

# SKAO

## SKA-Mid Science Operations

Shari Breen – Interim Head of Science Operations

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# What is Science Operations working on?

- Working towards the overall goal of facilitating the execution of an impactful science program, as efficiently as possible.
- Support commissioning
- Lead planning and execution of science verification (supported by commissioning and AIV teams) from AA2. End-to-end test of the system
- Working on key documents like the Access Rules and Regulations
- Ensure that the development of tools, operator displays, observations planning tools, SDP, SRC plans etc are aligned with what is required for full operations
- Developing the Science operations team, Mid sensitivity calculator, User support model (including the SKA Helpdesk), SKA Regional Centre (SRC) requirements and now prototyping



## Access Rules and Regulations for the SKA Observatory

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# Developing the Science Operations Team!

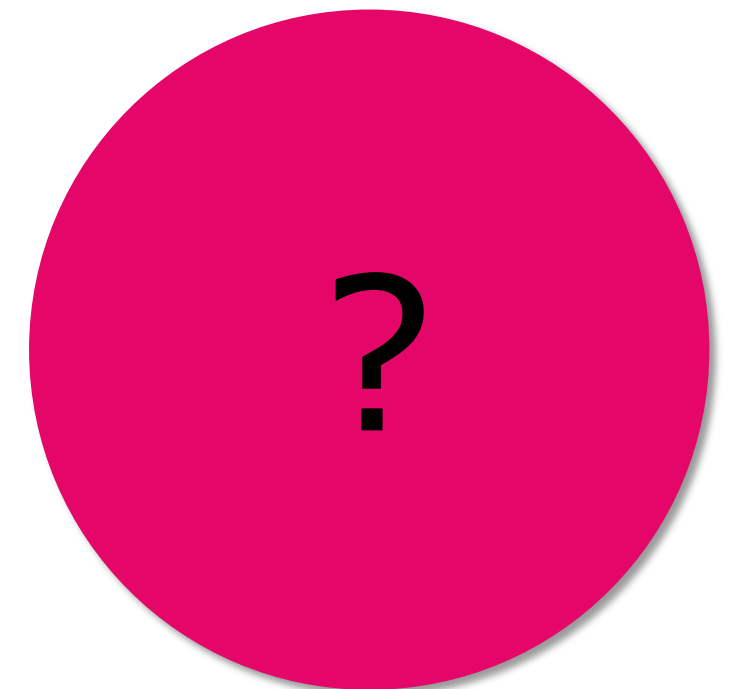
- Three Science Ops teams (Mid, Low and GHQ) will work collaboratively
  - We are growing:
  - TWO Operations Scientists joining GHQ starting June and September this year
  - Low Head of Science Operations will start at the end of June
- **Recruitments at Mid starting during 2022!**
  - SKA-Mid Head of Science Operations (SKAO)
  - SKA-Mid Telescope Operator X 2!
  - (Operations scientist to follow soon after...)



Sarrvesh Sridhar

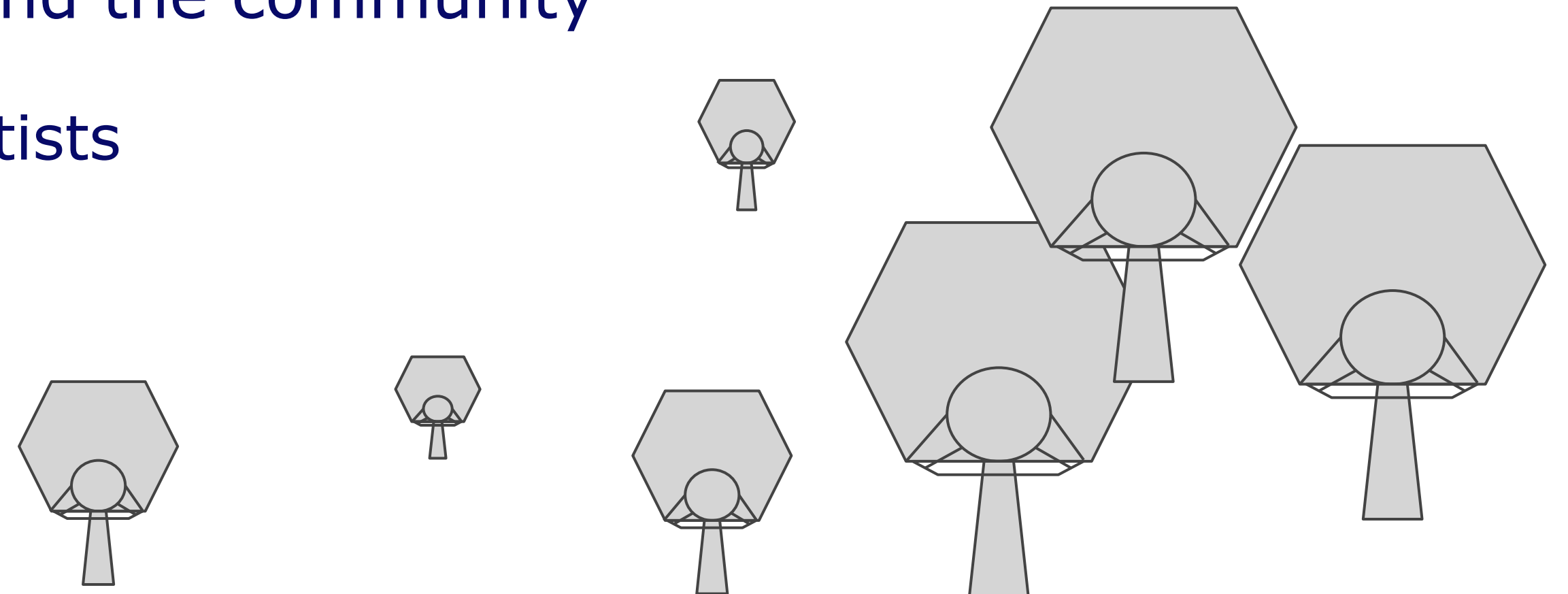
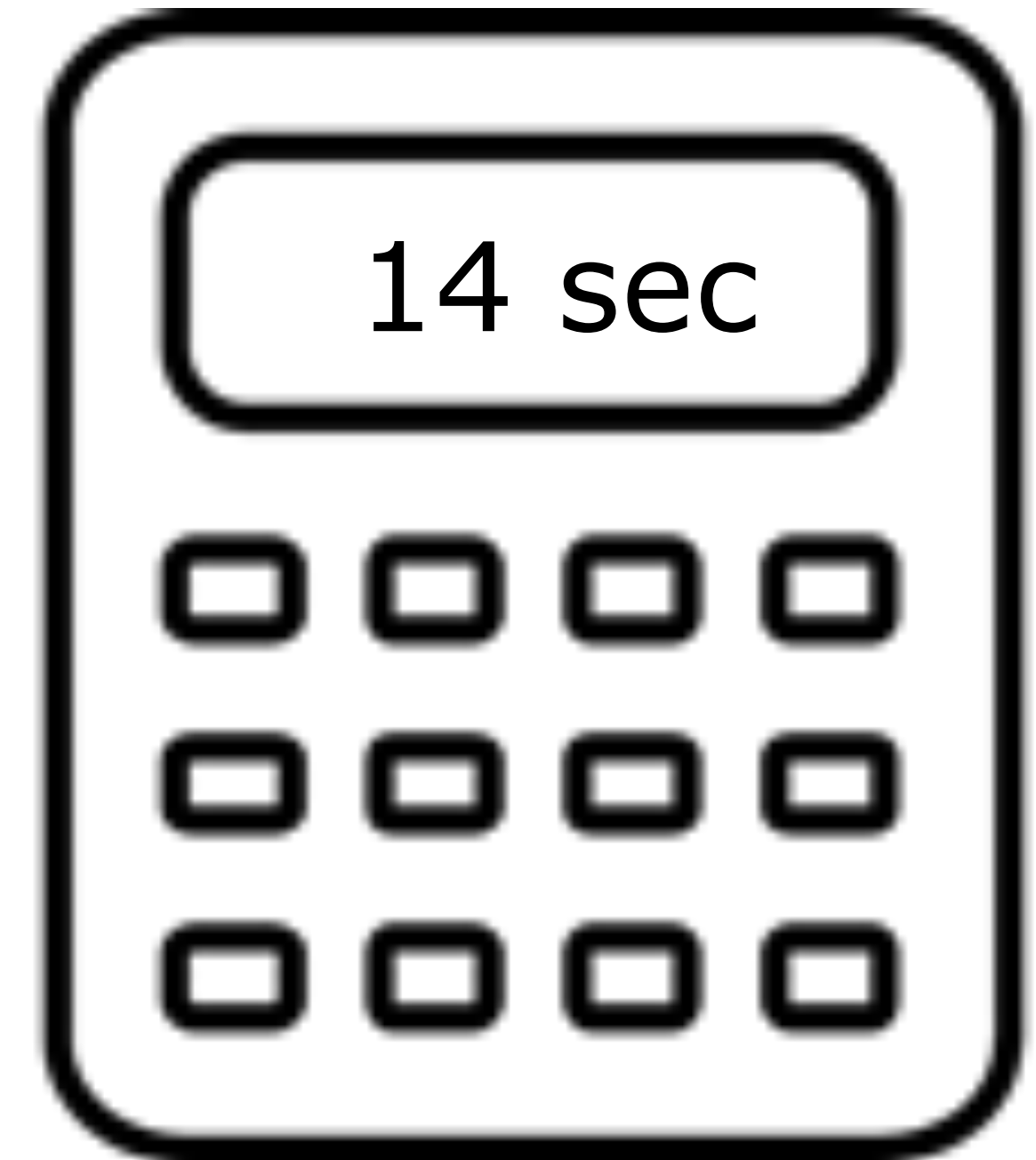


Thomas Franzen



# Mid Sensitivity Calculator development

- Needed for science planning by users and for commissioning
- Prototype development started in 2019 with secondee Thomas Mcaloone
- OMC team Buttons taken over since
- Continuum and line calculator with subarray, various weighting schemes (weighting + elevation) options built in with advanced mode allowing defaults values to be changed
- Planning to release the first version of the calculator after the end of PI15 for feedback (mid September) from staff and the community
  - Accompanied by a Mid correlator guide for scientists
  - Swap development to the Low calculator
  - After that we will add other observing modes.





# Mid Sensitivity Calculator development

Observing Band

Band 1 (0.35-1.05 GHz) Band 2 (0.95 - 1.76 GHz) **Band 5a (4.6 - 8.5 GHz)** Band 5b (8.3 - 15.4 GHz)

The frequency band that will be used

Right Ascension \*

13:25:27.60

Right Ascension of the source in sexagesimal format (hr:min:sec)

Declination \*

-43:01:09.00

Declination of the source in sexagesimal format (deg:arcmin:arcsec)

Array Configuration

**FULL**

Antenna/subarray selection

Weather PWV

(Optional) Enter Value...

The weather condition for observing, PWV (mm) between 3 and 25. Will default to 10 if left empty

Elevation

(Optional) Enter Value...

Elevation in degrees (Min: 5; Max: 90). Will default to 45 if left empty

**Continuum** Line

Central Frequency

6.55 GHz

The central frequency of the observation

Continuum Bandwidth \*

3.9 GHz

The total bandwidth of the continuum observation

Number of chunks

(Optional) Enter value...

Divide the bandwidth into a number of chunks to have a sensitivity reported for each chunk. Minimum value is 2

Spectral Resolution

13.44 kHz (615.1 m/s)

Channel spacing of continuum data

Spectral Averaging

4

Factor by which the intrinsic resolution should be averaged

Supplied

Integration Time

Select a method of supply

Image Weighting

Natural

Select an image weighting option

## Continuum Result - Integration Time

Type	Frequency	Bandwidth	Sensitivity
<i>For an input of 600.00 s and a weighting correction factor of 1.0, the results are as follows:</i>			
Continuum	6.550000 GHz	3.90 GHz	963.660 nJy
Line	6.550000 GHz	53.76 kHz	259.553 uJy
<i>The above results are for a source elevation of 45 degrees and a PVW of 10 mm</i>			

RESET

CALCULATE



# SKA User support

- SKA user support, from proposal to science results, will be provided by the SKAO and the SRC Network
- Collaborative planning work is ongoing
- SKA Helpdesk will be THE place for users to get help
  - Closely follow the ALMA model of a knowledgebase and a ticketing system
  - Staffed by virtual departments made up of SKAO and SRC staff
  - SKAO Helpdesk manager recruitment planned for early 2026
- Complemented by extensive documentation set, Friends of projects, community training etc

## SRCSC WG2 User Support Discussion Document

Authors: Shari Breen, Karen Lee-Waddell, Michael Lindqvist, Javier Moldon, Vanessa Moss, Isabella Prandoni

Date: April 2022



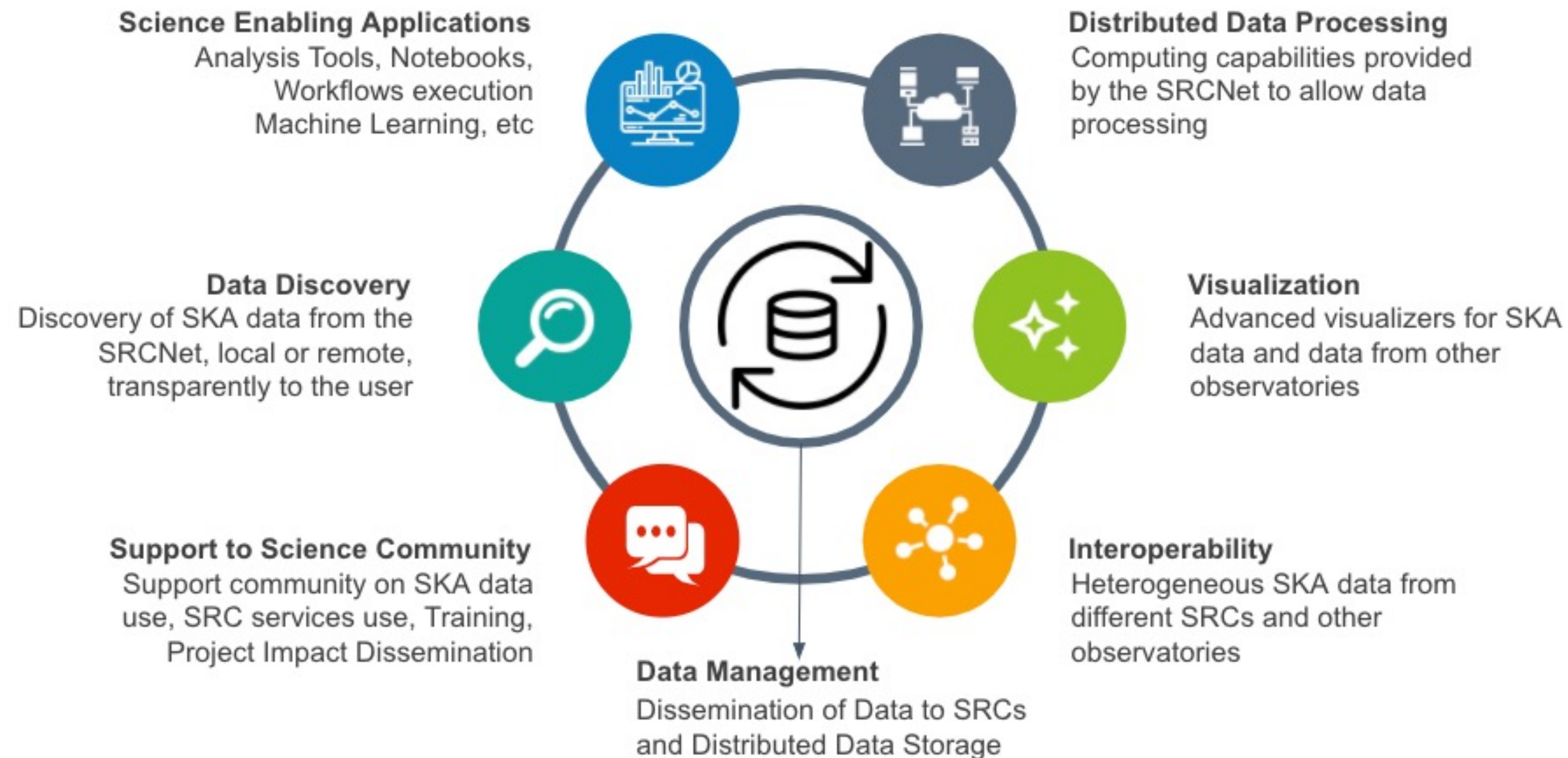
### SKAO HELPDESK CONCEPT

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Name	Designation	Affiliation	Signature	
Authored by:				
Shari Breen	Interim Head of Science Operations	SKAO	<i>Shari Breen</i>	
			Date:	2021-03-16
Owned by:				
Antonio Chrysostomou	Deputy Director of Operations	SKAO	<i>[Signature]</i>	
			Date:	2021-03-16
Approved by:				
Lewis Ball	Director of Operations	SKAO	<i>Lewis T Ball</i>	
			Date:	2021-03-16
Released by:				
Lewis Ball	Director of Operations	SKAO	<i>Lewis T Ball</i>	
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# SKA Regional Centre (SRC) Network



- Critical for the delivery of SKA science: providing provision for delivering SKA data products to scientists, storing SKA data for future use, computer facilities to undertake scientific analysis and local user support





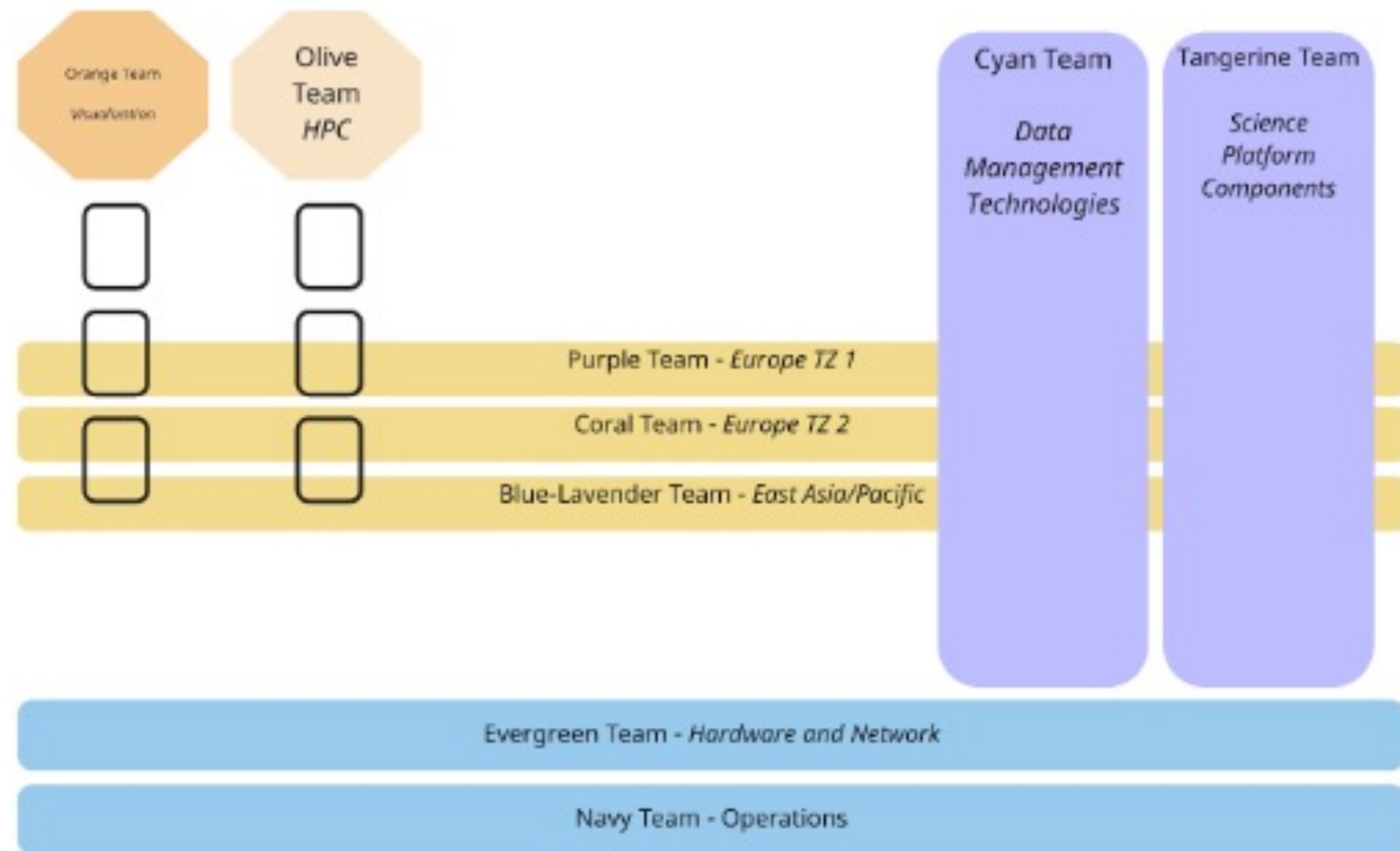
# SKA Regional Centre (SRC) Network - how will it work?

- SRCs will collectively meet the needs of the global community of SKA users
  - Anticipate SRCs to have different focuses/strengths
- Collaborative network, to be based on Memoranda of Understanding and an accreditation framework
  - Each SRC will pledge resources into a global pool to support the Network
- Operated through the SRC Operations Group (SOG), led by SKAO Ops with representation from each SRC





# SKA Regional Centre (SRC) Network – where are we now?



- Work by a series of 7 SRC Steering Committee working groups to define requirements largely concluded
- Now at a prototyping phase
  - SRC ART, Rosie Bolton is the lead Product manager, Jesus Salgado is the SRC Architect.
  - High level roadmap being defined now
  - First PI Planning Mid June



# What's ahead for the rest of 2022?

- Development of the broader science operations team, defining responsibilities, establishing collaborative work culture, recruiting!
- A year in the life of Operations
  - What does the schedule look like? What state will the telescope be in? Slewing, scanning, tracking? What does this mean for our power consumption? SDP?
- Time Allocation Policy
- Sensitivity calculators
- Planning the details of Science Operations involvement in commissioning and defining our Science Verification plan
- Leading/advising/consulting as appropriate on the development of tools, operator displays, SDP workflows, SRC development.





Thank you!

Shari.Breen@skao.int

*We recognise and acknowledge the  
Indigenous peoples and cultures that have  
traditionally lived on the lands on which  
our facilities are located.*

**SKAO**

[www.skao.int](http://www.skao.int)