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SKAO Regional Centre Australia

Annual Report 2024-25



Australian Government



Curtin University



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AUSTRALIA



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Acknowledgement of Country

AusSRC pays respect to the Aboriginal and Torres Strait Islander members of our community by acknowledging the traditional owners of the land on which our AusSRC offices are located, the Whadjuk People of the Noongar Nation.

We also acknowledge the Wajarri Yamaji as the Traditional Owners and Native Title Holders of Inyarrimanha Ilgari Bundara, the CSIRO Murchison Radio-astronomy Observatory.



Cover image: Antennas from the SKA Observatory's SKA-Low telescope, under construction at Inyarrimanha Ilgari Bundara, the CSIRO Murchison Radio-astronomy Observatory. Credit: SKAO.

Photo collage acknowledgements

1. AusSRC at Astrofest 2024.
2. Aerial view of an SKA-Low antenna station. Credit: SKAO
3. A Cube Analysis and Rendering Tool for Astronomy (CARTA) visualisation. Credit: CARTA Project Scientist Kuo-Song.
4. Sidewalk Astronomy event for Radio School 2024 at the Geraldton foreshore.
5. AusSRC personnel Jordan Collier and Kathryn Barker at a Sidewalk Astronomy event in Geraldton.
6. An image rendered during the 2024 Radio School from Murchison Widefield Array (MWA) data by Wildan Hidayat.

AusSRC Acknowledgement Statement

AusSRC is an equal collaboration between CSIRO – Australia’s national science agency, Curtin University, the Pawsey Supercomputing Research Centre, and The University of Western Australia.

The Australian SKA Regional Centre (AusSRC) project is Australia’s portion of the international SKA Regional Centre Network (SRCNet). This project received grant funding from the Australian Government.

Annual Report 2024–25 Statement

Our annual report provides a summary of our activities and performance for the financial year ended 30 June 2025. Access the 2024–25 Annual Report at www.aussrc.org/documents

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Image: a CARTA visualisation. Credit:
CARTA Project Scientist Kuo-Song.

Executive Summary

The Australian SKA Regional Centre (AusSRC) plays a central role in preparing Australia for the transformational science that will be delivered by the SKA Observatory (SKAO). AusSRC is a collaborative joint venture between CSIRO - Australia's national science agency, Curtin University, the Pawsey Supercomputing Research Centre, and the University of Western Australia. AusSRC is Australia's national gateway to the international SKA Regional Centre Network (SRCNet).

The 2024-25 financial year marked a period of rapid growth, international engagement, and increasing capabilities across AusSRC's operations, software development, science support, and administrative efforts.

AusSRC deepened global collaboration by contributing to SRCNet through personnel secondments, hosting international visitors, and participating in key planning and strategy forums.

A Community Engagement Workshop was held in December 2024, with over 70 participants engaging both in-person and online, leading to the commencement of eight AusSRC Science Enabling Projects (ASEPs).

AusSRC led and supported a range of public outreach activities across Australia, from Astrofest to the International Centre for Radio Astronomy Research (ICRAR) StarGirls+ STEM Camp and the 2024 Australia Telescope National Facility Radio School in Geraldton, with the aim of supporting engagement in big data, machine learning, advanced technology, and data driven discovery.

2024-25 AusSRC Team Highlights

Operations

The Operations Team made major advances in establishing critical computing infrastructure to support SKA-scale data workflows. Highlights included:

- Expanding cloud computing capability with Oracle Cloud and commencing evaluation of Amazon Web Services.
- Commencing procurement for AusSRC's first on-premises computing system at the Pawsey Supercomputing Research Centre.
- Laying the groundwork for future infrastructure to support SKA science for the next several years.

Software Development

The Software Development Team delivered both legacy project transitions and future-facing SRCNet deployments. Highlights included:

- Migrating legacy SKA precursor projects off the Nimbus Cloud to Oracle Cloud, ensuring continuity of critical workflows that support scientific outputs.
- Developing a software development roadmap to guide SRCNet v0.1 and v0.2 node implementation, with deployments targeted for late 2025 and early 2026.
- Supporting a selection of the 2025 ASEPs that will help drive the expansion of scientific workflows and creation of new data-handling pipelines for processing and analysing large astronomical datasets.

Science

The Science Team engaged with and supported local and international scientists that utilise SKA precursors. Highlights included:

- Contributing to SRCNet science delivery by developing science use cases and establishing requirements for SKA data processing.
- Commencing eight ASEPs spanning CSIRO's ASKAP radio telescope, the Curtin University-led MWA, and the South African Radio Astronomy Observatory (SARAO) MeerKAT telescope.
- Signing a Memorandum of Understanding with South Africa's Inter-University Institute for Data Intensive Astronomy (IDIA) to facilitate ultra-fast data transfers and collaboration on CARTA software.

Administration

The Administration Team provided support for AusSRC's internal operations, external communications, and strategic development. Highlights included:

- Supporting recruitment, Board and organisational liaison and contractual compliance.
- Developing business policies to guide sponsorship, formalising the recognition of AusSRC support in publications, and developing a Communications and Engagement Strategy to align messaging across AusSRC and the SKA Project.
- Providing AusSRC representation in the network of organisations delivering communication and outreach activity for the SKA project in Australia.
- Launching initiatives including a staff exchange with North Metropolitan TAFE, laying the foundations for an 'Astronomy for Mental Health' pilot, and hosting an AusSRC Collaborators Meetup.

About AusSRC

AusSRC is a Joint Venture between CSIRO, Curtin University, the Pawsey Supercomputing Research Centre, and The University of Western Australia.

AusSRC is part of an international network of SKA Regional Centres (SRCs) known as the SRCNet. AusSRC personnel are recruited across its joint venture collaborator institutions.

Vision

AusSRC's vision is to fundamentally enable the scientific output of the Australian SKA community. It will be at the forefront of the international SRC effort, and lead the delivery of SKA-Low science for Australian and international research communities.

Mission

AusSRC's mission is to deliver the ability to conduct science with current and next generation radio telescopes.

Goals

AusSRC's Phase 1 goals are to:

- Provide human resources, software, and access to hardware to enhance user interaction with existing SKA precursor data processing, archiving, and analysis facilities.
- Enable the production of advanced SKA precursor data products and the development of analysis tools.
- Play a leading role in developing a global strategy for the creation, storage, and delivery of advanced SKA data products.

The AusSRC Board

The AusSRC Board is made up of representatives from its collaborator organisations as well as independent members.



Patricia Kelly
Board Chair

Independent

September 2023 - present



Dr. John Reynolds
CSIRO

September 2023 - present



Prof. James Miller - Jones

Curtin University

December 2024 - present



Mark Gray
Pawsey
Supercomputing
Research Centre

December 2024 - present



Prof. Simon Ellingson

The University of
Western Australia

June 2024 - present



Cliver Rossiter
Independent

September 2023 - present



Prof. Mary-Anne Williams

Independent

September 2023 - present

Foreword by the Chair

The SKA Observatory (SKAO) is an ambitious international project to deliver cutting-edge radio telescopes that will revolutionise our understanding of the Universe. It is a global collaboration of 16 countries, including Australia, and will be enabled by a powerful supercomputing network, the SRCNet.

AusSRC represents the Australian node of this international computing network, which will process and facilitate user access to data from SKA telescopes. The two SKA telescopes, SKA-Low in Australia and SKA-Mid in South Africa, are currently under construction, with significant astronomy data expected to begin to flow from 2027-28. The SRCNet will deliver this data, in usable form, to researchers around the globe.

A Joint Venture between The University of Western Australia (UWA), Curtin University, CSIRO and the Pawsey Supercomputing Research Centre, AusSRC has been in operation since September 2023. It is funded by the Australian Government through the Department of Industry, Science and Resources. This report reflects AusSRC activities over its first full year of operations.

AusSRC works with the SKA precursor telescopes, CSIRO's ASKAP and the Curtin University-led MWA, to develop data management strategies and workflows that build our capacity for the large data processing and storage task presented by the SKA telescopes.

Over the 2024–25 year, AusSRC has increased its staffing levels and built its capacity. The year has seen a shift in emphasis as much of our work with SKA precursor instruments has moved into maintenance mode, allowing AusSRC to focus more strongly on development of the international SRCNet.

Increasingly, AusSRC staff are working as part of international teams developing the hardware and software solutions required to create the SRCNet. The volume and complexity of data that will be generated by the SKA telescopes poses a range of substantial challenges in managing data distribution, processing and storage as well as sophisticated software development to facilitate access by researchers.

Participating in these leading-edge supercomputing and software developments promises to provide knowledge and benefits across the research sector and the wider community. AusSRC undertakes a range of activities to share relevant information and knowledge with the broader research sector, industry and the public, as outlined in this report.

AusSRC is governed by a Board made up of collaborator representatives and independent members. I am grateful for the diligent efforts, guidance and support provided by the Board over the last year.

The SKA project must tackle a range of scientific and technological challenges to realise the SKA Observatory's mission – many of these around supercomputing and data management. The effectiveness of the SRCNet is essential to ensuring the SKA project meets its potential to transform our knowledge of the universe.

A great deal of good science, technology development, agility, creativity and hard work will be required to succeed. AusSRC is excited to be at the forefront of this work and looks forward to a year of further development and discovery.

Patricia Kelly
AusSRC Chair

Director's Summary

For AusSRC, 2024–25 has focused on growth and building the capabilities needed to support researchers using current and next-generation radio telescopes.

AusSRC has recruited expert personnel, worked directly with the SKA science community to facilitate cutting-edge scientific outputs, strengthened collaborations with other SKA member countries, and actively contributed to the international effort to establish the SRCNet.

AusSRC has made major strides in improving the flexibility and longevity of its software infrastructure. Our team successfully migrated all legacy SKA precursor projects from Pawsey's Nimbus Cloud system to new commercial cloud servers. As reflected in the growing list of AusSRC-related publications, many of these projects continue to generate significant scientific results.

Following community engagement activities and a merit-based review process, eight new science projects have been selected for AusSRC support. These projects span a wide range of scientific goals and will help refine the tools and techniques required to handle large volumes of radio astronomy data.

AusSRC has implemented key business and communications policies, developed new partnerships, and launched initiatives that connect astronomy to broader societal benefits.

Through social media engagement, enhanced online visibility, and staff exchanges with local TAFE institutions, AusSRC is strengthening links across education, industry, and the wider community. These efforts complement our expanding global relationships, which now include a collaboration with South Africa's IDIA.

AusSRC software developers and support scientists are embedded within international SRCNet teams. Their work includes integrating science-enabling workflows, developing advanced data management solutions, and preparing for science delivery from the SKA telescopes. By combining resources and expertise from around the world to develop, deploy, and expand SRCNet, we are helping to build a cooperative framework that will transform how astronomical data is shared, processed, and explored.

AusSRC is well positioned to succeed in its mission, thanks to the support of the Australian Government through the Department of Industry, Science, and Resources, the strength of our foundation partners (CSIRO, Curtin University, the Pawsey Supercomputing Research Centre, and UWA), the expertise of our personnel, and our connections with the science community. Together, we are progressing towards a new era of radio astronomy!

Dr. Karen Lee-Waddell
AusSRC Director

How AusSRC delivers in Phase 1

Goal 1

Enhance user interaction

Provide human resources, software, and access to hardware to enhance user interaction with existing precursor data processing, archiving, and analysis facilities.

Goal 2

Enable scientific output

Enable the production of advanced SKA precursor data products and the development of scalable analysis tools.

Goal 3

Develop a global network

Play a leading role in developing a global strategy for the creation, storage, and delivery of advanced SKA data products.

Goal 4

Enhance ability to lead and innovate in radio astronomy

Expand the ability of the Australian SKA science community to define the forefront of large-scale science programs, enhancing Australia's ability to lead and innovate in radio astronomy.

Goal 5

Engage with science and research communities

Enable engagement with science and research communities outside of the SKA and provide AusSRC infrastructure to new communities for a broader range of research returns.

Goal 6

Enable industry translation

Deliver translation and impact projects with industry through co-development of data/computing intensive innovations enabled by exposure to exascale datasets.

Goal 7

Communications and outreach

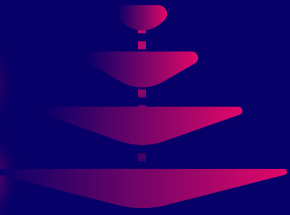
Deliver education and STEM outreach, training and community engagement on big data, machine learning, advanced technology, and data driven discovery.



Image: Dr. Jordan Collier's avatar during the 2024 Astronomical Society of Australia Annual Scientific Meeting ([ASA ASM](#)).

What AusSRC achieved in 2024-25

8



Projects initiated to support SKA and precursor science

19



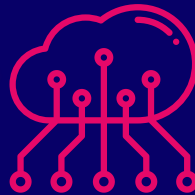
Research papers published or supported

6

TB of advanced data products from CSIRO's ASKAP radio telescope



267



TB of raw EOR data processed using...

3



Published **survey papers** supported

11



Giga-CPU HPC processing hours of ASKAP data



407,000

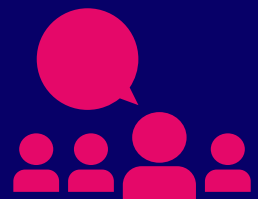
CPU hours

7



STEM Education Outreach initiatives supported

24



Research and industry conferences attended



4

Guest researchers hosted

7

New team members recruited



AusSRC and the SRCNet

The SRCNet is a global network of SKA Regional Centres that will enable the use of SKA science-ready data products.

AusSRC works with other members of the SRCNet to collaboratively develop tools and platforms that allow users to discover, evaluate, manipulate, and visualise SKA data through shared computational resources. This interoperable ecosystem minimises data transfer bottlenecks and ensures efficient utilisation of resources, irrespective of the user's geographic location.

Development and engagement of the international SKA science community will be achieved through three primary avenues:

- Collaboration on global software development initiatives through community-funded teams associated with national SRC projects;
- Providing user support for SKA pathfinder and precursor data and incorporating these insights into the design of the SRCNet systems, and;
- Fostering participation in SKA Science Data Challenges, which offer opportunities for the community to engage with simulated SKA data products and evaluate scientific workflows on the evolving SRC platforms.

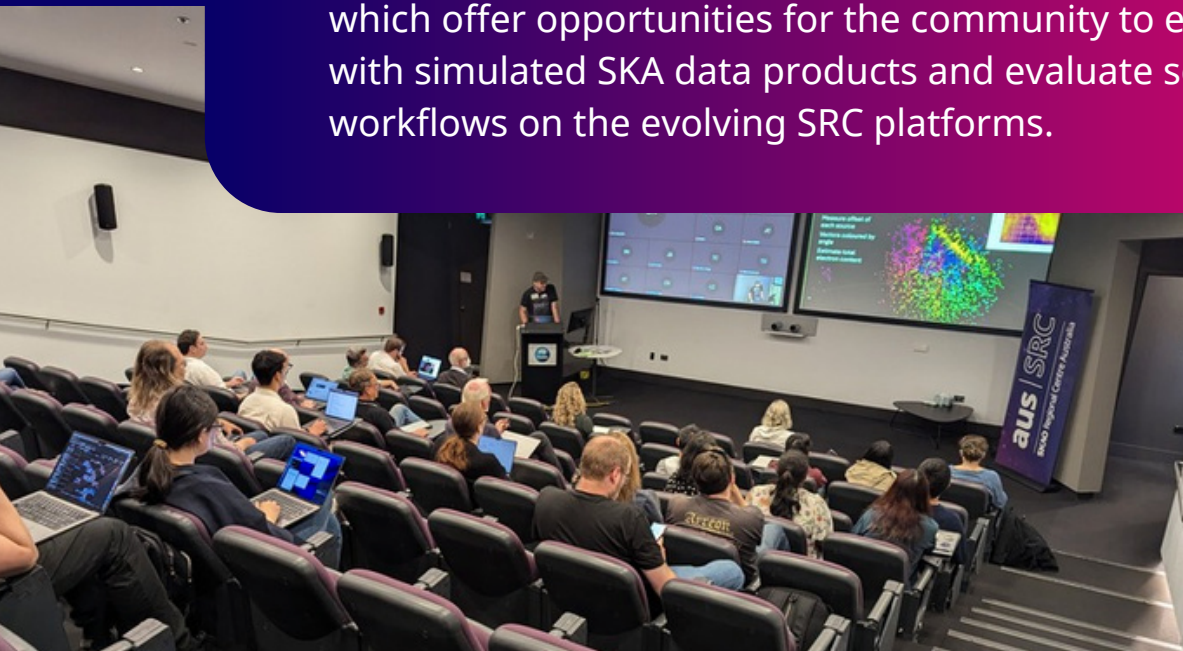


Image:
Senior Developer
Dev Null
presenting at the
2024 AusSRC
Community
Engagement
Workshop.

Recruitment in 2024–25

This financial year has seen significant growth of the AusSRC team with seven new personnel commencing and some changes in our management team.

Operations

Lachlan Campbell joined AusSRC as Head of Operations in September 2024.

Previously a Research Data Specialist at the Pawsey Supercomputing Research Centre, he brings both a background in astronomy and a track record of bridging the gap between researchers and technical infrastructure. His expertise and ability to coordinate across teams will be invaluable as AusSRC establishes the core infrastructure of its first on-premises computing system.



Software Development

January 2025 saw the recruitment of Senior Software Developer **Rini Angreani**. Rini has previously worked with CSIRO in GeoComputation. Her initial work at AusSRC focused on the migration of resources off of Nimbus, supporting the First Large Absorption Survey in HI (FLASH) project, and helping with the deployment of AusSRC's SRCNet v0.1 node.

In March 2025, Hasan Rayan left AusSRC and his role as Head of Software Development was filled by **Dr. Gordon German**, previously a Senior Software Engineer in the team.



Images: Top right - Head of Operations, Lachlan Campbell. Above - Head of Software Development Gordon German presents at the 2025 Collaborator Showcase event.

Science Support

In November 2024, **Dr. Bradley Meyers** and **Dr. Kat Ross** joined the AusSRC Science Support Team.

Bradley is a leading figure in the MWA flagship pulsar survey – the Southern-sky MWA Rapid Two-metre (SMART) survey, while Kat is focused on studying the Universe across the "radio rainbow" using the MWA as part of the GaLactic and Extragalactic All-sky MWA eXtended (GLEAM-X) survey.

Bradley and Kat bring complementary knowledge and experience to the team, including continuum imaging and survey science, pulsars, fast and slow transients, and low-frequency SKA precursor expertise.



Administration

July 2024 saw the recruitment of AusSRC's Communications and Outreach Coordinator **Mara Papavassiliou**. Having previously worked in State Government, Mara's skill translating strategic directives into compelling narratives will help drive awareness of AusSRC.

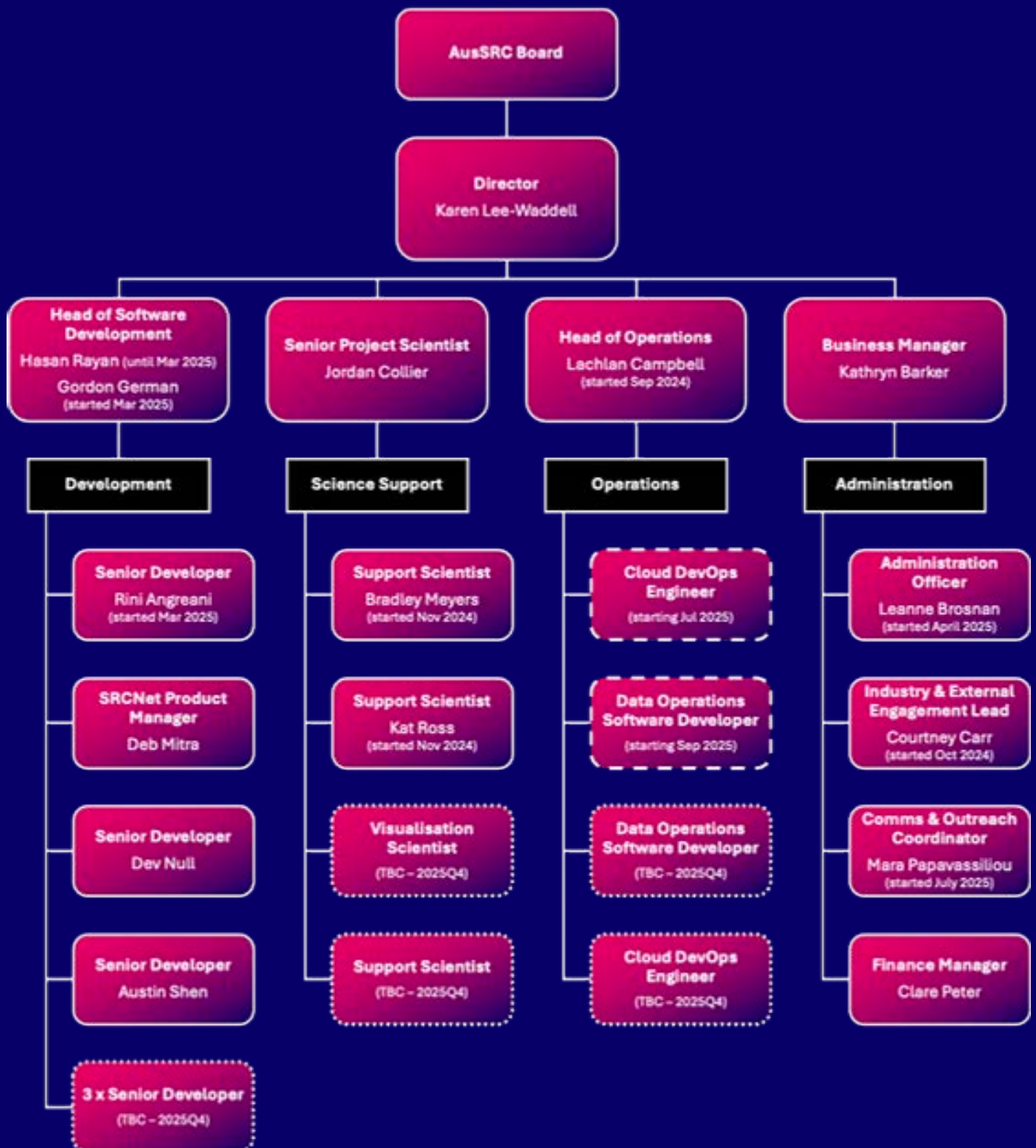
In October 2024, **Courtney Carr** joined the AusSRC as Industry and External Engagement Lead. Having spent her career working on a range of technology projects, Courtney will support the translation of technologies and STEM knowledge and techniques, and engage industry on complementary projects.

Leanne Bronson started with the team as an Administration Officer in April 2025. With experience working within the wider SKA project at CSIRO, Leanne brings valuable organisational knowledge and experience to this role.



Images: Top Right - Senior Software Developer Rini Angreani. Above - Administration Officer Leanne Bronson.

Our Personnel 2024-25



2024-25 AusSRC Events and External Engagements



Community Engagement Workshop 2024

In early December 2024, AusSRC ran a Community Engagement Workshop at the Australian Resources Research Centre (ARRC) building in Kensington to raise awareness of AusSRC in local and national research communities.



The workshop was attended by ~30 researchers in person and ~40 online. Seven presentations were delivered by the AusSRC team, and nine were delivered by the SKA science community covering a roughly equal mix of projects for the MWA and ASKAP radio telescopes.

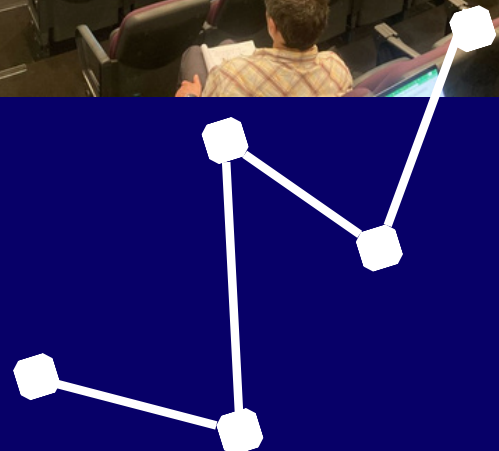
From this workshop, individual follow-up discussions and meetings took place with many of the presenters, leading up to submissions for a subsequent Expression of Interest (EOI) round.



Images: Previous page, top right - the AusSRC team at the 2024 Radio School in Geraldton; top left - international visitors tour the Pawsey Supercomputing Research Centre; middle - the OnSala Space Observatory; bottom right - the attendees of SRCNet PI 27 Planning; bottom left - Dev Null speaking to those curious about astronomy at Astrofest 2024.



This page, top left - Dr. Karen Lee-Waddell presents at the Community Engagement Workshop; bottom right - Dr. Jordan Collier presents at the Community Engagement Workshop; bottom left - Austin Shen presents at the Community Engagement Workshop.



International Engagements

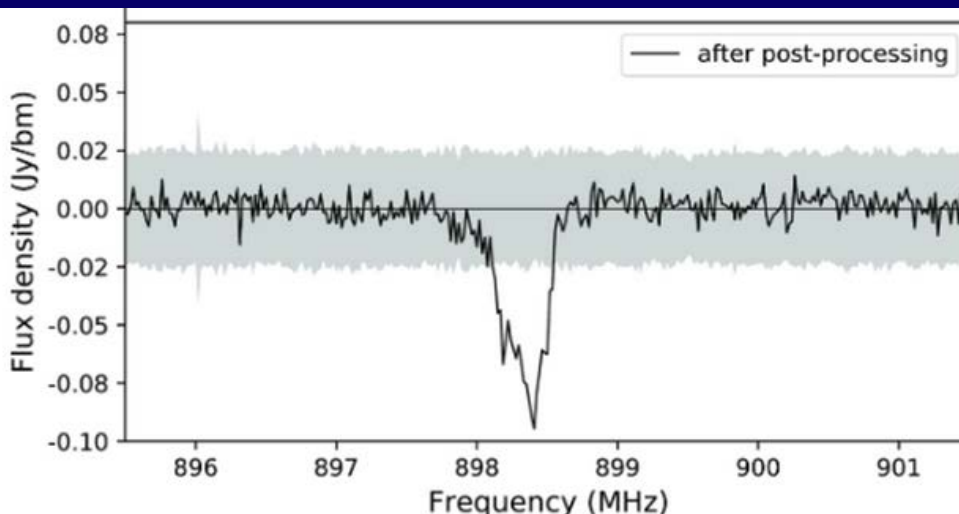
Active engagement with the international SRCNet and broader research communities, both locally and abroad, is central to AusSRC's mission to support data-intensive radio astronomy. In 2024–25, the AusSRC team strengthened international connections through collaborative initiatives, including hosting international visitors and participating in key forums and events.



Image: IPTA 2025 meeting attendees, including Dr. Bradley Meyers, in Pasadena, California at the Caltech campus.

PI 27 Planning (June 2025, Italy)

Members of the Software Development and Science Support Teams attended the in-person SRCNet PI 27 planning event in Catania, Italy. During PI 27, the team increased their contributed development effort and raised AusSRC's profile within the SRCNet. AusSRC has personnel within the Development and Science Delivery streams and are starting to contribute to the SRCNet Service Operations. AusSRC will be hosting the forthcoming in-person SRCNet workshop and PI 29 planning event in Perth in December 2025.



Data from ASKAP survey science team, FLASH, shows a hydrogen absorption line detection (the v-shaped dip) after post-processing. The FLASH post-processing and line detection workflows are part of a single automated pipeline that was developed by AusSRC, enabling faster scientific analysis of each absorption line feature.

Image source: Hyein Yoon et al, 2025 [incl. K. Lee-Waddell and G. German].

International engagements

AusSRC Director Dr Karen Lee-Waddell presented about AusSRC during the IDIA retreat (3-4 June), building stronger connections with IDIA, who will likely form part of the South African SRC. IDIA conducted a 5-year review (7-8 June) to reflect on their progress and determine future directions. AusSRC Director Dr Karen Lee-Waddell was invited to be on the panel and assumed the role of Panel Chair.



Images: Above - the Australian contingent at the SKAO's Science Conference in Görlitz, Germany; bottom right - the attendees of the SKAO's Science Conference in Görlitz, where Dev Null ran an MWA EoR workshop at EoR CodeX; bottom right - SRCNet PI 25 Planning at the SKAO Global Headquarters at Jodrell Bank, UK, with the Lovell Telescope in the background.

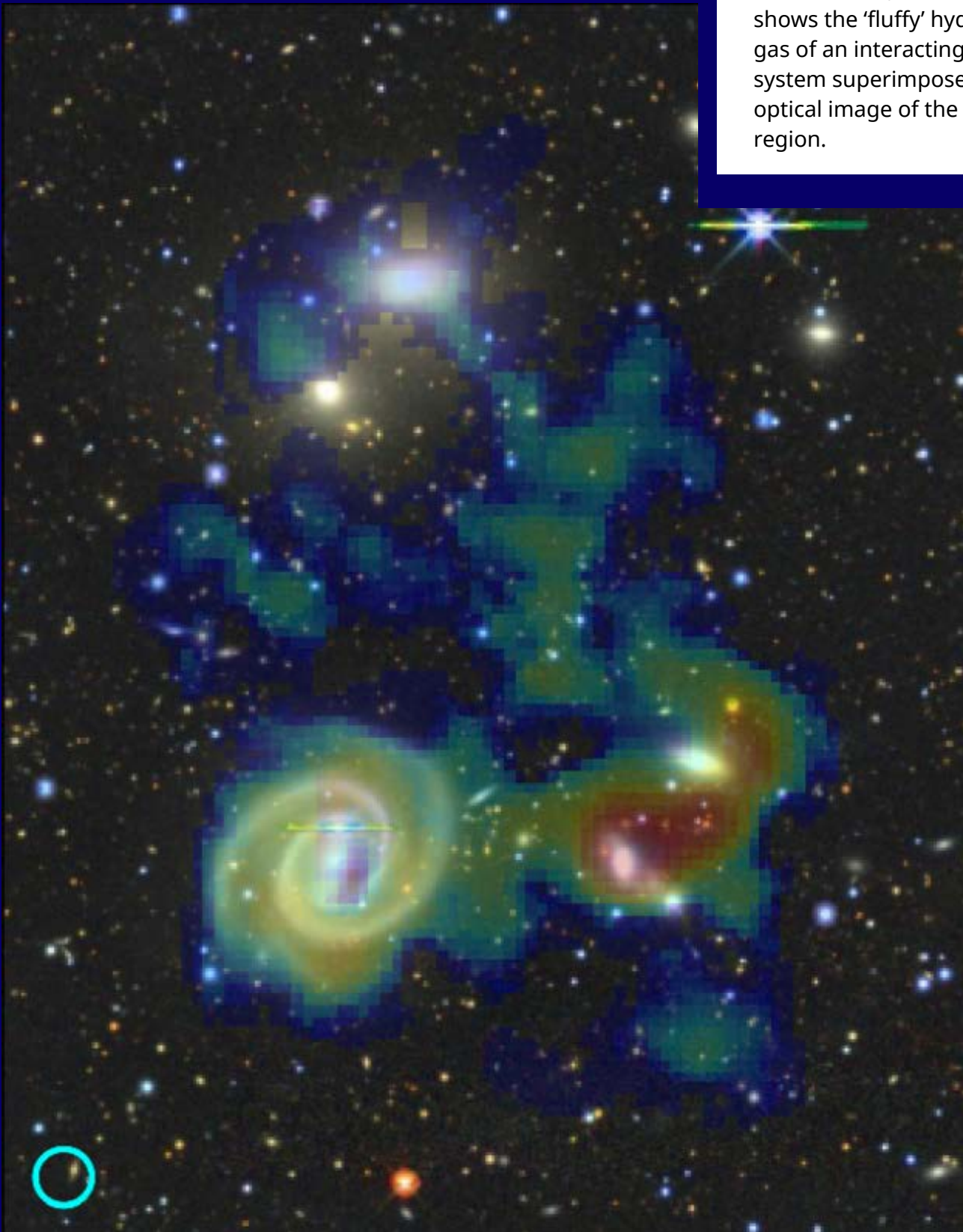
In June 2025, Support Scientist Dr. Bradley Meyers attended the International Pulsar Timing Array (IPTA) meeting held in Pasadena, California. The meeting was an international gathering of those involved in gravitational wave and pulsar timing array science, presenting an opportunity to engage from an SRC perspective on how AusSRC can align itself to support researchers.

While abroad, Dr. Meyers also visited the Canadian Astronomy Data Centre (CADC) located at the National Research Council Canada Herzberg Astronomy and Astrophysics Research Centre (NRC-HAA), where he interacted with CADC staff directly involved in SRCNet development. He presented on the status of current AusSRC projects and future plans, and discussed how SRCs, the SKAO and the radio astronomy community will engage with each other.



Image source: Huang et al., 2025
[incl. K. Lee-Waddell and A. Shen].

An image by ASKAP survey science team, WALLABY, shows the 'fluffy' hydrogen gas of an interacting galaxy system superimposed on an optical image of the same region.



Outreach Activities

Each year, the AusSRC team participates in a number of outreach activities centred on big data, machine learning, advanced technology, and data driven discovery.

In 2024–25 the team participated in the following events initiatives:

ICRAR StarGirls+ STEM Camp - January 2025

Dr. Kat Ross attended camps held in Perth and Geraldton, sponsored by the SKAO, aimed at high school students interested in astronomy and astrophysics, with a focus on women and underrepresented genders. Delivered by ICRAR, the two multiple-day camps were an opportunity to demonstrate our diversity in STEM careers and highlight successful women in astronomy.



Curtin Open Day 2025

AusSRC attended Curtin University's 2025 Open Day as part of the ICRAR stall. AusSRC developers, scientists and administrative staff spoke to Year 11 and 12 students considering future careers in big data and radio astronomy.

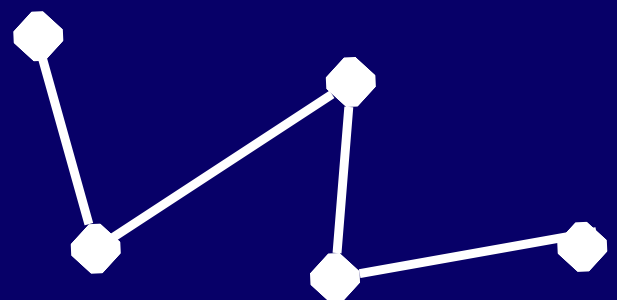
WiTWA Techtrails Program - February 2025

This Program, delivered by Women in Technology WA, invites women working in technology to run workshops and talks with Western Australian school children to show the possibilities of a career in technology. Support Scientist Dr. Kat Ross attended full day high school and primary school incursions to inspire students to study STEM subjects.

Astrofest 2024

Astrofest is a free astronomy outreach event held annually at Curtin University. In November 2024, AusSRC exhibited as part of the SKA project in Australia stall, engaging with the general public curious about astronomy.

Image: Dev Null and Dr. Kat Ross speak to prospective students at the 2025 Curtin Open Day.



Media and Other Engagements

In March 2024, Support Scientist Dr. Kat Ross appeared on the Australian Highlights Podcast, hosted by Science Explainer and comedian Rachel Rayner. In this podcast, Kat covered research undertaken by IncludeHer - the organisation they founded and lead - into representation of female scientists in senior science curricula across Australia.

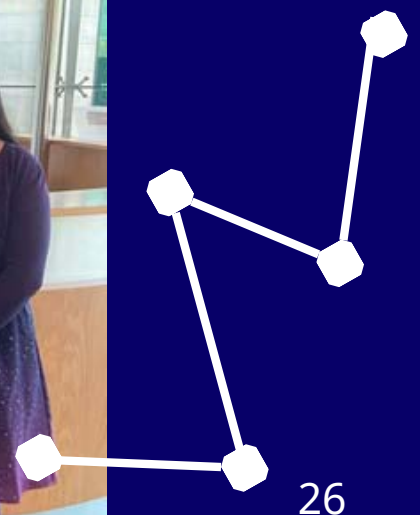
In 2025, Kat also appeared on triple j's Hack, speaking to Dave Marchese on the first image produced by SKA-Low.

Following the CARTA Developer Showcase, Senior Project Scientist Dr. Jordan Collier appeared with CARTA Project Manager Kechil Kirkham on the Fine Music Radio Show, a community radio station broadcast to the Cape Peninsula, reaching up to 100,000 listeners.

In May 2025 AusSRC Director Dr. Karen Lee-Waddell, along with her Barbie doppelganger, was featured in CSIRO's article 'Forget Barbie: Meet CSIRO's real-life STEM role models', to bring visibility to STEM careers for girls and women.



Images: Above - Dr. Karen Lee-Waddell poses with her Barbie as part of a CSIRO initiative (image: CSIRO); below - members of the AusSRC team meet astronaut Katherine Bennell-Pegg, the Director of Space Technology at the Australian Space Agency, following a Panel Q&A run by ICRAR.



The 2024 Australia Telescope National Facility Radio School

The 2024 Australia National Telescope Facility Radio School (Radio School) was jointly hosted by CSIRO, ICRAR, and the SKAO, from September 30 to October 4. AusSRC was proud to sponsor this important event.

The Radio School program saw over 150 researchers convene in Geraldton for the opportunity to learn radio interferometry fundamentals and participate in the hands-on processing of telescope data from ASKAP and the MWA.

Aimed at PhD students and postdoctoral researchers in astronomy, the program featured several presentations from AusSRC staff, as well as a program of public events for the Geraldton community, also jointly supported by AusSRC.

On the first day of the Radio School, principles in radio interferometry were put to the test by AusSRC Senior Developer Dev Null, who delivered a lecture and tutorial on Calibration and Flagging.

Dr. Jordan Collier, AusSRC's Senior Project Scientist and CARTA expert, also delivered a lecture on Visualisation Software. Meanwhile, at the Museum of Geraldton, AusSRC supported tabletop activities delivered by CSIRO. Participants young and young at heart learned about important concepts in astronomy and created a 'pocket solar system' to take home.



Images: Above - the Geraldton public gathers for a special look at the night sky during the Radio School Public Observing event; below right - activities prepared for the young and young at heart at the Museum of Geraldton; below left - Dev Null presenting at Day One of the Radio School.



Day one also saw a Public Observing event at the Geraldton Foreshore. Led by CSIRO, the event gave the Geraldton public the opportunity to look through one of 5 telescopes at celestial bodies such as Saturn, Venus and the 47 Tuc globular cluster. Local, national, and international astronomers from CSIRO, the SKAO, and AusSRC were available to answer the public's space-related questions and stoke curiosity in the night sky.

Days two and three of the conference deepened participants' understanding of MWA and ASKAP data processing. Dev Null delivered a lecture on MWA All-Sky Virtual Observatory (ASVO), while AusSRC Director Dr. Karen Lee-Waddell delivered a lecture and several tutorials on analysing spectral line data.



Images: Top right - Dr. Karen Lee-Waddell presents at Radio School 2025; above - participants attend a tutorial run by Dev Null and Dr. Kat Ross; bottom right - members of the AusSRC team pose in 'Christmas tree' dipole style amongst SKA-Low antennas at the under-construction SKA-Low telescope.

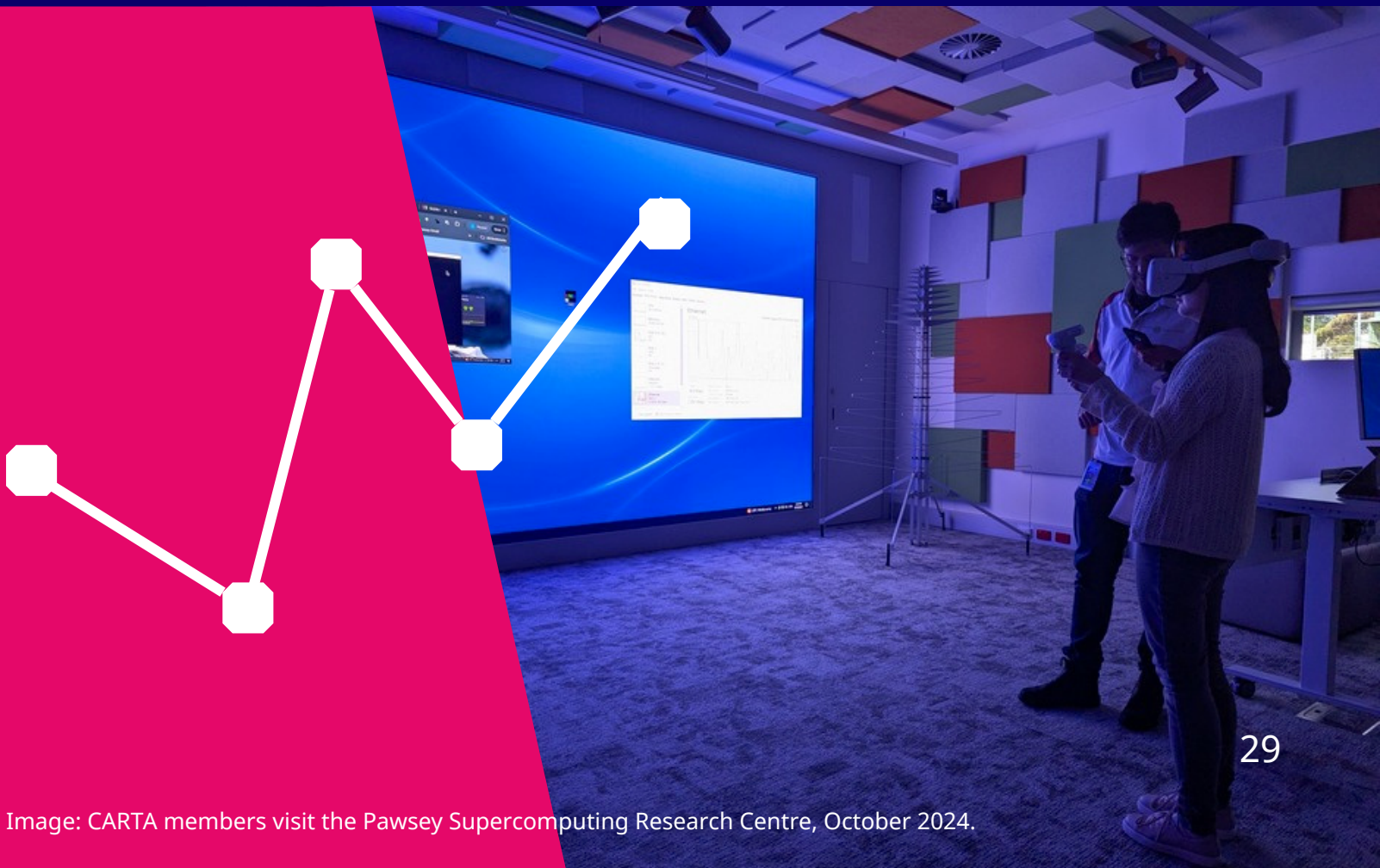
On day four of the Radio School, participants set out for a tour of Inyarrimanha Ilgari Bundara, the CSIRO Murchison Radio-astronomy Observatory. The observatory is one of the best locations in the world for radio astronomy due to its distance from human settlements. Radio School participants toured CSIRO's ASKAP telescope and the Curtin University MWA site, as well as the SKAO's under-construction SKA-Low telescope.

Operations Team Update

Building a backbone for SKA science

The Operations Team plays a crucial role in building and maintaining foundational infrastructure and services that support cutting-edge astronomical research.

During the 2024–25 financial year, the Operations Team's focus has been on establishing a robust and scalable environment to process and manage the vast amounts of data expected from the SKA telescopes. The Operations Team has made significant strides in establishing critical computing infrastructure, team growth, and strategically planning for the future.



Operations Team Key Developments

This year, the Operations Team has focused on team growth, the establishment of critical computing infrastructure, and strategic planning.

- **Growing an expert team:** The Operations Team initiated the recruitment process to build a highly skilled team capable of managing complex computing environments.
- **Establishing core infrastructure:** The Operations Team completed foundational work on AusSRC's first on-premise computing system. This system, located at the Pawsey Supercomputing Research Centre, is designed to be a key component of the SRCNet. This will enable the AusSRC to store, process, and distribute SKA data efficiently. AusSRC's cloud computing capabilities have also been expanded by forging relationships with major providers, ensuring the Software Development team has flexible and powerful resources at their disposal.
- **Future-Proofing Our Systems:** Current activities are strategically aligned with the long-term vision for the SKA project. By testing and developing infrastructure now, the Operations Team is actively shaping the architecture that will host the production systems for the SKA project's scientific operations. This proactive approach ensures that when the SKA begins its full scientific verification phase, the AusSRC will be ready with a reliable and high-performing environment.



Image: International visitors Fabio Luschsinger (IDIA), Hyeseung Lee and Professor of Astronomy Jungyeon Cho (both Chungnam National University) tour the Pawsey Supercomputing Research Centre.

Laying the foundations of an SRCNet Node

AusSRC is actively collaborating with computing providers to install an on-premises system at the Pawsey Supercomputing Research Centre. This system will be foundational for AusSRC's participation as a major node of the SRCNet, starting with SRCNet v0.2 in the first quarter of 2026. This Network is vital for distributing and processing SKA data globally.



Operations Resources

Oracle Cloud Engagement enables Nimbus migration

AusSRC has successfully developed strong relationships with Oracle Cloud. This has enabled our Software Development Team to seamlessly migrate their existing workflows from the Nimbus research cloud at the Pawsey Supercomputing Research Centre, providing them with enhanced flexibility and scalability. Continued evaluation of Oracle's cloud services will optimise resource utilization.

AWS Evaluation Commenced

AusSRC has begun evaluating Amazon Web Services (AWS) to explore additional cloud computing options to ensure we leverage the best available resources for our evolving requirements.

Growing our capacity to support advanced research workflows

Over the next year, the Operations Team will progress recruitment of personnel with specialised skills in high-performance computing and data management. The first new team member, a dedicated DevOps Engineer, will provide the expertise needed to automate and streamline operations, and will contribute to the broader scientific computing platforms at the Pawsey Supercomputing Research Centre.



Images: Previous page - Dev Null at the Pawsey Supercomputing Research Centre; above - Lachlan Campbell presents at the 2024 Community Engagement Workshop; left - SRCNet PI 23 Planning in Gothenburg, Sweden at the Onsala Space Observatory.

Planning for the future

AusSRC has commenced the crucial phase of testing and developing operations infrastructure and services. The ultimate goal of this work is to finalise the architectural design for the deployment of production systems in the 2027-28 timeframe. This period strategically coincides with the Science Verification phase of the SKAO, ensuring systems are fully prepared to support the first major scientific outputs from the SKA-Low telescope.

Software Development Team Update

Enabling astronomy through scalable software solutions

The AusSRC Software Development Team facilitates SRCNet prototyping and creates software tools and systems aimed at empowering scientists working with large volumes of astronomical data to publish new results.

The Software Development Team currently supports survey projects from SKA precursor telescopes including:

- **EMU** (Evolutionary Map of the Universe), the ASKAP radio continuum survey aiming to map the southern sky with high sensitivity and resolution.
- **WALLABY** (Widefield ASKAP L-Band Legacy All-Sky Blind Survey), the ASKAP neutral hydrogen (HI) survey of the local Universe, which aims to map all nearby HI sources in the southern hemisphere.
- **FLASH** (First Large Absorption Survey in HI), a wide-area survey using ASKAP to search for the HI line in absorption against background radio continuum sources.
- **POSSUM** (Polarisation Sky Survey of the Universe's Magnetism) a continuum polarisation survey of the entire southern sky using ASKAP.
- **DINGO** (Deep Investigations of Neutral Gas Origins) an ASKAP survey studying the evolution of HI by focusing all observing time to get deep (i.e. high-sensitivity) image cubes on selected patches of the sky.

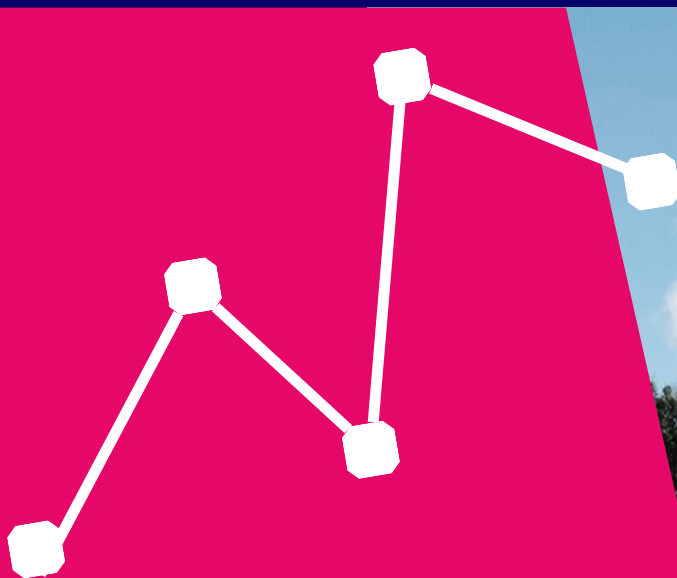


Image: AusSRC Senior Software Developer at PI 23 in Goteborg at the Onsala Space Observatory.



Software Development Team Key Developments

In 2025, the Software Development Team successfully managed the complex transition of legacy SKA precursor projects from the Nimbus Cloud, while also ramping up contributions to SRCNet and formulating a renewed strategic direction.

Key developments include:

- **Transition from Nimbus Cloud:** A key 2025 deliverable was the preparation for the shutdown of AusSRC's allocation on the Nimbus Cloud resource at the Pawsey Supercomputing Research Centre. The work took several months to complete, as it required finding a new cloud resource to host the legacy SKA precursor science projects that AusSRC supports, re-creating the software workflow pipelines on the new resource, and moving several terabytes of data.
- **Boosting SRCNet efforts:** In April 2025, AusSRC refocused its SRCNet development and deployment efforts. The Software Development Team raised its FTE contribution from 0.8 to 2.3 FTE. Three team members have now been successfully seconded into SRCNet Development or Operations teams.
- **Software development for SKA science:** The Software Development Team has been heavily involved in the consultation process leading up to the selection of 2025 ASEPs. Seven of the proposals require software development support. The development work on these projects will highlight AusSRC's expertise in developing scientific workflows and pipelines for processing and handling large astronomical datasets.
- **A software development roadmap for an exascale science project:** Following a dedicated workshop to determine timelines and milestones, a software development roadmap was created. This has helped to focus the team and prioritise work over several areas: workflow migration, SRCNet development, and the upcoming ASEPs.

Legacy SKA precursor Projects

Significant progress was made on legacy SKA precursor telescope projects still supported by AusSRC. These projects will soon transition into 'maintenance mode', where they will be supported by the AusSRC Operations Team. Final development work and documentation for both science users and the Operations Team has been prepared.

Some highlights of the development work include:

- **Improvements to the team's MWA Birli pre-processor.** This work has improved the efficiency of handling raw data from the MWA telescope, creating better and more accurate images.
- **Development contributions** to the publicly-announced world-leading MWA EoR limit.
- **Collaboration with Australian Astronomical Optics (AAO)** has led to the web hosting of some of AusSRC's advanced data products at Data Central (part of AAO) in Sydney. AusSRC is also exploring alternative hosting and public release solutions for WALLABY data products produced by AusSRC pipelines, in addition to CASDA (CSIRO ASKAP Science Data Archive) and CADC (Canadian Astronomy Data Centre).
- **Acceptance of a WALLABY Public Data Release 2 publication and POSSUM survey description paper**, as well as team contributions to the Radio Advanced Data Products whitepaper.
- Acceptance of the **FLASH Pilot data paper** for publication.
- The **FLASH web portal was created** and linked to both the AusSRC-designed FLASH database and the CHAD (Consolidated HI Absorption Database).
- The **final FLASH supplementary pipelines** for the processing of inverted spectra and masked detection were added.

Further information on these publications are noted in the Publications section of this report.

Farewell to Nimbus, and a new chapter for AusSRC computing

Over the past 6 years, the Nimbus Cloud (Nimbus) infrastructure hosted by the Pawsey Supercomputing Research Centre has hosted AusSRC's data processing pipelines. Nimbus has been a significant allocation for AusSRC, comprising of more than 2000 cores and 500 TB of storage. In March 2025, Nimbus reached its end-of-life, resulting in the need to migrate data-processing pipelines to a new resource.

Nimbus hosted the databases, pipeline logic, and triggering of all AusSRC-supported projects. Actual processing was done on Setonix, the HPC facility at Pawsey, with outputs then streamed back to Nimbus. As both Nimbus and Setonix were hosted on Pawsey infrastructure they shared the same internal network and protocols.

After the Software Development Team determined how to send processing from Oracle Cloud to Setonix and back efficiently, the FLASH, WALLABY, POSSUM, DINGO, and Radio Galaxy Zoo projects were migrated from Nimbus to Oracle. This was an extensive endeavour that took over five months and included all the databases, triggering logic, and network paths. 6 TB of data has been archived and stored at Acacia (the objectstore at Pawsey) for later retrieval.

AusSRC has committed to procuring its own hardware resources, which will run a cloud environment suitable for our pipelines and databases. It is anticipated this will be online in late 2025. As such, after consultation with several vendors, the Oracle Cloud platform was chosen as an interim solution.



Image: Dr. Karen Lee-Waddell at the Pawsey Supercomputing Research Centre.

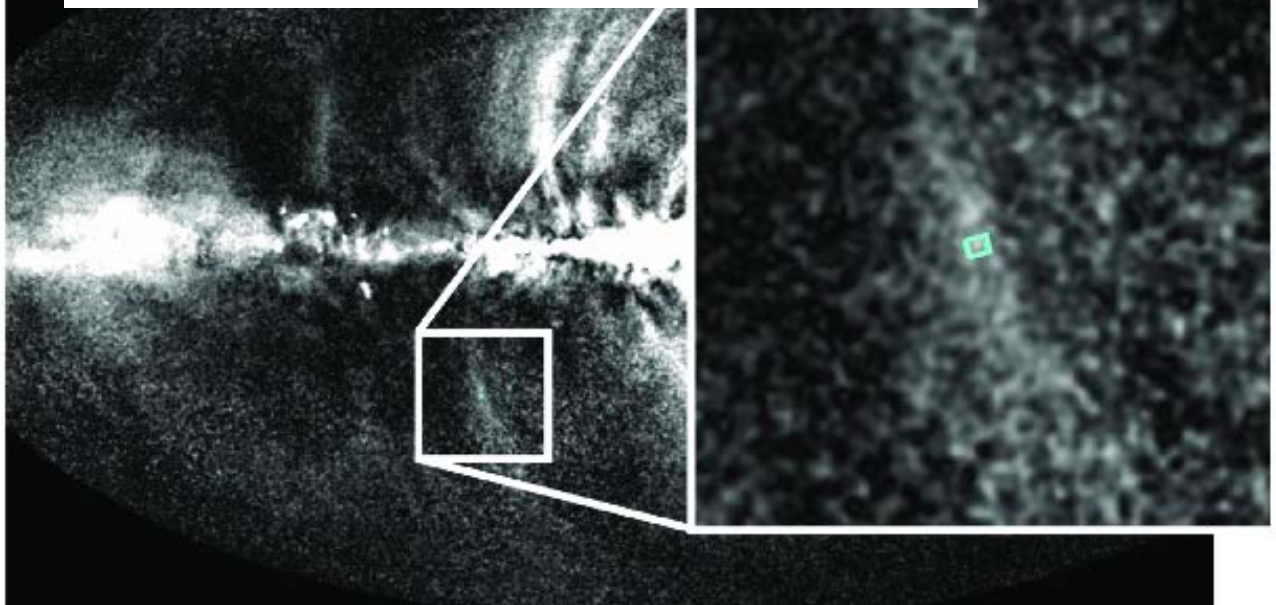
SRCNet Refocus

In April 2025, AusSRC refocussed its efforts to better support SRCNet development and operational plans.

Following a recent restructuring of the SRCNet away from nationally-formed teams to task-based teams, secondments were established placing AusSRC Software Developers into streams including Distributed Data & Compute, Operations, and Science Delivery.

Falling under the remit of the SRCNet Operations Group, AusSRC has committed to deploying SRCNet v0.1 node services on its Oracle Cloud allocation, to be functional by November 2025. We will then upgrade these services to SRCNet v0.2 node specifications in the first quarter of 2026, hopefully on our own on-premises resources.

AusSRC is supporting the ASKAP survey science team, POSSUM, by developing pipelines to handle and transfer large, multi-stokes data cubes to Canada, where the data is then analysed. This image demonstrates POSSUM's excellent sensitivity to the matter and radiation that exists in the spaces between star systems in a galaxy.



Looking to the future

The primary focus for the Software Development Team for the next year is the establishment of a node of services that conform to SRCNet v0.2 node architecture.

A solution in two stages

As this architecture has yet to be fully determined, establishment of services will be delivered in two stages. A functional equivalent of SRCNet v0.1 node specifications will be established by November 2025. This will utilise commercial cloud resources and demonstrate AusSRC's commitment to the SRCNet global endeavour, and our ability to provide resources and technical capability to the SRCNet. This should be in place by the time of the SRCNet PI 29 Planning event in Perth in December.

The second stage will be to migrate these services from the cloud to AusSRC-owned compute infrastructure, and extend the capabilities of the system to provide SRCNet v0.2 node services.

Enabling new research in radio astronomy

Another focus for the Software Development Team will be providing software support for the upcoming 2025 ASEPs. Two Astronomy Data and Computing Services (ADACS) developers will be contracted to provide some of this on-going support as new developers are employed and on-boarded.

Expanding the team

The Software Development Team is advertising for five more developers. One of these will be a joint hire with AAO Data Central in Sydney, broadening AusSRC's connection with existing Australian data centres and the East Coast.

Image: SRCNet PI 27 Planning in Catania.



Science Team Update

Enabling breakthroughs in radio astronomy science

The AusSRC Science Team provides engagement and support to local and international scientists utilising the SKA telescopes and their precursors. Support Scientists participate in SRCNet activities to ensure the science community will be able to conduct cutting-edge research with the SKA telescopes.



Science Team Key Developments

In 2024–2025, the AusSRC Science Team achieved several milestones supporting SKA precursor telescope science.

- **Successful migration of GLEAM-X survey processing:** The GLEAM-X survey workflow was successfully migrated from Pawsey's Setonix to DUG technologies, enabling rapid production of science-ready archival data through a highly collaborative process with DUG.
- **IDIA MoU signed:** A new collaboration with IDIA in South Africa was signed. This also formalises AusSRC's membership in the CARTA team, enabling us to contribute to the visualisation software that is the go-to for radio astronomers working with large data cubes and images. This partnership has already improved data transfer speeds from Cape Town to Australia, benefiting MeerKAT science projects.
- **Laying the foundations of SRCNet science delivery:** Within the SRCNet, AusSRC began contributing to the science delivery stream. Dr. Kat Ross was appointed as one of seven SRCNet Project Scientists, and Dr. Bradley Meyers will lead early work on some of the most challenging and versatile data output from the SKA-Low telescope used to follow-up explosive astronomical events.
- **Supporting groundbreaking radio astronomy:** In 2025, AusSRC supported eight ASEPs selected through a merit-based review process, following engagement with over 20 EOIs. These projects, involving ASKAP, MWA, and MeerKAT data, were developed collaboratively with IDIA, Data Central, and DUG.



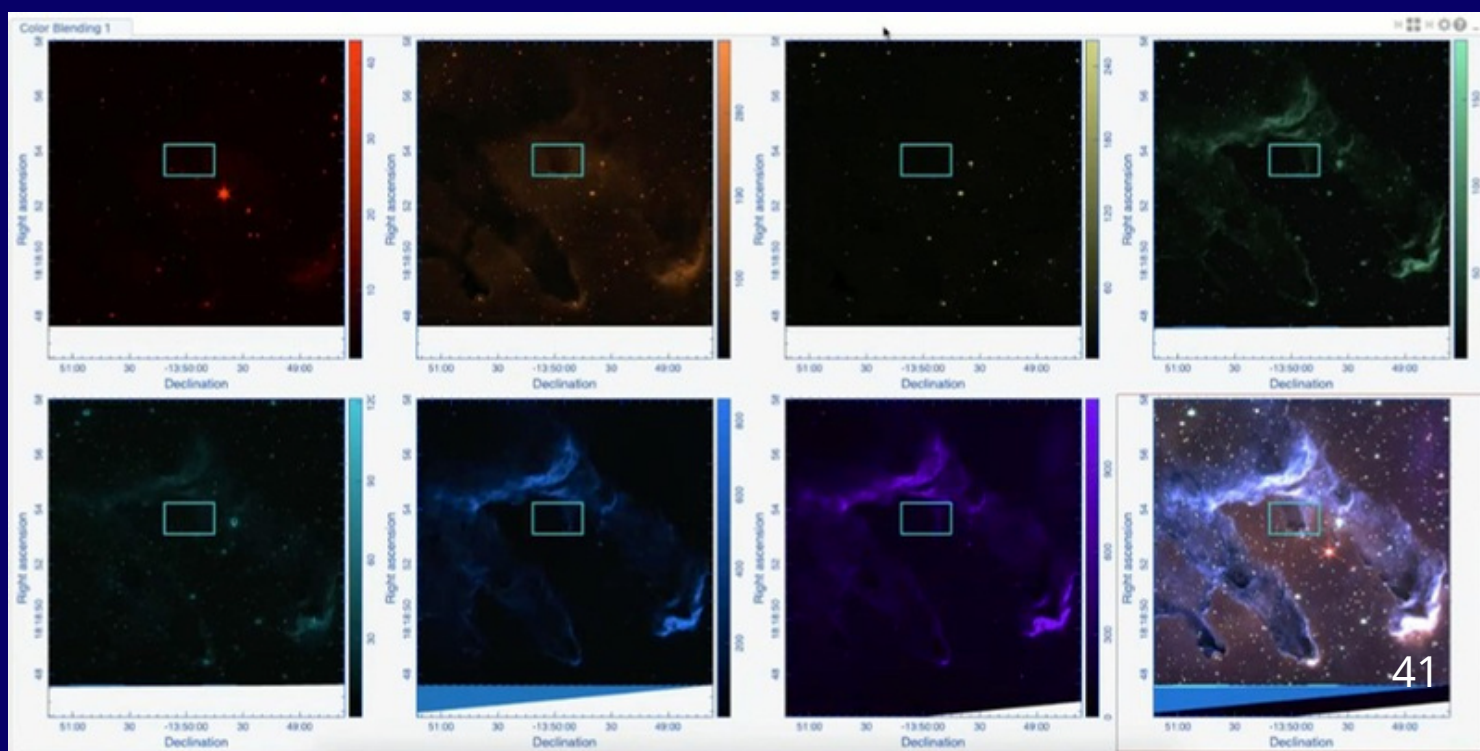
Successful migration sees science ready archival data from DUG technologies

July 2024 saw the successful migration of the GLEAM-X survey workflow from Pawsey's Setonix supercomputer to DUG technologies, a commercial provider of High-Performance Computing on demand. This workflow processes the data from the all-sky continuum survey of the MWA, all the way from uncalibrated data, through to calibrated data, images and catalogs.

Images: Above - guest researcher and IDIA PhD student Fabio Luschsinger delivers a workshop on the capabilities of TOPCAT, a popular tool among astronomers for cross-matching and visualising galaxy catalogues.

Below - image progression by CARTA Project Scientist Kuo-Song captured during the 2024 CARTA Showcase. CARTA can perform multi-colour blending, in this instance by combining seven images from the James Webb Space Telescope from different colour filters, and applying the default blending configuration.

After debugging and software rebuilding, solutions were quickly identified, and the DUG HPC team was very responsive and helpful. After an initial proof of concept period, funds were secured for ongoing access to DUG, and the GLEAM-X workflow was up and running on DUG, producing science-ready archival data.



MoU with IDIA paves way for ultra fast data transfers and future innovation

In 2025 AusSRC signed an MoU with the Inter-University Institute for Data Intensive Astronomy (IDIA), South Africa, that will help implement technology that facilitates SKA science.

IDIA is a partnership of three South African universities: the University of Cape Town, the University of the Western Cape and the University of Pretoria. Its overarching goal is to build capacity and expertise in data intensive research in the South African university research community (<https://idia.ac.za/>).

Led by the AusSRC Science Team, AusSRC's MoU with IDIA outlines AusSRC's contribution to the Cube Analysis and Rendering Tool for Astronomy (CARTA) visualisation software, which AusSRC joined as a formal member (<https://cartavis.org/>).

Following the CARTA face-to-face workshop in October 2024, AusSRC hosted IDIA executives during a visit to DUG and Curtin's HIVE facilities. AusSRC also hosted CARTA at UWA during a show-and-tell discussion to stimulate thoughts and ideas for collaboration. This program included a CARTA showcase to increase engagement between CARTA and the Australian astronomical community. The event attracted over 70 attendees, deepening mutual understanding and improving user experience with CARTA.

As part of the collaboration, IDIA and AusSRC have already facilitated fast data transfers from Cape Town to the Pawsey Supercomputing Research Centre using Globus and a new category of IDIA staging projects, supporting several Australian-led MeerKAT science projects. Principal Investigator and frequent MeerKAT observer Associate Professor Natasha Hurley-Walker (ICRAR-Curtin University) transferred ~2 TB in ~2.5 hours, a significant improvement on the previous data transfers, which took a few weeks to complete.

It is expected that AusSRC's collaboration with IDIA will enable further creative coding, improve software innovation and help facilitate SKA science.

AusSRC sets direction for SRCNet Science delivery stream

In January 2025, AusSRC began contributing to a new science delivery value stream within SRCNet.

Within this stream, Dr. Kat Ross was announced as one of seven SRCNet Project Scientists. As part of this group, she has delivered an initial set of SKA science workflows, their detailed science cases, and level 0 requirements, determining the direction of future priorities for SRCNet, including their initial test campaigns.

Dr. Bradley Meyers joined the Teal team as a Support Scientist collaborating with several team members across Europe. In May 2025, he deployed, tested and documented the first informed attempts to process SKA-Low transient buffer board data, and provided predictions for SKA-like data. Based on the data and software experience from the MWA telescope, and using prototype computer systems with the SRCNet, the work provided examples, scaling estimates, and predictions of computational requirements to process SKA-Low Transient Buffer Board (TBB) data in real time for a milestone roll-out stage for SKAO.

In June 2025, Dr. Jordan Collier and Senior Developer Austin Shen joined the Teal team, working on compression of visibilities and scalability of post-processing workflows respectively.

Image source: Murugesan et al., 2024 [incl. A. Shen; K. Lee-Waddell]

Hydrogen gas content of galaxy NGC 5054, shown in orange contours, overlaid on a DESI Legacy Survey optical image. The WALLABY post-processing workflows that were used to create this image are supported by AusSRC.

2025 ASEPs

As part of AusSRC's commitment to enable the scientific output of the Australian SKA science community, it supports a number of projects to build capabilities that will enable SKA science. In 2025, following a proposal and review process, eight projects were chosen for AusSRC support.

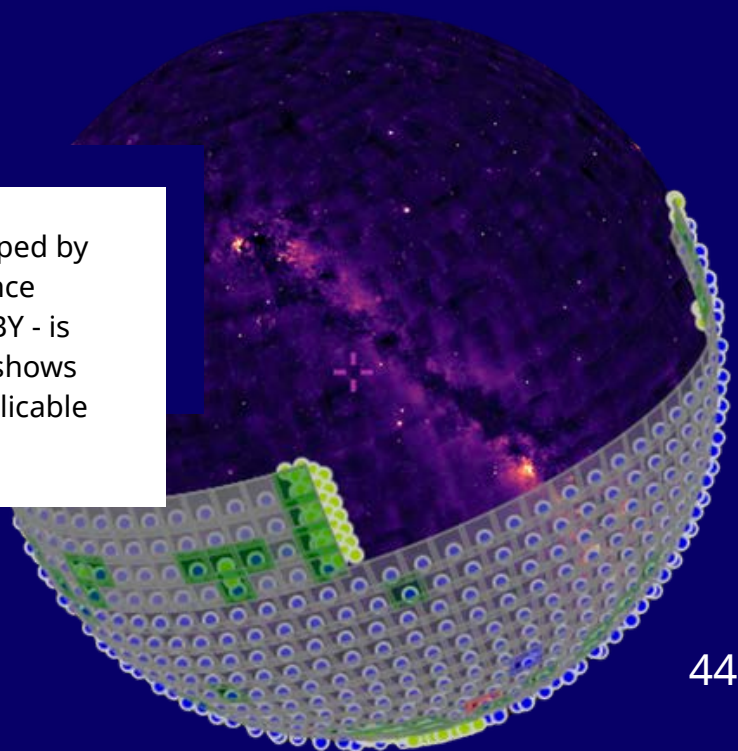
Initial Call for Expressions of Interest

In late 2024, following a Community Engagement Workshop, AusSRC issued a call for EOIs for AusSRC software development and science support. Twenty EOIs were received and reviewed internally by AusSRC. Based on scientific impact, feasibility, path to SKA science, and level of current AusSRC support fourteen were selected to be progressed.

Project Consultations

Consultations were held between the project leads of the successful EOIs and representatives from AusSRC to evaluate project scope and resource requirements. Roadmaps were produced with specific tasks and timelines to assist the projects leads in drafting their proposals. During this process, AusSRC liaised with IDIA, Data Central and DUG, on collaborative components of these projects.

A survey progress tracking tool developed by AusSRC software developers. The science survey's footprint - in this case WALLABY - is shown in grey and each coloured box shows the status of the observations and applicable data post-processing. Credit: A. Shen.



Time Allocation Committee Assessment

Following the consultation process, the project leads of the successful EOIs were invited to submit formal proposals for evaluation by an external Time Allocation Committee (TAC). The chair and secretary of the TAC developed the AusSRC Merit Allocation Program and provided details to the proposers. All fourteen EOIs were resubmitted as proposals to AusSRC. The TAC assessed, scored, and provided feedback on these proposals.

AusSRC 2024 Community Engagement Workshop

7 Presentations from the AusSRC team ...



9 from the SKA Science Community

30



in-person attendees



40

online attendees



: **42**



: **22**



: **3**

20

EOIs received and assessed



14

Proposals submitted

8

Projects Commenced

Successful Projects

Ultimately, eight proposals were selected for AusSRC support on a best-effort basis, with three from ASKAP, three from MWA, one from both, and one from MeerKAT. The outcomes were announced to PIs with TAC feedback included.



Image: Dr. Jordan Collier presents at the CARTA Showcase.

Successful 2025 AusSRC Science Enabling Projects

Proposal Name	Principal Investigator(s)
Accelerating Pulsar Science and Discoveries from the SMART survey	Ramesh Bhat (Curtin Institute of Radio Astronomy (CIRA))
pulsars.org.au: A portal to public pulsar timing data	Emma Carli (Swinburne University of Technology)
Prototyping and Production of a Source Finding Pipeline for GASKAP-OH – Pathway to Source Finding in Very Large Datacubes for the SKA	Jo Dawson (Macquarie University/CSIRO)
Maximizing Science Impact with a Robust Cutout and Mosaicking Tool for Large Spectral Cubes	Minh Huynh (CSIRO), Lister Staveley-Smith (ICRAR-UWA), Jennifer West (National Research Council of Canada)
Triggering the MWA with ASKAP FRBs	Clancy James (ICRAR-Curtin)
Spectral Mini-Cubes from Low Frequency Aperture Arrays	Nick Seymour (ICRAR/Curtin)
Proposal for AusSRC Science Support for the Development of a Real-Time Coherent Beamformer for the MWA	Greg Sleap (CIRA)
Developing a pipeline management framework for an SRCNet prototype system	Cameron Van Eck (Australian National University)

Administration Team Update

The business side of big data

The AusSRC Administration Team is responsible for the development of AusSRC policies, budgets, and business planning. It also leads the delivery of communications and outreach activities, identifies and delivers science and technology translation projects, and provides logistics and administrative support to the other AusSRC Teams.



Image: Dr. Jordan Collier and Kathryn Barker at the Public Observing event at Radio School 2025.

Administration Team Key Developments

In 2024–25, the Administration Team recruited new team members, laid the foundations of business policies and processes, delivered a communications strategy for AusSRC, and instigated the development of future translation and impact projects.

These initiatives provide organisational footing for new partnerships and collaborations that will deliver long-term impact in radio astronomy and related fields, strengthening AusSRC's reputation as a key collaborator in the SKA project and the broader research ecosystem.

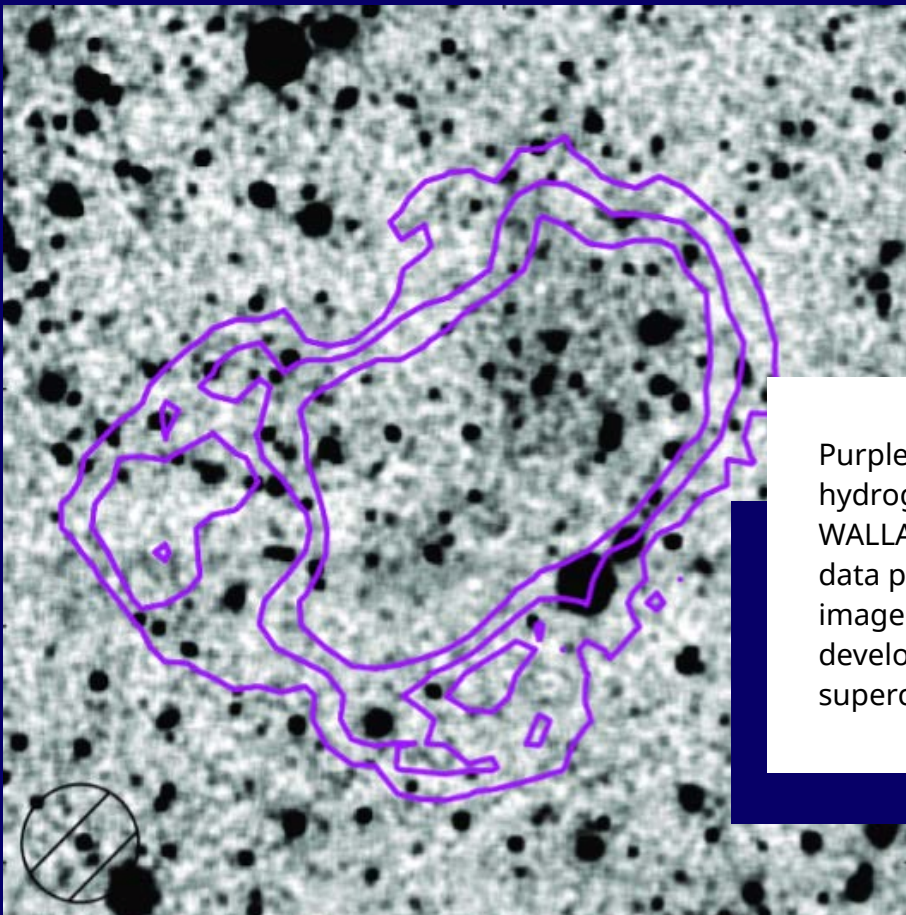


Image source: O'Beirne et al., 2025 [incl K. Lee-Waddell and A. Shen].

Purple contours show the location and density of hydrogen gas overlaid on a broadband optical WALLABY image showing the location of stars. The data post-processing and source detection for this image were fully automated using software developed by AusSRC and run on the Pawsey supercomputers.

Business and Administration Policies

In 2025, AusSRC introduced a Sponsorship Policy to guide support of community events that promote education, outreach, and awareness. A standardised acknowledgement statement was also created to improve recognition of AusSRC's contributions across software development, science support, and scholarly publications.

AusSRC Sponsorship Policy

AusSRC has developed a Sponsorship Policy to provide guidance for low risk sponsorship of community events and activities that stimulate education in STEM, or raise awareness of the SKAO, SRCNet or AusSRC. The policy defines full brand exposure through a range of mechanisms and forms part of the Communication and Engagement Strategy.



Image: Industry and External Engagement Lead Courtney Carr at a morning tea at the University Industry Innovation Network (UIIN) Conference in the Netherlands.

AusSRC Acknowledgement Statement

AusSRC brings together researchers, industry, and communities to shape solutions for the challenges in radio astronomy and beyond. To improve recognition of AusSRC and its outputs, the AusSRC Administration Team has prepared statements to acknowledge support given by AusSRC, inclusive of software development, science support, and scholarly publications. Readers can find out more on the AusSRC website at: <https://aussrc.org/about/working-with-the-aussrc/>

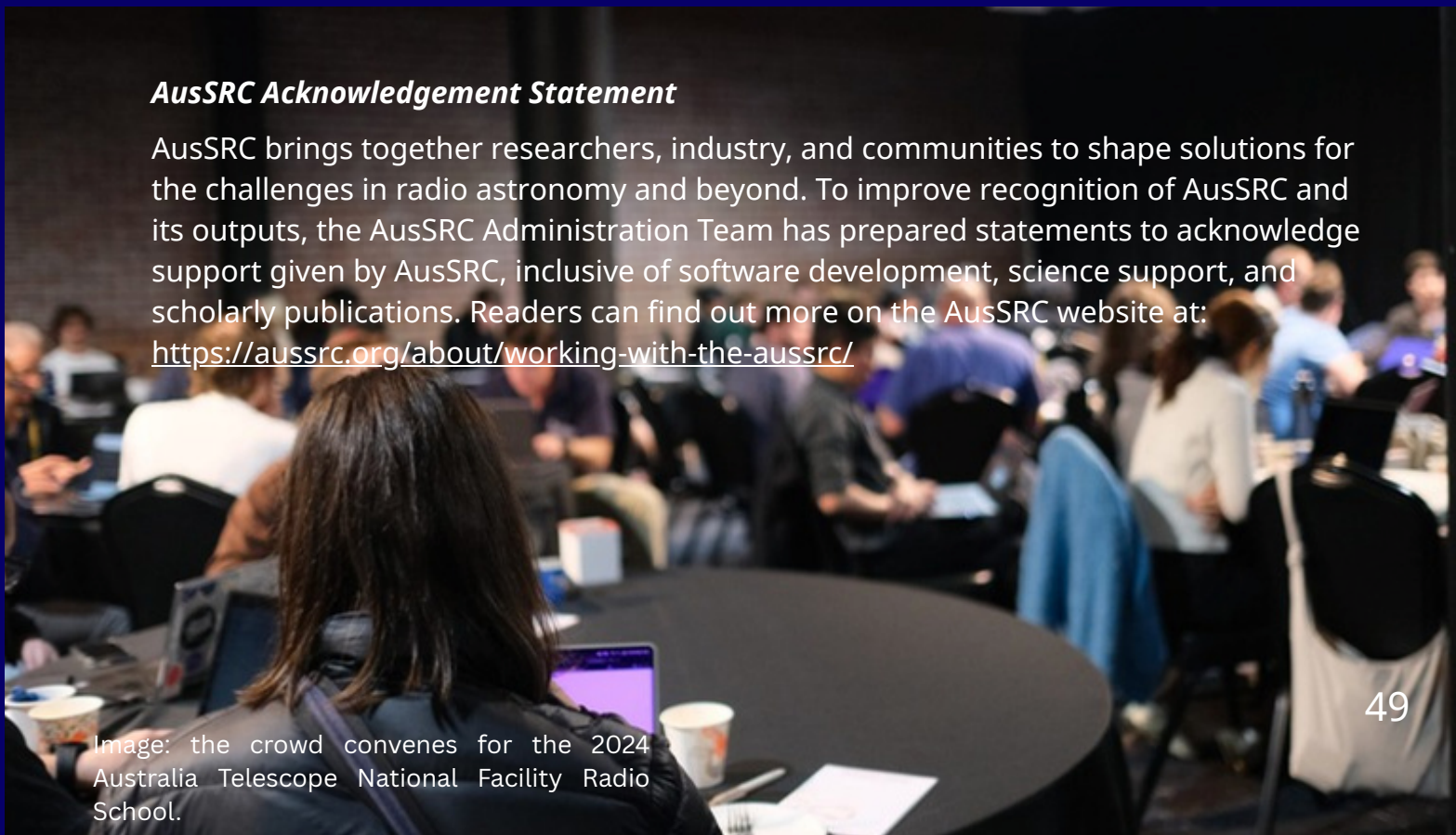


Image: the crowd convenes for the 2024 Australia Telescope National Facility Radio School.

Communications Initiatives

2024 saw the delivery of early AusSRC brand collateral, including lanyards and a banner for use at events.

A key focus for 2025 was increased alignment with other communications professionals within the SKA project leading to inclusion in the SKA project in Australia stall at Astrofest 2024, outreach collaborations at Radio School 2024, and the commencement of other initiatives to be delivered in 2025 onwards.

Delivery of the AusSRC Communications Strategy and Plan will ensure that future initiatives are aligned with organisational objectives of the other AusSRC teams.



Images: Above - A display of AusSRC, SKAO and ICRAR branded collateral; left - Dr. Kat Ross, Dr. Kathryn Barker, Mara Papavassiliou, Courtney Carr and Clare Peter at the 2024 Women in Tech WA Conference.

Communications Strategy envisions future initiatives for AusSRC

In 2025, the Administration Team prepared a Communications and Engagement Strategy and Plan.

The Strategy and Plan are aligned with AusSRC's organisational goals and will ensure that key messages are conveyed to target audiences. The strategy spans approximately two years, and will be reviewed biannually for progress and every two years at the Board level.

High priority initiatives to be delivered as part of the Strategy and Plan include:

- Activities centred on brand development, including refinement of stakeholder messaging, creation of branded merchandise, and updating AusSRC website content.
- Internal communications initiatives such as the development of communications guides and template documents.
- The development of infographics and social media materials that explain and promote AusSRC's compute and storage network.
- The delivery of print and online materials that explain AusSRC's role in the SKA project and radio astronomy.
- The delivery of STEM outreach activities and materials that can be replicated at successive STEM outreach events.

Led by the AusSRC Communications and Outreach Coordinator, activities are supported by the Administration Team and broader AusSRC personnel. AusSRC will also coordinate with its collaborators and the SKAO for brand use and messaging alignment.

Translation and Impact

In 2025, AusSRC strengthened its collaborations through projects spanning mental health, industry engagement, and international knowledge exchange. Key initiatives included developing a stargazing-for-mental-health pilot, launching a 'Collaborate with Us' platform on the AusSRC website, hosting a North Metropolitan TAFE industry placement, and participating in the 2025 UIIN Conference to share and gain insight on the best practice in cross-sector collaboration.

AusSRC Astronomy for Mental Health Collaboration

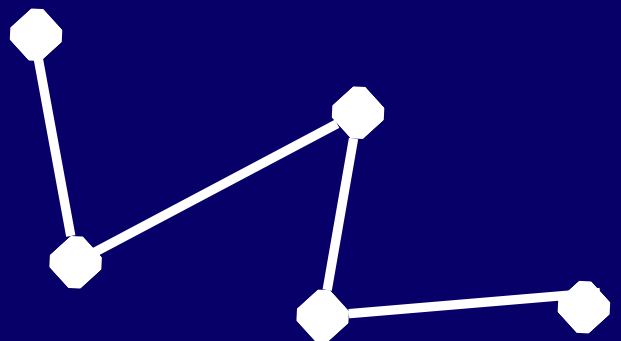
In 2025, AusSRC began developing an Australian adaptation of the International Astronomical Union's Office of Astronomy for Development's Mental Health Program. The result was a 'stargazing for mental health' concept aimed at supporting vulnerable communities.

Relationships were established with a health science research institute, who have offered to co-design tailored activities with mental health practitioners and regional astronomy organisations, which will provide telescopes and astronomy expertise. A local government authority is also on board and now connecting AusSRC with local support organisations.

Work is underway to formalise collaboration agreements, confirm the first target group, and prepare for delivery of the pilot program in Western Australia.



Image: the 2025 Collaborator Meetup event.



Staff exchange with North Metropolitan TAFE delivers mutual benefits

In April 2025, AusSRC's Software Development Team hosted North Metropolitan TAFE senior programming lecturer Rafael Avigad as part of a staff exchange focused on compute memory optimisation and benchmarking.

The placement delivered mutual benefits - Rafael gained fresh insights and confidence in teaching advanced programming concepts and will be exploring the integration of new languages such as Rust into future curricula. Their technical skills in areas including command line, Git, and containerisation were also strengthened.

In turn, the AusSRC team benefited from Rafael's up-to-date industry expertise. The Software Development Team was able to apply new Python best practices in dependency management, linting, object-oriented design, and library patching, as well as produce benchmarking results comparing Rust and Python. These results are now informing future memory optimisation projects.

"It was an absolute honour to spend a couple of months at the Curtin Institute of Radio Astronomy. The subject matter is incredible and getting to see early glimpses of new visions of the universe and the galaxy - WOW!"

- Rafael Avigad, North Metropolitan TAFE senior programming lecturer

Image: The CARTA Showcase.



Collaborate with us platform launched

Following an internal capability assessment, in February 2025, AusSRC launched a new page on its website to articulate priority areas of external engagement and showcase the unique set of skills our team can contribute to collaborations.



AusSRC Collaborators Meetup

In May 2025, AusSRC hosted guests from both the UWA and Curtin nodes of ICRAR, CSIRO, and Pawsey in the CIRA Collaborative Area to share news and network. Participants heard updates on AusSRC's software development projects and translation and impact activities, and explored the diverse capabilities in our collaborator organisations.

Images: top right - the AusSRC team during a team building exercise; middle - the 2025 Collaborator Meetup event; right - Courtney Carr presents at the AusSRC Collaborators Meetup.

Extending learnings in university-industry collaboration

In June 2025, AusSRC Industry and External Engagement Lead Courtney Carr attended the international UIIN conference in The Netherlands, engaging with global leaders in university-industry collaboration. Key learnings included the value of cluster models and innovation hubs, market-driven research, asset identification, and strategies to foster entrepreneurial mindsets, measure impact, and strengthen governance in collaborative projects.

AusSRC Publications

2024 Publications

Authors	Title	Journal & DOI
Deg et al., including Lee-Waddell	WALLABY Pilot Survey: Gas-rich Galaxy Scaling Relations from Marginally Resolved Kinematic Models	The Astrophysical Journal DOI: 10.3847/1538-4357/ad84ba
Heywood et al., including Collier	MIGHTEE-H I: deep spectral line observations of the COSMOS field	Monthly Notices of the Royal Astronomical Society DOI: 10.1093/mnras/stae2081
Mould et al., including Lee-Waddell and Shen	WALLABY pilot survey: the Tully-Fisher relation in the NGC 4808, Vela, and NGC 5044 fields	Monthly Notices of the Royal Astronomical Society DOI: 10.1093/mnras/stae1522
Murugeshan et al., including Shen and Lee-Waddell	WALLABY Pilot Survey: Public data release of 1800 H I sources and high-resolution cut-outs from Pilot Survey Phase 2	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2024.91
Sokolowski , et. al.	High-time resolution GPU imager for FRB searches at low radio frequencies	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2024.46
Williamson , et al.	Optimising the Processing and Storage of Radio Astronomy Data	Cray User Group Conference Proceedings DOI: 10.48550/arXiv.2410.02285
Yoon et al., including German and Lee-Waddell	The First Large Absorption Survey in HI (FLASH): II. Pilot Survey data release and first results	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.10046

2025 Publications

Authors	Title	Journal & DOI
Bonaldi, et al., including Null	Square Kilometre Array Science Data Challenge 3a: foreground removal for an EoR experiment	Monthly Notices of the Royal Astronomical Society DOI: 10.1093/mnras/staf1466
Filipović, et al., including Ross	Teleios (G305.4-2.2) -- the mystery of a perfectly shaped new Galactic supernova remnant	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.10045
Gaensler et al., including Shen	The Polarisation Sky Survey of the Universe's Magnetism (POSSUM): Science Goals and Survey Description	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.10031
Holwerda et al., including Lee-Waddell	WALLABY Pilot Survey: kNN identification of perturbed galaxies through H 1 morphometrics	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.5
Hopkins et al., including Collier	The Evolutionary Map of the Universe: A new radio atlas for the southern hemisphere sky	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.10042
Huang et al., including Lee-Waddell and Shen	WALLABY Pilot Survey: Star Formation Enhancement and Suppression in Gas-rich Galaxy Pairs	The Astrophysical Journal DOI: 10.3847/1538-4357/ad9579
Lee et al., including Lee-Waddell	WALLABY pilot survey: Spatially resolved gas scaling relations within the stellar discs of nearby galaxies	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.30

Authors	Title	Journal & DOI
Li et al., including Lee-Waddell and Shen	WALLABY Pilot Survey: HI source-finding with a machine learning framework	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.14
Nunhokee et al., including Null	Limits on the 21 cm power spectrum at $z=6.5-7.0$ from MWA observations	The Astrophysical Journal DOI: 10.3847/1538-4357/adda45
O'Beirne, et al., including Lee-Waddell and Shen	WALLABY pilot survey: properties of HI-selected dark sources and low surface brightness galaxies	Publications of the Astronomical Society of Australia DOI: 10.1017/pasa.2025.10047
Perron-Cormier et al., including Shen and Lee-Waddell	WALLABY Pilot Survey and ASymba: Comparing H I Detection Asymmetries to the SIMBA Simulation	The Astronomical Journal DOI: 10.3847/1538-3881/ada567
Sasaki et al., including Collier	Supernova remnants on the outskirts of the Large Magellanic Cloud	Astronomy & Astrophysics DOI: 10.1051/0004-6361/202452178

Image: The CARTA Showcase event at the Curtin HIVE (Hub for Immersive Visualisation and eResearch).



Glossary

AAO	Australian Astronomical Optics
ADACS	Astronomy Data and Computing Services
ARRC	Australian Resources Research Centre (CSIRO)
ASEP	AusSRC Science Enabling Project
ASKAP	CSIRO's SKA precursor telescope
AusSRC	Australian SKA Regional Centre
AWS	Amazon Web Services
CADC	Canadian Astronomy Data Centre
CARTA	Cube Analysis and Rendering Tool for Astronomy
CASDA	CSIRO ASKAP Science Data Archive
CIRA	Curtin Institute of Radio Astronomy
CHAD	Consolidated HI Absorption Database
CSIRO	Australia's national science agency
DINGO	Deep Investigations of Neutral Gas Origins
EMU	Evolutionary Map of the Universe
EOI	Expression of interest
FLASH	First Large Absorption Survey in HI
GLEAM-X	GaLactic and Extragalactic All-sky MWA eXtended survey

HI	Neutral hydrogen
HIVE	Hub for Immersive Visualisation and eResearch (Curtin)
ICRAR	International Centre for Radio Astronomy Research
IDIA	Inter-University Institute for Data Intensive Astronomy (South Africa)
IPTA	International Pulsar Timing Array
MWA	Murchison Widefield Array
NRC-HAA	National Research Council Canada Herzberg Astronomy and Astrophysics Research Centre
POSSUM	Polarisation Sky Survey of the Universe's Magnetism
SKAO	SKA Observatory
SKA-Low	SKA Observatory's low frequency telescope
SRC	SKA Regional Centre
SRCNet	SKA Regional Centre Network
TAC	Time Allocation Committee
UIIN	University Industry Innovation Network
UWA	University of Western Australia
WALLABY	Widefield ASKAP L-band Legacy All-sky Blind Survey



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