



# SKA Organisation Monthly Bulletin

*9<sup>th</sup> Issue, December 2014-January 2015*

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## From the Desk of the Director-General

Wow, where did January go? The whole month seems to have shot by. It started, at least for me, with a plane trip to Seattle for the AAS meeting. The meeting itself, and the SKA splinter session are discussed in sections below. I'd like to comment on a different splinter session, which took place on Sunday 4<sup>th</sup> January, arranged by NRAO and which discussed the science case for a Next Generation VLA (ngVLA).

Ideas for a ngVLA envisage an array 3-10 times more sensitive than the JVLA, covering a frequency range of ~10-100 GHz, and with baseline lengths of a few hundred to a thousand or more km. The ngVLA would build out from the JVLA, on a time scale well into the next decade. An overview of the technical specifications can be found [here](#). The overarching theme of the science discussion at the splinter session was 'Thermal imaging at millarcsecond scales'. The science talks were interesting and covered a wide range from planetary and star formation, through galaxy ecosystems, galaxy assembly through cosmic time and the enticingly named 'Real-time cosmology'.

I provided an update on the status of SKA to the well-attended workshop – standing room only at times. I congratulated our US colleagues for beginning the strategic planning process necessary to prepare for Astro2020, the next US Decadal Survey. Of course, from an SKA perspective it would be good to think that our US colleagues are taking into account what is happening in the rest of the world as they discuss their future. I made the offer that the whole SKA world would be happy to assist in whatever way was deemed appropriate as the strategy develops. This will be an interesting process.

Once back into the office the month was occupied by various PDR panels and, primarily, work associated with SKA1 re-baselining. A process for which I am sure you are all awaiting the outcome. As part of that process we had meetings of the *ad hoc* Science Review Panel, which reports to me, and the Science and Engineering Advisory Committee, which provides independent advice to me and to the Board. The advice received was useful and well-founded. The Board will soon receive the documents, which, I hope, will enable them to take a decision on the new baseline design in their meeting on 3-5 March.

It was a great pleasure to announce that India's Giant Metrewave Radio Telescope (GMRT) was awarded SKA pathfinder status at the end of January. GMRT is undergoing a major upgrade and many of the lessons learned will be immensely important in guiding the design of aspects of SKA. You can see more details on the SKA website.

Philip Diamond  
SKAO Director-General



## Project

*By Alistair McPherson, Head of Project*

Due to workload there is no Head of Project update this month.

## System Engineering

*by Tim Stevenson, SKA Chief System Engineer*

The Element PDR season is now in full swing. The submissions, and the conduct of the Reviews so far are some cause for satisfaction on all sides. There is a great deal of optimism that the PDRs will create a sound foundation for the re-baselining and Stage 2 of the Pre-Construction Phase. The Consortia System Engineers are to be congratulated and thanked for their contribution to the process.

In terms of Lessons Learned, there are some SE issues are emerging which are worthy of note.

The SKA, like all other major research facility developments, will experience change throughout its lifetime. This means that during the Pre-Construction Phase, we must remain open and agile regarding change. However, the design review process demands stability for the period of time appropriate to its execution; the more complex the review, the longer the time. The SKAO has suspended the change process during the PDRs for this reason. Moreover, it is expected that the PDR submissions constitute a proposed baseline, and that unilateral changes at Element level are not made for the duration of the Review. We encourage Consortia to ensure that PDR action items are completed so that the revised data packs can be treated as the baseline we all desire.

PDR submissions thus far contain, as required, Element level (and below) requirements documents. These documents must show traceability, via their higher level documents, to the L1 Requirements. If not, they must create a need to establish traceability, for instance by stimulating a change proposal against L1. It is hoped that Consortia will consider revisiting traceability and using that activity to propose improvements to Level 1 immediately following PDR.

## Architecture

*by Tim Cornwell, SKA Architect*

The Architecture team has completed its work as part of the re-baselining process, and the output is now being discussed at SKA Management level before the outcome of the re-baselining process is presented to the SKA Board of Directors in March 2015. The Architecture team have been involved in the on going Preliminary Design Reviews as Panel Members and observers.

The focus of the team has now turned to forward planning for the next 6-9 months once a decision on the revised baseline design has been made. The architecture of all telescopes will need to be well understood and checked to ensure that it meets requirements. The architecture will need to be well described in a format, primarily SysML, which can be presented to the design consortia.

A review of the L1 requirements will be undertaken. The review will try to improve the wording of existing requirements to ensure better clarity and identify missing requirements. During the review, the Architecture team will use documentation from the design consortia and the PDRs to make significant improvements to the existing L1 requirements document. Operations information will also be included in the revised document.

A Radio Frequency Interference/Electromagnetic Compatibility document has been released to the design consortia for consultation and will be revised accordingly.

A draft calibration strategy has been written and distributed to SDP and TM consortia for consultation. The strategy will be revised following this first phase consultation and then distributed to all design consortia for consultation at the end of March 2015.

## Science

by **Robert Braun, SKA Science Director**

Robert Braun and Tyler Bourke attended the 225<sup>th</sup> meeting of the American Astronomy Society meeting in Seattle, USA 4-8 January 2015. SKA Organisation held a splinter meeting: “The SKA Telescope: Global Project, Revolutionary Science, Extreme Computing Challenges” on Wednesday 6<sup>th</sup> January which was well-attended (see more details in the Comms section below).



*SKA Splinter session at the 225<sup>th</sup> AAS meeting early January in Seattle*

During January, the Science team has continued to support the re-baselining process through work as part of the SKA Office team and by supporting the *ad hoc* Science Review Panel, which held a videoconference on 16<sup>th</sup> January to provide independent advice on the scientific capabilities of proposed new SKA1 baseline design options.



On 20<sup>th</sup> January, Robert Braun gave a talk entitled [“SKA Update and Science Prospectus”](#) in the 2020s workshop at ESO Headquarters in Garching,

Development of the Key Science Programme for SKA1 has started. A draft paper outlining a proposed policy for Key Science Projects has been developed by the SKA Operations Working Group. The [document](#) is undergoing a science community consultation and has been circulated to the SKA Science Working Groups and SKA Science Directors who have been asked to distribute the document widely and collect feedback and comments to be sent to the SKA Office. The [SKA Key Science Programme Workshop](#) will be held in Stockholm on 24-27 August 2015. The workshop will be the first opportunity to bring together interested groups and assist in setting up collaborations and projects.

## Policy Development

*by Simon Berry, SKA Director of Policy Development*

In January, the Policy team focused on preparations for the Procurement workshop held on 27<sup>th</sup> -28<sup>th</sup> January 2015 at SKA Headquarters, followed by a meeting of the SKA Strategy and Business Development Committee (StratCom) on 29<sup>th</sup>-30<sup>th</sup> January.

Several StratCom members and nominated procurement experts from current and potential member countries met for a two-day workshop to take the high-level procurement principles agreed by the SKA Board in October 2014, and develop procurement strategy, process and policy for the SKA Organisation as it moves toward the construction phase starting in 2018. The workshop explored each country's view of procurement in the SKA and the possible mechanisms for procurement. Following this, the workshop looked at the existing procurement documentation produced by SKA Office, and based on this developed a series of next stage principles for a procurement policy. The output of the workshop was presented to StratCom for consideration at its meeting before the Policy team prepare documentation to present to the SKA Board in March 2015.

The StratCom meeting focused on the SKA Key Document Set, the core documentation which will be considered by member governments as part of the negotiations towards an SKA treaty organisation and funding decisions for the construction phase of the project. StratCom discussed each element of the Key Document Set and provided recommendations and feedback which will be presented to the SKA Board in 2015, when the Board will consider the Key Document Set as a whole. A critical part of the Key Document Set is the draft SKA Observatory agreement, which will need to be agreed by member governments in order to form the treaty organisation. StratCom recommended that the draft Observatory Agreement be presented to the SKA Board for approval.



## SKA Board Matters and Administration

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

### SKA Members

The SKA Members held a general meeting via videoconference on 4<sup>th</sup> February 2015. The main focus of the meeting was to approve the SKA Business Plan for 2016 and 2017. Once the business plan is approved, Members will be asked to seek the funding commitments necessary to meet the operational requirements for SKA Office for the 2016 and 2017.

The SKA Members will hold their next face-to-face meeting on 6<sup>th</sup> March 2015 at SKA Headquarters. The main items for discussion will be future funding for SKA Organisation and the transition to intergovernmental treaty negotiations towards the establishment of SKA Organisation as an international treaty organisation.

### Board of Directors

Preparations are underway for the 17<sup>th</sup> meeting of the SKA Board of Directors which will be held on 3<sup>rd</sup>-5<sup>th</sup> March 2015 at SKA Headquarters. The main focus of the meeting will be to discuss and approve the re-baselined design for SKA-1 and the Key Document Set mentioned above in the policy development section.

### SKA Headquarters

Following the deadline of 1<sup>st</sup> February for receipt of proposals to host the SKA Organisation Headquarters for the construction phase of the Project, two proposals from Italy and the UK have been received. The Headquarters Selection Advisory Panel (HQSAP), comprising of Prof. Brian Boyle, Dr Bernie Fanaroff, Ms. Patricia Vogel and Ms. Laura Comendador Frutos, will review the submissions and visit the two candidate sites during week commencing 9<sup>th</sup> February 2015. The HQSAP will submit a recommendation to the SKA Board of Directors for approval at its meeting on 3<sup>rd</sup>-5<sup>th</sup> March 2015.

### Staff Update

Kobus Cloete, Engineering Project Manager for CSP and LFAA, left SKA Organisation on 29<sup>th</sup> January 2015. Kobus joined the SKA Project in 2008, and was one of the longest serving members of staff. We wish Kobus well for the future.

### 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](mailto:skao-it@skatelescope.org))



## Communications and Outreach

by *William Garnier, SKA Communications and Outreach Manager*

After a well-deserved break over Christmas, it didn't take long for the comms team to get back into a busy schedule with a range of exciting activities.

### AAS Meeting

We can now call it a tradition: for the comms team, the first week of the year is synonymous with science engagement with the US (but not only) astronomy community at the AAS meeting. This year, the proceedings were in Seattle, WA, on the US West coast. In addition to the SKA stand, visited by an increasing number of people compared to previous years (around 200-250 people), we organized a splinter session focusing on the science prospects of the SKA with updates from the precursor telescopes and some pathfinder facilities, and on a second part on the computing challenges of the SKA. The latter started with an overall presentation of the SKA Big Data challenge by our colleague Dr. Rosie Bolton from Cambridge (also member of the SDP Consortium), and included talks from industry partners: Intel, NVidia, SGI, and Amazon Web Services. Just under 100 people turned up to the session. Feedback received was positive, encouraging us to repeat the experience in future opportunities.

### AAAS Meeting

Engagement with the US continues in February, with a [special session on the SKA at the AAAS Meeting](#) in San Jose, CA, featuring the SKA Director General and senior colleagues from some partner countries. Clive Cookson, from the Financial Times, will be moderating the session, while the South African Science Minister Naledi Pandor and the Chair of the SKA Board John Womersley will be acting as discussants. The AAAS Meeting is amongst the world's largest and most prestigious general scientific events, bringing together thousands of scientists, policymakers, science journalists.

### Shared Sky

Our indigenous art-astronomy exhibition is about to pass its second major milestone after the exciting launch at the John Curtin Gallery in Perth in October last year. It is now being inaugurated in Cape Town, where it will stay on display at the Iziko National Gallery for 3 months, starting on February 9. Shared Sky will be officially inaugurated by Minister Pandor on February 13. Simon Berry will represent the office, and an invitation has been extended to the local Ambassadors of all SKA partner countries. Photos of the event will be made available. To learn more about Shared Sky visit our [dedicated page](#) on the exhibition.

### Big Research Infrastructures Communications and Key outreach Strategy (BRICKS) Committee

With my working experience in big facilities and international collaborations and after touring several of these facilities and talking to comms colleagues there, I apprehended the numerous synergies between our megastructures and am convinced that we should exploit them more efficiently. Though navigating in different environments, we face similar situations, processes, challenges, and have in most cases funding bodies in common. From a comms perspective, we all need to reach a wide variety of audiences (with a lot of overlap), have to tailor our messages to engage with and enthuse each of these audiences, and use both traditional and innovative approaches and channels to actually reach them.

So instead of all of us doing our own things in an independent way and (sometimes) trying to re-invent the wheel, SKAO plan to initiate and promote a stronger collaboration across comms/outreach departments at Big Research Infrastructures around the world bringing together colleagues from such facilities in an international Committee of experts.

Such a committee will comprise experts from astronomy and from the physics world, but will probably be open to other fields in a later stage. The overarching goal will be to maximize the reach and impact of our respective comms/outreach activities; this should be achieved through a number of key objectives: joining forces; defining



common interests as well as divergences; sharing knowledge and expertise, ideas, thoughts, and resources; encouraging joint cross initiatives; sharing good practices; discussing case studies; promoting each other's achievements; and linking strategies where applicable and desirable.

I plan to set up this Committee shortly but have already received interest and/or positive responses from colleagues at TMT, GMT, ALMA, ITER and CERN, and plan to contact some others in the near future.

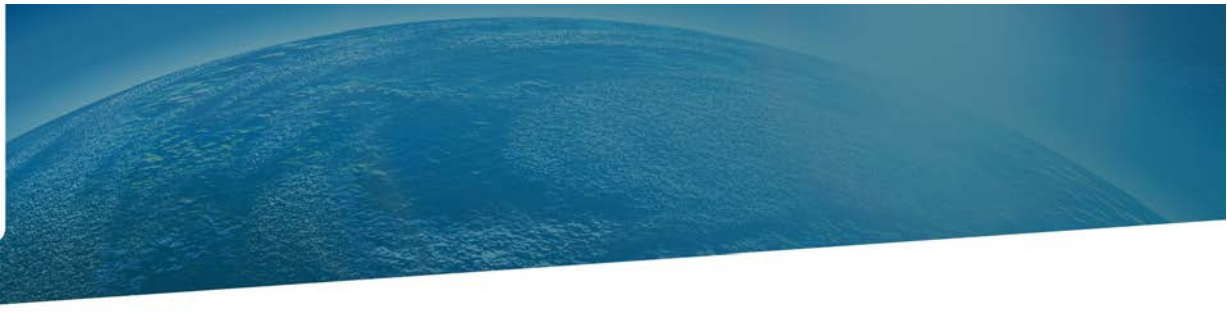
SKA News

The year started with [an exciting release](#) from the cosmology science working group, co-released by many institutes in the UK, in Germany, in Norway, in South Africa, in China and in the US. The release was a textbook example of good coordination between scientists and comms colleagues, leading to massive coverage (it was our most popular story across all social platforms since the dual site decision and was covered by BBC Radio 4, the BBC World Service, BBC Children, BBC Spanish and Portuguese and across German and South African media). Below are some statistics of its impact.

We can only encourage members of the science community and engineering consortia to contact us early when they wish to publish news related to the SKA in order to help them maximise impact.

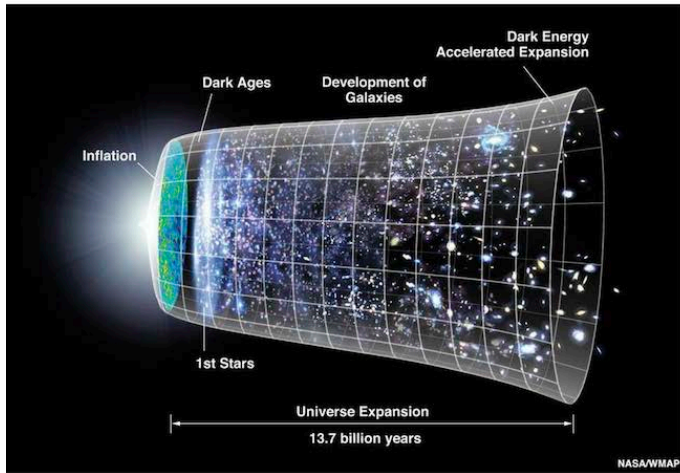






Square Kilometre Array  
Posted by SocialSignIn [?] · January 19

SKA news: Scientists from around the world have joined forces to lay the foundations for an experiment of truly astronomical proportions: putting together the biggest map of the Universe ever made using the SKA.  
[http://skatel.org/SKANews\\_Ftese](http://skatel.org/SKANews_Ftese)



3,542 people reached

Boost Post

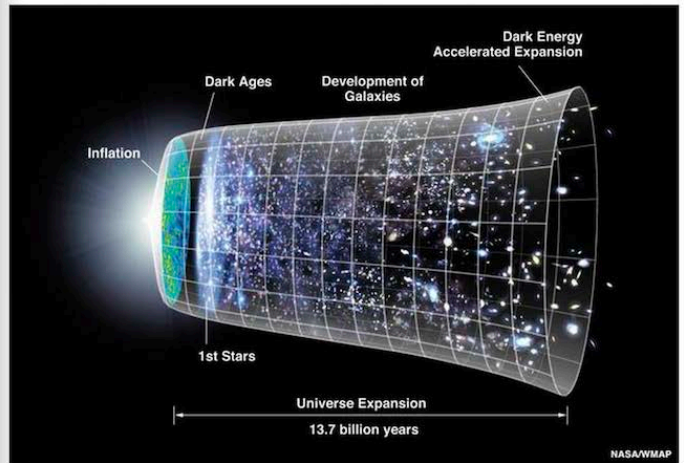
Like · Comment · Share

31 Shares

Eleonora Ferroni, Jay Shukla, Chie Hanamoto and 74 others like this.

SquareKilometreArray  
@SKA\_telescope

#SKAnews Astronomers are preparing to put together the biggest map of the Universe with SKA [skatel.org/SKANews\\_LAYuU](http://skatel.org/SKANews_LAYuU)



RETWEETS  
53

FAVORITES  
25

12:44 PM - 19 Jan 2015

Our most popular story across all platforms (pictured above: Facebook and Twitter) since the dual site decision.

We also linked to the release published by Chalmers and Astron on [new observations of the galaxy M82](#) with LOFAR.

Just as this bulletin was about to be released, we also published the news that [India's iconic GMRT telescope had been granted SKA pathfinder status](#) by the SKA Organisation.

### SKA in the news

A selection of articles published by the media:

Our Shared Sky exhibition was featured:

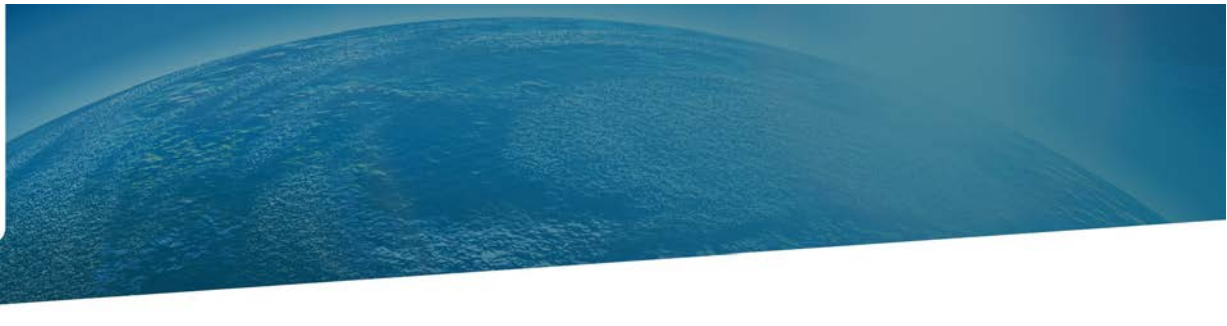
- in the [inflight magazine of SA Express](#), South Africa
- on the [website of the Central Australian Aboriginal Media Association](#) (interview from the Shared Sky international curator Chris Malcolm, Director of the John Curtin Gallery)

On [Gaia and the SKA](#) on space.com

On [the cosmology release](#) in the South African Mail & Guardian

On [the cosmology release](#) in the prestigious German Der Spiegel

In addition, the 2014 European Astronomy Journalism Prize was announced in January. The winning article, published by Physics World, discusses [hunting gravitational waves using pulsars](#) and mentions both Jodrell Bank and the SKA. A second article entitled [India Bets on its Astronomers](#) published in the astronomy magazine First Light was highly commended and focuses on GMRT and our colleagues at NCRA.



## Extras

### SKA Memos

We would like to draw your attention to and encourage the community to continue to contribute to the [SKA memo series](#). The SKA memo series plays a key role in disseminating ideas for the SKA and aims at providing information on SKA-related developments. Note that ideas and opinions of the authors don't necessarily have to be endorsed by the SKA Organisation for the papers to be accepted as part of the memo series, as long as opinions and plausible arguments on SKA design and technology are relevant and acceptable.

Memos published in 2014 are:

- [Memo 153](#): Effect of Gain and Phase Errors on SKA1-low Imaging Quality from 50-600 MHz, by D.R. Sinclair (August 2014)
- [Memo 152](#): Suitability of NVIDIA GPUs for SKA1\_LOW, by A. Magro (July 2014)
- [Memo 151](#): Aperture Array Configurations for SKA1 Core, by K. Grainge (February 2014)

## 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](#).