



# SKA Organisation Monthly Bulletin

*8<sup>th</sup> Issue, November-December 2014*

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## From the Desk of the Director-General

2015 looms, and I expect it to be an exciting year for the SKA. Amongst many objectives, we will complete the re-baselining of the project; the preliminary design reviews (PDR) and any follow-up work will take place – indeed, as I write, the Central Signal Processor PDR is just coming to an end; we will start the so-called Stage 2 of SKA design, that is the detailed design process that will take us to critical design reviews; and we hope that the governments will begin the non-trivial task of negotiating the establishment of an international organisation.

At the end of a year I like to look back to see what has been accomplished, I always find it instructive. However, this year our Communications and Outreach team have done the job for me; by clicking on the baubles in the [SKA Christmas e-Card](#) you will see the impressive list of highlights resulting from the hard work across the global project.

On Wednesday 17<sup>th</sup> December the UK published its [Science and Technology Strategy](#). The high profile of the SKA within this document is gratifying and impressive.

As 2014 draws to a close, the three precursor projects are all making exciting progress: the MWA is now in routine operation and delivering scientific publications; ASKAP is well into its commissioning phase, with early science being delivered and the first of the MkII Phased Array Feed systems on an antenna and undergoing testing; and just this week we received the excellent news that the second of the eventual 64 MeerKAT antennas has been erected.

I hope all of our colleagues around the world find time for some well-deserved rest and relaxation.

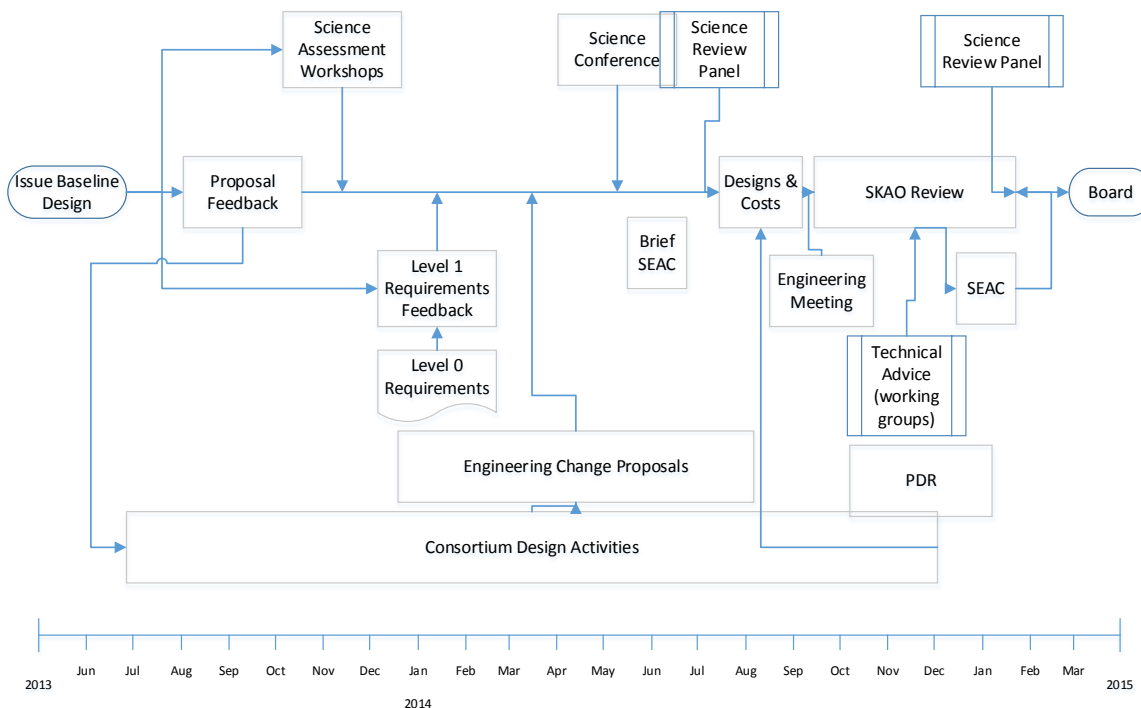
Philip Diamond  
SKAO Director-General

## 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 Process and preparation for the Preliminary Design Reviews (PDR), for the consortia it has been responding to our queries on re-baselining and preparing documentation for PDR. The good news is that both processes seem to be working to schedule and no significant delays yet.

The re-baselining (RBS) is moving ahead. The overall process is shown below:



You will be aware that we received suggestions from all of the consortia through their submissions and also from the workshop in Fremantle. In addition, some were raised through the staff in the SKA office. We also went through the original list of suggestions from the teams at the Fremantle workshop to ensure that all the suggestions and not only those filtered through the workshop process were captured. This led to a list of over 200 suggestions to be processed.

The initial list was processed through two initial phases which looked at them on the basis of science, marked against the Science Priorities prepare by the Science Review Panel (SRP), the risk and the cost. The risk score included technical and schedule risk. This was followed by a much more detailed phase looking more closely at costs and technical risk. This final phase of reviewing individual suggestions resulted in a clearly identified list of individual options that can be consolidated into an overall strategy.

The next phase is to take these individual options and create potential combinations which can be presented to the SKA Board in March. The process includes presenting the solutions to both the Science Review Panel and the Science and Engineering Advisory Committee (SEAC) for their advice. To date, the SRP have reviewed

the individual options and the SEAC has discussed the process development.

Currently, we are on track to present the final suggested solutions to the SRP and SEAC in January in preparation for the March Board meeting.

On the PDR front we are all progressing well. All of the consortia now have agreed dates and have issued their PDR Readiness Certificates. The documentation is arriving and the initial reviews are part way through their process. We have been successful in attracting a wide range of external expertise from across the domains to act as reviewers which will add a great deal of value to the work and process.

I listed the dates within the last newsletter, but repeat them here:

Meeting Order	Element	Meeting
1	CSP	17-18 December 2014
2	TM	7-8 January 2015
3	SaDT	14-15 January 2015
4	LFAA	26-27 January 2015
5	DSH	9-10 February 2015
6	INFRA SA	16-17 February 2015
7	INFRA AUS	18-19 February 2015
8	AIV	23-24 February 2015
9	SDP	18-19 March 2015

The early feedback from what we have seen is that there is a great deal of work going on around the project. The amount of documentation being produced is encouraging, although we all know that we have to balance quantity with quality. To date the quality is good. It is also understood that there is a wariness of progressing too far in certain areas until RBS is completely known and the resulting implications understood. That said, we are aware that it is essential to capture an agreed coordinated baseline and this is the purpose of PDR. Once we have that, we can transition, through the Engineering Change Proposal (ECP) process, to the revised baseline.

Finally, I would like to thank you all for your efforts in 2014, which has been a bit of a rollercoaster of a year for me, and I suspect for you. I trust you will all have an enjoyable festive season and a really successful 2015.



## System Engineering

*by Tim Stevenson, SKA Chief System Engineer*

The first few PDR submissions show the impact of a System Engineered approach to Element development, tailored according to circumstances. It is encouraging that the fundamental tenets are generally understood and are being adhered to. The Element System Engineers within the Office can therefore focus on the content of the submissions rather than their structure or completeness.

I would like to issue a gentle reminder, however, that the PDR submissions constitute a commitment and represent a baseline (once amended following PDR). This means that the rate of change in definition has slowed, and the Project is now willing to undertake formal Change Management and the work that it entails. If the rate of change is still high and is uncontrolled, the effort expended on PDR is wasted as the designs are not stable enough to be analysed at system level.

We understand that there is still a lot of work to do at Element level, and that significant technology/design downselect is yet to come. In order to arrive at a focused design which may be developed towards Critical Design Review (CDR), these downselects must take place as a matter of urgency. We are aware that downselects create design 'losers' but that following this important step, Consortia will re-align themselves so that the total capability is brought to bear on developing the chosen designs. The Office System Engineers and Element Project Managers are ready and able to advise on any workshare re-allocations made necessary.

## Architecture

*by Tim Cornwell, SKA Architect*

The re-baselining process has proceeded through the first three stages and is now in the midst of the final phase – this is the composition of options for re-baselining constructed from those options which have made it through the previous three phases. These options have been selected for costs and science impact based on approaches developed by the Science Team. The next stage of the process is to inform the SKA Science and Engineering Advisory Committee of progress so far and seek feedback and advice. The eventual goal is to deliver a broad set of options for the next baseline design to the SKA Board in March 2015.

A large effort has been put into reading the PDR material as it has been submitted to the SKA Office. Members of the Architecture Group have read not only material from the elements for which they are responsible but also for other appropriate elements. Questions from the Architecture Group have been recorded in Observation Action Registers, assembled by the SKA Office Project Managers, and submitted to the consortia for responses. This process, while time consuming has been very effective at identifying and resolving issues in complex documentation.





## Science

*by Robert Braun, SKA Science Director*

The Science team's focus has been supporting the re-baselining process, assessing the scientific impact of the re-baselining options under consideration. The science team has also supported the Science Review Panel which held a face-to-face meeting on 10<sup>th</sup> – 11<sup>th</sup> December 2014 to provide an independent science review of the re-baselining process to date.

The science team has recently welcomed Prof. Takuya Akahori who has joined the SKA Office on secondment from Kagoshima University in Japan on 19 November until the end of March 2015. Prof. Akahori's secondment is the start of three years of funding provided by the National Astronomical Observatory of Japan (NAOJ) to station scientists and engineers at SKA Office in order to learn more about the SKA project and provide information for the Japanese science community. Prof. Akahori is fully integrated in science activities at SKA Office but will also provide reports to colleagues in Japan on SKA and its activities.

Dr Evan Keane, currently a CAASTRO Senior Postdoctoral Fellow at the Swinburne University of Technology in Melbourne, Australia will be joining the Science team in February 2015 as a Project Scientist. Dr. Keane completed his PhD at Jodrell Bank (Thesis: "The Transient Radio Sky").

On 14th November, Dr Jimi Green gave a talk at Macquarie University, Australia: "[The science driving the Square Kilometre Array](#)". On 9th December, he gave a Lovell Christmas Lecture at Jodrell Bank Discovery Centre: "[Masers and the Square Kilometre Array](#)".

## Policy Development

*by Simon Berry, SKA Director of Policy Development*

In addition to continuing our rounds of 'informal discussions' with the project Members, the last couple of months in the policy team have been focused on preparing for the series of meetings held at SKA HQ in early December. Around the Members meeting and Board meeting, we hosted a meeting of our Strategy and Business Development Committee which considered the next steps for the development of our future governance structure and the future funding model. Those themes carried into the Members meeting later that week where the representatives considered how to move towards the more formal 'intergovernmental' negotiations that we expect to commence in 2015. In order to get that point, we'll need to have our 'prospectus' in place; the summary of all the elements of what we're calling the Key Document Set. We're moving ahead well with the text of a future SKA Agreement, and as a key part of our work, will be testing our current thinking on procurement for SKA construction in an expert workshop of our Members in late January.

As we've mentioned before, an important component of the Prospectus is the need to sell the potential impact, whether in technology, innovation or in its reach to the general public, of SKA. With this in mind, StratCom (SKA's Strategy Committee), together with the EU's GO-SKA project, hosted a 'Prospectus Workshop' at Jodrell Bank (talks available [here](#)). This was an interesting day, hearing from experts in the potential impacts from research infrastructures, sharing experience from within the SKA family and beyond. We will use this in the coming weeks, augmented by other inputs from GO-SKA and from the broader project, including various offers of help we've already received, to develop what will be a critical document.

## SKA Board Matters and Administration

by *Colin Greenwood, SKA Head of Administration and Legal*

### SKA Members

The [SKA Members](#) held their first general meeting since November 2012 at SKA Headquarters on 3<sup>rd</sup> December. The Members discussed a way forward for future funding and governance of SKA Organisation for 2016 onwards. This meeting marked the start of more frequent general meetings of the SKA Members going forward into 2015.

### Board of Directors

The [SKA Board of Directors](#) held its latest meeting at SKA Headquarters on 4<sup>th</sup> December. The half-day closed session meeting provided the SKA Office with the opportunity to update directors on progress with the re-baselining process and revision of the Level 0 Science Requirements.



SKA Board photo, 4<sup>th</sup> December 2014

In association with the SKA Members and Board meeting, sub-committees of the Board including the Strategy and Business Development Committee, Science and Engineering Advisory Committee and Finance Committee met. The first meeting of the re-constituted Finance Committee was held on 1<sup>st</sup> December 2014. The Board are in the process of appointing a Chair and vice-Chair to the Finance Committee.

### SKA Headquarters

Following the release of a Call for Proposals to host the SKA Organisation Headquarters for the construction phase of the project, the Board has appointed a Headquarters Selection Advisory Panel (HQSAP) to evaluate the proposals, two of which were received, one from Italy and one from the United Kingdom. The HQSAP will evaluate the proposals following the deadline of 1<sup>st</sup> February 2015 and visit the potential sites before presenting



a recommendation to the SKA Board at the SKA-BD-17 meeting (3-5 March 2015).

The University of Manchester is currently tendering for an on-site sleeping accommodation for use by SKA Office visitors.

#### Staff Update

Altomese Brown joined SKA Organisation as Project Officer on 1<sup>st</sup> December 2014 on a one year contract as maternity cover for Debbie Schutte.

Prof. Takuya Akahori arrived at SKA Organisation on 19<sup>th</sup> November 2014 on secondment from Kagoshima University. Further details are available under the Science Report.

We are currently in the process of reviewing the applications received for the recently advertised Engineering Project Manager position. A small number of outstanding vacancies will be advertised in 2015. SKA Members are encouraged to identify suitable staff for these posts once advertised.

#### IT

The Vidyo videoconference software has been utilised for SKA Board, Members and various subcommittee meetings successfully. 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 meetings with the SKA Office, please contact the IT department ([skao-it@skatelescope.org](mailto:skao-it@skatelescope.org))



## Communications and Outreach

by *William Garnier, SKA Communications and Outreach Manager*

Over the last few weeks, we focused our efforts on a number of activities going from the support of the “non-science benefits workshop” (held on December 2; more in the Policy Development section of this bulletin) to the update and production of promotional material, the coordination of upcoming international conferences, and the coordination of the world tour of Shared Sky, our indigenous art-astronomy exhibition. Further details are as follows:

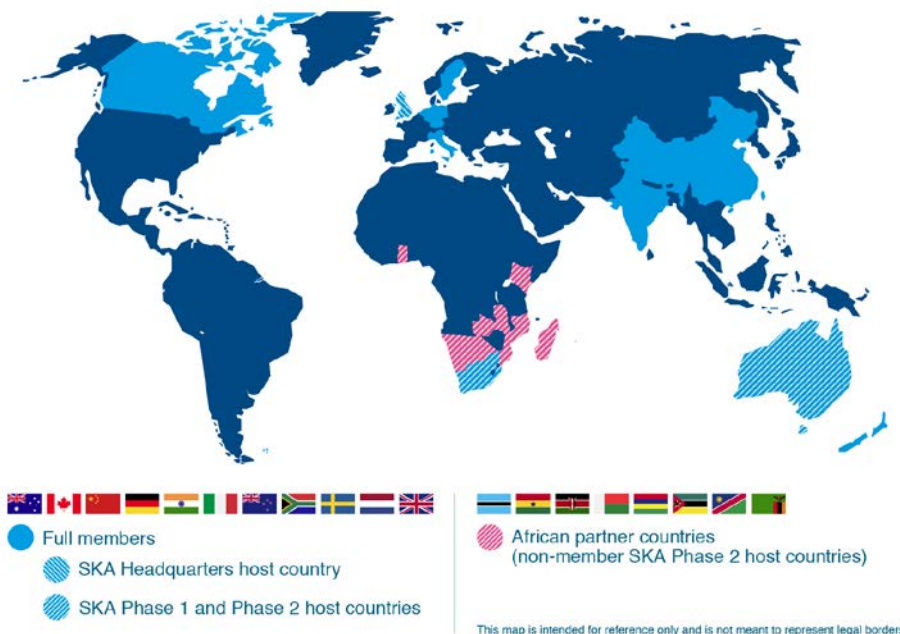
### SKA Promotional material

With so many conferences, meetings and other public engagement opportunities this year, we were “dangerously” close to running out of outreach material. This is now back to normal and we renewed our stock for the first quarter of 2015 with a number of resources so if you are interested in receiving some SKA Science Brochures or some general leaflets (credit card format so-called ‘concertinas’), get in touch with us.

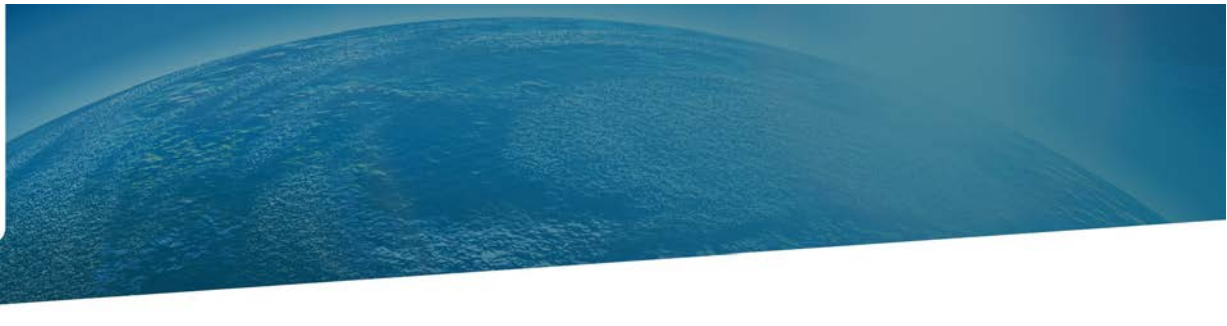
Similarly, and as it is now a tradition, we produced the very popular SKA calendar. This year, we decided to feature the artwork done by the Australian and South African artists as part of the Shared Sky exhibition. Calendars have been sent to the [SKACON colleagues](#) so I encourage you to contact them if you would like some copies. We’ve also got spare ones in the office so let us know if you want us to post a batch for you.

Nice posters are also available in A2 size. We are happy to send you a few copies for your offices in poster tubes (up to 10 posters per tube) but if you prefer, you can also [download high-resolution versions](#) (heavy files) and print these yourselves. The link also contains editable versions in case you would like to translate the texts before printing.

You will also have noticed that the [SKA world map](#) has been updated since India’s full membership through NCRA, and now includes the flags of all SKA member countries as well as the SKA African partner countries. We invite you to update your slides, talks and any other resources to make use of this map intensively.



*The SKA World Map*



### Shared Sky art-astronomy exhibition

Preparations for the [Shared Sky exhibition](#) launch in Cape Town, South Africa, are now in full swing. The exhibition will be displayed at Iziko National Gallery, located very close to the Parliament, in February and March. A welcoming ceremony hosted by the South African Minister of Science and Technology will be held on 13 February. SKACON colleagues have been invited to express their interest in receiving the exhibition in their country by submitting their preferred dates and option of venues. More details on the Shared Sky World Tour will be provided in this bulletin as things take shape.

### SKA Design Process

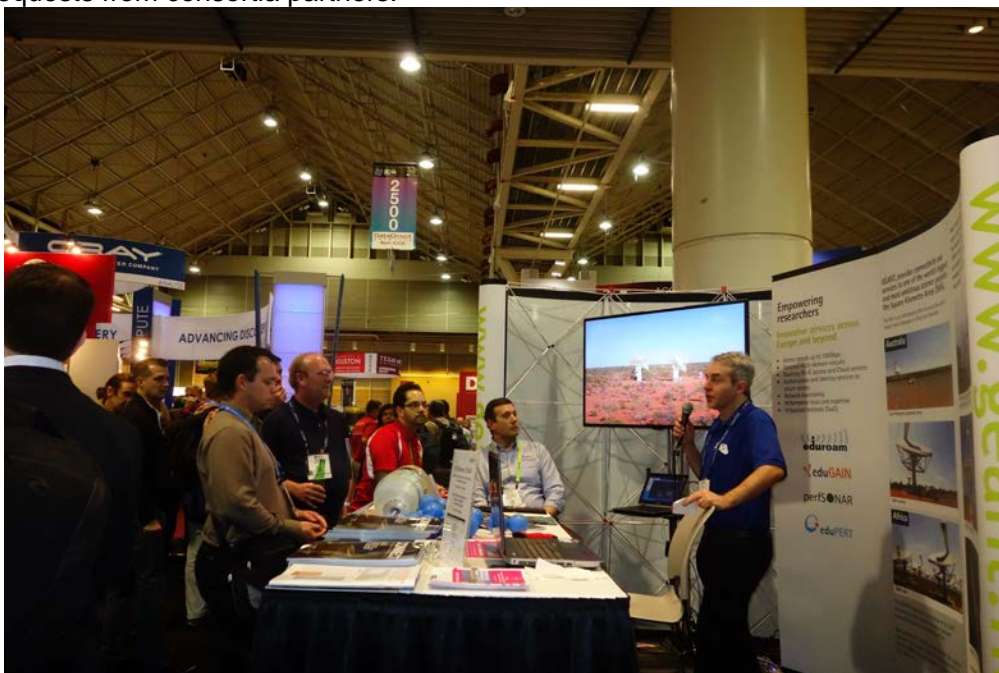
We've published a new page on the website which details the [design process](#) of the SKA. The page's objective is to dispel confusion at the design process and ensure that the right information is publicly accessible in a transparent manner. In particular, the page explains the science prioritisation process and the re-baselining exercise the project is currently going through.

### ITER

I visited the massive [ITER](#) Project earlier this month and met with the communications team there. I was very impressed by the construction activities and the interaction I had with my colleagues was extremely useful. The number of challenges we as SKA Project have in common with ITER is certainly very high, including on the Communications, Outreach and PR side, and we certainly have a lot to learn from each other. The discussion we had was very open, allowing us to identify room for further interaction and collaboration.

### GÉANT and the SKA at SC14

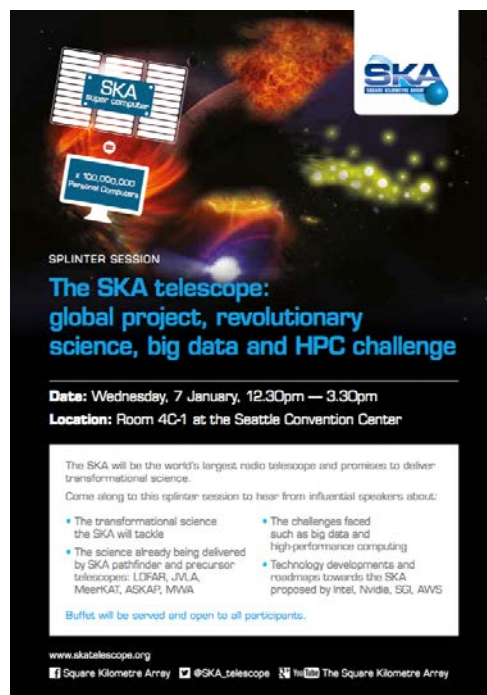
The GÉANT project, member of the SaDT consortium, secured an exhibition booth in the research area of the SC14 conference for high performance computing, networking, storage and analysis delegates. Held in New Orleans, USA the conference attracts over 10,000 attendees. The SC conference provided a great exposure for the SKA Project (also on Social Media), prominently featured as part of the GEANT booth, as well as in a number of promotional material. A good and effective collaboration between the GEANT team and the SKAO Comms team in the preparation phase ensured the accuracy of SKA-related texts and the respect of the SKA branding and messages at the booth. We certainly encourage this sort of win-win collaboration and are happy to support future requests from consortia partners.



*Keith Grainge, SaDT Consortium lead, at the GEANT booth at the SC14 conference*

## AAS Meeting

The SKA will have a strong presence at the [225<sup>th</sup> AAS Meeting](#), to be held in Seattle on January 4-8. In addition to an SKA stand (feel free to visit us!), we will also organize a 3-hour [Splinter Session on Wednesday afternoon](#), called: *The SKA Telescope: Global Project, Revolutionary Science, Extreme Computing Challenges*. Half of the session will be focused on the science capabilities of the SKA, also featuring progress and science results of some of the SKA pathfinders and the SKA precursors, and the other half will be focused on the computing challenges. In this latter session, we'll hear from Intel, NVIDIA, SGI and AWS on how they see (and plan to cope with) the SKA challenges in this domain.



*Leaflet for the SKA Splinter Session at the AAS Meeting*

## Videos

The Prime Minister of the United Kingdom, [David Cameron mentioned the SKA on an official visit to Australia](#) during a speech in the Australian Parliament, a testimony to the importance of the project.

We've also put online [Dr. Jill Tarter's visionary talk at the non-science benefit workshop](#) that was held at Jodrell Bank, and which provides her vision of the SKA in the world of 2050.

## News Coverage

As usual, a selection of media articles of interest is featured on the [press coverage page of the SKA website](#). In particular, find below the ones we selected for you this month. If you find these articles or videos interesting, we invite you to share them with your colleagues and friends.

- News on the precursors:
  - o [ASKAP wins the Australian Innovation Challenge](#)
  - o [German institute's R150m boost for MeerKAT telescope](#)
  - o [Arizona State University joins MWA](#)
- On the search for life in the Universe:
  - o [Is there life out there? How the world's largest telescope could tell us everything](#) in Contributoria
  - o [Alien intelligence and the lost prologue to 2001: A Space Odyssey](#) in the Guardian





- On our Shared Sky exhibition, [Aboriginal art aims for sky](#), in Australian Geographic
- On the SKA and pathfinder instruments, [Monster telescope needs mind-bending mathematics to uncover secrets of the universe](#) in the Conversation
- An interview with [Astronomer Dr Lisa Harvey-Smith on the SKA project](#) in the Sydney Morning Herald

#### Season's greetings

The SKA Comms Team would like to wish you all a good, relaxing festive season with family and friends and looks forward to working with you next year in what already promises to be an exciting year!

#### **Connect with us**

For any enquiries, requests or feedback please write to [ska-outreach@skatelescope.org](mailto:ska-outreach@skatelescope.org)

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