

The MAPPP NINE programme

Phase I of the pilot NRAO/SARAO Multi-wavelength Public Engagement Programme (MAPPP) National and International Non-Traditional Exchange (NINE) is now complete. (NRAO stands for National Radio Astronomy Observatory. SARAO stands for the South African Radio Astronomy Observatory.) Twelve participants graduated after participants pitched each of their 12 projects to a panel of evaluators and potential funders in Pretoria on Friday, 16 March 2018.

Aim of the programme: MAPPP NINE was established to contribute to the advancement of the public engagement with astronomy, as well as the science engagement sector in South Africa. This is done by training high-potential individuals in the sector in project management. It also uses co-design and co-opetition to develop disruptive public engagement projects. The programme was co-designed by the SARAO Communications and Stakeholder Relations Unit and the NRAO NINE Programme.

Who are the participants? Twelve high potential candidates (known as MAPPP NINEers) were chosen from esteemed science communication organisations in South Africa. The NSTF was one of the organisations, represented by Bokgabo Tlhaku. Other represented organisations included:

- Sci-Bono Discovery Centre
- Sci-Enza Science Centre, University of Pretoria
- UniZulu Science Centre
- MLab
- South African Astronomical Observatory (SAAO)
- Iziko Planetarium, Cape Town
- Cape Town Science Centre

Individuals included astrophysicists, tour guides, science centre management staff, mobile application programmers, science outreach professionals, and marketing specialists. This created a small society of science communicators who could share the varying challenges they experience, as well as differing perspectives and best practice.



Developing the project proposals: The Phase One aim was to plan 12 MAPPP interventions. The proposals had to incorporate local community involvement in co-design, learner and educator programmes, and virtual reality exhibition elements. This ran from 19 February 2018 to 16 March 2018.

Using co-design for projects: Co-design is essential to achieve the MAPPP NINE goals. Each member of the MAPPP NINE group was a Primary Investigator (PI) for his or her own project and a Co-Investigator (Co-I) on the projects of up to two other MAPPP NINEers.

Expert advice: Insight was given by experts in the science engagement arena. These included Anton Binneman (SARAO Northern Cape Stakeholder Manager), Rachel Rayner (SAASTA Social Media), and Tony Lankester (National Arts Festival Director). The latter looked at projects that combine multi-wavelength astronomy with the arts. SARAO's Cape Town staff provided constructive feedback on the elevator pitches (very brief presentations to convince the audience).

Presenting the proposals: After a project management course, an astronomy tour, a science engagement event and advice from experts, MAPPP NINEers presented their project proposals to a panel of judges and invited members of the science engagement community at the South African Agency for Science and Technology Advancement (SAASTA) auditorium. (The tour happened simultaneously with the project management training.)

Project management training course: People involved in South African science communication need project management as a skill for improved planning and execution. (Science engagement usually takes place as a series of science shows, talks, programmes and, therefore, projects.) From 18 February to 16 March 2018, the MAPPP NINEers participated in a rigorous and practical project management course. The aim is for the MAPPP NINEers to teach these skills to people in their organisations, and in the science engagement arena.

The project management course used a range of templates as tools to assist the MAPPP NINEers to develop their projects. These templates address all aspects of project planning which feed into the final project management plan and then the project proposal and presentation. Over the duration of the tour, the MAPPP NINEers were populating these documents with details from their respective projects and contemplating how to execute these plans. These documents fed information into one another ensuring that all elements were covered, including:

- Project charter
- Project scope statement
- Project schedule (critical path)
- Activity list and attributes
- Activity duration estimate
- Activity resource list
- Activity duration estimate
- Measurements and audits
- Stakeholder register and management plan
- Communication management plan
- Interface control document
- Risk register
- Project cost estimate (budget)
- Work breakdown structure

Tour of multi-wavelength astronomy spaces: The programme included a tour to see science centres, observatories, planetariums, and multi-wavelength astronomy instruments.

- The SARA0 HartRAO site, Pretoria, as the host of the first radio telescope commissioned by National Aeronautics and Space Administration (NASA) to assist in tracking their launch missions
- South African National Space Agency (SANSA), Pretoria, including a look into the future of space science in South Africa and its benefits to society
- Boyden Observatory, Bloemfontein, hosts the Elvin Clark 13” refractor telescope which took the first picture of Mars
- Navel Hill Planetarium, Bloemfontein
- The SARA0 Square Kilometre Array (SKA) site outside Carnarvon, Northern Cape, where the radio antennas stand in stark contrast of the dry Karoo
- South African Large Telescope (SALT), Sutherland, Northern Cape, is the largest optical telescope in the southern hemisphere.
- South African Astronomical Observatory (SAAO), Cape Town, Western Cape

The tour provided context to the MAPPP NINEers as to the developments and achievements that South Africa has made in astronomy. This ranges from the simple advantage point that we hold because of our location on earth’s surface (remote location in the Karoo where there is little radio interference, with some of the darkest skies (with no light pollution) and access to the optical sky about 75% of the year) to capacity building when constructing KAT (Karoo Array Telescope) 7. It includes winning part of the SKA bid in 2012. This comes with social and economic benefits and the opportunity to contribute to the global knowledge economy.

Attending Scifest Africa 2018 (South Africa’s National Science Festival): This was an opportunity to see science engagement in action.

The Three Phases of MAPPP NINE

Phase 1: This four-week immersion programme was Phase 1 of MAPPP NINE. Individuals who complete Phase 1 gain highly specialised and valued skills in creative and critical thinking, proposal development, fundraising, structured methods (project management and systems engineering), science engagement, and monitoring and evaluation.

Phase 2 of MAPPP NINE will be held mid-2018. This phase’s planned outcomes will include the implementation of the selected projects from Phase 1. It will need the co-design of proposals for a public participation programme in the following categories:

- Citizen science
- Coding and radio telescoping
- Interferometry.

Selected proposals will be funded for Phase 3 at the end of 2018. Best practices learned from MAPPP NINE will be shared with public engagement practitioners in the eight SKA African Very Long Baseline Interferometry Network (AVN) partner countries, as well as at various conferences and forums.

Phase 3 of MAPPP NINE will be held at the end of Phase 2. An expanded programme will be implemented across the other eight SKA Africa partner countries. The programme design will also be shared with the Square Kilometre Array Communications and Outreach Network (SKACON) for implementation by SKA partner countries. Best practice learned from the pilot programme will be reported at various conferences.