Careers In Space

Student Workbook

Name:

Australian Centre for Career Education

A collaboration between
The Australian Centre for Career Education
and The Australian Space Agency

Australian Space Agency

Welcome

Welcome to the exciting world of work in 'Careers in Space!' This interactive workbook has been prepared by the Australian Centre for Career Education (ACCE) in collaboration with The Australian Space Agency (ASA), to help young people prepare for the world of work in a dynamic industry – the Australian Space Sector.

The workbook provides secondary students with important information through exploring different occupations and discovering a multitude of career paths in the growing and ever-changing space sector.

Career exploration activities and real-life case stories and videos feature throughout this workbook, offering a wealth of career information, and shedding light on dynamic professions that are continually adapting to meet future demands.

Developed in partnership between the ACCE and the Australian Space Agency, this resource aims to engage students and guide teachers and parents as they support young people through the next phase of their study and career journey.

Launch into your exploration of 'Careers in Space' by discovering, planning and considering your path with this invaluable resource.
An extraordinary journey awaits you!

Penne Dawe

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The Australian Centre for Career Education acknowledges the Traditional Owners of Country throughout Australia and pays respect to Aboriginal and Torres Strait Islander people as custodians who have cared for this land, and its waters for over 60,000 years.

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Contents

1. Sector Overview

About Careers in Space

When you first think of 'Careers in Space', you may think of astronauts and rocket scientists. In reality, the influence of space extends far beyond and has a direct impact on the everyday lives of Australians. The Space sector plays an important role in providing essential services that we depend on, including weather forecasting, emergency management, internet access, online banking, and even the GPS technology that guides us through our daily travels.

With a diverse range of careers available, such as Space scientists, technicians, engineers, doctors, communicators and more, the Space sector is experiencing rapid growth, requiring a greater number of jobs to be filled that require a wide range of skill sets.

What is the Australian Space Sector and where is it headed?

Space technology turns our phones into navigation devices; helps forecast the weather; monitors the environment and climate change; helps us track and respond to natural disasters like bushfires; enables the economy through financial transactions and so much more. It also provides us with a unique perspective on the Earth, giving us data and insights that we don't get on the ground.

As an industry, space is the new jobs frontier, driving opportunities across a range of STEM fields and other industries too. From Manufacturing to Mining, Health and Science, to critical technologies such as AI, quantum and Robotics – space requires skills and capabilities from all these areas.

Globally, the Space sector is experiencing rapid expansion, and within Australia the industry continues to go from strength to strength. Since 2018, the Agency has been working to establish our national space sector to ensure long-term industry growth, the development of critical space technologies, and to foster international collaboration. The Agency is focused on bringing the Australian space sector together with the civil, defence and science sectors to take advantage of Australia's unique capabilities and to improve our lives on Earth.

The Australian Government has set a goal to generate 1.2 million tech-related jobs by 2030. Space can play an important part in achieving this, with many opportunities for young Australians to contribute. Through its goal to Inspire, the Australian Space Agency is leading the way in promoting space careers and pathways to build a strong and diverse future space workforce.

Watch the video below to hear more about the role that space activities play in our everyday lives and how space can contribute to solving the problems our nation is facing. Then take-off into this workbook and discover the amazing world of "Careers in Space" that awaits you!

2. Employability Skills

2a. Employability Skills Chart

As you may have guessed from the title, employability skills are abilities or talents that can help set you apart from the crowd when looking for work. These skills can't always be taught in a traditional way, like in a classroom or a workshop, but can be developed over time simply by taking part and trying things. You might develop teamwork and collaboration skills by participating in a sporting team or a school play. You can develop communication skills on the school debating team, or by creating content to suit your audience on TikTok or YouTube. There are many ways to develop these skills and you don't have to follow the traditional path to do so.

Consider the following table that outlines the skills required for many occupations in the Space sector. Further, click on the highlighted careers and discover more about those jobs in action, and the skills and capabilities required of those working in them.

	Public Relations Officer	Flight Surgeon	Engineering Professional	Space Lawyer	Space Scientist	Software developer	Mechanical Technician
Communication and Interpersonal Skills	✓	✓	✓	✓	✓	✓	✓
Teamwork / Collaboration	✓	✓	✓	✓	✓		✓
Customer service skills	✓			✓			✓
Organisational and administrative skills	✓	✓	✓	✓	✓	✓	✓
Planning, analytical and problem solving skills	✓	✓	✓	✓	✓	✓	✓
Information Technology	✓	✓	✓	✓	✓	✓	✓
Working with tools		✓	✓		✓	✓	✓
Adaptability / Flexibility	✓	✓	✓	✓	✓	✓	✓
Safety Awareness		✓	✓	✓	✓		✓

Public Relations Officer:

Public Relations Professionals plan, develop, implement and evaluate information and communication strategies that create an understanding and a favourable view of organisations, their goods and services, and their role in the community.[1]

Flight Surgeon:

Flight Surgeons Support the health, safety and wellbeing of astronauts, utilising medical science and technology to prevent and control hazards. Flight surgeons are specialised doctors assigned to manage and oversee the health of aerospace personnel like astronauts or pilots. Mission crews have very specialised health and medical needs.

Engineering Professional:

Aerospace engineers perform and supervising engineering work concerned with the design, development, manufacture, maintenance and modification of spacecraft and satellites for flight. Other Engineering Professionals include Aeronautical Engineer, Agricultural Engineer, Biomedical Engineer, Engineering Technologist, Environmental Engineer and Naval Architect occupations.[2]

Space Lawyer:

Space lawyers provide advice and prepare legal contracts and documentation to ensure compliance with Australian and international laws and treaties. Space belongs to everyone, but there are rules about what we can do in space. There are a number of international and domestic treaties, rules and principles involved in conducting any activities in space.[3]

Space Scientist:

Space scientists apply the laws of physics, chemistry, geology and other sciences to understand the universe, its origins and how it works. Space science is all about looking outwards from Earth to the stars and beyond. Space scientists try to find answers to big questions, such as whether there is life beyond the Earth.[4]

Software Developer:

Software developers and software engineers design, program, test, implement and maintain software programs. Software helps run almost every organisation and business in the world, and the space sector is no different. In fact, space exploration helped pioneer software engineering. In the Space sector, software developers and engineers create tools and applications that set the standards for other industries.[5]

Mechanical Technician:

Mechanical technicians install machinery, parts and equipment onto aircraft and spacecraft. Spacecraft consist of many parts and systems that all need maintenance to keep them in optimal working order. Mechanical technicians are responsible for checking the quality of the parts and systems and ensuring they are correctly assembled.[6]

1 https://myfuture.edu.au/occupations/details/2253--public-relations-professionals#overview

2 https://myfuture.edu.au/occupations/details/2339--other-engineering-professionals#overview

3 https://www.industry.gov.au/australian-space-discovery-centre/pathways-career-space/space-lawyer

4 https://www.industry.gov.au/australian-space-discovery-centre/pathways-career-space/space-scientist

5 https://www.industry.gov.au/australian-space-discovery-centre/pathways-career-space/software-developers-and-software-engineers

6 https://www.industry.gov.au/australian-space-discovery-centre/pathways-career-space/mechanical-technicians

What employability skills do you have already?

There are many sites online that can help you learn about employability skills, like myfuture or Youth Central.

Using what you now know about employability skills, complete this list of skills that you already have, skills that you can start developing, and how you might be able to develop those skills.

Employability skill	Have now	Need to develop	How can I develop these skills?
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

My employability skills and how I can use them

Now choose 3 of the skills you identified in the table above. Provide examples of how you can use that skill and what that skill may look like in the workplace for an employer. An example has been completed for you.

Employability skill	How I use this skill	What I can do in the workplace for my employer
Organisational and administrative skills.	*Manage my time effectively so I always hand in my work on time and meet deadlines.*	*If I can work under pressure and meet deadlines, I will be able to take on new challenges with confidence.*

2b. Space Career Case Stories

Now it's time to hear from people working in the Australian Space Sector. As you'll see, there's a wide range of people, skills, strengths and qualifications needed for this sector to continue advancing. Read these career stories and answer the questions to find out more.

Head to link www.ceav.vic.edu.au/resources/industry-resources/careers-in-space to see extended case stories from everyone mentioned in this book.

Hugh Prescott

Role: Embedded Software Engineer

Organisation: Inovor Technologies

Qualifications: Bachelor of Science in Mechatronics, Master of Engineering (Mechatronics)

Employability Skills:

Problem-solving, Creative Thinking, Research, Teamwork, Learning, Collaboration

What does Hugh spend a lot of his time doing?

What part of the satellite is the Attitude Determination and Control System (ADCS)?

When I was in Year 10 I was fascinated by physics. That year I visited the Large Hadron Collider in Geneva and I was set on uncovering the mysteries of our Universe. A lot of those answers I believe are in understanding the universe, but I didn't want to have other people build tools for me to discover that.

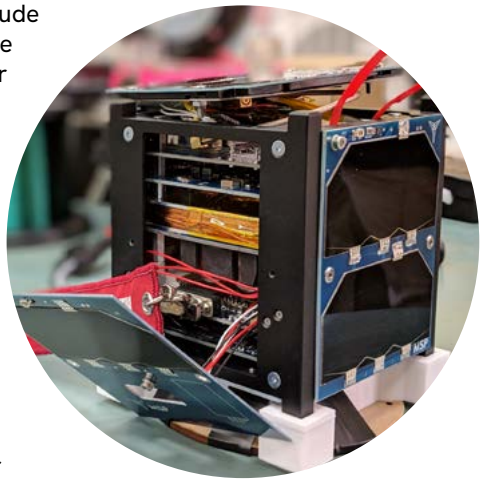
I realised the common denominator between all the missions that further our understanding of the universe – the Mars Rovers, the Hubble and James Webb Space Telescopes, and the rockets to get them there – all of them depended on great engineering and the software to make the mission a reality. That's when I knew I had to pursue engineering.

My interest outside of school was my love for space – whenever I had the chance I would rent a book from the school library about anything involving space – whether that was black holes or the moon landing or aliens, I just was completely fascinated with what could be going on up there.

After finishing school, I went straight into a Bachelor of Science at The University of Melbourne, majoring in Mechatronics which is a 3-year degree. I then completed my Master of Engineering (Mechatronics) degree in the next 2 years.

During University I got involved in the Melbourne Space Program which had just successfully launched Acrux-1. I came on as part of the second generation of students looking to design Acrux-2. I gained a tonne of experience relating to how designing for space works and the inner workings of satellites. At the

same time I was studying control systems in class, so I lent towards the Attitude Determination and Control System (ADCS) subsystem team. I graduated while working on the designs for the ADCS, which helped during my application for Inovor where I went on to work on the same subsystem here. I have now been working at Inovor for 2.5 years.



Every day tends to be different – some involve testing flight hardware for a satellite, and other days involve writing software to simulate how it will all work when in space. The team comes together at the start of the day to discuss our tasks and we are often collaborating to solve whatever issues come up during testing or how we can implement a new feature for the team and customers to use.

What do I love about my current job? I like coding, and I get to do a lot of it at Inovor across a wide range of languages and applications. The team is also very talented – I'm always pushed to be a better engineer, which makes it an enriching place to work. The work is also very challenging – building for space is hard! I want to work on the most challenging projects so that I am always improving, and this work is some of the most complex you can come across.

A skill essential for this role, above all else, is the skill of being able to learn. You have to be able to look at something you know nothing about and have the drive, curiosity, and grit to absorb it fully and make it yours. All knowledge is valuable because it almost always comes in useful when a novel problem comes your way. Writing software is an exercise of constant problem solving, creative thinking, and research – it's so important to be able to integrate what you learn online into your problem solving methodology, but also be critical enough of it to understand there will be other approaches. It'll be the curiosity and drive that will lead you to a great solution and ultimately make you a great software engineer.

My advice for anyone wanting to work in the industry: now is the best time to get involved – the industry is still young enough that you will get to have a real impact on the future of what space will look like in Australia. If you are currently studying at uni and want to get into the industry, there's nothing better than getting started on a project of your own that demonstrates those skills mentioned earlier – curiosity, drive and grit, as that will stand out in an interview process.

In the future, I see myself expanding with Inovor as we begin to work on bigger and more complicated satellites. I plan on being a leader on these larger projects, and I hope to enable some fascinating technology with that work. Long-term I'd like to be a contributor and expert on satellites in Australia and really push what is possible in space. The plan is to push myself towards having the knowledge, experience and skills to tackle the biggest questions we have yet to tackle, all from space.

What studies did Hugh study after finishing school?

What was Hugh working on when he graduated from University?

What is Hugh's advice for anyone wanting to work in the industry?

What does Hugh see himself doing next and into the future?

Lachlan Mackie

Role: Mechatronics Engineer

Organisation: Skykraft

Qualifications: Associate Degree in Engineering, Bachelor of Engineering (Robotics and Mechatronics) (Honours) Bachelor of Business

Employability Skills:

Problem-solving, Flexibility, Tool Skills, Communication, Technical

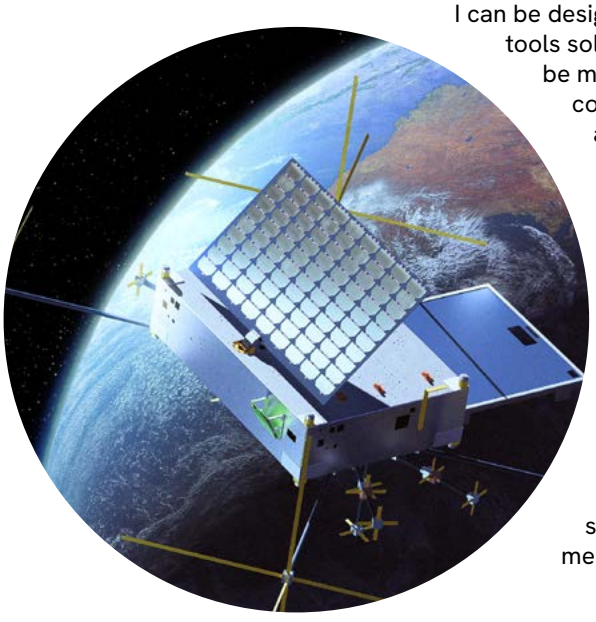
I graduated Year 12 with a reasonable ATAR but I didn't have the Maths course required to get into an Engineering degree. So I decided to do an Associate Degree in Engineering at Swinburne University as a bridging course to get into Engineering. This proved to be a good choice as I found it to be a nice transition from high school to University, as there was more guidance and support.

The Associate Degree gave me what I needed at the time and meant that I could make the transition to the degree that I wanted: The Bachelor of Engineering Robotics and Mechatronics (Honours)/Business. Swinburne University is a practical University with a focus on real world applications and labs instead of focusing on theory. This kept me motivated as I could see why we were learning things rather than just learning things so we could pass a test.

While I was studying for my Bachelor of Engineering Robotics and Mechatronics (Honours) and Business at Swinburne University I was involved in a lot of university clubs. I was a founding member of the Swinburne Rocket Club and President of the Swinburne Tinkerers Guild. It was through my connections with both of these clubs that I interacted with the Melbourne Space Program.

I had just finished my degree in engineering and was looking for jobs when I saw a post on the Melbourne Space Program's Facebook page advertising internships for an Australian space startup based in Canberra called Skykraft. I had always been interested in space, so I thought "Well, why not?" I applied for the internship via email, attached my website portfolio of projects that I had completed to the email and waited. I had my first call with Craig and he told me about the satellite constellation that we would be building to deliver space-based global air traffic management services and that I would be designing and building satellites. Oh, also, instead of an internship, we'd like to offer you a job. Excited by the opportunity, my girlfriend and I decided it was too good to pass up, so we took the risk and both moved to Canberra to see how far we could take it. I've been working for Skykraft for 3 years now.

I consider myself a jack of all trades! Day to day, depending on where we are in the build schedule, I can be designing PCBs in ECAD or designing parts in CAD. I can be on the tools soldering prototype boards or reworking boards for flight. I can be modifying or manufacturing metal and 3D printed mechanical components for flight. I can be directing and managing others in achieving task requirements. I can be writing code for testing my boards, writing documentation for others to manufacture and test my designs or I can be in the cleanroom assembling and modifying satellites.



I am responsible for the design, documentation, development and manufacture of assigned hardware. I design tests for quality assurance of hardware, work collaboratively with others and consider the big picture of where your hardware fits into the satellite. I also help others with their work, lead and pass on knowledge. I like to think outside of the box, be creative, and be flexible.

I chose Mechatronics for a reason. I want to do everything – software, hardware, electrical and mechanical. Skykraft allows me to do this, as I get to design hardware that is forced to survive in

extreme environments. My designs need to survive high G loads, high and low temperatures, radiation, zero atmosphere and charged particles. This means that I work in an environment where I am surrounded by interesting and intelligent people who are all focused on these complex problems. I learn every day and I feel I contribute to something meaningful.

My advice to anyone thinking about working in the industry is to take calculated risks. Work for that startup even if you know that there is a risk that they may not be around in 2 years. Whatever you do at that startup, it will make you more knowledgeable, capable, and be more influential than choosing the safe option. You will make fantastic new connections with like-minded people, work on fantastic world-altering problems, and in your next endeavour you will be better and more connected.

Develop a portfolio website of personal projects that you can show prospective employers, it helps you stand out from the pack, demonstrates that you know what you are doing, can see a project to completion, can communicate effectively and are passionate about your field.

Join a hackerspace or a university club that interests you. Volunteer your time to teach others interesting things and help run things. Show up, build cool things, focus on developing and learning new skills, talk to interesting people and have fun. Every skill you learn, and every new connection you make, is valuable and you never know where it might take you.

The logo of the Australian Space Agency is made of representations of eight different constellations recognised by Australia's Indigenous peoples. The different coloured dots depict each different pattern. The star grouping of the Seven Sisters is common to Western and Indigenous astronomy, while the constellation we call the Southern Cross was interpreted differently by First Nations peoples across Australia.

What bridging course did Lachlan do at university to get into Engineering?

How did Lachlan become aware of his current job?

What is your understanding of what a Mechatronics Engineer does?

What are some of the skills required for Lachlan's job?

3. Australian Space Milestones

3a: Let's explore Australia's Space History!

Use the Australian Space Milestones document to discover more about Australia's involvement in space exploration.

In what year did the Australian Space Agency commence operations?

Explain the role of the Australian Space Agency and some of its primary responsibilities:

When and how did Australia contribute to the Apollo lunar program?

Identify two major milestones in Australia's space history and explain their importance and in what year they occurred.

3b. Making Australian Space History

Katherine Bennell-Pegg
Australian Astronaut Candidate

Hear about the fascinating and inspiring journey of Katherine Bennell-Pegg, the first Australian-born female trained as an astronaut, as she prepares to embark on an extraordinary training program

What did Katherine like to do when she was young?

What did Katherine refuse to do in high school?

In what country, and where, will Katherine train as an astronaut?

Unlike previous astronauts, what will Katherine get to do?

What percentage of Australia's STEM workforce are women?

What is Katherine most excited about?

Katherine calls astronauts the "ultimate operators", What do they do?

4. Australian Space Sector Case Stories

Remember: Head to www.ceav.vic.edu.au/resources/industry-resources/careers-in-space to be supplied to see extended case stories from everyone mentioned in this book.

4a. Andreas Antoniades

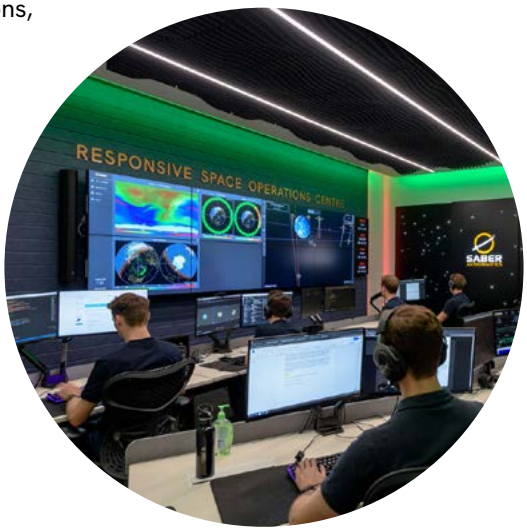
Role: National Director
Organisation: Saber Astronautics
Qualifications: Bachelor of Electrical Engineering (Honours), Bachelor of Business (Management)

Employability Skills:
Management, Problem solving, Communication, Leadership

I began at Saber Astronautics as a part-time electronics engineer, helping deliver a defence innovation project. Prior to that, I had my own start-up focused on Cubesat hardware manufacturing and STEM education hardware. After some downtime working on my own new satellite groundstation control prototypes, I approached Saber's CEO with the demo. It could be considered a boon to Saber, that was working on Mission Control software. The CEO saw the prototypes' potential to ensure we delivered phase 1, and offered me a role to build the hardware/firmware for the project.

Saber was small-scale and ran lean when I commenced. It required more structure to grow as new employees were welcomed. My prior start up experience led me to taking on further business-related tasks. I was building our growth strategy and involved in the day-to-day tactical, giving many more presentations and representing the company internationally as we grew. After reaching a team size of approximately 10 members, with a strong and established engineering team, the CEO approached me about a directorship role. I accepted and have since been focused on my position as the National Director, while also advising general engineering for the teams in the business. I have been in the space industry for approximately 10 years, and with Saber Astronautics for close to 6 years.

My typical day revolves around maintaining the business operations and ensuring timely delivery of projects with adequate resources. On the business side, I frequently engage with stakeholders, defence, government, and handle general operations, including legal, HR, media, marketing, and accounting. Given the current growth of the Australian space industry, an important part of my job is frequently communicating with state/country's leadership to secure ongoing support and funding for everyone.



I love constantly solving problems in space operations and traffic management. From revlutionising spacecraft operations, to coordinating Asia-Pacific's space traffic. Our team dares to make a difference, as part of a collective vision which is inspiring.

I love waking up and realising that my job in Australia is as close to sci-fi as it gets. Spacecraft flying was something I never imagined outside of NASA, or the USA, at 18 years old. Passion and collaboration drive everyone in this industry. At Saber, we work with numerous businesses, and have tight friendships, making my job enjoyable.

Careers in Space

A solid understanding of core mathematics, physics, and chemistry will go a long way to running a space business effectively. While a PhD or dedicated degree in these subjects is not necessary, it can be advantageous for specialised roles. The space industry touches on almost every single sector / profession, allowing individuals to apply their passions in fields such as engineering, law, design, arts, medicine, information technology, geology, architecture, and beyond. Don't doubt yourself and explore the possibilities.

During Year 10, I had a deep interest in the sciences. Engineering seemed like a practical extension of my passion for making things. My extracurricular activities included programming, web development, creating electronic music, building the original Dick Smith electronics kit, and modding sci-fi video games.

Looking ahead, my goal is to push the boundaries of science fiction and make it a reality. I dream of civilisation venturing into the stars.

How did Andreas initially join Saber Astronautics?

What led to Andreas being offered a role at Saber Astronautics?

What additional responsibilities did Andreas take on as Saber Astronautics grew?

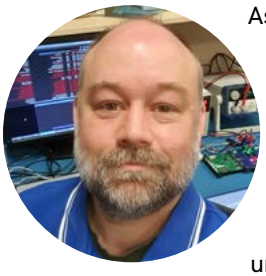
What is an essential skill required in the space industry according to Andreas?

The James Webb Space Telescope has observed the most distant galaxy so far detected. JADES-GS-z13-0 is 13.6 billion light years distant. Now that's a galaxy far, far away!

4b. Ben Martin

Role: Electronics Technician
Organisation: Inovor Technologies
Qualifications: Advanced Diploma of Electronics and Communications Systems Engineering

Employability Skills:
Adaptability, Time Management, Technology, Problem-solving, Logical



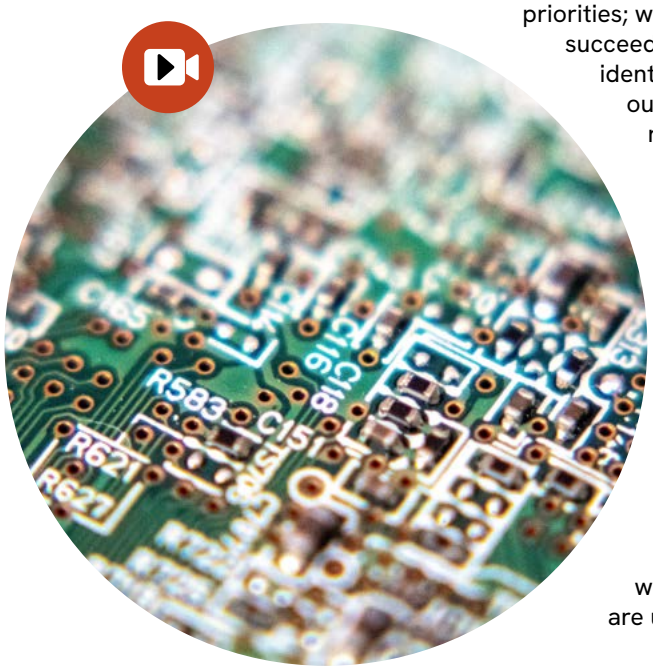
As a kid I loved figuring out how things worked. I'd disassemble my toys to see what was inside. I don't think that love of exploring things ever went away. I also enjoy working with computers. There's so much they can do; all you have to do is "google it". I eventually figured out that studying electronics might align with my hobbies, and in the process, I may be able to start a career in a field that interests me.

I had no idea what I wanted to do in high school. I think deep down I knew a STEM job would align with my interests, but I couldn't see myself in any specific role. It wasn't until I was in my twenties that I decided electronics might suit, so I enrolled in TAFE to see how I liked it. It was the right choice because this led me to the last 15 years building my career, learning and working with electronics.

My first electronics job was during my studies at TAFE. Gaining experience, I worked part-time at a local manufacturer, assembling and testing products. Near the end of my diploma, I landed a full-time role as an assembler at a smaller electronics company. I aimed to progress into a more advanced position, which was exactly what happened. I tried several roles in different departments until finding my fit in the testing department. Over the following years, I honed my skills.

I've been working in the manufacturing industry in South Australia for over 15 years. I felt I needed to stretch my capabilities and experience another side of electronics. The Space Industry sounded like the perfect place to accomplish this, so when the opportunity at Inovor Technologies presented itself, I jumped at the chance to be part of this upcoming company.

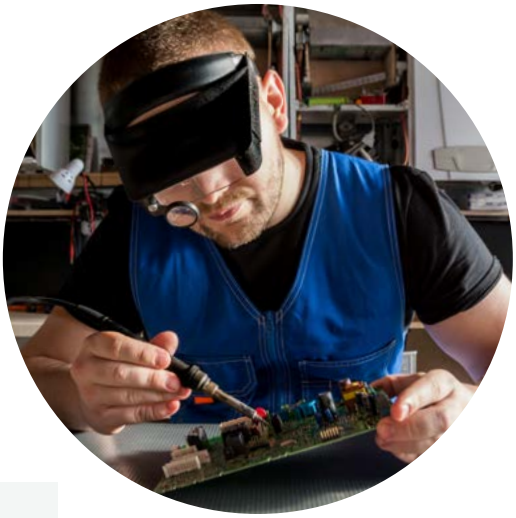
As part of the Electrical Team at Inovor, we're responsible for the electronics hardware in our Cube Satellites. Our team shares responsibilities depending on the day's priorities; we're all focused on ensuring the projects at Inovor succeed on time, whatever it takes. Part of my role involves identifying and implementing solutions to optimise our assembly, manufacture and testing process. I'm responsible for developing and implementing testers and process improvements from the ground up.



As an Electronics Technician it's advantageous to be adaptable. Some days I'll be manufacturing printed circuit boards for our range of Cube Satellites, the next I might be functionally and formally testing another module we've made in-house. I'm currently working on designing and building the hardware and software for several testers we'll use to automate our processes. The dynamic environment here at Inovor keeps me interested and on my toes.

Working in this industry requires a growth mindset. I will never know everything about electronics, but that's a good thing! It means I can always learn more! A will to learn, logical mind and good problem solving skills are useful skills in my role.

Careers in Space



I chose this industry because it interested me. I quickly found South Australia is a great place to work in electronics and it's getting better every year. Electronics manufacturing and the space industry are alive in Adelaide! If you're passionate about engineering then knuckle down, learn as much as you can at school, TAFE or University and follow your dreams.

What are some of Ben's daily tasks?

What was Ben's first job while studying?

How long has Ben been working in the manufacturing industry?

What is Ben's current position at Inovor Technologies?

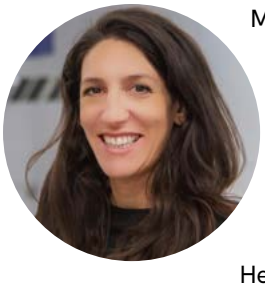
What does Ben suggest you do if you're passionate about Engineering?

4c. Chloe Leclerc

Role: Chief Marketing Officer
Organisation: Fleet Space
Qualifications: Master's degree in International Business

Employability Skills:

Multilingual, Research, Written & Verbal Communication, Leadership, Collaboration, Technology



My journey began in communications at the AIRBUS Aviation manufacturing plant in China. Returning to Europe, I joined AIRBUS Headquarters, assuming responsibility for global communications activities, then transitioning to overseeing product marketing for satellite-based earth observation services. This role honed my ability to translate intricate technical knowledge and services into actionable strategies, catering to a diverse range of commercial sectors.

My next venture led me to the position of Head of Marketing and Business Development. Here, I expanded my focus to include satellite telecommunications and navigation, blending satellite data with Artificial intelligence capabilities. When I relocated to Australia, I observed the dynamic nature of the local space industry and recognised an opportunity to contribute my expertise to benefit the country I now call home. This realisation motivated me to apply for the role of CMO at Fleet Space Technologies.

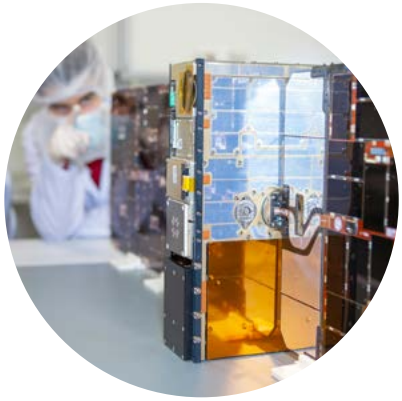
As I kick off my day with a cup of coffee, I dive into the latest industry news and trends. This info helps us make smart decisions, adjust our strategies, and spot new opportunities in the market. Market research is a big deal for me and I believe this is a key value added from a marketing department. We dig into customer insights, conduct research, and keep an eye on industry trends.

As the CMO at Fleet Space Technologies, I am responsible for driving our marketing strategy and managing our reputation, and also contribute to decision making processes that impact the entire organisation. One of my key strengths lies in leading a diverse team. Within this team, we have individuals from various backgrounds and experiences, each bringing their own valuable perspectives. This diversity of thought enables us to think outside the box and approach challenges from different angles. I absolutely love my current job as the CMO at Fleet Space Technologies. Anything can happen. It's a fast-paced environment where new priorities can pop up any time. Whether it is my direct marketing team, or the leadership team I am part of, I'm surrounded by some of the smartest, most talented people.

Strategic thinking is at the heart of everything I do. It's all about developing and executing marketing strategies that align with our business goals and drive growth. Analytical skills come into play here. Creativity is another key skill that I rely on daily; it is what helps us make a lasting impact.

Communication is a vital skill for any CMO. From presenting to Board meetings or in public forums, I ensure that our brand's message is clear, compelling, and resonates with our stakeholders. Leadership is also an essential aspect of my role, providing guidance, support, and fostering a collaborative work environment. Lastly, Adaptability is crucial. I need to be flexible and ready to embrace new challenges and opportunities.

Careers in Space



The beauty of this profession is that it allows me to combine my creative instincts with a structured approach. You don't necessarily need the typical engineering or science background to thrive in this industry. Like me, you can enter and learn from some of the most brilliant minds in their respective fields. Australia is making significant strides in attracting exceptional talent from around the globe, and this is where the magic happens. So, go ahead, dive in, and be a part of this incredible journey. The possibilities are endless, and we're excited to have you on board!

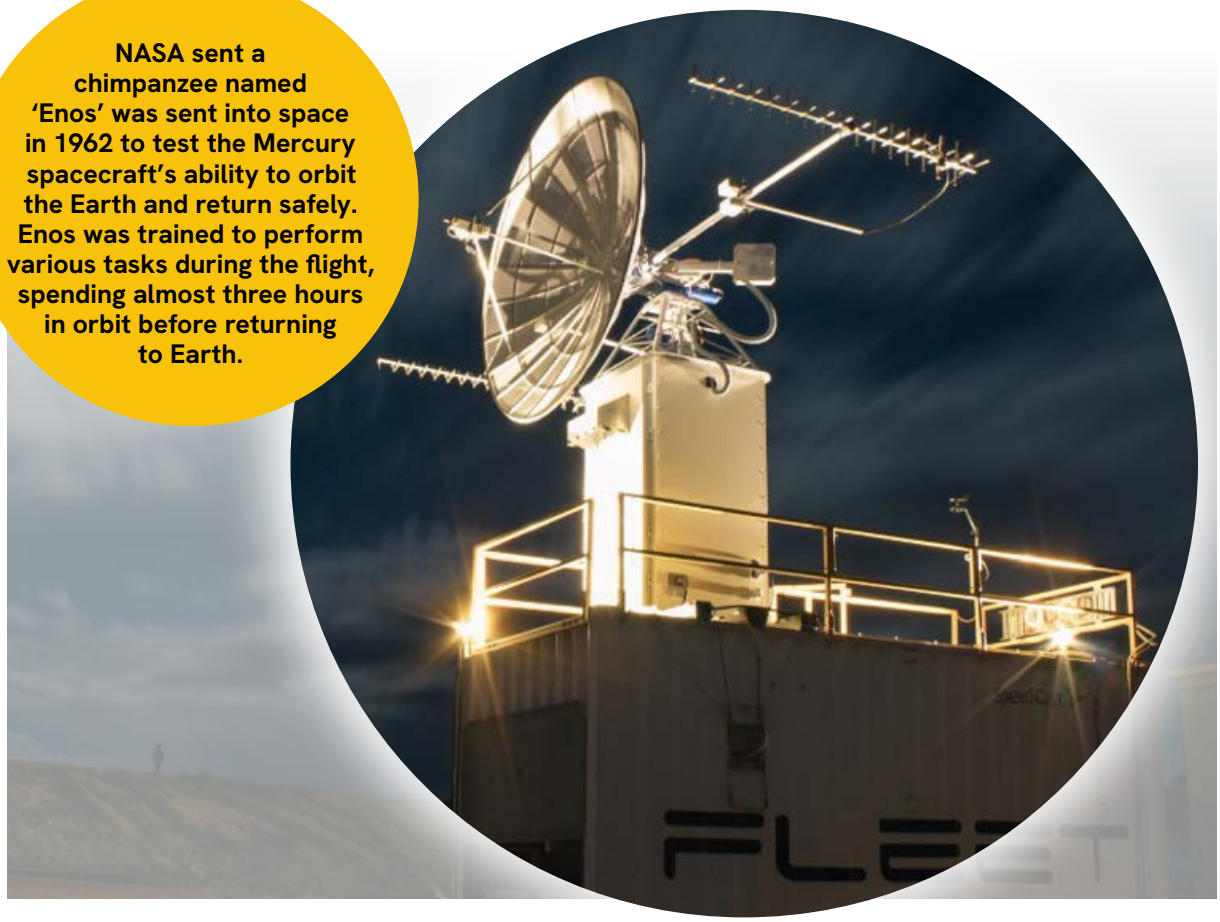
Where did Chloe's career journey begin?

What is one of the key strengths of Chloe and her team?

What are the five skill sets Chloe requires for her role?

What advice does Chloe give for anyone thinking about working in the industry?

NASA sent a chimpanzee named 'Enos' was sent into space in 1962 to test the Mercury spacecraft's ability to orbit the Earth and return safely. Enos was trained to perform various tasks during the flight, spending almost three hours in orbit before returning to Earth.



4d. Daniel Floreani

Role: Director
Organisation: CyberOps
Qualifications: Science Degree, Engineering Degree and a PhD

Employability Skills:
Entrepreneurial, Technical, Interpersonal, Leadership, Communications

When I was at school I wanted to be an astronomer and a fireman. I decided that whilst science was great, being an engineer was far more likely to result in a job that paid well and allowed me to make an impact.

I went from school to university for 5 years, then worked for 2 years in manufacturing, before returning to university to do my PhD, I spent 10 years at university getting my PhD, which later in life has rewarded me greatly. This led to getting a Defence job, and from that a global job in a large multinational, travelling the world and putting the Internet into Space. Finally I founded a company with a friend to deliver space and cyber services globally.

I founded the CyberOps company. In previous roles I applied for space-related positions based on the fact I already had experience in space technology and services which made it natural for me to want to use my experience in the domain. Prior to that, I became interested in the space industry as I was always fascinated in astronomy. I have been working in the field now for 25 years.

Careers in Space

At CyberOps we are responsible for providing quality analysis of systems and creating reports with meaningful advice so that our customers can increase the security posture of their systems and processes. This is a mix of technical and people skills when it comes to delivering these services.

Working in the intersection of space and cyber is a fascinating area, as its quite new and the global ecosystem is developing currently before our eyes. It also has the potential to grow exponentially in the coming years, as there is a growing awareness of space cyber activities globally.

In our business we value equally both detailed technical skills and those with very good interpersonal skills. In some cases we need people with a mix of both. We value those with space knowledge that can be applied to cyber, and those with cyber skills that can be applied to space. In all cases we value people who can take knowledge of issues and apply them to how it may apply to particular business outcomes.

My advice to anyone thinking about working in the industry is to learn communication skills. The smartest people who can't explain their ideas are great, but they can't make an impact unless they can impart those ideas to others. Work out what you want to do, and why you want to do it. In cyber for example, there are many pathways. Employers that want to know which pathway you can do now, and what you wish to do in the future.

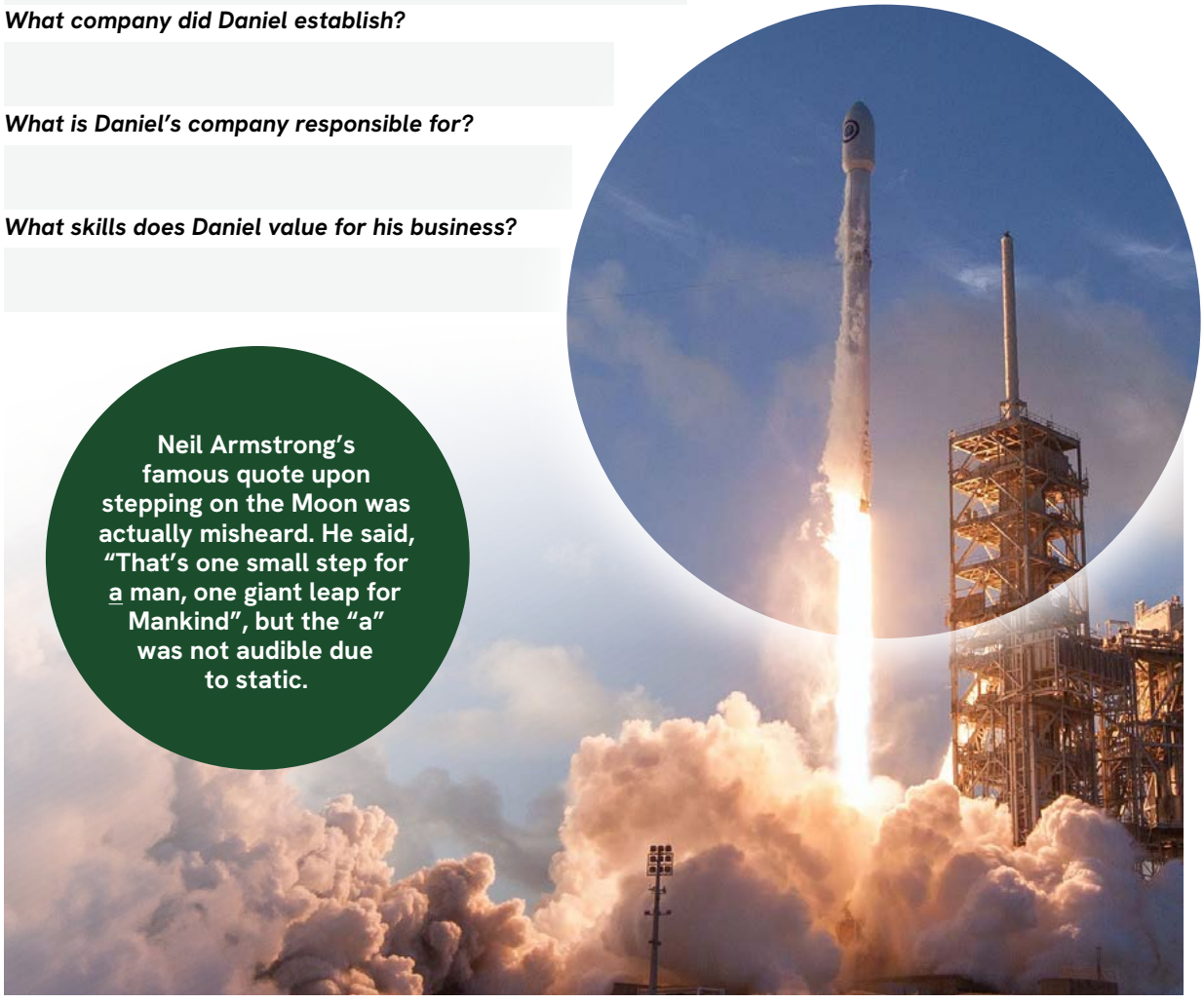
Running a company is exhausting, but very rewarding, so I plan to stay doing this for quite a while.

How many years at university did it take Daniel to get his PhD?

What company did Daniel establish?

What is Daniel's company responsible for?

What skills does Daniel value for his business?



Neil Armstrong's famous quote upon stepping on the Moon was actually misheard. He said, "That's one small step for a man, one giant leap for Mankind", but the "a" was not audible due to static.

4e. Mandi Dimitriadis

Role: Director of Learning
Organisation: Makers Empire
Qualifications: Education Degree

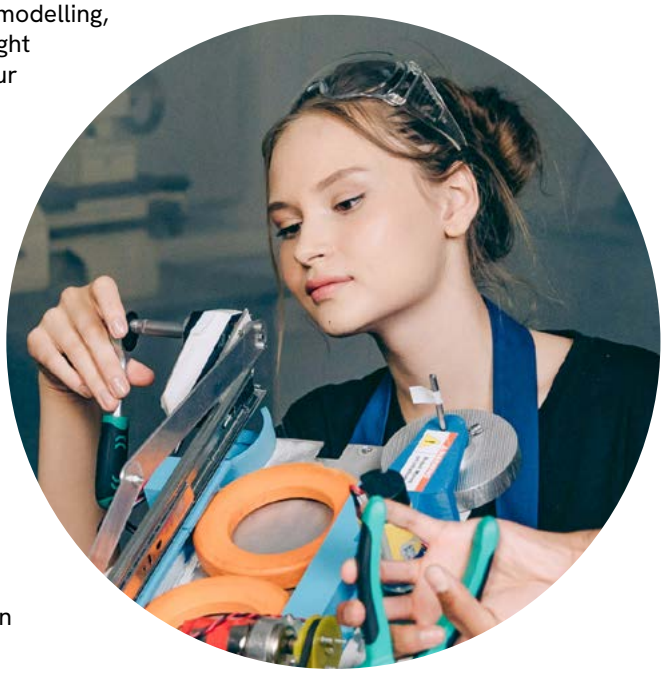
Employability Skills:
Communication, Technical, Problem-solving, Collaboration

I always knew that I wanted to be a school teacher and help young people. I always enjoyed working with children, so I did a lot of babysitting and volunteering. My Dad was a science teacher, so I was always interested and curious about how the world works, too.

I went straight into university to study education when I left school. I have an education degree which allows me to be registered as a teacher and recognised as an education specialist when I am working with schools and other organisations.

Having worked as an educator for over 30 years, I've always been passionate about helping young people reach their potential and dream big about future opportunities. I'm committed to using new and emerging technologies to help solve problems, develop skills, and ensure equitable access to learning experiences and opportunities. I saw Makers Empire as a ideal opportunity to combine my experience in space education programs over the past 5 years.

I spend my days helping school students and their teachers learn in exciting ways. I develop learning programs based on 3D modelling, 3D printing, design thinking, and problem-solving. You might find me at my desk developing materials, working with our tech team to create in-app challenges, such as our Kids in Space National Challenge, or you'll find me out in schools working with students and teachers.



As an educator working in an Ed Tech company, my main role is to ensure the educational quality of the products, programs, and services we provide. When we are developing space education programs, I need to work closely with space industry experts to ensure the programs are factual and rigorous. I also have to draw on my knowledge of curriculum, pedagogy and design programs that meet the needs of teachers and students.

I love being able to reach so many young people around the world and inspire them to reach for the stars. It is so exciting to see students finding a passion for an exciting area such as space, solving problems that matter to them, and becoming creatively confident design thinkers.

I need to have excellent communication skills for my role. I need to be able to talk with people from a huge range of backgrounds and develop collaborative relationships very quickly. I need to be creative and find new ways to solve problems and get things done. I also need to be extremely flexible and adapt quickly when priorities change.

Careers in Space

My career journey include:

- Becoming a permanent teacher in the Government system
- Gaining experience as a Museum Educator
- Being asked to be a curriculum consultant
- Working in state-wide curriculum and pedagogy roles
- Joining an Ed Tech company as the Director of Learning

I encourage young people to look closely at the space industry. There are so many different opportunities that we might not be aware of. Australia's ongoing success in the space industry is going to depend on having people in many different roles with many different skills and experiences. I never would have thought that my career as a teacher would connect to space in the ways it has!

What were the career steps Mandi took to get to her current job?

What are Mandi's day to day duties in her current role?

What does Mandi love most about her current role?

How many years has Mandi worked as an educator and what are her qualifications?

4f. Nick Manser

Role: Satellite Systems Engineer
Organisation: SmartSat CRC
Qualifications: Bachelor of Computer and Information Science and a Master of Computer Science

Employability Skills:
Technology, Learning, Communication, Problem-solving

I have always loved computers and therefore always wanted to "do something" with computers. I couldn't have possibly known that I would end up where I am today when I was in Year 10, as the space industry didn't even exist in Australia. However there is no place I would rather be.

I went straight from high school to university. Towards the end of my degree, I was done with studying and keen to start working in the industry, so I ended up deciding not to complete my honours year. I felt I needed more experience before I could make a meaningful contribution to research.

I graduated from the University of South Australia with a Bachelor of Computer and Information Science and started my career in space in 2010, working as a graduate researcher in satellite communications at the Defence Science and Technology Group. I learnt everything about Satellite Communications on the job through being deeply immersed in the technology, surrounded by experts who were willing to share their knowledge, and asking lots of questions.

When I heard that SmartSat CRC was looking for a Satellite Systems Engineer to help build South Australia's own satellite – known as Kanyini – I knew I had to be involved. Kanyini will be used to collect data to help improve the lives of people on Earth as well as providing a testbed for onboard processing and running artificial intelligence algorithms in space. My combination of skills and experience in both space and computer science seemed to be the perfect fit for this role.

There is no typical day as my job involves solving unique challenges, and each day brings a new challenge to solve. The only things that are constant each day are collaborating with my peers and learning something new. I love learning! Space is a very complex environment, and my role is incredibly diverse. Space is also an inspiring field to work in as I believe it represents the very best of what humanity can achieve when we put our minds to it and work together to solve problems.

Technical skills are essential, but I have come to realise that communication skills are even more important. Systems engineering involves understanding multiple complex systems that are often someone else's, and getting them to work with your own. It's important to talk to all the stakeholders and keep everyone informed, to ensure the system is not only developed right, but the right system is developed. A natural sense of curiosity and a willingness to learn are also vital skills for system engineers.

Space is a journey, not a destination. The space industry needs people with a diverse range of skills from all walks of life. Find where your passion lies, do what you love and then work out how it can be applied to space.

Nick's work days are always different, but what are the two constants?

How did Nick acquire knowledge and experience in satellite communications and space systems engineering?

What motivated Nick to join the SmartSat CRC and contribute to building South Australia's satellite?

4g. Tom Grace

Role: Space Weather Forecaster
Organisation: Bureau of Meteorology
Qualifications: Doctorate in Nanotechnology

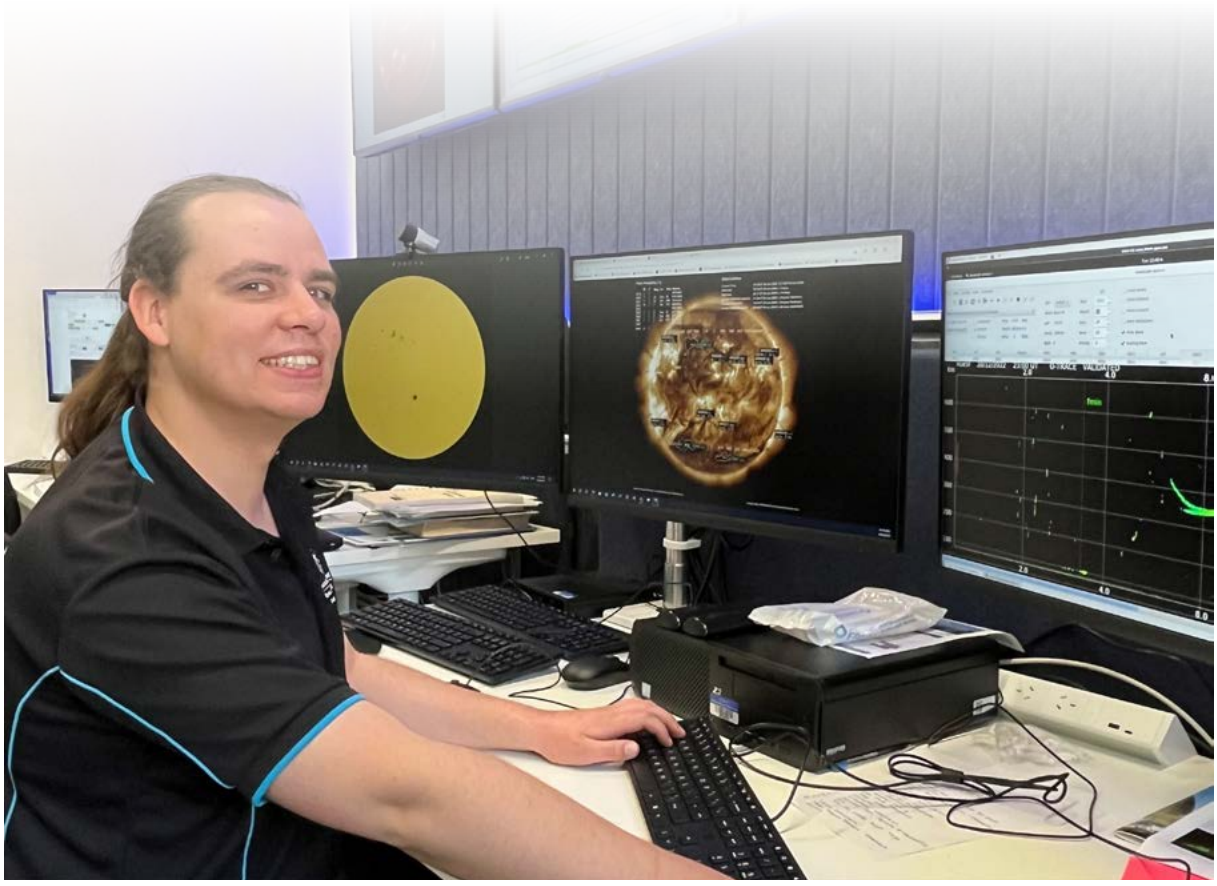
Employability Skills:

Analytical, Written & Verbal Communication, Time Management,

Throughout school I never really had any substantial career goals in mind. I enjoyed science and maths, so I always assumed I'd end up in those fields somewhere, but I never thought about anything definite. Although, if you'd told me then I'd be working in space weather I would have been happy to hear it that's for sure! Space has always been a fascinating field for me.

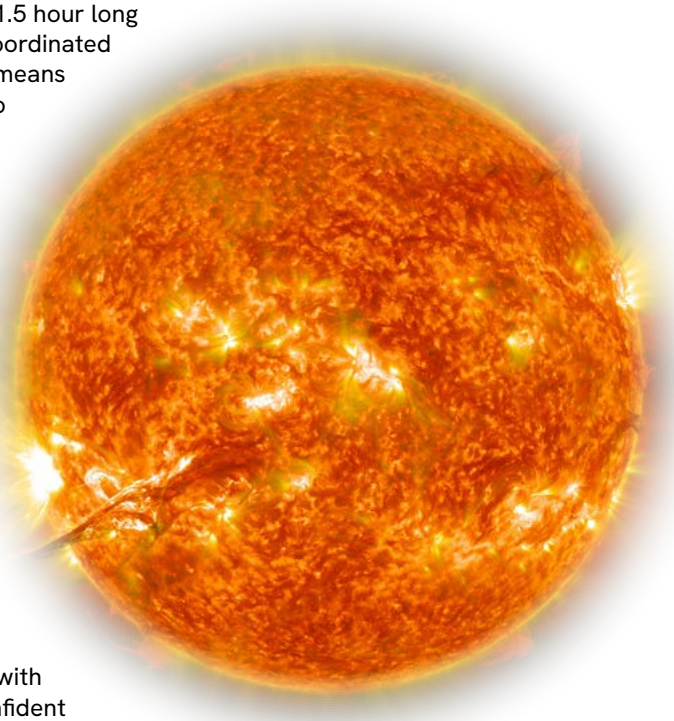
My career journey is only just beginning. I went from a casual teacher/outreach ambassador at university, to a casual space communicator, to a full-time space weather forecaster. Each of these transitions was a key milestone for me and allowed me to build my skill sets in different ways. Another key milestone was publishing my thesis. My doctoral degree was the toughest period of my life, but it allowed me to learn a lot about myself and how to get the best out of me.

Throughout my post-graduate study, I had the opportunity to work in various science communication roles. I really enjoyed the experience in taking complicated science data and presenting it in a way that was interesting, engaging, and understandable. After graduating university, I worked in a casual position with the Australian Space Agency. When I saw the job of 'Space Weather Forecaster' advertised with the Bureau of Meteorology I jumped at the chance.



Careers in Space

My working days are split between normal 9-5 shifts and 11.5 hour long forecasting shifts. During a 9-5 shift, I start at 8:30 pm in Coordinated Universal Time (UTC) or Greenwich Mean Time (GMT). This means our working times change when daylights savings come into effect! The vast majority of space weather is caused by the Sun, so this is my focus during this analysis. I use this information to write daily forecasts which we issue at 11:30 pm UTC. I spend the rest of the time working on various projects whilst keeping an eye on the sun. If any significant space weather happens during the day, it's my job to get abreast of it, let important people know and put out warnings to our customers.



When I'm on forecasting shifts it is my responsibility to be aware of the space weather conditions over the Australian region of the globe. For example, we monitor sunspots because larger, more complex sunspot groups are more likely to produce solar flares. Solar flares can disrupt radio communications on Earth, but more importantly they can herald that something more significant is happening.

The main skill that is required to be a space weather forecaster is to be able to analyse lots of data, sometimes with missing information, to produce a forecast that you are confident about. This skill requires lots of experience and knowledge about space weather so it's essential that you are keen to learn! Alongside these skills are the need to be able to write well and work on tasks independently at times.

It's very exciting to work in the space industry. The main thing for me, however, is knowing that I'm performing an important service for people all around Australia and beyond. Our society is more vulnerable to space weather than ever, so it gives me great pleasure to know I'm party of a team keeping us safe. There are many jobs out there for a whole range of skill sets and interests. You can absolutely find a place in space that works for you.

What is the main skill that is required to be a space weather forecaster?

What does Tom enjoy about science communication roles?

What does Tom sometimes monitor that can disrupt communications on Earth?

4h. Zandria Farrell

Role: National Manager, Space. National Security and Space Program
Organisation: Bureau of Meteorology
Qualifications: Bachelor of Archaeology (Honours), Chemistry for conservators, Post Grad in Environmental Management and the International Space University's Southern Hemisphere Space Studies Course

Employability Skills:
Technology, Strategic Thinking, Interpersonal Skills, Written and Verbal Communication Skills

In Year 10, I wanted to be a scientist and a geologist. I also wanted to be an inventor, as well as a National Geographics photographer as my side gig.

I think my wide scope of interests probably created the issue of liking too many different things rather than helping me with a career choice! I was playing sport, doing art and dancing. I also enjoyed rock collecting and making things. I also loved playing the Computer – specifically T.O.M an invention/mechanical problem solving game.

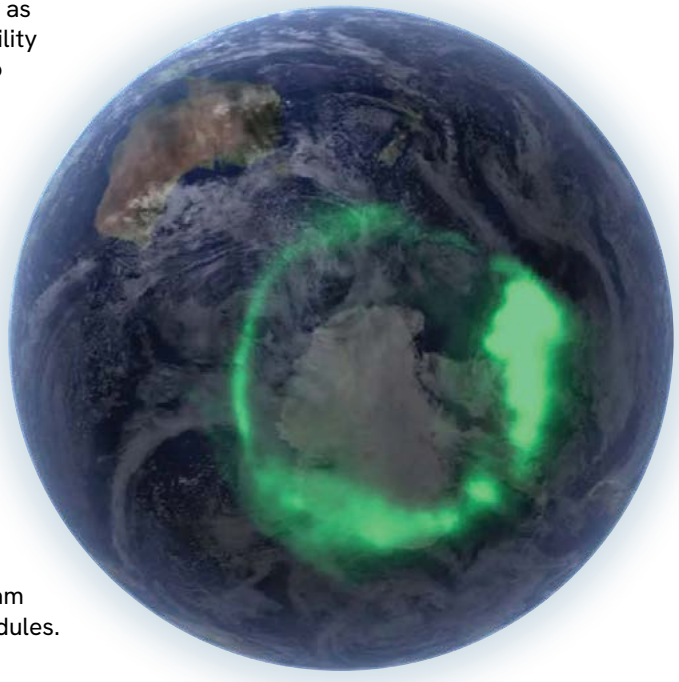
I transitioned from high school directly into university and continued studying to complete my Bachelor of Archaeology (Honours).

I've always had a desire to learn more, and be involved in interesting and meaningful work. I think that was the main reason why I applied for the Australian Space Agency. It sounded amazing, and it would allow me to be involved in the many aspects of STEM I was drawn to as a child. I suppose that initial curiosity has now led me to have a career in space.

I first joined the space industry in 2018, when I won the role of International Engagement Lead for the Australian Space Agency.

My initial role at the Bureau of Meteorology was as the Space Industry Lead for Space Weather. I applied for this role because I saw a great opportunity to be involved in an area of the space sector (space weather) that impacts so many aspects of space. Being able to focus on space weather, and increase the Australian Space Sector's understanding and awareness of space weather impacts both on the ground and in the near-earth environment, was exciting.

This role provided a stepping stone into my current role as National Manager, Space, which allows me greater visibility of the Bureau's other space touchpoints. It allows me to take on opportunities and establish the Bureau's own spaceflight support capability. The development of such targeted capability excites me, as it connects the Bureau's expertise in meteorological and space weather, supporting a successful and safe space.



Every day is different, and most days are very busy! But on a typical day I will attend internal meetings to support the development of a Bureau-wide approach to space, I will respond to external agency requests for information and provide briefings to the Bureau's Senior Executive relating to space. I also represent the Bureau at industry events and present to external stakeholders, participate in STEM activities, all to increase the awareness about space weather and terrestrial weather impacts on the space industry. Currently I am undertaking the Bureau's meteorological training and I am doing self-paced space weather forecaster learning modules.

The major responsibilities of my role are divided across three areas of focus: Establishment of the Bureau's spaceflight capability; development of a Bureau wide space strategy; and general space engagement with Commonwealth partners and key industry.

Essential skills for my role: An ability to understand complex technical information, and then the ability to simplify this complex information into simple straightforward content; excellent interpersonal, written and verbal communication skills; strategic thinking and opportunity mindset – you need to see the big picture, and understand the larger context to know where you can play a meaningful role.

People are often surprised that I went from studying Archaeology to working in the space industry. My career path has been anything but linear. A significant milestone that reassured me was the acceptance into the Commonwealth Department of Environment graduate program. It provided an incredible opportunity to explore various areas of interest and gain valuable skills and experience that have contributed to my success in the space industry.

Advice to anyone thinking about working in the industry, I would tell them to give it a go! There is space for everyone here in the space industry and there are opportunities for all skillsets. I think the more diversity we draw into the space industry, the more successful it will become. Bring your perspective, bring your skills and be ready to be involved in some amazingly exciting stuff!

What were some of the different career interests that Zandria had in Year 10?

How did Zandria's wide range of interests impact her career dcision-making process?

What motivated Zandria to apply for a role at the Australian Space Agency?

How did Zandria's initial role at the Bureau of Meteorology contribute to her current position as National Manager, Space?

5. Study Table

Use this table to discover more about possible pathways to a career in the Australian Space sector. Choose 8 jobs from the ASA Careers in Space booklet https://www.industry.gov.au/sites/default/files/2022-11/careers-in-space-booklet.pdf and use the job information from the booklet and also www.myskills.gov.au to help you find the information and complete the table. Information for the first job in the table has been completed for you. The Careers in Space booklet can help you find out more about where your passions and interests can take you in the Australian Space Sector, and www.myskills.gov.au can help you find nationally accredited courses to start your journey. Remember that these are just *some* of the possible pathways that are out there, and they don't take into account your specific wants and needs. For a more detailed pathways discussion, speak to your school's Career Department.

JOB	DESCRIPTION	SPECIALTY AREAS	FURTHER SPECIALTY AREAS	STUDY PATHWAYS			MEDIAN AUSTRALIAN SALARY	
				VET Pathway (Certificate level courses, Diploma, Adv. Diploma, etc.)	**Bachelors Degree/ Honours**	**Post Graduate Study** (Masters, PhD)	**Entry Level**	**Experienced**
Space Systems Engineers	*Design, build and test spacecraft, launchers and ground-based systems.*	*Analysts, System and Subsystem Leads and* *Subsystem Architects*	*Aerothermodynamics, Operations, Payload types such as radar and optical*	***Visit www.myskills.gov.au and search for a relevant course. This can become a pathway into a University Degree if you choose.*** *Cert II-IV in Engineering, Cert IV in Electrical Equipment and Systems, Diploma of Engineering - Technical, Advanced Diploma of Instrumentation and Control Engineering*	*Bachelor of Engineering (Honours) (Mechanical),* *Bachelor of Engineering Honours (Mechanical and Mechatronic),* *Bachelor of Engineering (Mechanical and Advanced Manufacturing)*	*Aerospace Engineering study recommended for higher level industry and research jobs*	*$72,000*	*$140,000*

Careers in Space

JOB	DESCRIPTION	SPECIALTY AREAS	FURTHER SPECIALTY AREAS	STUDY PATHWAYS			MEDIAN AUSTRALIAN SALARY	
				VET Pathway (Certificate level courses, Diploma, Adv. Diploma, etc.)	**Bachelors Degree/ Honours**	**Post Graduate Study** (Masters, PhD)	**Entry Level**	**Experienced**

Careers in Space

JOB	DESCRIPTION	SPECIALTY AREAS	FURTHER SPECIALTY AREAS	STUDY PATHWAYS			MEDIAN AUSTRALIAN SALARY	
				VET Pathway (Certificate level courses, Diploma, Adv. Diploma, etc.)	**Bachelors Degree/ Honours**	**Post Graduate Study** (Masters, PhD)	**Entry Level**	**Experienced**

6. Identifying Your Strengths

It's not always easy to know what our strengths are. Some might be easy to spot, like regularly doing really well in a subject at school, while strengths like problem solving, creativity or resilience can't always be graded. When it comes to your career (remember your career is not just what you do for work!) knowing what your strengths are, and just as importantly, what you need to improve on, gives you control and can help you navigate hard decisions.

Read through the ASA ***A Space for Everyone*** posters https://www.industry.gov.au/sites/default/files/2022-11/a-space-for-everyone-careers-in-space.pdf and find out where your strengths could lead you. Record the strengths needed, suggested school subjects and possible space careers in the table below. Think about the skills required and whether you have these already, or if you need to work on any. Don't forget to explore the discover.space.gov.au site to find out even more!

Job cluster	Strengths	School Subjects	Space Careers
Communicator			
Doctor			
Engineer			
Lawyer			
Scientist			
Techie			
Technician			

7. Jobs in space

7a. Jobs in space quiz – A group activity

For this activity you will need access to you own device. This activity involves individual, group and suggested class activity. Have fun exploring!

You've been successful in your application to the International Lunar Base.

Together with representatives from around the world, you've been selected to be part of the next phase of settlement on the Moon. In the coming days you will launch into space toward your new lunar home, with a full induction awaiting you upon landing.

To help us assign you to your new role on the Base, we have a short quiz to help us understand your strengths and interests.

We look forward to you joining our team on the Moon.
Sincerely, the Australian Space Agency

The quiz will take a couple minutes to complete – Take the Quiz

1. According to the Quiz, what career might you be suited to ?

2. Do you agree with this suggestion? If so why/why not?

3. Suggested careers are located at the end of the quiz. What are they?

Break into small groups (approx. 4-5 students and work through the below questions as a team). Within your group share what career you might be suited to.

Choose from one of the suggested careers, as a group, that you would like to explore further. You will find all the answers for the next few questions via the other careers suggestions at the end of the quiz.

Write down which career you will explore as a group:

4. What are the 3 key skills that are listed for your suggested career?

Careers in Space

Time to launch your group into learning more about the suggested career pathway.
Click on the title of the suggested career.

5. What are the suggested school subjects for your chosen career?

Are there any other subjects that you are currently studying that could assist in pursuing this suggested career pathway?

6. As a group, take time to look at the suggested jobs. You can view a more comprehensive list via the Australian Government website (Department of Industry, Science and Resources) https://www.industry.gov.au/australian-space-discovery-centre/pathways-career-space
7. As a group, research 3 facts that you have found that you would like to share with the class, to encourage others into exploring that career as your suggested space pathway.
8. Each group takes 2 minutes to present findings to the group.
9. As a class, take a poll by asking your class to raise their hands to write down how many of were recommended to the same or other suggested pathways:

Suggested Space Career	**Question:** *How many other students had the career pathway suggested?*	**Question:** *Based on the class discussion on the skills and interests how many would prefer to explore a suggested space career?*

10. Do you see a trend in suggested careers within your class? Is this surprising to you and if so why/why not?

Now that you have completed the Jobs in Space Quiz, read more about
Andrea, a Space Communicator, Dancy, a Space Technician, and Sarah a Space Engineer.

7b. Andrea Henderson

Role: National Manager, National Security & Space Operations (acting)

Organisation: Bureau of Meteorology

Qualifications: Graduate Diploma in Meteorology, Graduate Certificate in Management, Bachelor of Science with First Class Honours (Mathematics)

Employability Skills:

Leadership, Communication, Problem-solving, People Management Skills, Strategic Thinking, Project Management & Financial Management

For many years I've been actively involved in the work of an expert team under the World Meteorological Organisation (WMO), focusing on education, training and competencies for aviation services. Recently, our attention has shifted towards space weather services, which share safety concerns with traditional meteorology. This role provided insights into Australia's engagement in space weather services, as part of a consortium, working alongside Canada, Japan and France. As a leader, I prioritise listening to my team, effectively communicating, and understanding key priorities on where to focus our efforts. Within the WMO, I regularly participate in online meetings with global experts. The work remains exciting, and we strive to make a significant impact in the international community.

As the National Manager of National Security and Space Operations, I am primarily responsible for approximately 36 staff members. Some of my main duties include:

- ensuring our operational products and services meet the needs of our customers
- managing strategic relationships with National Security and Space communities
- taking the lead on any Ministerial, Government or general enquiries on our National Security and Space Operations
- overseeing investigations into terrestrial and space weather-related incidents and requests
- and ensuring our workplace is healthy, safe, inclusive and representative of the diversity of the community we serve

I love the variety of the specialist science areas I explore. Science has always been my passion. Shift work didn't suit me well, but working in a scientific organisation offers accessible jobs, positive engagement, and encouragement for female leadership. I appreciate collaborating with amazing people and having the privilege to work with STEM superstars, picking their brains and testing new ideas together.

Key attributes for this role are:

- Problem-solving: having the ability to look at a problem from all angles
- Communication: both written and oral communication is critical
- People management skills: this includes being able to manage a team of people
- Strategic thinking: deal with day-to-day operational decisions

Overall though, my key role is one of leadership, therefore it is imperative I possess strong leadership skills, can define a compelling vision, communicate with influence and inspire the team to deliver according to the vision.

WORLD METEOROLOGICAL ORGANIZATION

Early on in my career, I worked under a strong female leader who exemplified professionalism with her skills, knowledge and respect from peers. Being in male-dominate fields like mathematics and

meteorology, I am pleased to say that my gender hasn't hindered me and has even brought more encouragement. Although I made professional sacrifices while focusing on my family, maintaining networks and utilising flexible working arrangements allowed me to regain momentum as my children grew older. I've approached my career by addressing gaps, identifying areas for improvement, and pursuing opportunities with these key questions in mind.

My advice to others starting out on their career journey is to follow your passions, but be open to new ideas. If you're like me and you like to make plans, don't be totally inflexible on those plans, be willing to go with the flow a little bit, but always stand up for your passions. Find a trusted mentor who is well-connected in your chosen industry and can invest in your professional development and advocate for you. Finally, tap into industry networks – don't be afraid to make yourself known and put your work out there.

How did Andrea's involvement with the World Meteorological Organization (WMO) lead to her interest in space weather services?

What are some of the main responsibilities of Andrea as the National Manager of National Security and Space Operations?

What does Andrea find most rewarding about working in a scientific organisation?

How did Andrea navigate challenges related to gender and work-life balance in her career?

The famous Comet Halley, made of rock, dust and ice, is visible from Earth about once every 75-76 years. In 1986, it became the first comet to be visited by space probes. Japan, the USSR and the European Space Agency all sent spacecraft to explore it.

7c. Dancy Chan

Role: RF Engineer
Organisation: Inovor Technologies
Qualifications: Diploma in Electrical and Electronic Engineering and an Electrical and Electronic Degree

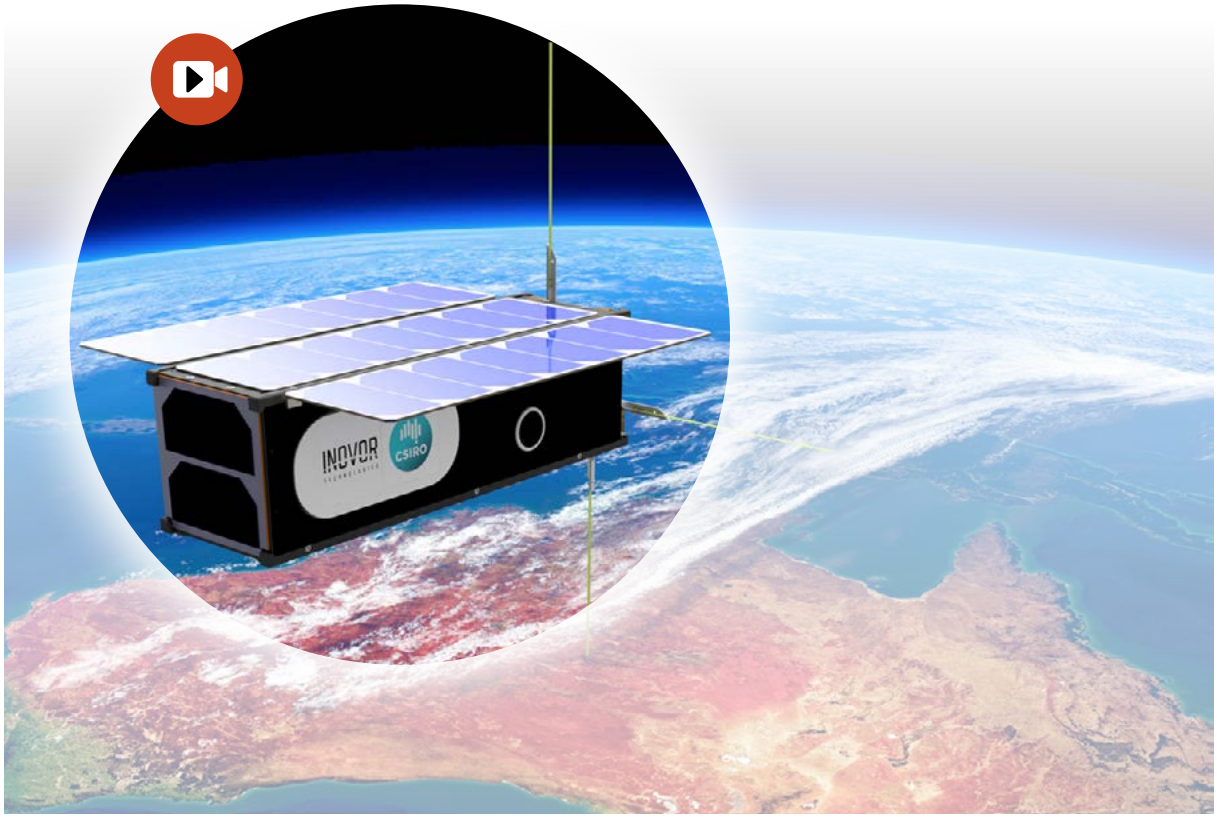
Employability Skills:
Practical, Communication, Methodical, Persistent, Analytical, Logical

My love for maths, physics and anything science at school led me to enrol in engineering. After high school I went on to college to get my diploma in Electrical and Electronic Engineering. I was then offered a place in the university to continue my studies for my Degree.

After graduating at University, I went straight into the workforce, working as a technician. From there I learnt the basics of doing rework and testing. Then next was a job as a graduate engineer. From experience, I eventually became an RF engineer, which led me to my current role as a RF engineer at Inovor Technologies. My skill set and past experience was a perfect match for the role and I can see that I'll be adding value to the company. I also learned that Inovor Technologies is a South Australia company and to be a part of it is something to be proud of. I have now been working in this field for 15 years.

A typical day in my role starts off with a stand up team meeting followed by working on design, work or research work. I also spend a lot of time in the electronic lab doing testing and product development work which includes troubleshooting and reworking on PCB's.

I am responsible for the RF frontend for satellite and ground station architecture and design, and technical problem solving. My role is challenging but working with a great team makes the work more enjoyable. Almost everything is made in house which gives us a lot of flexibilities.



Careers in Space

Skills essential for my role include: soldering for reworking electronics; understanding RF design; able to operate RF equipment such a spectrum analyser, RF power meter, vector network analyser and signal generator.

It is a great career with plenty of opportunities, especially in aerospace and telecommunication industries. It's challenging and rewarding at the same time. The industry is suited to someone who is methodical, persistent, analytical, logical and likes to work in a combination of office and field settings.

I love the industry and see myself continuing to be in the space industry for as long as possible.

What qualifications did Dancy gain at University?

What subjects did Dancy love at high school?

What are some of Dancy's responsibilities as a RF Engineer?

What are some of the skills required for a RF Engineer?

What are some of the attributes suited for the industry?

7d. Sarah Cirillo

Role: Mission Systems Engineer
Organisation: Inovor Technologies
Qualifications: Bachelor of Mechanical Engineering & Bachelor of Finance

Employability Skills:
Technical, Problem-solving, Collaboration, Communication, Attention to Detail, Project Management

A combination of factors led me to apply for this job. Firstly, I was ready for a change in my career and wanted to explore new opportunities. I had developed a keen interest in the space industry over time and felt a strong desire to be a part of it. Although I had previously considered opportunities overseas, I recognised that I had transferrable skills that could be valuable in Australia's space industry, despite not having direct experience in the field. This realisation gave me the confidence to pursue this career path and apply for a job in this industry.

As a systems engineer, I am responsible for designing, developing, testing, and maintaining the systems that enable a spacecraft to perform its mission objectives. A typical day for me involves some or all of the following:

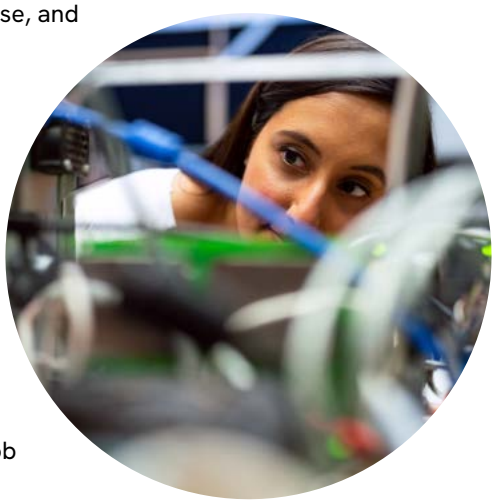
- Reviewing the requirements and specifications of the mission and the spacecraft
- Developing and validating the system architecture and interface
- Performing trade studies and analyses to optimise the system's performance and reliability
- Coordinating with other engineers and stakeholders to ensure the system meets the mission's needs and constraints
- Developing and executing test plans and procedures to verify and validate the system's functionality and performance
- Troubleshooting and resolving any issues or anomalies that arise during the system's development, integration, and operation
- Documenting and presenting the system design, development, test, and operation results

As a mission systems engineer, I have key responsibilities. I design and develop critical systems for space missions, collaborating with a multidisciplinary teamto translate objectives into technical specifications. I oversee the entire mission lifecycle, from design to testing and operation. My role involves selecting, integrating, and testing the components like spacecraft systems, sensors, and communication systems. I ensure seamless system functionality, meeting mission objectives and adhering to safety standards and project timelines.

In my current job, continuous learning is essential due to the constantly evolving fields of space.

Staying updated with advancements and industry trends is exciting, and I embrace daily opportunities to expand my knowledge and skills. Diverse projects inspire and enrich me, presenting unique challenges and goals. Strong system engineering skills are crucial for understanding projects holistically and coordinating subsystems effectively.

Careers in Space



Problem-solving skills are essential in my role, enabling me to identify, analyse, and resolve intricate technical issues that arise during projects.

- Strong communication skills are vital, as they enable me to effectively convey technical concepts, collaborate with multidisciplinary teams, and engage stakeholders
- Attention to detail ensures accuracy and reliability in designs, specifications, and test procedures
- Project management skills help me plan, prioritise, and coordinate tasks, ensuring projects are delivered on time and within budget

For anyone considering a career in the industry, I would offer the following advice: If you're a graduate, I strongly encourage you to apply. Immerse yourself in space activities, programs, and events to gain first-hand exposure to the field. Networking plays a crucial role, so connect with professionals already working in the industry and enquire about potential job opportunities within their companies.

Knowing what to do straight out of school or university is either an easy question to answer for some, or it's not. There's no wrong decision, but a decision you took in that moment based upon where you were, physically or mentally, who you had spoken with, or maybe you didn't decide.

What is Sarah's Job title?

What were a couple of factors that lead Sarah to apply for her current job?

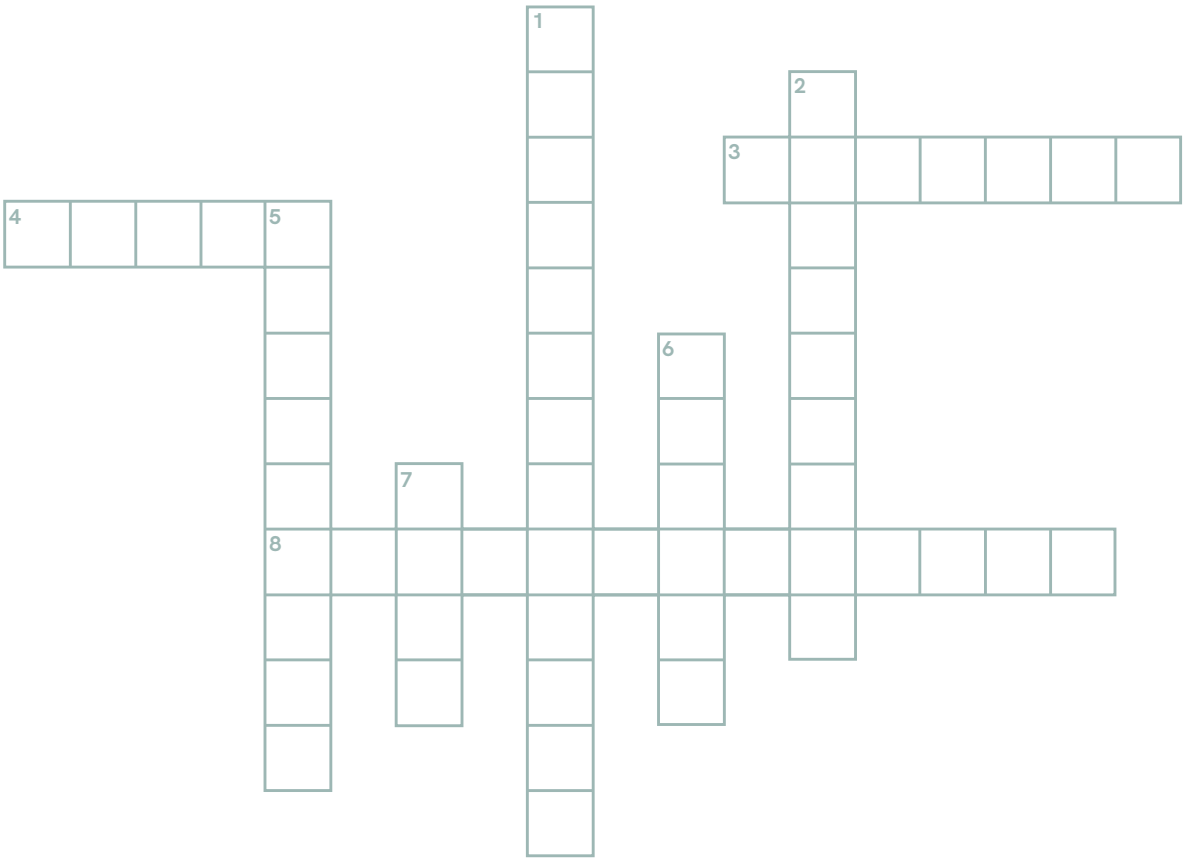
What are the responsibilities of a Mission Systems Engineer?

What kind of skills are essential for Sarah's role?

8. Crossword

Instructions:

1. Use the below clues to fill in the words
   (***Tip:*** look through the Careers in Space Workbook to find interesting facts)
2. Words can go across or down
3. Letters are shared when the words intersect

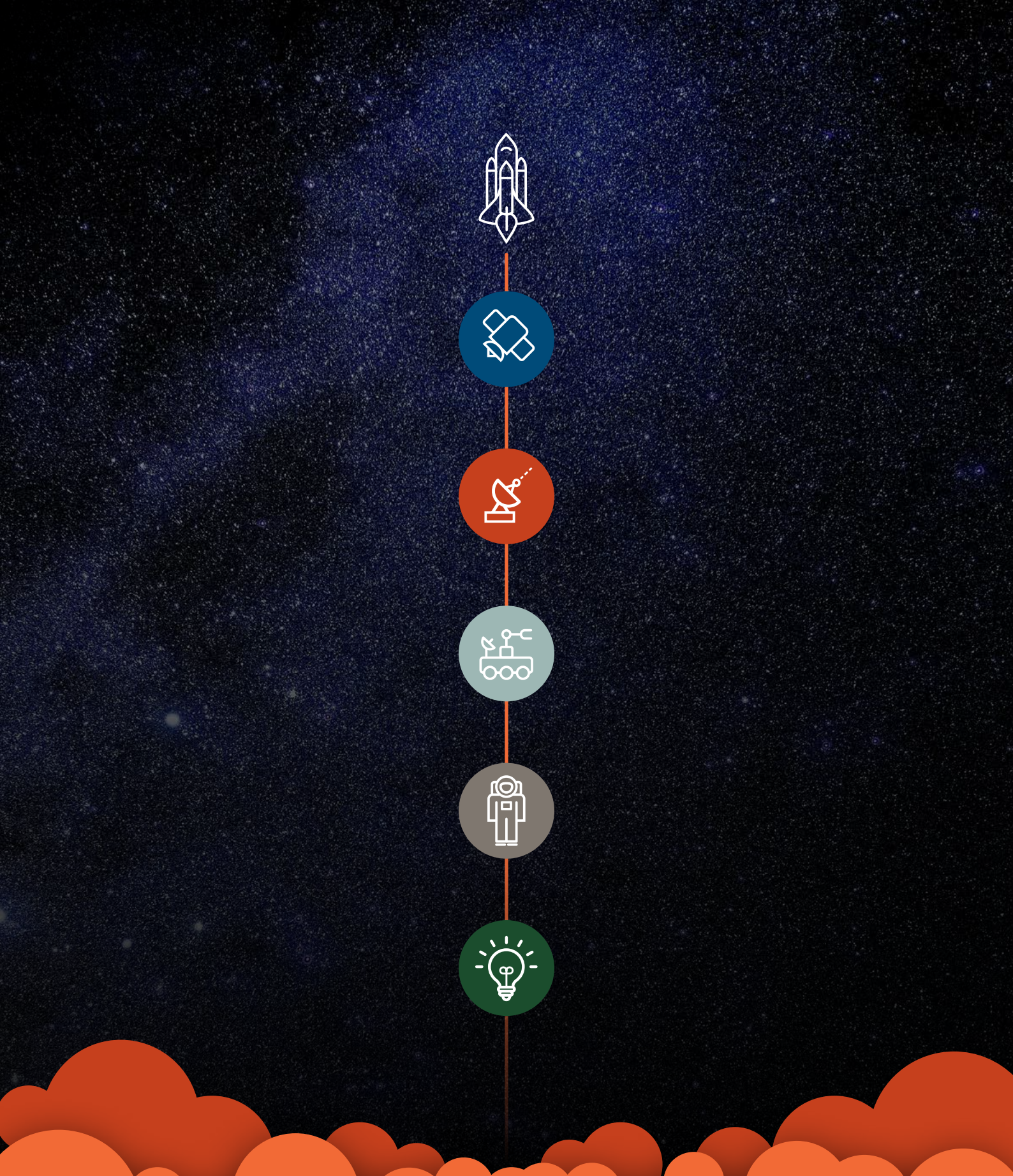


DOWN

1. The first man to walk on the Moon.
2. One of the key skills/strengths a space technician needs (clue: use 'A space for everyone' pdf document).
5. A device used to view distant objects in space.
6. A comet that is visible from Earth every 76 years
7. Who spent almost three hours orbiting the Earth?

ACROSS

3. The force that holds planets in orbit around the Sun.
4. A small, icy object that orbits the Sun.
8. A group of stars that form a recognisable pattern.



Australian Centre for Career Education

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TO FRONT PAGE