



National Youth  
Science Forum

17 – 20 JUNE 2023 | CANBERRA

# NATIONAL YOUTH STEM SUMMIT

Building and connecting Australia's future  
STEM workforce

Delegate Booklet

NATIONAL  
YOUTH  
STEM  
SUMMIT



National Youth  
Science Forum

Building and connecting Australia's future STEM workforce



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# THE NATIONAL YOUTH STEM SUMMIT

## BUILDING AND CONNECTING AUSTRALIA'S FUTURE STEM WORKFORCE

### EVENT OVERVIEW

The STEM Summit ran from Saturday 17 June to Tuesday 20 June 2023 in Canberra, ACT.

In addition to workshops on career development, delegates accessed a Career and Study Expo, a range of targeted networking sessions, and met key decision makers in a Networking Function at Australian Parliament House, Canberra on Monday 19 June 2023.

### REASONING

The Prime Minister and the Minister for Industry and Science have committed to widen the pipeline of talent and respond to a significant shortage of STEM skills to meet Australia's future challenges.

The 2023 NYSF National Youth STEM Summit provided an opportunity for young and emerging STEM professionals to connect with Australia's technology, science, industry, and business sectors.



### FOR DELEGATES

► **Connect** with fellow young Australians and exchange ideas on current trends in STEM fields.

► **Learn** from successful professionals who will share their experiences and provide insights on career opportunities.

► **Network** with business, government and senior representatives in the STEM sector.

► **Upskill** your career and personal development with workshops in media, networking, personal branding and interview skills.

► **Provide a voice** to decision makers on key STEM topics including: critical technologies; climate change and environmental sustainability; and health.

► **Engage** with organisations who are looking for talented individuals.

**We can help meet Australia's workforce goals including:**

- 16,000 new quantum jobs by 2040<sup>1</sup>
- 20,000 new space sector jobs by 2030<sup>2</sup>
- 8,000 new hydrogen jobs, many in regional Australia by 2050<sup>3</sup>
- 1.2 million tech-related jobs by 2030
- Jobs to support nuclear science<sup>4</sup> stewardship and safety

<sup>1</sup>Growing Australia's STEM industries: Lessons from Quantum; <sup>2</sup>Australian Civil Space Strategy 2019-28;

<sup>3</sup>National Hydrogen Strategy (2019); <sup>4</sup>Getting to 1.2 million: Our roadmap to create a thriving Australian tech workforce









# PROGRAM OUTLINE



## AFTERNOON

Opening Address

Major Challenges and Opportunities for Australia: Critical Tech, Environment, Health

Leadership Conversation

## EVENING

Social Event, Questacon

**SATURDAY**  
**17 JUNE 2023**

## MORNING

Keynote

Personal Development: Media Skills and Interview Skills

## AFTERNOON

Keynote

Working in Different Sectors: Academia, Entrepreneurship, Public Service

First Five Years

**SUNDAY**  
**18 JUNE 2023**



## MORNING

Keynote and Q&A

Career & Study Expo

## AFTERNOON

Speed Networking & Pitch Fest

Australian Parliament House tour and Pre-Networking event on Meaningful Collaboration with Government

## EVENING

Networking Function at Australian Parliament House

**MONDAY**  
**19 JUNE 2023**

**TUESDAY**  
**20 JUNE 2023**

## MORNING

Closing Keynote at VIP Breakfast at the Shine Dome





# SPEAKERS - MINISTERS

## Meet the Ministers/Parliamentarians



The Hon Ed Husic  
MP, Minister for  
Industry and Science



The Hon Jason Clare  
MP, Minister for  
Education



The Hon Dr Anne  
Aly MP, Minister for  
Youth and Minister  
for Early Childhood  
Education



The Hon Paul Fletcher  
MP, Manager of  
Opposition Business in  
the House of  
Representatives

## Including a session on meaningful collaboration with Government featuring:

Anna-Maria Arabia  
Chief Executive, Australian Academy of Science

Dr Sandra Gardam  
Deputy CEO, Science and Technology Australia

Dr Melanie Bagg GAICD  
CEO, National Youth Science Forum

Dr Geoff Garrett AO FTSE  
Former Queensland Chief Scientist and NYSF  
Deputy Board Chair









# KEYNOTE SPEAKERS



Speakers listed in order of the program:

Dr Melanie Bagg GAICD  
CEO, National Youth Science Forum

Patricia Kelly PSM GAICD  
Board Chair, National Youth Science Forum

Prof Tanya Monro AC FAA FTSE FOSA FAIP  
GAICD (NYSF 1990 alum)  
Australia's Chief Defence Scientist, DSTG

Kerri Hartland  
Director General, Australian Secret Intelligence  
Service and former NYSF Board Chair

The Hon Kate Lundy  
Deputy Board Chair, National Youth Science  
Forum

Robert Sewell (NYSF 1988 alum)  
Chief Information Officer, nbn

Duncan McIntyre  
Deputy Secretary, Science and Technology  
Group, Department of Industry, Science and  
Resources

Dr Cathy Foley AO PSM FAA FTSE  
Australia's Chief Scientist, Department of  
Industry, Science and Resources

Retired Air Marshal Warren McDonald AO, CSC  
Chief Executive, Lockheed Martin Australia and  
New Zealand

Enrico Palermo  
Head of Australian Space Agency









# SPEAKERS

Speakers listed in order of the program:

Prof Elanor Huntington FTSE  
Executive Director of Digital Facilities and  
Collections, CSIRO

Dr Christopher Harris (NYSF 1999 alum)  
Supercomputing Applications Team Lead,  
Pawsey Supercomputing Research Centre

Dr Marcus Doherty (NYSF 2000 alum)  
Co-Founder & Chief Scientific Officer, Quantum  
Brilliance Pty Ltd

Prof Jason Sharples FTSE FRSN FMSSANZ  
UNSW Bushfire Research Group, UNSW  
Canberra

Alison Reeve  
Climate Change and Energy Deputy Program  
Director, Grattan Institute

Daniel O'Halloran (NYSF 2003 alum)  
Adjunct Lecturer, Griffith Business School

Dr Emma Tucker  
Research Fellow, The Australian National  
University

A/Prof Keith Chappell  
Molecular Virologist and Group Leader  
The University of Queensland

Dr Geoff Garrett AO FTSE  
Former Queensland Chief Scientist;  
Board, National Youth Science Forum

Colonel Dr Renée Kidson, CSM (NYSF 1992  
alum)  
Science and Technology Executive, DSTG

Dr Chris Hatherly (NYSF 1996 alum)  
Executive Director of Academy of Social  
Sciences





# SPEAKERS

Speakers listed in order of the program:

Dr Brad Tucker  
Astrophysicist and Cosmologist  
The Australian National University, College of Science

Dr Bobby Cerini  
General Manager, Science and Learning,  
Questacon

Amanda Caldwell  
Media and Communications Manager  
Communications

Paul Richards  
Director of Communications and Outreach  
The Australian Academy of Science

Karrie Bishop (NYSF 1995 alum)  
Early Careers Talent Partner, Rheinmetall

Melanie Tacey (NYSF 2010 alum)  
Manager, Corporate Services, NYSF

Dr Kaitlin Cook (NYSF 2008 alum)  
Research Fellow, Department of Nuclear Physics and Accelerator Applications, ANU

Prof Tim Senden (NYSF 1984 alum)  
Director, Research School of Physics, ANU

Prof Steven Tingay (NYSF 1987 alum)  
Executive Director, Curtin Institute of Radio Astronomy, Curtin University

Sauda Talukder (NYSF 2006 alum)  
Director and Founder, ARAQOR

Dr Victor Pantano  
Founding Director, Liquid Instruments





# SPEAKERS

## Speakers continued:

David Jamieson  
Cryptanalyst, ASD-ANU Co-Lab

Jaynell Vila  
Policy Officer, Department of Industry, Science  
and Resources

Dr Bianca Capra MRaES  
Deputy Program Leader Space, Navigate  
Program, Defence Science and Technology  
Group

Teresa Gong  
Acting Director, Capability Acquisition  
Sustainment Group (CASG), Department of  
Defence

Dr Catherine Wheller (NYSF 2008 alum)  
Communications Manager, NYSF

Tara Cheng  
Programs Officer, NYSF

Siân Keys  
Executive Officer, Department of Industry,  
Science and Resources

Dr Joe Kaczmarek (NYSF 2009 alum)  
Researcher and Lecturer, ARC Centre of  
Excellence in Synthetic Biology, ANU

Dr Sophie Calabretto (NYSF 2005 alum)  
Science Advisor, DSTG

Michael Liu (NYSF 2008 alum)  
Chief of Staff to the ACT Minister for Arts,  
Business, Economic Development, Multicultural  
Affairs and Human Rights ACT Government

Anntonette Dailey  
Manager, National Youth Science Forum









# MAJOR PARTNER

## LOCKHEED MARTIN AUSTRALIA

At Lockheed Martin Australia, we are part of a global team that makes an impact everyday – our collective strengths make a difference in the lives of one another, our customers, our community and our planet. We are at the forefront of helping to solve the world's most complex defence and security problems.

Lockheed Martin's diverse programs form a critical backbone of Australia's current and future defence capabilities including Next Generation Pilot Training, Advanced Guided Weapon Systems, Combat Systems Integration, Rotary Wing Systems and Sustainment, 5th Generation Air Combat Capability and Surveillance across air, sea, land and space. We're proud of our inclusive and collaborative culture that embraces and celebrates our people's differences. Most importantly, we live by our values of Do What's Right, Respect Others and Perform With Excellence every day.

Right now our business is growing and we have a number of great opportunities to join our team and grow your career. Whatever your experience – whether that's thinking about starting your career or you are already on your career journey; there are exciting roles for you to explore and we are keen to hear from you! A career at Lockheed Martin Australia offers you flexible working schedules (including compacted working weeks), excellent benefits and focus on ongoing learning and career development. We understand and value a healthy life balance both at work and outside work.

Lockheed Martin early career employees have the opportunity to work side by side with knowledgeable and experienced professionals and gain real-world experience. A career with us could take you in directions you never could have imagined.

### Australian Graduate Development Program

Our structured two year program would provide you a framework of technical, personal and leadership development. You will be based within teams undertaking work based activities. The program gives you an opportunity to build on and use the skills you have gained during university.

### Industry Based Learning and Internships

The Industry Based Learning Program or our Intern Programs offer you the opportunity to apply your studies in a work environment whilst you're a completing the later parts of your degree.

### Apprenticeships and Traineeships

We offer several vocational pathway programs to start your career in an Apprenticeship or Traineeship; from Aircraft Maintenance, to IT to warehousing, at Lockheed Martin Australia we are continuing to grow our pathway programs that can be the start of your career or your next career chapter.

To learn more about Lockheed Martin; the work we do and our careers on offer visit [www.lockheedmartin.com/en-au/careers](http://www.lockheedmartin.com/en-au/careers)





# PREMIUM SPONSOR

## DEPARTMENT OF DEFENCE

Defence's primary role is to defend Australia and its national interests, promote security and stability, and support the Australian community as directed by the Government.

### Mission and purpose

Defence's mission and purpose is to defend Australia and its national interests in order to advance Australia's security and prosperity.

Defence serves the Government of the day and is accountable to the Commonwealth Parliament, which represents the Australian people, to efficiently and effectively carry out the Government's defence policy.

Defence achieves its mission and purpose through:

- The conduct of operations, and provision of support for the Australian community and civilian authorities, in accordance with Government direction.
- The provision of strategic policy, the development, delivery and sustainment of military, intelligence and enabling capabilities, and the promotion of regional and global security and stability as directed by Government.



### Defence Science and Technology Group (DSTG)

DSTG brings together interdisciplinary expertise from across Australia and around the world to address Defence and national security challenges. Our role is to work closely with the Australian science, technology and innovation eco-system to deliver scientific advice and solutions that provide capability enhancement for Defence and the national security community.

### Capability Acquisition Sustainment Group (CASG)

The vision for Capability Acquisition and Sustainment Group (CASG) is to be the premier program management, logistics, procurement and engineering services group in Defence.

The Capability Acquisition and Sustainment Group (CASG) is part of the Department of Defence and exists to meet the Australian Defence Force's (ADF) military equipment and supply requirements as identified by Defence and approved by Government.

### Graduate and Early Entry

The Defence Graduate Program offers four specialised pathways tailored to graduate areas of interest and previous studies: Intelligence pathway, Policy and corporate pathway, Research and innovation Pathway, and the Technical pathway.



**Australian Government**  
**Department of Defence**



# GOLD SPONSOR

## DEPARTMENT OF INDUSTRY, SCIENCE AND RESOURCES

The Department of Industry, Science and Resources and our broader portfolio are integral to the Australian Government's economic agenda. Our purpose is to help the government build a better future for all Australians through a productive, resilient and sustainable economy enriched by science and technology. We do this by:

- growing innovative and competitive businesses, industries and regions
- investing in science and technology
- strengthening the resources sector.

Our portfolio is at the heart of the government's plan to revitalise Australian industry and make the most of new and emerging technologies. This will create productive, sustainable and high-value jobs in the economy of tomorrow. The portfolio supports businesses and industries by reducing barriers to productivity, designing appropriate regulatory frameworks and providing targeted investment and services.



Our key activities in investing in science and technology include:

- building a stronger science sector to help solve challenges, improve productivity and wellbeing, and boost the science, technology, engineering and mathematics (STEM) pipeline
- investing in Australia's technology capabilities such as quantum, robotics and artificial intelligence to boost our economy and create high-value jobs that will help retain talent in Australia
- ensuring Australia has the advanced measurement science it needs to accelerate our economy and support global trade, by developing and harnessing the expertise of the National Measurement Institute
- securing long-term science and technology capabilities by investing in Questacon's grassroots science engagement activities and ensuring they reach diverse communities, including those in remote and regional Australia
- supporting Australia's digital capability through targeted initiatives to accelerate the adoption of technologies and foster transformation across the economy.



**Australian Government**  
**Department of Industry,  
Science and Resources**



# STEM SUMMIT SPONSORS

## AUSTRALIAN SIGNALS DIRECTORATE

ASD's purpose is to defend Australia from global threats and help advance Australia's national interests. We do this by mastering technology to inform, protect and disrupt.

- Informing - by the covert acquisition of foreign information not publicly available (signals intelligence).
- Protecting - by comprehensively understanding the cyber threat, providing proactive advice and assistance to improve the management of cyber risk by government, business and the community.
- Disrupting - by applying our offensive cyber capabilities offshore, to support military operations, counter-terrorism, counter cyber espionage and serious cyber-enabled crime.

ASD operates in the slim area between the difficult and the impossible. We aren't looking for one type of person, we're looking for the right type of person- those curious and creative minds who will bring new ideas and skills to our organisation. No matter your background, skills and experiences, there is an opportunity available for you at ASD.

**ASD** AUSTRALIAN SIGNALS DIRECTORATE



## AUSTRALIAN SPACE AGENCY

The Australian Space Agency, which was established on 1st July 2018, has a presence Australia-wide with the hub built on Kuarna land within Lot Fourteen (in the North Eastern corner of the city of Adelaide).

Using our unique geographic location and skills, the Australian Space Agency will help grow a responsible and inspiring Australian space sector, with national and international capabilities.

Ever dreamt of a career in space? It's not just for rocket scientists and engineers. At the Australian Space Agency we hope to expand your ideas about what jobs exist in the wider space sector from lawyers, to doctors, to tradies. With the focus of the Australian Space Agency to support the growth and transformation of Australia's space industry, creating 20,000 jobs by 2030, there has not been a better time to think about your place in space.



## CEA TECHNOLOGIES PTY LTD

CEA is an Australian company that designs, develops, manufactures and sustains advanced active phase array radar systems. The company's design principles and commitment to investment in research and development ensures innovative thinking, technological skill, and quality fabrication.

Through our longstanding and ongoing collaboration with Defence, CEA Technologies has undertaken research and development into all aspects of active electronically scanned array technologies. This has resulted in the creation of a highly-modular and scalable product suite, which have become integral to a wide range of critical Defence capabilities.





# STEM SUMMIT SPONSORS

## IP AUSTRALIA

IP Australia is the Australian government agency that administers intellectual property (IP) rights and legislation for patents, trade marks, design rights and plant breeder's rights (PBR) in Australia. We sit within the Department of Industry, Science and Resource. Our Minister is the Hon Ed Husic MP.

We contribute to the innovation system, using our skills and experience to advise government, and inform Australian businesses on the role of IP in their business. We play a lead role in helping Australians recognise and protect their ideas. A career at IP Australia can be highly rewarding, with opportunities to apply your skills, knowledge, and expertise to a range of examination, policy, engagement and operational positions throughout the Agency.



**Australian Government**

**IP Australia**



## PAWSEY SUPERCOMPUTING CENTRE

The Pawsey Supercomputing Research Centre is a world-class high-performance computing facility accelerating scientific discoveries for Australia's researchers. Pawsey serves over 40 organisations and 1600 researchers, delivering high-impact research in domains such as radio astronomy, quantum computing, artificial intelligence, machine learning, energy and resources, engineering, health, and climate science.

Pawsey is an unincorporated joint venture of CSIRO – Australia's national science agency, Curtin University, Murdoch University, The University of Western Australia (Core Members) and Edith Cowan University (Founding Associate Member).





# VENUE SPONSOR

## THE AUSTRALIAN NATIONAL UNIVERSITY (ANU)

The Australian National University (ANU) is unlike any other university in Australia. Founded in 1946, in a spirit of post-war optimism, our role was to help realise Australia's potential as the world recovered from a global crisis.

That vision, to support the development of national unity and identity, improve our understanding of ourselves and our neighbours, and provide our nation with research capacity amongst the best in the world, and education in areas vital for our future, has been our mission ever since.

It can be difficult work, but it's work we proudly do-because connecting talented people with diverse perspectives, equipping and encouraging them to address the most complex of tomorrow's problems, and ensuring Australia's future is not just our approach-it's also our national role and international responsibility as Australia's national university, and it's a responsibility from which we'll never waver.



Keynotes and panels were held in the Auditorium of the ANU Research School of Physics building.



The Career and Study Expo and PitchFest were held in the Foyer of the ANU Research School of Physics building.





# CAREER AND STUDY EXPO

DISCOVER A WORLD OF POSSIBILITIES AT THE CAREER AND STUDY EXPO DEDICATED TO STEM FIELDS



**Australian Government**  
**Department of Defence**



Australian Government



Office of  
National Intelligence



**Australian Government**  
**IP Australia**









# NATIONAL YOUTH SCIENCE FORUM

## PARTNERS



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For more information visit  
[www.nysf.edu.au](http://www.nysf.edu.au)



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