SWG Chairs Telecon 8-May-2018
Minutes by SKAO Science Team

Participants:
SWGs: Andrea Possenti, Douglas Johnstone, Garrelt Mellema, Mark Sargent, Izaskun Jimenez-Serra, Erik Rosolowsky, Francoise Combes, Richard Battye, Stijn Buitink, Ann Mao, Eduard Kontar, Ingrid Stairs, Fernando Camilo, Sebastien Muller

Apologies: Sarah Blyth, Lourdes Verde-Montenegro, Gianni Bernardi, Natasha Hurley-Walker, Michael Rupen

SKAO: R. Braun, J. Wagg, T. Bourke, C. Garcia Miro

SKA Board Meeting 26 Outcomes
- Garrelt: Are there other observatories using a "partnership" operations model? Yes, the "Joint Astronomy Centre" to run the JCMT and UKIRT in Hawaii used this model with staff being contributed by each of the countries in this collaboration as well as local staff, all reporting to the observatory director.

CDR Activities and LFAA Recovery Plan
- No questions

Testing of SKALA4 Prototypes
- Francoise: What are all the peaks near 250 MHz? Intermittent radio frequency interference due to aircraft navigation.
- Garrelt: What are the yellow regions in the plots? There is no significance whatsoever to the yellow regions.

Science HPC Requirements
- Mark: Are the reduced HPC requirements above 5 GHz due to the lower antenna numbers? They should be partially due to this. However, the parametric model did not exclude the MeerKAT antennas from the calculation (now verified by reviewing the model output). The reason the HPC needs are already much lower is the lower number of required sources in the calibration model (by about a factor of 10). Taking account of the lower number of visibilities would actually lead to a further reduction by about a factor of two = $(194/133)^2$.
- Garrelt: Are the calculated HPC needs being supplied centrally or might this be distributed in Regional Centres? Ideally, this is the capacity that would be available centrally, since there will not be sufficient data transport bandwidth to distribute the "native resolution" visibilities and some aspects of the calibration require full resolution visibilities to be effective. In addition, there is ample scope for SRCs to provide extra resources for data product combination, analysis and interpretation.
- Ann: Will full polarisation simulation and calibration outputs be available? Yes, an extension of the T-RECs simulations to include polarisation is planned, and yes, full polarisation station and dish beams are already available but have not yet been included in the HPC modelling. However, the HPC calculation is based on processing all 4 Stokes parameters and is done to a depth that should already be fully representative of the needs of polarimetry use cases.
- Francoise: Are HPC requirements reduced if one takes account of the fact that intrinsic source variability is only expected for the most compact sources? No,

unfortunately not, since it is the apparent source variability due to direction dependent gain variations of the array that completely dominates and makes it necessary to calibrate with both a high time and frequency resolution and in multiple directions simultaneously.

- Andrea/Ingrid: Why is there an assumed 10% level of non-image processing shown in the plots? This is completely arbitrary and does not reflect a likely observing time allocation. It is simply chosen as an example to calculate total HPC loads and should not be interpreted as anything more sinister. If the current document text does not make this clear enough, then please suggest an alternate wording.
- Eduard: What are the HPC needs of tied array beam use cases? All tied array beam forming is in the non-image processing (NIP) category and only requires the real-time calibration processing. The HPC needs for NIP are much lower than any of the imaging applications by more than a factor of ten.
- Doug: Might it not be possible to begin acquiring short observations for what will ultimately be a deep integration and then reprocess all of the data when more HPC is available? Unfortunately, not, since there is not foreseen to be the capacity to either archive or export the "native resolution" visibilities, many aspects of the calibration can only be done at the time of the observation with the HPC that is available on site. Shortcomings in the calibration will be frozen into the intermediate data products and would lead to systematic errors in the subsequently combined data products.
- Doug: How can one relate the generic use cases with real life observations that are of scientific interest? One of the sections in the document provides a table with the list of the "High Priority Science Objectives" that were deemed by the community to be representative and of great interest. Each entry is accompanied by an estimate of the HPC required to generate its associated data products.