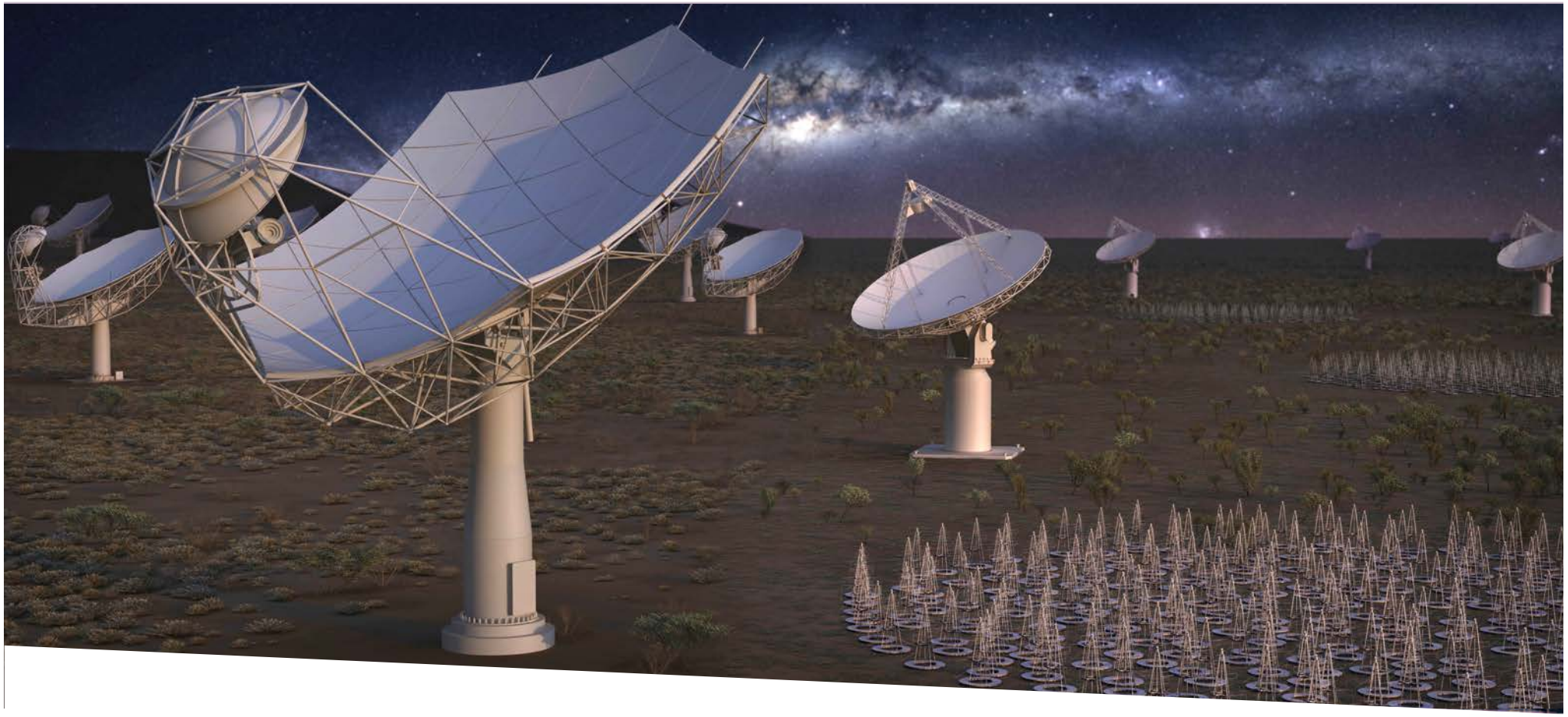
SKA SWG Update



SQUARE KILOMETRE ARRAY

Exploring the Universe with the world's largest radio telescope

Robert Braun, Science Director

19 February 2019

Science Activity Updates

- Governance
- Critical Design Reviews
  - LFAA Bridging (as per Gianni's request)
- SKA related meetings (All)
- SWG Posters (Tyler)
- 2019 SKA Science Meeting and KSP Workshop
  - Workshop Schedule (as per Lourdes, George requests)
- Science Data Challenges (Anna)

Negotiations to establish SKA Inter-Governmental Organisation.

Text of Convention and protocols now agreed

Initialing of documents completed

Ministerial signing ceremony 12 March 2019

Transition planning underway

CDR Activity – Update Feb 2019

Element	RRN Submission	CDR Submission	CDR Meeting
TM	29 January 2018	28 February 2018	17-20 April 2018
SaDT & SAT	17 January 2018	28 February 2018	15-18 May 2018
INAU	19 March 2018	30 April 2018	27-29 June 2018
INSA	19 March 2018	30 April 2018	2-4 July 2018
CSP	18 May 2018 - PSS, PST, CBF-Low, CBF-Mid Sub-Element CDRs	30 June 2018	25 – 28 September 2018 !!
MeerKAT Integration			22 October 2018
SDP Pre-CDR SDP CDR	9 March 2018 17 September 2018	25 April 2018 31 October 2018	20 – 22 June 2018 15 – 18 January 2019 !!
LFAA	15 October 2018	5 November 2018	11 – 13 December 2018 ++
AIV	29 October 2018	30 November 2018	4 March 2019
DSH Pre-CDR DSH CDR	17 September 2018 1 Apr 2019 - Band 1, LMC Sub-CDR 20 Sept 2018 - DSH Struct Sub-CDR 1 Apr 2019 - Band 2 Sub-CDR 1 Apr 2019 - Band 5 Sub-CDR 27 Aug 2019	28 September 2018 13 September 2019 (B2)	26 – 27 November 2018 Aug 2019 (DSH, B2) Oct 2019 (B1, B5)
System		Q3 2019	Q4 2019

CDR Activity – Update Jan 2019

- LFAA CDR Report urges:

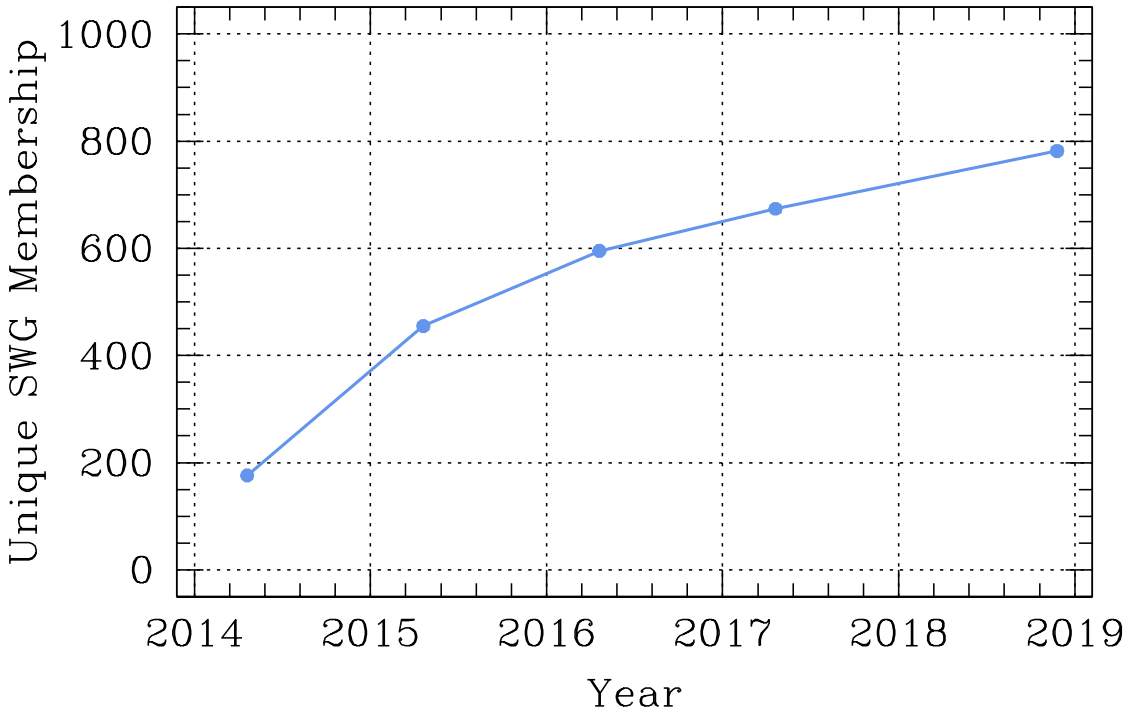
1. Risk mitigation
   - Demonstrate station beam calibration with both simulations and prototypes
2. Requirement reevaluation
   - Will only undertake once reliable measurements in hand

Bridging Task SOW 158 : LOW Station Calibration Risk Mitigation

Created by Waterson, Mark, last modified by Gresley-Jones, Val on Feb 14, 2019

Name:	
Task Title: LOW Station Calibration Risk Mitigation	**Task Ref:**
Proposer name:	Waterson, Mark
Task Manager:	van Es, Andre
Suppliers (countries):	**UK (Cambridge) 0.1** Italy (INAF) 0.2 Malta (UMalta) 0.2 Aus (Curtin) 0.2 NL (ASTRON) 0.1
Objectives:	Implement changes resulting from Station Calibration risk mitigation study
Milestones/Delivery Dates:	1. ...Kick off 01 Feb 2019 2. ... 3. ... 4. ... / 1. . 2. ... 3. ... 4. ...Dec 2019
Risk Mitigated:	Calibration of station beams not proven
Benefit:	Science
Task Description:	▪ Scope & assess changes to reference design ▪ Implement changes (e.g. antenna design, software, MCCS cluster specification, SDP implications) ▪ Revise documentation (incl requirements & verifications) ▪ Prototype & test as necessary (scope TBD)

The SKA Science Community



(SKA @ 2019 AAS Seattle)

- SKA Science Working Group membership has grown by factor of four in the past 5 five years
- SKA Splinter Session at the 2019 AAS, > 100 attendees (Tyler)
- PHISCC Meeting Perth 11 – 13 February, ~ 80 attendees (Sarah/Jeff)
- SKA 2019 Science Meeting and KSP Workshop, ~ 300 registrants

Upcoming SKA-related Meetings

- CTA 1st Science Symposium, 6 – 9 May, Bologna
- New Perspectives on Galactic Magnetism June 10-14 2019 https://conferences.ncl.ac.uk/galacticmagnetism/
- EWASS SS11: New Inputs and prospects to model Milky Way Magnetic Fields https://eas.unige.ch/EWASS2019/session.jsp?id=SS11
- EWASS FRBs Special Session, 24 June, Lyon https://eas.unige.ch/EWASS/session.jsp?id=SS24
- EWASS SKA Special Session, 26 June, Lyon https://eas.unige.ch/EWASS2019/session.jsp?id=SS29

SWG Posters

- Aim to have a poster (banner) for each SWG
- First use was AAS in January,

  https://astronomers.skatelescope.org/meetings-2/the-ska-a-transformational-telescope-for-the-next-decade-and-beyond/

  then the April SKA meeting, ...
- Seven posters produced:

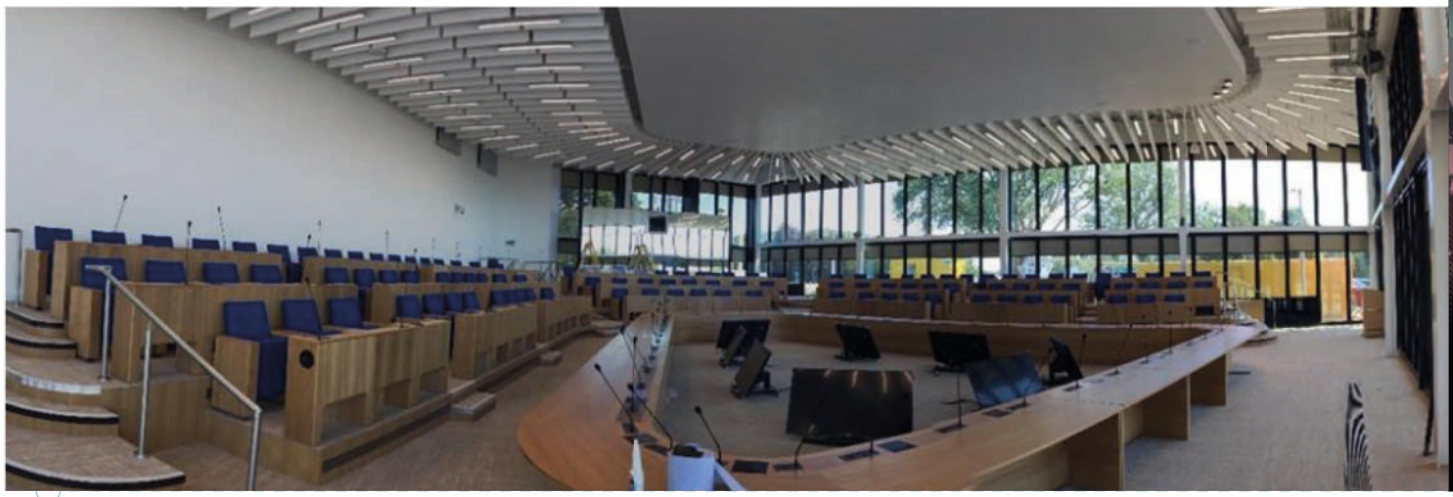
  https://www.dropbox.com/sh/yb7tpn0u5b91iid/AAAFhgBkMfsUNjDPQhtRhRNqa?dl=0
- Remaining posters (you know who you are!) please push ahead with submissions ASAP so that you will be represented at the April SKA meeting

SWG Posters

- Aim to have a poster (banner) for each SWG by April

Science Meeting

- 2019 SKA Science Meeting and KSP Workshop, 8 – 12 April
  - ~290 paid registrations
  - HQ Auditorium capacity ~160
  - Use Alderley Park back-up venue (232+XX capacity) for Mon – Fri
  - HQ reception (TBC) on Monday



KSP Workshop Schedule

- 2019 SKA KSP Workshop, 11 – 12 April
  - Thursday morning general introduction plenary
    - SDP data products
    - SRC coordination progress
    - Science Data Challenges current and upcoming
  - Thursday afternoon and Friday morning
    - SWG self-organized break-outs (detailed schedules to be circulated to permit cross-fertilization) on topics like KSP coordination, pilot studies with path finders, etc.
    - Special multi-SWG topical break-outs (eg. High frequency white paper)
  - Friday afternoon wrap-up plenary
    - Reporting by SWG on progress to date

Science Data Challenge #1

- **SDC1** released, 26 November!
  https://astronomers.skatelescope.org/ska-science-data-challenge-1/
- Continuum sub-band images ($\Delta\nu/\nu_c$ = 30%)
- SKA1-Mid, three frequencies: ν_c = 0.56, 1.4 and 9.2 GHz
- One pointing: 8^h, 100^h and 1000^h observations
- Data info:
  - Images of 32k pixels per side for the full FoV
  - 1.50, 0.60 and 0.091" FWHM resolution at 0.56, 1.4 and 9.2 GHz
  - Size of a single frequency slice: 4GB (x9 = 36GB total)

Data Challenges

- SDC1 includes true inputs for a 5% of the field of view, which can be used by participants to assess their analysis
- To participate, register your interest by sending an email to skaSDC1@skatelescope.org
- Provisional deadline 15/3/19, for results to be presented at the SKA science conference in April
- 13 participating teams so far, some of them outside the SKA WG community. Several issues with the data have been reported and remedied, so please download latest release.
- SKAO working on results assessment and scoring
- **SDC2**: let's hear your suggestions on what the next challenge could be!

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