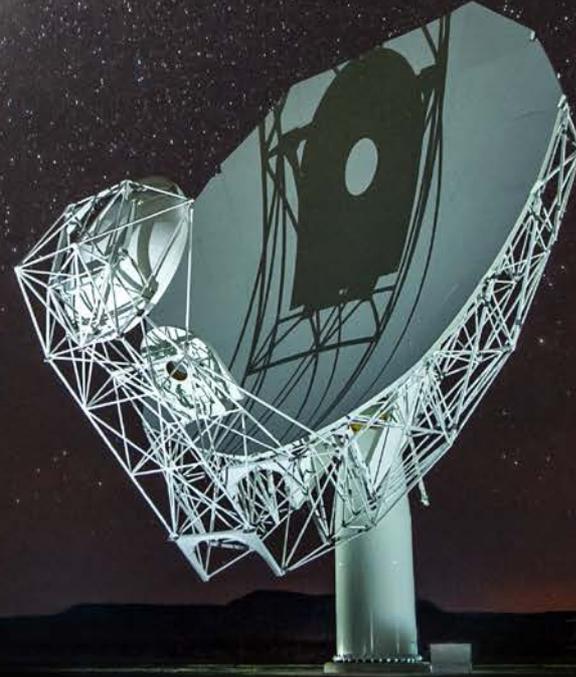


Communicating big science

Lorenzo Raynard & Anja Fourie
SARAO/SKA SA



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



SARAO
South African Radio
Astronomy Observatory



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*Terms and conditions apply

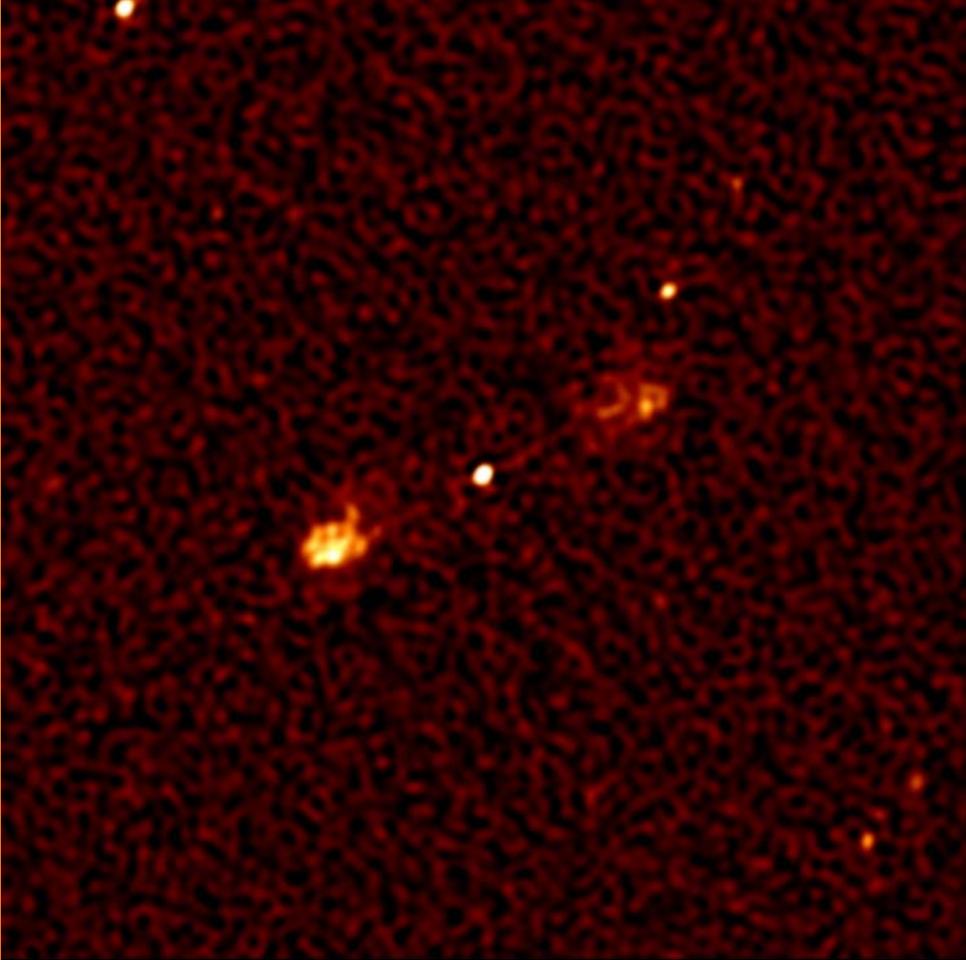
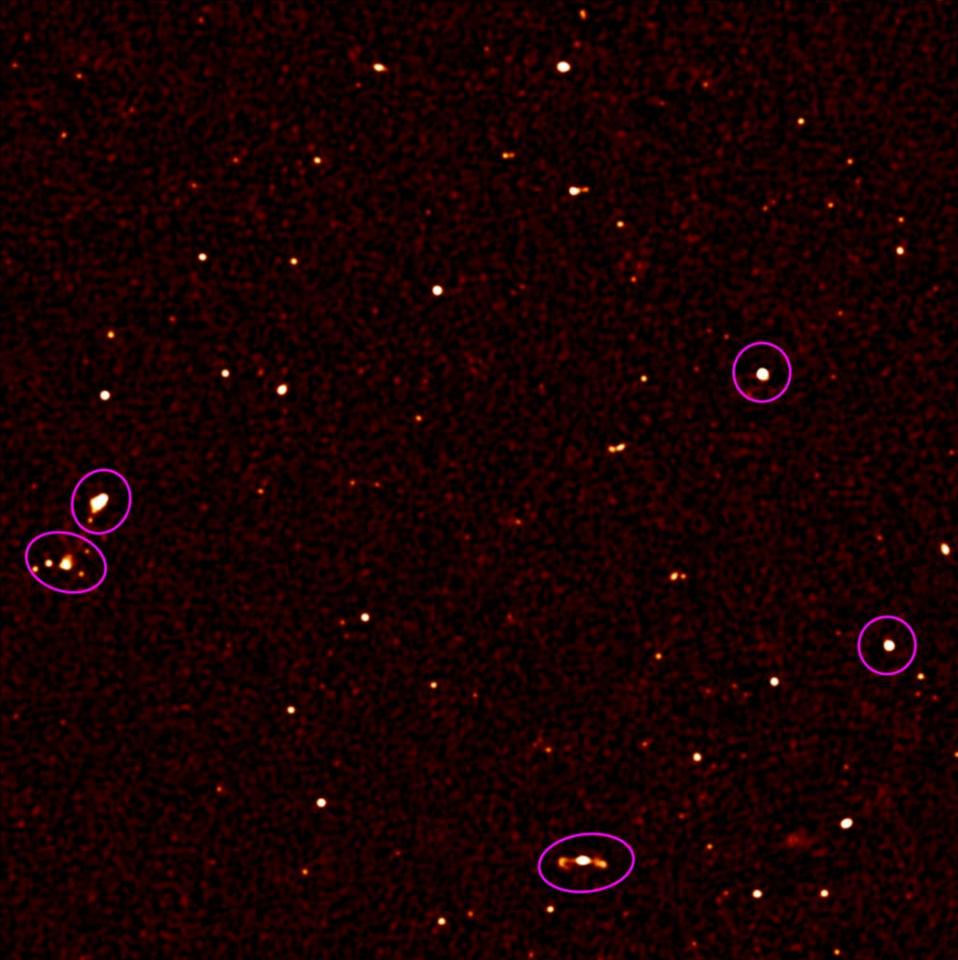
www.ska.ac.za

What is the SKA?

- International collaboration to build the world's largest and most sensitive radio telescope
- SKA Organisation (SKAO) is a not-for-profit company created to centralise the leadership of the project and to formalise relationships between the international partners
- HQ: Jodrell Bank Observatory, Manchester, United Kingdom
- Eleven partner countries: Australia, Canada, China, Germany, India (Associate Member), Italy, New Zealand, South Africa, Sweden, the Netherlands and the United Kingdom.
- Array radio telescope with collecting area of one square kilometre, or one million square metres.
- Two sites:
 - South Africa: Thousands of receptors (dishes) outside Carnarvon, Northern Cape approximately 950 km from Johannesburg and 590 km from Cape Town
 - Australia: Thousands of aperture array antennas outside Cue, WA approximately 650 km north of Perth and 4,000 km west of Sydney
- SRAO/SKA South Africa is currently constructing the MeerKAT precursor array radio telescope, consisting of 64 receptors, which will be integrated into SKA Phase 1







SKA African VLBI Network



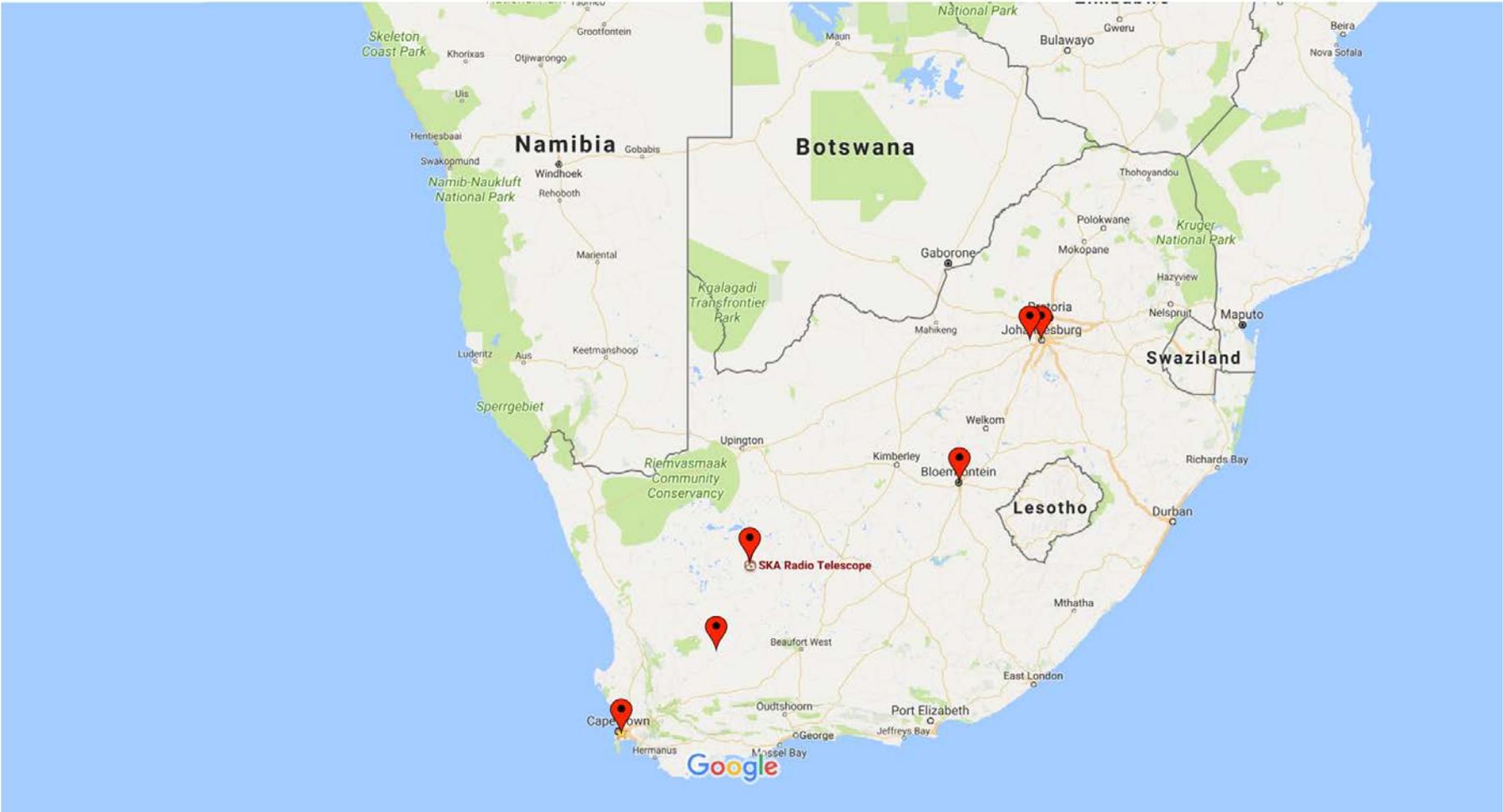
- Collaboration between South Africa and eight other African countries to construct a network of receptors across the continent
- Network will consist of MeerKAT in South Africa and converted telecoms receptors or newly-constructed receptors in each of the eight partner countries
- Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia, South Africa and Zambia
- Kutunse Radio Astronomy Observatory outside Accra, Ghana launched on 24 August 2017
- Longest baseline (distance) between two receptors of the SKA AVN will be between Kutunse, Ghana and MeerKAT, South Africa (7,500 km)



South Africa's Geographic Advantage

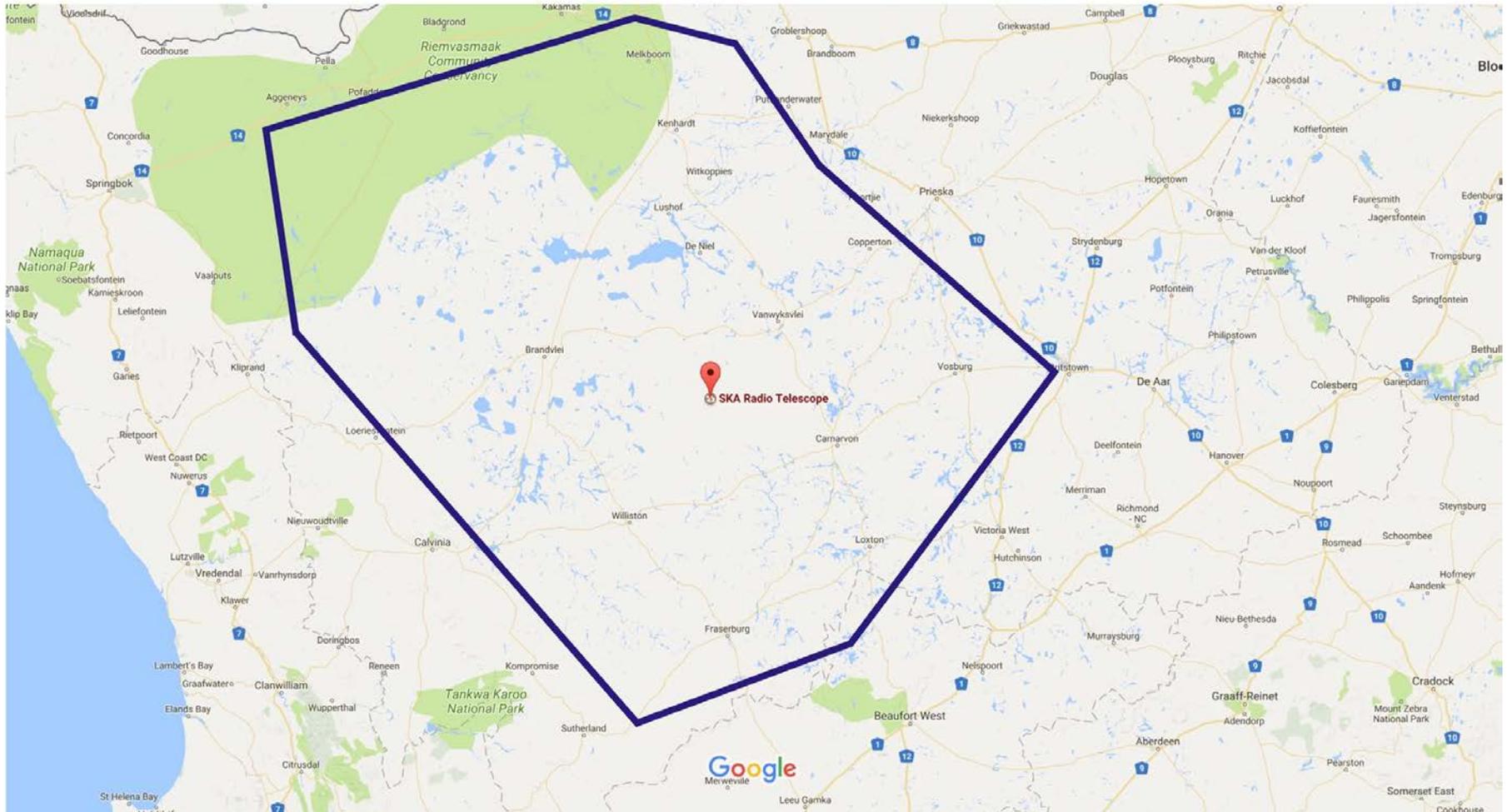
- No. of objects south of celestial equator
- High altitude
- Low moisture content
- Lack of turbulent air
- Low levels of light pollution
- Low wind speeds
- Protective topography
- Radio quietness
- Geotechnical stability
- Infrastructure
- Security
- Area protected by law
- Knowledge advantage

Observatories in South Africa



Astronomy Geographic Advantage Act

Google Maps





Science

- Isolated
- Secure
- Scientists at work

Society

- Accountability
- Communication of:
 - Benefits and Applications
 - Economic
 - Political
 - Socio-cultural
- Scientific literacy
- Human capacity development

Government Support for Communication

SOUTH AFRICA (Host/Partner Country)

Department of Science & Technology National Research Foundation SARAQ/SKA SA



Science Engagement Strategy

NRF Strategy 2020

SARAQ/SKA SA Communications Strategy



- SARAQ/SKA SA Science Engagement Strategy

- SARAQ/SKA SA Stakeholder Engagement Strategy

Government Support for Communication

SQUARE KILOMETRE ARRAY

SKA Organisation, Manchester

South Africa (Partner Country)

African Partner Countries

SKAO Communications Strategy
(SKACON)

SARAO/SKA SA Communications Strategy

SKA AVN Communications Strategy



- SARAO/SKA SA Science Engagement Strategy

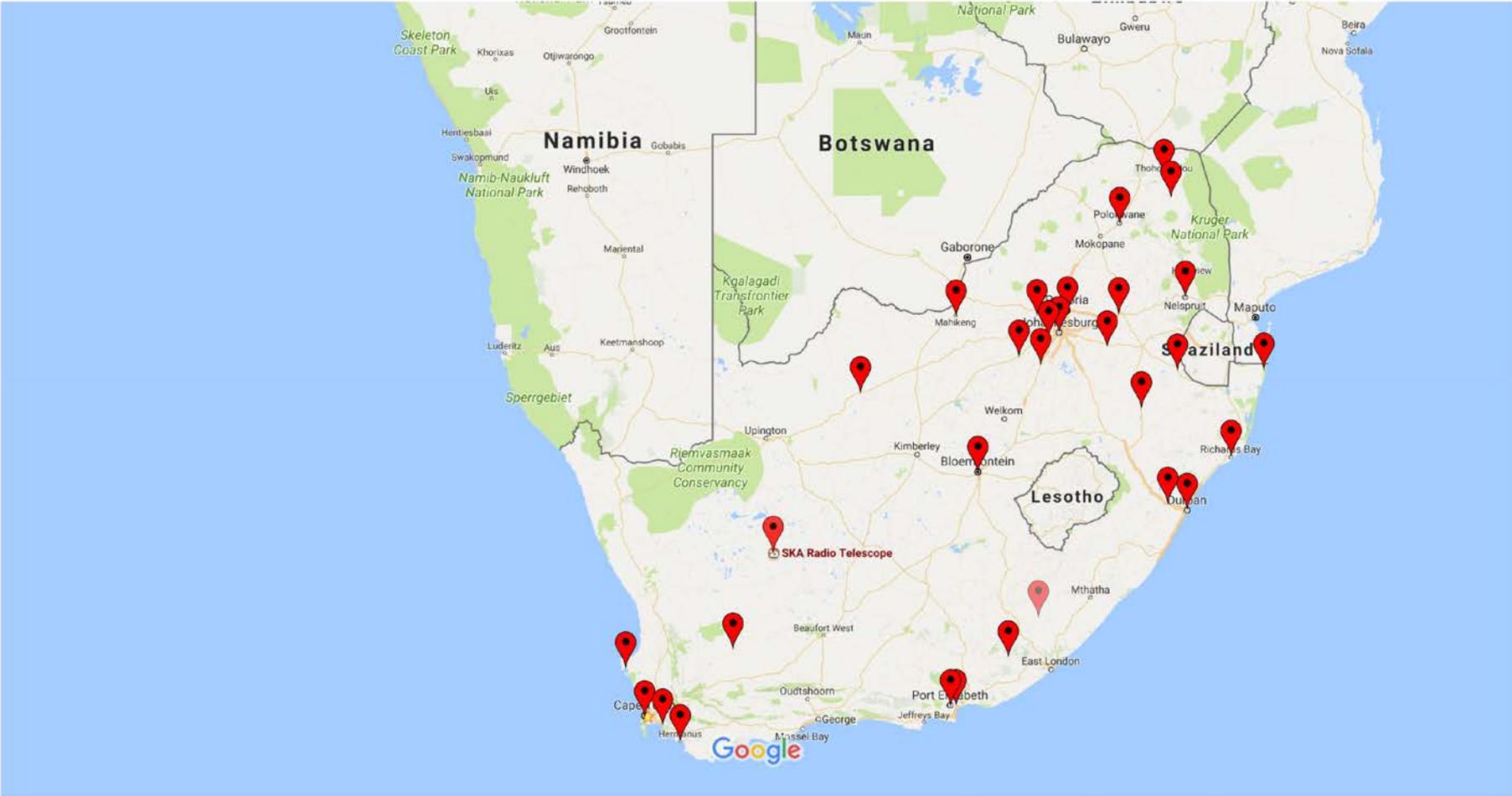
- SARAO/SKA SA Stakeholder Engagement Strategy

SKA Visitors Centre, Carnarvon, Northern Cape, South Africa



Network of Observatories and Science Centres in South Africa

Google Maps



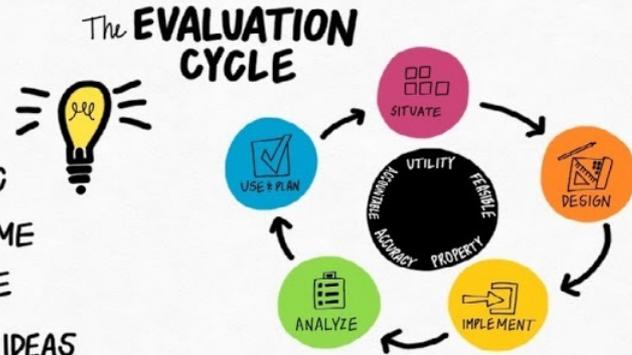
WHAT IS CODESIGN?

... AN APPROACH THAT ENABLES A WIDE RANGE OF PEOPLE TO MAKE CREATIVE CONTRIBUTIONS IN THE FORMULATION & SOLUTIONS OF A PROBLEM...

THE FIVE PHASES



- ✓ DEFER JUDGEMENT
- ✓ ENCOURAGE WILD IDEAS
- ✓ BUILD ON OTHER'S IDEAS
- ✓ STAY FOCUSED ON THE TOPIC
- ✓ ONE CONVERSATION AT A TIME
- ✓ BE VISUAL + EXPRESSIVE
- ✓ GO FOR QUANTITY OF IDEAS





The Role of Science Centres

- Virtual visitors centres
 - AR/MR/VR and mobile content
 - Content roll-out
- Multipliers
- Citizen science
- Co-design:
 - Re-imagining of sector in SA
 - Design challenges for solutions
 - Co-design of programmes and content



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The South African Radio Astronomy Observatory (SARAO) is a Business Unit of the National Research Foundation. SARAO spearheads South Africa's activities in the Square Kilometre Array (SKA) Radio Telescope, an international effort to build the world's largest and most sensitive radio telescope, that will produce science that changes our understanding of the universe.

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