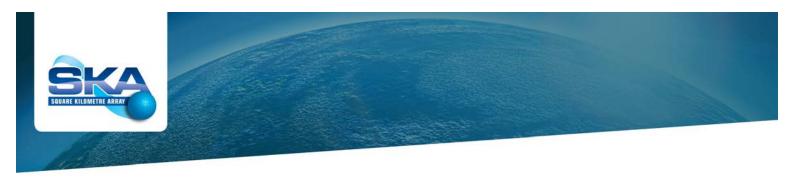


SKA Organisation Monthly Bulletin

11th Issue, April 2015

From the Desk of the Director-General	2
Project	3
System Engineering	4
Architecture	4
Operations Planning	5
Science	5
Policy Development	6
SKA Board Matters and Administration	7
Communications and Outreach	8
Connect with us	14



From the Desk of the Director-General

As all of you who follow and work within the SKA will know, the last few weeks have been a critical period in determining the future direction of the project. Key was the decision on 29th April of the SKAO Members, that is the governments and organisations that fund SKA activity, to select Jodrell Bank in the UK as the permanent location for the SKA Headquarters. Our Italian colleagues had mounted a strong, high quality bid, proposing Castle Carrara in Padua, in North East Italy close to Venice. I visited the castle prior to the Members' meeting. It was impressive and would, without doubt, have served as an excellent HQ for the SKA if it had been selected. I sincerely thank Giovanni Bignami, President of INAF, and his colleagues for the enormous amount of work they put into preparing the bid.

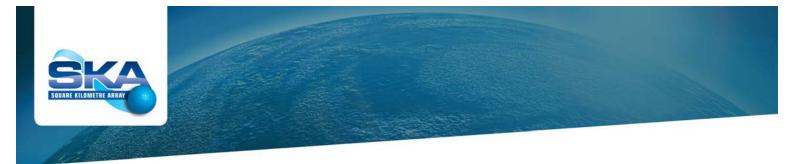
Following the decision, I, and colleagues from SKAO, will be working with the UK government, STFC and the University of Manchester to ensure that the design of the proposed SKA Campus at Jodrell Bank is suitable for our current and planned needs and, vitally, to negotiate a Hosting Agreement between SKAO and the UK government similar to that already well advanced with the Australian and South African governments. The Hosting Agreement will require approval by the SKA Board in due course.

While on the subject of important policy work; the Hosting Agreements will form part of the package of documents that will underlie the negotiations that will lay down the future governance structure of the SKA; namely, an Inter-Governmental Organisation (IGO). As Simon Berry indicates below, we now have Letters of Intent from five governments stating that they will, in good faith, begin these negotiations. More governments are expected to sign the Letter of Intent in the near future. This will be a major activity on the policy front over the coming months and its successful outcome is critical for the future of the project.

On a different note, as we emerge from re-baselining it has been necessary to refresh and update much of our outreach and publicity material. To that end, and as described in William Garnier's section below, new animations, stills, written material and more is close to completion. This will all be very useful as we prepare for the IAU General Assembly in Hawaii, EWASS in the Canaries and a whole range of national astronomy meetings amongst our member nations.

An excellent opportunity to which I'd like to draw your attention is the AstroCompute in the Cloud Call for Proposals, which is described later in this bulletin. This is a collaborative activity, funded by Amazon Web Services (AWS), for the radio astronomy community to develop Cloud-based applications for processing radio data, which will benefit the SKA. I am extremely pleased that AWS are supporting this endeavour and I thank Jamie Kenney and Brendan Bouffler of AWS for helping make this happen.

Philip Diamond SKAO Director-General



Project

By Alistair McPherson, Head of Project

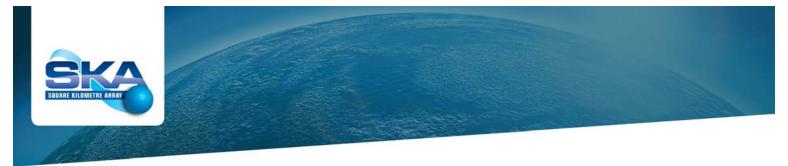
The past month has been busy in the office dealing with the outcome of the PDRs, the work towards the revised baseline following the outcome of the Re-Baselining and the Consortium Leaders' Meeting to look forward to the next Phase of the project.

The PDR meetings have now been completed and we have received all but one report from the review panels. We have recently reviewed the progress of the actions following the reviews. What has been clear from the submissions and the review meetings is that there has been an enormous amount of work carried out by all of the consortia. Naturally, the review has shown up some gaps and incorrect assumptions. These have been identified and are being addressed.

The revised architecture is being developed and it should not come as a surprise that, as we chose to use scaling as the prime tool within re-baselining, the revised architecture is merely a development from the BDv1 architecture. The way we will represent it will be different and will be less narrative than before.

The Consortium Leaders' Meeting was a success with a great deal of interaction. It was another lesson in getting a great deal done when you bring people together, which is a constant challenge in such a geographically distributed project. During the meeting we covered a great number of issues including the effects of the rebaselining, the new Project Management Plan and the new Systems Engineering Management Plan. These documents are now available and should be read by all. Naturally, comments are very welcome. The planning for the Architectural and Systems Reviews are in hand and dates will be published soon.

One final word this month, it is clear that communication within the project is key to understanding and progress. The members of the Office spend a great deal of time travelling, but this can be inefficient, due to the nature and distribution of the consortia. To help balance that, we are always very happy to support people to come to SKA Office for a period of time. This could be anything from a few days added onto a meeting, to a significant period. We can support this by providing office space and even, depending on the funding situation, some level of support. If you are interested in taking advantage of the opportunity to spend time in the office, please gain the support of your consortium leader and get in touch. Naturally, it is best to prepare a plan of what you would like to achieve during your visit and ensure that the relevant people will be on site.



System Engineering

by Tim Stevenson, SKA Chief System Engineer

Following the recent round of PDRs and their expected closeout, the matter of assessing the state of the system/observatory/telescope looms. Re-baselining effects will be taken care of in the Architecture review and the consortia responses. These 're-baselined' Element development baselines will stand as the 'black box' components of the Telescopes, and the requirements allocation to them, their combined compliance and their interfaces will be reviewed in order to determine whether we have a system. Furthermore, plans for verification at Element level, plus the overall AIV plan will be assessed to ensure appropriate staged risk reduction and qualification in a cost efficient manner. The intention is not to revisit element level definition. This will be taken as given; it will be the credibility of the way that the system is built from this elements that will be under scrutiny. This 'System Review' will conclude the PDR process, which will have taken, by then, 1 year to complete. This is not uncommon for a project of this size and complexity, particularly when a major change (re-baselining) has taken place halfway through.

Architecture

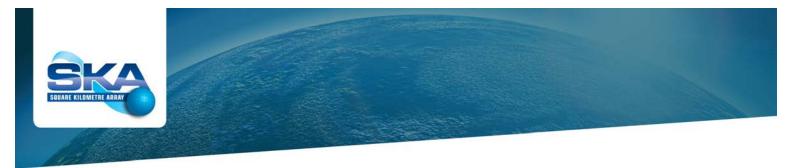
by Tim Cornwell, SKA Architect

Since the last issue of the bulletin, the Architecture Group has been working on the Baseline Design v2, which will be presented to the SKA Board for approval at the SKA-BD-18 meeting (22-23 July). As part of this, the Level 1 Requirements are being updated to include changes from the re-baselining process; general improvements suggested by the design consortia in a small number of areas; and general improvements to the degree of specification within the requirements.

The Architecture pack is being assembled; this is a SysML package, which describes the architecture of the telescopes following re-baselining. The pack includes the detailed model of the top-layer of the two telescopes including structure, functionality and allocations. It also includes an n² diagram showing all interfaces. The model will be product-based, facilitating the development of product-based interfaces.

Finalising the configuration of the two telescopes in underway. In order to do this, we need to understand how the two telescopes will be calibrated and consult with calibration experts in the community. On 14-15 April 2015 the SKA LOW Calibration Consultation Workshop was held at SKA HQ. The workshop was well attended both in person and via videoconference and the output of the workshop is being incorporated into the calibration plan for SKA LOW. A Calibration Consultation Workshop for SKA MID will be held at SKA HQ on 28-29 May 2015.

SKA Organisation had been awarded a \$250k per annum grant for 2015 and 2016 by Amazon Web Services (AWS) for the development of radio astronomy analysis tools utilising cloud computing. AWS has made a significant tranche of AWS Services credits available each year, for two years and will host up to 1 Petabyte of radio astronomy datasets as a public resource open to grant recipients and the community in general. The Square Kilometre Array, in conjunction with AWS, is pleased to issue this call for proposals for grants to use AWS for radio astronomy data reduction or tools and techniques development. SKA will review submissions, allocate resource grants, and monitor progress. AWS will provide technical advice to grant recipients and will make training available.



Operations Planning

by Gary Davis, Director of Operations Planning

This is my first column for the SKA Bulletin. I am delighted to have joined the project and I look forward to connecting with those of you I have not yet met.

It is envisaged that the SKA will operate for 50 years, and although much energy is currently focused on the design of SKA1, it is vital that all parts of the project recognise the long-term nature of this enterprise. Our mission is not just to build the SKA: our mission is to operate the SKA for 50 years and to deliver transformational science with it. My role in the project is to plan for this 50-year operational phase, and my remit covers a very wide range, from the design of the observatory organisation to the minutiae of infrastructure and maintenance (to name but two areas).

The Board has adopted two top-level sets of principles governing and constraining this work: the Concept of Operations principles in July 2013, and the principles of access in May 2014.

The Operations Working Group, chaired by Douglas Bock, carried out operations planning prior to my arrival and I am grateful to them for their careful work, which has provided me with an excellent starting point. The OWG has recently generated a revision of the Concept of Operations document, and this will be issued imminently. For the remainder of 2015, my two primary objectives are (a) to develop a set of operational requirements, and (b) to develop an Operations Plan that meets those requirements. The former is both essential and urgent: several consortia have highlighted to me that they are making assumptions in their designs that need to be confirmed (or otherwise). Progress in these areas will be presented in future bulletins.

A key aspect of the SKA design, from an operational perspective, is to ensure that reliability and maintainability are fully embedded. To this end, all consortia have been asked to provide full RAM analyses during stage 2. These analyses will be incorporated into the system-level RAM model, and will ultimately dictate the technical staffing level that is needed to meet the availability requirement.

I will be visiting the sites in Australia and South Africa during June and I look forward to catching up with many of you then.

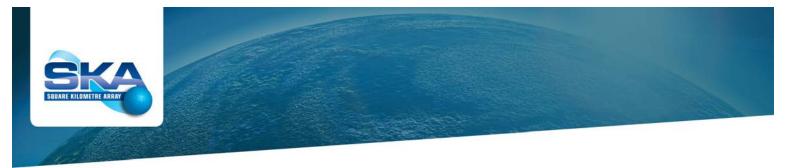
Science

by Robert Braun, SKA Science Director

The SKA Key Science Workshop

Arrangements for the <u>SKA Key Science Workshop</u> to be held in Stockholm, 24-27 August 2015 are well underway. The period of registration of interest has ended and invitations have been sent to approximately 150 participants who have until the 15th May 2015 to confirm their attendance. Invitations to those participants on the waiting list may be sent after this date dependent on take up of workshop places. Further details of the workshop are available on the <u>Indico page</u>.

This four-day workshop will explore the capabilities of SKA Phase 1 within the context of notional 'Key Science Projects', large-scale collaborative projects addressing key scientific questions with significant legacy value. Building on the extensive efforts formulating science goals to date, and engaging new forums, this workshop will initiate the development of objectives and collaborations, the start of a 3-year timeline that will conclude with a formal call for projects.



The aims of the workshop are to:

- Further develop Key Science Project concepts
- Support development of potential Key Science Project collaborations
- · Maximizing commensality

There are likely to be 2 or 3 annual Key Science Project (KSP) workshops before KSP proposals are formally submitted and this is only the first. Attendance of this or any other KSP workshop is not a prerequisite for KSP leadership or participation.

Science Working Groups

In addition to the Science Working Groups, several focus groups have been formed during the past year. The SKA Office is in the process of elevating the <u>Solar & Heliospheric Physics</u> and <u>Extragalactic Spectral Line</u> Focus Groups to become Science Working Groups.

After two years, it is time to rotate the leadership of the Science Working Groups. Each Science Working Group has elected, or is in the process of electing, a new Chair. The membership of each Science Working Group is available on the SKA Science Website.

SKA Science Book

The SKA Science Book is in the last stages of preparation before electronic publication in the next few weeks. The SKA Office intends to publish hard copies of the book in a limited print run. Further details will be available in next month's bulletin.

Level 0 Science Requirements

A revised version of the Level 0 Science Requirements has been distributed to the Science Working Groups for review. Following collation of the feedback by the Science team, the SKA Science and Engineering Advisory Committee will assess the Level 0 Science Requirements at its next meeting on 22 May 2015. The final draft will be presented to the SKA Board for approval at its next meeting (SKA-BD-18, 22-23 July 2015).

Science Meetings

Robert Braun attended the 'OzSKA: Radio Astronomy in the next decade' at University of Melbourne, 8-10 April 2015 and gave a talk on 'Science with the SKA'. The conference provided an opportunity for the community in Australia to discuss the SKA post re-baselining and to explore the new science that will be possible with the SKA.

Tyler Bourke attended the <u>UK ALMA Meeting</u> at University of Manchester on 30-31 March 2015, and gave a talk titled "A Complete Census of Dense Cores in Chamaeleon I"

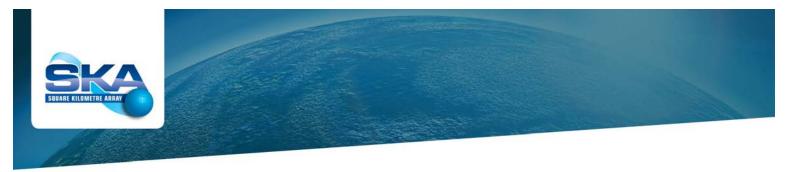
In April, Jeff Wagg attended the <u>MIDPREP workshop</u> in Aveiro where he presented an update on SKA-related science activities. The meeting demonstrated the progress that the AAMID consortium has made over the past year in preparation for SKA2.

Evan Keane gave two public outreach talks in April:

"Explosions in Space", an Ask the Expert talk at Jodrell Bank Discovery Centre on 7 April 2015;

"Extreme Astrophysics" at the Didsbury SCIbar event on 20 April 2015.

Jimi Green gave a talk entitled 'Cosmic magnetism with the SKA' at the "Workshop on Interstellar magnetic fields" at IRAP in Toulouse on the 29 April 2015.



Policy Development

by Simon Berry, SKA Director of Policy Development

With a busy few weeks since the last bulletin, we received some good news just after Easter with notification from the European Commission that the SKA proposal for Horizon 2020 funding to support the detailed design infrastructure in Australia and South Africa was successful. We have been awarded €4.95M, the full amount requested and are now responding to the European Commission rapidly to ensure that the Grant Agreement is signed as soon as possible. Discussions are ongoing in several other areas of the H2020 programme around other areas of work relevant to the project.

Outside that, there have been meetings with government officials in Portugal followed by a productive few days meeting government officials and leading participants in the design effort in New Zealand looking ahead at how to build a strong socio-economic case for the SKA. On the latter point, development of the Prospectus is progressing, following guidance from the Board, and we are working on how to incorporate the inputs from the European Union funded GO-SKA project (which looked at issues such as the 'impact' of SKA and how SKA can address various areas of global non-science challenges) which has just ended.

As mentioned in the previous Monthly Bulletin, following the SKA Board's approval of the Key Document Set as a starting point for negotiations towards establishing the SKA Organisation as an intergovernmental organisation, discussions are underway about initiating formal intergovernmental negotiations between member countries. With the addition to the Netherlands, Australia and Italy to the existing set of South Africa and UK we now have five signatories of the Letter of Intent, aimed at stating the desire to move towards the future SKA (Intergovernmental) Organisation. On other specific areas of the policy programme, we are continuing to develop the detailed thinking around procurement. The Policy team attended the latest meeting of the Consortium Leaders held on 9-10 April 2015 at SKA Headquarters. Thanks to everyone for the productive discussion that was held, providing input for the next stage in developing the procurement plan.

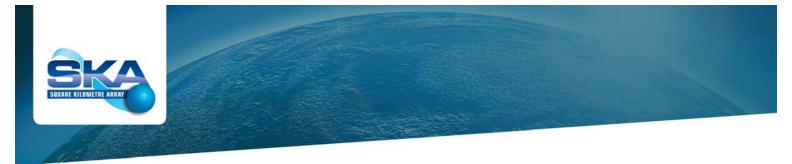
SKA Board Matters and Administration

by Colin Greenwood, SKA Head of Administration and Legal

SKA Members

The SKA Members held the 7th general members meeting on 29 April 2015. The main topic for discussion at this meeting was the selection of the SKA Headquarters. The process for selecting the permanent headquarters began in 2014 when, following an agreed plan, Members were invited to submit bids to host the headquarters. Two bids were received, from Italy and the United Kingdom, both of which were judged to be excellent and both suitable for the project's needs. After thorough consideration, the Members of the SKA Organisation expressed their preference for the Jodrell Bank site as the future home for the SKA Headquarters. A written hosting agreement will be drafted which will need to be approved by the Members of the SKA Organisation before it is signed by SKA Organisation and the UK government.

At the 5th general members meeting held on 4 February 2015, the Members of the SKA Organisation approved the SKA Organisation Business Plan for 2016-17; the Members subsequently agreed the preferred funding option for this extended period at the 6th general members meeting held on 6 March 2015. Funding commitments were discussed at the latest general members meeting (29th April 2015). As the location of the permanent SKA headquarters has been decided, it is expected that Members will make their funding commitments for 2016-17 in the near future.



Following a request for observer status, Malta will be invited to send a representative to SKA Board meetings over the next year. The intention is, following a year as an observer, Malta then considers applying for membership if the SKA Organisation.

Staff Update

Andre van Es joined SKA Organisation on 1 April 2015 on secondment from ASTRON. Andre is the Engineering Project Manager working with the Signal and Data Transport (SaDT) consortium. Joseph Diamond joined SKA Organisation on 30 March 2015 as Communications and Outreach Assistant for a 6-month period.

HR

Cascade HR management software is in the process of being rolled out within the SKA Office. The software is currently being used by line managers and will be rolled out to all staff in May 2015. Cascade will allow HR work streams and processes such as recruitment, staff induction and holiday allowances to be streamlined.

ΙT

The SKA Organisation intranet has been updated and in the near future will be used as a portal for information for groups of external stakeholders.

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

In April, the Comms team grew with the recruitment of an Outreach Assistant, Joe Diamond, in post for a 6-month period. Joe is bringing with him a valuable previous experience at ICRAR in Perth, Australia, well appreciated at a time when the communications and outreach activities keep growing. A snapshot of these activities is provided below.

SKA HQ

A lot of preparation was put into the communications plan around the SKA HQ outcome, in particular the <u>press</u> <u>release</u> detailing the outcome and providing some information about the future permanent SKA Headquarters. Special thanks are due to our Italian and UK colleagues, who showed great professionalism in collaborating very efficiently with the SKA Comms team during this period.

The Press release was distributed on April 30, and triggered a lot of media coverage, especially in Italy and in the UK. In particular, the news was featured on BBC online, BBC News, The Guardian, Financial Times, The Telegraph, the Independent, The Mirror, Yahoo online (UK and Italy), Huffington post, Science, Nature, Physics World, Wired, Corriere del Veneto, ANSA Italian Press Agency.

Social media impact was also very high.

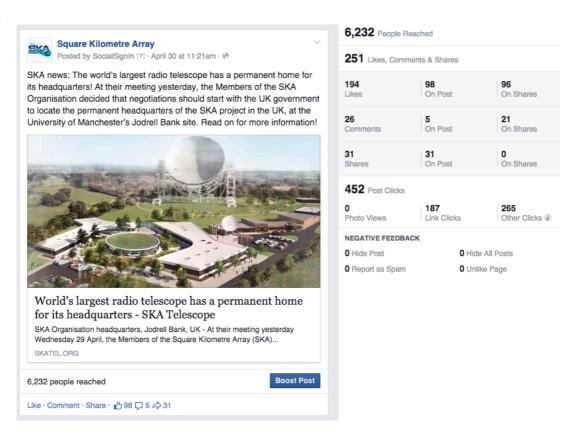


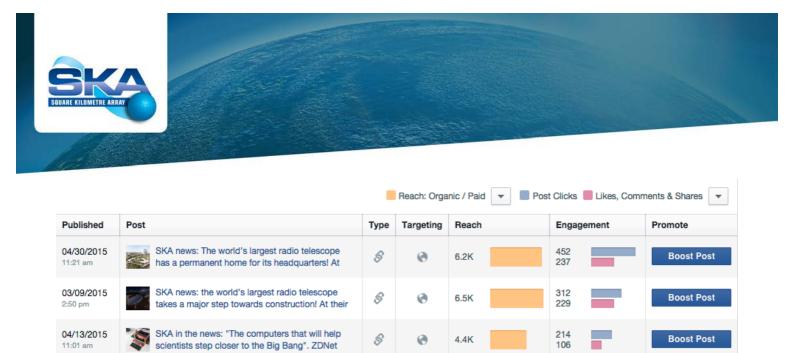
Twitter



The Tweet announcing the decision was read by over 10,000 users and re-tweeted 49 times, making it the 2nd most re-tweeted tweet this year.

Facebook



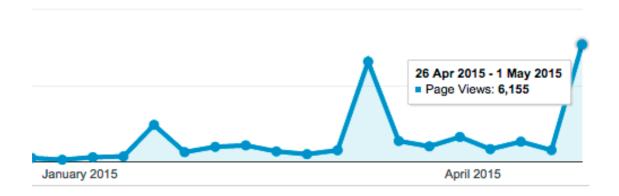


With over 200 likes and 450 clicks, the story was the most liked and shared story so far this year, and the 2nd most read with 6200 views.

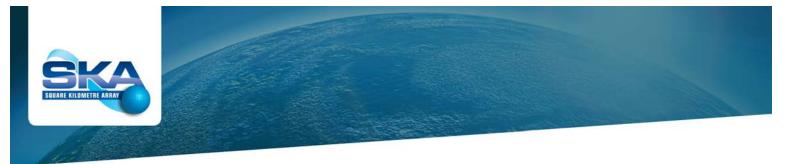
On the web

Page ?		Page Views ? ↓
		49,325 % of Total: 11.93% (413,580)
/news/worlds-largest-radio-telescope-near-construction/	æ	5,464 (11.08%)
2. /news/germany-announces-intent-leave-skao/	P	4,431 (8.98%)
3. /news/decision-on-ska-headquarters/	Ð	3,014 (6.11%)

The press release was read more than 3,000 times, making it the 3rd most read news story on our website in the past year.



With over 6,000 views that week, this was the most visited week ever for the website.



SKA/AWS news

On April 28, we released the Call for Proposal and associated <u>press release about the SKA/Amazon Web</u>
<u>Services (AWS) AstroCompute in the Cloud grant</u>. This was jointly released on social media with the AWS press team, increasing the reach within the AWS users community. More details on this initiative are provided in the SKA Architecture section of this bulletin.

Media coverage was reasonably good, mostly on financial and technical media such as eWallstreeter, Engineering News, InsideHPC, InsideBigData, Scientific Computing World, or Pan European Network.



AstroCompute in the Cloud logo

SKACON

Not only did the SKA Comms team grow, but the SKACON group also. We are pleased to welcome 2 new members representing Malta and Japan. Edward Ducca, Publications Developer and Editor at the University of Malta for the research magazine Think, is the Maltese Representative, bringing with him his expertise as Science writer, editor and communicator (collaborations include the Times of Malta, Science and Nature). Hiroyuki Nakanishi, from the Kagoshima University, represents Japan. Hiroyuki is a scientist, also in charge of communication and outreach in the Japan SKA consortium. Both Edward and Hiroyuki will be great assets in the SKACON group, allowing us to further raise awareness of the SKA in Malta and Japan, and all SKACON members look forward to collaborating with them.

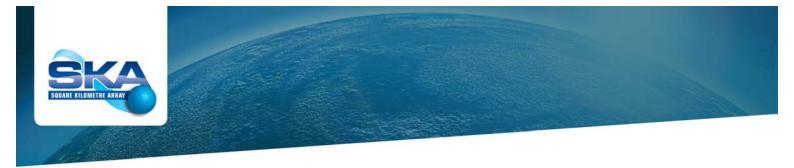
Material

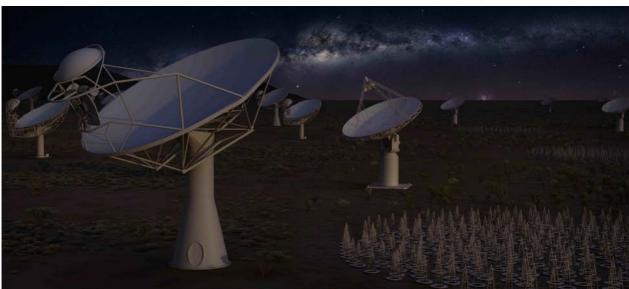
The Comms team have now updated most of the outreach material post re-baselining and post HQ decision. For consistency, we strongly encourage you to update your files and use the latest available material whenever possible and discard the old ones. The links below provide the latest versions of:

- <u>artist's impressions</u> of the array,
- <u>video animations</u> (new animated flyovers of the array are also being prepared and should be ready in the next couple of months)
- posters,
- science brochure and general public leaflet,

This comes ahead of a number of conferences coming up in the next few weeks and months and we encourage our readers to get in touch with us should they need any material.

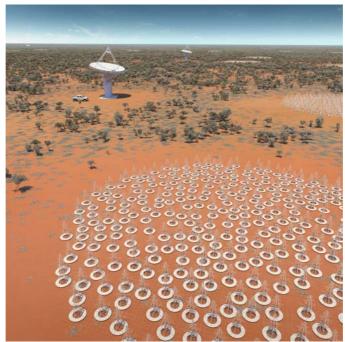
We're also working on a new Big Data animation that should be ready in the next couple of weeks. Please note the previous one is out of date and should not be used anymore.





New SKA at night artist's impression featuring the 2 SKA instruments: SKA MID in Africa on the left hand side of the image, and SKA LOW in Australia on the right hand side. Both MeerKAT and ASKAP precursor telescopes are also featured on this image.

Credit: SKA Organisation



Artist's impression of SKA LOW. Credit: SKA Organisation





Artist's impression of SKA MID. Credit: SKA Organisation

Sharing of material

To facilitate sharing of outreach material such as videos, images, brochures, etc., we have implemented a shared dropbox account for each SKA country in the SKACON group. This is part of our ongoing strategy to document consortia activities with images, videos, etc. in order to create an archive of material. As global interested in the SKA grows, we are increasingly asked by broadcasters for such material to help produce documentaries.

It will be the responsibility of each member of the group to upload images, print and video material of activities happening in their country. To facilitate their task, we strongly encourage you to proactively document your consortium activities and share your material with your representative (see the list here) so that they can upload it

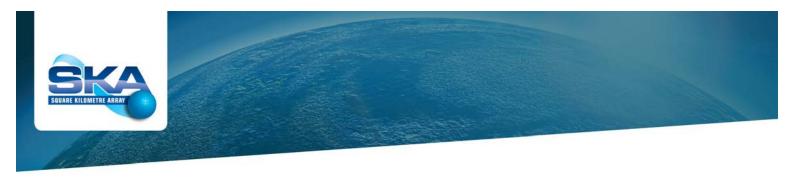
Conferences

EWASS

The European Week of Astronomy and Space Science is this year taking place in Tenerife, Canary Island. Our Spanish colleagues have been strongly involved in the organisation of this meeting, which will include a special session on the SKA. Robert Braun and Tyler Bourke from the SKAO Science Team, and Mathieu Isidro from the Comms team will attend the meeting. We will also have a stand to increase visibility of the project in this important conference.

IAU GA

We are now almost set for the IAU GA in Hawaii in August, with a significant SKA presence and many of us in the office attending the meeting. In particular, an SKA Splinter session will be organized on Sunday August 9, organized by the SKA Organisation Science Director. SKA Science Working Groups have been contacted to provide speakers for this session and final touches are being put on the programme, whose details will be provided in the next issue of this bulletin. We will also have a stand during the meeting, and actually put the bar quite high in terms of the impact we expect to make there. I keep the suspense on for now.



National Astronomy Meetings

The NAM season also starts, with the Netherlands, Italy, UK, Canada and France organising their national astronomy gathering in the next few weeks. SKA material is being sent to these as a way of supporting the great efforts from local colleagues in spreading the word about the project within their respective communities.

SKA-eNews

I'm pleased to report that the SKA Newsletter (called SKA eNews) will be revived with a new issue released mid-June. While the aim of this monthly bulletin is to provide an update of the activities undertaken by the SKA central office, SKA eNews will be a great complement to it, providing a wider view of the global partnership by featuring, amongst other things, activities from all consortia to increase cross-consortia communication. The main audience for the SKA eNews is the engineering and science community, and has a readership of more than 2,000 people. The eNews is expected to be a quarterly publication.

Minisites

We welcomed a new member to the fast growing list of SKA minisites. Upon joining the SKA as an observer, Malta quickly provided basic content for <u>a core site to be uploaded</u> and we encourage more countries to do the same. Our Dutch colleagues are translating their minisite for publication in the next few weeks. Our Japanese colleagues are also busy translating their minisite into Japanese and are making good progress.

Media Coverage

In English

Distant cultures meet in Shared Sky, South Africa
The computers that will help scientists step closer to the Big Bang, UK
Malta invited to join giant telescope team, Malta
Meet the largest radio telescope in the world, USA
SKA, AWS offer grants for innovative cloud services, South Africa
Building the world's biggest telescope array – with machines that don't yet exist, UK

In other languages

Radioøyne mot det første lyset (series of 5 articles), Norway SKA. El telescopio más grande jamás construido, Spain

Connect with us

For any enquiries, requests or feedback please write to skatelescope.org

You can also find the SKA Organisation on Facebook, Twitter, Google+ and YouTube.