

Highlights from the AusSRC Design Study Program

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SKAO REGIONAL
CENTRE
NETWORK



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**



Curtin University



pawsey



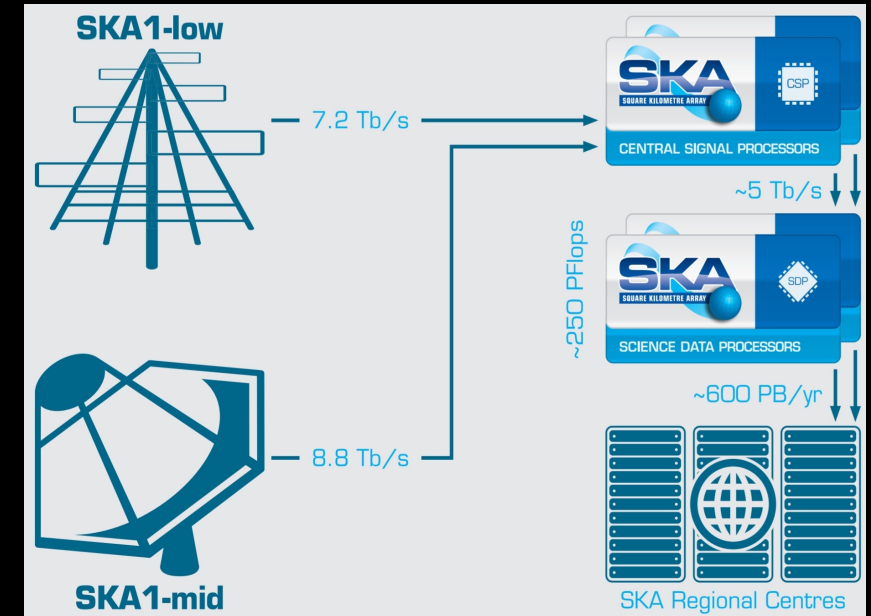
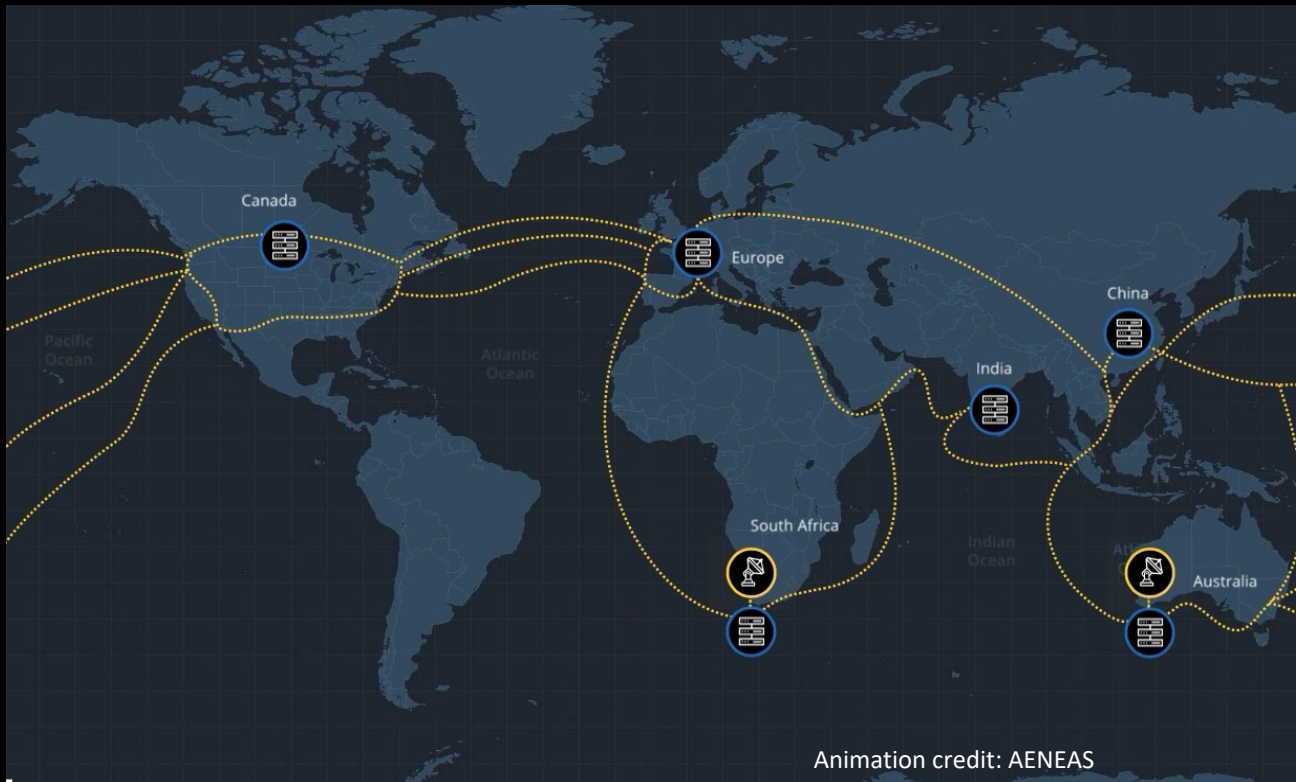
MWA
MURCHISON
WIDEFIELD
ARRAY



SKAO

SKA Regional Centres (SRCs)

regionally lead hubs of a global computing and data delivery network



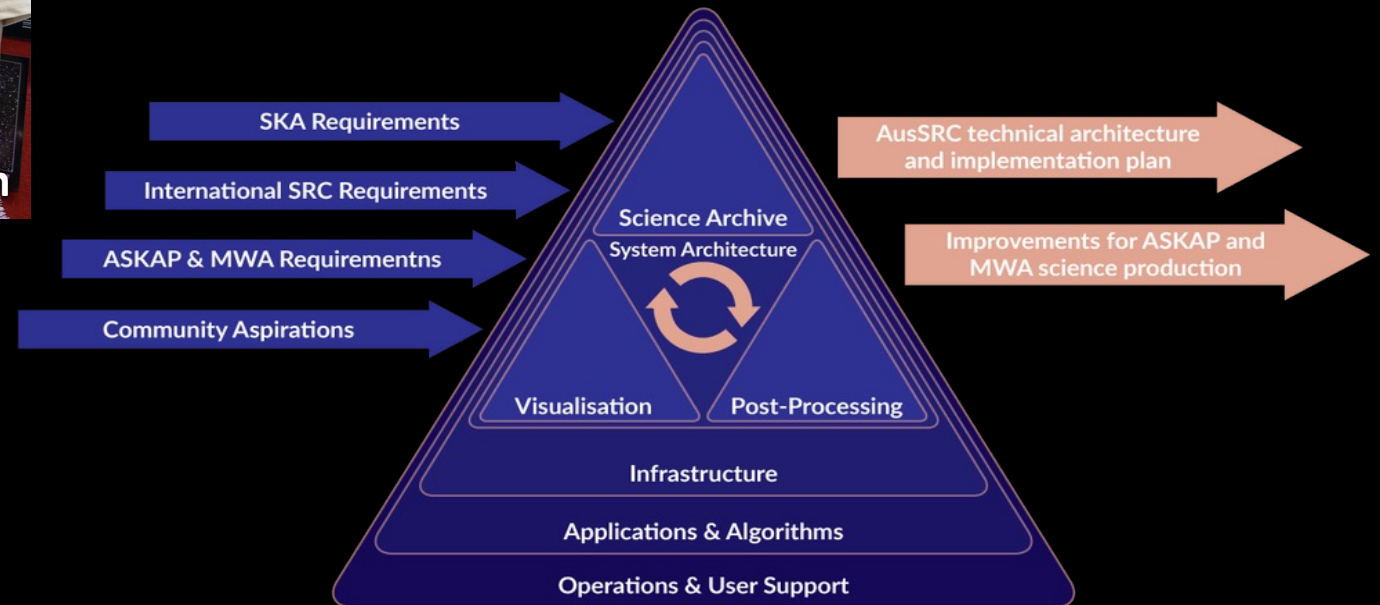
collaborative effort to provide the resources needed to fully process, distribute, archive, and utilise data from SKA telescopes

AusSRC Design Study Program (DSP)



Working with SKA precursors
(e.g. ASKAP and MWA) science
teams since Oct 2019.
DSP will conclude Dec 2022

Goals = establish an organisational structure,
develop requirements for an SRC, establish
support and improve the science outputs from a
range of projects using SKA precursors, and
secure long-term funding



AusSRC DSP projects

- ASKAP science projects
 - EMU, WALLABY → producing/facilitating science
 - FLASH, POSSUM → development phase
 - DINGO/HiVIS → algorithm testing
- MWA science projects
 - EoR → array-related development phases
 - Transients/BLINK → algorithm testing
- Technical project
 - international SRC Network prototyping



Developing technology

- improving MWA EoR science = customised processing pipeline with newly developed software for high-precision calibration and analysis

Birli

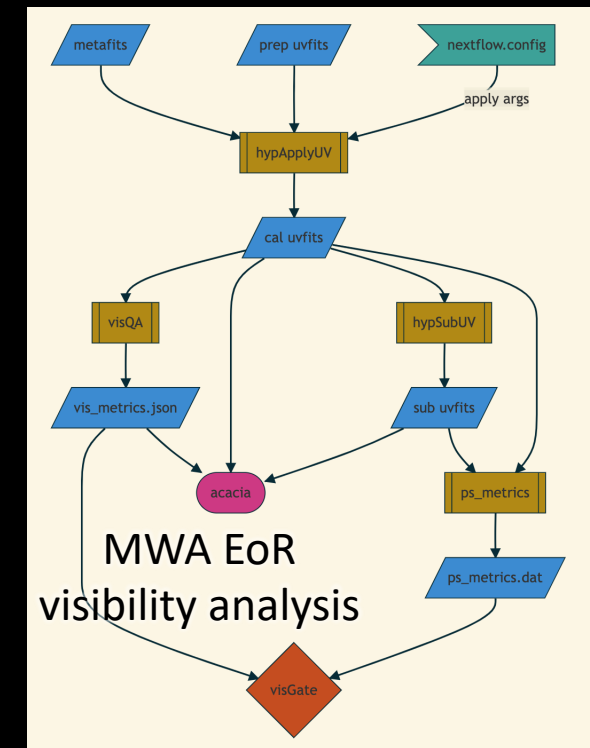
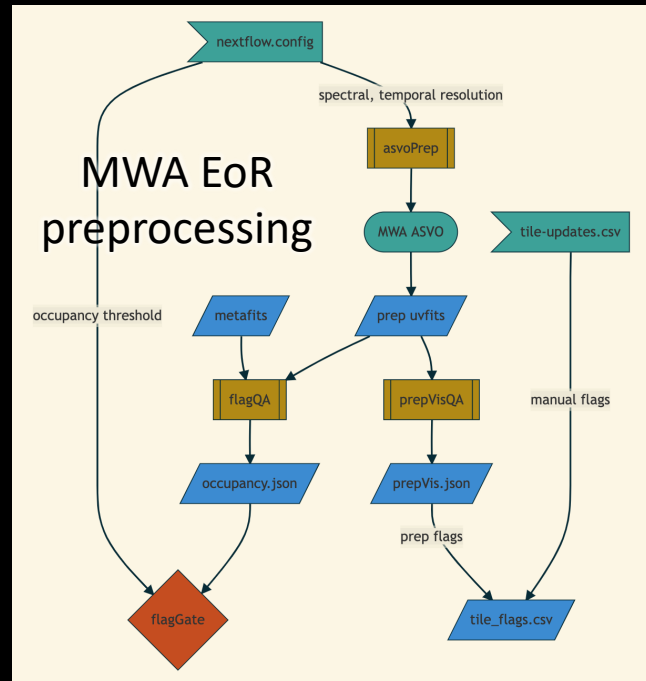


Linux Tests passing crates.io ↓ 3k docs passing codecov 96%
rs report A+ license MPL-2.0

A Rust library for common preprocessing tasks performed in the data pipeline of the Murchison Widefield Array (MWA), located on the land of the Wajarri Yamatji people in Murchison Shire, Western Australia.

Birli reads MWA correlator visibilities in the gpufits file format using [mwlib](#), which supports the existing "legacy" MWA correlator, as well as the in-development "MWAX" correlator.

Images credit: D. Null



Developing technology

- reducing visibility storage requirements = sparse data storage and processing pipeline based on gridding of ASKAP visibility data

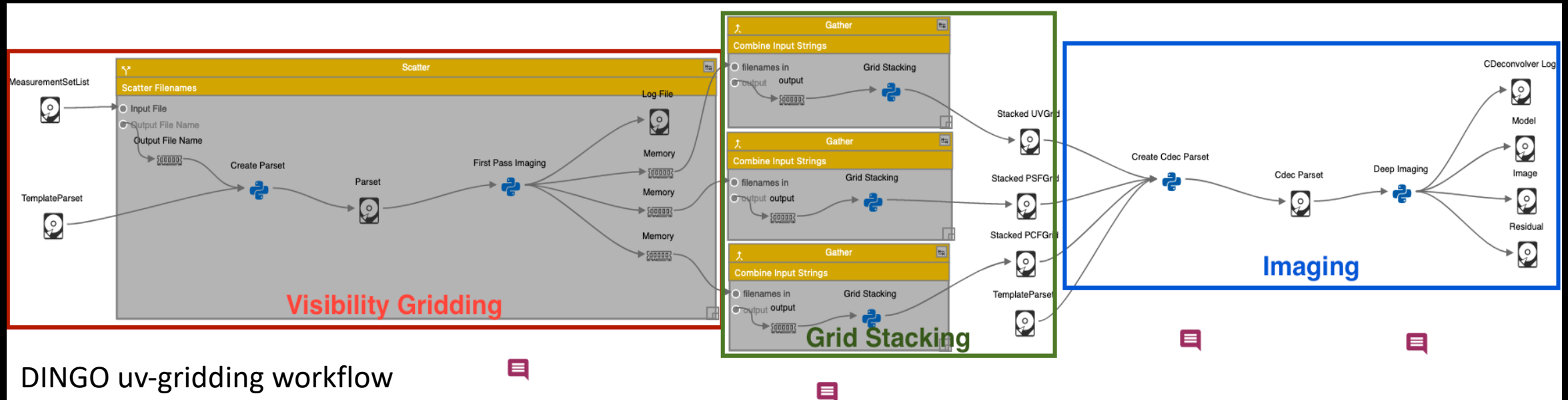


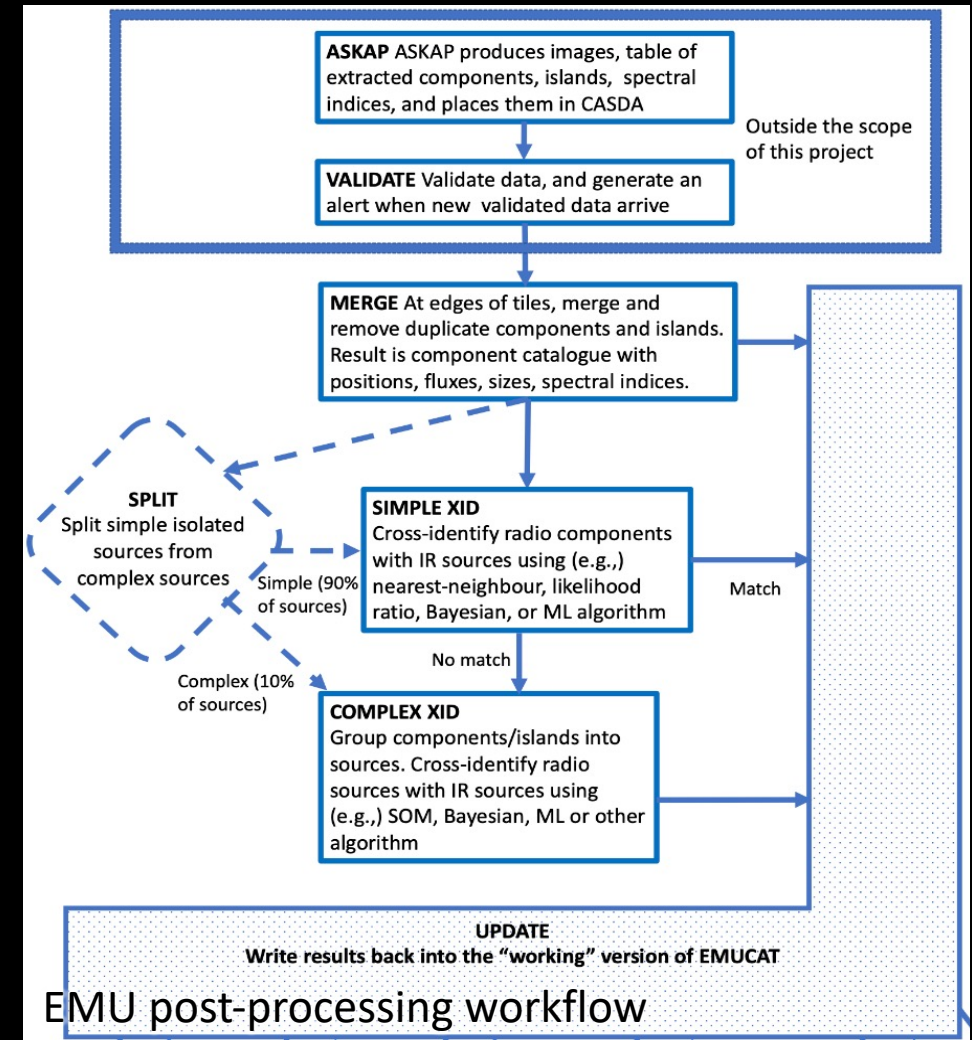
Image credit: A. Williamson

Post-processing workflows

- event-driven workflow = triggered by “science-ready data products” uploaded onto CSIRO ASKAP Science Data Archive (CASDA)



Images credit: D. Pallot



Post-processing workflows

- multi-epoch image combination using parallel processing-based mosaicking tasks
- source and/or parameter extraction using Selavy, SoFiA 2, FLASHfinder, etc.

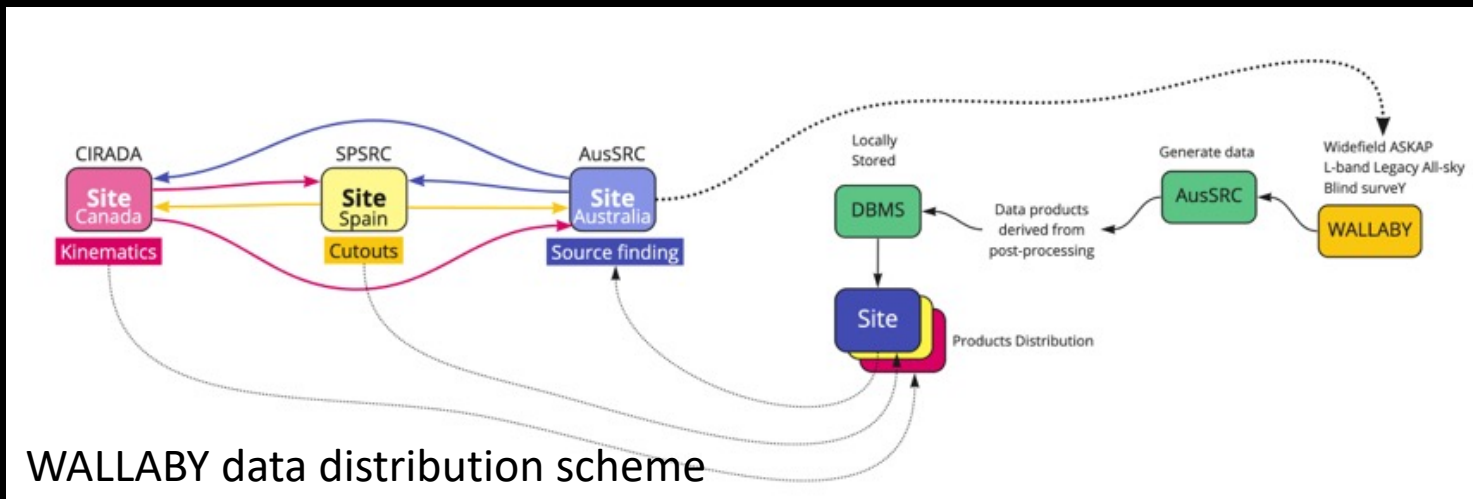


Image credit: M. Parra

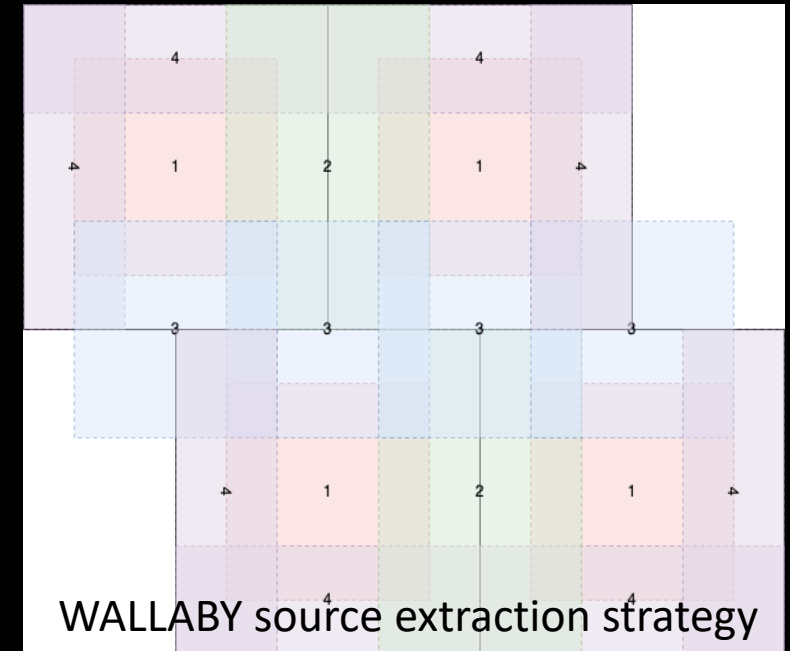


Image credit: A. Shen

Post-processing workflows

- advanced databasing and archiving
- data and database replication to external/overseas facilities

CHAD

Consolidated HI Absorption Database

Home About Admin

Position Search

Search for all objects within a specified radius of RA and DEC. Input an RA, DEC (in degrees or hh:mm:ss and dd:mm:ss), a search radius (in arcminutes), and the catalogue type. Optionally, specify extra search constraints.

RA: DEC: Search radius: Catalogue type:

☐ Select only sources brighter than mJy

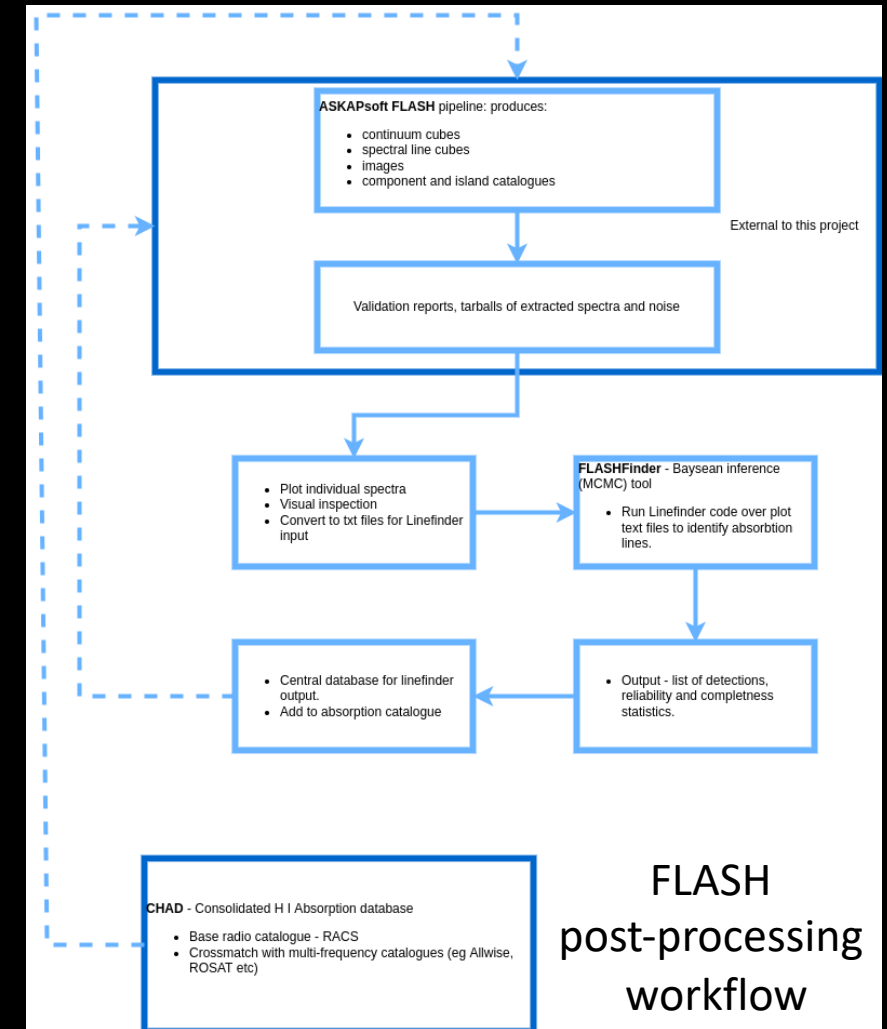
☐ Select only sources with matches in

Search by name

Search for a known object by name. Given name is resolved using Sesame.

Source Name: Catalogue type:

CHAD user portal

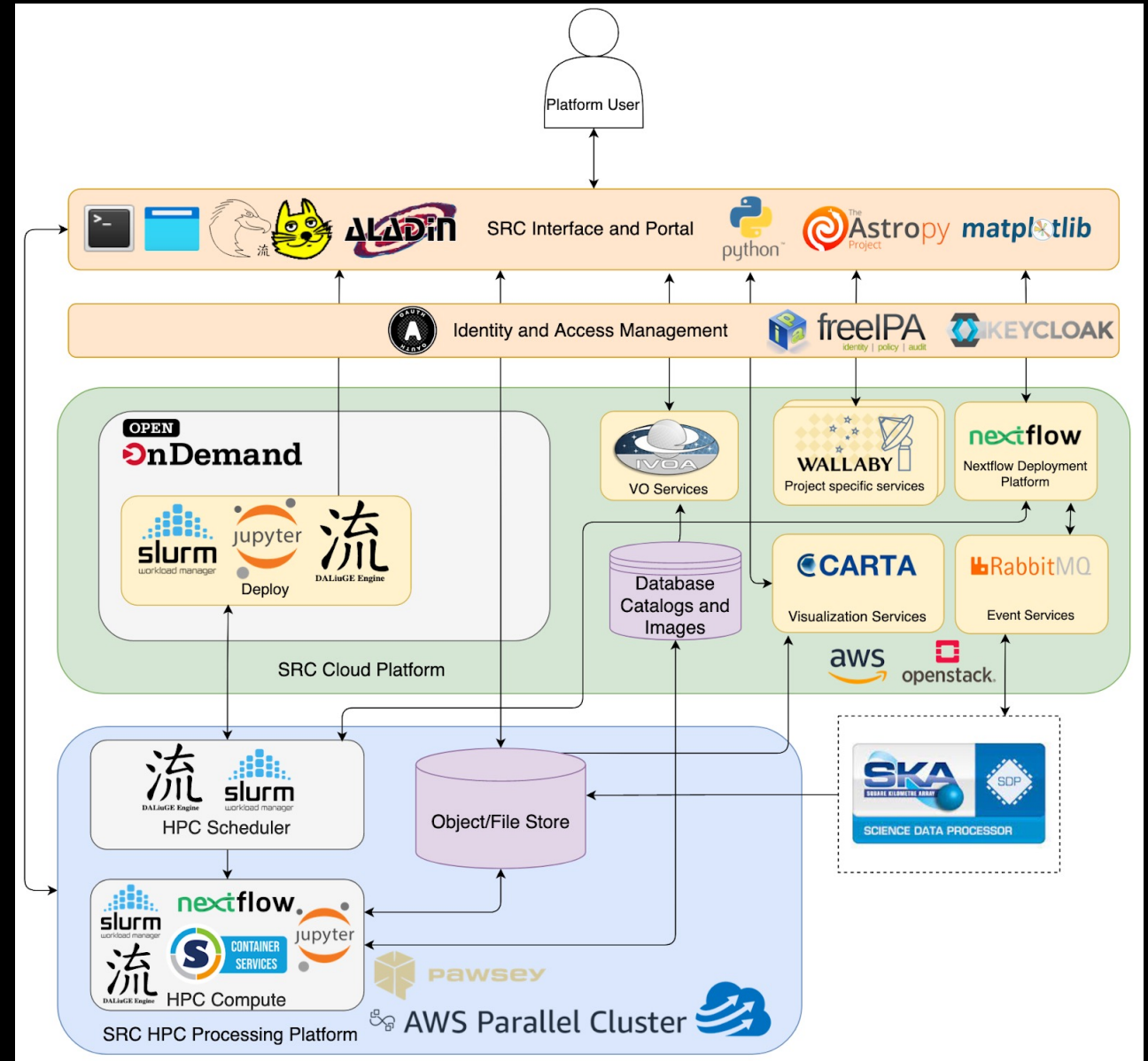


FLASH
post-processing
workflow

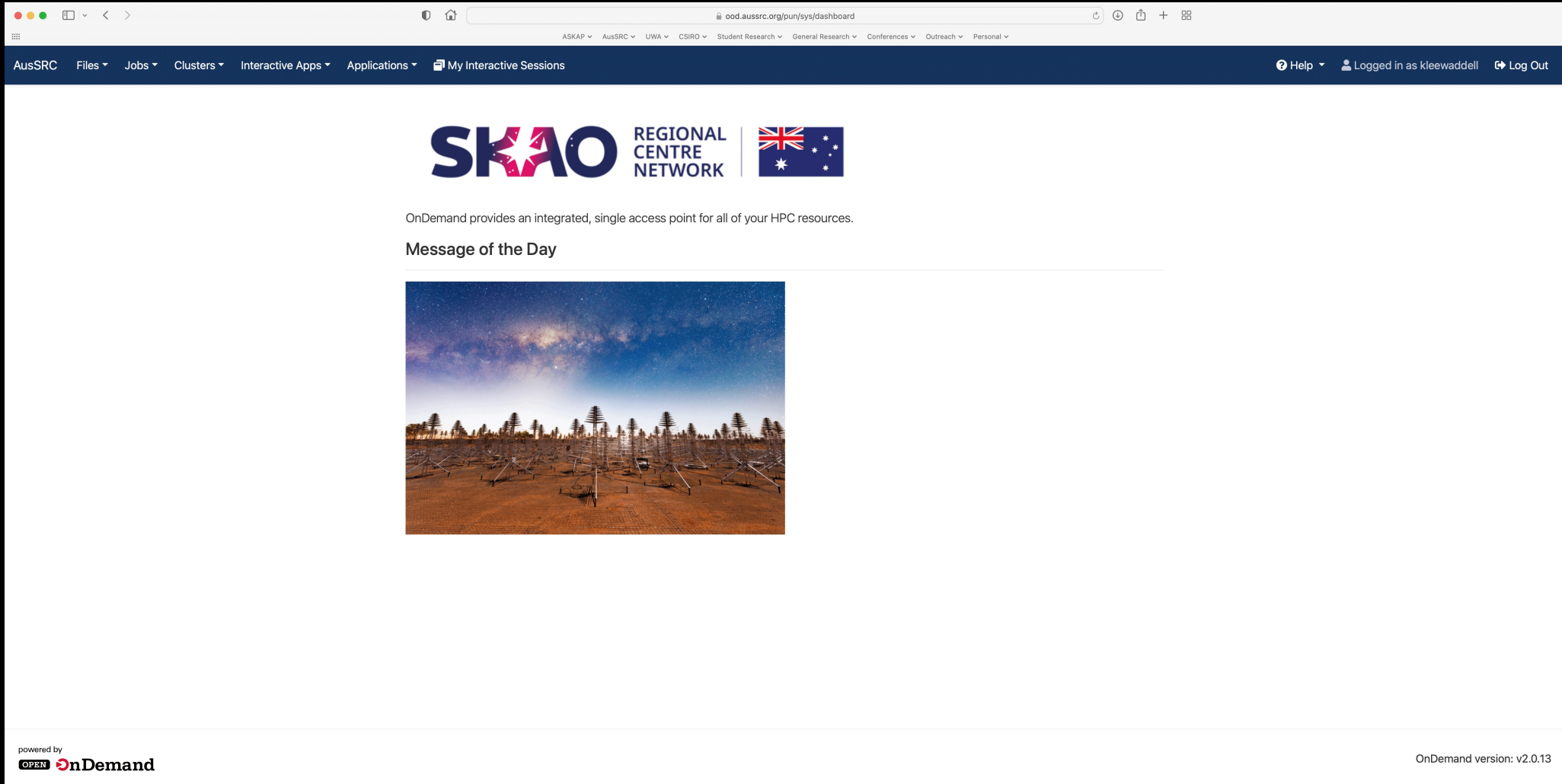
AusSRC platform

- web-based user platform combining a range of programmatic and graphical interfaces
- 3 main components
 - science portal
 - cloud services
 - HPC processing

Image credit: D. Pallot



AusSRC (preliminary) user portal



The screenshot shows a web browser window displaying the AusSRC (preliminary) user portal. The browser's address bar shows the URL `ood.aussrc.org/pun/sys/dashboard`. The page features a dark blue navigation bar at the top with a menu on the left containing links for AusSRC, Files, Jobs, Clusters, Interactive Apps, Applications, and My Interactive Sessions. On the right side of the navigation bar, there are links for Help, a user profile (Logged in as kleewaddell), and Log Out. Below the navigation bar, the main content area has a header with the SKAO REGIONAL CENTRE NETWORK logo and the Australian flag. A text block below the header states: "OnDemand provides an integrated, single access point for all of your HPC resources." This is followed by a section titled "Message of the Day" which contains a large image of a radio telescope array in a desert landscape under a starry night sky. At the bottom of the page, the footer includes the text "powered by OPEN OnDemand" on the left and "OnDemand version: v2.0.13" on the right.

ood.aussrc.org/pun/sys/dashboard

ASKAP ▾ AusSRC ▾ UWA ▾ CSIRO ▾ Student Research ▾ General Research ▾ Conferences ▾ Outreach ▾ Personal ▾

AusSRC Files ▾ Jobs ▾ Clusters ▾ Interactive Apps ▾ Applications ▾ My Interactive Sessions

Help ▾ Logged in as kleewaddell Log Out

SKAO REGIONAL CENTRE NETWORK

OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

powered by **OPEN OnDemand**

OnDemand version: v2.0.13

Thank-you!

Karen Lee-Waddell

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