



SKA Organisation Monthly Bulletin

10th Issue, February -March 2015

From the Desk of the Director-General	2
Project.....	3
System Engineering.....	4
Architecture.....	5
Science	5
Policy Development.....	6
SKA Board Matters and Administration.....	7
Communications and Outreach.....	8

From the Desk of the Director-General

These are exciting times for the SKA. After 20 months of work, since the Board set a cost-cap of €650M for the construction of SKA Phase 1, we finally have an outcome for the re-baselining. The details are provided in Alistair McPherson's section below. I would like to thank all of the consortia members who provided the detailed information to enable us to undertake the re-baselining; the members of the *ad hoc* Science Review Panel, who undertook what they knew would be a sensitive job in advising me on the SKA1 science priorities; the Science and Engineering Advisory Committee (SEAC), with whom we had several intense and highly useful and productive discussions; and the staff in the Office, who were highly professional and dedicated in delivering the huge amount of work required to pull this complex job together. In the end, it went through the Board in about 3 hours. This demonstrates the quality of the work done by the whole SKA team.

Another major outcome of the March Board meeting is that described in Simon Berry's section below. I must emphasise to all readers the requirement for us to develop the new governance structure for the project; this is as essential for the SKA as developing the science case and the technical design. The Board re-affirmed its intent to seek the establishment of an Inter-Governmental Organisation (IGO) governed by a treaty, and we now hope to see negotiations between the SKA Member states beginning soon. A valuable pre-requisite for such negotiations is for the partner nations to sign what we call a Letter of Intent, which declares that government's intent to participate in negotiations. To date, we have three such Letters signed, and I hope more will be soon.

As I'm sure you will all be aware, one item discussed at the Board meeting was the SKA HQ selection. Colin Greenwood provides information on the current state of this process below. As some of you probably know, some incomplete and inaccurate information on this subject was reported in the press, which is unfortunate because we are in the middle of the process. On the SKA website you will find a [statement](#), from me, describing that process. As I write this note I can confirm that both Italy and the UK have provided best and final bids, which are now being examined by the HQ Selection Advisory Panel.

As you will read below, in the news on staff matters, we welcome the arrival of Gary Davis as Director of SKA Operations Planning. Gary arrives at SKA after 12 years as Director of the Joint Astronomy Centre in Hawaii. I am very pleased to see Gary on board; his immediate focus will be the development of the detailed Operations Requirements, an essential piece of work to enable the project to move forwards on several fronts. From the next edition of this Bulletin, Gary will have his own section and so can update readers on his area of responsibility.

I would like to congratulate our partners ASTRON who, last Monday, formally celebrated the opening of their new building. I was very pleased to be invited to attend the event. Details can be found at <http://www.astron.nl/dailyimage/>, click on the article for 16 March 2015.

Finally, as you may know, Brian Boyle, Director of the Australian SKA Office, will be stepping down on 10th April. I would like to warmly acknowledge Brian's tremendous contribution to the SKA over many years, all the way back to the early days of the International SKA Steering Committee. In recent times, his steering of SKA activities in Australia, and his dedicated and professional advice to the SKA Office on many areas of policy, has been invaluable and essential. I am sure that Brian will continue to be engaged in SKA in one form or another as we continue towards construction.

Philip Diamond
SKAO Director-General

Project

By Alistair McPherson, Head of Project

The past month in the office has been extremely busy for the project and I am certain that life within the consortia has been equally busy. Within the office, the focus has been on the re-baselining and completing the last of the PDRs. In fact, as I write this, the SDP Consortium are nearing the end of their Review.

By now you will all have heard the results of the re-baselining work. This has been through a Board Meeting as well as a meeting by the Members in early March. The outcome of the Board meeting is summarised below in a note from the Director General:

Taking into consideration the work undertaken by consortia and the SKA Office team, advice from the ad hoc Science Review Panel and the SEAC, it is my recommendation that the Board adopt the following components as the updated SKA1 Baseline Design to be built within the agreed cost cap of €650M (2013 Euros):

- *SKA1-Mid in South Africa should be built, incorporating MeerKAT. 70% of the planned 190 SKA1 dishes should be constructed with a target of delivering baseline lengths of 150km, but with a fallback of 120km if funding is constrained. Receiver bands 2, 5 and 1 should be constructed for all SKA1-Mid dishes, with their priority order as written. Capability to form and process 50% of the planned pulsar search beams should be delivered.*
- *SKA1-Low in Australia should be built. 50% of the planned 262,144 low frequency dipoles should be deployed. The array should cover the frequency range 50-350 MHz, as planned. The current planned baseline lengths of ~80km should be retained. The inclusion of a pulsar search capability for SKA1-Low (currently an Engineering Change Proposal on hold) should be actively explored.*
- *SKA1-Survey in Australia should be deferred.*

In addition, an SKA Phased Array Feed (PAF) development programme will be initiated as part of a broader Advanced Instrumentation Programme.

It is also recommended that the Board approve funding, with Australia's agreement, for the operations of ASKAP as an integral component of SKA1; the start date to be negotiated with Australia. This would enable ASKAP to provide SKA1 with an early survey capability and also serve as a platform for the development of next-generation PAFs.

SKAO will immediately implement the variations in the design via a series of Engineering Change Proposals, which would require full documentation and review through our now standard processes. A new Baseline Design document will be generated for consideration at the July 2015 Board meeting.

The result of this will be for the office to work now towards the revised Baseline which will become Baseline Design Version 2 (BDv2). To achieve this, we are reviewing the level 1 Requirements and identifying what needs to be changed. Naturally, some discussions will be required with consortia to clarify some issues. We will generate an ECP to cover the key elements of this change to amend the Level 1 Requirements. In parallel, we will review the existing paused ECPs and also see what additional ECPs will be required to take into account issues and suggestions that have been raised during the RBS process. Finally, we will provide a revised Architecture through an Architecture Review in the summer and a Systems Review later in the year. These reviews will naturally be based on BDv2. There are also a number of other documents that will need to be revised, including the Array Configuration Document and others. This will be discussed in detail at the Consortia Leaders Meeting after Easter.

As mentioned earlier, the Preliminary Design Reviews are coming to an end and they have proved to be very

successful. It has been a great deal of work for everyone in the project, but I believe rewarding. All of the Elements have a clear understanding of their state; those parts in good state, and those areas needing attention. We are in the process of releasing the reports and will discuss the detail with the Consortia Leaders. All have their list of actions required to close out the reviews. We are looking for feedback from the process and we are asking for responses from the Consortia. The Leaders will send comments, but feel free to send any feedback you may wish. The aim is to try and improve the process for CDR and any other reviews required.

Two of the consortia are in the middle of down-selects; both DSH and CSP. They are both following a disciplined process to choose the most appropriate solution. Hopefully, we will know the choices soon.

The office is planning to issue an updated version on the Project Management Plan and the Systems Engineering Plan. These will be available in April. In addition, we are developing the solution for the Configuration Management Tool. At present we are aiming towards implementing eB, a Bentley product that is known to some of you. That said, we are yet to agree the contract. Once we have agreed the tool we will run a trial and, assuming success, roll it out late this year.

Over the past few weeks I have managed to visit HIA in Victoria and the Observatory at Penticton. It was good to see DVA-1 and I will visit Australia soon to discuss hosting arrangements and developments.

Now we have re-baselining behind us, we all have a great deal of work to do to implement it. This will take a great deal of effort and enthusiasm from all of us, but it will result in a world class facility.

System Engineering

by Tim Stevenson, SKA Chief System Engineer

In preparation for Pre-Construction Stage 2, an update to the System Engineering Management Plan (SEMP) is in preparation. Stage 1 has shown that there is some understanding of the system engineering needs of the Project and that in most cases the principles are being followed. The new SEMP will support these efforts in two ways:

- The SEMPs of the Consortia will be made explicitly applicable (within their own domains) at Project level. The hope is that these Element SEMPs will be overhauled where necessary and placed under configuration management.
- The 'pillars' of system engineering will be re-iterated and the addressing of them by Consortia are made mandatory, but without the specification of methods, tools or procedures within Consortia. Methods, tools, procedures, roles and responsibilities in SE transactions between Consortia will be elaborated, most of which are already in operation and are familiar. Integration will be encouraged if feasible.
- The role of the SKAO Architecture Group in SE matters, as discussed in Fremantle, will be described.

As always, the Element System Engineers are available to assist in making the various mechanisms work (or work better). The goal is to create a 'bias for action' so that progress can be made on the basis of reduced misunderstanding and clearer guidance.



Architecture

by Tim Cornwell, SKA Architect

The SKA1-Low Telescope Architecture Team is organizing a Calibration Consultation meeting to discuss issues relating to calibration of the SKA1-Low telescope, and the implications that these have to the configuration and design of the array and subsystems.

The objectives of this meeting are to exchange and review the latest thinking on these issues with respect to their impact on achieving successful EOR observations, and to inform the community of the SKA office view of how best to define the telescope to optimize the probability of success. In particular we will discuss our framework and approach to calibrating the array, the physical effects that must be corrected, and the implications to the telescope configuration/layout in terms of station distribution and location. While the approach assumes that station beams are delivered as calibrated products, the present Consortium plans for doing this, and the measurements and data required will also be reviewed.

The format will be a series of topical discussions led off by invited presentations, and followed by a significant period of open discussion to allow participants to give their views on the topic. The meeting will be wrapped up by a session to discuss the reaction of the subsystem leads to the information presented and a summary of where the Office sees the collected wisdom taking the designs.

We are inviting roughly 15 subject matter experts from various consortia and telescope projects. The meeting will be held in mid-April depending on availability.

A subsequent similar meeting will be held to define SKA1-Mid calibration.

Mark Waterson, Tim Cornwell - Co-chairs SKA1-Low Telescope Architecture Team

Science

by Robert Braun, SKA Science Director

In February, both Jeff Wagg and Phil Diamond gave presentations while attending the Astronomical Society of India meeting at the NCRA in Pune. The first day of this meeting was a workshop on [Indian participation in the SKA](#).

It was a very stimulating workshop that included the formal kick-off of the SKA-India Consortium, a steering body consisting of scientific institutions, Universities and Colleges that will oversee a range of SKA-related activities in the country over the next few years. Members of the Indian science working groups also gave presentations demonstrating the wide breadth of radio astronomy expertise within the community.

While in India, Jeff gave SKA seminars at the Raman Research Institute and the [Indian Institute of Astrophysics](#) in Bangalore, and back in the UK at the [University of Warwick](#).

The Science Team has continued to support the Re-baselining process during February by preparing documentation for the SKA Board meeting held on 3-5 March 2015.

A major Science support effort was also directed at various Preliminary Design Reviews: DSH, INFRA SA, INFRA AU, and AIV.



Robert Braun attended the UK SKA Science Community Meeting at the Royal Astronomical Society on 13 March and gave a presentation entitled: “SKA Science Prospects”.

At the AAS meeting in Seattle (4-8 January), Tyler Bourke gave the following talks:

- an update on SKA1-LOW at the @ AAS Splinter Session “Universe at Long Wavelengths” (organised by Joe Lazio)
- a presentation on “SKA Science Drivers” @ AAS Splinter Session “The SKA telescope: Global Project, Revolutionary Science, Extreme Computing Challenges”

Policy Development

by Simon Berry, SKA Director of Policy Development

The March Board meeting and subsequent meeting of the SKAO Members was a significant milestone for the Policy Team as well as the Engineering and Science teams in the SKA Office. For us, the meeting marked the review point and approval point for several parts of the so-called Key Document Set.

As regular readers will know, together with our advisory group StratCom, we have been talking about and planning the content of the core policy documents; the documents that will eventually form the basis of the future SKA Observatory. At their March meeting, the Board re-affirmed its desire to see the creation of an SKA Intergovernmental Organisation, and to put that in place requires an agreement negotiated and concluded between national governments. After much work through the StratCom, the text that will form the basis of the negotiations needed over the coming months was agreed as an appropriate starting point. You’ll see this referred to as the ‘Observatory Agreement’.

Supporting this are various other elements; One is a document describing the rules of financial engagement with SKA, ranging from practical issues such as how things like budgets are set, through to how one sets the starting rules for discussions on who contributes what share of the SKA1 budget. Again, much work has been done, especially on the principles that the project will use in these areas. That building work has been important in progressing things so that the Board was content to give the current status the green light as the basis for future negotiations alongside the Observatory Agreement. Another one in the supporting set relates to procurement; how responsibility for constructing and delivering SKA1 will be apportioned and critically, how we handle the initial process of understanding national aspirations and matching them to project plans. This builds on the procurement workshop in late January and we will be discussing the ideas further with the Consortium leaders at their meeting in early April. The Board also talked about access principles, building on the work done last year, and a new starting point for more detailed discussion of the issues in the coming months. We’ve talked in past Bulletins about the ‘Prospectus’ that describes the project in executive summary form for stakeholders in the past. Work on this, now that re-baselining is moving into an implementation phase after the top-level discussion, and with the Board’s endorsement of the policy elements, is picking up pace.

So on the policy side of the Office, the March meeting was a turning point too, and a major step forward. Discussions are underway about initiating this ‘Formal Negotiation’ phase and planning on how it will take place starting up. The transition marks a point where things become still more serious, and higher profile. There will undoubtedly be tricky discussions ahead, but as shown by more Governments signing the Letter of Intent to support the development of the project into SKA1 and cautiously promising news from some of the prospective future members, we can look ahead to the next few months with optimism.



SKA Board Matters and Administration

by Colin Greenwood, SKA Head of Administration and Legal

Board of Directors

The 17th meeting of the SKA Board of Directors was held on 3-5 March 2015 at SKA Headquarters. At this meeting, the Board unanimously agreed to move the SKA telescope forward to its final pre-construction phase. The design of the €650M first phase of the SKA (SKA1) is now defined, consisting of two complementary world-class instruments – one in Australia and one in South Africa – both expecting to deliver exciting and transformational science. Important progress was also made at this meeting in agreeing the key documents to be included in the SKA Prospectus, which will provide governments with the basis for developing national business cases for SKA-1. In addition, the Board confirmed that establishment of the SKA as an Inter-governmental Organisation should be taken as the starting point for discussions about possible future governance models.

SKA Members

The SKA Members held the 6th general members meeting on 6 March 2015. The main topics for discussion at this meeting were selection of the SKA HQ (see below) and the level of funding for SKA Organisation for 2016-17. Whilst Members had previously approved the text of a revised business plan for SKA Organisation for the period of pre-construction up to 2017, selection of the preferred funding option was deferred to this meeting. Members have now agreed their preferred funding scenario and are now looking to secure their funding contributions for 2016-17.

SKA Headquarters

In October 2014, a Call for Proposals to host the permanent headquarters of what will become the SKA Observatory was released. Both Italy and the UK submitted bids, the UK offering to expand the current SKA Organisation headquarters at Jodrell Bank Observatory, and Italy offering to host the headquarters in Padua. The Board established a Headquarters Selection Advisory Panel (HQSAP) to review the proposals and the Panel submitted a recommendation to the SKA Board of Directors for consideration at the Board meeting on 3-5 March 2015.

The HQSAP report noted that both proposals met all the criteria and that the Italian proposal exceeded more criteria than the UK bid; on that basis, the HQSAP identified the Italian proposal to locate the SKA HQ in Padua as best meeting the selection criteria in the Call for Proposals. The Board noted the HQSAP's recommendation and referred the matter to the SKA Members.

The SKA Members discussed the HQSAP's report and requested Best and Final Bids from both parties. In particular, Italy and the UK were asked to expand their responses to the Call for Proposals in areas such as financial commitments, operational/schedule matters and organisational/reputational matters; they were asked to submit these bids by 20th March 2015.

The SKA Members will meet at the end of April to discuss both final bids, their respective benefits, and the implications of choosing one location over the other for the permanent SKA HQ. It is expected that a decision can be reached at this meeting.

Staff Update

Professor Gary Davis joined SKA Organisation on 2 March 2015 as Director of Operations Planning. Previously, Gary was Director of the Joint Astronomy Centre, the administrative base in Hawaii for the James Clerk Maxwell Telescope (JCMT) and the United Kingdom Infrared Telescope (UKIRT).



Dr Evan Keane joined the SKA's science team on 16 February 2015. Evan is an alumnus of The University of Manchester and most recently worked in the Swinburne Pulsar Group at the Swinburne University of Technology, Australia. He brings particular expertise in radio transients and pulsar search and timing to the science team.

Andrea Casson has been appointed as Head of Project Management from 2nd March 2015, she was previously employed by SKA Organisation as its Project Controller.

Mr David Bolt has been appointed as a Graduate Support Engineer from 9th March 2015; he was previously employed by SKA Organisation as its Deputy IT Manager.

IT

The Vidyo videoconference software has been successfully utilised for SKA Board, Members and various subcommittee meetings. We encourage you to use this software for remote participation in meetings with the SKA Office. If you have not used Vidyo before and would like to try out the software in preparation for meeting with the SKA Office, please contact the IT department (skao-it@skatelescope.org)

Communications and Outreach

by William Garnier, SKA Communications and Outreach Manager

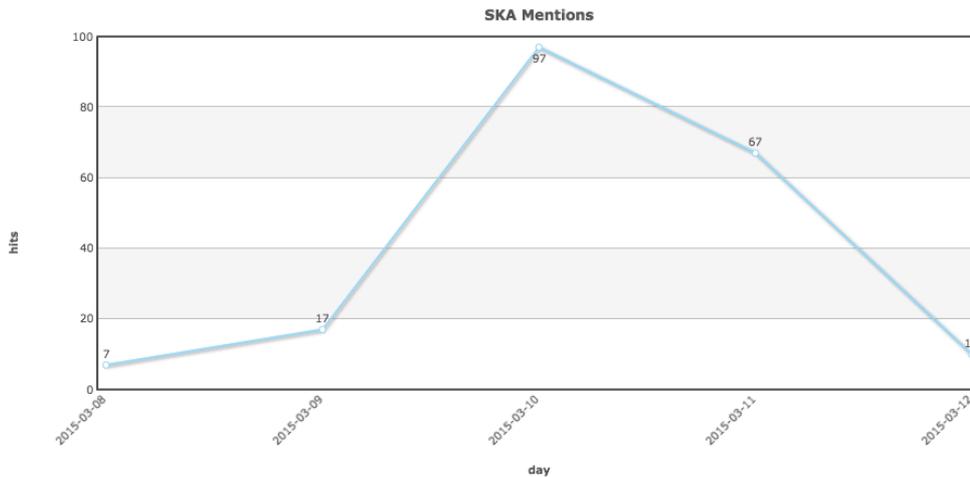
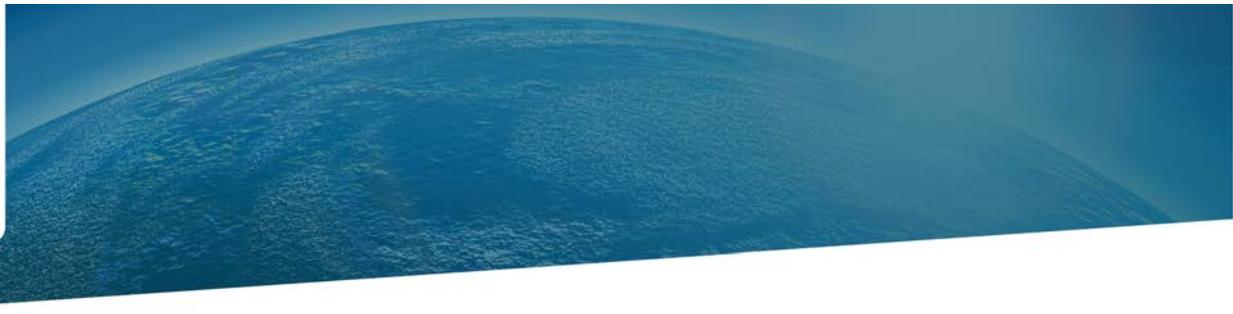
While many of the February/early March activities were aimed towards being prepared for the big decision on the re-baselined SKA1, the Comms team got involved in a number of exciting initiatives on the outreach and public engagement front as well. An outline of the most relevant activities is provided in this section.

Re-baselined SKA1

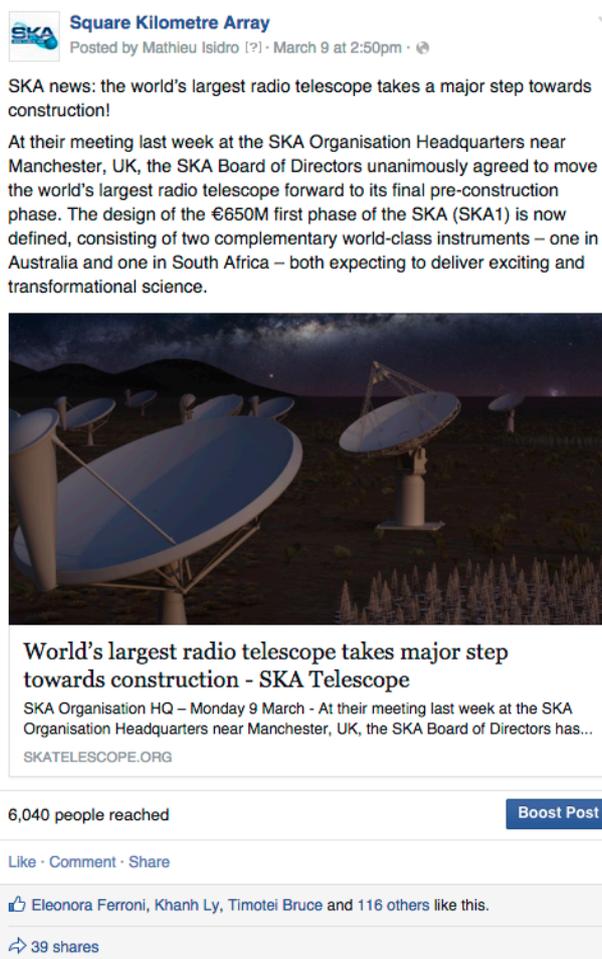
A [Press Release](#) was issued on March 9 reporting on the main outcome from the SKA Board meeting, namely the re-baselining. The release highlights the transformational aspect of the two SKA1 telescopes and provides details on these instruments, as well as new visuals: technical fact sheets for each of the SKA1 telescopes; a radio telescope collecting area comparison infographic highlighting the biggest instruments in the world and how they compare to SKA1; an infographic explaining the physical concepts of resolution, sensitivity, and survey speed and showing how SKA1 surpasses the current state-of-the-art.

This press release proved extremely popular, demonstrating once again that the expectations from our community and from the public on such decisions are very high. The coverage worldwide is very impressive as well, putting this news as one of our top news items in the recent history of the project. It is for instance the second most read press release, viewed 3400 times on the web, it was shared 586 times on Facebook and tweeted more than 100 times, and generated more than 200 news hits (including the Xinhua news agency, the official press agency of China and most influential media outlet in the country). When pulling the data together, the press release reached a total of around 300,000 twitter accounts. Graphs are shown below.

We also took this opportunity to generate a [Frequently Asked Questions](#) providing basic information about the project and aiming at clarifying a number of aspects, including the evolution in the design of SKA1. This FAQ should serve as a reference when communicating about the project to an external audience and without asking it to become your bedside book, we certainly encourage you to have a considerate look at it.



This graph shows the number of news hits generated by the press release during the days following its publication.



Square Kilometre Array
Posted by Mathieu Isidro [?] · March 9 at 2:50pm · 🌐

SKA news: the world's largest radio telescope takes a major step towards construction!

At their meeting last week at the SKA Organisation Headquarters near Manchester, UK, the SKA Board of Directors unanimously agreed to move the world's largest radio telescope forward to its final pre-construction phase. The design of the €650M first phase of the SKA (SKA1) is now defined, consisting of two complementary world-class instruments – one in Australia and one in South Africa – both expecting to deliver exciting and transformational science.

World's largest radio telescope takes major step towards construction - SKA Telescope

SKA Organisation HQ – Monday 9 March - At their meeting last week at the SKA Organisation Headquarters near Manchester, UK, the SKA Board of Directors has...

SKATELESCOPE.ORG

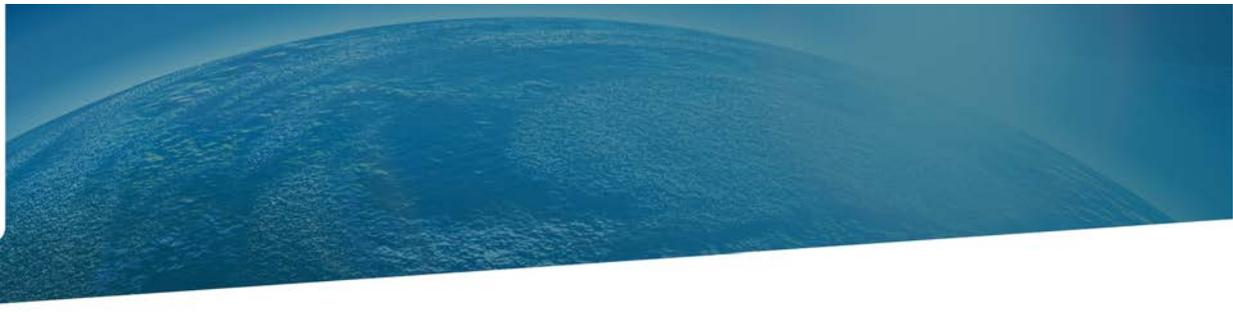
6,040 people reached Boost Post

Like · Comment · Share

👍 Eleonora Ferroni, Khanh Ly, Timotei Bruce and 116 others like this.

🔗 39 shares

SKA1 final design announcement on Facebook had a big success, reaching several thousand people.



AAAS Meeting

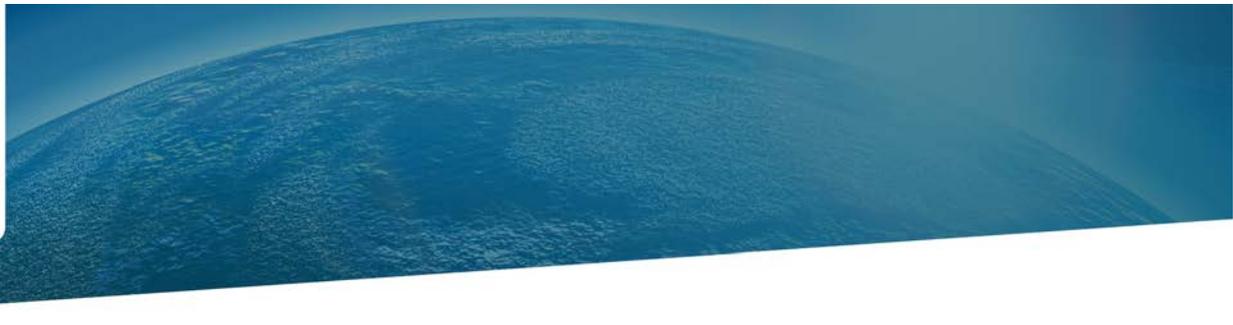
As mentioned in the previous issue, we arranged a [splinter session at the AAAS meeting](#) in San Jose, CA, as a way of strengthening our engagement with the US community. Special thanks to our speakers who came from far to deliver great talks during the 3 hour session, attended by ~50 people, and to Clive Cookson, Science Editor at the Financial Times, who kindly accepted to moderate the session. The AAAS Meeting is amongst the world's largest and most prestigious general scientific events, bringing together thousands of scientists, policymakers and science journalists.

Shared Sky

Shared Sky was successfully inaugurated at the Iziko National Gallery Museum on February 13 (see photos below). The event was attended by the South African Science Minister, high-level delegates from the South African Department of Science and Technology, from SKA SA office, from SKA Organisation, local artists, local curators of the exhibition, and was attended by Ambassadors and Representatives from SKA partner countries and many local stakeholders. Shared Sky will be on display in Cape Town until the end of May. To learn more about Shared Sky, visit our [dedicated page](#) on the exhibition.



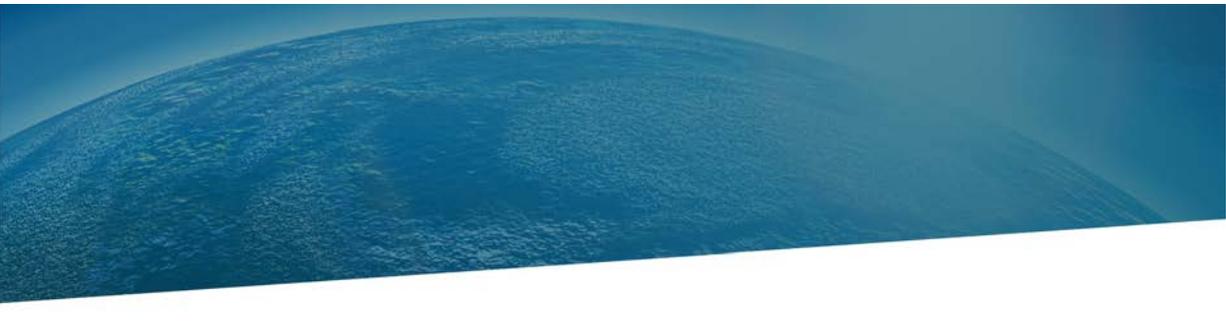
A view of the gallery where Shared Sky is exhibited at the Iziko National Gallery



Professor John Parkington introduces the South African works of Art to the South African Science Minister Naledi Pandor



An artist plays a traditional instrument at the inauguration of the exhibition in Cape Town



An artist plays a traditional instrument at the inauguration of the exhibition in Cape Town



Professor John Parkington is interviewed by SA FM who did a live coverage of the inauguration event from the Gallery.

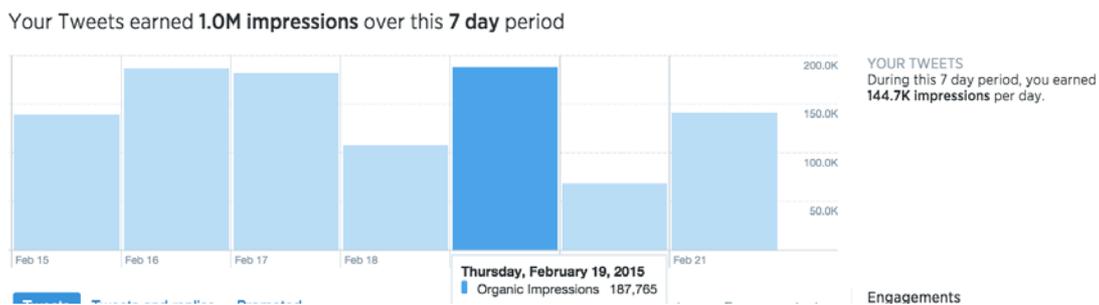


Media training

We arranged a media training session for part of our scientific and engineering staff. The training was delivered by science communication experts, aiming at providing skills to our staff to talk about their work and SKA-related technical concepts in an easy-to-digest way. As part of our public engagement and media activities, we often solicit our staff to take part in public talks, interviews, hands-on and awareness activities, etc. and as such, it is important for them to develop and improve their skills to communicate their passion and their knowledge to a wide range of audiences. The training was extremely well received by the staff, and further sessions are planned for other colleagues.

@realscientists Twitter Account

Mathieu Isidro curated the @realscientists account on Twitter for a week in February, where he talked about radio-astronomy and all aspects of the SKA. The account is followed by over 16,000 people from across the globe, including many influential journalists, scientists and policy makers. It was a great success with over 100 tweets sent out every day, each of which was read on average by 1500 people.



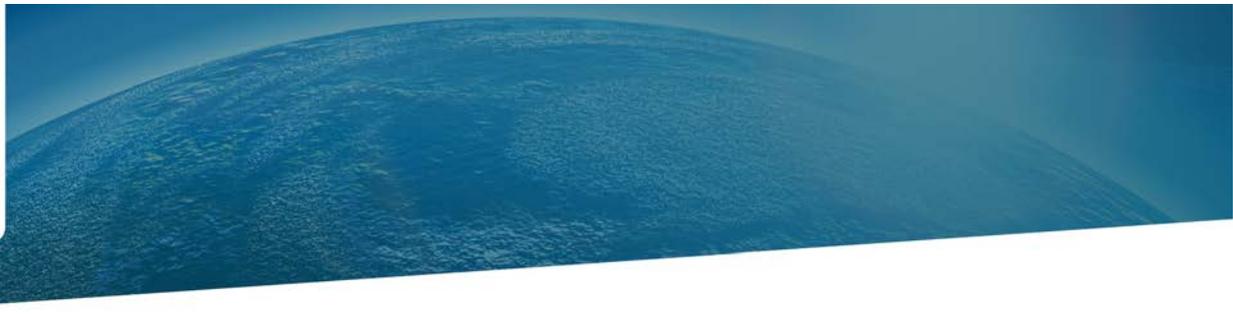
As shown in this graphic, all the tweets displayed that week on the twitter account of @realscientists added up to more than one million impressions – the total number of times the topic was mentioned on users' accounts that week.

SKA Mini-sites

There's been more progress on the mini-sites with the addition of the Portuguese mini-site as a non-member country, as well as the implementation of welcome pages for most of the countries, describing their current involvement in the SKA. To access them, simply click on the flag of that country. Japan has also joined the list of non-member countries and our colleagues from the Japan SKA Consortium are now working on translating relevant sections of the website.

STEM event in London

In Early March the Comms team was invited by Cisco to take part in their annual outreach event "Your Future, Your Ambition". The event was held at the Emirates stadium in London and attracted around 500 students aged 7-17 who were curious to discover how to make a career in STEM fields. Special thanks to project scientist Evan Keane, Keith Grainge, SaDT consortium leader from the University of Manchester, as well as Naomi Smith from the Jodrell Bank Discovery Centre, Sophy Palmer and Vicky Stowell from STFC's RAL lab who volunteered to run the SKA booth, the theme of which was career opportunities in radio astronomy in the UK. It featured a live video link and remote operation with a telescope in Cambridge as well as fun experiments like an infrared camera, spectroscopes and a touch screen table with videos and images of the SKA.



Public engagement initiative

We've made contact with the British Science Association to take part in scibars across the North West. Scibars – or 'cafés scientifiques' – are monthly public science talks held in pubs across the country. In February, Peter Dewdney took part in the Didsbury Scibar, and organisers have already expressed interest in having us in Chester, Liverpool, and Macclesfield.

SKA in the news

A selection of articles published by the media:

- [Article in Business Australia on the new Cisco Innovation Centre.](#)
- [Article in New Electronics \(UK\) and data transport for the SKA.](#)
- [Blog post by NPL on their visit to the MRO.](#)
- [Blog post by UCL on observation techniques being developed for SKA.](#)
- [Article in the Conversation on Epoch of Re-ionisation.](#)
- [Article in CNN International edition on SKA's future science contributions.](#)



About re-baselined SKA1:

- In Portuguese press: <http://expresso.sapo.pt/luz-verde-para-o-maior-radiotelescopio-do-mundo=f914692>
- Article in Science (USA): <http://news.sciencemag.org/physics/2015/03/square-kilometer-array-scales-back-ambitions-first-phase>
- Article in Engineering News (South Africa): <http://www.engineeringnews.co.za/article/go-ahead-given-for-next-phase-of-the-ska-2015-03-10>
- Short note by Xinhua news agency (China): http://news.xinhuanet.com/english/2015-03/10/c_134055482.htm

Connect with us

For any enquiries, requests or feedback please write to ska-outreach@skatelescope.org

You can also find the SKA Organisation on [Facebook](#), [Twitter](#), [Google+](#) and [YouTube](#).