

# SIAA WEBINAR Q&A

Your career in Space... right here, right now

*Q&A from Webinar  
of 18 May 2020*

*CICA Industry  
Information  
Session*

## ABOUT THE EVENT

Tim Parsons and Julia Mitchell conducted an event for Careers Week 2020 – ***“Your career in Space... right here, right now - CICA Industry Information Session”***.

## EVENT SUMMARY

*Have you ever thought about a career in Space?*

*Tim and Julia want to take you on a trek... to places that you may not have imagined. Your mission, should you choose to accept it, is to explore possible careers in Space.*

*When you hear the word “space”, you are probably imagining astronauts and living on the International Space Station, and soon, travelling to the Moon and Mars. Yes! And for every astronaut and every space mission, there are thousands of jobs needed to be done right here on Earth too in one of the world’s fastest-growing high-tech industries: space.*

*And in Australia, the space industry is starting to grow fast. The demand for people with STEAM skills, including researchers, engineers (aerospace, electronics, mechanical and computer), data analysts and astronomers, as well as communicators, project managers and even salespeople are – post COVID-19 – set to increase dramatically.*

*Please join Tim and Julia as they share with you some of the emerging career opportunities, and the kind of skills, and areas of study to pursue, and even projects to join if you think this might be the career for you.*

*Organisation Profile - The Space Industry Association of Australia (SIAA) is a nationwide organisation formed to promote the growth of the Australian space sector. By formulating national policies and strategies, SIAA speaks with authority and credibility on behalf of its members to accelerate the growth of the Australian space industry.*

**Presenter Names - Dr Tim Parsons and Julia Mitchell**

## QUESTIONS FROM THE EVENT

Several questions were posted throughout the event and then emailed through following the event. This document forms a summary of the questions asked that were not explicitly addressed in the Webinar and responses from the SIAA. The question responses have been responded to by Julia Mitchell with the help of some other Directors as well. Please note the exact responses below often are a personal view and are not necessarily the view of the SIAA.

Where possible, questions have been responded to individually, however some questions may not be individually answered and instead batched up as responses pertaining to general categories.

## TABLE OF CONTENTS

QUESTIONS FROM THE EVENT.....	1
ABOUT THE SPACE INDUSTRY .....	1
CAREER OPPORTUNITIES/ PATHWAYS.....	1
TRANSFERABILITY OF SKILLS .....	5
COVID-19 IMPACT .....	6
INDUSTRY INFORMATION .....	6
DEFENCE.....	6
INFORMATION SOURCES .....	8
OVERSEAS WORK .....	8
QUALIFICATIONS.....	9
OTHER .....	10

## ABOUT THE SPACE INDUSTRY

1. *What are some of the prominent satellite communications or space related organisations in Australia?*
2. *What are some of the prominent satellite communications organisations or other organisations involved in the space industry within Australia? This is good to know for employment prospects for interested students.*

**Response:** Please take a look through our website! Many of our members work in satellite communications and most of our members are either space-related organisations in Australia, or may be Individuals that work for space-related organisations in Australia. We do have a few members based overseas with interest in Australian space activities too.

If you did want to sign up to the SIAA for an Introductory Membership, which you can do through this website -

<https://www.spaceindustry.com.au/membership/>.

One of the benefits the SIAA offers members is our Capability Database. This database lists many space organisations within Australia so can assist with answering your query. I can tell you there are many space-related organisations in Australia, so I could not easily list them here either.

## CAREER OPPORTUNITIES/ PATHWAYS

3. *Career opportunities appear to be limited here in Lovely, quiet Perth. Is there any insight you could please report regarding Perth opportunities?*

**Response:** Please take a look at my response above About the Space Industry. I believe one of the easiest ways for you to find out WA space opportunities may be through accessing our Capability Database. One other way, if you are a member, is that we post space-related job opportunities around Australia from our Members on a Members Only board.

We do have several members in WA and have held an event or two (or more) in WA before talking about various space opportunities. One particular WA related activity I am aware of is the Robotics, Automation and AI Command and Control Centre, which will be based in WA and initially supported by the Australian Space Agency. There are many mining and resource companies in Perth that have specialities in remote operations that can be applied to space.

4. *Is there a place for geologists in space? You touched on people who have qualifications in other areas e.g. biology, thanks!*

**Response:** Yes, there most definitely is a place for geologists in space. In fact, we do have Interplanetary Geologists in Australia (what a cool job title!). One such person is Dr Phil Bland from Curtin University <https://staffportal.curtin.edu.au/staff/profile/view/P.Bland/>. I suspect we definitely have a few more in Australia as well.

Understanding more about geology on different planetary bodies is incredibly important! For example,

engineers must know the surface conditions and environment in the instance they are designing a space vehicle to go to that planetary body.

As we do move (hopefully) to having humans on other planetary bodies such as the Moon and Mars, knowing the surface properties and materials will be determined by geologists. Those activities are key so humans can work out how to adapt and live on those different bodies.

*5. Do you know what options are available for someone interested in Astrobiology or Astrogeology? I haven't found anything besides an elective subject in the field in Australia, no specialised Bachelors or Degrees. (Though maybe I haven't searched thoroughly enough). Would this mean studying overseas, or is it just that these subjects aren't offered as majors anywhere? If that is the case, do you have any advice for someone looking into Astrobiology or Astrogeology?*

**Response:** Please see the question and response above about geology. I am not personally aware of any Bachelor degrees offered from Australian Universities which have a major in astrobiology or astrogeology. I would expect you would need to major in biology and geology and seek to do whatever electives you could in your field of interest and try and do any research projects in those areas as well.

There may be courses overseas that do specialise in these areas, but I am not aware of them.

*6. Any ideas on what commercial or government opportunities exist in law?*

Believe it or not, space and the activities that are conducted to, from and in space are highly regulated, both by international and domestic laws.

Governments need advice on the applicable international legal regime that applies to space in order to ensure that they comply with the obligation to give effect to that regime in domestic laws. Australian civilian space activities are regulated by the Space Activities (Launches and Returns) Act 2018 and lawyers are involved in providing advice regarding the licensing regimes under that Act, as well as similar regimes in other countries, eg New Zealand, UK, and the US. Lawyers are also involved in providing advice and assistance to businesses, from Universities and start-ups through to large industry primes, obtaining licences, dealing with confidentiality and export control issues, intellectual property licensing and related commercial advice.

*7. I wish to learn more about current opportunities within the intersection between space and law in the industry.*

You can undertake a Graduate Certificate in Space Law at the Adelaide Law School (covering both Strategic Space Law and Commercial Space Law), study space law units at several other Australian universities and join interest groups like ANZSLIG (Australia and New Zealand Space Law Interest Group). There are several firms now developing expertise in space law.

*8. What kind of background experience would you need to get into this industry?*

**Response:** The space sector has many different roles, where all kinds of backgrounds, qualifications and experience levels are very useful. Assuming this question comes from the perspective of looking for

space careers when in later high school years, typically many people who later find a career in the space industry have completed English, Physical Sciences, Maths and often Computer Science/Programming related subjects. Other subjects can lead to pathways in space too though!

*9. What are the most common and least common engineers in the space industry?*

**Response:** This is a really hard question! In my career I have seen many engineers with backgrounds including: mechanical, mechatronic, software, aerospace, electrical and systems. This list is not exhaustive by any means. From my experience only, I have seen fewer civil engineers in space related careers. Engineering degrees usually provide the applicant with a fantastic skill set which they can apply to solve space problems.

*10. Recent space sector activity has featured a heavy focus on the development of satellite technology. So, I have the impression that the space industry is currently more directly approachable through traditional computer science, mechanical and electrical engineering disciplines. As a chemical engineering undergraduate, what sort of opportunities should I be exploring to find a role somewhere in the space-industry?*

*11. I've noticed that positions in the space-industry relevant to chemical engineers often involve asteroid mining. However, advanced materials play a large role in upstream-space technologies. Is this field of work more suited for professionals with science backgrounds? What sort of opportunities could a chemical engineer explore to work with advanced materials in the space-industry?*

**Response:** I'm very glad to hear you are interested in a space career. As I have mentioned in the response above, you'll have a great skillset for many roles within the space sector. Some roles that come to mind for a chemical engineer (and are not exhaustive in any way) relate to development of launch vehicles and launch sites. Some companies working in this area in Australia include Equatorial Launch Australia, Southern Launch, Gilmore Space, Black Sky Aerospace. The SIAA also has a space Capability Database you can access if you are a member and I'd definitely recommend you sign up and find out even more companies!

*12. I am a mature (41yr old) student about to transition from Foundation studies into a Bachelor. I'm still undecided about my career/study path and as such was advised to contact industry professionals in my fields of interest (most of which are in Space Sciences) to find out more about their careers and if this work appeals to me. I'm wondering if you have any advice on how to find these people and make contact with them?*

**Response:** Congratulations on shortly starting a Bachelor degree. We have received several queries over the past few months similar to yours with people thinking about a career change into space after having experience in other industries and often also pursuing tertiary studies.

From my experience, I believe many people working in space sciences are based at Universities and often perform space research activities. There are many different universities across Australia that have space science courses – one recent one I'm aware of is at RMIT in Melbourne and one of our SIAA Directors, Gail

lles is involved. You can find a bit of information on that specific course and career recommendations here: <https://www.rmit.edu.au/study-with-us/levels-of-study/undergraduate-study/bachelor-degrees/bachelor-of-space-science-bp330>

Note this is only one of the many courses offered across Australia and I'd recommend getting in touch with the university lecturers themselves to see where they have seen past graduates go (to what employers, roles etc). Good luck with your studies!

*13. I'm in my early 30s and have spent my career in web design/admin and most recently digital marketing for a large Australian retailer. I've always been obsessed with space, and with my recent job loss I was hoping that there may be an avenue for me to finally pursue this interest professionally. Are there many space companies out there that need marketing managers? Or are there other roles in the industry that require similar skill sets?*

**Response:** There are definitely space companies that need marketing managers! I've worked with marketing teams in several roles I have had in the past. I would recommend you sign up to be a member – as the Australian space sector grows, you'll see more roles come up this way – [www.spaceindustry.com.au](http://www.spaceindustry.com.au). We have a Members Only jobs board you can keep an eye on. Alternatively, many companies are happy to be contacted directly, so you can only see. Also, feel free to keep an eye on our website for events etc and see if you can attend some and get to know where those roles may be.

*14. I currently reside in Adelaide where the growth of the space-industry is rapidly increasing, particularly around Lot Fourteen and the North*

*Terrace University Campuses. What types of non-technical opportunities could I explore to get involved with these local space organisations/agencies/businesses?; how could I find general work experience as an undergraduate to "help get my foot in the door" and develop relationships with professionals already in the industry? Similarly, are there any extra-curricular opportunities associated with SIAA or other Australian space organisations that would help provide some exposure to the space industry?*

**Response:** You are lucky to be based in Adelaide where there are so many different space organisations! Signing up to the SIAA will inform you of various activities and events happening around Australia and I would recommend becoming a member and attending our events. Interacting with our members will help you to find out the exact answers to your questions. Also, check out our Capability Database and see what you can find our members offer – many do have internship programs mentioned on their websites.

I would recommend you also look into the Australian Youth Aerospace Association (<https://ayaa.com.au/>) to find like-minded students.

## TRANSFERABILITY OF SKILLS

*15. I am looking for pathway advice/ career development into the emerging space industry from my current role. I have been working for an airline for the last 10 years and am currently employed as a licensed aircraft maintenance engineer. My question is whether I should attend a university for a relevant degree or, whether having aircraft experience, I should try for a foot in the door job as a base technician or mechanic? Also finding a relevant job/ company is proving difficult from Perth WA as there doesn't seem to many listed currently unless you know which company to directly approach. If you could provide any further guidance or advice it would be appreciated.*

**Response:** Brilliant! Your skill set would definitely be useful for space related activities. While I am not aware of all exact activities our SIAA Members are involved in, some of the launch related activities companies I have mentioned above may very well value your experience. Take a look at those companies – however I don't believe any have manufacturing or integration activities ongoing in Perth.

I would definitely recommend you sign up to be a member and keep an eye on our Members Only Job Board and look through the Capability Database. Also, I would recommend attending one of our events and start getting to know other SIAA members.

*16. Air Traffic Controller and I'm wondering if there'll be potentially any transferable skills in the greater space industry.*

**Response:** Similarly to above, the skills you have gained through being an ATC would be very useful in

the space sector. The two areas I can see these being useful are as a spacecraft operator or ground station operations. These roles look at operation of spacecraft from the ground and the related ground infrastructure. So, rather than looking at aircraft going from A to B, you're looking at spacecraft or monitoring ground systems. Some roles like this do exist within larger Space Communications providers and some such companies that have these jobs are Optus, NBN Co and Speedcast (not an exhaustive list though!).

## COVID-19 IMPACT

*17. Good morning and greetings from Adelaide, I'm an undergraduate on Engineering, will like to ask what the panellist think is and will be the impact from COVID-19 in the Industry??*

**Response:** I completed my final year of my undergraduate degree just as the Global Financial Crisis hit back in 2008. Several large companies with graduate programs cancelled them. The number of opportunities did decrease for roles starting in 2009 and 2010. However, what I'm seeing in the space sector is that we have not been impacted to that extent, as yet, for future job opportunities. I haven't heard, personally, of companies holding off advertising new roles. It is likely when different ASA grant opportunities and Defence tenders are awarded, there will in fact be more roles within the space sector 😊.

As for other impacts from COVID-19: venture capital funding is likely to be harder to find and may be for some time; as space uses a global supply chain, many companies are experiencing delays in receipt of hardware as two examples.

## INDUSTRY INFORMATION

- 18. I am a Master of Philosophy student at QUT, currently undertaking research in the environments of galaxies. Firstly, where do you think is the best area in the world to get the most out of astrophysics/space research?*
- 19. Where do you think in the world is the best place to get the most out of astrophysics/space industry?*

**Response:** I am honestly not sure. From what I understand different universities in different countries around the world have different research specialities within a field, such as astrophysics. I believe you'd be more knowledgeable than myself as you would be reading papers about galaxies etc and seeing which universities may be doing more research in this area than others. It depends what you wish to do after you've finished your Masters I think as to what research is best to conduct as to where is good to go next!

## DEFENCE

- 20. Is a career in the ADF a good stepping-stone into the space industry?*

**Response:** Most definitely, yes. There are many space roles within the ADF itself and many people working within the space industry have held roles within the ADF.

Australian Defence has plans to acquire multiple space systems over the next 10 years in addition to its current assets and involvement with international space activities.

## FUTURE GROWTH

21. *How do you see the Australian space sector growing? – i.e. now there's the new space centre in northern Queensland.*
22. *Can you speak about how and where you are going to expand the space industry in Australia?*

**Response:** I can speak about how I think the space industry in Australia could expand. There are multiple roadmap activities ongoing within different areas of the wider space community in Australia at the moment that will all be aiming to answer the questions you have raised about how we will grow and expand. It's a hard question and every group will likely have a different answer to it.

There are several ways this could be done:

1. Expanding existing Australian capability through existing Australian companies. This can be done in at least two ways:
  - a. Creating additional demand for products and services from existing Australian companies
  - b. Enabling Australian companies that supply goods and services to different industries to adapt their existing goods and services to be applicable and used within the space sector
2. Growing the number of space companies in Australia by having overseas companies set up in Australia and expand their capability here
3. Creation of new Australian companies that can provide services or goods into the space sector

One of the key aspects here is not just having more space companies here in Australia (supply), but there being enough work for these companies to stay and grow within the Australian market (demand). Thus, as we have seen more space companies in the Australian

space ecosystem than ever before, we now really wish to see the need for their products and services (demand). In many countries overseas, Space Agencies and Government contracts can create a large part of this demand. The Australian Space Agency does have several funding streams for activities with should help the sector, however I personally believe that having Australian Defence purchase space goods and services from Australian companies, with their large amount of funding available, would definitely help create this demand.

Space is very much a global market, so I hope that many Australian goods and services from our local space sector can supply this global market as well!

23. *What kind of new kinds of jobs do you think this industry will create that we may not have now?*

**Response:** This is another hard question! In many ways I think we won't necessarily create new roles, but rather have more jobs that have typically been seen as very niche roles within Australia. For example, a few years ago there were a handful of spacecraft systems engineers in Australia. I believe the number would have likely tripled in the past 3 or so years! As companies grow and get larger, these space companies will need more ancillary roles such as communications, marketing, etc as well.

I would also believe that 10 years ago the number of people working in launch vehicle companies in Australia was very small, but I believe we could have 100 or more in that field now!

*24. Will Australia ever have something equivalent to the status of NASA?*

**Response:** Ah, this is another hard question! Australia does now have a space agency – the Australian Space Agency – however they were only founded back in 2018.

NASA is an organisation that has been running for a very long time and has a very large amount of funding. The ASA's aims, at this time, I believe are not to fulfil the same role that NASA does for the USA and aims to be more industry focussed. The ASA is focussed on different priorities to NASA. Since 2018, the Australian Government announced several funding opportunities for the Australian space sector, but this funding is unlikely to be near the size of NASA's funding (on a per population basis scale) that I can see. I could be wrong though.

Despite this, Australia's space sector is growing. The number of companies has increased over the past few years, so I sincerely hope there will be many opportunities for Australians to work in this sector in the future.

## INFORMATION SOURCES

*25. Thousands of children and young people are eager to become part of the space industry. Which interactive, responsible and moderated online websites/social media sites do you know/recommend to these young people who need a community of like-minded people to interact with?*

**Response:** I think this question is best aimed at the Australian Space Agency and I would definitely recommend you get in touch with them in this regard. As an Industry Association, we are not fully knowledgeable on STEM resources. I would recommend checking out Questacon's website just in case they do have anything as I do know they are an amazing Australian facility and resource.

## OVERSEAS WORK

*26. Do you need to work and study overseas as well as in Australia to be successful?*

**Response:** No, definitely not. I assume you are talking about being successful in an Australian based space career. Living and/or working overseas would definitely be seen as an advantage – not only because it exposes you to a more developed space industry and how they have done things before and their heritage and grows your personal networks, but living in a different country provides you with a new perspective. I believe my times overseas have greatly helped my career, but I do definitely acknowledge some people's circumstances may mean it is very difficult to find a way to study/live/work overseas!

## QUALIFICATIONS

*27. Are there any psychology-based careers in space? or careers surrounding the mental aspect?*

**Response:** Multiple studies have been performed by NASA, ESA and other space agencies about the mental health aspects of being in space, and especially for long durations. There was a mission a few years ago now were about 5 people (a mix of Europeans and Russians) were kept in a space simulation for 500 days! This study was performed purely to see how the people would interact and the mental aspects to that. You could definitely search for long duration space mission research and find many interesting websites and papers.

In relation to what Australia does in this area, I know through our Antarctic Studies, research has been done in similar aspects on how being in Antarctica for long periods, in isolated conditions, affects us.

*28. Did aerospace engineering and astrophysics work well as a pairing?*

**Response:** I believe this question may have been directed at myself (Julia) as I studied combined degrees in Bachelor of Engineering (Aerospace) and Bachelor of Science (Physics). I was so close to being able to major in Astrophysics (one subject away)! For me personally, this degree combination worked really well. I was more interested in the science at the start of the degree, but ended up more interested in the engineering at the end. I have found at various aspects of my primarily engineering career the science background has been particularly useful. It was also fun to have a subject within my degree where we discussed life on other planets and the possibility!

*29. I'm at Unimelb where, instead of having a "Major of Aerospace Engineering", we can only do a "Major of Mechanical Engineering with Aerospace." I'm just wondering if this has any sort of impact when it comes to entering the 'space' workforce.*

**Response:** No, many Australian universities do the same thing. When applying for jobs, employers will likely ask for and review your university transcript to see the various subjects you have completed as many universities do have different course combinations. If you are interested in space and have some elective subjects, or areas where you can tailor projects in an area of interest, I definitely recommend you do these in your area of interest – such as space! Employers will likely ask you about those.

*30. When it comes to the actual astronauts, is there any position that is more based on the mental wellbeing of the astronauts?*

**Response:** I think this may be the hardest question of them all. As far as I am aware with European and American astronauts, they go through incredibly extensive training programs and assessments to work towards being considered capable for selection in a future mission. There are many aspects to this including mental wellbeing. As we don't have astronauts here in Australia, I'm not as familiar with astronaut training programs though!

## OTHER

31. *Where are the Headquarters going to be.*
32. *Will there be a launch pad in Australia for rocket satellites? If yes, where will it be?*
33. *Because I speak 3 languages (English, French, Spanish) where can I use it in the every day job?*

**Response:** Unfortunately I don't fully understand your question. The Headquarters of the Australian Space Agency was announced fairly recently and the ASA moved into an office space in Lot Fourteen in Adelaide, with its official opening earlier this year. For the SIAA, we do not have a Headquarters or main office as such. Apart from Sherri, our Operations Manager, the SIAA is a volunteer organisation and we have volunteers spread from across Australia.

Please refer to some of my responses above in relation to chemical engineering careers and launch company names/opportunities.

Australia, as you are aware, is an English-speaking country, however we do have several companies here in Australia which are either Headquartered overseas or have a large presence/multiple offices in various countries around the world. My personal thoughts are a multi-lingual background may be useful for those companies with connections overseas, or those providing services/products to markets that speak those languages.