

SWG Chairs Telecon of 13 March 2018

Minutes by Jeff Wagg

Participants: Doug J., Jason H, Francoise C, Fernando C., Sarah B., Garrelt M., Richard B., Divya O., Ann M., Isaszkun J., Andrea P., Eduard K., Erik R., Rossella C., Ingrid S., Lourdes V-M.

Apologies: Laura W., Grazia U., Mark S., Gianni B., George H., Sebastien M., Cormac R., Tao An, Cristina

SKAO: Robert, Evan, Tyler, Anna, Shi Dai, Jeff

Robert B.:

- Introduction of Shi who will be working on pulsar search and timing strategies with Evan

Dishes:

- Images of the first prototype dish are shown which were inaugurated on the 6th of Feb.
- Second prototype dish will be shipped in one month

HQ:

- headquarters construction is also progressing and photographs are shown
- construction is progressing but there may be some delays that I will return to

Design work:

- critical design reviews (CDRs) are underway, and the table shown in the slides which summarize progress
- three (plus two more) sub-element CDRs have already been passed
- Joe McMullin has taken over as programme director and has indicated that system CDR date may be delayed from Dec. 2018 by a couple of months.
- all other dates remain unchanged

IGO:

- with respect to observatory convention, the text of the treaty has been finalised and released to country delegations.
- mid-Sept in Rome is when we are expecting to see the signing ceremony occur

EPAs:

- A new concept that has emerged is that of early production arrays (EPAs)
- these have emerged as a means of bridging the gap between the end of design activities and the beginning of construction
- these will be built on infrastructure on-site and the idea is to reduce any remaining risks associated with the design and cost
- we also expect to learn lessons that will be useful during later stages of commissioning
- here are maps of the proposed LOW station locations that will comprise the EPA (4 expected)

Ingrid: Why are CORE station locations not being used, rather than more remote ones?

Robert: Two reasons; proximity to fibre connectivity and avoiding the complexity of adding later stations in the very densely filled CORE region.

- we also show a list of the verification activities that will be conducted with the EPA which were originally planned for array assembly 1

- in the case of MID, we also expect to deploy 4 antennas on a subset of the 8 locations shown in the map

- we show the high-level schedule as it currently stands and where the EPA fits in

- we expect to include consortium members during bridging activities in order to retain expertise

Sarah: regarding the layout, am I right that the EPA for MID will be inside the MeerKAT footprint?

Robert: yes, that will require careful coordination during construction

- regarding the scope of the EPAs, these need to be justified and Joe M. has gone through an analysis of the risk exposure reduction that would result from this activity. the costs would be equivalent to spending contingency early so as to reduce risks and costs for construction

- Some early staff ramp up might be required.

Jason: Will science data products from the EPAs be released from these? will extra eyes be allowed to analyse the data?

Robert: Robert L. has produced a commissioning plan that tests science modes; data will not be publicly released, but we expect that there will be opportunities for experts from the community to contribute to these activities if they are able to commit significant effort

Jason: it would be useful to share the commissioning plan with SWG members for their input in case there are any gaps

Robert: yes, good point

HPC:

- regarding the HPC document that was distributed earlier, here is a summary of the parametric model used as input

- please provide your critical feedback on the assumptions and calibration strategy

- this plot shows the derived HPC loads as a function of use case parameters and frequency

- as Divya has pointed out, the solar imaging use case has a different calibration and imaging strategy. He will provide more details for this.

- the document covers examples where we arbitrarily assume 10% observing time on NIP applications

Ingrid: 10% seems low for pulsars since this is one of the main science cases for SKA1

Robert: Possibly, this is just an arbitrary placeholder. The reason to keep the distributions flat in the examples is to avoid prejudging the time allocation outcome.

Anna: recall that pulsar searches can be conducted commensally with other imaging experiments

- the assumed computational efficiency is 10%

Jason: what about load balancing?

Robert: a two-week storage buffer is expected to enable load balancing. The examples show the fractional time allocations that could be supported within the storage buffer timeframe.

- there are many caveats: efficiency, support for direction dependent calibration, costs are dominated by DFT calculation which could be reduced with partial FFT usage. We also need to calibrate the models against real life use cases.

Doug: I found the document interesting especially the calibration challenges when compared to the ALMA case. Deeper calibration appears to be possible with more FLOPs and maybe a tiger team should be looking at this.

Robert: Yes, the quality of calibration is always limited by the amount of HPC. We have deliberately tried to make do with the minimal computing that still achieves thermal noise limited performance

Doug: clever minds can find clever solutions to computing bottle-necks.

Robert: Indeed, we're counting on it.

High-nu science case

- Sebastien Muller suggested we revisit the science case for 15 to 50 GHz
- this is motivated by anticipated performance of the dishes and site
- this naturally fits within the observatory development programme: 20 MEuro/year budget
- possibly this would best be left until the R&D efforts have led to a mature design
- upgrade proposal could then be submitted to the council

Tyler: such a science case was started a couple of years ago and it is up to the community if you want to complete this

Izaskun: There is great interest in the area of pre-biotic molecules, and I have a post-doc who could contribute to documenting prospects.

Robert: Great, we are happy to coordinate getting something put together.

Upcoming meeting

- finally, the SKA Key science workshop at the SKA HQ will need to be delayed
- unfortunately, the new building meeting room and catering area are unlikely to be ready
- this would have implied renting a nearby venue and raising the conference fee to more than 300 GBP, which we did not want to do
- We are therefore having to postpone the meeting dates until early April (8-12)
- we anticipate capping the conference fee at less than 200 GBP.