



What is ASKAP?

The Australian Square Kilometre Array Pathfinder (ASKAP) is a next-generation radio telescope being constructed by CSIRO in the Mid West region of Western Australia. It will be made up of 36 antennas, each 12 metres in diameter, incorporating novel receiver technologies and leading-edge ICT systems.

Why build ASKAP?

ASKAP will capture radio 'images' with unprecedented sensitivity over large areas of sky. With a large instantaneous field-of-view, ASKAP will also be able to survey the sky much faster than existing radio telescopes. This combination of survey speed and sensitivity will allow astronomers to answer fundamental questions about how galaxies have formed and evolved, and to study pulsars, transient radio sources, and magnetic fields in space, helping to cast light on fundamental physics and processes at work in the Universe.

As well as being a world-leading telescope in its own right, ASKAP will be an important test-bed for the future Square Kilometre Array (SKA) project.

Where will ASKAP be located?

The cluster (or array) of ASKAP antennas is being built at the Murchison Radio-astronomy Observatory (MRO), a remote

outback region of Western Australia about 700 km from Perth. This follows the signing of an Indigenous Land Use Agreement (ILUA) with the Wajarri Yamatji Claimant Group.

The Mid West region is ideal for a new radio observatory because the population density is very low and there is a lack of human-made radio signals that would otherwise interfere with weak astronomical signals.

Who is involved in ASKAP?

ASKAP is being led by CSIRO in collaboration with leading scientists and engineers in The Netherlands, Canada and the USA, as well as colleagues from a number of Australian universities.

Collaborations with industry partners are also an important aspect of the project, particularly in the areas of information and communication technology, high performance computing and mass production manufacturing techniques.

Artist's impression of a complete ASKAP at the Murchison Radio-astronomy Observatory (MRO). Credit: Swinburne Astronomy Productions, design data provided by CSIRO.

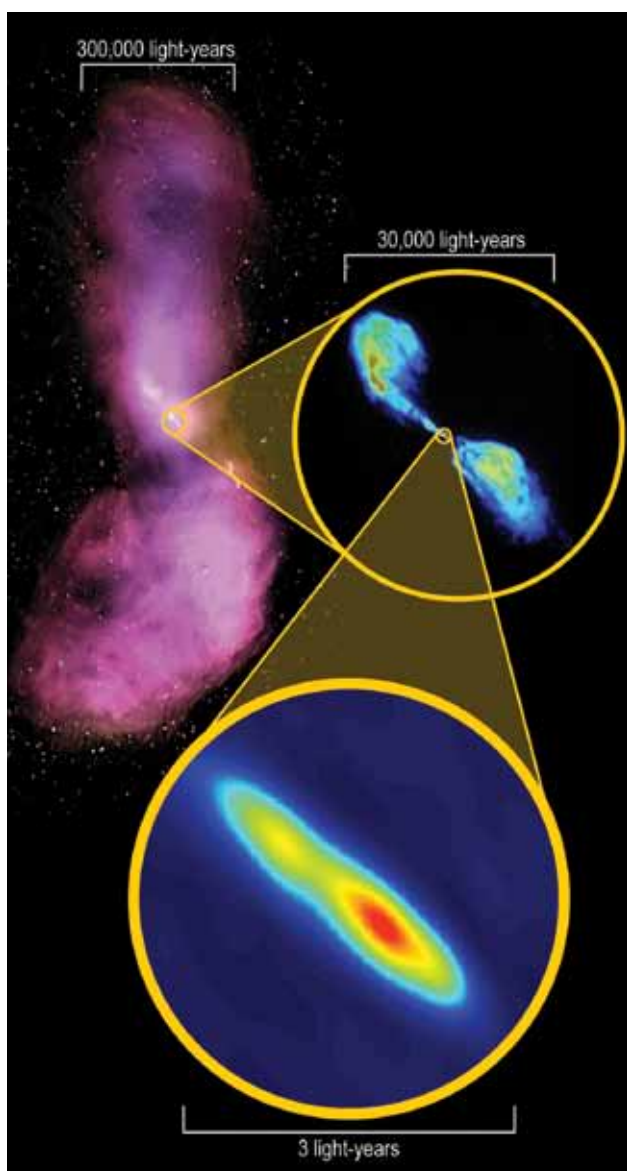


When will ASKAP be built?

Construction of ASKAP at the MRO began in January 2010. All 36 antennas and their technical systems are expected to be completed by 2013.

Who will operate and use ASKAP?

ASKAP will provide Australian and international astronomers with another world-leading radio astronomy instrument. It will be operated by CSIRO, along with existing observatories at Parkes, Narrabri and Mopra in New South Wales, as part of the Australia Telescope National Facility.



The bulk of the first five years of ASKAP's operation has been allocated to 10 major international projects that will look for pulsars, measure cosmic magnetic fields and study millions of galaxies.

ASKAP's first antenna is already involved in research. The antenna joined with other radio telescopes in Australia and New Zealand to act as a single, giant telescope to create a detailed image of the radio galaxy Centaurus A.

What is the link between ASKAP and the international SKA project?

The SKA project is a proposal by the international community to develop a future radio telescope that will have capabilities far in excess of even ASKAP. Australia – New Zealand is one of two regions shortlisted to host the SKA, the other is southern Africa. A decision on which region will host the SKA is expected to be made in 2012.

The remarkably radio-quiet MRO is Australia and New Zealand's candidate site for the central 'core' of antennas that will make up the SKA.

ASKAP will pioneer and test revolutionary new technologies in areas of electrical engineering, digital systems, computing and signal transport. Key results and techniques generated through the development of ASKAP will contribute to the international SKA design and development effort.

ASKAP will also trial 'green energy' power generation systems, as well as showcase the outstanding characteristics of the MRO site and the potential for the SKA to be located in Australia and New Zealand.

For further information

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www.atnf.csiro.au/projects/askap

Zooming in to the heart of galaxy Centaurus A, 14 million light-years away. This composite image shows the entire galaxy, as imaged by CSIRO radio telescopes; radio emission from a central part of the galaxy, imaged by a US radio telescope; and the innermost part of the galaxy, imaged by the new network of Australian and New Zealand radio telescopes including the first ASKAP antenna. Credits: Whole galaxy: I. Feain, T. Cornwell & R. Ekers (CSIRO/ATNF); ATCA northern middle lobe pointing courtesy R. Morganti (ASTRON); Parkes data courtesy N. Junkes (MPIfR). Inner radio lobes: NRAO / AUI / NSF. Core: S. Tingay (ICRAR) / ICRAR, CSIRO and AUT.



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