AusSRC

Update for MTR
Peter Quinn, Sarah Pearce
Data rates

**ALMA**  
Science Data Products ~ 1 PB/year

**LSST**  
Science Data Products 4-5 PB/year

**SKA**  
SKA1-LOW excluding EoR: 3 Gb/s  
EoR only: 22 Gb/s  
SKA1-MID: 9 Gb/s  
TOTAL: 34 Gb/s = 370 TB/day = 130 PB/yr  
FULL DISCOVERY ARCHIVE: ~ 700 PB/yr  
Aggregate processing ~ 100 PFlop/s

**LHC**  
High Luminosity LHC 2023  
Science Data Products ~ 400 PB/year
• **March 2016** - The SKAO Data Flow Advisory Panel (DFAP) report to the SKA Board identified a shortfall between the construction cost of SKA-1 and the cost of supporting the development of advanced data products by the community, the support of KSP teams and the creation and curation of a long-term SKA science archive capable of supporting archival research.

  • DFAP Recommendation - the creation of “... a collaborative network of SKA Regional Centres (SRCs) to provide the essential functions that are not presently provided within the scope of the SKA1 project”
  • indicative aggregate costs (HW/SW+people) ~ 30-40 MEuro/year

• Australian response to date:

  • **April 2017** - ERIDANUS (ICRAR/SHAO/CSIRO, www.eridanus.net.au)
  • ANZSCC - **2017** formed AusSRC Working Group
    • 1st AusSRC Community Workshop Nov 2017
  • ANZSCC - **2018** formed AusSRC Management Committee
    • AusSRC White Paper May 2018
  • **2019** - $4 million AUD funding secured from DIIS and CSIRO to conduct a three year AusSRC design study: www.aussrc.org
 SRC Essential Functions

- **Data Flow** - delivering data from the observatory to those that have been given time to acquire it
- **Data Processing** - the resources necessary to work on the data after it's delivered
- **Data Curation** - providing a performant and persistent science archive that allows discovery and new science
- **User Support** - supporting all users with all of the things above
- **Commonality** - support a common and minimum set of tools to enable users to work at SRCs
- **Resource Management** - enable and support an interface to observatory TAC and operations processes to ensure maximal use of distributed SRC resources
Global SRC Network

- Where will the SKA science archive data be hosted?
- How will that data be transported from the sites to the SRCs?
- How can we take optimal advantage of existing infrastructure?
- What are the processing requirements and technologies to consider?
- What interfaces, tools, and techniques will users need for analysis?
- How do we setup and operate an international network of SRCs?
Principles
The SKA Observatory and the SRCs will be jointly responsible for:

a) maximising the quality of SKA data delivered to users;
b) the production of Advanced Data Products;
c) ensuring that the approved science programme can be accommodated within available resources; and
d) ensuring the availability of computational and software resources to support the user community to deliver SKA science.

Mission
The mission of the SRCSC is to define and create a long-term operational partnership between the SKA Observatory and an ensemble of independently-resourced SKA Regional Centres.

The SRCSC will function as a round-table partnership, consisting of the SKA Office and individuals appointed by the SKA partners in response to a solicitation from the DG

Australia: Peter Quinn
Canada: Severin Gaudet
China: An Tao
France: Jean-Pierre Vilotte
India: Yogesh Wadadekar
Italy: Andrea Possenti
The Netherlands: Michiel van Haarlem
South Africa: Simon Ratcliffe
Spain: Lourdes Verdes-Montenegro
Sweden: John Conway
United Kingdom: Anna Scaife
SKA Organisation: Antonio Chrysostomou
Rosie Bolton (secretary)

- First Meeting in Manchester 7-9 May
- Presentation to community at SKA Meeting in Shanghai Nov 2019
- White Paper on SRCs for SKAO Council Q1 2020
The AusSRC Management Committee will:

- Report to the ANZSCC
- Consist of representatives from ICRAR, CSIRO, MWA, Pawsey and AAL
  - Peter Quinn (Chair), Sarah Pearce (Deputy Chair), Melanie Johnston-Hollitt, J-C Guzman, James Murray, John Reynolds, Steven Tingay, Ugo Varetto, Andreas Wicenec

**AusSRC program of work**

- Delivering projects for ASKAP and MWA users: 2019 - 2022
- Defining architectures and technologies relevant to an AusSRC at national and international level: 2019 - 2022
- As part of the SKA Cabinet Submission - Delivering a business case to the Federal Government for an investment in a staged deployment of an AusSRC at a scale relevant to SKA precursors and SKA-1: 2023 – 2030
International SRC Efforts

AENEAS + ESCAPE (EU) : 2017-23 : ~ 6 million Euro

ERIDANUS (Aus/China) + AusSRC (Aus) : 2017-20 : ~ 3 million Euro

ChinaSRC (China) : 2017 - 2021 : 5 million Euro

IDIA (RSA) : Inter-University Institute for Data Intensive Astronomy : 2017 - 2022 : 0.7 million Euro

CIRADA (Canada) : Canadian Initiative for Radio Astronomy Data Analysis: 2018-2023 : 7 million Euro

NCRA (India) : 2019 - 2023 : 6 million Euro (requested)

others…. (Spain..)

Total : ~ 28 Million Euro 2017-2023
Connected and Coordinated

- Any request for AusSRC resources will need to show connections to other Federal investments in data intensive astronomy capabilities and national research infrastructure in general.

- Specific investments will need to focus on specific needs that differ significantly in timeline, scale, scope and infrastructure dependencies - not one investment but several that are well connected.

- An AusSRC will need to connect to and use, and can potential bring benefit to, data intensive initiatives in multi wavelength and multi messenger astronomy.
  - Multi wavelength and multi messenger science needs for data connectivity and interoperability.
  - Sharing human resources and creating career paths.
  - Partnerships in international initiatives - LSST, Space, time domain.
  - Coordinated input to research infrastructure developments.

- There is a need for an active discussion and Coordination Forum in Data Intensive Astronomy.
  - Needed in building the AusSRC Business Case.
  - Needed to maximise outcomes from project-specific investments.
  - AusSRC MC will support the creation of this Forum (workshops, conferences,..)