Annual Report 2019/20

SMARTSAT
COOPERATIVE RESEARCH CENTRE

Contents

Chair's Foreward

The establishment year of the SmartSat Cooperative Research Centre has been an exciting journey which will lay the foundation for the next six years.

We were delighted that Australian Prime Minister, the Hon. Scott Morrison and Minister for Industry, Science and Technology, the Hon. Karen Andrews officially launched SmartSat in February and attended the State Dinner hosted by South Australian Premier Steven Marshall MP. The support and investment from both national and state governments has been integral to SmartSat's initial success, along with the backing of industry. With one hundred and twenty participants on board and our Commonwealth agreement consolidated, the Board is confident SmartSat will make a significant contribution to helping the nation build a fully functioning space ecosystem in close collaboration with the Australian Space Agency.

We have made sound progress in forming a strong management team, laying out our Technology Roadmap to 2027, as well as establishing our Industry Advisory Board and the three End User Advisory Boards (Mining and Energy, Defence and National Security, and Agriculture and Natural Resources). Additionally, the formation of the Aurora Start-Up Cluster, a wholly owned subsidiary proprietary limited company and Core Partner of SmartSat, will provide a community of over fifty space start-ups the opportunity to engage with SmartSat and further their business growth. On top of this we have developed important links with key international partners including NASA, the European Space Agency, Japan Aerospace Exploration Agency and Catapult Satellite Applications in the UK.

SmartSat's pipeline of investments has progressed strongly in the first year, despite the impact of COVID-19. We implemented an approach of fast-tracking research to help partners impacted by the pandemic and it has been reassuring to see the commitment from all our partners to progress projects even in these uncertain times. I would like to acknowledge and thank Defence Science Technology Group for bringing forward three years of payments to assist our partners through this challenging period.

On behalf of the Board I would also like to thank the Commonwealth Government's Cooperative Research Centres Program for its support of SmartSat and guidance in the first year and extend our sincere thanks to SmartSat's CEO Professor Andy Koronios, the management team and our participants for a very sound first year. We now set our sights on delivering the highest impact research possible and shaping the future of our exciting industry.

Dr Peter Woodgate | SMARTSAT CHAIR

Executive Summary

I'm delighted to introduce SmartSat's 2019–2020 Annual Report, our first such report and my first as CEO.

I have been honoured and privileged to serve as the inaugural CEO and to lead the establishment of this amazing organisation with such highly dedicated, passionate and professional colleagues working to build a culture of inclusion, innovation and excellence in all that we do. We have now laid the foundations for a nation-building CRC, delivering value for our partners and contributing to the growth of Australia's space industry and our economy.

The Australian space industry continues to experience rapid growth, offering huge potential for innovation and the transformation of Australia's priority sectors. SmartSat is Australia's largest investment in space industry R&D and is set to foster the creation of next-generation space technologies and make Australia more competitive in the global space economy. With a network of over 100 participants, SmartSat is committed to creating game-changing technologies and generating know-how that will make our industries more competitive and future-proof the jobs of all Australians.

The SmartSat CRC was officially launched in Adelaide on 19 February 2020 by Australian Prime Minister, the Hon. Scott Morrison and Minister for Industry, Science and Technology, the Hon. Karen Andrews. It has been a successful first year of operations and despite the current global challenges, we are now progressing well on our mission to become the leading contributor in transforming Australia's space innovation ecosystem for future prosperity.

Our key achievements include the establishment of the Governing Board, Management Team and associated advisory boards and committees, signing of the Participants' Agreement, commencement of a number of potentially impactful research projects and our PhD program is growing steadily. My talented colleagues have had many achievements which are outlined in the rest of this report.

Looking ahead, we will now focus on accelerating our Research Program and implementing the Strategic and Operational Plans we have developed. I would like to thank our partners for their support and patience during the establishment phase and acknowledge the hard work and dedication of the Board of Directors and the broader SmartSat team in getting us to where we are today. We have made a fantastic start and this is due to the dedication, professionalism and excellence of the SmartSat team. I look forward to the achievements of this future-defining partnership.

Professor Andy Koronios
| CHIEF EXECUTIVE OFFICER
& MANAGING DIRECTOR

We will be globally respected as an innovator in space technology and valued as an enduring, trusted and leading contributor in transforming Australia's space research and innovation ecosystem

THE SMARTSAT VISION

Achievements

In the first year of operations the SmartSat CRC is now progressing at speed towards its mission to conduct translational research which creates game-changing technologies for future prosperity. Key achievements include the following:

Governance

- **Governing Board appointed and four Board Committees established:**
  - **Audit, Risk & Compliance,**
  - **Nominations & Remuneration,**
  - **Research Investment and**
  - **Diversity & Inclusion;**
- **Company Secretary appointed;**
- **Three management committees established:**
  - **Research Program Leadership Group,**
  - **Industry Advisory Board and**
  - **the SmartSat Education College; and**
- **Three End-User Advisory Boards (EUAB) established:**
  - **Defence & National Security,**
  - **Agriculture & Natural Resources, and**
  - **Mining & Energy**

These EUABs have now formed working groups and have commenced work on their respective Sector Plans to inform the SmartSat Research Program from an end-user perspective

Operations

- **Company registered as a not-for-profit** and granted charitable status by the Australian Charities and Not-for-Profit Commission;
- **Established the SmartSat Aurora Start-Up Cluster** as a wholly owned subsidiary proprietary limited company and Core Partner of SmartSat, giving a community of over 50 space start-ups the opportunity to meaningfully engage with SmartSat and the research program;
- **Recruitment of the core team of staff;**
- **Fifty-five formal participants consisting of:**

18 Core Partners

37 Supporting Partners

+ 54 Start-Ups

Communications and Outreach

- **Official launch event in February attended by:**
  - **Australian Prime Minister, The Hon. Scott Morrison,**
  - **Minister for Industry, Science and Technology, The Hon Karen Andrews,**
  - **SA Premier, The Hon. Steven Marshall and**
  - **a large number of state, local and international VIPs;**
- **Regular communication with partners** through 'InfoComms emails', Twitter, LinkedIn and quarterly newsletters;
- **Finalist in the 2020 Australian Space Awards;**
- **Significant media coverage throughout the year;** and
- **A series of seven Distinguished Speaker lectures**, with over 600 attendees registered in total

Research

- **SmartSat Technology Roadmap developed** and has been used to drive the research program;
- **Engaged the majority of SmartSat's participants in project discussions and commenced development of the project pipeline;**
- **15 projects approved;**
- **Tactical Research Fund launched** to support partners through the economic impacts of COVID-19;
- **Established the AI4Space Research Network** to connect Artificial Intelligence experts to build capability in AI for space applications;
- **Commenced the development of three critical sector plans** to inform the SmartSat Research Program from an end-user perspective; and
- **Commenced a partnership with the Inclusive Organisation** to undertake research that will assist us to progress Diversity & Inclusion activities

Education and Training

- **Initiated a Skills Gap Analysis of the Australian space industry;**
- **Completed a study to determine the impact of COVID-19 on industry partners** and potential actions that could alleviate these impacts; and
- **Awarded seven full and four top-up PhD scholarships** in association with approved research projects (some of these are yet to be filled)

Performance Against Activities

SmartSat is focussed on high impact, industry driven and collaborative research to generate game-changing technologies to create a more competitive Australian space industry.

SmartSat's research activities will progress towards the following objectives:

1

Develop advanced communications architectures and technologies that will provide Australia with ubiquitous access to data services and develop a globally competitive communications industry;

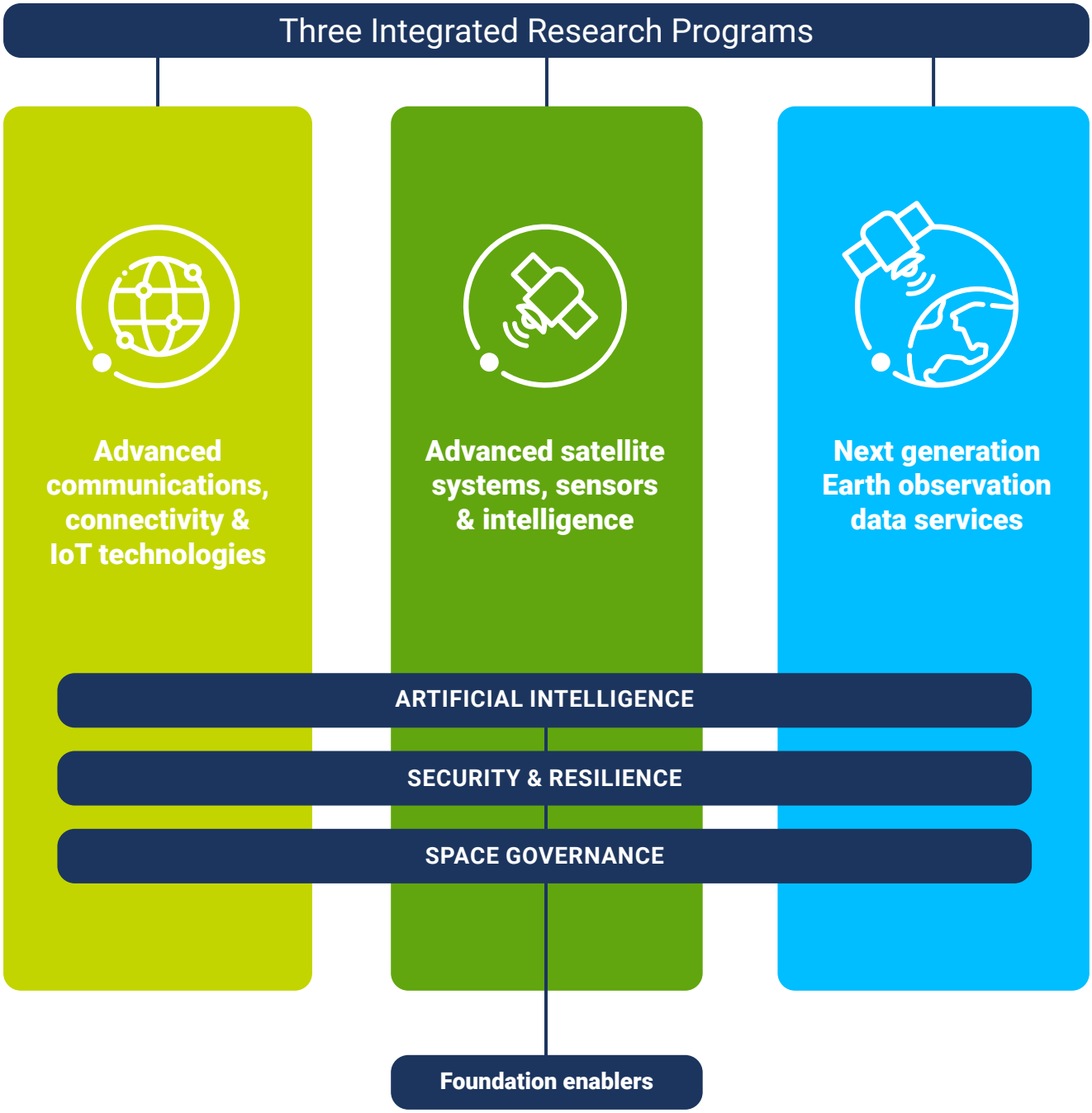
2

Integrate AI techniques into satellite systems, sensors, and technologies to enable more autonomy in larger satellite constellations producing leapfrogging, sovereign capabilities for the Australian space industry; and

3

Develop next generation Earth Observation (EO) data services including 'smart' EO through onboard processing, focusing on embedded AI to drive productivity and innovation by delivering new services and capabilities more deeply and quickly than is currently possible.

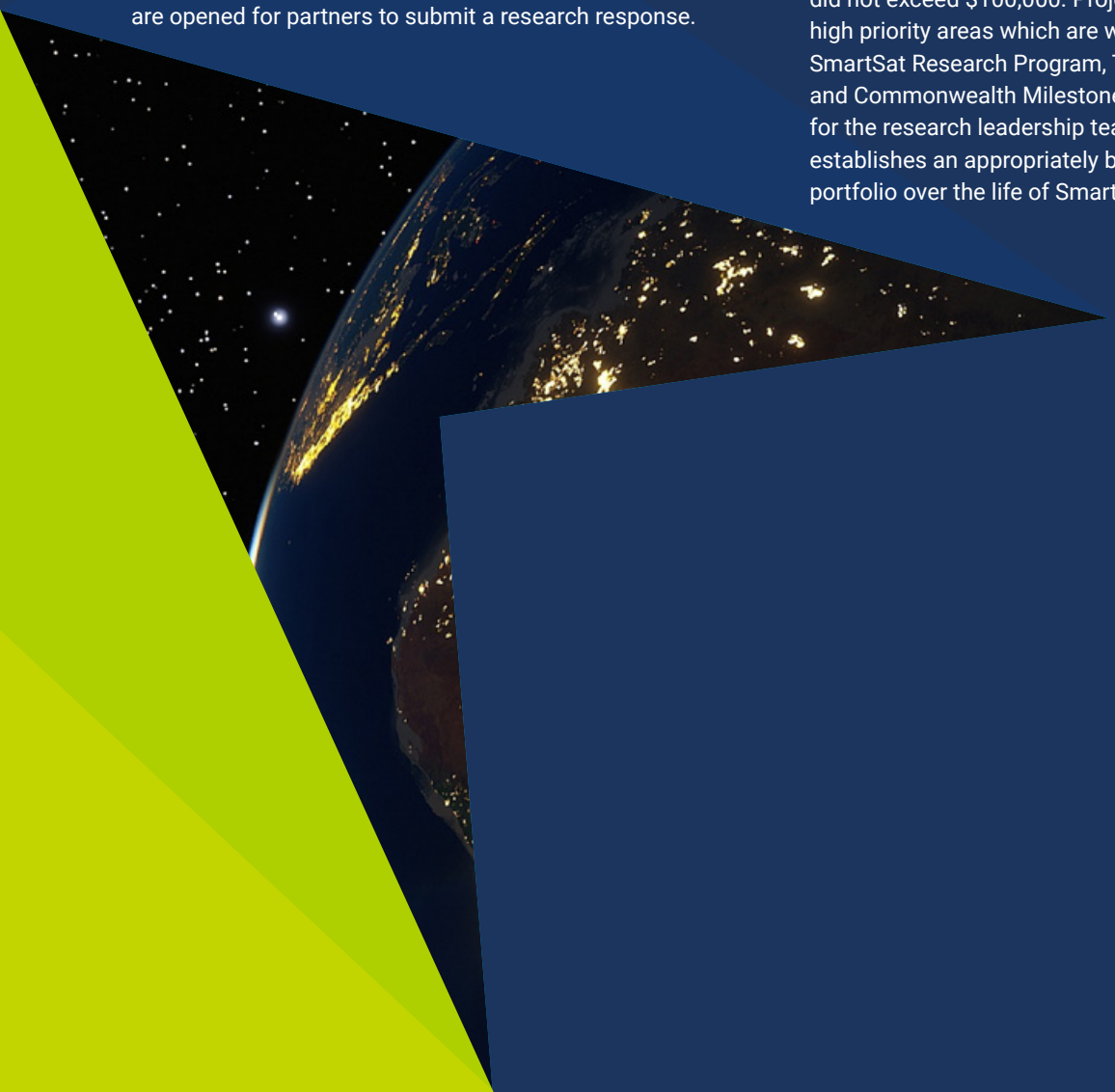
These will be achieved through high quality, outcome-focused collaborative research, and development in three research programs integrated by three cross cutting research themes.



Research

SmartSat sought to progress a fast start to the research program through a general call for project Expressions of Interest (EOIs) in September 2019. EOIs were required to align with nine foundational research objectives in the Commonwealth Milestones. The high volume of responses were reviewed against the technology roadmap and a subset developed with partners into full proposals for approval by the Research Investment Committee and Board. Five projects across Research Programs 1 – 3 were approved in December 2019 and by June 2020, there was a total of twelve projects approved. In addition to Research Programs 1 – 3 , SmartSat has also initiated Research Program '4' which incorporates projects not specifically linked to the three core research programs, including scoping studies and gap analyses.

During the fast start stage, the Technology Roadmap, Research Investment Criteria and Project Costing Principles were refined and made available through the SmartSat website. These provide the guiding framework for the research program as it transitioned from the initial broad EOI call to a more strategic approach targeted at high priority areas, addressing end user needs aligned with the Commonwealth Milestones. The new approach seeks to provide increased opportunities for partners to collaborate earlier in the project EOI process. 'Project Concepts' are opened for partners to submit a research response.



The Project Concept may define an industry or end-user need or cover a technology gap required to underpin a new capability. This approach gathers multiple research project responses that can be progressed separately or, merged into a larger project with the aim of progressing the most innovative and impactful research. In this new approach, SmartSat recognises the need to balance end-user/industry pull of technology with technology push from the research community. This aim is to focus the SmartSat research on known commercial gaps and opportunities whilst also seeking to generate new industry opportunities with leap-frog technologies.

The SmartSat Technology Roadmap illustrated key technologies within the three research programs as a function of time. This is a living document that will be refined and updated. Some drivers for change are the SmartSat Strategic Plan, End User Advisory Board Sector Plans, input from partners and the SmartSat missions.

SmartSat also established a $3 million 'Tactical Research Fund' (TRF), to enable an accelerated approval process of small, short term projects (<12 month duration) where the SmartSat investment did not exceed $100,000. Projects must fall in the high priority areas which are well aligned with the SmartSat Research Program, Technology Roadmap and Commonwealth Milestones. It is a focus area for the research leadership team to ensure SmartSat establishes an appropriately balanced research portfolio over the life of SmartSat.

Technology Roadmap

SMARTSAT PROPOSED 'MISSIONS'

- **AquaWatch**
- **Disaster Resilience**
- **Indo-Pacific Inter-Connector**

Research Programs

Program 1: Advanced Communications, Connectivity and IoT Technologies (RP1)

Professor Gottfried Lechner, Research Program Director

Program 1 aims to use space technology to provide high-speed, reliable, and secure communications that will integrate with terrestrial networks in Australia.

A series of workshops and consultation activities were held in the first year to guide and progress the development of the research programs. This provided focus for defining several projects across RF, optical and satellite network technology. In alignment with the SmartSat fast start, several projects were progressed as an initial phase of larger projects, conducting fundamental work to set the basis for future activities. The projects addressed stabilisation of optical links, development of new optical laser sources, optical channel models and hybrid RF/optical systems. Projects also strengthened international partnerships through collaborations with Thales Alenia Space in Europe (optical communications) and NASA (satellite-based Search & Rescue systems).

During the first year, the following projects were approved:

- **P1-01** Coherent Free-Space Optical Communications
- **P1-02** Modem Development for Optical and Hybrid RF/Optical Communications
- **P1-03** Advanced Satellite Communications Scoping Study for High Rate and Dynamic Service Delivery
- **P1-04** Optical Channel Modelling Scoping Study
- **P1-05** Compact Hybrid Optical RF (CHORUS)
- **P1-06** Chip Laser combs for free space optical communications
- **P1-07** Resilient Emergency and Search and Rescue (SAR) Communications

Program 2: Advanced Satellites Systems, Sensors, and Intelligence (RP2)

Professor Russell Robert Boyce, Research Program Director

Program 2 aims to develop new approaches in the design, methodologies, concepts and technologies for sensors and intelligence. This will result in the development of new space systems capable of delivering actionable information.

RP2 was established to develop the technologies that enable integration and demonstration of research outcomes from RP1 and RP3. The early RP2 workshop focused on developing an action plan from the milestones and understanding broader activities in the community related to the SmartSat Research Program.

A selection of EOIs from the September 2019 general call were progressed to full proposals for consideration by the SmartSat Research Investment Committee. These covered a range of technologies including attitude control, next generation digital engineering, inter-satellite optical links and Infrared imaging technology. One attitude control project was progressed during the first 12 months of operation.

The role of intelligence in end-to-end space systems is a key component of Program 2. Workshops were conducted in to determine the most important areas of AI technology for the Australian space sector. The focus areas include multi-sensor machine learning, optimising machine learning for on-board processing and approaches for trusted AI. Project proposals are being progressed for research investment consideration in the second year.

Due to university commitments Professor Boyce stepped down from the Research Program Director position in March 2020. SmartSat is very appreciative of his leadership and guidance during the bid and initial operations phase. SmartSat research partners provided several compelling candidates for this role with Professor Allison Kealy (RMIT) being appointed and commencing the role in July 2020.

During the first year, the following projects were approved:

- **P2-01** Ultra-fine attitude control via event-based star tracking and piezoelectric stabilisation

Program 3: Next Generation Earth Observation Data Services (RP3)

Professor Stuart Phinn, Research Program Director

Program 3 aims to use and enhance the existing world leading research capabilities of the Australian Earth Observation community to develop new applications to improve the Australian economy and develop opportunities for export.

Two main types of SmartSat technology users were identified during the initial consultation phase; those associated with partners creating new products, and end users using information derived from EO products. Many of the latter category are external to SmartSat with their requirements being captured by the SmartSat End User Advisory Boards.

There was strong response to general call for project EOIs in September 2019 and the proposals received were representative of the breadth of research community capabilities in this program. Under the fast start, several scoping projects were progressed to contribute to the program framework. A key project, 'Know the Market to Grow the Market', seeks to better understand the willingness of end-users to pay for advanced EO products. The aim is to understand the opportunities for Australian industry that SmartSat should focus on as the broader EO community transitions from a predominantly public good data ecosystem, to one with a greater contribution from commercial systems.

SmartSat has three mission areas that aim to provide focus and integrating themes for components of the research program addressing specific technologies. The AquaWatch mission aims to develop an innovative fusion of in-situ and EO technologies to provide water quality decision information for managers of national water resources. A Phase 0 project commenced as a collaborative SmartSat and CSIRO activity to develop the components, scope and initial research for this mission.

During the first year, the following projects were approved for RP3:

- **P3-01** SatCom IoT-enabled Automatic Ground Water Collection and Aggregation Pilot (SIG Water)
- **P3-02** Phase-0 AquaWatch Australia
- **P3-03** Earth Observation Analytics Solutions: Know the Market to Grow the Market
- **P3-04** Real Time Fire Analytics

Foundation Enablers

As well as the three vertical research programs, SmartSat has established three cross cutting foundation enablers:

- **Cyber Security and Resilience**
- **Artificial Intelligence**
- **Space Governance (to be developed)**

CYBER SECURITY AND RESILIENCE

Professor Jill Slay was appointed as the Cyber Security and Resilience Theme Leader, bringing extensive experience and expertise in the areas of forensic computer science, security, protection of infrastructure and cyber-terrorism. Prof Slay is a Fellow of ACS and a Fellow of the International Information Systems Security Certification Consortium, both for her service to the information security industry. It is expected during SmartSat's second year significant progress will be made in Cyber Security research areas.

ARTIFICIAL INTELLIGENCE

Clinton Fookes, Professor in Vision & Signal Processing within the School of Electrical Engineering & Robotics of the Science and Engineering Faculty at QUT, was appointed SmartSat's AI Theme Leader. Clinton holds a BEng (Aerospace/Avionics), an MBA with a focus on technology innovation/management, and a PhD in the field of computer vision. He actively researches in the fields of computer vision, machine learning and artificial intelligence. He has developed technology and solutions for a range of applications with end-user benefits across video analytics, biometrics, national security, human-computer interaction, medical signal processing, digital agriculture, infrastructure monitoring, aviation security & screening, and other pattern recognition areas.

A number of AI workshops were held in the first year (as noted in Research Program 2) that span the three research programs. A few clear themes emerged, including the development of new multi-modal and multi-sensor machine learning approaches; optimisation of machine learning architectures for onboard processing; AI for RF spectrum sensing; and AI for anomaly detection/change detection. Trust in AI systems and their decisions emerged as a key issue in making outcomes in these areas interpretable and explainable to human operators and industries who use them. Additionally, a new Artificial Intelligence for Space Research Network (AI4Space) was established as a vehicle to bring together researchers from academic and industry sectors with the aim to increase collaboration in AI for space.

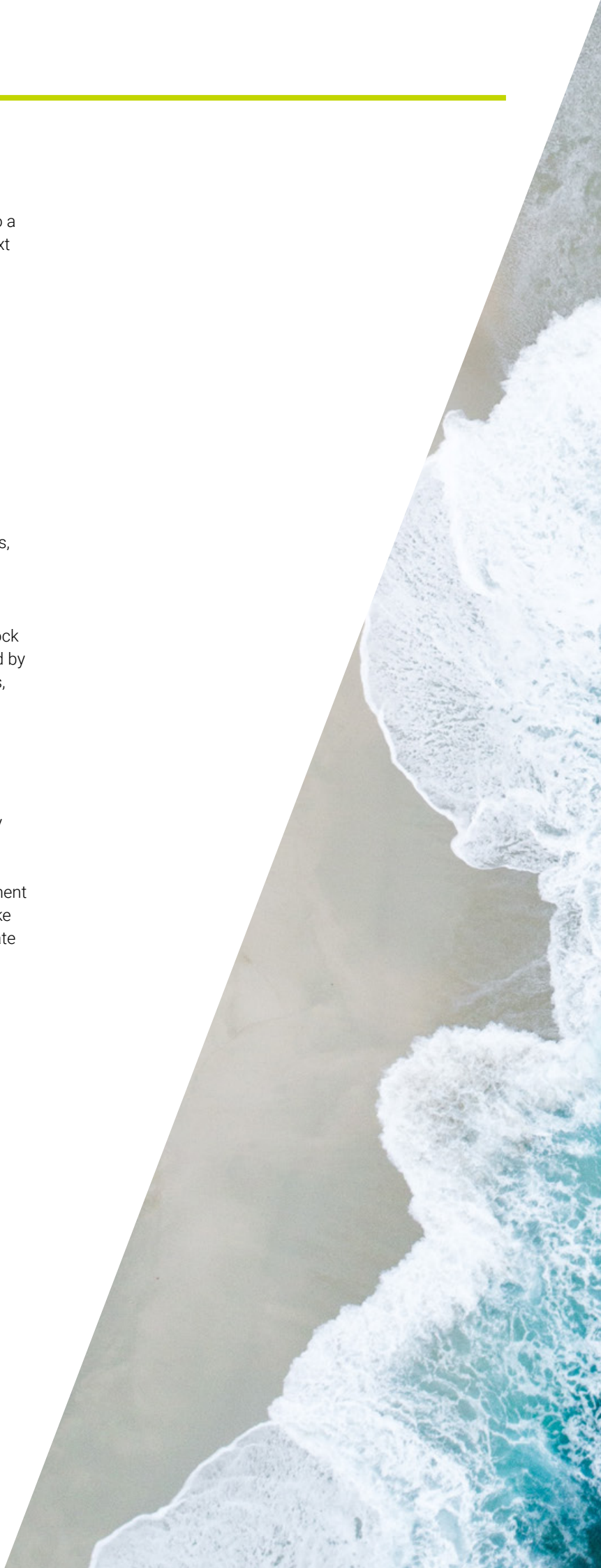
Missions

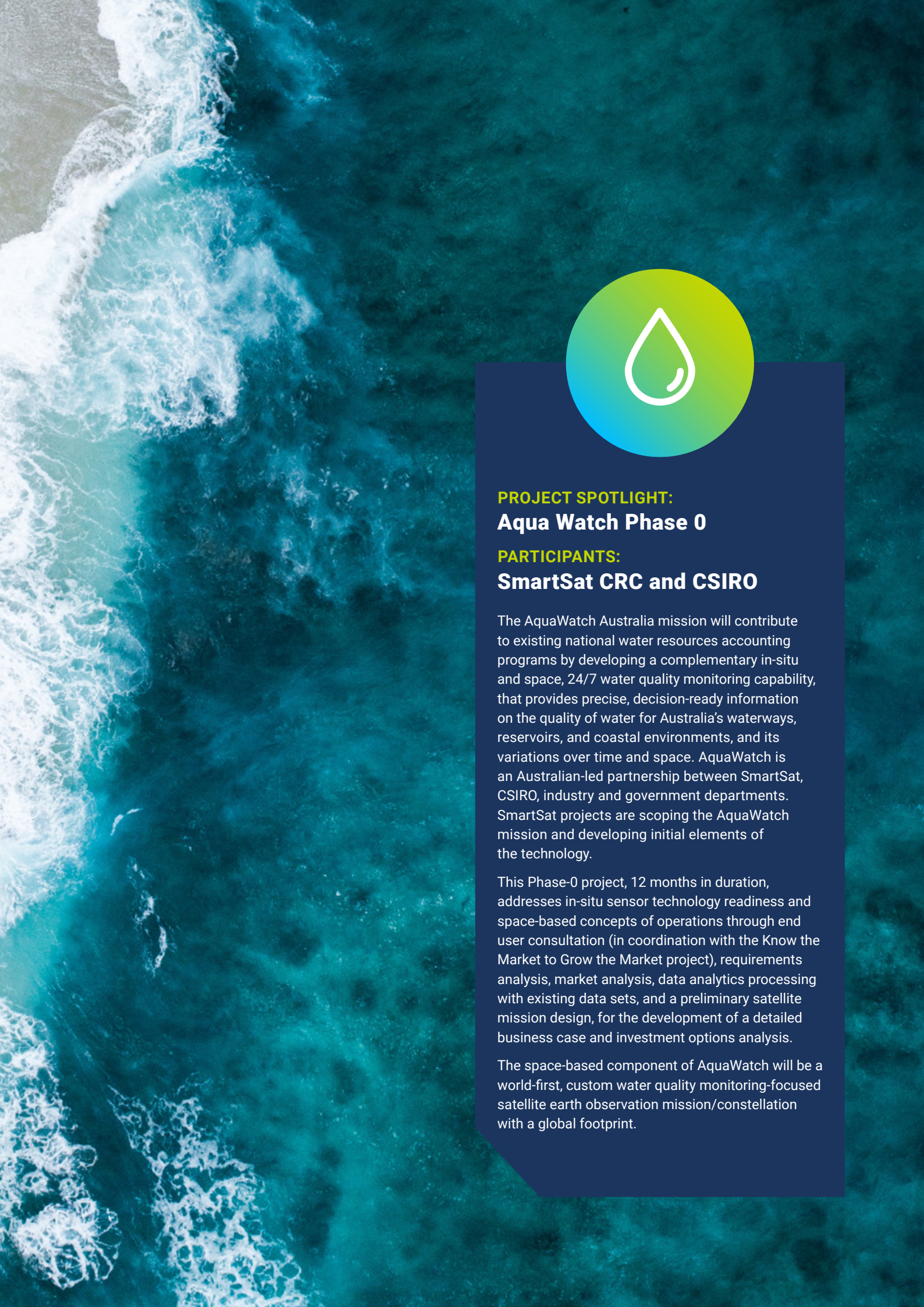
SmartSat has defined three mission areas where space technology can contribute solutions to complex national problems. The objective is to place research projects into a capability demonstration framework that provides context and focus on the elements of an end-to-end system that SmartSat needs to address. It also enables SmartSat to more effectively communicate the value of the research program to end users and more generally, the national benefits of space research and development. The three mission areas are:

- AquaWatch Australia
- Disaster Resilience
- Indo-Pacific Connector (Defence and Security)

AQUAWATCH AUSTRALIA

Knowledge of water quality information from inland rivers, reservoirs and coastal zones is a critical requirement for the effective monitoring and management of this essential resource. Access to safe and clean freshwater impacts rural and urban communities, agriculture, livestock and wildlife. Freshwater quality can be adversely affected by natural or man-made low river flows, warm temperatures, toxic algae blooms, hypoxic blackwater from floodplain inundation, bushfires, sediment and nutrients transport. Recent events like the Menindee region fish deaths (>1 million fish died in 2019) led to major environmental, political, economic and community concerns as well as significant economic loss. Similarly, coastal water quality is a key factor for fishing, ecosystem health, aquaculture, recreation, and tourism. Preventing poor water quality requires improved monitoring, forecasting and management responses. Australia needs a comprehensive and bespoke monitoring capability that provides the timely and accurate information to support responsible management.





PROJECT SPOTLIGHT:

Aqua Watch Phase 0

PARTICIPANTS:

SmartSat CRC and CSIRO

The AquaWatch Australia mission will contribute to existing national water resources accounting programs by developing a complementary in-situ and space, 24/7 water quality monitoring capability, that provides precise, decision-ready information on the quality of water for Australia's waterways, reservoirs, and coastal environments, and its variations over time and space. AquaWatch is an Australian-led partnership between SmartSat, CSIRO, industry and government departments. SmartSat projects are scoping the AquaWatch mission and developing initial elements of the technology.

This Phase-0 project, 12 months in duration, addresses in-situ sensor technology readiness and space-based concepts of operations through end user consultation (in coordination with the Know the Market to Grow the Market project), requirements analysis, market analysis, data analytics processing with existing data sets, and a preliminary satellite mission design, for the development of a detailed business case and investment options analysis.

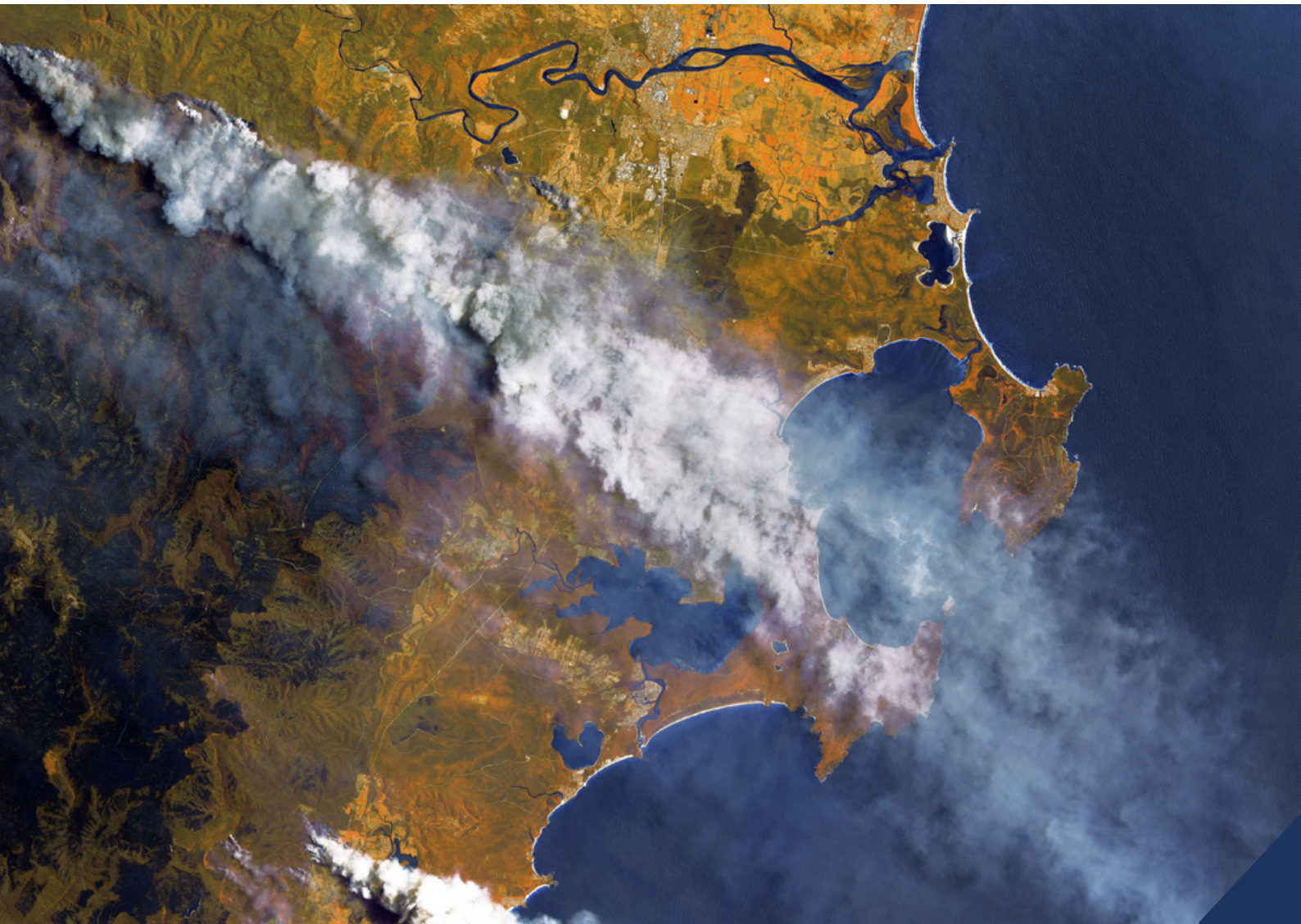
The space-based component of AquaWatch will be a world-first, custom water quality monitoring-focused satellite earth observation mission/constellation with a global footprint.

DISASTER RESILIENCE

Natural disasters have been part of the fabric of Australia's existence, with bushfires and floods occurring with increasing frequency and severity. This year's catastrophic bushfire season has been devastating for people, property and wildlife, claiming many deaths and significantly affecting the livelihood of many Australians. Critical communications infrastructure is often damaged during a major fire incident which in turn hampers the rescue efforts and further degrades the capability to fight the bushfires and keep firefighting, emergency personnel and citizens out of harm's way. Several significant gaps in emergency management exist that can be filled by new generation space-based technologies working in tandem with current ground-based emergency management systems. Disasters can be segmented in phases covering prevent, prepare, respond, and recover where space technology can contribute to all four.

Using bushfires as an example, EO and in-situ satellite communication connected sensors can contribute to managing forest fuel loads and the early detection of outbreaks, satellite communications can support command and control and firefighter situational awareness during the event, and both space technologies can fill gaps while ground infrastructure is repaired.

The Disaster Resilience mission seeks to focus research projects on significant gaps in all phases of disaster management to enhance decision-ready information and develop resilience capabilities for disaster operations.



PROJECT SPOTLIGHT:

Resilient Emergency and Search and Rescue (SAR) Communications

PARTICIPANTS:

Safety from Space, Myriota, Black Art Technologies, Flinders University, University of South Australia, Australian Maritime and Safety Authority, NASA SAR Office

The aim of the project is to develop enhanced system requirements and resilient architectural designs, waveforms and protocols for selected concepts of operation and usage cases, that will improve the efficacy and operation of the current system.

Existing Search and Rescue (SAR) systems suffer from operational and performance limitations that limit their effectiveness. This project will initially focus on the current internationally used Cospas-Sarsat SAR system, a system constrained by a number of existing specifications and requirements, and then extend to additional applications. The first phase of this work will develop enhanced system requirements and resilient architectural designs, waveforms and protocols for selected concepts of operation and use cases, that will improve the efficacy and operation of the current system.

This phase will not only look at the Cospas-Sarsat system, but also extend to investigating how emergency management can be impacted and enhanced. Further, it will study initial architecture options for a prospective new environment being developed by NASA to support the safety of astronauts (called LunaSAR) as part of the Moon to Mars ARTEMIS program.

INDO-PACIFIC CONNECTOR (DEFENCE & SECURITY)

The Australian government has placed increased emphasis and priority on enhanced regional engagement covering disaster response, security and economic assistance for neighbouring nations across the Indo-Pacific. In addition, the 2020 Defence Strategic Update notes the region is undergoing a strategic realignment making the region more contested and apprehensive. Australian space capabilities across the three SmartSat research programs can contribute to regional diplomacy and security partnership through technology collaboration. The Indo-Pacific Connector mission provides a concept for integrating SmartSat technologies into an end-to-end system able to deliver advanced communications and situational awareness. This can be achieved through collaborative development aimed at capacity building with regional partners.
This is predominantly a regional security and diplomatic engagement concept, requiring Australian leadership enabled by advanced space technology.

PROJECT SPOTLIGHT:

Compact Hybrid Optical RF (CHORUS)

PARTICIPANTS:

Defence Science and Technology Group, EM Solutions, EOS Space Systems, Lyrebird, University of South Australia, Australian National University, Shoal

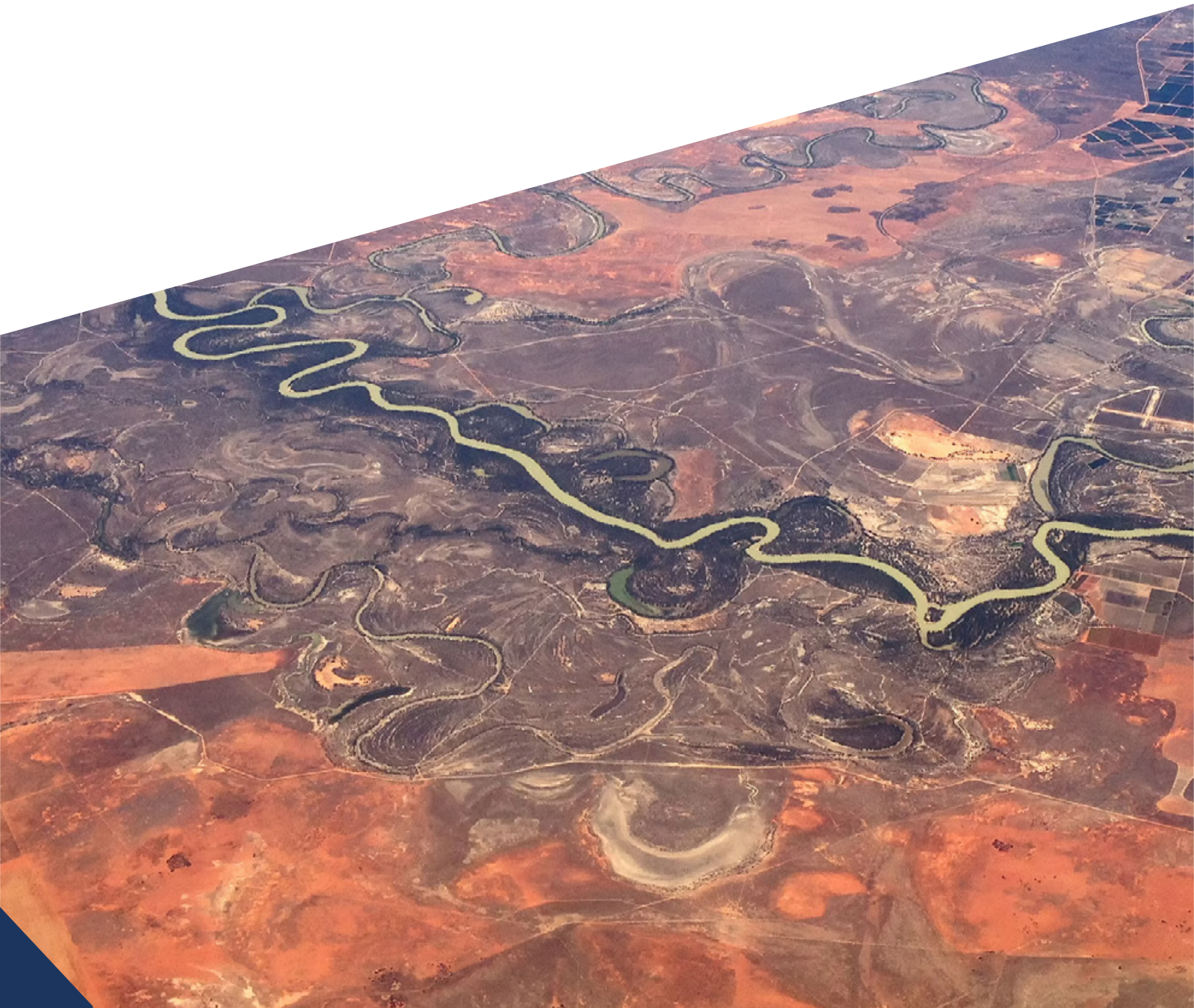
This highly collaborative project aims to build on existing world leading Australian technology in compact RF tactical terminals and optical communication to develop “leap-frogging” technology that exploits bearer diversity through a highly integrated hybrid Optical-RF tactical terminal. This will place Australia in a leading position to create new capabilities for compact, high data rate, high availability satellite earth terminals for commercial and national security markets.

This research project is for the 12-month Phase 1 of an initial activity to research, design and model the performance of hybrid satellite terminal for mobile applications. The project proposes several research questions regarding mobile platform pointing technology with sufficient precision to support free space optical communications, diversity gains from integrated hybrid RF-Optical systems, requirements for adaptive optics and protocols to optimise the diverse links for the end user. The project will bring together RF and optical communications researchers to develop novel approaches that will be optimised through digital twin design approaches for trade off analysis and performance modelling.

Projects Approved in 2019/2020

NO.	PROJECT TITLE	LEAD ORG	PROJECT PARTIES INVOLVED
P1-01	Coherent Free-Space Optical Communications	University of Western Australia	DST Group Thales Australia Ltd University of Western Australia University of South Australia
P1-02	Modem Development for Optical and Hybrid RF/Optical Communications	University of South Australia	DST Group Solinnov Pty Ltd University of South Australia
P1-03	Advanced Satellite Communications Scoping Study for High Rate and Dynamic Service Delivery	University of Sydney	University of Sydney Airbus Goonhilly Macquarie University Thales Australia Ltd University of New South Wales
P1-04	Optical Channel Modelling Scoping Study	Macquarie	Macquarie University The Australian National University
P1-05	Compact Hybrid Optical RF (CHORUS)	DST	DST Group EOS Space Systems EM Solutions Pty Ltd Shoal Group Pty Ltd The Australian National University University of South Australia Lyrebird Antenna Research
P1-06	Chip Laser combs for free space optical communications	University of South Australia	University of South Australia Red Chip Photonics
P1-07	Resilient Emergency and Search and Rescue (SAR) Communications	Safety from Space (Rice Satcom)	Safety from Space (Rice Satcom) Myriota DST Group Black Art Technologies Flinders University University of South Australia Australian Maritime and Safety Authority NASA
P2-01	Ultra-fine attitude control via event-based star tracking and piezoelectric stabilisation	Adelaide University	University of Adelaide Inovor Technologies University of Queensland Australian National University
P3-01	SatCom IoT-enabled Automatic Ground Water Collection and Aggregation Pilot (SIG Water)	FrontierSI	FrontierSI Myriota Pty Ltd University of South Australia SA Department of Environment Water and Natural Resources
P3-02	Phase-0 AquaWatch Australia	CSIRO SmartSat	CSIRO SmartSat University of New South Wales Curtin University
P3-03	Earth Observation Analytics Solutions: Know the Market to Grow the Market	FrontierSI	FrontierSI Geoscience Australia

NO.	PROJECT TITLE	LEAD ORG	PROJECT PARTIES INVOLVED
P3-04	Real Time Fire Analytics	RMIT University	RMIT University SA Department of Environment Water and Natural Resources VIC Department of Land Water and Planning Geoscience Australia Charles Darwin University
P4-01	Research and technology gap analysis	University of South Australia	University of South Australia
P4-02	Scoping study: COVID-19 impact analysis and recovery strategies	Deakin University	Deakin University
P4-03	Industry Skills Gap Analysis	Western Sydney University	Western Sydney University



Commercialisation

As the reporting period consists of the first 12 months of operation, no commercial or utilisation activity has been reported as the initial projects have not been completed. SmartSat have been working hard to ensure projects have significant industry commitment and that industry play a key role in the management of approved projects. Strong industry involvement during project formulation and conduct is an important success factor in maximising commercial opportunities.

Commercialisation and Utilisation Arrangements With Industry

End user input is key to ensuring solution focused research is targeted where it is needed, practical and cost effective. SmartSat has established three End User Advisory Boards (EUAB) comprising key members from the sectors. Each of EUAB's have established sector plans identifying critical areas of the sector where innovation can have real impact. The plans will be used by the SmartSat team to support the research approval process and project development. The EUAB with also be asked for comment on projects relevant to that sector. The EUAB established to date are:

- Defence and National Security (Chaired by Mr Andrew Seedhouse, DST)
- Agriculture and Natural Resources (Chaired by Mr Mark Allison, Elders)
- Mining and Energy (Chaired by Mr Peter Rossdeutscher)

SmartSat established the Industry Advisory Board (IAB) which consists of a cross section of Core and Supporting industry partners. The IAB will provide high level input to the SmartSat Executive and Board in areas including:

- Commercialisation policies and strategies
- Australian's sustainable sovereign space industrial capability
- SmartSat industry impact reviews
- SmartSat industry partner representation (start-ups to multi-nationals)

An experienced Commercialisation and Investment group is currently being established under the IAB to guide and support commercialisation and investment initiatives for SmartSat partners, including Aurora. SmartSat Aurora is a company established to nurture the large number of SmartSat start-ups that do not have the resources to join as full SmartSat partners.

SmartSat will assist Aurora by:

- Providing networking opportunities with SmartSat researchers and industry partners
- Providing details of the research program to inform start-ups of cutting-edge technologies
- Providing briefings to support members across a broad spectrum of issues that space start-ups are likely to encounter.

New Or Improved Products, Services, Processes And Existing Spin-Off Companies

In the first year of operation there were no spin-off companies established. No commercial or utilisation activity has been reported for the period.

Specific Benefits To Industry

The level of Australian industry working with researchers is significantly lower than that in the US and Europe. SmartSat is running focussed workshops bringing industry with researchers together with the aim of building relationships leading to collaborative projects. Workshops have been run for the cross-cutting themes of Cyber Security and Resilience and AI and within the Research Program domains.

Intellectual Property

SmartSat has established a flexible framework for commercially valuable intellectual property (IP), outlined in detail further in the intellectual property section of this report.

Education and Training

During the first year, SmartSat established an Education and Training College, with the following responsibilities:

- Coordination and management of SmartSat education and training activities;
- Review the whole skills 'pipeline' and identify existing and potential initiatives to provide advice to the SmartSat Chief Executive Officer (CEO) and Board on issues of tertiary and industry education and training relevant to establishing priorities, policies and planning; and
- Form a virtual community of interest, engaging with peak bodies, Australian Research Council Centres of Excellence and the wider educational establishment, enabling a coherent approach to lifetime skills development pathways.

Strategies and Operational Structures

In the initial period, SmartSat established strategies and operational structures for the College. In parallel, a project was initiated to identify the skills needed to grow the sector, recruitment of PhD students commenced and some initiatives around STEM education and outreach were trialled.

An overall strategy was developed to outline objectives across the full skills pipeline from STEM education activities in schools, to undergraduate internships, PhD scholarships and professional development training for industry partners. The aim was to increase awareness of sector needs while ensuring the needs of SmartSat partners are met first, and to work with others rather than seek out or initiate offerings where others are better suited to do so. This strategy is supported on three pillars that cover specific areas:

- A Higher Degree by Research strategy, involving the development of a cohort of well trained, industry ready graduates in the key areas identified by the SmartSat
- A STEM and outreach strategy, working in conjunction with the communications team to promote space in general and SmartSat research outputs in particular
- A work-force development strategy focussing on developing essential skills across the industry and within the skills development pathways from high school into industry.

Skills Gap Analysis

In order to operationalise these strategies, it was important to understand where there are skills gaps within the industry and what resources exist in the community that could address those gaps. A Skills Gap Analysis was developed in conjunction with the Australian Space Agency and released in April 2020.

The successful bid team led by Western Sydney University commenced the project and aim to report back by the end of 2020. This output will enable SmartSat to prioritise efforts in developing training and education in the areas where it can have the most impact.

Higher Degree by Research

For the Higher Degree by Research strategy, SmartSat's Education & Training College meets on a regular basis to discuss matters relating to the recruitment, assessment, and training of PhD students. SmartSat has set a target of 72 PhD completions over its 7-year life. The College also plans to provide greater support to HDRs through initiatives such as space industry placement/internships and space-related short course training.

STEM Initiatives

Finally, SmartSat supported some small initiatives identified as beneficial to the Education and Training College goals. The first of these was to sponsor a space-themed competition as part of the popular Premier's Reading Challenge in South Australia, working jointly with the Department for Education and Inspiring South Australia. This initiative is designed to encourage reading in children from Reception to Year 12 across the state. With over 1200 entries across more than 20 schools in the STEM section alone, this initiative provided an opportunity to encourage children to reflect on the importance of space and undertake STEM subjects.

A second initiative teamed high school students and some of Australia's leading space scientists to identify project ideas using satellite technologies to address global challenges such as the protection of the earth, ending poverty, ensuring peace and many of the 17 United Nation's Sustainable Development Goals (SDGs). Although initially for students at Hamilton Space School it is hoped to make this, or a similar challenge, available to more schools in the future. It is planned to extend both initiatives to other states and territories next year though the SmartSat nodes.

In partnership with Engineers Australia, SmartSat has sponsored the annual Space Thesis Prize, awarded to the best undergraduate thesis on a space engineering theme. It is hoped that this will encourage research projects in these areas and give us an opportunity to raise awareness of SmartSat studentships.

Having piloted these activities during the first year, the Education and Training College intends to develop a high school work experience program, undergraduate internships and industry placements for final year students in the next twelve months.

PHD STUDENTS 2019–2020

RESEARCH PROGRAM/ PROJECT NO.	STUDENT NAME	PROJECT TITLE	HOST UNIVERSITY	COUNTRY OF ORIGIN	COMMENCE-MENT	EXPECTED COMPLETION
1-08s	Duaa Fatima	Physical Layer Security for Satellite based IoT Edge Services with Deep Reinforcement Learning for Energy Efficiency	La Trobe University	Australia	2020	2023
1-09s	Zachary Aul	Anomaly Detection in IoT for Satellite Security Using Blockchain	La Trobe University	Australia	2020	2022
1-01	Benjamin Dix-Mathews	Phase- and spatial-stabilisation system development	The University of Western Australia	Australia	2020	2022
2-02s	Anne Bettens	Autonomous navigation of satellites for space exploration	University of Sydney	Australia	2020	2022
2-03s	Sam Hilton	Human-Autonomy teaming for intelligent Distributed Satellite Operations	RMIT	Australia	2020	2022
2-04s	Jordan Plotnek	Measuring Control System Resilience to Cyber-Physical Threat in a Satellite Context	La Trobe University	Australia	2020	2022
3-06s	Jason Dail	Towards effective adaptive monitoring of UN SDG #15 Protect and Sustain Terrestrial Ecosystems using EO Data, Products and Services	The University of Queensland	USA	2021	2024

Intellectual Property (IP) Management

The issue of IP ownership and rights arising from a cross-sector and multi-party collaboration can be difficult to manage and can give rise to instances where there may be a conflict between project partners. Indeed, companies will generally want to protect their own know-how and any new IP in which they invest. Setting clear expectations for IP management, ownership, commercialisation, and the processes for assigning utility will be critical to SmartSat's success.

SmartSat has established a flexible IP framework that takes into consideration its 'broad church' of partners, Defence and National Security issues, and the special role SmartSat will need to play in supporting the many start-ups in the nascent space industry.

Unless otherwise agreed and detailed in a Project Agreement, upon its creation all Project IP will be owned legally and beneficially by SmartSat.

The SmartSat Board will be responsible for determining protocols relating to circumstances of exception to the ownership of Project IP, which will be agreed in Project Agreements by SmartSat on a fair and consistent basis.

As part of the establishment phase, it was agreed that the SmartSat IP Utilisation Protocol would be guided by two principles, namely:

- Preference for utilisation rights to be given to those (Core and Supporting) Participants who have played a lead role in the research and development phase, and
- The flow of benefits from outcomes of utilisation must be in the overall best interests of all SmartSat Participants, including the immediate and long-term national interest

In operationalising these principles, SmartSat will also acknowledge the different drivers for projects (i.e. commercially driven by specific industry partners) and the different project attributes to be considered when negotiating utilisation rights and benefits arising from utility of the IP, including: funding provided to partners, likely increase in TRL levels, commercial potential and opportunities for use of latent IP.

In the first year of operation, there was no commercially valuable IP generated.

In establishing its framework for future IP generation that may occur, SmartSat undertakes to identify all Background and Third Party IP being brought to a project, a Utilisation Agent on each Project Agreement where provisional utilisation rights and intended fields of use are identified, and where appropriate, the development of a draft Utilisation Plan which will include the strategy of the Utilisation Agent to ensure Project IP will be exploited to maximise value and national benefit.

Collaboration

Building a collaborative network amongst SmartSat members (research organisations, universities, industry corporations, SMEs and start-ups) was a key objective for the first year. Collaboration has occurred in a number of formats including: workshops, research projects, partner forums, research networks, nodes, team meetings and advisory boards. While the impact of COVID-19 presented some challenges for the traditional collaborative approaches, SmartSat has been proactive in its endeavours to bring partners together, provide networking events, communicate opportunities, and facilitate introductions and networks to build collaborations.

The following is a summary of key initiatives to support and build a culture of collaboration at SmartSat:

Research Projects and Programs

SmartSat's approach for developing research proposals aims to improve the industry-research partnering opportunities and alignment as early as possible in the process. In the initial phase, SmartSat conducted a series of thematic workshops to bring together research and industry partners to identify opportunities for collaboration between parties with related expertise and areas of interest. These formed the foundation of several joint projects which are composed of industry needs (technology pull) and existing or developing technologies (technology push).

In addition to research and industry partners, SmartSat has established partnerships with:

- Government agencies (eg. Australian Space Agency, CSIRO, Geoscience Australia, Bureau of Meteorology, Australian Maritime Safety Authority, state governments, Chief Scientists)
- Other CRCs (eg. Bushfire and Natural Hazards Cooperative Research Centre, Trusted Autonomous Systems Defence CRC)

Periodical meetings are held with these agencies to share strategies and resources to explore potential synergy and joint projects. For example, the AquaWatch project partners with CSIRO and the Resilient Emergency and Search and Rescue Communications project partners with the Australian Maritime Safety Authority.

Each of the three Research Programs are supported by a community of experts related to the field of research who have guided the development of the joint projects.

Of the current twelve projects across the three research programs:

Establishment of State Nodes

Establishment of the state-based nodes remains a high priority for SmartSat. These nodes will provide facilities and support mechanisms to assist space entrepreneurs with infrastructure, testing facilities, R&D services from partner universities and other necessary infrastructure to ensure the success of Australian space start-ups and SMEs. Part of the Node Strategy is to also support the engagement and participation of non-SmartSat partners in defined activities.

The status of the nodes is as follows:

- NSW – confirmed in partnership with NSW Treasury and the Office of the NSW Chief Scientist & Engineer;
- QLD – a proposal for a Centre for Earth Observation Analytics in Queensland has been submitted;
- SA – SmartSat is in ongoing discussions with the SA government regarding the establishment an SA node;
- Discussions with WA and VIC are ongoing

End User Advisory Boards

The End User Advisory Boards (EUABs) were established to identify the challenges and needs of each sector and formed working groups to develop these Sector Plans under the guidance of SmartSat's Industry and Deputy Industry Directors. These plans will inform the SmartSat Research Program and help improve the sustainability and prosperity of critical sectors through harnessing transformative space industry technologies.

Three End User Advisory Boards (EUAB) have now been established in year one:

- Defence and National Security
- Agriculture and Natural Resources
- Mining and Energy

Membership of the EUABs has been drawn from SmartSat Partners, and key external organisations, including representative organisations, with awareness of user needs within the relevant end-user sector.

AI4Space & Research Network

In order to further develop SmartSat's capability in Artificial Intelligence applied to space systems and earth observation data analytics, the SmartSat 'AI4Space' Research Network was formed. Researchers and industry experts from within the SmartSat community as well as other national and international collaborators joined the network to progress the aims and collaborative research activities of this community. More than 100 research and industry partners have already joined this research network. The aim of the AI4Space Research Network is to bring together and connect AI researchers, space scientists and engineers to facilitate sharing of knowledge, expertise and resources, creating game changing technologies for enhanced telecommunications, earth observation, remote sensing and other space-based applications.

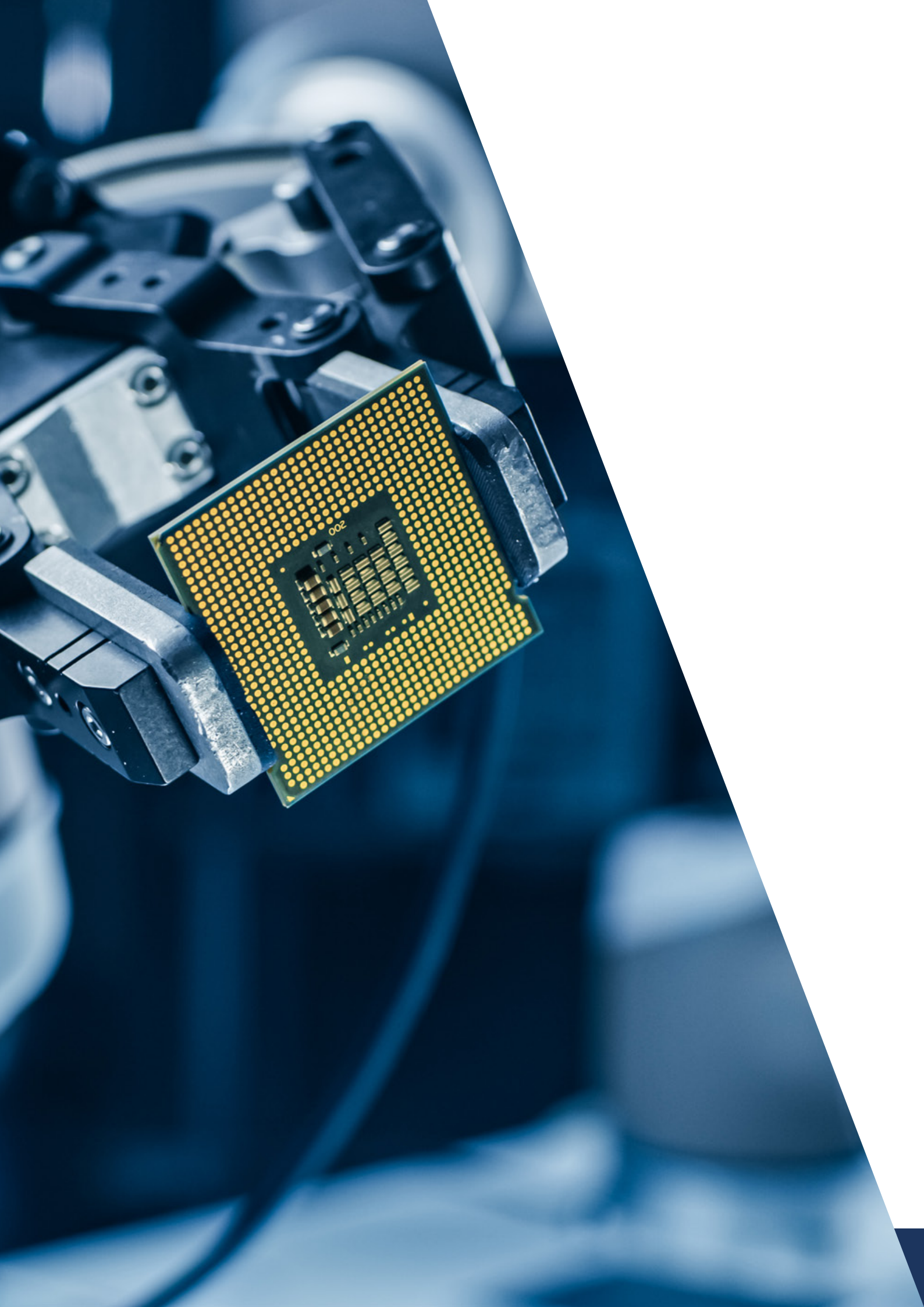
International Cooperation

During it's first year, SmartSat identified and developed a series of initiatives aiming to explore and establish national and international collaborative research programs. The main initiatives are listed below:

- **Distinguished Speaker Series**
  Lectures from international guest speakers representing a range of emerging and established scientists and entrepreneurs from a broad spectrum of the space sector. Please refer to the table in the event section.
- **International bilateral Workshops**
  Workshops were held to form international collaborations with Satellite Applications Catapult (UK); Thales, Airbus, the Toulouse University and Britany New Space Research Centre (France); and Italian Space Agency, Leonardo, E-geosTelespazio and Sitael (Italy).
- **Australian Space Forum**
  SmartSat organised thematic panels of international experts at the two national Space Forums in October 2019 and in February 2020.
- **Bilateral Cooperation with NASA Goddard Space Flight Centre (NGSFG)**
  This collaboration generated tangible outcomes during this first year. In February, Dr Christyl Johnson, Deputy Director for Technology and Research Investments at NGFG, with Dr. Liza Mazzuca NASA Search and Rescue Mission Manager visited Adelaide and attended meetings with SmartSat partners, with follow up fortnightly meetings. As a result, the Resilient Emergency and Search and Rescue (SAR) Communications joint project with NASA was approved and two more joint projects in the fields of quantum technology and quantum clocks are under consideration.
- **Participation at international events**
  SmartSat representatives have participated in international events such as the International Astronautical Conference in Washington DC and the Space Conference in Turin.

2030 Space and Spatial Roadmap for Australia

The SmartSat Chair, Dr Peter Woodgate has led a Steering Group to develop a White Paper on the 2030 Space and Spatial Roadmap for Australia, with Peter Kerr, SmartSat's Defence and National Security Coordinator. The purpose of the white Paper is to specifically seek the advice of key stakeholders in the space and spatial ecosystems on what actions can be taken over the coming decade to accelerate the growth of the space and spatial industries to form a critical part of the 2030 Space and Spatial Industries Growth Roadmap. Members of the Steering Group include leading industry representatives and policy and innovation bodies from the civilian sector.



SME Engagement

Start-ups and SMEs are a critical component of the Australian space industry and play a central role in the uptake of research and innovation. SmartSat attracted a number of leading-edge SMEs to join its program, with the majority of supporting partners classified as SMEs. Various engagement mechanisms were implemented to provide a platform for SMEs to work with SmartSat, including:

- Opportunities to participate in research projects with Core industry and research partners
- The SmartSat Ideation Challenge, a funding opportunity aimed to drive innovation in a rapid timeframe challenge-based approach
- The Tactical Research Fund, an innovative scheme of short-term research projects of $100k (or less) cash investment by SmartSat and 12 months or less duration
- Regular professional development and supporting activities to develop industry know-how and provide an opportunity for SMEs and start-ups to directly engage with leading industry and research organisations.

Engagement Strategy with Start-Ups

During the reporting period, SmartSat established a subsidiary Pty Ltd company 'Australian Space Industry Start-up Company Pty Ltd' (ACN 636 351 267), later named Aurora Space Cluster Pty Ltd, to become a strategic vehicle to help SMEs and start-ups engage with, initiate and contribute to SmartSat projects. This company has been designated Core Partner status to ensure its members can formerly join SmartSat projects consisting of other core and supporting partners.

During the reporting period, the company began its activities with the recruitment of a geographically, gender and age diverse Establishing Steering Group.

Aurora Space Cluster Pty Ltd (Aurora) provides the framework for an Australian association of new and emerging businesses (startups) that operate within the space sector of Australian industry. The framework is intended to provide a collective voice and support to members in pursuit of an active and internationally strong commercial space sector.

SmartSat is Aurora's sole custodian shareholder. Aurora is intended to transition to a self-sustaining organisation that will be able to continue in it's own right; independent of the SmartSat and potentially in collaboration with other organisations and associations within the space sector of Australia.

As the technologies and commercial structures of the international space sector rapidly change, the emergence of an Australian Space Agency and larger national space agenda, it is hoped that Aurora will assist the growth of new and powerful new commercial capabilities that lead to new and leverage existing infrastructure located in space.

Communications

The Communications and Outreach initiative aims to create a rich and vibrant ecosystem amongst SmartSat members and the national and international space community.

One of the main goals of SmartSat is to broadly disseminate knowledge with the public and share the integral importance space technology has on everyday life. Further, SmartSat aims to ensure that research results and capabilities are used to inspire young people to consider space related STEM careers. Finally, it is important to inform and educate the public about the benefits which will result from investment in the program.

Communication activities have been targeted to SmartSat members to drive collaboration and develop research projects which respond to specific needs of industry and offer innovative solutions for future competitive products and systems. A key component of this plan is to communicate with SmartSat stakeholders via several methods, including:

- Fortnightly updates ('Infocomms') for the internal SmartSat community to ensure all partners are informed of the centre's progress and opportunities
- Specific updates have also been provided to Chief Scientists, End-User Advisory Boards and state governments.
- A comprehensive series of events including workshops, roundtables, and end-user consultations, as outlined below.
- Quarterly newsletters published since September 2019

External communications are focussed on increasing public awareness and understanding how research and innovations in space technology affect and improve the quality of life. Regular communication also broadens the public's appreciation of scientific and technological research in general. Modes of communication include press releases, the SmartSat website, media coverage of SmartSat activities, conferences and community events.

Events

National and international events aimed at building collaboration in the space sector have been very successful during the 2019–2020 year. Registrations reached over 1,500 for events including the SmartSat Distinguished Speaker sessions, workshops and roundtable sessions during the 2019–2020 period. Events are an important part of the engagement strategy, to develop partnerships with end-users, improve technological expertise and capacity of the SmartSat and share knowledge amongst the community. Events also provide an opportunity to engage with end-users for strategic advice and to identify opportunities for cross-sector coordination.

Launch Event

An event highlight was the official launch of SmartSat and the Australian Space Agency HQ followed by the 9th Australian Space Forum. On Wednesday 18 February, the Australian Space Agency and SmartSat headquarters were officially launched in the presence of many VIP, national and international guests.

Workshops and Roundtables

May 2019	Space Law (hosted by Melissa de Zwart, UoA)
May 2019	RP3 (Queensland)
Jun 2019	RP1 & RP2 (Sydney)
Oct 2019	RF/Optical Communications Research
Nov 2019	Forestry Research Workshop
Dec 2019	Bilateral Workshop – SmartSat CRC & France
Apr 2020	Artificial Intelligence
Jun 2020	Asset Management from Space
Feb 2020	SmartSat CRC and Artemis Program
Jun 2020	SmartSat CRC Venture Capital Roundtable

Distinguished Speaker Series

Sep 2019	**Luca del Monte**, Head of Industrial Policy and SME Division at the European Space Agency
Feb 2019	**Dr Charles Norton**, Special Advisor Small Spacecraft NASA HQ
Feb 2019	**Dr Sachi Babu**, Technology Validation Program Manager, NASA Earth Science Technology Office
Feb 2019	**Dan Hannan**, Retired from US Government, Future Application of Space 2.0 Technologies for Resilient Government Space Communications
Feb 2019	**Mr. Giorgio Saccoccia**, Head of Italian Space Agency
Jun 2020	**Dr. Max Pastena** - Future Missions / Earth Observation Programmes (EOP-ΦM) – European Space Agency
Jun 2020	**Prof Kay-Soon Low**, Director, Satellite Tech & Research Centre (STAR) at National University of Singapore

Bilateral Cooperation

Nov 2020	Presentation on Satellite Applications Catapult and the opportunities within the AUS-UK Space Bridge
Dec 2020	Bilateral Workshop on higher education and joint research project opportunities with France
Feb 2020	Industrial R&D in Space/Space Start-ups Innovation Forum with Italian Space Agency

Supporting Partnerships

SmartSat has also sponsored outreach initiatives which stimulate end-users and technological providers such as: the Maxar Spatial Challenge; SpotGEO Challenge; Australian Technologies Competition and the Gravity Challenge.

Media

Over the past twelve months, SmartSat has communicated key activities and announcements with media releases and targeted media articles. This ensures regular communication to the public of SmartSat's goals and achievements and increases public awareness and understanding of how research and innovations in space technology affect and improve quality of life. In addition, SmartSat has distributed regular newsletters through mailing lists and the SmartSat website.

DATE OF RELEASE	TOPIC
Sep 2019	School students to assist space scientists to tackle United Nation's Sustainable Development Goals
Sep 2019	Students developing space-age ideas for a more sustainable planet
Sep 2019	Australia's leading space organisation prepares take off
Sep 2019	Australian space experts focus on small sat technology
Oct 2019	Why Australia needs to stand on its own in space
Oct 2019	Space start-ups get a voice at Australia's newest space organisation
Dec 2019	SmartSat CRC Foundation Board announced
Feb 2020	SmartSat CRC Research Announcement
Feb 2020	NSW Government establishes a home for Space Industry Initiatives

Website

The SmartSat website attracted 14,700 users in the 2019 – 2020 year, over 23,500 sessions and 68,000 page views. The majority of website visitors were from Australia, followed by United States, China and the UK.

Social Media

SmartSat's LinkedIn page was established in August 2019 and has proven to be a successful communication tool, with consistent follower growth and engagement with posts. The majority of visitors were employed in higher education and research; defence and space; aerospace and aviation; and information technology. In addition, Twitter followers grew on the SmartSat account to 470 in the first year, with an average of 248 impressions per tweet.

Partners and Third Parties

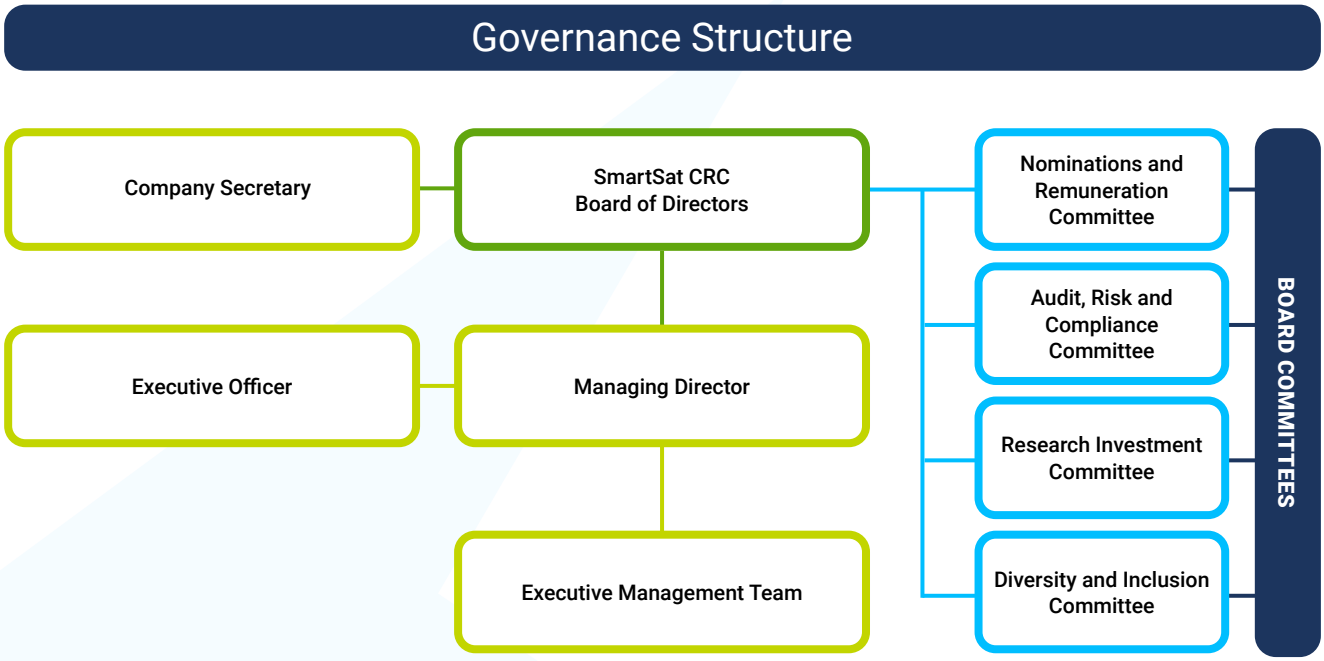
NAME	PARTICIPATION TYPE	ABN	ORGANISATION TYPE
Airbus Defence and Space Limited (UK)	CRC Participant		Large Industry
BAE Systems Australia Limited	CRC Participant	29 008 423 005	Large Industry
Curtin University	CRC Participant	99 143 842 569	University
Deakin University	CRC Participant	56 721 584 203	University
Department of Defence represented by the Defence Science and Technology Group	CRC Participant	68 706 814 312	Australian Government
La Trobe University	CRC Participant	64 804 735 113	University
MDA	CRC Participant		Large Industry
Nova Aerospace Pty Ltd - trading as Nova Systems	CRC Participant	11 090 818 214	Large Industry
Spatial Information Systems Research Ltd – trading as FrontierSI	CRC Participant	49 139 387 232	Individual SME
Swinburne University of Technology	CRC Participant	13 628 586 699	University
The Australian National University	CRC Participant	52 234 063 906	University
The University of Adelaide	CRC Participant	61 249 878 937	University
The University of New South Wales	CRC Participant	57 195 873 179	University
The University of Queensland	CRC Participant	63 942 912 684	University
ULVAC	CRC Participant		Large Industry
University of South Australia	CRC Participant	37 191 313 308	University
University of Sydney	CRC Participant	15 211 513 464	University
Australian Space Industry Start-up Company Pty Ltd	CRC Participant	20 636 351 267	Other
Asset Institute Limited	CRC Participant	38 165 199 959	Other
CSIRO	CRC Participant	41 687 119 230	Other
Defence SA (South Australian Space Industry Centre)	CRC Participant	42 912 246 233	State government
Department of Jobs, Tourism, Science and Innovation (WA)	CRC Participant	90 199 516 864	State government
DEWC Systems Pty Ltd	CRC Participant	83 623 954 932	Individual SME
Digital Content Analysis Technology Pty Ltd	CRC Participant	99 627 161 399	Individual SME
DMTC Ltd	CRC Participant	37 131 257 175	Individual SME
E M Solutions Pty Ltd	CRC Participant	33 082 157 846	Individual SME
ENSTA Bretagne	CRC Participant		University

NAME	PARTICIPATION TYPE	ABN	ORGANISATION TYPE
EOS Space Systems Pty Ltd	CRC Participant	25 100 248 253	Individual SME
Fleet Space Technologies Pty Ltd	CRC Participant	27 607 948 729	Individual SME
Flinders University	CRC Participant	65 542 596 200	University
Fusetec 3D Pty Ltd	CRC Participant	35 618 746 875	Individual SME
Goonhilly Earth Station Ltd	CRC Participant		Individual SME
Hamilton Secondary College represented by Minister for Education	CRC Participant	91 814 239 978	Other
IMT Atlantique	CRC Participant		University
Inovor Technologies	CRC Participant	97 159 954 659	Individual SME
Leonardo Australia Pty Ltd	CRC Participant	48 1239 30343	Individual SME
Macquarie University	CRC Participant	90 952 801 237	University
Meat & Livestock Australia (MLA)	CRC Participant	39 081 678 364	Other
Myriota Pty Ltd	CRC Participant	65 609 161 373	Individual SME
Neumann Space	CRC Participant	48 605 939 197	Individual SME
Northrop Grumman Australia	CRC Participant	78 156 458 981	Large Industry
Picosat Systems Pty Ltd	CRC Participant	63 619 458 543	Individual SME
Queensland University of Technology	CRC Participant	83 791 724 622	University
Rice Satcom Pty Ltd	CRC Participant	55 625 648 964	Individual SME
Royal Melbourne Institute of Technology	CRC Participant	49 781 030 034	University
Saab Australia Pty Ltd	CRC Participant	88 008 643 212	Large Industry
Shoal Engineering Pty Ltd	CRC Participant	49 604 474 204	Large Industry
Sintelix Pty Ltd	CRC Participant	71 620 090 708	Individual SME
Sitael Australia Pty Ltd	CRC Participant	80 626 522 165	Individual SME
Solinnov Pty Ltd	CRC Participant	99 120 509 542	Individual SME
Thales Australia Ltd	CRC Participant	66 008 642 751	Large Industry
The University of Western Australia	CRC Participant	37 882 817 280	University
Universite de Bretagne Occidentale	CRC Participant		University
University of the Sunshine Coast	CRC Participant	28 441 859 157	University
Western Sydney University	CRC Participant	53 014 069 881	University
The South Australian Minister for Environment and Water (through the Department of Environment and Water (DEW))	Third Party	36 702 093 234	State government
Geoscience Australia	Third Party	80 091 799 039	Other

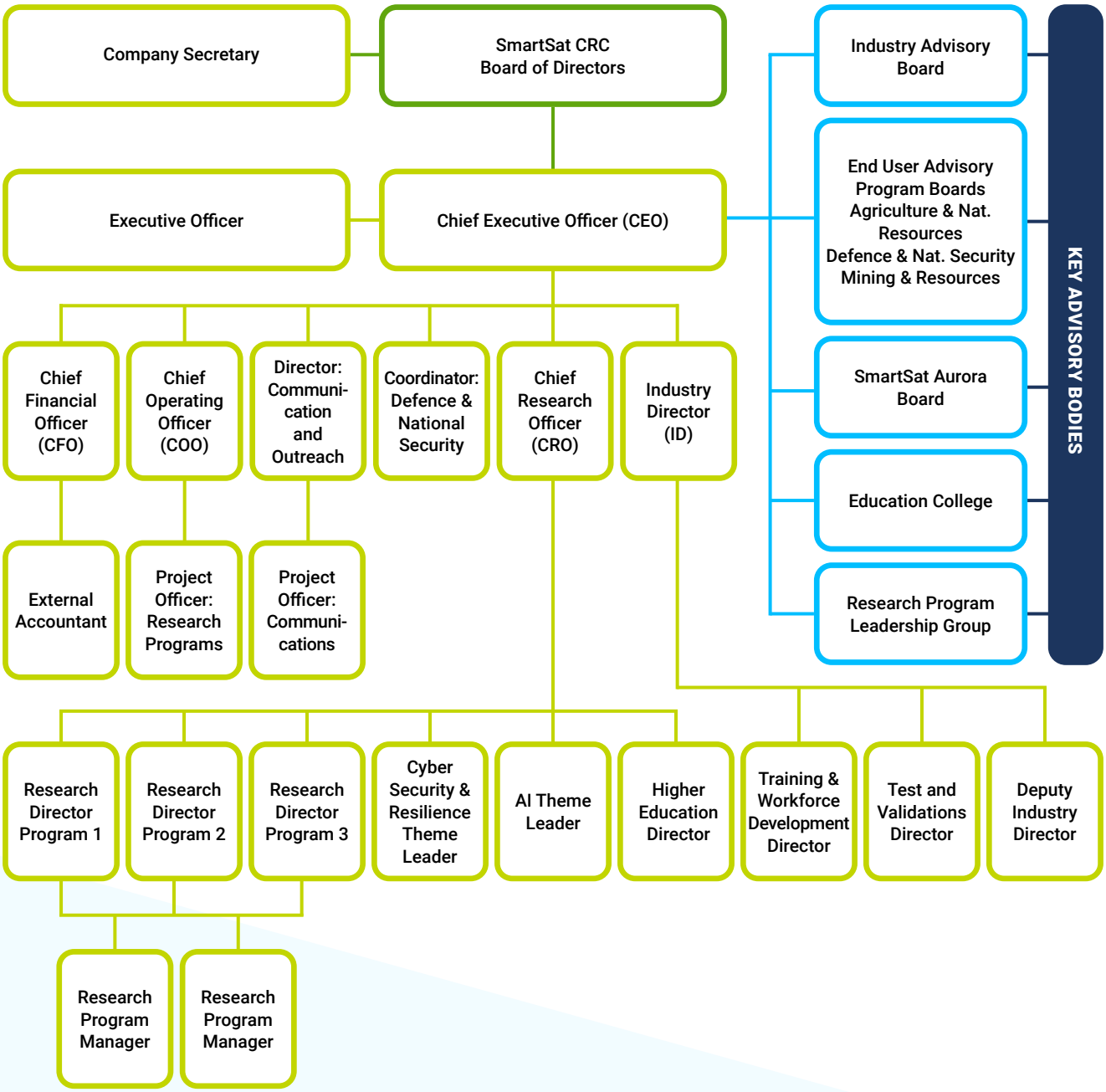
SmartSat has also requested to the Commonwealth that the following organisations be removed as they were unable to enter into the Participants' Agreement:

NAME	PARTICIPATION TYPE	ABN	ORGANISATION TYPE
Argsen Pty Ltd	Industry	18 611 315 756	Withdrawn
Optus Satellite Network Pty Ltd	Industry	15 091 789 945	Withdrawn
Palamir Pty Ltd	Industry	30 168 152 298	Withdrawn
SCISYS Deutschland GmbH	Industry	-	Withdrawn
University College London	University	-	Withdrawn

Governance – Board, Committees and Key Staff



SmartSat Organisational Chart/Management Structure



CRC Structure

SmartSat is a consortium of universities and other research organisations, partnered with industry that has been funded by the Australian Government to develop know-how and technologies in advanced telecommunications and IoT connectivity, intelligent satellite systems and Earth observation next generation data services. The impact of this research will be to develop intellectual property and a specialist industry expertise that will spawn new businesses, create export economic value and generate new high-tech jobs for all Australians.

The SmartSat CRC is managed by a not-for-profit company limited by guarantee, SmartSat CRC Ltd. The company has tax-exempt status, and endorsement from the Australian Charities and Not-for-profits Commission (ACNC). The company operates a lean management structure to maximise its investment in research activities and has overall responsibility for the delivery of agreed research outputs, utilisation and impacts of the CRC.

SmartSat participants comprise companies in the Space industry, research institutions, universities and allied government agencies. Their involvement in SmartSat is governed by a Participants' Agreement.

SmartSat has also established a wholly owned subsidiary company, referred to as Aurora.

The Board

The SmartSat Governing Board is an independent, skills-based Board comprised of 8 directors, including the Managing Director.

In the inaugural year of SmartSat, the initial directors (as named in the SmartSat CRC Ltd Constitution) remained in office until 27 November 2019, at which time then sole company member in the University of South Australia, approved the following as SmartSat Directors: Michele Allan, Julie Cooper, Jacqueline Craig, Michael Davis AO, Rosalind Dubs and Margaret Harding. These Directors would join Dr Peter Woodgate and Prof. Andy Koronios as directors, who were appointed as an initial two-year term under the Constitution. As part of this same process, Mr Peter Nikoloff, who acted as one of the initial directors, resigned.

NAME	ROLE	APPOINTED	NUMBER OF MEETINGS HELD / ATTENDED	KEY SKILLS
Dr Peter Woodgate	Chair Independent	5 August 2019	5/5	Audit, financial and risk management; space industry experience; academic / research sector; capital raising; research and development; and IP and technology transfer
Prof. Andy Koronios	CEO & MD	5 August 2019	5/5	Audit, financial and risk management; space industry experience; academic / research sector; capital raising; research and development; and IP and technology transfer
Dr Michelle Allan	Director Independent	27 November 2019	4/4	Academic / research sector; and research and development (R&D);
Ms Julie Cooper	Director Independent	27 November 2019* *Retired 30 June 2020*	4/4	Audit, financial and risk management; space industry experience; and IP and technology transfer
Dr Jacqueline Craig	Director Independent	27 November 2019	4/4	Space industry experience; academic / research sector; research and development; and IP and technology transfer
Michael Davis AO	Director Independent	27 November 2019	4/4	Space industry experience; academic / research sector; capital raising; research and development; and IP and technology transfer
Dr Rosalind Dubs	Director Independent	27 November 2019	4/4	Audit, financial and risk management; space industry experience; academic / research sector; and research and development
Prof. Margaret Harding	Director Independent	27 November 2019	4/4	Audit, financial and risk management; academic / research sector; research and development; and IP and technology transfer
Mr Peter Nikoloff	Director Independent	5 August 2019* *Retired 27 November 2019*	1/1	Space industry experience; and IP and technology transfer; capital raising; research and development

Board Meetings

Following the establishment Board meeting that was held with the three Foundation Directors outlined in the Constitution, there were four additional meetings of the full SmartSat Board. The first two were held in Adelaide, followed by two held via video conference due to COVID-19 travel restrictions. Board meetings will continue to be held via video conference until travel restrictions are lifted, at which time it is expected that meetings will be held at different locations across Australia in order to maximise interactions with our participants.

NUMBER	DATE	LOCATION
Establishment meeting	5 September 2019	UniSA, Adelaide, SA 5000
1	19 December 2019	UniSA, Adelaide, SA 5000
2	24 January 2020	Lot Fourteen, Adelaide, SA 5000
3	23 March 2020	Video conference
4	26 May 2020	Video conference

Directors

PETER WOODGATE CHAIR

Peter served as CEO of the Australia and New Zealand Cooperative Research Centre for Spatial Information (CRCSI) from June 2003 to December 2017. In this capacity he oversaw the establishment and management of 43pl, Australia's spatial industry innovation cluster, through which over 100 companies were able to partner in the activities of the CRCSI. He has held senior positions with the Victorian Government and RMIT University.

As Co-Chair for the Australian Government's Space Cross-Sectoral Interest Group he is helping to undertake the analysis of Australia's dependence on space assets and its contribution to the nation's next Critical Infrastructure Resilience Strategy. He is also the Co-Chair of the Leadership Group of the 2026 Spatial Industry Growth and Transformation Agenda which sets out the road map for the spatial industry including the next steps in its engagement with the space industry. Dr Woodgate is a member of the Australian Space Agency's Space Industry Leaders Forum and Chair of the Australian Urban Research Infrastructure Network.

PROF. ANDY KORONIOS
CEO & MANAGING DIRECTOR

Professor Andy Koronios is the SmartSat CEO and previously held the positions of Dean: Industry & Enterprise and Head of the School of Information, Technology and Mathematical Sciences at the University of South Australia.

Andy is a professor of information systems and holds academic qualifications in Electrical Engineering, Computing and education as well as a PhD from the University of Queensland. He has extensive experience in both commercial and academic environments and his research interests include information quality, management & governance, analytics and the strategic exploitation of information.

Andy has established two University Research Labs and a funded Research Centre and was the Research Program Leader for System Integration & Interoperability in the CIEAM CRC. He has worked both as a consultant as well as a professional speaker on IT issues in Australia and South East Asia and has over twenty five years' experience in the academic environment. He is a Fellow of the Australian Computer Society, and a Founding Fellow of the International Institute of Engineering Asset Management, Editor-In-Chief of the International Journal of Information Quality. He was recently been honoured as a Distinguished Speaker of the ACM.

DR MICHELLE ALLAN DIRECTOR

Dr Michele Allan is currently Chair of the Boards of Apple and Pear Australia Limited, Charles Sturt University, the Food and Agribusiness growth Centre (FIAL). She is a non-executive director of CSIRO, CRC Food Agility and Dairy Food Safety Victoria.

Her prior board roles include Meat and Livestock Australia, Grain Growers Limited, Tasmanian Irrigation, Innovation and Science Australia, Grape and Wine Research and Development Corporation, Forest and Wood Products Australia, William Angliss Institute, Callaghan Innovation (NZ) and Food Standards Australia and New Zealand. Michele held executive roles with Amcor Limited, Kraft Foods, Bonlac Foods Limited, ICI, Tasmanian Bioinformatics Centre of Excellence Tasmania, Johnson and Johnson and Nestle. Michele has a Bachelor of Applied Science from University of Technology Sydney, Master of Management of Technology from Melbourne University, Master Commercial Law Deakin University and Doctorate from RMIT. She is a fellow of the Australian Institute of Company Directors and a Fellow of Australian Academy of Technology and Engineering.

MS JULIE COOPER DIRECTOR

Julie is a former McKinsey & Company consultant with extensive international experience. Prior to joining McKinsey's London office she held corporate and senior management roles for BAE Systems PLC in Australia and the UK. She also worked in the banking and brewing sectors in South Australia.

Julie is a Non Executive Director of Credit Union SA and a member of both the Governance and Audit Committees. She is also a Non Executive Director of the Nova Group (Nova Systems Pty Ltd), a technology-based professional service provider that is regularly acknowledged in Australia's 'most innovative companies'.

Julie is the Chair of the Audit and Risk Committee of the Adelaide Crows Children's Foundation and an active member of the 'Tomorrow's Director' Committee for the Australian Institute of Company Directors.

She has recently consulted to the Chief Executive of Department of Premier and Cabinet as the Interim State Project Lead for the entrepreneurial and innovation neighbourhood, Lot Fourteen.

DR JACQUELINE CRAIG AM
DIRECTOR

Dr Jackie Craig graduated with a PhD in physics from St. Andrews University in 1981 and was employed by the UK Ministry of Defence for nine years.

In 1990 she emigrated to Australia and began her 26-year science career with the Australian Defence Science and

Technology Group. She has extensive experience in lasers and optics, space-based airborne Intelligence, Surveillance and Reconnaissance (ISR) systems, UAVs, and cyber and electronic warfare systems. She led the science and technology input into ISR, geospatial intelligence and space-related Defence projects for ten years, establishing a dedicated branch to conduct research into imaging sensors, digital systems and big data. On becoming Chief of Electronic Warfare and Radar Division she identified and described the convergence of EW and cyber. She went on to establish and lead the Cyber and Electronic Warfare Division, focused on developing solutions to defeat a wide range of threats.

As a Chief of Division Jackie was a member of the Defence Senior Leadership Group for eight years. She has also held numerous senior executive leadership positions within the five-eyes Defence and Intelligence S&T forums, spanning the areas of space, digital systems, autonomous systems, big data, cyber and ISREW.

She was awarded the 2001 Ministers Award in Defence Science for her substantial contribution and influence on imagery ISR systems, and has received several awards for scientific leadership from the five-eyes community in the areas of ISR, space, EW and cyber. She was elected a Fellow of the Australian Academy of Technology and Engineering (ATSE) in 2016. She was awarded a Member of the Order of Australia (AM) in the 2020 Queen's Birthday Honours for "significant service to science and technology research in the defence capability field".

MICHAEL DAVIS AO DIRECTOR

Adjunct Professor Michael Davis AO is a former Chair of the Space Industry Association of Australia.

He holds the degrees of Bachelor of Laws from the University of Adelaide, Australia and Master of Space Studies from the International Space University in Strasbourg, France.

Michael practised law for 41 years, including 22 years as a partner of Ward & Partners, a major South Australian legal firm. In 2002 he co-founded Adelta Legal, a specialist commercial law firm, retiring from legal practice in 2014.

His volunteer service in the space sector includes five years as Chair of the Space Industry Association of Australia and 20 years' membership of the Board of that organisation.

Michael proposed Adelaide as the host of the International Astronautical Congress which was held in 2017, and chaired the Congress Local Organising Committee for that event. He was a leading advocate for the establishment of the Australian Space Agency, an Australian Government decision announced at the Congress.

Michael also played a key role in organising a number of International Space University programs and courses in Australia including the Southern Hemisphere Space Studies Program which is held annually in Adelaide.

DR ROSALIND DUBS DIRECTOR

Dr Rosalind Dubs FTSE FAICD has had a diverse international business career, holding senior executive and board roles in publicly listed, private and government companies. She is a non-executive director of ASC Pty Ltd, Astronomy Australia Ltd, ANU Enterprise Pty Ltd and Science in Australia Gender Equity Ltd. She is a former NED of Aristocrat Leisure Limited and the Australian Academy of Technology & Engineering.

Trained as a scientist, Ros' executive career gave her wide-ranging commercial and international experience in the aviation, transport, and defence industries, and she specialised in the management of large engineering organisations. As part of multinational electronics company Thales SA, she was the Paris-based Operations Vice-President of its global air traffic management business, and prior to that Managing Director of the navigation aids business in Stuttgart, Germany. Dr Dubs' most recent executive position was Deputy Vice-Chancellor (External Relations) at the University of Technology Sydney, where she fostered engagement between academia and business.

Ros chaired the Australian Space Industry Innovation Council from 2010 to 2012. She has also been Director of Operations Support for Airservices Australia, Registrar of the ANU, and served in CSIRO's senior executive service during 1983–85.

PROF. MARGARET HARDING DIRECTOR

Margaret Harding (BSc Hons, PhD, DSc, CChem, FRACI, MAICD), is an experienced Board Director and Senior Executive. She is currently a non-executive Director on the SmartSat CRC Board, Chair of Board of NSW Circular, Professor Emeritus at the Australian National University, and an Honorary Fellow at the National Measurement Institute.

Margaret has held senior Executive roles across higher education, most recently serving as Deputy Vice-Chancellor (Research and Innovation) at the Australian National University (2012–18), where she was responsible for the strategies, policies and systems to enhance the University's performance and reputation in research and research training.

Margaret's Board roles have spanned consulting and business development, research infrastructure, medicine and health, and collaborative partnerships. She has served as Director on the Boards of ANU Enterprise (2012–18), Australian Scientific Instruments (2012–18), Neuroscience Research Australia (2010–12), Bionic Vision Australia (Alternate Director, 2010–12) and was a member of the Governing Boards of the National Computational Infrastructure (2012–18), the National Centre for Indigenous Genomics (2013–18) and the Australia Indonesia Centre (2016–18). She was Chair of the Australian Giant Magellan Telescope Committee (2012–18), a member of the NSW State Government Review of Health and Medical Research Panel (2011) and of the Australian Research Council Advisory Council (2011–12).

Audit, Risk and Compliance Committee (ARCC)

The Audit, Risk, and Compliance Committee (ARCC) provides independent assurance and advice to the Board on SmartSat's risk, control and compliance framework, and its financial statement responsibilities.

NAME	ROLE	KEY SKILLS
Dr Rosalind Dubs	Chair Director	See Board description
Ms Julie Cooper	Director Independent	See Board description
Mr Michael Davis	Director Independent	See Board description

The ARCC was established by the Board on the 24 January 2020 and held its inaugural meeting on 24 April 2020. It is expected to meet up to four times a year.

Research Investment Committee (RIC)

The RIC provides expert advice and recommendations to the CEO and the Board on the scope and effectiveness of proposed and existing SmartSat Research activities. This expert advice includes, but is not limited to, project generation, project evaluation, portfolio review, international trend monitoring and reporting, expert advice in relation to IP utilisation and protection.

NAME	ROLE	KEY SKILLS
Prof. Margaret Harding	Chair Independent	See Board description
Prof. Andy Koronios	CEO & Managing Director SmartSat	See Board description
Dr Jacqueline Craig	Director Independent	See Board description
Dr Andrew Seedhouse	End-user Defence	SmartSat Defence and National Security End-user Advisory Board Chair
Mr Peter Nikoloff	Industry Director SmartSat	SmartSat Industry Advisory Board Chair

The RIC was established by the Board on 24 January 2020 and held its inaugural meeting on 22 April 2020. It is expected to meet up to four times a year. The Committee membership will expanded for future meetings with the Chairs of the End-user Advisory Boards (or nominee) to be included, with additional external independent members with acknowledged expertise and experience as required.

Nominations and Renumeration Committee (NRC)

The Nominations and Remuneration Committee coordinates nominations for Director positions and recommends those persons who are suitable for nomination and appointment as a Director of SmartSat. It also supports the review process for the Board and CEO performance reviews and in determining appropriate remuneration and incentive policies and practices for SmartSat.

NAME	ROLE	KEY SKILLS
Dr Michele Allan	Chair Director	See Board description
Dr Peter Woodgate	Director Independent	See Board description
Dr Jacqueline Craig	Director Independent	See Board description

The NRC was established by the Board on 24 January 2020 and held its inaugural meeting on 15 April 2020. It is expected to meet up to four times a year.

Diversity and Inclusion Committee (D&I)

The purpose of the Diversity and Inclusion Committee is to ensure that diversity and inclusion sits at the heart of SmartSat's values and is central to having its leadership and workforce representative of the communities in which we live, work and represent. The SmartSat Board and Management is committed to playing a lead role nationally in achieving the best practice to actively support and encourage a diverse workforce and inclusive workplace, now and in the future. Diversity and Inclusion is core to SmartSat's objective of becoming Australia's best Participant led CRC. The D&I Committee provides advice to the Board to drive diversity and inclusion initiatives and operationalise SmartSat's values.

NAME / ROLE	KEY SKILLS
Prof. Andy Koronios **Chair, Director**	See Board description
Ms Julie Cooper **Director, Independent**	See Board description
Prof. Margaret Harding **Director, Independent**	See Board description
Ms Eva Rodriguez Rodriguez **Member, SmartSat**	Ms Rodriguez has immersed herself in the areas of Space and Spatial industry engagement. She has a great ability to take inputs from a wide variety of stakeholders, practitioners and advocates and turn these into clear, strategic plans. She was awarded the 2019 Women's Leadership Award at the Asia-Pacific Spatial Excellence Awards in Victoria for her work strategically growing the Spatial sector in Australia, particularly focusing on connections to the Space sector, and for the role she is playing in leading Diversity and Inclusion in the spatial and space sector.
Mr Peter Nikoloff **Member, SmartSat**	Mr Nikoloff is an Executive Director and Co-founder of Nova Systems and Senior Weapons System Engineer. Pete is a strong advocate for growing a strong space industry and holds the position of Industry Director with SmartSat.
Dr Sarah Pearce **Member, CSIRO**	Sarah is Deputy Director, CSIRO Astronomy and Space Science. Sarah has been a champion of D&I initiatives, particularly in the space and astronomy sector and established the CASS Diversity Committee. She was also awarded the 2020 Telstra NSW Business Woman of the Year Award.

The Diversity and Inclusion Committee was formally established by the Board on 24 January 2020 and held its inaugural meeting on 24 April 2020. It is expected to meet up to four times a year. Prior to the formal establishment of the committee, it met as an interim group that was supported by a number of members, including: Mr Paul O'Connor (ANU), Dr Peter Woodgate (independent Chair of SmartSat), Prof. Stuart Phinn (UQ), Prof. Anna Moore (ANU), Mrs Dana Rawls (SmartSat), Ms Emily White (SmartSat), Mr Andrew Beveridge (SmartSat).

Program Leaders

NAME	ORGANISATION	CRC POSITION / ROLE	TIME COMMITMENT
Gottfried Lechner	University of South Australia	Research Program 1 Director	0.4 FTE
Russell Boyce	University of New South Wales	Research Program 2 Director	0.4 FTE
Stuart Phinn	University of Queensland	Research Program 3 Director	0.3 FTE
Jill Slay	La Trobe University	Education & Training Director / Cyber Security and Resilience Theme Leader	0.4 FTE
Ady James	University of South Australia	Education & Training Director	0.4 FTE
Clinton Fookes	Queensland University of Technology	AI Theme Leader	0.2 FTE

SmartSat Staff

NAME	ORGANISATION	CRC POSITION	TIME COMMITMENT
Aggie Wojtysiak	SmartSat	Project Officer	1.0 FTE
Alison Bowman	SmartSat	Communications Officer	1.0 FTE
Andrew Beveridge	SmartSat	Chief Operating Officer	1.0 FTE
Andy Koronios	SmartSat	CEO-Designate	1.0 FTE
Elizabeth Weeks	SmartSat	Project Officer: Research Programs	1.0 FTE
Emily White	SmartSat	Executive Officer	1.0 FTE
Eva Rodriguez	Frontier SI	Research Program Manager (RP3)	0.5 FTE
Jeff Kasparian	KasComm Pty Ltd	Research Program Manager (RP1)	0.5 FTE
Nick Stacy	DST Group	Chief Research Officer	0.5 FTE
Nicola Sasanelli	Defence SA	Director: Communications & Outreach	0.6 FTE
Peter Kerr	DST Group	Director: Defence	1.0 FTE
Peter Nikoloff	Nova Systems	Industry Cluster Director	0.2 FTE
Rosie Erasmus	SmartSat	Chief Finance Officer	0.6 FTE
Sarah Cannard	Nova Systems	Deputy Industry Director	0.2 FTE

Risks and Impediments

The SmartSat Audit, Risk and Compliance Committee (ARCC) actively uses a Risk Register for the management and reporting of risks which is reviewed quarterly by the ARCC and the Board. While SmartSat is progressing well with all critical governance and management systems in place, it is recognised that the identification and management of the following risks is critical to success:

IT and Cyber Security

SmartSat provided a copy of the SmartSat Risk Register, to its external IT service provider as a means to allow them to review and provide advice on IT and Cyber Security risks and clarify the existing and future mitigation strategies that would support SmartSat in this area. In response to this request, SmartSat has been provided with a list of potential mitigations that could be put in place. A key mitigation strategy was alignment to the ASD Essential Eight Maturity Model at Level 3 and the uplift of elements of the SmartSat IT services and Strategy to achieve this. SmartSat has commenced working through the implementation of the mitigation strategies.

COVID-19

The devastating impacts of COVID-19 are being felt worldwide and present a significant risk to many SmartSat partners, particularly the university sector, SMEs and start-ups. SmartSat implemented a COVID-19 Action Plan in March 2020 which included a Business Continuity Plan, Disaster Recovery Plan and scenario-based financial modelling.

To support partners through this time SmartSat launched the Tactical Research Fund, an innovative scheme to fund short-term (<12 month) research projects of $100k (or less) cash investment. The scheme presents an opportunity to increase research expenditure, accelerate the research program and increase engagement with partners. In addition, SmartSat has worked with partners who have requested to reprofile or delay their payments as a result of the pandemic.

The SmartSat Board has also requested management undertake a conservative approach to future budget planning and undertake a review of likely partner revenue shortfalls. Further, the Board has suggested that SmartSat adopt a severe impact scenario when calculating future revenues and build this into the Operational Plan and 20/21 Budget. The Board and Management will monitor and report on this on a regular basis.

Participant Engagement

Keeping participants well informed and engaged with SmartSat has been a key focus during the first year of operation. Most importantly, there is a goal to deliver value to the large number of partners and provide ample opportunities for involvement in SmartSat activities. As such there has been a focus on completing all Participant Expectation Surveys to ensure there is a clear understanding of what partners expect to achieve through their investment in SmartSat.

A variation to the Commonwealth Funding Agreement was submitted in June. This occurred due to a small number of organisations deciding not to proceed with their commitment to participate in SmartSat and two organisations which had a change of business details.

Project Process

Initially, an open call for project EOIs was distributed to partners which led to a high volume of responses that needed further development to ensure alignment with the Technology Roadmap. Subsequently a more targeted approach was introduced, whereby industry partners submit project concepts for participants to respond with project ideas and methodology to address the identified problem. In addition, the SmartSat Ideation Challenge was launched with an aim to drive innovation by harnessing the skills and knowledge of the SmartSat community in a new, rapid timeframe, challenge-based approach.

Achievement of Commonwealth Milestones

SmartSat has made progress on 85% of its first-year milestones, with 15% having a delayed commencement. Milestones that are currently behind schedule are on average, 40% complete; however, it is expected that all year 1 and year 2 Milestones will be completed by the end of the second year of operation. It is expected that the refining of the project proposal process and introduction of a project management system will assist with more effective monitoring of the Commonwealth Milestones, and ensure SmartSat is on track to achieve Milestones in line with the Commonwealth Agreement timelines.

HDR Student Recruitment

SmartSat aims to graduate 72 PhD students over the life of the centre. The issues associated with COVID-19, and the implementation of travel restrictions, have impacted the commencement of some domestic and international students. SmartSat is working with university partners to promote opportunities and secure students and to develop the STEM pipeline for future recruitment.

Financial Management

During its first year of operations, 64.6% of SmartSat's contributions (cash) were sourced from Participants and 35.4% from Commonwealth funding. At 30 June 2020, there remains outstanding 13% of cash contributions from Participants however these are deemed recoverable.

Due to the timing of the submission of Commonwealth reports and that the Commonwealth pays its quarterly contributions quarterly in arrears, the final quarter contribution will be paid in FY 2021. The Commonwealth has acknowledged this by reprofiling the FY 2020 Q4 contribution into FY 2021.

There has been reprofiling of contributions by four Partners however this will not impact overall contributions over the life of the CRC. Five bid partners did not proceed to contract and SmartSat CRC Ltd will sign a Deed of Variation with the Commonwealth which reflects contracted participant position and the commitment of the company to achieve the milestones of the activities.

SmartSat CRC Ltd has engaged the services of an external accounting provider, Lee Green Ltd to provide day to day accounting services and BDO has been engaged to provide audit services and assistance with the financial statements.

Research expenditure as at 30 June 2020 is underbudget due to the delay in the signing of all Participant agreements, resulting in the delayed commencement of projects and the impact of COVID-19; however, it is anticipated that this situation will be rectified in FY 2021. The financial impact of COVID-19 has yet to become clear and SmartSat has evaluated a number of scenarios as a response to a possible negative financial impact of the pandemic and the impact COVID-19 has on partners will continue to be closely monitored. The Tactical Research Fund has also been launched to support partners and provide economic assistance throughout the pandemic.

Year 1 Milestones have been somewhat delayed due to COVID-19 with physical isolation, closure of some research facilities and inability to travel impacting the commencement of some projects. With the return to a more 'normal' operating environment this will be addressed, and Milestones are expected to be back on track.

As for all CRCs, the continuing financial sustainability of SmartSat and its ability to support existing and new projects are dependent on the Company being successful in:

- receiving the continuing support of its participants and the Commonwealth of Australia
- negotiating additional funding
- achieving sufficient future cash flows to enable its obligations to be met.

The Directors believe that the Company will be successful in the above matters and, accordingly, the accounts have been prepared on a going concern basis.

The recent audit of the company noted that there were no control issues or recommendations for improvement identified during the 2020 audit process. The CFO provides monthly finance reports to the Executive and quarterly financial updates to the Board and its Audit, Risk Management and Compliance Committee.
The independent auditor's report to the members of SmartSat CRC Ltd for the financial period ending 30 June 2020 has expressed the opinion that the financial report of SmartSat CRC Ltd has been prepared in accordance with the Corporations Act 2001.
Their opinion further states that the financial report as at 30 June 2020 gives a true and fair view of the Company's financial position as at that date and of its performance for the period ended on that date, and complies with Australian Accounting Standards.

SmartSat CRC Ltd FY 2020 Financial Overview

IN-KIND CONTRIBUTIONS

In-kind contributions TOTAL	12.6 FTE
Non-staff in-kind contributions - TOTAL	$305,970

REVENUE AND EXPENDITURE

Revenue - TOTAL	$13,997,998
Expenditure -TOTAL	$2,345,115

ASSET AND LIABILITIES

TOTAL Assets	$12,722,160
TOTAL Liabilities	$1,069,277

Accrued surplus for the period $11,652,883

Other Activities

CRC Future Plans and Transition Arrangements

In the first year of SmartSat, the focus has been on establishing the governance structures, processes, and foundational research activities to ensure that SmartSat commences operations effectively.

SmartSat Participants have agreed in principle to work towards the establishment of a permanent space research entity at the completion of the seven-year term.

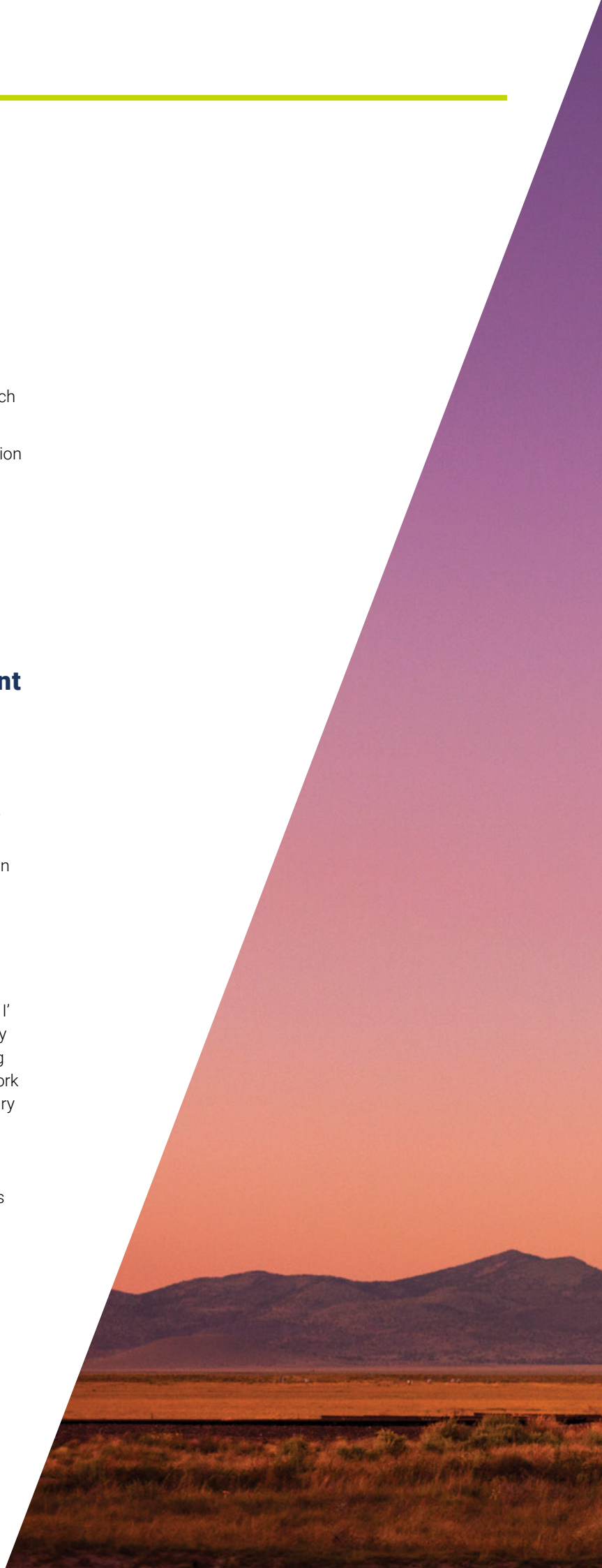
Establishment of the entity will be an item for consideration at the inaugural SmartSat Board Strategic Planning Day later in 2020.

Monitoring and Review Activity Update

SmartSat has not been subject to monitoring or review during this reporting period.

Activities Not Covered by the Grant Agreement

- SmartSat, through the leadership of the Chair, Dr Peter Woodgate, is supporting the development of the proposed 2030 Space and Spatial Industry Growth Roadmap. (Refer to Collaboration: 2030 Space and Spatial Roadmap for Australia).
- SmartSat made a submission to the Royal Commission into National Natural Disaster Arrangements to outline the role satellite technology could play in a nationally coordinated approach to natural disasters.
- SmartSat, in conjunction with the Australian Space Agency, has supported a National Careers Institute Partnership Grant 'Student Pathway to Space – Phase I' application. Led by the South Australian Space Industry Centre, the application proposes to build on an existing and continuing South Australian based face-to-face work placement and space passport programs, for secondary (Years 10–12) students, in Space Research institutes and/or Australian Space industry. The extension of the SA based program provides a platform to create a National Work Placement Program for students across the secondary and tertiary education levels.



Financial Statements

Directors' Report

The directors present their report on SmartSat CRC Ltd (SmartSat) for the period ended 30 June 2020.

INFORMATION ON DIRECTORS

The names of each person who has been a director during the period and to the date of this report are:

DIRECTORS	POSITION	DATE APPOINTED/ RESIGNED
Dr Peter Woodgate	Chairman	05/08/2019
Prof. Andy Koronios	CEO & Managing Director	05/08/2019
Mr. Peter Nikoloff	Director	05/08/2019 *- resigned 27/11/2019*
Ms. Julie Cooper	Director	27/11/2019 *- resigned 30/06/2020*
Prof. Jacqueline Craig AM	Director	27/11/2019
Mr. Michael Davis AO	Director	27/11/2019
Dr. Rosalind Dubs	Director	27/11/2019
Prof. Margaret Harding	Director	27/11/2019
Dr. Michele Allan	Director	27/11/2019

PRINCIPAL ACTIVITIES

The principal activities of SmartSat during the financial period were to conduct translational research which creates game-changing technologies, generate know-how that will make Australian industries more competitive, and future-proof jobs for the Australian population.

SmartSat is a consortium of universities and other research organisations, partnered with industry that has been funded by the Australian Government to develop know-how and technologies in advanced telecommunications and IoT connectivity, intelligent satellite systems and Earth observation next generation data services. The impact of this research will be to develop intellectual property and a specialist space industry expertise that will spawn new businesses, create export economic value and generate new high-tech jobs for all Australians.

SHORT AND LONG TERM OBJECTIVES OF THE GROUP

SmartSat was established to tackle three major challenges:

1. Lack of universal digital connectivity; (communications and connectivity)
2. Fragmented space ecosystem; (creation of an integrated space R&D ecosystem)
3. Technology-limited earth observation; (earth observation from space)

The strategic objectives of SmartSat are to:

- Forge space systems research
- Drive innovation and transformation
- Develop a space industry
- Foster a space smart nation
- Position Australia as a global player in the space sector

THE GROUP'S STRATEGY FOR ACHIEVING ITS OBJECTIVES

SmartSat has developed strategic and operations plans that underpin the achievement of its strategic objectives.

These include:

- Seeking peer review of SmartSat projects and outcomes from world leaders in space research and development
- Developing a continuous review approach
- Identifying areas of high impact applications in which to develop research programmes relevant to EU needs
- Developing a technology roadmap to align research projects and technology development to selected applications
- Identifying higher degree research (HDR) topics that support and augment the research programme
- Conducting a space industry skill needs analysis
- Collaborating with educational providers in mapping all available relevant training programmes
- Developing partnerships to share expertise, capabilities and strategies
- Using media tracking services to track media reporting on SmartSat activities and outputs

KEY PERFORMANCE INDICATORS USED BY THE GROUP

Key performance indicators have been developed for each of the Group's strategic objectives including:

- Partners contributing additional funding to CRC approved research projects
- Recognition of excellence in national and international events and activities
- External benchmarking of research projects
- Successful completion of at least 70 HDR students
- A percentage of SmartSat students will be employed by the Australian space industry

The Group's key performance measures used are the milestones that are set up in the CRC Commonwealth Agreement and SmartSat is required to report against those milestones on a quarterly basis. SmartSat is also required to submit an annual report to the Commonwealth.

SIGNIFICANT CHANGES

As it was the first year of operations there are no significant changes.

OPERATING RESULT

A review of the operations of the Group during the period and the results of those operations, the Group was engaged in its principal activities, the results of which are disclosed in the attached financial statements.

The profit of the Group for the period amounted to $11,652,883.

DIVIDENDS

The Group is limited by guarantee and has no share capital. No dividends were paid or declared by SmartSat for the period.

EVENTS AFTER THE REPORTING DATE

No matters or circumstances have arisen since the end of the period which significantly affected or may significantly affect the operations of the Group, the results of those operations or the state of affairs of the Group in future financial years.

FUTURE DEVELOPMENTS AND RESULTS

As the Group continues its activities, further expenditure will be incurred on research, educational and other activities and projects established by SmartSat.

ENVIRONMENTAL ISSUES

The Group's operations are not regulated by any significant environmental regulations under a law of the Commonwealth or of a state or territory of Australia.

INFORMATION ON DIRECTORS

The information on directors is as follows:

	QUALIFICATIONS
Dr Peter Woodgate	DBA, M App Sci (Remote Sensing), B For Sci, Dip For, GAICD, FSSSI (Hon)
Prof. Andy Koronios	PhD, MLitt(Comp), GradDip Ed, BE, FACS, FISEAM, GAICD
Prof. Jacqueline Craig AM	BSc, MSc, PhD, FTSE
Mr. Michael Davis AO	LLB, MSc(Space Studies)
Dr. Rosalind Dubs	BSc, Dr ès Sc (Lausanne), FTSE, FAICD
Prof. Margaret Harding	BSc (Hons, Chemistry), PhD (Chemistry), DSc (Chemistry), FRACI, MAICD
Dr. Michele Allan	B App Sc (Biomedical), DBA, M Mgmt Tech, M Com Law, FAICD, FTSE
Ms. Julie Cooper	BE (Aeronautical)
Mr. Peter Nikoloff	BA (Journalism), GradDip Bus, FAICD

MEETINGS OF DIRECTORS

DIRECTORS	NUMBER ELIGIBLE TO ATTEND	NUMBER ATTENDED
Dr Peter Woodgate	5	5
Prof. Andy Koronios	5	5
Prof. Jacqueline Craig AM	4	4
Mr. Michael Davis AO	4	4
Dr. Rosalind Dubs	4	4
Prof. Margaret Harding	4	4
Dr. Michele Allan	4	4
Ms. Julie Cooper	4	4
Mr. Peter Nikoloff	1	1

INDEMNIFICATION AND INSURANCE OF OFFICERS AND AUDITORS

The directors and officers of the Group are covered by a directors and officers insurance policy, paid for by the Group.

No other indemnities have been given during or since the end of the period for any person who is or has been an officer or auditor of the Group.

PROCEEDINGS ON BEHALF OF THE GROUP

No proceedings have been entered into on behalf of the Group.

MEMBERS' GUARANTEE

SmartSat CRC Ltd is a company limited by guarantee. In the event of, and for the purpose of winding up of the company, the amount capable of being called up from each member and any person or association who ceased to be a member in the year prior to the winding up, is limited to $100 for members that are corporations and for all other members, subject to the provisions of the company's constitution.

As at 30 June 2020 the collective liability of members was $900.

AUDITOR'S INDEPENDENCE DECLARATION

The lead auditor's independence declaration in accordance with section 60-40 of the Australian Charities and Not-for-profits Commission (ACNC) Act 2012, for the period ended 30 June 2020, has been received and can be found on the following page.

Signed in accordance with a resolution of the Board of Directors:

Dr. Peter Woodgate
DIRECTOR

Prof. Andy Koronios
DIRECTOR

24th September 2020

Auditor's Independence Declaration

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420 King William Street
Adelaide SA 5000
GPO Box 2018, Adelaide SA 5001
AUSTRALIA

DECLARATION OF INDEPENDENCE
BY ANDREW TICKLE
TO THE DIRECTORS OF SMARTSAT CRC LTD

As lead auditor of SmartSat CRC Ltd for the period ended 30 June 2020, I declare that, to the best of my knowledge and belief, there have been:

1. No contraventions of the auditor independence requirements of the *Australian Charities and Not-for-profits Commission Act 2012* in relation to the audit; and
2. No contraventions of any applicable code of professional conduct in relation to the audit.

This declaration is in respect of SmartSat CRC Ltd and the entities it controlled during the period.

Andrew Tickle
Director

BDO Audit (SA) Pty Ltd

Adelaide, 29 September 2020

Consolidated Statement of Profit or Loss and Other Comprehensive Income

For the period 5 August 2019 to 30 June 2020.

	NOTES	5 AUG 2019 – 30 JUN 2020
REVENUE		
Contributions	5	8,567,141
Grant Income	5	4,956,066
Third Party Contributions	5	180,000
Total Revenue		**13,703,207**
OTHER INCOME		
Other Income	5	294,791
Total Other Income		**294,791**
TOTAL REVENUE AND OTHER INCOME		**13,997,998**
PROGRAMME COSTS		
Outreach		117,359
Research Expenditure		530,261
TOTAL PROGRAMME COSTS		**647,620**
EXPENSES		
Business Development		153,752
Conferences & Seminars		30,264
Administration Expenses	6	706,727
Governance		216,572
Information Technology		133,069
Marketing & Promotion		207,932
Office Operations		120,857
Other Expenses		128,322
Total Expenses		**1,697,495**
PROFIT/(LOSS)		**11,652,883**

	NOTES	5 AUG 2019 – 30 JUN 2020
OTHER COMPREHENSIVE INCOME		
Other Comprehensive Income		-
Total Other Comprehensive Income		**-**
TOTAL COMPREHENSIVE INCOME		**-**

Consolidated Statement of Financial Position

As at 30 June 2020.

	NOTES	30 JUN 2020
ASSETS		
Current Assets		
Cash at Bank	7	11,087,716
Trade and Other Receivables	8	1,211,364
Prepayments	5	19,091
Other Current Assets		521
Income Receivable		50,000
Total Current Assets		**12,368,692**
Non-Current Assets		
Right-of-use Asset	9	353,468
Total Non-Current Assets		**353,468**
TOTAL ASSETS		**12,722,160**

	NOTES	30 JUN 2020
LIABILITIES		
Current liabilities		
Trade and Other Payables	10	683,103
Employee Benefit Liabilities	11	24,480
Lease Liabilities	12	54,785
Total Current Liabilities		**762,368**
Non-Current Liabilities		
Lease Liabilities	12	306,264
Employee Benefit Liabilities	11	645
Total Non-Current Liabilities		**306,909**
TOTAL LIABILITIES		**1,069,277**
NET ASSETS		**11,652,883**

	NOTES	30 JUN 2020
Equity		
Scholarships Reserve	17	4,321,500
Retained Earnings		7,331,383
TOTAL EQUITY		**11,652,883**

Consolidated Statement of Changes in Equity

For the period 5 August 2019 to 30 June 2020.

	NOTES	RETAINED EARNINGS	RESERVES	TOTAL EQUITY
Balance at 5 August 2019		-	-	-
Net Profit for the Period		11,652,883	-	11,652,883
Other Comprehensive Income for the Period		-	-	-
Total Comprehensive Income for the Period		**11,652,883**	**-**	**11,652,883**
TRANSFERS TO SCHOLARSHIP RESERVE				
Scholarships Reserve	17	(4,321,500)	4,321,500	-
Total Transfers to Scholarship Reserve		**(4,321,500)**	**4,321,500**	**-**
BALANCE AT 30 JUNE 2020		**7,331,383**	**4,321,500**	**11,652,883**

Consolidated Statement of Cash Flows

For the period 5 August 2019 to 30 June 2020.

	NOTES	
CASH FLOWS FROM OPERATING ACTIVITIES		
Receipts from Grants		5,451,673
Receipts from Participants		7,625,676
Receipts from Other Operating Activities		11,652,883
Payments to Suppliers and Employees		(2,101,925)
Interest Income		8,799
Interest Expense		(10,907)
Net Cash flows from operating activities	**15**	**11,119,409**
NET CASH FLOWS USED IN FINANCING ACTIVITIES		
Repayment of lease liabilities (principal)	13	(31,693)
Net Cash flows used in financing activities		(31,693)
Net increase in cash and cash equivalents		11,119,409
Cash and Cash Equivalents at the beginning of the period		-
CASH AND CASH EQUIVALENTS AT THE END OF THE PERIOD	**7**	**11,087,716**

Notes to the Financial Statements

For the period 5 August 2019 to 30 June 2020

The consolidated financial statements and notes represent those of SmartSat CRC Ltd & Controlled Entities. SmartSat CRC Ltd is a Company limited by guarantee, incorporated and domiciled in Australia. Australian Space Industry Start-up Company Pty Ltd is a wholly owned subsidiary of SmartSat CRC Ltd.

SmartSat is a not-for-profit entity for the purpose of preparing the financial statements. The functional and presentation currency of SmartSat is Australian dollars.

The financial report was authorized for issue by the Directors on 24 September 2020. The directors have the power to amend and reissue the financial statements.

PRINCIPLES OF CONSOLIDATION

The consolidated financial statements incorporate the assets and liabilities of all subsidiaries of SmartSat CRC Ltd ('company') as at 30 June 2020 and the results of all subsidiaries for the year then ended. SmartSat CRC Ltd and its subsidiaries together are referred to in these financial statements as the 'Group'.

1. BASIS OF PREPARATION

The financial statements are general purpose financial statements that have been prepared in accordance with the Australian Accounting Standards - Reduced Disclosure Requirements and the Australian Charities and Not-for-Profits Commission Act 2012.

The company was incorporated on 5th August 2019 and consequently there are no comparatives in this financial report.

The financial report has been prepared on an accrual basis, and is based on the historical cost method unless otherwise stated.

The Company is an entity to which ASIC Corporations (Rounding in Financial/Directors' Reports) Instrument 2016/191 applies and, accordingly amounts in the financial statements and Directors' Report have been rounded to the nearest dollar.

2. NEW AUSTRALIAN ACCOUNTING STANDARDS

As the entity was incorporated on 5th August 2019, all mandatory accounting standards were adopted and applied at this date.

The relevant elements of AASB 1058 have been discussed below in the revenue recognition note, refer Note 3. Statement of Significant Accounting Policies – Revenue Recognition.

The relevant elements of AASB 16: Leases have been discussed below, refer Note 3. Statement of Significant Accounting Policies - Leases.

3. STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

The accounting policies that have been adopted in the preparation of these statements are as follows:

Revenue Recognition

Income of Not-for-Profit Entities

The Group has adopted AASB 1058 Income of Not-for-Profit Entities. The standard replaces AASB 1004 'Contributions' in respect to income recognition requirements for not-for-profit entities. The timing of income recognition under AASB 1058 is dependent upon whether the transaction gives rise to a liability or other performance obligation at the time of receipt. Income under the standard is recognised where: an asset is received in a transaction, such as by way of grant, bequest or donation; there has either been no consideration transferred, or the consideration paid is significantly less than the asset's fair value; and where the intention is to principally enable the entity to further its objectives. For transfers of financial assets to the entity which enable it to acquire or construct a recognisable non-financial asset, the entity must recognise a liability amounting to the excess of the fair value of the transfer received over any related amounts recognised. Related amounts recognised may relate to contributions by owners, AASB 15 revenue or contract liability recognised, lease liabilities in accordance with AASB 16, financial instruments in accordance with AASB 9, or provisions in accordance with AASB 137. The liability is brought to account as income over the period in which the entity satisfies its performance obligation. If the transaction does not enable the entity to acquire or construct a recognisable non-financial asset to be controlled by the entity, then any excess of the initial carrying amount of the recognised asset over the related amounts is recognised as income immediately. Where the fair value of volunteer services received can be measured, a private sector not-for-profit entity can elect to recognise the value of those services as an asset where asset recognition criteria are met or otherwise recognise the value as an expense.

For the below listed revenue streams, the Group recognises revenue as follows:

Contributions from Participants

Contributions from Participants are recognised as revenue in the Statement of Profit or Loss and Other Comprehensive Income as they are received, or when the Group has an unconditional right to receive payment.

Government Grants

Government Grants (including non-monetary grants at fair value) are recognised as revenue in the Statement of Profit or Loss and Other Comprehensive Income as they are received, or when the Group has an unconditional right to receive payment. If conditions are attached to the grant which must be satisfied before the Group is eligible to retain the contribution, the grant will be recognised in the statement of financial position as a liability until those conditions are satisfied.

Third Party Contributions

Contributions from other third parties are assessed on a case by case basis, with the Group evaluating whether sufficiently specific performance obligations are attached to the funding. Where sufficiently specific performance obligations are determined to exist, revenue is recognised in profit or loss when the Group satisfies the performance obligations. When the Group determines there are no sufficiently specific performance obligations, contributions are recognised as revenue in the Statement of Profit or Loss and Other Comprehensive Income as they are received, or when the Group has an unconditional right to receive payment.

Interest

Interest revenue is recognised as interest accrues using the effective interest method. This is a method of calculating the amortised cost of a financial asset and allocating the interest income over the relevant period using the effective interest rate, which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset to the net carrying amount of the financial asset.

Other revenue

Other revenue is recognised when it is received or when the right to receive payment is established.

Volunteer services and other in-kind contributions

The Group has elected not to recognise volunteer services as either revenue or other form of contribution received in line with AASB 1058. As such, any related consumption or capitalisation of such resources received is also not recognised.

Financial Instruments

Financial instruments are recognised initially on the date that the Group becomes party to the contractual provisions of the instrument.

On initial recognition, all financial instruments are measured at fair value plus transaction costs (except for instruments measured at fair value through profit or loss where transaction costs are expensed as incurred).

Financial Assets

All recognised financial assets are subsequently measured in their entirety at either amortised cost or fair value, depending on the classification of the financial assets.

Classification

On initial recognition, the Group classifies its financial assets into the following categories, those measured at:

- amortised cost
- fair value through profit or loss – FVTPL
- fair value through other comprehensive income – equity instrument (FVOCI - equity)
- fair value through other comprehensive income – debt investments (FVOCI - debt)

Financial assets are not reclassified subsequent to their initial recognition unless the Group changes its business model for managing financial assets.

Amortised Cost

Assets measured at amortised cost are financial assets where:

- the business model is to hold assets to collect contractual cash flows; and
- the contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding

The Group's financial assets measured at amortised cost comprise trade and other receivables and cash and cash equivalents in the Statement of Financial Position.

Subsequent to initial recognition, these assets are carried at amortised cost using the effective interest rate method less provision for impairment.

Interest income, foreign exchange gains or losses and impairment are recognised in the Statement of Profit or Loss and Other Comprehensive Income. Gain or loss on derecognition is recognised in the Statement of Profit or Loss and Other Comprehensive Income.

Plant and Equipment

Minor asset purchases of less than $3,000 are expensed when incurred.

Impairment of financial assets

Impairment of financial assets measured at amortised cost is calculated using an expected credit loss (ECL) approach which requires lifetime expected credit losses to be recognised from initial recognition of the financial assets.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating ECL, the Group considers reasonable and supportable information that is relevant and available without undue cost or effort.

This includes both quantitative and qualitative information and analysis based on the Group's historical experience and informed credit assessment and including forward looking information.

The Group uses the presumption that an asset which is more than 90 days past due has seen a significant increase in credit risk.

The Group uses the presumption that a financial asset is in default when:

- the other party is unlikely to pay its credit obligations to the Group in full, without recourse to the Group to actions such as realising security (if any is held); or
- the financial assets is more than 120 days past due date

Credit losses are measured as the present value of the difference between the cash flows due to the Group in accordance with the contract and the cash flows expected to be received. This is applied using a probability weighted approach.

Trade Receivables

Impairment of trade receivables and contract assets have been determined using the simplified approach in AASB 9 which uses an estimation of lifetime expected credit losses. The Group has determined the probability of non-payment of the receivable and contract asset and multiplied this by the amount of the expected loss arising from default.

The amount of the impairment is recorded in a separate allowance account with the loss being recognised in Other Expenses. Once the receivable is determined to be uncollectable then the gross carrying amount is written off against the associated allowance.

Where the Group renegotiates the terms of trade receivables due from certain customers, the new expected cash flows are discounted at the original effective interest rate and any resulting difference to the carrying value is recognised in the Statement of Profit or Loss and Other Comprehensive Income.

Other Financial Assets Measured at Amortised Cost

Impairment of other financial assets measured at amortised cost are determined using the expected credit loss model in AASB 9. On initial recognition of the asset, an estimate of the expected credit losses for the next 12 months is recognised. Where the asset has experienced a significant increase in credit risk then the lifetime losses are estimated and recognised.

Financial Liabilities

The Group measures all financial liabilities initially at fair value less transaction costs, subsequently financial liabilities are measured at amortised cost using the effective interest rate (EIR) method. Gains and losses are recognised in the Statement of Profit or Loss and Other Comprehensive Income when the liabilities are derecognised as well as through the effective interest rate amortisation process.

Amortised cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortisation is included as finance costs in the Statement of Profit or Loss and Other Comprehensive Income.

The financial liabilities of the Group comprise trade and other payables.

Impairment of non-financial assets

At the end of each reporting period the Group determines whether there is an evidence of an impairment indicator for non-financial assets.

Where an indicator exists and regardless for indefinite life intangible assets and intangible assets not yet available for use, the recoverable amount of the asset is estimated.

Where assets do not operate independently of other assets, the recoverable amount of the relevant cash-generating unit (CGU) is estimated.

The recoverable amount of an asset or CGU is the higher of the fair value less costs of disposal and the value in use. Value in use is the present value of the future cash flows expected to be derived from an asset or cash-generating unit.

Where the recoverable amount is less than the carrying amount, an impairment loss is recognised in the Statement of Profit or Loss and Other Comprehensive Income.

Reversal indicators are considered in subsequent periods for all assets which have suffered an impairment loss.

Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, deposits held on call with banks, other short-term highly liquid investments with original maturities of three months or less, and bank overdrafts.

Provisions

Provisions are recognised when the Group has a legal or constructive obligation resulting from past events, for which it is probable that there will be an outflow of economic benefits and that outflow can be reliably measured. Provisions are measured using the best estimate available of the amounts required to settle the obligation at the end of the reporting period.

Employee Benefits

Provision is made for the liability for employee entitlements arising from services rendered by employees to 30 June 2020. Provision in respect of wages and salaries, annual leave and long service leave is recognised when it is probable that settlement will be required and they are capable of being measured reliably.

Provisions made in respect of employee benefits expected to be settled within 12 months are measured at their nominal values using the remuneration rate expected to apply at the time of settlement.

Provisions made in respect of employee benefits which are not expected to be settled within 12 months are measured at the present value of the estimated future cash outflows to be made by the Group in respect of services provided by employees up to reporting date.

Leases

Finance leases are leases of fixed assets where substantially all of the risks and benefits incidental to the ownership of the asset are transferred to the Group, but the legal ownership is not transferred to the Group.

Finance leases are capitalised by recording a right-of-use asset and a corresponding liability at the lower of the amounts equal to the fair value of the leased asset, or the minimum lease payments measured at present value including any residual values.

Leased assets are depreciated on a straight-line basis over the shorter of their estimated useful lives or the lease term.

Short-term leases (remaining lease term of 12 months or less) or low value leases are charged to the Statement of Profit or Loss and Other Comprehensive Income on a straight-line basis over the term of the lease.

The Group has recognised a right-of-use asset of $392,742 upon the commencement of the lease on 1 January 2020. The lease liability was recognised of the equal value of $392,742. The weighted average incremental borrowing rate applied to lease liability was 6%.

Goods and Services Tax (GST)

Revenue, expenses and assets are recognised net of the amount of goods and services tax (GST), except where the amount of GST incurred is not recoverable from the Australian Taxation Office (ATO).

Receivables and payable are stated inclusive of GST.

Cashflows in the statement of cash flows are included on a gross basis and the GST component of cash flows arising from investing and financing activities which is recoverable from, or payable to, the ATO is classified as operating cash flows.

Income Tax

Australian Space Industry Start-up Company Pty Ltd is a for profit company and liable for income tax. SmartSat CRC Ltd is income tax exempt under Subsection 50-5 of the Income Tax Assessment Act 1997.

4. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS

The directors make estimates and judgements during the preparation of these financial statements regarding assumptions about current and future events affecting transactions and balances. These estimates and judgements are based on the best information available at the time of preparing the financial statements, however, as additional information is known then the actual results may differ from the estimates.

The significant estimates and judgements made have been described below.

Key estimates - revenue recognition

When determining the nature, timing and amount of revenue to be recognised, the following critical estimates and judgements were applied and are considered to be those that have the most significant effect on revenue recognition.

The Group was required to assess whether government grants and contributions from participants fell under the scope of AASB 15 or AASB 1058. Specifically, the Group had to determine whether the Agreements contained performance obligations that meet the 'sufficiently specific' criteria in sections F20-F26 of AASB 15. Judgement is necessary to assess whether a promise is 'sufficiently specific', which takes into account any conditions specified in the Agreements regarding the following aspects:

a) the nature or type of the goods or services;

b) the cost or value of the goods or services;

c) the quantity of the goods or services; and

d) the period over which goods or services must be transferred.

No specific number or combination of the conditions noted above needs to be specified in an agreement for the promise to be 'sufficiently specific'. There may be other conditions that need to be taken into account in applying the judgement that may indicate the promise is 'sufficiently specific'.

A condition that a not-for-profit entity must transfer unspecified goods or services within a particular period does not, of itself, meet the 'sufficiently specific' criterion.

Where entities receive a transfer to be used over a particular time period for specified services, such a transfer could meet the 'sufficiently specific' criterion. It is unlikely that transfers directed at promoting or progressing an entity's charter or stated objectives alone would be specific enough. If the transfer does not specify measurable services to be provided, the entity would not meet the 'sufficiently specific' criterion because it would be unable to determine when it meets the performance obligations.

The directors have determined that the Commonwealth and participant agreements in place do not contain performance obligations that meet the 'sufficiently specific' criteria as per sections F20-F26 of the AASB 15. Therefore, Grant Income has been recognised in accordance with AASB 1058: in full upon receipt or when the Group has the unconditional right to receive the contribution, and it is probable that the economic benefits comprising the contribution will flow to the Group.

Impact of COVID-19

A global pandemic (COVID-19) occurred during the period, which has resulted in broad and significant economic and social impacts.

The Group has not been significantly affected by the pandemic, however, the Directors are unable to reliably determine the potential impact of the pandemic on future results or cashflows. Accordingly, no adjustments have been made as at 30 June 2020 relating to any potential future impacts of COVID-19.

5. INCOME

	5 AUG 2019 – 30 JUN 2020
INCOME	
Participant Cash Contributions	8,567,141
Third Party Contributions	180,000
Grant Income	4,956,066
Total Income	**13,703,207**
OTHER INCOME	
Cash Flow Boost	100,000
Interest Income	8,798
Office Space	25,560
Space and Spatial Industry Road Map	89,000
Sponsorship	51,433
Skills Gap Analysis	20,000
Total Other Income	**294,791**
TOTAL INCOME	**13,997,998**

6. ADMINISTRATION EXPENSES

	5 AUG 2019 – 30 JUN 2020
DEPRECIATION EXPENSES	
Depreciation	39,274
Total Depreciation Expenses	**39,274**
EMPLOYEE EXPENSES	
Wages & Salaries	608,320
Superannuation	31,533
Workcover	2,475
Annual Leave Expense	24,480
Long Service Leave Expense	645
Total Employee Expenses	**667,453**
TOTAL ADMINISTRATION EXPENSES	**706,727**

7. CASH AND CASH EQUIVALENTS

	30 JUN 2020
Cash at Bank	11,087,716
Total Cash and Cash Equivalents	**11,087,716**

Reconciliation of Cash

Cash and Cash equivalents reported in the statement of cash flows are reconciled to the equivalent items in the statement of financial position as follows:

	30 JUN 2020
BALANCE AS PER STATEMENT OF CASH FLOWS	
Cash and Cash Equivalents	11,087,716
Balance as per Statement of Cash Flows	**11,087,716**

8. TRADE AND OTHER RECEIVABLES

	30 JUN 2020
Accounts Receivable	1,211,364
Total Trade and Other Receivables	**1,211,364**

The carrying value of trade receivables is considered a reasonable approximation of fair value due to the short-term nature of the balances.

The maximum exposure to credit risk at the reporting date is the fair value of each class of receivable in the financial statements.

9. RIGHT OF USE ASSET

	30 JUN 2020
Office Lease	392,742
Accumulated Depreciation	(39,274)
Total Right of Use Asset	**353,468**

10. TRADE AND OTHER PAYABLES

	30 JUN 2020
CURRENT	
Accounts Payable	119,957
Accrued Expenses	6,336
Credit Card	5,984
GST	502,207
PAYG Withholdings Payable	48,619
Total Current	**683,103**
TOTAL TRADE AND OTHER PAYABLES	**683,103**

Trade and other payables are unsecured, non-interest bearing and are normally settled within 30 days. The carrying value of trade and other payables is considered a reasonable approximation of fair value due to the short-term nature of the balances.

11. EMPLOYEE BENEFIT LIABILITIES

	30 JUN 2020
Provision for Annual Leave	24,480
Provision for Long Service Leave	645
Total Employee Benefit Liabilities	**25,125**

12. LEASE LIABILITIES

	30 JUN 2020
Lease Liability Current	54,785
Lease Liability Non-Current	306,264
Total Lease Liabilities	**361,049**

	5 AUG 2019 – 30 JUNE 2020
LEASES	
Depreciation Expense of Right-of-Use Assets	39,274
Interest Expense on Lease Liabilities	10,907
Total Leases	**50,181**

SmartSat has one finance lease with the duration of 5 years. The lease has terms to extend the period of use past the end date but no purchase option or escalation clauses. The Group had total cash outflows for leases of $42,600 in 2020. The Group also had noncash additions of right-of-use assets and lease liabilities of $392,742.

13. RECONCILIATION OF LIABILITIES ARISING FROM FINANCING ACTIVITIES

The changes in the Group's liabilities arising from financing activities can be classified as follows:

	LEASE LIABILITY
1 January 2020	392,742
- Repayments	(42,600)
- Interest	10,907
30 June 2020	**361,049**

14. CONTINGENCIES

In the opinion of the Directors, the Group did not have any contingencies at 30 June 2020.

15. CASH FLOW INFORMATION

Reconciliation of results for the period to cashflows from operating activities:

	5 AUG 2019 – 30 JUNE 2020
Surplus for the period	$11,652,884
Depreciation	$39,274
(Increase)/ decrease in trade and other receivables	($1,261,364)
(Increase)/ decrease in prepayments and other assets	($19,091)
Increase (decrease) in trade and other payables	$682,581
Increase (decrease) in provisions	$25,125
Cashflow from operations	**$11,119,409**

16. RELATED PARTIES

The Group's main related parties are as follows:

- Key management personnel - refer to Note 18.
- Other related parties include close family members of key management personnel and entities that are controlled or significantly influenced by those key management personnel or their close family members.

Transactions between related parties are on normal commercial terms and conditions no more favourable than those available to other parties unless otherwise stated.

17. RESERVES

	30 JUN 2020
Scholarships Reserve	4,321,500
Total Reserves	**4,321,500**

The scholarships reserve has been set up for the specific purpose of quarantining future commitments for the payment of PhD scholarships during the term of SmartSat. The amount has been identified through the budgeting process and ensures that sufficient funds are available to meet these obligations. Supporting the PhD programme is considered a high priority and is a commitment in the education and training milestones in the Commonwealth agreement. A statement of movement and balances will be provided for monthly financial reporting to the Executive and Board.

18. KEY MANAGEMENT PERSONNEL REMUNERATION

The totals of remuneration paid to the key management personnel of SmartSat during the period are as follows:

The total remuneration paid to key management personnel of the Group is $698,898.

19. EVENTS AFTER THE END OF THE REPORTING PERIOD

The financial report was authorised for issue on 24 September 2020 by the Board of Directors.

No matters or circumstances have arisen since the end of the financial period which significantly affected or may significantly affect the operations of the Group, the results of those operations or the state of affairs of the Group in future financial years.

20. STATUTORY INFORMATION

The registered office and principal place of business of the Group is:

SmartSat CRC Ltd
Level 3, McEwin Building
Lot Fourteen, Frome Rd
ADELAIDE SA 5000

Directors' Declaration

SmartSat CRC Ltd

For the period 5 August 2019 to 30 June 2020

The directors of the Group declare that:

1. The financial statements and notes, as set out on pages 49 to 63, are in accordance with the Australian Charities and Not-for-Profit Commissions Act 2012 and:

   a. comply with Australian Accounting Standards - Reduced Disclosure Requirements; Australian Charities and Not-for-profits Commission Regulation 2013 and other mandatory professional reporting requirements, and

   b. give a true and fair view of the financial position of the Group as at 30 June 2020 and of the performance for the period ended on that date.

2. In the Directors' opinion, there are reasonable grounds to believe that the Group will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the Board of Directors.

Dr. Peter Woodgate
DIRECTOR

Prof. Andy Koronios
DIRECTOR

24th September 2020

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INDEPENDENT AUDITOR'S REPORT

TO THE MEMBERS OF SMARTSAT CRC LTD

Report on the Audit of the Financial Report

Opinion

We have audited the financial report of SmartSat CRC Ltd (the registered entity) and its subsidiaries (the Group), which comprises the consolidated statement of financial position as at 30 June 2020, the consolidated statement of profit or loss and other comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flows for the period then ended, and notes to the financial report, including a summary of significant accounting policies, and the responsible entities' declaration.

In our opinion the accompanying financial report of SmartSat CRC Ltd, is in accordance with Division 60 of the *Australian Charities and Not-for-profits Commission Act 2012*, including:

(i) Giving a true and fair view of the Group's financial position as at 30 June 2020 and of its financial performance for the period then ended; and

(ii) Complying with Australian Accounting Standards – Reduced Disclosure Requirements and Division 60 of the *Australian Charities and Not-for-profits Commission Regulation 2013*.

Basis for opinion

We conducted our audit in accordance with Australian Auditing Standards. Our responsibilities under those standards are further described in the *Auditor's responsibilities for the audit of the Financial Report* section of our report. We are independent of the Group in accordance with the auditor independence requirements of the *Australian Charities and Not-for-profits Commission Act 2012* (ACNC Act) and the ethical requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants (including Independence Standards)* (the Code) that are relevant to our audit of the financial report in Australia. We have also fulfilled our other ethical responsibilities in accordance with the Code.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other information

Those charged with governance are responsible for the other information. The other information obtained at the date of this auditor's report is information included in the registered entity's annual report, but does not include the financial report and our auditor's report thereon.

Our opinion on the financial report does not cover the other information and accordingly we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial report, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial report or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If, based on the work we have performed on the other information obtained prior to the date of this auditor's report, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of responsible entities for the Financial Report

The responsible entities of the registered entity are responsible for the preparation and fair presentation of the financial report in accordance with Australian Accounting Standards – Reduced Disclosure Requirements and the ACNC Act, and for such internal control as the responsible entities determine is necessary to enable the preparation of the financial report that is free from material misstatement, whether due to fraud or error.

In preparing the financial report, responsible entities are responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the responsible entities either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the registered entity's financial reporting process.

Auditor's responsibilities for the audit of the Financial Report

Our objectives are to obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of this financial report.

A further description of our responsibilities for the audit of the financial report is located at the Auditing and Assurance Standards Board website (http://www.auasb.gov.au/Home.aspx) at: http://www.auasb.gov.au/auditors_responsibilities/ar3.pdf

This description forms part of our auditor's report.

BDO Audit (SA) Pty Ltd

Andrew Tickle
Director

Adelaide, 29 September 2020

SMARTSAT
COOPERATIVE RESEARCH CENTRE

For more information:
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Australian Government
Department of Industry, Science, Energy and Resources

Business Cooperative Research Centres Program