Vision for Astronomy in South Africa

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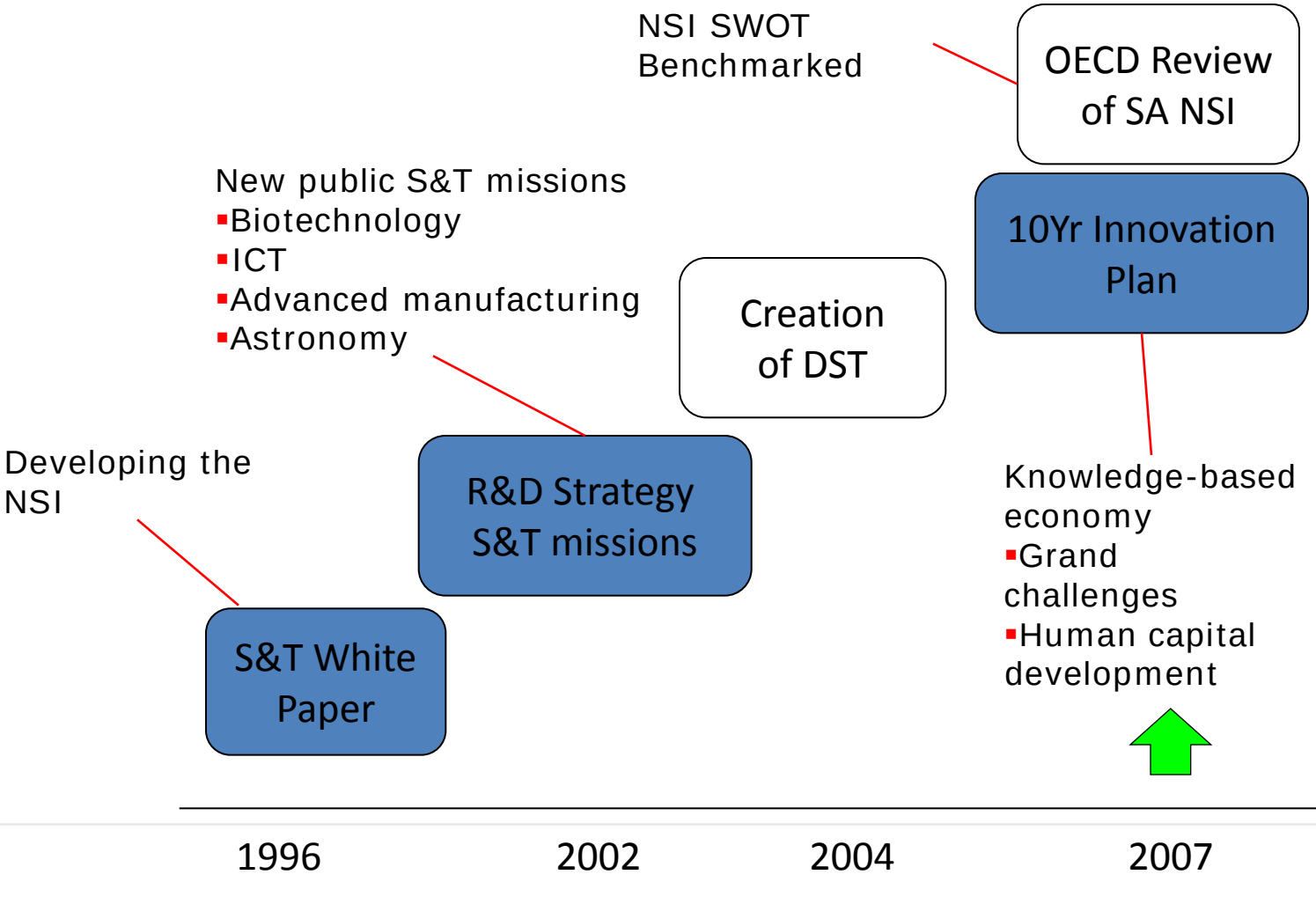
science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

NSI landscape: Policy



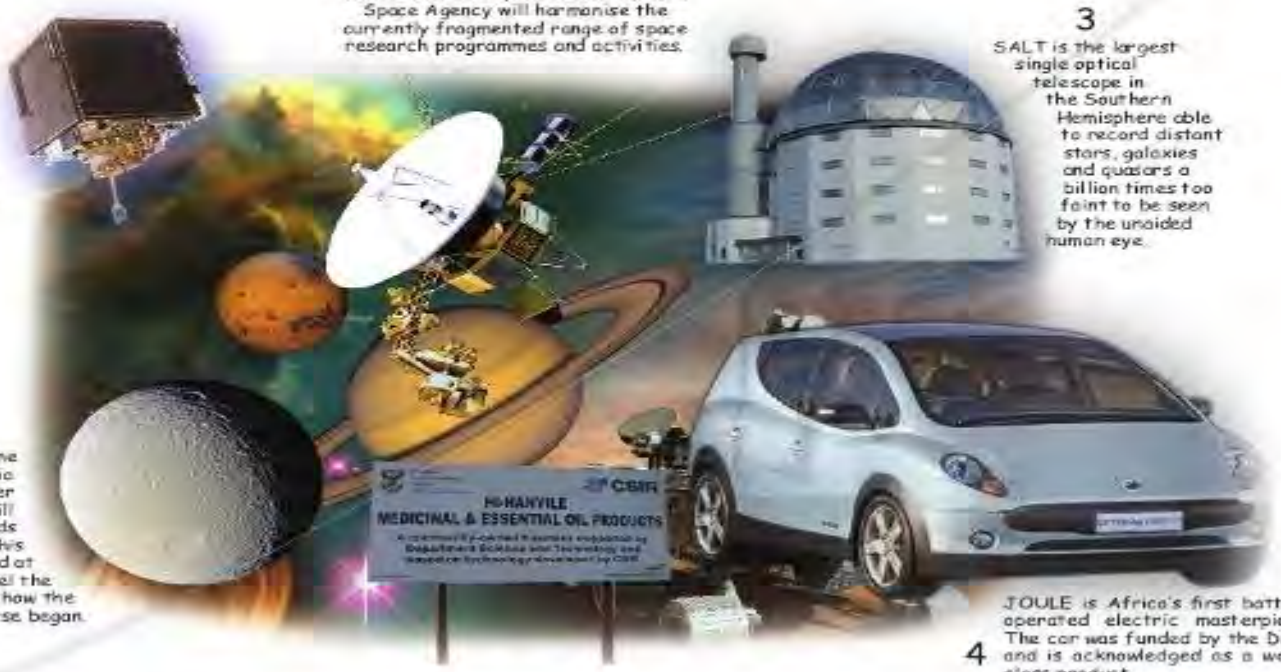
Our vision is to create a prosperous society that derives enduring and equitable benefits from Science and Technology...

... in the process we have pioneered some amazing projects!

1
Our SumbandilaSAT programme will culminate in a satelite being positioned in a low earth orbit to take high resolution images that will be used for agricultural and environmental management applications.

2
Once established, the South African Space Agency will harmonise the currently fragmented range of space research programmes and activities.

3
SALT is the largest single optical telescope in the Southern Hemisphere able to record distant stars, galaxies and quasars a billion times too faint to be seen by the unaided human eye.



5
Our SKA programme is the largest radio telescope ever constructed which will consist of thousands of dishes. This endeavour is aimed at helping to unravel the mysteries of how the universe began.

4
JOULE is Africa's first battery operated electric masterpiece. The car was funded by the DST, and is acknowledged as a world class product.

Could there be a better place to carve a career niche?

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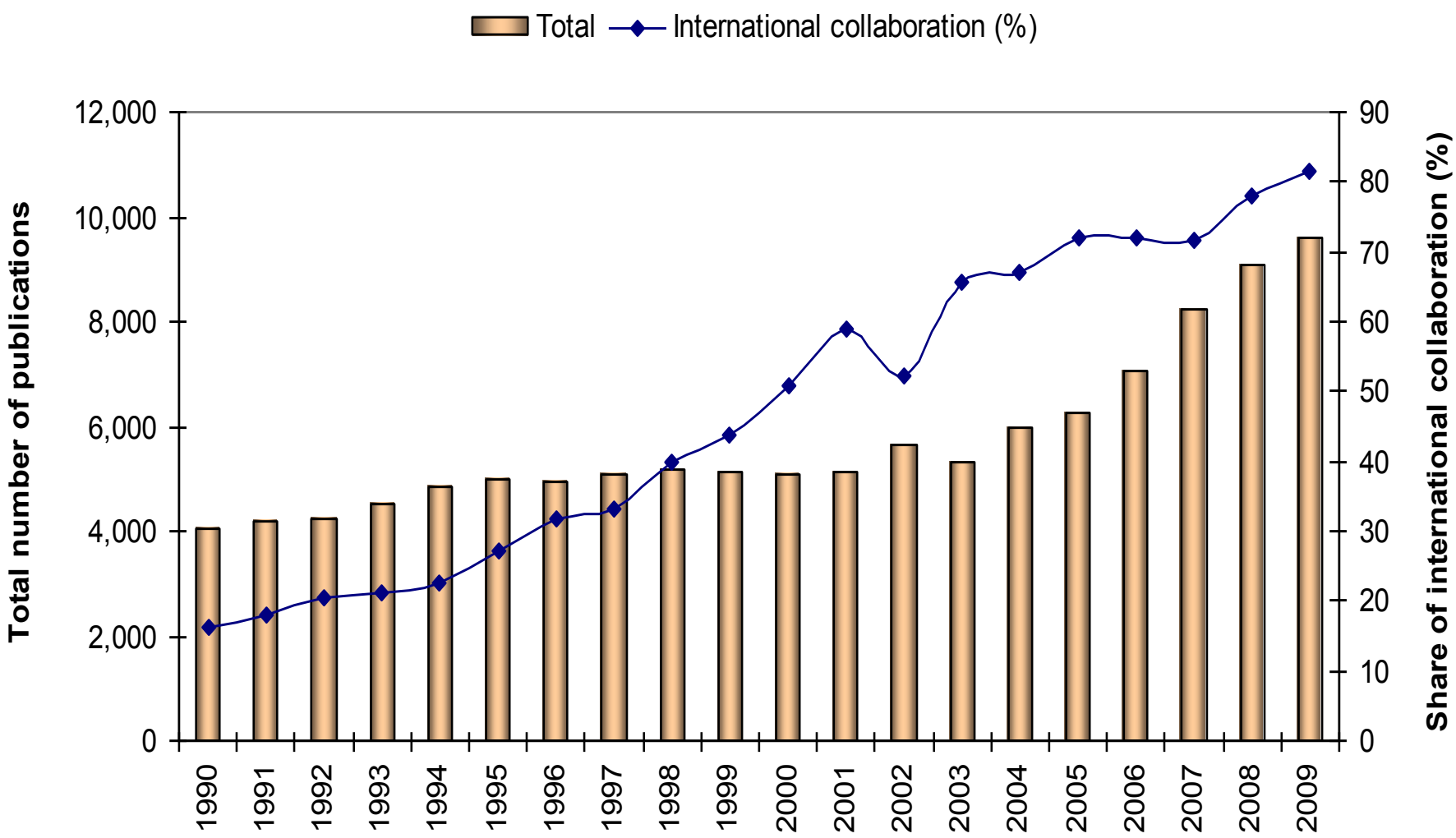
The contribution of international collaboration to South Africa's knowledge production



OTHER INTITIATIVES

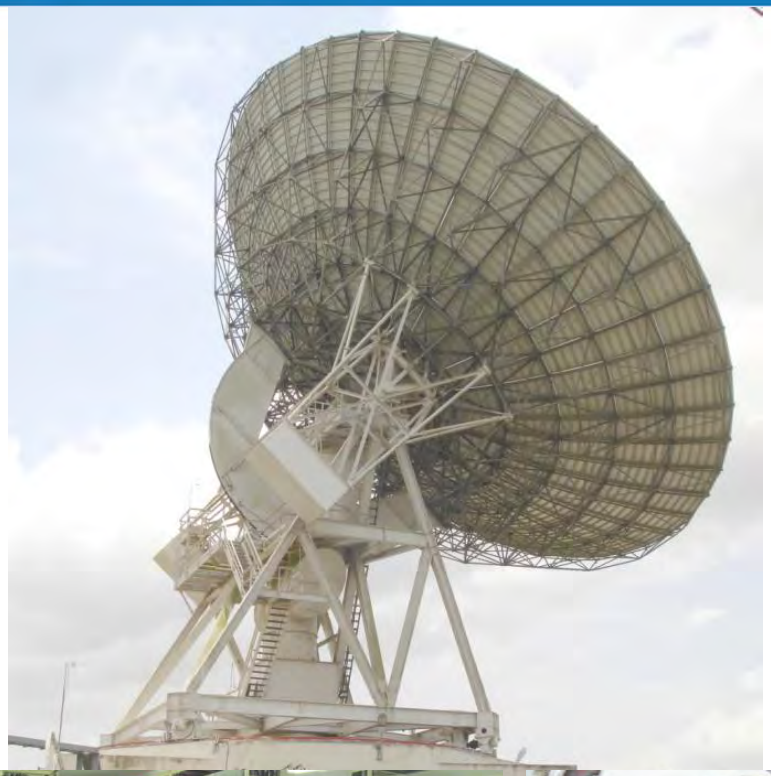
- Pan African University for Space Science
  - Building human capital on the African continent
  - To include space science and astronomy
- African Space Policy
  - Draft policy has been finalised
  - Going through the formal approval process
  - Includes astronomy (a geometric advantage - southern skies)
- Readiness Strategy for the SKA and AVN (Africa focus)
  - Has been finalised
  - Undergoing consultation process
- Astronomy and Research Infrastructures Roadmap in South Africa

Optic Fibre Network

Above: Carnarvon Point of Presence (POP) station (SANReN/SKA interface)

Above: Broadband InfraCO terrestrial backbone

NKUTUNSE - GHANA



Delivered over the past 12 months (2)

- PAPER
  - 128 antennas by September
  - New computing
  - Routine observations starting
- CBASS
  - Receiver being commissioned at HartRAO

PAPER: built by trainee technicians

Project with US NRAO, Berkeley, Virginia, Pennsylvania

128 antennas on site November 2013 UKZN and UWC involved in the science

C-BASS

Oxford Physics

MANCHESTER 1824

CALIFORNIA INSTITUTE OF TECHNOLOGY 1891

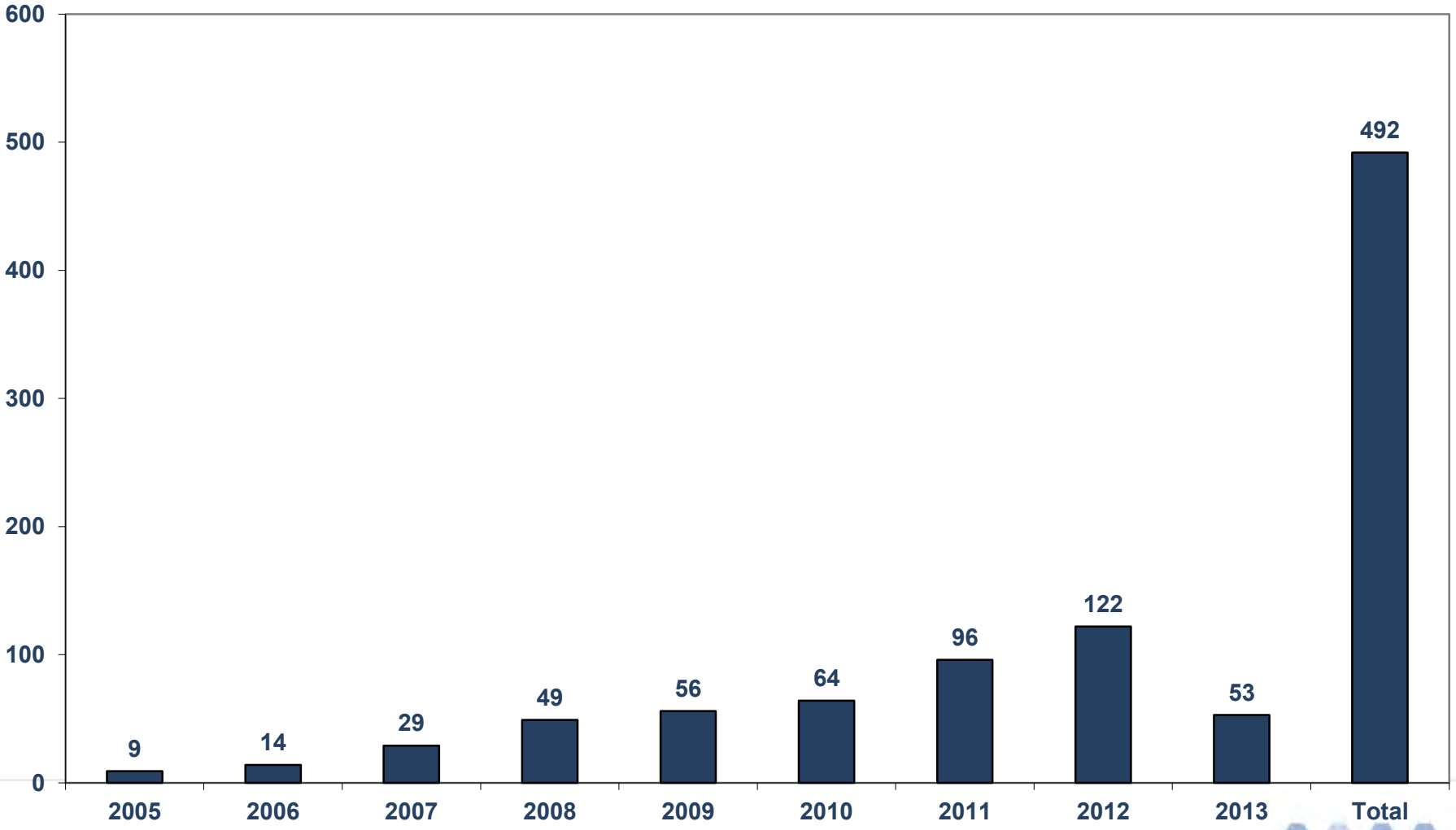
JPL
Jet Propulsion Laboratory
California Institute of Technology

مدينة الملك عبدالعزيز للعلوم والتقنية KACST

South African Research Chairs Initiative (SARChI)

- The aim of SARChI is to strengthen scientific research leadership and capacity in South African universities, in order to strengthen the development of a knowledge-based economy in South Africa
- The Research Chair will be expected to advance research capacity and related human capital in South Africa and the region, generate new knowledge and lead the process of shaping new thinking internationally
- The aim is to establish over 260 Research Chairs
- Research Chairs are guaranteed for about 15 years
- 7 SKA Research Chairs established and six of them filled with internationally acclaimed scientists

SKA HCD

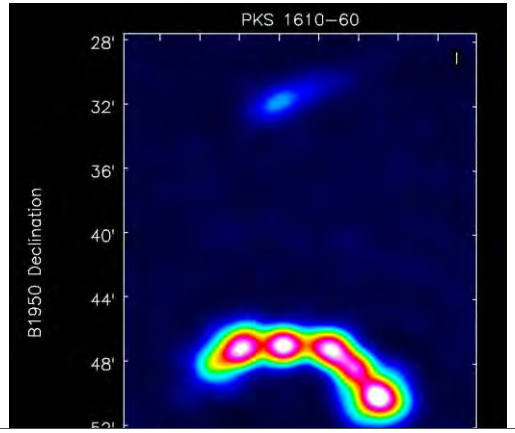

600
500
400
300
200
100
0
9
14
29
49
56
64
96
122
53
492
2005
2006
2007
2008
2009
2010
2011
2012
2013
Total

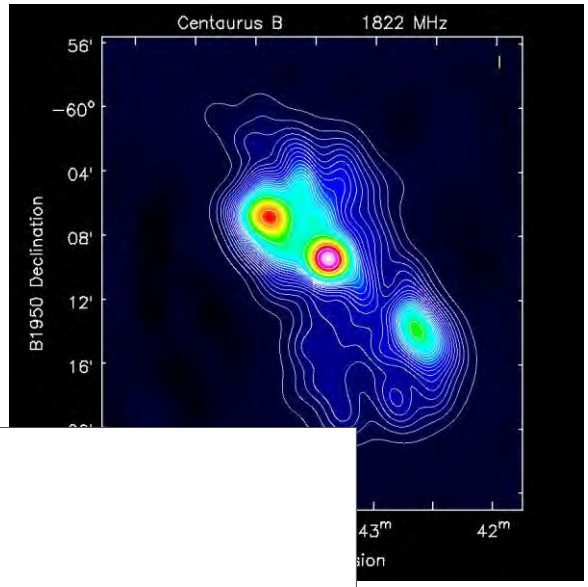
SKA in Africa and Australia

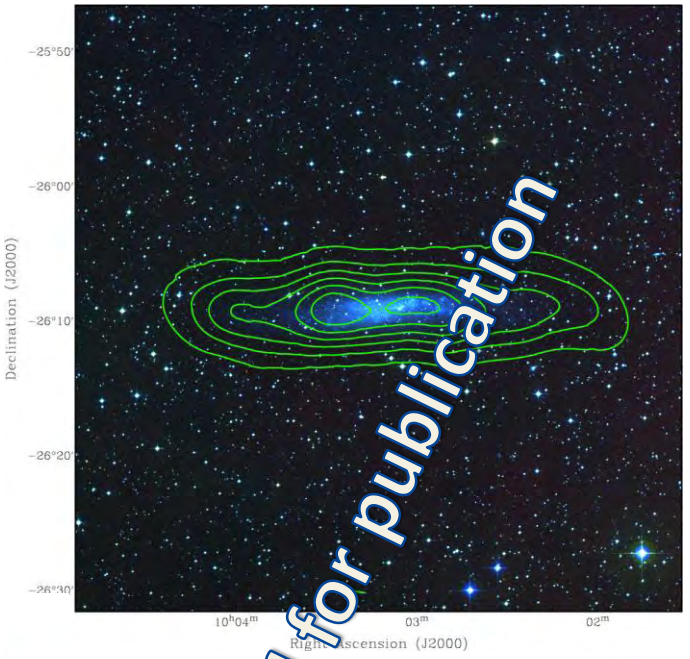
Africa (mid-frequency)

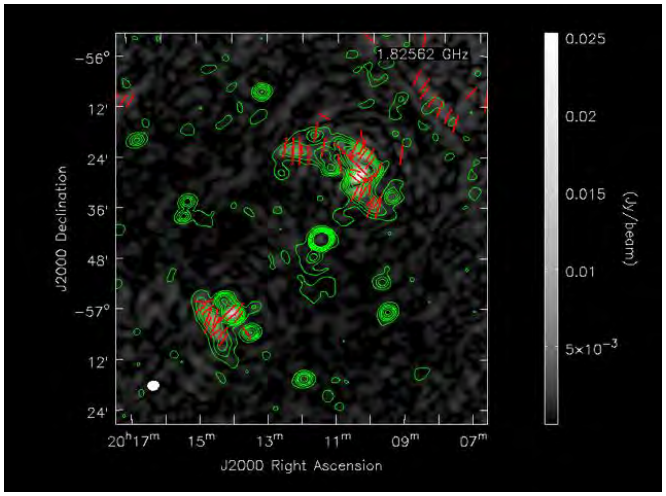
Australia (low-frequency
+ mid-survey)

KAT 7

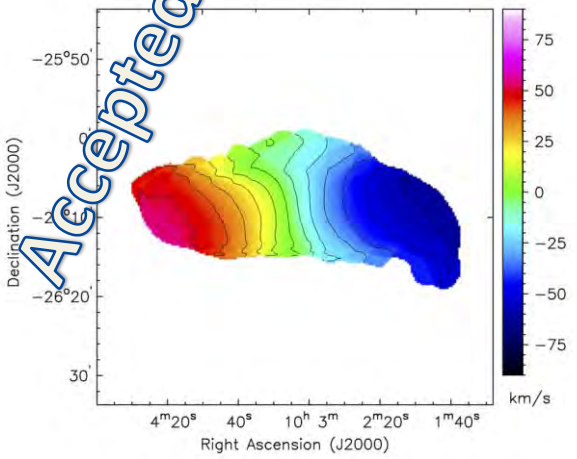








Riseley, Scaife et al.



Accepted for publication

MeerKAT Timeline

- Concept design review Aug 2012
- Preliminary design review April 2013
- 1st antenna on site Dec 2013
- Antenna 1 qualified and CDR: 28 Feb 2014
- Antenna 2 acceptance testing completed: 28 March 2014
- Array release 1 (Antenna 1-4) I&V complete: 29 June 2015
- Array release 1 science commissioning complete: 28 Sept 2015
- Array release 2 (Antenna 5-32) I&V complete: 14 March 2016
- Array release science commissioning complete: 13 June 2016
- Array release 3 (Antenna 33-64) I&V complete: 15 Dec 2016
- Full array available for science: 17 April 2017

CDR = critical design review

I&V = Integration and Verification - ready for science commissioning

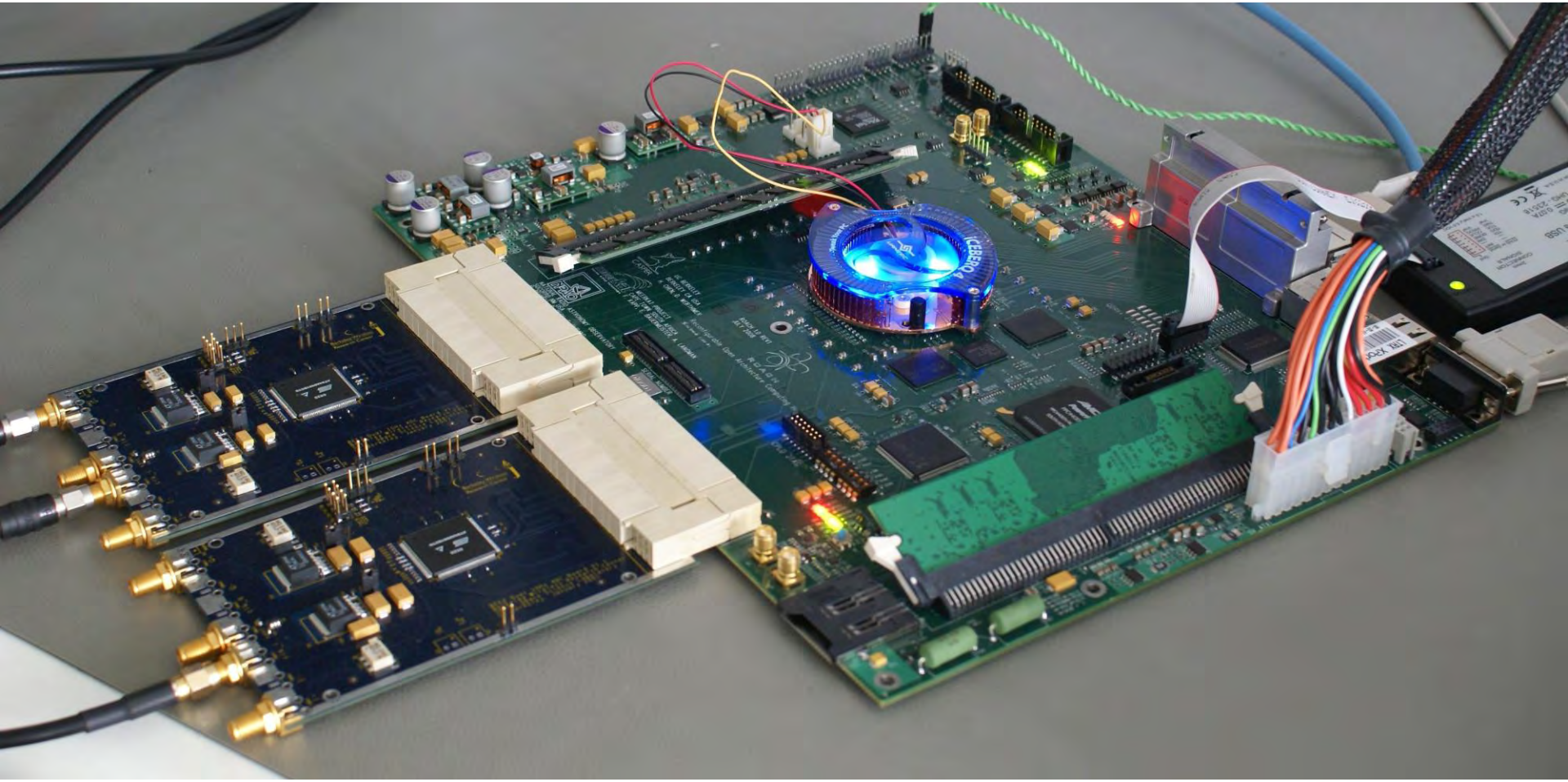
Science commissioning completed = ready to do science

Site Complex

All-weather landing strip

Above and Right: Slurry layer underway on all-weather landing strip

CASPER / ROACH



www.ska.ac.za

THANK YOU