The Square Kilometre Array
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What is the SKA?

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- World’s largest and most sensitive radio telescope
- One of the most complex science projects ever conceived
- To address fundamental unanswered questions about the Universe
What is the SKA?

- Truly global project, led by the SKA Organisation based in Manchester
- 13 Member Countries
- Project funding from the Member Countries (cash, in-kind)
- SKA1 capital cost budget of 674M Euros, intended for construction 2020 to 2025
What is the SKA?

Dish prototype

LFAA artists impression
Explaining the telescope

Radio waves let us see objects we can’t see in visible light, like the gasses in galaxies. The dish acts like a mirror and focuses radio waves onto the receiver. Information from the receiver is processed by computers to create visible images.
SKA Location
Existing Infrastructure
Existing Infrastructure – ASKAP Precursor

- 36 identical antennas, each 12m in diameter, working together as a single instrument
- 860sqm control building consisting of a Correlator room supporting offices, workshops and plant areas
Existing Infrastructure – ASKAP Precursor
ASKAP telescope in Western Australia bags huge haul of 20 mysterious radio bursts

ABC Science  By Genevieve Weule
Updated 11 October 2018 at 8:58 am
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Existing Infrastructure – MWA
FIRST SIGNS OF EARLIEST STARS SEEN FROM THE MURCHISON RADIO-ASTRONOMY OBSERVATORY

Existing Infrastructure – EDGES
Existing Infrastructure – Pawsey HPC

- $80 million HPC (Perth)
- Cray IVY BRIDGE 1.4 Petaflop
- 40 Petabyte tape library
SKA Work Packages

- Aurecon in partnership with CSIRO responsible for Infrastructure Australia (INAU)
- Leading engineering aspects and project management
- Recently completed the detailed design packages for infrastructure - Buildings, Power, Civil
Building Design
Prototyping & VR
Radio Frequency Interference (RFI)
Remoteness and scale of site

22 MCG’s within the central core…
Playing field only, not the full stadium
Power Distribution - Core

- Algorithm developed
- Trades off power cabling, fibre cabling, trenching to optimise cost
Global Stakeholders

- Assembly, Integration & Verification
- Science Data Processor
- Wide Band Single Pixel Feeds
- Telescope Manager
- Dish
- Signal and Data Transport
- Central Signal Processor
- Mid-Frequency Aperture Array
- Low-Frequency Aperture Array
- Infrastructure Australia
- Infrastructure South Africa
Collaboration
We acknowledge the Wajarri Yamatji people as the traditional owners of the observatory site.