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African-European cooperation
in science and technology for
growth and development

"Investing in People,
Prosperity and Peace"



African-European
Radio Astronomy Platform

Introducing AERAP

The **African European Radio Astronomy Platform (AERAP)** was launched in May 2012 as a response to **Written Declaration 45/2011 on "Science Capacity Building in Africa: promoting European-African radio astronomy partnerships"**, which was adopted by the European Parliament on 15 March 2012 and which recognised the value of research infrastructures in facilitating cooperation with Africa, promoting human capital development and addressing societal challenges.

The Heads of State of the African Union, through their decision "**Assembly/AU/Dec.407 CXVIII**", also called for radio astronomy to be a priority focus area for Africa-EU cooperation. The European Parliament and African Union recognise radio astronomy cooperation as an important catalyst for mutually beneficial science and technology partnerships in a wide range of research areas and industry sectors on both continents.

AERAP is a stakeholder platform of industry, academia, the public sector and civil society established to define and implement radio astronomy cooperation initiatives between Africa and Europe. These initiatives cover a wide range of research areas and industry sectors as well as human capital development and researcher mobility programmes.

The overall goal of this platform is to strengthen research and innovation in Europe and Africa, by harnessing science and technology to promote sustainable development and competitiveness across both continents.

AERAP Objectives

- Harness research and technological advances through radio astronomy cooperation to drive socio-economic development on both continents in line with the objectives of the Joint Africa-EU Strategy
- Facilitate high-level interaction with policy and decision-makers of the European Union and African Union and their Member States regarding radio astronomy cooperation
- Promote science capacity building as a tool for competitiveness
- Improve knowledge transfer between industry/SMEs and academia
- Use EU-Africa collaboration in radio astronomy as a platform for broader global partnerships (e.g. with Australia, Asia, USA, etc.)

AERAP is open to researchers, engineers, technicians, entrepreneurs etc. from all continents

AERAP Activities

Through a series of high-level workshops, AERAP stakeholders have developed the **AERAP Framework Programme for Cooperation** (available at www.aerap.org), which defines the objectives and key actions for future African-European radio astronomy cooperation. The concept grounding this programme envisions radio astronomy cooperation through eight thematic priorities: 1) research infrastructures; 2) instrumentation, research and development; 3) support for global projects; 4) human capital development for radio astronomy; 5) ICT and big data; 6) renewable energy for radio astronomy; 7) astronomy as a tool for science education; 8) public outreach. The overarching goal of this programme is to open up these priorities to key stakeholders on both continents.

Through its events and activities, AERAP aims to initiate radio astronomy partnerships between Africa and Europe aligned with the objectives of the Joint Africa-EU Strategy. Since its initiation in May 2012, the AERAP workshops have focused on different areas of radio astronomy cooperation.

Themes discussed at previous AERAP workshops and seminars:

Date	Title
29 May 2012	Workshop on Leveraging New Funding Opportunities for African-European Radio Astronomy Partnerships (Brussels, Belgium)
27 September 2012	Workshop on Human Capital Building (Pretoria, South Africa)
14 November 2012	Workshop on Infrastructure Investment and Technology Development for Radio Astronomy (Brussels, Belgium)
6 - 7 March 2013	Workshop during the ES:GC2 Conference at the European Parliament (Brussels, Belgium)
18 - 19 June 2013	1 st Workshop for the Implementation of the AERAP Framework Programme and a working breakfast with the European Parliament's AERAP Group (Brussels, Belgium)
27 June 2013	Presentation at GSC: Science Capacity Building & the Implications for the Development Process seminar (Addis Ababa, Ethiopia)
17 July 2013	2 nd Workshop for the Implementation of the AERAP Framework Programme (Cape Town, South Africa)
4 - 5 November 2013	3 rd Workshop for the Implementation of the AERAP Framework Programme (Brussels, Belgium)
3 December 2013	AERAP Presentation at the 2013 Africa-EU Cooperation Forum on ICT (Addis Ababa, Ethiopia)
17 - 21 February 2014	AERAP Presentation at the Transformational Science with the SKA Symposium (Stellenbosch, South Africa)
11 March 2014	Seminar on Venture Capital for Innovation in Africa: The Case of Radio Astronomy (Brussels, Belgium)
2 April 2014	Roundtable seminar: Industry and Africa-EU science capacity building (Brussels, Belgium)
6 - 9 May 2014	Presentation at the IST-Africa 2014 Conference (Pointe Aux Piments, Mauritius)

For more information, please visit: www.aerap.org



EU participants of the Workshop to discuss the Draft AERAP Framework Programme for Cooperation, 6-7 March 2013, Brussels

Horizon 2020 Framework Programme for Research and Innovation

In order to facilitate cooperation between the African and European radio astronomy communities, AERAP provides early information on funding opportunities. It offers guidance to entities interested in participating in project proposals focused on African-European radio astronomy cooperation, which will be submitted in response to research and development cooperation calls, particularly under Horizon 2020, the EU's new programme for financing research and innovation.

Regarding research and development calls for proposals, AERAP has developed a **Report on the Calls for Proposals under Horizon 2020**, which identifies the opportunities potentially relevant for AERAP members. Under Horizon 2020's predecessor, the Seventh Framework Programme for Research and Technological Development, AERAP helped its members find the right consortium partners, assisted them with the proposal preparation and also facilitated successful applications for funding for research training and mobility networks.

AERAP Helpdesk

In order to create an optimal environment for Africa-Europe radio astronomy cooperation and to further technological advances, AERAP offers proactive support throughout the whole process of African-European partnership building.

The AERAP Helpdesk support comprises the following services:

- Early information on funding opportunities and upcoming calls for research and development cooperation projects (H2020, development cooperation instruments, philanthropic funding, etc.). The AERAP Helpdesk also answers questions about the conditions and the application procedure of these funding opportunities.
- Bringing together researchers and industry representatives who are interested in radio astronomy cooperation projects by:

- Creating a database of interested African and European radio astronomers
- Facilitating contact with potential industry partners
- Facilitating proposal coordination meetings between African and European researchers
- Providing active support on funding proposal preparation
- Guidance in proposal writing and providing contact to successful applicants
- Advice in legal and financial matters

Should you have any questions, please contact the AERAP Helpdesk at helpdesk@aerap.org.

AERAP Participants

AERAP is structured around a network of key stakeholders, primarily from industry, academia and the public sector. AERAP membership is free of charge and is open to researchers, engineers, technicians, entrepreneurs etc. from all continents.

• Netherlands Institute for Radio Astronomy (ASTRON), Netherlands	• Netherlands Organisation for Scientific Research (NWO), Netherlands
• Centre National de la Recherche Scientifique (CNRS), France	• Omnisys Instruments, Sweden
• University of Porto, Portugal	• Onsala Space Observatory, Sweden
• Coriant (formerly Nokia Siemens Networks), Germany	• Rhodes University, South Africa
• European Industrial Engineering Group (EIE), Italy	• Science & Technology Facilities Council (STFC), United Kingdom
• Ghana Space Science and Technology Centre	• SKA Organisation, United Kingdom
• Ghent University, Belgium	• SKA South Africa
• Goonhilly Earth Station Ltd, United Kingdom	• University of Cambridge, United Kingdom
• IBM, Netherlands	• University of Groningen, Netherlands
• National Institute of Astrophysics (INAF), Italy	• University of Hertfordshire, United Kingdom
• Instituto de Astrofísica de Andalucía (CSIC), Spain	• University of Leeds, United Kingdom
• International Programme in the Physical Sciences, Sweden	• University of Manchester, United Kingdom
• Joint Institute for VLBI in Europe (JIVE), Netherlands	• University of Nairobi, Kenya
• Leiden Observatory, University of Leiden, Netherlands	• University of Oxford, United Kingdom
• Instituto de Astrofísica de Canarias (IAC), Spain	• University of Zambia, Zambia
• Max Planck Institute for Radio Astronomy, Germany	• Trinity College Dublin, Ireland
	• VIA-SKA, Spain

Some of the leading Members of the European Parliament supporting AERAP



Fiona Hall

Filip
Kaczmarek

Miguel Angel
Martínez
Martínez

Teresa
Riera
Madurell

Judith
Sargentini

Emer
Costello

Seán Kelly

A clear majority of 394 Members of the European Parliament signed the **Written Declaration 45/2011** on "**Science Capacity Building in Africa: promoting European-African radio astronomy partnerships**", which was adopted by the European Parliament on 15 March 2012, and which supports African-European radio astronomy partnership.

🌑 African-European cooperation in flagship projects

AERAP also supports, directly or indirectly, existing projects in which its African and European stakeholders are already involved. These include initiatives such as: The Square Kilometre Array (SKA), MeerKAT, or the African Very Long Baseline Interferometry Network (Africa V.L.B.I.).

- **Square Kilometre Array (SKA)**

SKA is a global science and engineering project led by the SKA Organisation, a not-for-profit company with its headquarters at Jodrell Bank Observatory, near Manchester, UK. The SKA will address fundamental unanswered questions about our Universe including how the first stars and galaxies formed after the Big Bang, how galaxies have evolved since then, the role of magnetism in the cosmos, the nature of gravity, and the search for life beyond Earth.

Thousands of linked radio wave receptors will be located in Southern Africa and Australia. Combining the signals from the antennas in each region will create a telescope with a collecting area equivalent to a dish with an area of about one square kilometre.

Members of the SKA Organisation are Australia, Canada, China, Germany, Italy, the Netherlands, New Zealand, Republic of South Africa, Sweden and United Kingdom. India is an associate member.

For further information, please contact William Garnier, Chief Communications Officer of the SKA Organisation (w.garnier@skatelescope.org) or visit the website of the SKA Organisation: <http://www.skatelescope.org>

- **MeerKAT**

MeerKAT is a radio telescope under construction in the Northern Cape of South Africa. It will be the largest and most sensitive radio telescope in the southern hemisphere until the SKA is completed (expected in 2024). MeerKAT is a precursor to the SKA telescope and will be integrated into the mid-frequency component of SKA Phase.

Several European industry and academic partners contributed to the design and construction of MeerKAT. Europe's leading radio astronomers have been offered observation time on MeerKAT as part of the MeerKAT global science projects. The first MeerKAT antenna was inaugurated in 2014 and the entire 64-dish array should be finished in 2016/2017. The KAT-7 science and engineering prototype is already operational and delivering results beyond expectations.

Through MeerKAT, South Africa is playing a key role in design and technology developments for the Square Kilometre Array (SKA), including the use of composite, one-piece reflectors, single-pixel wide-band receivers, low-cost and high-reliability cryogenic systems in addition to reconfigurable digital processing systems.

Further information on MeerKAT can be found at: www.ska.ac.za/meerkat

- **African Very Long Baseline Interferometry Network (Africa V.L.B.I.)**

The Africa VLBI Network is a planned array of radio telescopes which could serve as an extension of the current global VLBI Network. The SKA South Africa network and its partners are currently investigating the construction of an Africa VLBI network which would modify existing but redundant and obsolete dishes previously utilized for satellite telecommunication for radio astronomy purposes. This improved network could then be connected to radio telescopes and arrays in Europe and around the globe (e.g. North and South America, Asia and Australia).

The Africa VLBI network will stimulate astronomy in the participating countries as well as significantly develop skills in electronics and information and communications technology. Preparatory work on the configuration of dishes is already underway in Ghana and Mozambique. Further information on Africa VLBI can be found at: <http://www.ska.ac.za/newsletter/issues/14/12.php>





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