

# SKA Organisation Monthly Bulletin

*4<sup>th</sup> Issue, July 2014*

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## From the Desk of the Director-General

Welcome to summer, at least in the Northern Hemisphere. I am aware that many colleagues in the SKAO and across the design teams will be taking a well-deserved break over the next few weeks and I wish them all a relaxing time. Of course, our friends in the Southern Hemisphere will, I am sure, continue to work hard!

As in previous months, July has been interesting and varied. On 3<sup>rd</sup> July, Simon Berry and I visited Brussels to meet with Robert-Jan Smits, who is Director-General of Research and Innovation at the European Commission. The purpose of the trip was to brief Robert-Jan on recent progress in the SKA; he is influential in European science policy circles and so it is important that we keep him and his colleagues up-to-date with the rapid, positive changes in the project. Robert-Jan indicated he was impressed with the developments over the past year or so and confirmed that SKA is highly regarded within EU science policy circles.

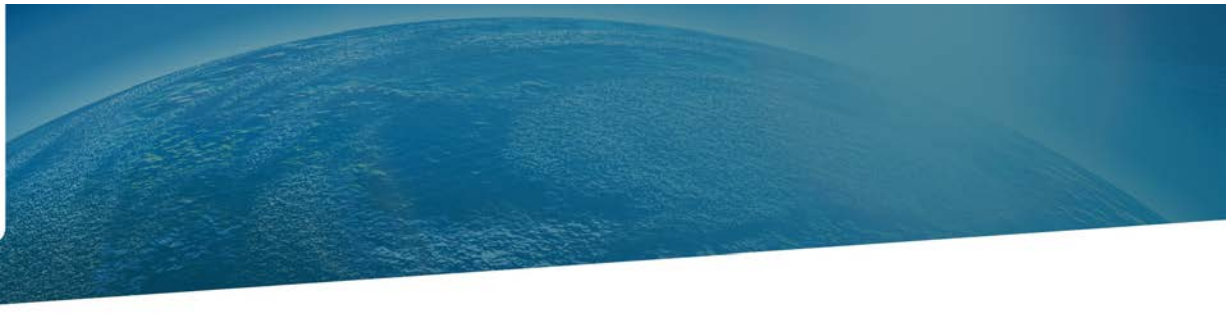
8<sup>th</sup> July saw a Board meeting, the outcomes of which are covered in Colin Greenwood's report below. This Board meeting was notable for being the first to be a full video-conference, although a few European-based Directors did come to SKA HQ because we didn't quite trust the technology. We were using the Vidyo system and, after a quick fix to a problem early on in the videocon, the technology worked well. We have now rolled this out and are using it regularly in engineering and other meetings. I strongly encourage all colleagues to start using the system. A brief note on testing your equipment's compatibility with Vidyo can be found in Colin Greenwood's section.

That same week saw a visit from Colin Lonsdale, Director of MIT's Haystack Observatory, to SKA HQ. Colin spent a day with us after a series of meetings elsewhere in the UK but found time to give a fascinating talk on RAPID, a project which uses self-contained, SKA-prototype LFAA antennas with on-board recording of data. The antennas can be deployed quickly where appropriate for the science goals, the data recorded and correlated later, in a similar manner to classic VLBI. It is good to see technology developed for the SKA already being used in other projects.

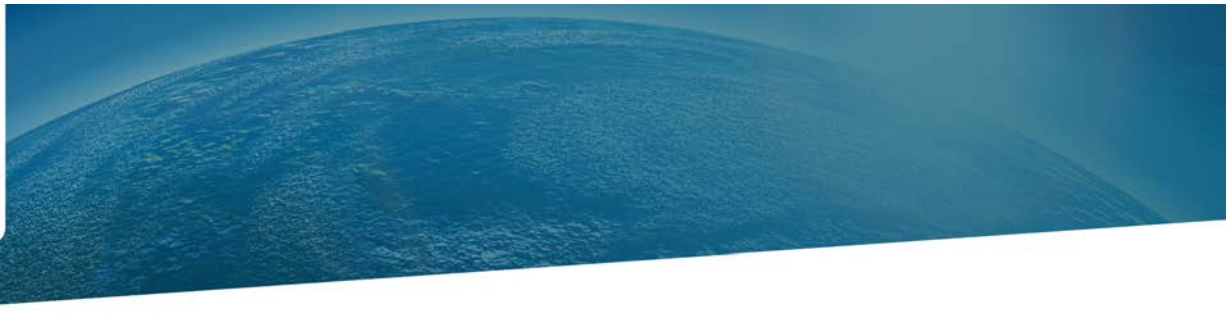
On 15<sup>th</sup> July I visited the UK's Houses of Parliament, a first for me. After queuing for 20 minutes in the hot sun to get through security I attended an exhibition organised by the UK's Parliamentary Office of Science and Technology (POST) on Big Data Research. All of the UK's Research Councils were exhibiting. As I entered the Members' Dining Room, I was confronted with an LFAA antenna and a large screen showing [the latest SKA video](#); they were a major feature of the Science and Technology Facilities Council display. There were ~100 people present, from different UK research organisations and industry, and from UK government. After speeches from the Chairman of POST, Adam Afriyie, MP and Francis Maude, Minister for the Cabinet Office, the guests circulated amongst the exhibition stands. I was pleased with the profile of SKA at this event.

Later that week our landlord, the School of Physics and Astronomy at the University of Manchester, organised a summer picnic at Jodrell Bank Observatory for all of the School's staff. The invitation was kindly extended to SKAO personnel and we spent a pleasant few hours on a Friday afternoon enjoying the food, drink and sunshine and mixing with colleagues from the University.

Finally, I'd like to share with you a photograph that I received showing progress on the Chinese Five-hundred meter Aperture Spherical Telescope (FAST). This is a real beast; the circumference of the ring is just under one mile (to switch from SI to imperial units). I congratulate our Chinese colleagues on the truly impressive progress.



Philip Diamond  
SKAO Director-General



## Project

By Alistair McPherson, Head of Project

The last month seems to have been busy, although looking back it is interesting to see what we did to fill in our time...

We had the SEAC meeting in June which resulted in some work for us. We rehearsed the Re-Baselining Process (RBS) with them and discussed it with the Consortium Leaders. This was followed by a presentation to the Board in early July and the approval of the procedure. This now leaves work to do by first ensuring that the Science Priorities are clearly specified as a key principle and then ensuring the consortia deliver sufficient information to allow sensible choices to be made. To do this we have the following work ongoing:

### Science Priorities

Science Working Group chairs have submitted their priorities which are now being scored by the SKA Science Team. The results will be discussed with a Science Review Panel in early September and then the SEAC in mid-September before being presented to the Board in October. These priorities will then act as the bed-rock of the RBS process. More details are available in Robert Braun's section.

### RBS Submissions

The consortium leads have been briefed and a paper describing the process along with one giving details of the submissions have been issued. In short we expect to receive three submissions from the consortia:

- Design Description and supporting Architecture (final draft of PDR submission)
- Costing spreadsheet demonstrating anticipated costs of baseline solution
- Suggestions and ideas to reduce costs or options for RBS

I suspect that will keep everyone busy until September before the office receive the submissions.

After we receive the submissions, we have planned face-to-face meetings with the consortia at the Engineering Meeting in Fremantle and we have also planned a workshop at the Engineering Meeting to allow members of the consortia to help assess and develop options.

### Telescope Architecture Teams

It has become clear to the office that by organising ourselves around the elements we have lost a little focus on the end-to-end architecture of the three telescopes. I know this has been the subject of discussion around the project and I am now endeavouring to fix this.

To respond to this need, we will be forming two Telescope Architecture Teams, Low\_TAT, and Mid/Survey\_TAT. The Terms of Reference are:

*To ensure that the end-to-end architecture of the three telescopes are recognised and addressed correctly it is planned to set up groups with responsibility for monitoring and influencing this. In reality, as two of the three teams would be identical, there will be two groups, one to look after SKA-Low and another to look after both SKA-Mid and SKA-Survey. The groups will be led by members of the Architecture Group, as the task is primarily architectural, but will include members from the relevant elements. The groups will have no executive*



*authority but will report to the Head of Architecture Group who will arrange any subsequent actions required through the Head of Project.*

*Low\_TAT will be co-chaired by Mark Waterson and Tim Cornwell, and Mid/Survey\_TAT will be co-chaired by Gie Han Tan and Tim Cornwell. Members will be drawn from the Architecture Group and from System Engineering. The core members of the TAT's are SKAO staff. In addition we will consult with Consortium members and other experts in the field as needed.*

Hopefully, this will fill some holes and ensure that a holistic view is maintained.

It should be noted that this is not another complexity within the management structure. These teams will have no executive power but will be responsible for pointing out issues to me for action.

### Engineering Meeting

The planning for the Engineering Meeting is well progressed and the event is now open for attendees [to register](#) (there is no registration fee). As I draft this I note that we have nearly 150 people registered already.

The meeting is split between central briefings and updates with a series of Re-Baselining meetings, ICD meetings and Re-baselining Workshops. The aim is to ensure that we all have the opportunity to contribute to the Re-Baselining process and that the office will be in the best position to develop options and present a corporate view to the Board in March.

The social side of the conference is planned with drinks in the WA Maritime Museum hosted by the WA Government and ICRAR on the Monday evening and a conference dinner on the Wednesday evening. The venue for dinner is Fraser's Restaurant in King's Park and gives one of the best views over Perth. The trip to the MRO is now full, although I would suggest if you wish to visit, add your name and we will keep you as a reserve. We will soon open payments for the conference dinner and trip to the MRO and will be inviting participants to pay by credit card or bank transfer.

I realise that several consortia have arranged their own meetings whilst in Fremantle and they will issue their own arrangements.



## System Engineering

*by Tim Stevenson, SKA Chief System Engineer*

The inclusion of SysML diagrams in the Interface Control Documents signifies our intent to increase the use of configuration controlled models in representing the system. This utilisation is limited at this stage, and there is yet no underlying unified modelling framework. At present, Consortia system engineers need to be able to **read** Package Diagrams, Block Definition Diagrams and Internal Block Diagrams in order to agree ICDs. The syntax of these three SysML diagrams is simple and requires no extensive training to interpret.

The use of formal Technology Readiness Assessment across the Project is increasing and is to be encouraged. The Element system engineers at the Office are using TRLs to help manage the project level risk of a small number of critical technologies for SKA. We ask that requests for analysis and test reports to enable them to do this are treated in a constructive spirit.

The finalisation of the contents of Element level PDR data packs is ongoing. Several Consortia have produced matrices showing the correspondence between their intended deliverables and the 16 classes of document called out in the Request for Proposals. The Office system engineers are assisting in tailoring and elaborating the lists and contents tables where a Consortium requests it.

## Architecture

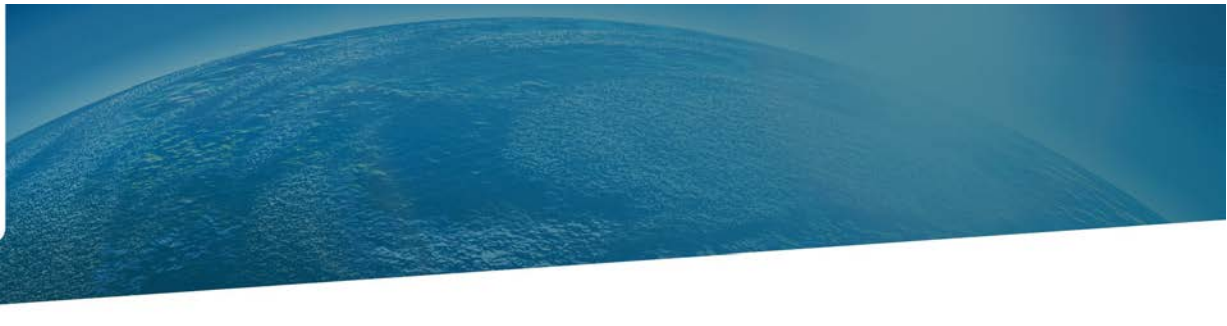
*by Tim Cornwell, SKA Architect*

SKA Office staff attended the Telescope Manager (TM) face-to-face meeting in Pune, India 14<sup>th</sup>-18<sup>th</sup> July 2014. Roshene McCool (Domain Specialist SaDT and Synchronisation & Timing) presented the revised network plan, which is a result of Architecture group Functional Analysis work. TM design consortia expected the new design, which is vital to their work. Overall it was a good meeting, and the progress by the TM consortium is impressive.

An Engineering Change proposal (ECP) for Functional Analysis is being drafted at present, and Function Analysis documentation for the SKA project will be published in mid-August 2014.

I attended the Science Data Processor (SDP) Architecture Workshop in Cambridge, UK on 28<sup>th</sup>-29<sup>th</sup> July. There is good progress in most areas of architecture within the SDP design consortium and I'm pleased to see progress in the consortium following the task rearrangement.

The update to the Level 1 Engineering Requirements is continuing. All trivial changes to the requirements are being considered by the Change Control Board as a single ECP and those changes will be implemented once the ECP has been agreed. Significant changes to the requirements will be considered separately. Any significant changes to the Level 1 Requirements will be made in spring 2015 once re-baselining is complete.



## Science

by **Robert Braun, SKA Science Director**

Progress has been made on defining the Science Prioritisation Review process. An ad-hoc [Science Review Panel](#) has been appointed, to be chaired by Dr Chris Carilli, Chief Scientist of NRAO. Science Working Group Chairs (further information [here](#)) have provided a list of key science goals for each science area, ~45 in total. At the moment, these science goals are being reviewed and prioritised by the SKA Science Team. The Science Review Panel will meet in early September to review the Science Team's prioritisation and provide advice on the science priorities to the Director-General. The Science and Engineering Advisory Committee (further information [here](#)) will review the Science Review Panel's recommendation. The Science Review Panel will also meet in December 2014 to review potential options for re-baselining.

We continue to develop the 'A year in the life of SKA', a mock observing schedule for each of the three SKA telescopes. The schedule is based on an assumption of 50% observing time for large projects and 50% for smaller PI-led projects. 'A year in the life of SKA' provides early assessment of data processing, data archiving and power requirements for the observatory and is key to understanding for planning the operations processes. The documentation will be adjusted to reflect the outcomes of the science prioritisation review.

SKA Project Scientists continue with science and outreach work. Jeff Wagg is currently being hosted by the Dunlap Institute at the University of Toronto. As part of his visit Jeff has given the following talks:

*"Designing phase I of the Square Kilometre Array"* on 21<sup>st</sup> July at the Dunlap Institute of the University of Toronto, Canada

*"From Exoplanets to Cosmic Dawn with the Square Kilometre Array"* on 25<sup>th</sup> July at McMaster University in Hamilton, Canada

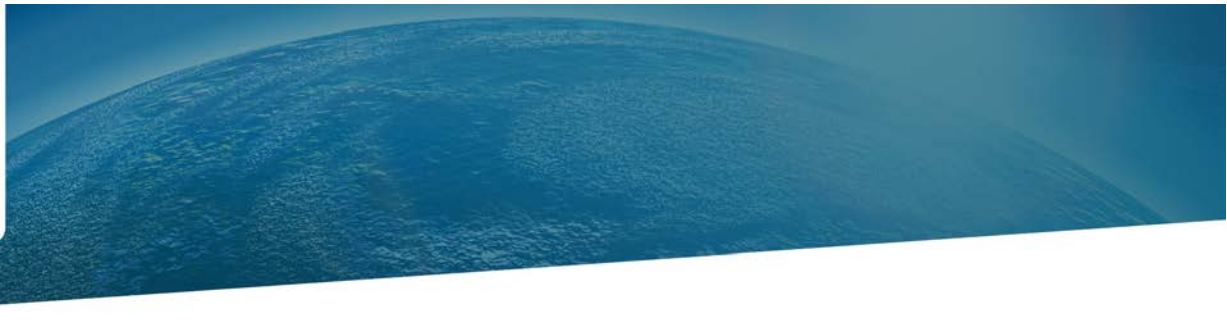
Tyler Bourke gave a talk entitled "Infrared and Submillimetre Observations of Dense Cores" at the American Astronomy Society [Workshop on Dense Cores](#) in Monterey, California.

## Policy Development

by **Simon Berry, SKA Director of Policy Development**

The Policy team have attended several bilateral meetings during July, as mentioned in last month's bulletin. The meetings ranged from informal discussions with member countries to high-level discussions with the EU, which reinforced the recent supportive statements on the project made by ESFRI. An interesting meeting was also held with the European Investment Bank, exploring how they are supporting high priority research infrastructure projects and what might be possible for the SKA Organisation in the long-term.

An information exchange meeting with delegates from China's Foreign Affairs University was held at SKA Headquarters on 28<sup>th</sup> July. The policy team provided an insight into the current and potential future governance structure of SKA Organisation to the delegation who are studying best practice in governing large infrastructure projects.



The Observatory agreement drafting group held a meeting on 24<sup>th</sup> July to discuss the next draft of the observatory agreement following its discussion at the SKA Board meeting on 8<sup>th</sup> July. Following the drafting group meeting, the SKA Strategy and Business Development Committee (StratCom) held a meeting on 30<sup>th</sup> July to discuss progress against the Committee's workplan. StratCom will hold a face-to-face meeting in September to discuss the draft SKA observatory (treaty) agreement and procurement models.

Following a favourable report in the recent ESFRI roadmap process, SKA Organisation expects to receive an invitation from the European Commission to apply for funding from its INFRADEV-3 Horizon2020 programme to be used for project implementation activities.

## **SKA Board Matters and Administration**

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

### Board of Directors

The SKA Executive Committee held its latest meeting via teleconference on 18<sup>th</sup> June to discuss preparations for the SKA Board meeting on 8<sup>th</sup> July.

The SKA Board held its latest meeting via videoconference on 8<sup>th</sup> July 2014. This was the first Board meeting held using the Vidyo videoconferencing software. A summary of the meeting is available [on our website](#).

### Staff Update

Vipin Gungaram joined the organisation on 14<sup>th</sup> July as IT intern. Marcus Moore started a summer student placement on 28<sup>th</sup> July 2014.

Information and contact details for all SKA Office staff are available on our website [here](#).

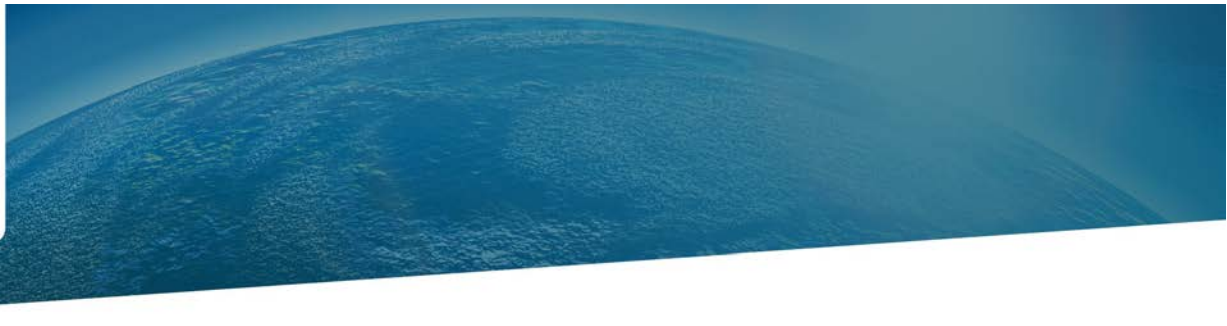
### IT

Vidyo videoconference software is being used by SKA Office staff and in consortium meetings. If you would like to try out Vidyo in preparation for a meeting with the SKA Office, please contact the IT department ([skao-it@skatelescope.org](mailto:skao-it@skatelescope.org)) at SKA Headquarters to arrange a test.

### Legal

A number of design consortia are yet to sign up to the latest variations to the Memorandum of Understanding (MoU). It is important the variations are signed as soon as possible, in order to, for example, clarify the process for making amendments to the MoU. The variations also clarify how the Statement of Work can be changed outside of the MoU and facilitate for new members to join consortia and be incorporated in the MoU.



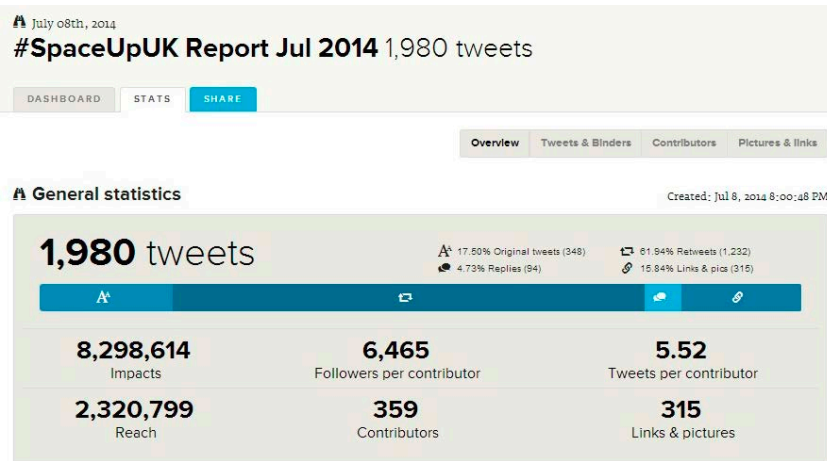


## Communications and Outreach

by William Garnier, SKA Communications and Outreach Manager

### Events & exhibitions

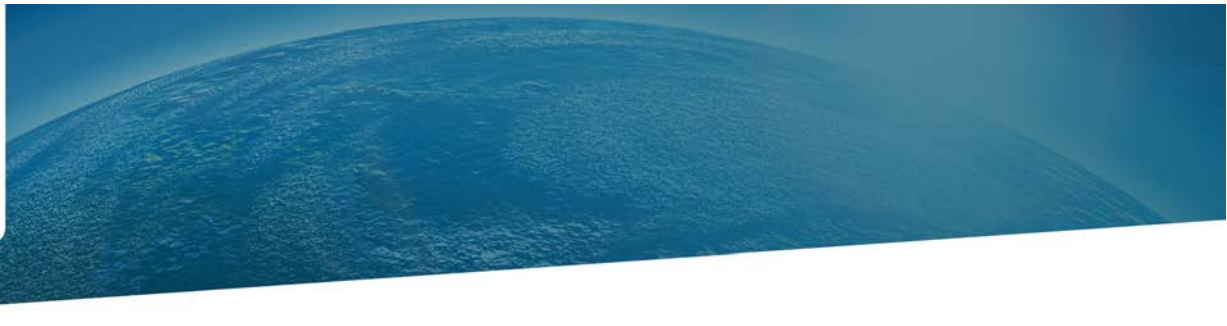
Early in the month, the SKA Comms Team sponsored and gave the introductory talk at [SpaceUp:UK](#) held in London on 5<sup>th</sup> and 6<sup>th</sup> July, the first such conference to be held in the UK, and the first time a major astronomy organisation has been involved in such a conference. Some 50 space enthusiasts, influencers, opinion leaders and professionals active on social media took part, including representatives from ESA, the Royal Astronomical Society, the British Interplanetary Society and the International Space University. It was a great opportunity for SKA to reach out to a different audience with similar interests in science and technology and who were very keen to know more about the project. As usual with such events – the online reach is extreme with only a few hundred people taking part but reaching an online audience of up to millions.



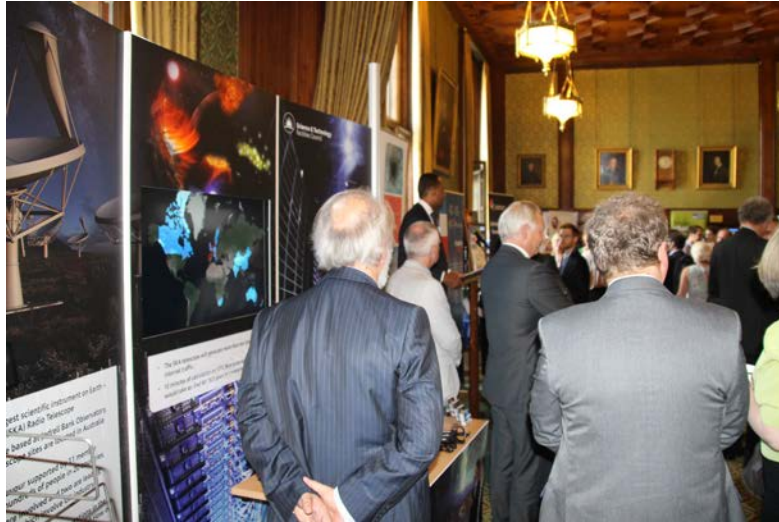
Some 2000 tweets were sent by over 350 Twitter users during the course of the conference (40 of them were at the conference). These tweets were read by over 2 million Twitter users, including astronauts currently onboard the International Space Station.



In a joint collaboration with STFC, SKA was also well represented at the Big Data Day in the British Parliament, hosted by the Parliamentary Office for Science and Technology in the House of Commons on 15<sup>th</sup> July. It was an opportunity to showcase the work being done on the SKA in the UK, in particular on the Science Data Processor



front, which is led by the University of Cambridge. Some 100 Members of Parliament, peers and senior decision makers attended.



### Engineering Meeting

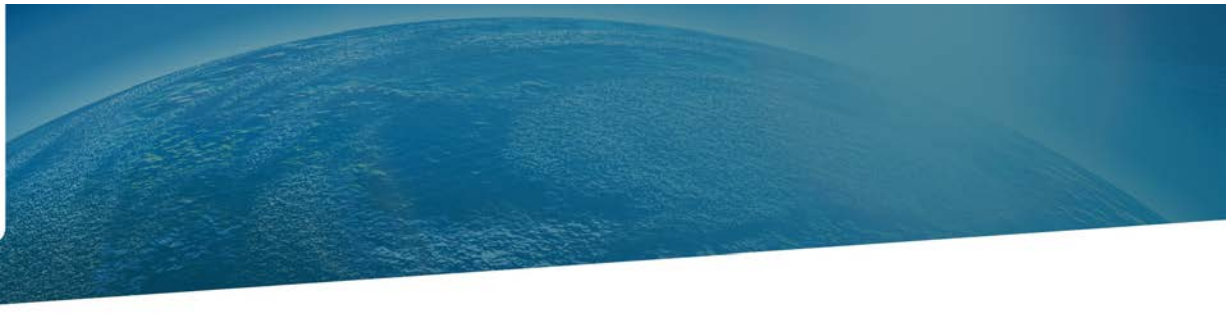
Progress continues on the organisation of the Engineering Meeting to be held in Fremantle at the end of September. Details are available in Alistair McPherson's [report](#).

### Social Media

With a view to strengthening the collaboration with communications offices at partner institutions and encouraging colleagues to participate even more in the global communications efforts, the SKA's social media channels have now been opened to input from our member organisations (NRC, STFC, Onsala, etc.), on behalf of their country and consortia's involvement in the SKA. This will enable us to promote the work being done in various countries on the SKA, and is a great way to promote all the institutions involved while also showing the global nature of the SKA. The input is managed by our communications colleagues within the partner organisations and we encourage consortia leaders and managers to get in touch with them to promote their activities.

### SKA Minisites

The SKA Comms Team is also happy to announce the launch of the SKA minisites, one of our cornerstone initiatives of 2014. The minisites, managed by our communications colleagues in the respective country organisations, are an initiative to provide SKA-related content in other languages as well as a way for countries to provide more information on their contribution to and interest in the SKA. In particular, we are keen to communicate on activities from the consortia and invite consortia members and leaders to get in touch with their minisite managers to provide content (contact details are provided on each minisite). The minisites go beyond the SKA membership to include countries interested in joining the SKA and who are keen to communicate to raise awareness. The first minisites for Italy, Spain, Sweden and the UK will become available later this week (an announcement will be published on our website) and will be accessible by clicking on the country flags on the [SKA's homepage](#). Please note these sites are managed and translated by our colleagues on top of their many other tasks and not all content will always be available, depending on national focus. With time, more minisites will be made available in other languages.



### Art exhibition

Progress is also continuing on *Shared Skies*, the SKA's indigenous art/astronomy exhibition to be inaugurated during the Engineering Meeting. A number of works representing the cultural heritage of each SKA site have been identified and secured and will be brought together to create a unique exhibition showcasing the art, culture, history and cosmology of local people from both SKA sites in one narrative.

### AAAS

Finally, alongside colleagues from STFC, SKA AU and SKA SA, we have secured a double session at next year's American Association for the Advancement of Science (AAAS) meeting in San Jose in February 2015. More details about this session will be provided in due time.

### Media coverage

On the media front, the South African *Play Your Part* TV series aired an episode on the SKA, which had been coordinated by the SKA Comms Team in collaboration with our South African colleagues. Physics World also published a great article and video about the SKA (links available below).

Relevant media coverage about the SKA includes:

- [General article in Physics World](#)
- [Focus on South African role in global SKA project in Play your part TV series](#)
- Interviews with Phil Diamond in International Innovation available [here](#) and from page 11 of the [Space Unlimited](#) supplement.
- There's been renewed coverage of the Search for ExtraTerrestrial Intelligence (SETI) in recent weeks, with mentions of the SKA's role in [Newsweek](#) and in the European Commission's official Research & Innovation magazine [Horizon](#).

As usual, a selection of media articles of interest is featured on the [press coverage page of the SKA website](#).

### **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](#).