



# ATUC Open Day Session 1

2026 March

Australia's National Science Agency



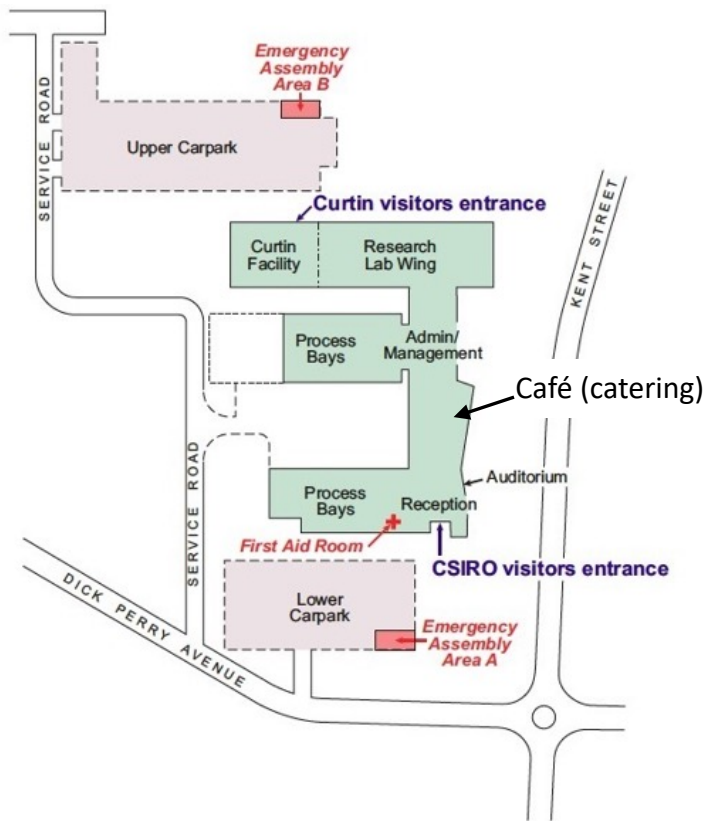


# CSIRO ARRC Kensington Housekeeping





# Emergency exits + facilities



- Emergency exits via reception doors at front, and glass doors at back of building.
- Toilets located to left of reception or next to lift on the left once past security doors on level 3
- kitchens on all levels with fridge, microwave etc.
- **Catering will be provided in the cafeteria, located up the corridor to the right**



# ATUC Chair's welcome

Stas Shabala

Australia's National Science Agency





I would like to begin by acknowledging the Whadjuk people on the Noongar nation as the Traditional Owners of the land that we're meeting on today, and pay my respect to their Elders past and present.



'Eternal Wisdom, Infinite Innovation'  
artwork by Rachael Sarra, working with Gilimbaa.



# ATUC Meeting Code of Conduct

The organisers of this meeting are dedicated to providing a **harassment-free experience for everyone**, regardless of age, gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, nationality, race or religion. We expect our attendees to contribute to a **professional and respectful atmosphere**. **All attendees, speakers and organisers are required to comply with the Code of Conduct**. Organisers will enforce this code throughout the meeting to ensure a safe, inclusive and welcoming environment for everyone.

In practical terms:

- Treat each other with respect and consideration
- Behave in a professional manner
- Critique ideas, not individuals
- Be kind

<https://www.atnf.csiro.au/content/atuc-code-conduct>





# ATNF Program Update

Céline d'Orgeville  
ATNF Program Director

Australia's National Science Agency





# Staffing update

- Recruitment drives for operations team
  - Details will be provided in Daleen's presentation
- Co-funded positions
- Postdocs into the future
- Bolton Fellowship – Applications close 22 March
- General concepts around future recruitment:
  - Have diversity in mind
  - 40-40 gender diversity on short-lists
  - Opening multiple positions at the same time





# Building the talent pipeline

- Interacting with high school students through programs such as PULSE@Parkes
- Summer undergraduate student program
- Graduate student symposium (yesterday!)
- Presentation from the new student committee in the last session today by Sparrow Roch.
- Have obtained feedback from the students, the university supervisors and the CSIRO co-supervisors
- Radio school in Narrabri (1 – 5 June)

Summer students 2025/6





# Building the talent pipeline

A few actions from our various feedback surveys for students, supervisors and ATNF co-supervisors

- **Provide more “value-add” from the ATNF** including ensuring students are more involved in ATNF Science activities, have ability to visit our observatories and can be involved in instrument commissioning
  - Have an active student Slack channel
  - Have funding to enable to students to spend time at the observatories (currently under discussion by the student committee)
  - Our staff emails now go to “staff and students”
- Students have been invaluable in supporting BIGCAT commissioning
- We are exploring options for CSIRO being an **industry partner for university schemes or internship programs.**

Summer students 2025/6





# Engagement between ATNF and our users

Have been proactive in trying to improve communication with our ATNF users.

## General

- ATNF Newsletter.
  - Question: is this read? Does it include the material you would like to see?
- Two open sessions of ATUC per year
- More interactions that before between ATUC representatives and ATNF
- Requested feedback to our ATUC student representatives (Elizabeth and Saurav) directly from students who have applied for observing time
- ATNF Futures workshop





# Engagement between ATNF and our users

## **ASKAP:**

- Each science survey team now has a point of contact within CSIRO
- Weekly messages on survey progress (and ASKAP status) being sent to all the survey team PIs.

## **Feedback mechanisms:**

- Various feedback mechanisms now exist from observatory-specific feedback forms to more general feedback mechanisms.

Question: is there any specific ATNF activity that you would like focused communication and/or engagement on?





# Strengthening the links between the optical/IR astronomy community and radio community

- AAL (Large telescope access working group, Astralis Instrumentation)
- ADACS, DataCentral
- LSST (Vera C. Rubin Observatory)
- SPIE meeting





# ATNF Futures 2030

ATUC Open Day

Cathryn Trott | March 19, 2026

Australia's National Science Agency



# The international context

- New facilities on a 5-year horizon
- Existing advanced facilities: FAST, ASKAP, CHIME

Telescope	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36
ASKAP	█	█	█	█	█	█						
SKA-Mid AA2					█	█	█					
SKA-Mid AA*							█	█	█	█	█	█
DSA			█	█	█	█	█	█	█	█	█	█
ngVLA											█	█



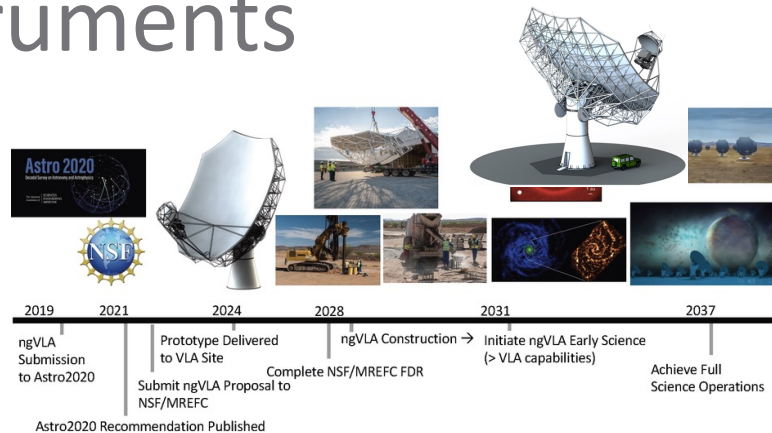


# 2030s international instruments



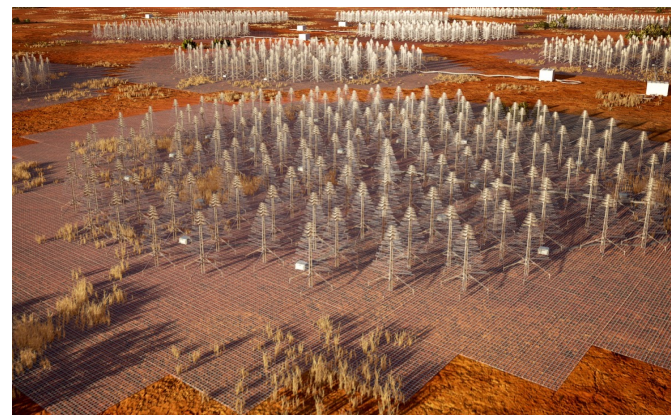
DSA  
(USA)  
Radio  
camera  
6m dish

ngVLA  
(USA)  
1000km  
baselines  
18m dish

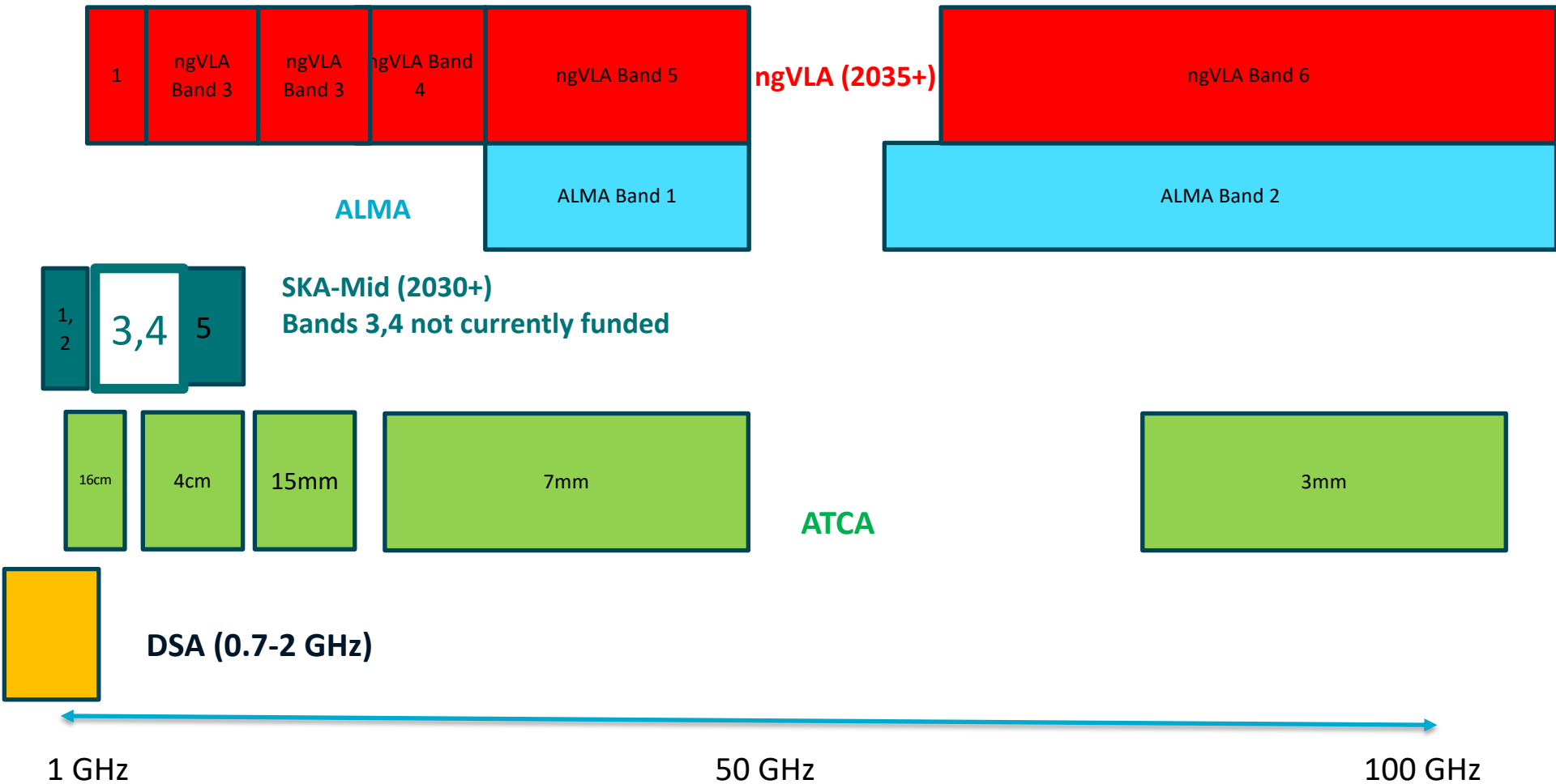


SKA-Mid  
(RSA)  
150km  
baselines  
15m dish

SKA-Low  
(Aus)  
74km  
baselines  
35m AA



# Current and Future Facilities – Receiver Bands





# The national context

CSIRO funding pressure: ATNF does not have sufficient funding to operate all its current facilities toward the end of the decade

Optical astronomy uncertainty: AAT funding cliff; ESO strategic partnership ending 2027/28

Large SKAO commitments by Australian Government

By the end of the decade, ASKAP will require a significant capital refresh





# ASKAP's mission

The ASKAP radio telescope was built to:

- Help establish an observatory site for the SKA Observatory's SKA-Low telescope, and
- Demonstrate SKA survey science technologies.

Following the construction of ASKAP, CSIRO ran an open proposal process, and initiated the 5-year Science Survey Projects, which are still in progress.

The majority of ASKAP observing time between now and 2030 is dedicated to completing the large-scale surveys





# ATNF Futures 2030 Workshop

## Why?

- Context: difficult financial environment; SKA telescopes incoming; international landscape step change in 5 years
- Crucial for a National Facility to consult with the community + internal
- ASKAP surveys on track for 2030 completion; now is the time to plan for 2030+

## What next?

- Combine input from ATNF staff R&D survey + ATNF Futures 2030 workshop + Decadal Plan to inform the forward strategy





# Concepts and intent

## ASKAP upgrade

- New PAFs
- Wider BW
- More dishes



## New dish array

- Mid-high freq
- Wide BW
- PAF + SPF
- Smaller/larger dish



## Aperture Array

- Mid-high freq
- Wide BW
- Potential for  $>1$
- No moving parts



## Concept X

- New ideas!





# Other considerations

- Operational model
- Efficiency and sustainability
- Software, pipelines, storage and compute
- Training opportunities
- Connectivity: VLBI
- National Facility: ATNF's role in providing research infrastructure for Australia





# ATNF Futures 2030

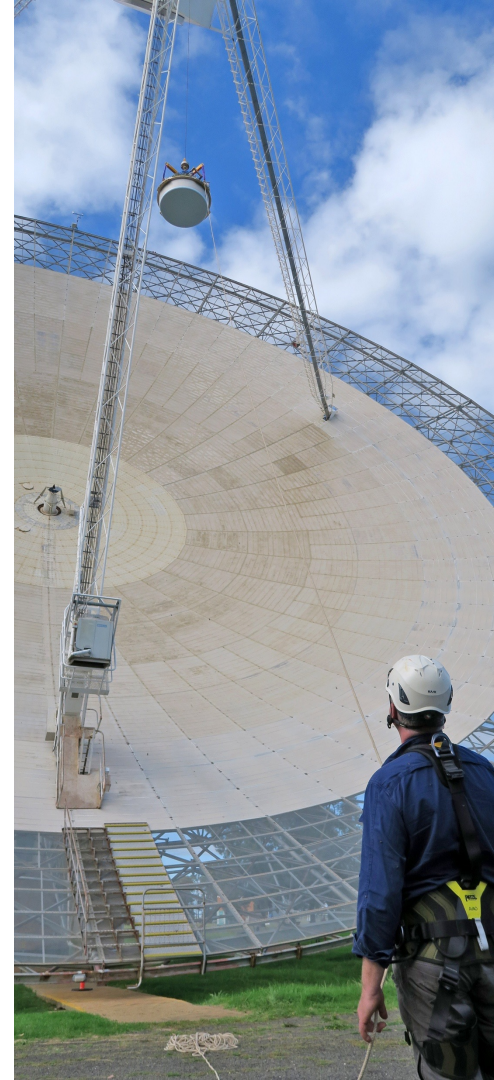
- 200-300 participants across the two days
- 50-page live document of questions and feedback
- Talks recorded and slides provided (available on the meeting website)





# Community input

- Distinctiveness over scale  
Avoid “SKA-light”; focus on capabilities SKA project will not prioritise or operationalise
- Wide-field + cadence  
Synoptic and time-domain leadership via commensal, autonomous operations
- RFI is strategic  
Satellite and terrestrial interference requires designed-in, real-time mitigation and permanent capability
- Software & archives = half the telescope  
Science platforms, automation, and sustained software engineering are critical infrastructure
- Any ASKAP upgrades must be targeted  
High-impact changes (sensitivity, modest baselines, autonomy) without large data-rate growth
- Aperture arrays: high potential with some risk  
Proceed via staged demonstrators
- Precision niches matter  
Polarimetry, rapid VLBI response, astrometry, and calibration stability offer global differentiation





## ATNF Futures 2030 – Next Steps

- Extract key messages from slides, recordings + community document as community input
- Consider community input alongside CSIRO PoR reviews, R&D Roadmap, staff survey
- Undertake groundwork to understand technology, data, software etc requirements for different paths
- Present early analysis to ATNF Steering Committee for comment





# Internal work

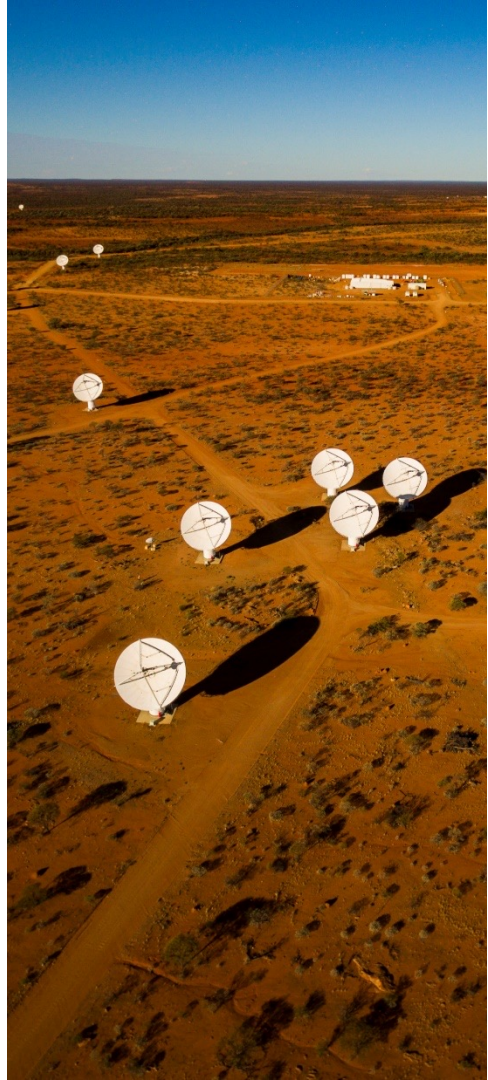
- New dish-based array
- ASKAP upgrade
- Mid-frequency aperture arrays
  
- Engineering considerations
- Software considerations
  
- Operational model and data platforms





# Key elements across concepts

- RFI design, treatment, resourcing
- Software embedded
- Operations model
- VLBI capabilities
- Polarimetry considerations
- Sustainability; efficiencies
- Full lifecycle costing





# Thank you

## **Space and Astronomy**

Cathryn Trott  
ATNF Chief Scientist

[cathryn.trott@csiro.au](mailto:cathryn.trott@csiro.au)

Australia's National Science Agency





International  
Centre for  
Radio  
Astronomy  
Research

# An Australian Radio Transients Facility

James Miller-Jones  
(ICRAR – Curtin)



*ICRAR is a joint venture between Curtin University and The University of Western Australia and receives support from the Western Australian and Australian Governments.*



# Radio transients

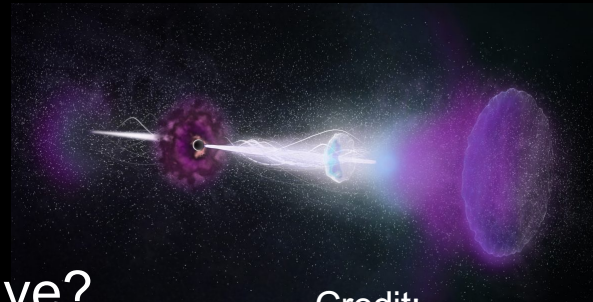
- *Probing physics under the most extreme conditions*
- Tracer of particle acceleration and coherent processes
- Determine the budget of kinetic energy feedback



Credit: ICRAR

## Key questions:

- What populations produce energetic transients?
- What kinds of transients produce jets?
- What can we learn about particle acceleration?
- How do compact stellar remnants form and evolve?



Credit:  
NRAO/AUI/NSF



# Australia's unique radio capabilities





# Opportunity

---

- MWA, ASKAP, ATCA, Parkes, LBA have traditionally operated separately
- Co-ordination has nominally been possible but highly manual
  - Leads to time delays and missed opportunities
- Combined capabilities perfect for transient detection and response
- Combine to enable:
  - Simultaneous multifrequency spectra
  - Joint imaging/time series data
  - Zooming in following a low-resolution detection
  - Co-ordinated observations with multi-wavelength programs



# New developments

---

- Build from existing rapid response system on ATCA and MWA
  - Improvements in system stability
  - Improvements in automation (e.g. scheduling)
- Co-ordinated observing windows
- Quick-look pipelines for planning strategy



# LIEF proposal

---

- 3-year timeline (2027-2029)
- Consortium of 10 Australian + 2 overseas partners
- MWA+ASKAP+ATCA+Parkes+LBA
- Co-ordinate the 5 facilities into a unique radio transient response network
  - Transient detection (wide fields of view)
  - Broadband radio spectra (70 MHz – 105 GHz)
  - High angular resolution (<1 mas)
  - High time resolution (>64  $\mu$ s)
- **Simultaneity, rapid response, high cadence**
- Test strategies and build expertise before SKA operations begin



# ATUC Open Day Session 1

2026 March

Australia's National Science Agency

