International Centre for Radio Astronomy Research

Australia-China SKA Big Data Workshop Call for Proposals

The Square Kilometre Array (SKA) will consist of two of the world's largest radio telescopes, producing orders of magnitude more data than any other astronomical instrument before. All this data will be used by hundreds of scientists working in multiple institutions across the globe. To fully exploit the scientific potential of the instruments and enable ground breaking scientific discoveries, it is essential for the wider SKA community to build up the expertise and develop the technologies to support the science teams during their scientific exploration of the data products released by the SKA Observatory.

To start this process, we are pleased to announce **the Australia-China SKA Big Data Workshop**, which aims to provide a vibrant forum for tinkering with the latest development in SKA Big Data. This workshop is also a "somewhat different" event in terms of organisation, format and also in terms of support for the participants.

The workshop will bring together experts from China and Australia to discuss and work together on selected topics in the broad field of 'Big Data' related to the SKA. As outlined below this covers not just software and algorithms, but also advanced global networking and data sharing technologies and methods. The main goal of this event is to foster and strengthen collaborations between Australian and Chinese organisations in a broad sense, including academic institutions and private companies. As an outcome we expect the workshop to seed and initiate new collaborative projects, or strengthen existing projects with additional partners. We expect to follow up with these projects within about 6 months. In order to achieve this goal in the most efficient way and also to stay within the budget, we are planning for 25 participants from each Australia and China. *This is a workshop, not a conference and thus we are specifically targeting people with a high degree of technical background and skills in their respective area of expertise.*

The workshop is co-organised by the International Centre for Radio Astronomy Research (ICRAR) in Australia and Shanghai Astronomical Observatory in China. It is co-funded by the Australian Department of Industry, Innovation and Science and the Ministry of Science and Technology in China.

Note: *This event is specifically targeted to foster and support Australia-China collaborations and fully funded by the two governments, thus we can only support people with an affiliation in either of the two countries. In exceptional cases we may consider people from other countries, if they are part of an existing Australia-China collaboration.*

Key Information:

Date: 10-13 April, 2017

Location: Shanghai (exact venue to be announced)

Participant topic proposals due date: March, 1st, 2017

Participant notifications: March 10th, 2017

Proposal guidelines:

Since this is an event, which is covering most expenses of the participants, including airfares and accommodation, we obviously need to select participants. Apart from the affiliation, this selection process is largely based on the merit of the proposals submitted by potential participants, and is tightly integrated with the format and agenda of the workshop itself. The organisation of the workshop broadly follows the Hackathon idea (https://en.wikipedia.org/wiki/Hackathon), but extended to other areas than just software. Since we don't want to impose a pre-selection on the exact topics of the workshop, we are counting on your input and creativity in proposing workshop topics. In order to guide proposers we have identified 10 themes broadly covering the topics we are expecting to address during the workshop:

Theme ID	Short Description
1	Networking (Multiple Tbit/s data streams, both within the actual telescope but also across the globe).
2	Monitoring and control network and software at SKA scale.
3	Near real-time, (non-)imaging algorithms and software components
4	Processing frameworks and software systems
5	Collaborative data reduction support software (how do globally distributed science teams work on SKA scale data)
6	Data management software systems for globally distributed data (including data lifecycle and preservation/archiving systems)
7	Data mining technologies (science and sensor data)
8	Hardware platforms for all of the above (includes co-design and cloud technologies)
9	Global astronomical data dissemination at SKA scale and VO software and technologies
10	Advanced or future technologies (including research into those)

We are asking people interested in participating to put together a proposal of a topic to work on and discuss during the actual workshop. Note that proposals are bound to a person, not an institution or organisation. That means that each person interested in participating needs to submit her/his own topic proposal.

Proposal submission

Please use the following form to submit your proposal:

https://eridanusworkshop.wufoo.com/forms/topic-proposal/

Please make sure to use your work or affiliation e-mail address, since this information is used to ensure your eligibility to participate in the workshop.

Selection process:

The selection process consists of two stages – peer review and random selection.

Stage 1:

The **peer review** stage goes through 3 steps.

1) Pre-screen all proposals received to make sure that the information we have received is complete and valid (in particular the affiliation).
2) Identify themes that have received multiple topic proposals. If there are themes, which have received less than 3 proposals based on the first keyword, we will have a look into the second keyword as well, but if there is too little interest or diversity of proposers (China and Australia), we may simply drop those themes from the workshop. Conversely if there is a theme with a lot more topic proposals than required, obviously the competition for the 'best' proposal is much higher. Ranking of the topic proposals will take into account potential new collaborations, level of innovation and creativity. Existing collaborators can submit separate proposals under the same theme (thus with overlapping keywords), listing their respective collaborating institutions. However, each topic proposal should cover a different aspect of the theme, and should articulate potential ways they might form new partnerships with other workshop participants. Coincidentally similar proposals from two unrelated persons are the most promising ones to form new collaborations.
3) For each sufficiently covered theme, select the top topic proposal and add the proposer to the workshop participant list.

The peer review stage will thus produce a maximum of 10 invitees on the participant list, one for each theme sufficiently covered. The peer review stage will also define the final list of **workshop themes**. We hope to be able to cover all 10 from the original list above, but there is no guarantee. Note, however, that we will in any case invite the same number of people, just distributed across fewer themes.

Stage 2:

In the **random selection** stage, we will randomly pick 4 additional people listing the keyword (Theme-ID) for each of the workshop themes in their proposal, starting from the first one, and add them to the invited workshop participant list. This process has some interesting side effects: If a theme has just 5 or less topic proposals listing it in the first keyword, all of the proposers will be added to the participant list. If there are less than 5 topic proposals we will try to fill the theme up with additional proposers listing it in the second and then the third keyword. On the other hand, if a theme has a lot more than 5 topic proposals

listing it in the first keyword, the random selection has a more significant impact. It should also be clear, that listing all 3 keywords in your proposal increases your chances of participation slightly, that's why we are asking all three keywords to be given, even if not all of them apply to the proposed topic. It would be good, though, if you had some expertise in the other keywords as well, in order to be useful in the topic working group.

Workshop format and schedule:

The workshop itself will be organised in the following way:

Day 1 (April 10th):

Morning:

- Introduction talks from funding agencies and workshop organisers
- Selected topic proposers introduce their topics in more detail
- Deal-time: People can deal their space in a topic with other participants from another topic.

Afternoon:

- The 10 topic teams start their work on the proposed topic. The teams have the freedom to discuss the actual details of the topic they want to work on. The topic should stay within the theme and be at least close to the original.

Day 2 (April 11th): Continued work on the topics.

Day 3 (April 12th): Continued work on the topics. In the afternoon the teams should prepare a report and a 25+5 min presentation. The reports will be compiled into the workshop proceedings, which will also serve as the final report back to the governments thus it should be of high quality. The presentations are summarised to be presented on Day 4. One very important aspect of both the report and the presentation is to highlight potential collaborative future work.

Day 4 (April 13th): Presentations of the results of the topic teams.
25+5 min each.

The organisers will nominate a team of observers whose terms of reference will be to summarise the whole workshop and pick the best topic and teamwork, also taking into account the expected or potential future work. The observations of this team will be reported as the final agenda item.

Science Organising Committee

Tao An (co-chair)	Shanghai Astronomical Observatory
Juan-Carlos Guzmann	Commonwealth Scientific and Industrial Research Organisation
Xiaoyu Hong	Shanghai Astronomical Observatory
Yuan Luo	Shanghai Jiao Tong University
Peter Quinn (co-chair)	International Centre for Radio Astronomy Research, University of Western Australia
Andreas Wicenec	International Centre for Radio Astronomy Research, University of Western Australia
Chen Wu	International Centre for Radio Astronomy Research, University of Western Australia
Xiangping Wu	National Astronomical Observatory of China Shanghai Astronomical Observatory