



International
Centre for
Radio
Astronomy
Research



SRC activities in Australia and Asia-Pacific Region

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THE UNIVERSITY OF
WESTERN AUSTRALIA



Australian Investment



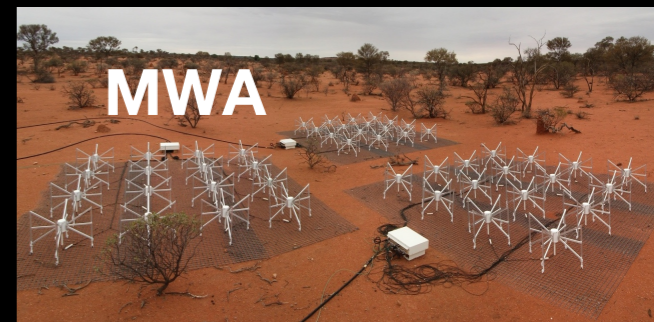
ICRAR



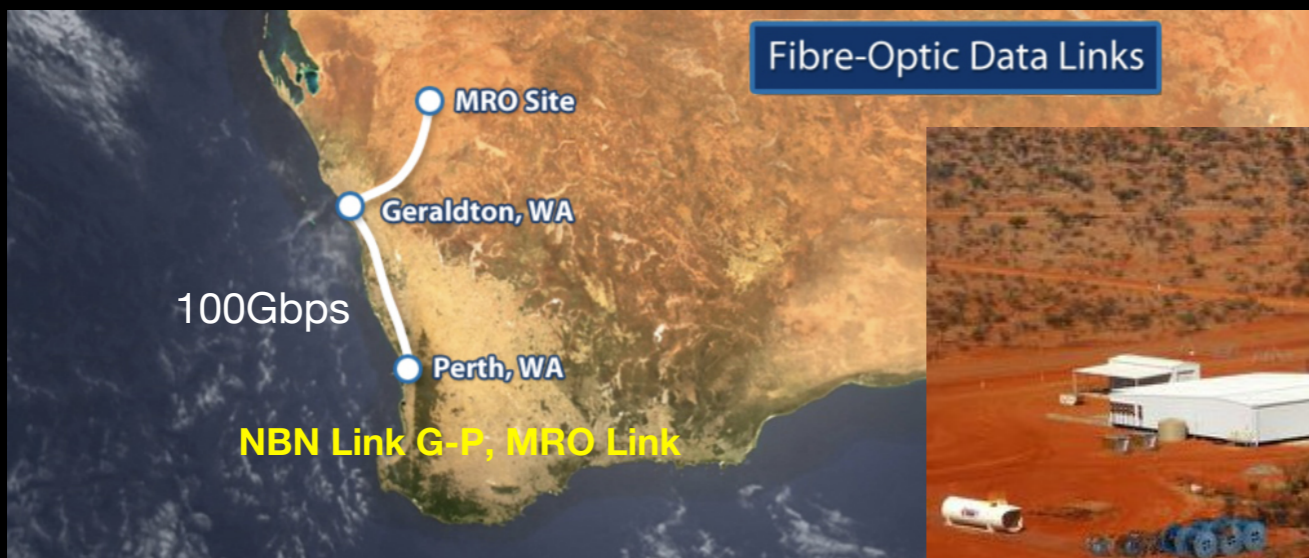
ASKAP (CSIRO)



MRO (CSIRO)



MWA



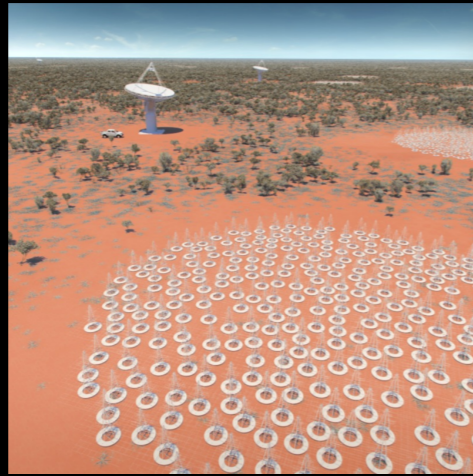
Fibre-Optic Data Links



Pawsey

Bottom-up approach to SRC

Up to 300 PB/y



SKA-1 Scale



Technology Development Projects



Precursor Science Projects

15 PB/y

- Data flow architectures
- Data storing and archiving
- Networking optimisation
- Post-processing
- Data analysis and visualisation
- Execution frameworks
- Cloud computing options
- Cost monitor and control



Exascale Research
Infrastructure
For Data In Asia-Pacific
Astronomy
Using The SKA

2017中澳SKA大数据研讨会 2017 AUSTRALIA/CHINA SKA BIG DATA WORKSHOP

2017 April 9-13, Shanghai



Ten themes

1. Signal and Data Transport
2. Telescope monitoring and control network and software at SKA scale
3. Near real-time, imaging and non-imaging algorithms and software components
4. Execution frameworks and software systems
5. Collaborative data reduction support software
6. Data management software systems
7. Data mining technologies
8. Hardware platforms for all of the above
9. Global data dissemination at SKA scale and VO software and technologies
10. Applicable advanced or future technologies





2nd Australia-China SKA Big Data Workshop

Asia-Pacific SRC Prototyping
(focused on ASKAP and MWA)
9 - 12 April 2018, Shanghai, China



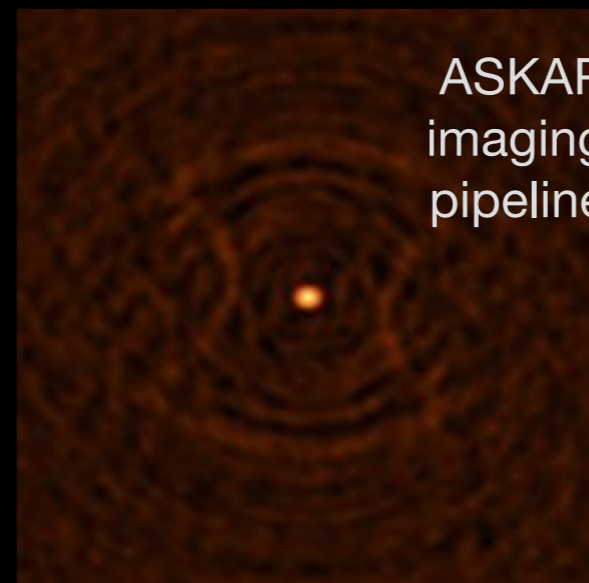
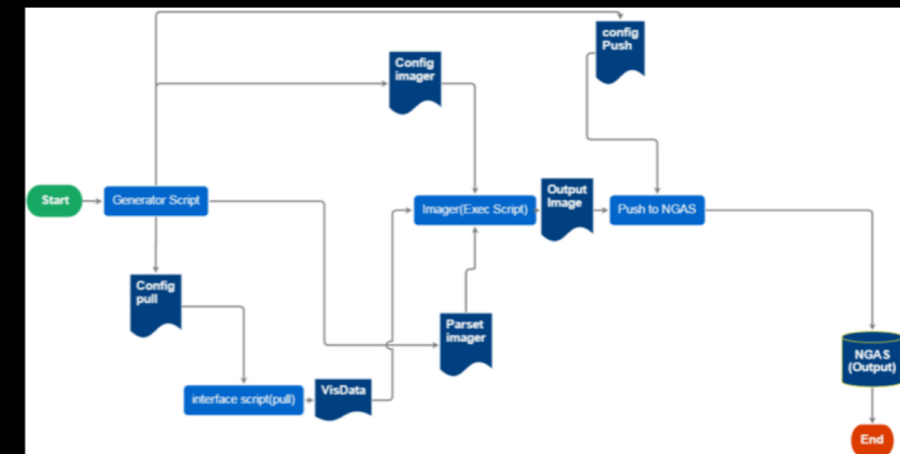
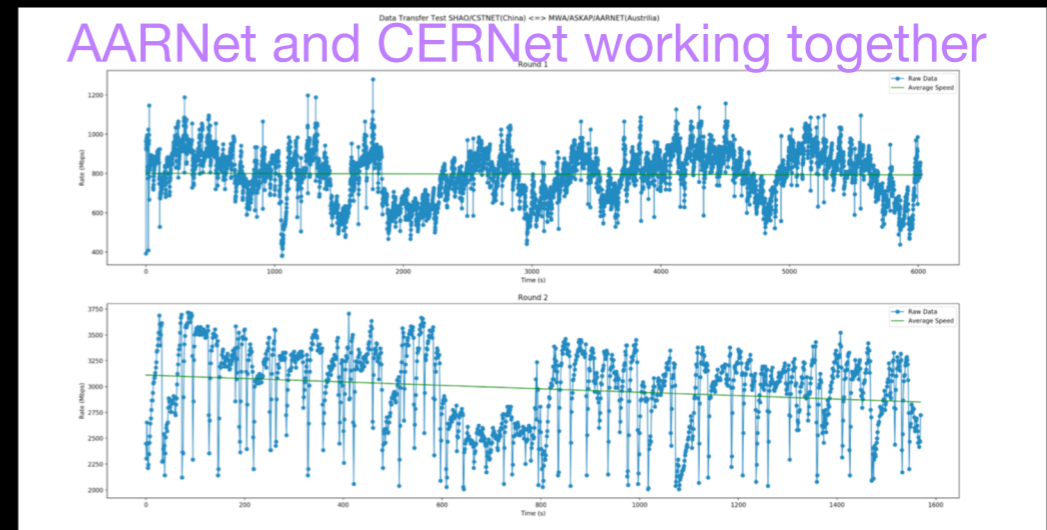
Exascale Research
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WORK PACKAGES

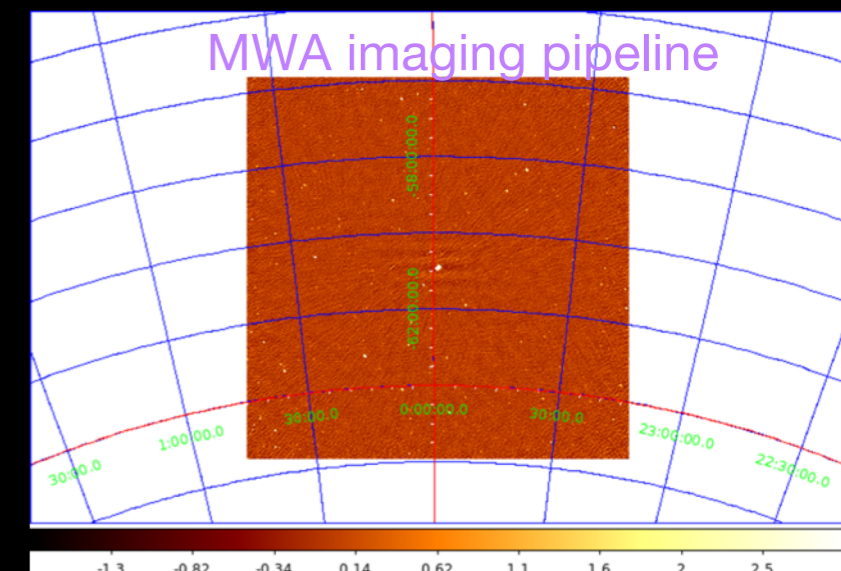
1. Data Transfer
2. Pipelines & Algorithms
3. Execution Framework
4. Global Data Management
5. Hardware/Software Co-design
6. System Integration



- 0.8->3 Gbps data transfer Perth (Pawsey) to Shanghai (SHAO);
- Automatic MWA and ASKAP data transfer;
- Automatic pipeline deployment and execution on data arrival;
- Functioning MWA and ASKAP pipelines;
- Comprehensive system monitoring;



ASKAP imaging pipeline

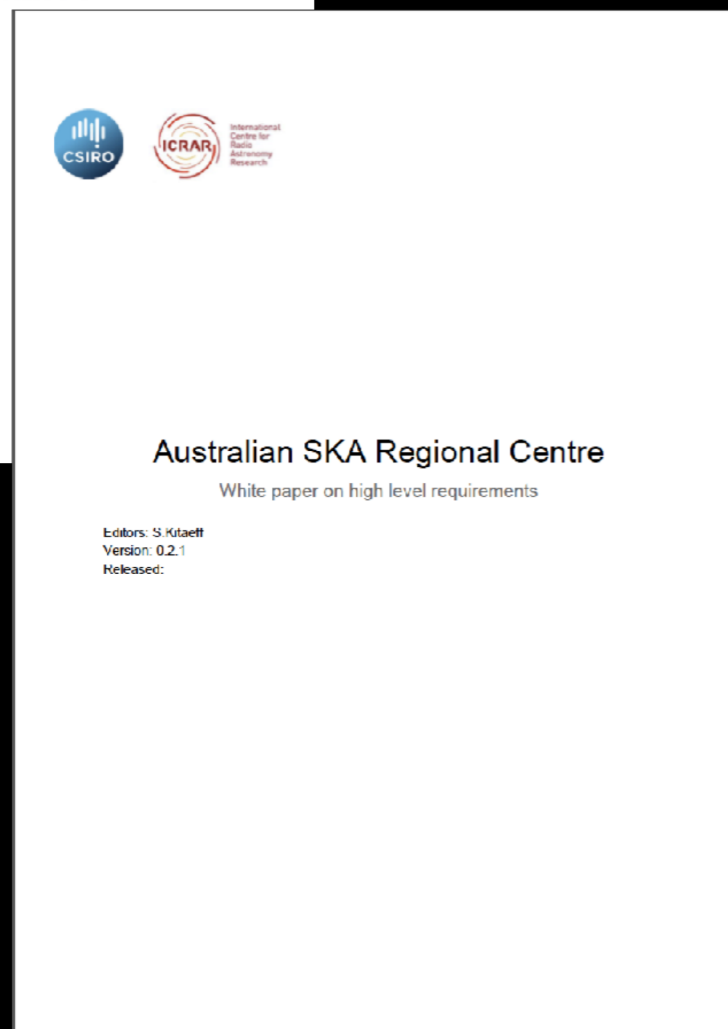


MWA imaging pipeline

1st AusSRC Workshop

November 2017, Perth

- Overviewing activities, science and technical projects that are within the scope of AusSRC.
- Developing the high level requirements and a roadmap for the AusSRC, with an initial focus on data from the Australian precursors (MWA and ASKAP).
- Discussing collaboration and common goals of the AusSRC with other SRCs around the globe, especially in the Asia-Pacific region.
- Learning from other international regional science centres around the world.





Development of Australian Industry Capability Matrix

March-April 2018 (Perth and Sydney)

Australian Government Department of Industry, Innovation and Science

SKA SOUTH AFRICA AUSTRALIA

CSIRO

International Centre for Radio Astronomy Research ICRAR

PAWSEY supercomputing centre

Australian SKA Regional Centre

Industry Information Session

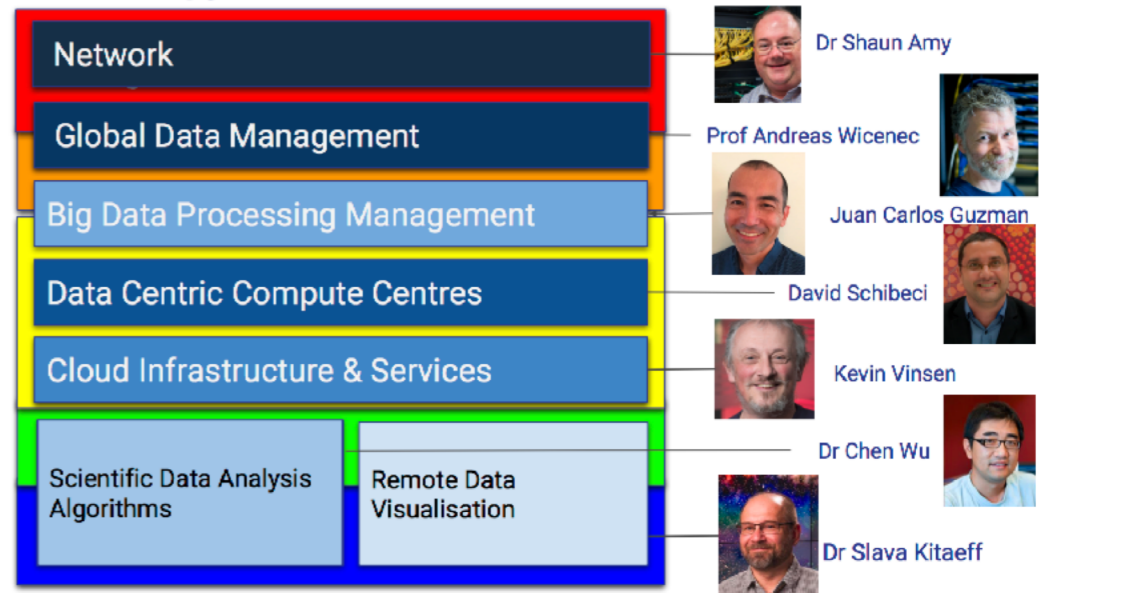
With support

Innovation Central
A collaboration led by

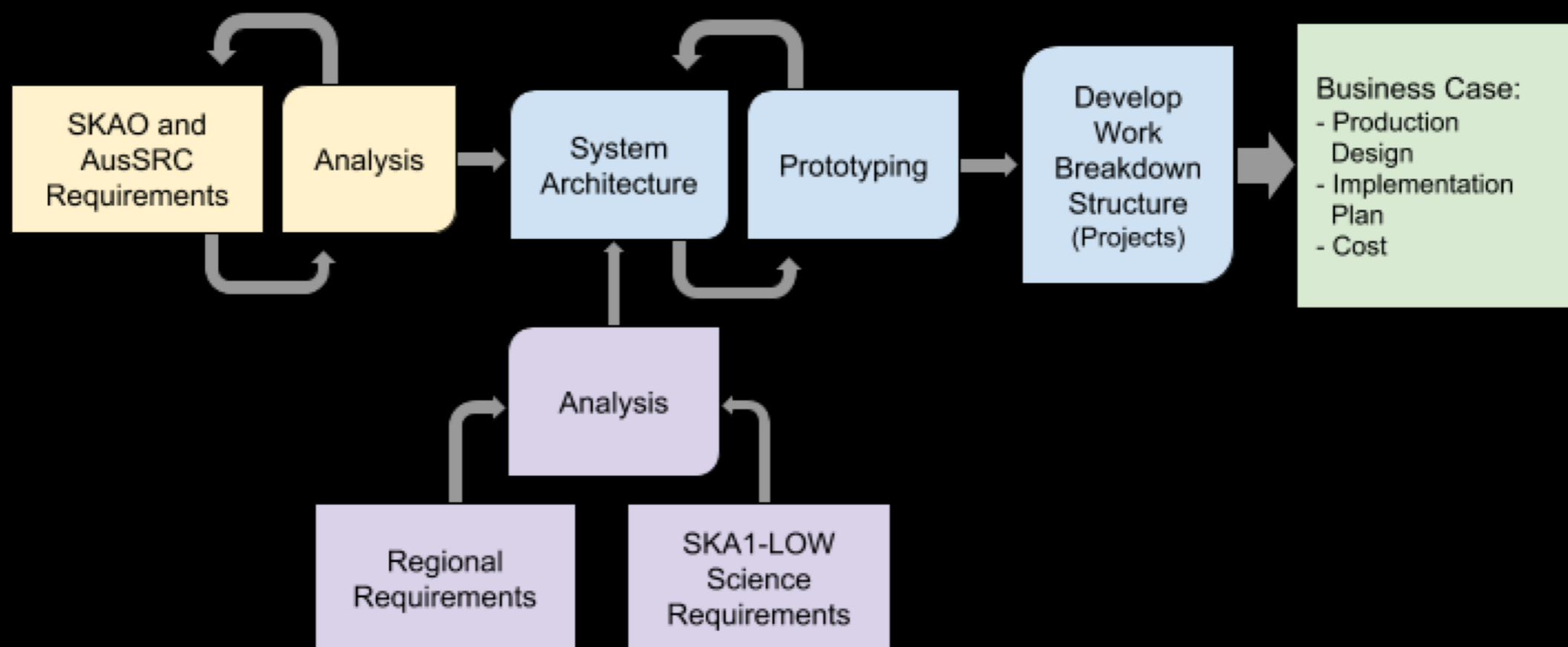
Atomic Sky

Over 100 companies (WA+NSW)

Technology Stack



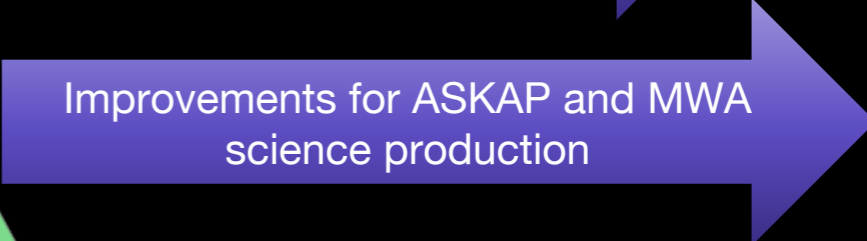
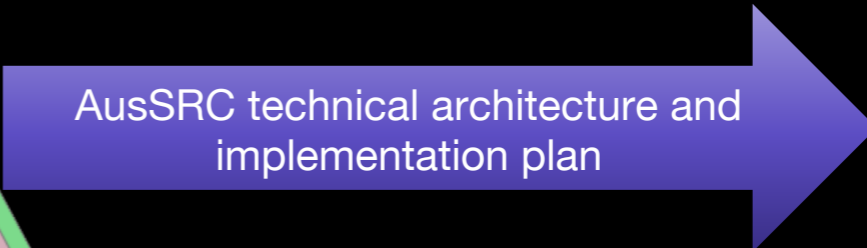
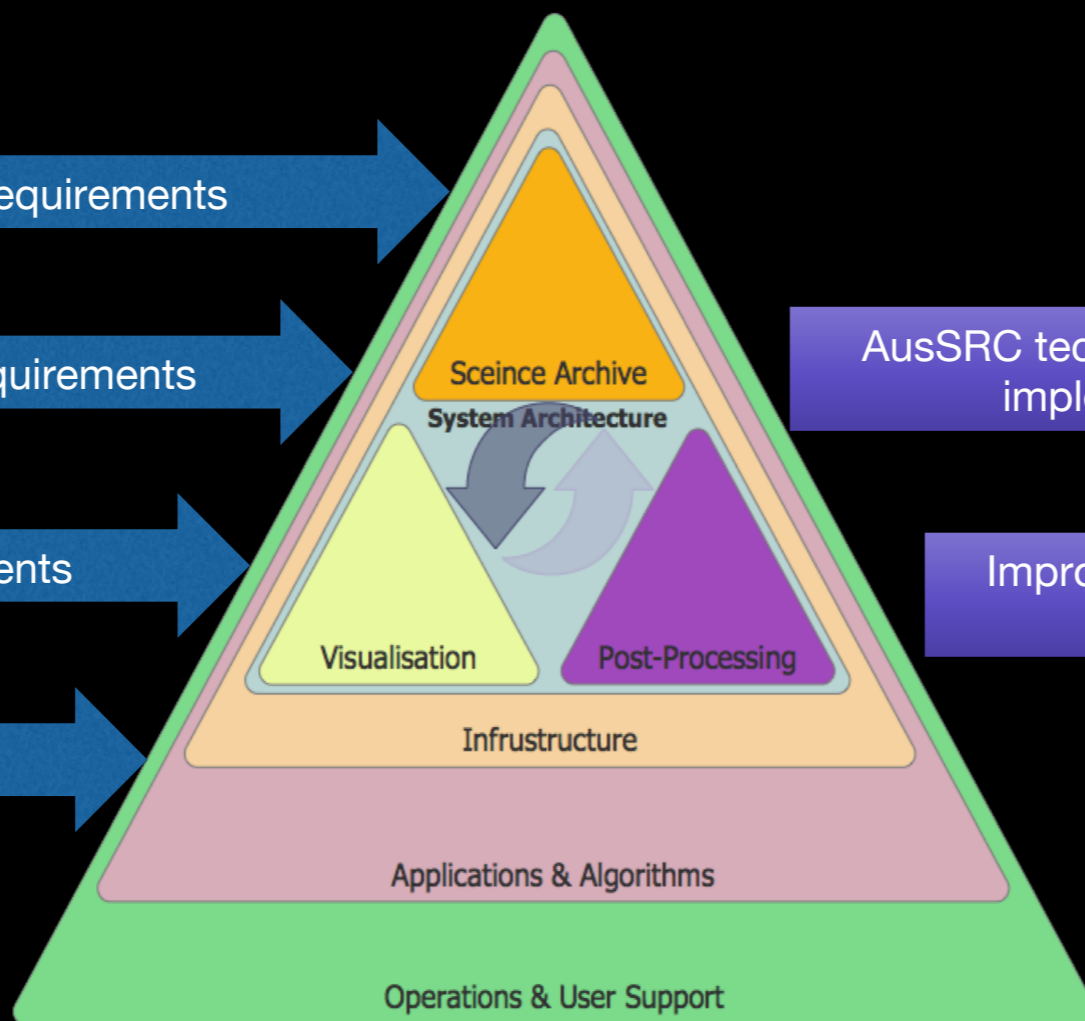
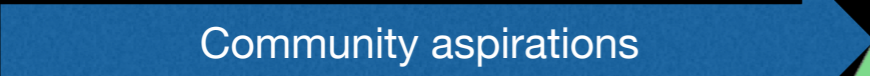
Next steps

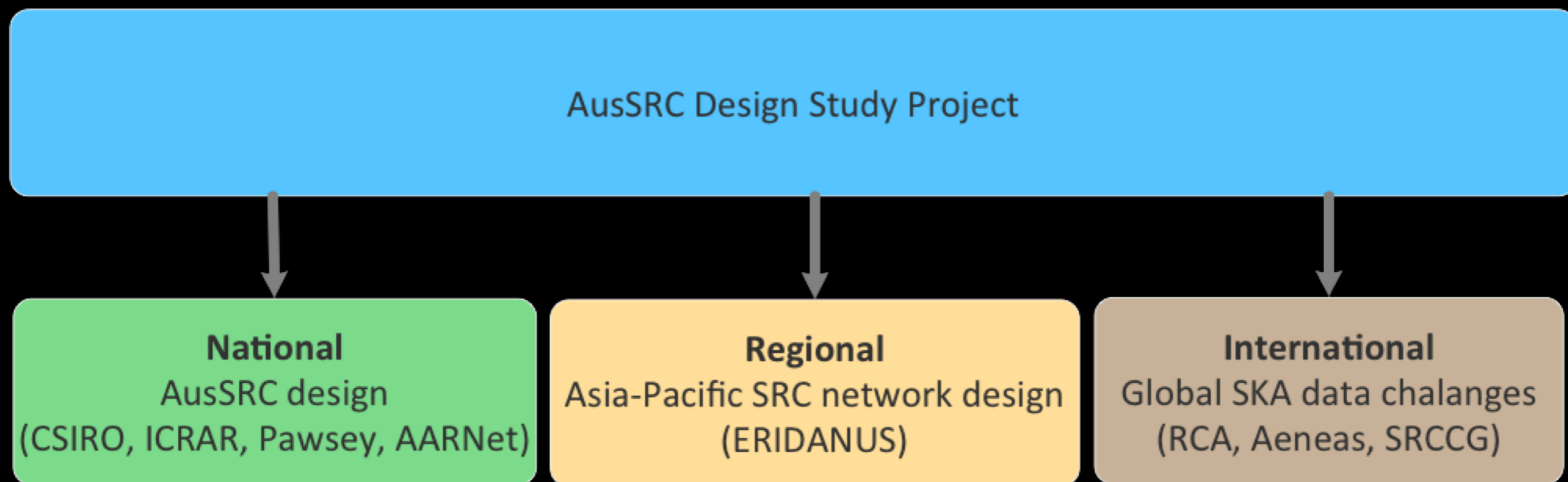




AusSRC Design Study Project (2019-2021)

\$4m project for the next 3 years
Partner institutions - CSIRO, ICRAR & Pawsey







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