



Science and
Technology
Facilities Council

SKA(@RAL) Status Update

James Walder

With inputs from many others

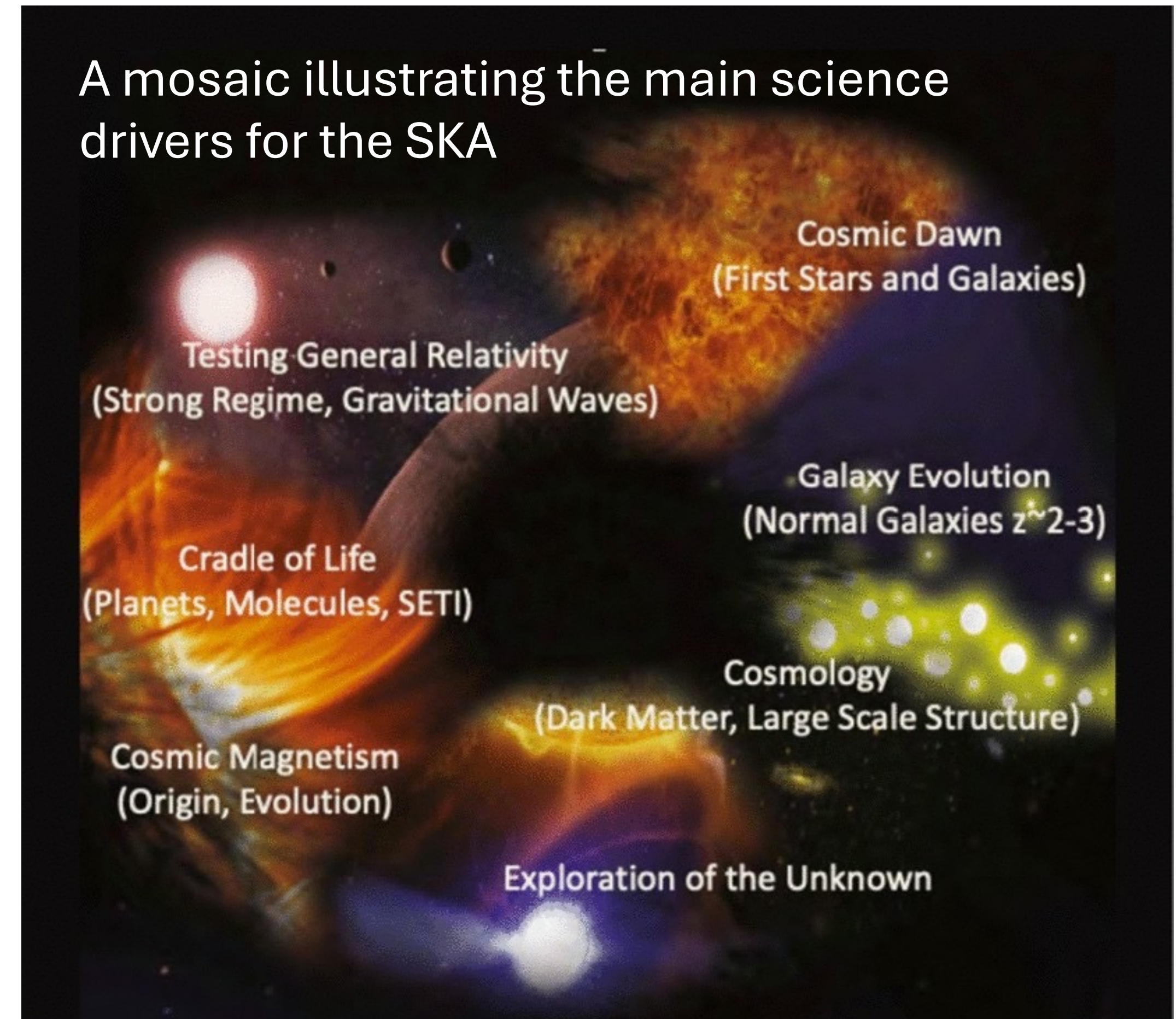
15/8/24

Square Kilometer Array: Transforming radio astronomy

The Square Kilometer Array (SKA) Observatory (SKAO) is a next-generation radio astronomy facility which will cover the frequency range from 50 MHz to 15 GHz.

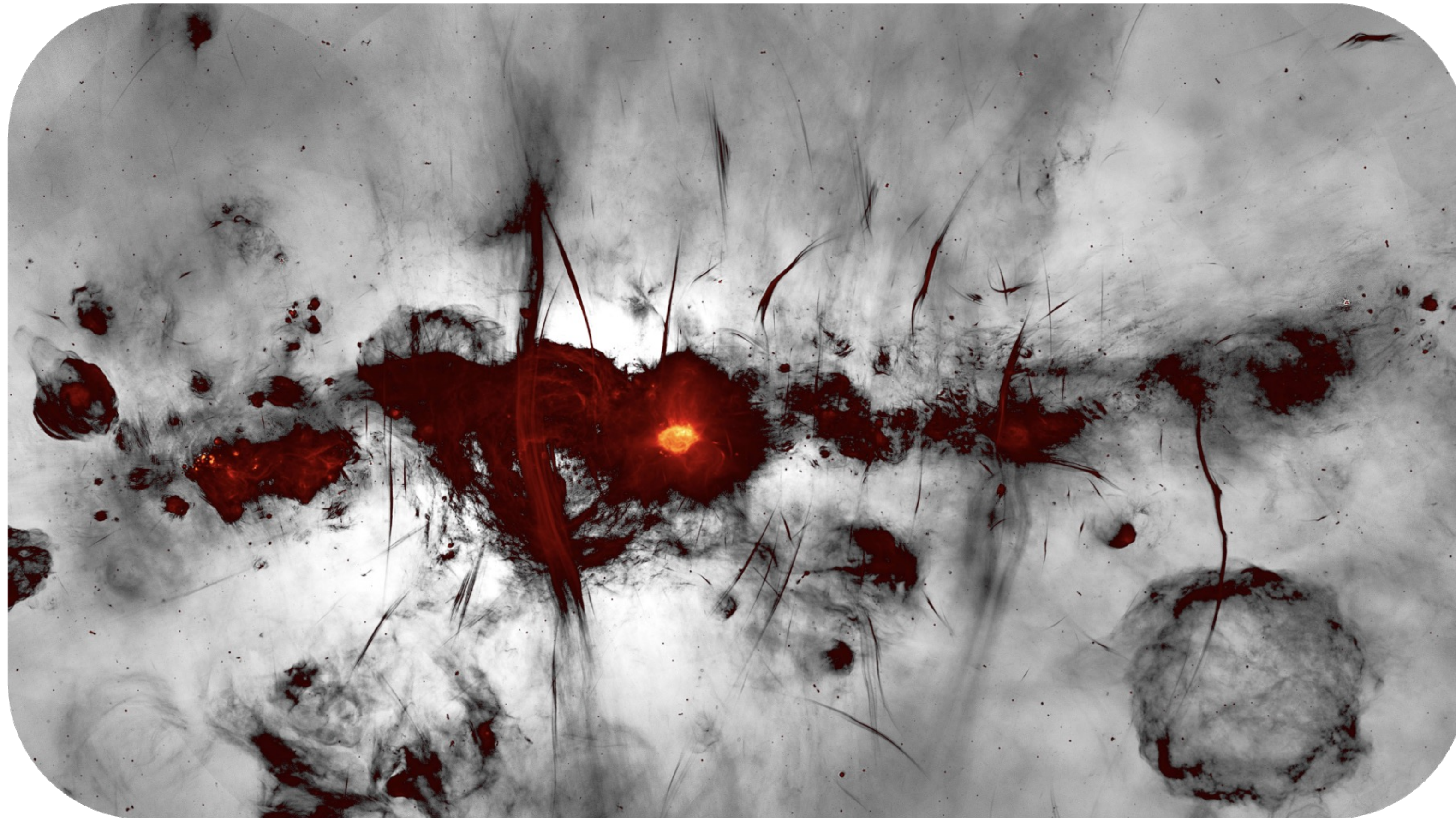


Composite image of the SKA telescopes, blending real hardware already on site with artist's impressions. credit: SKA Observatory



Credit: SKA Observatory

We will deliver data products!

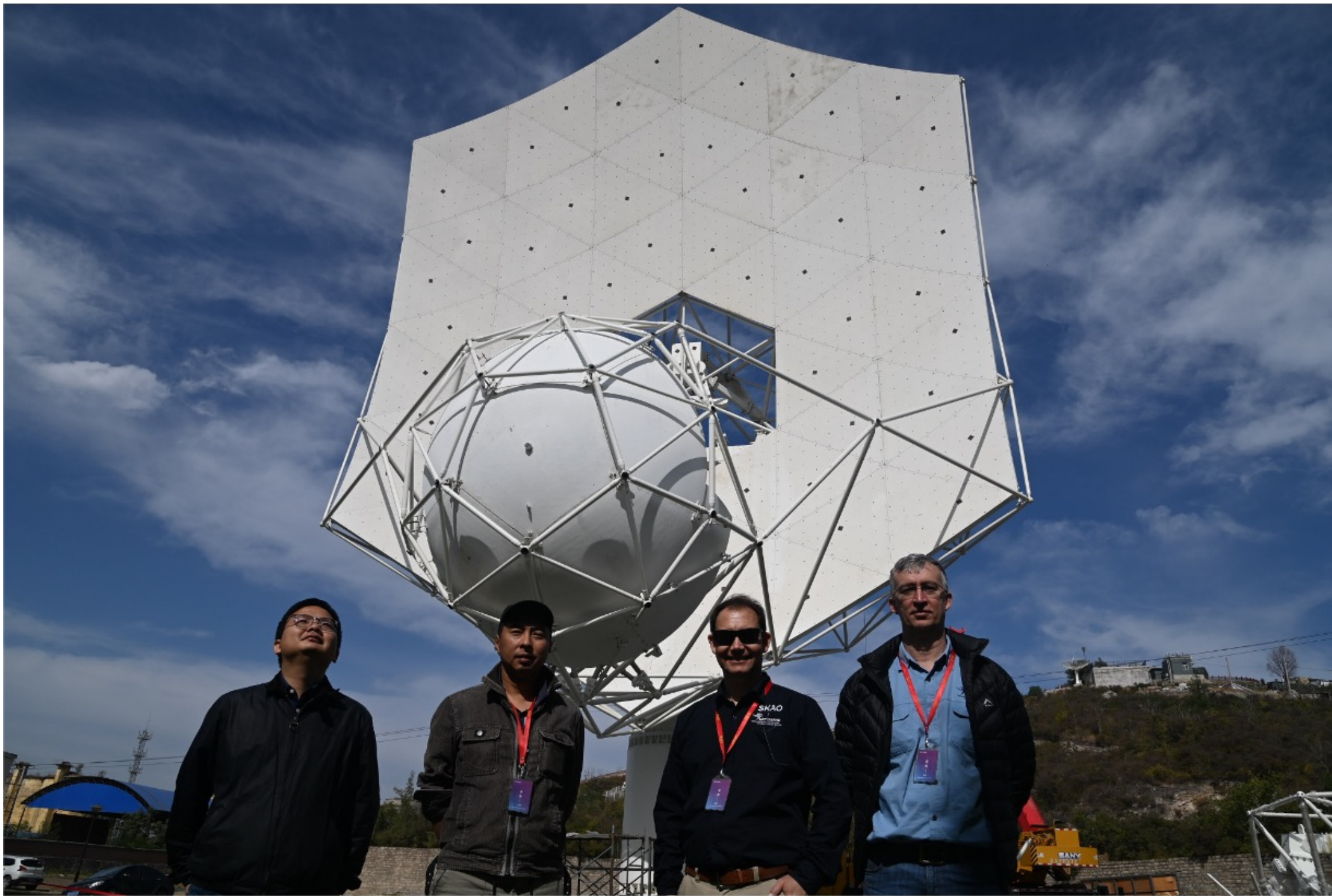
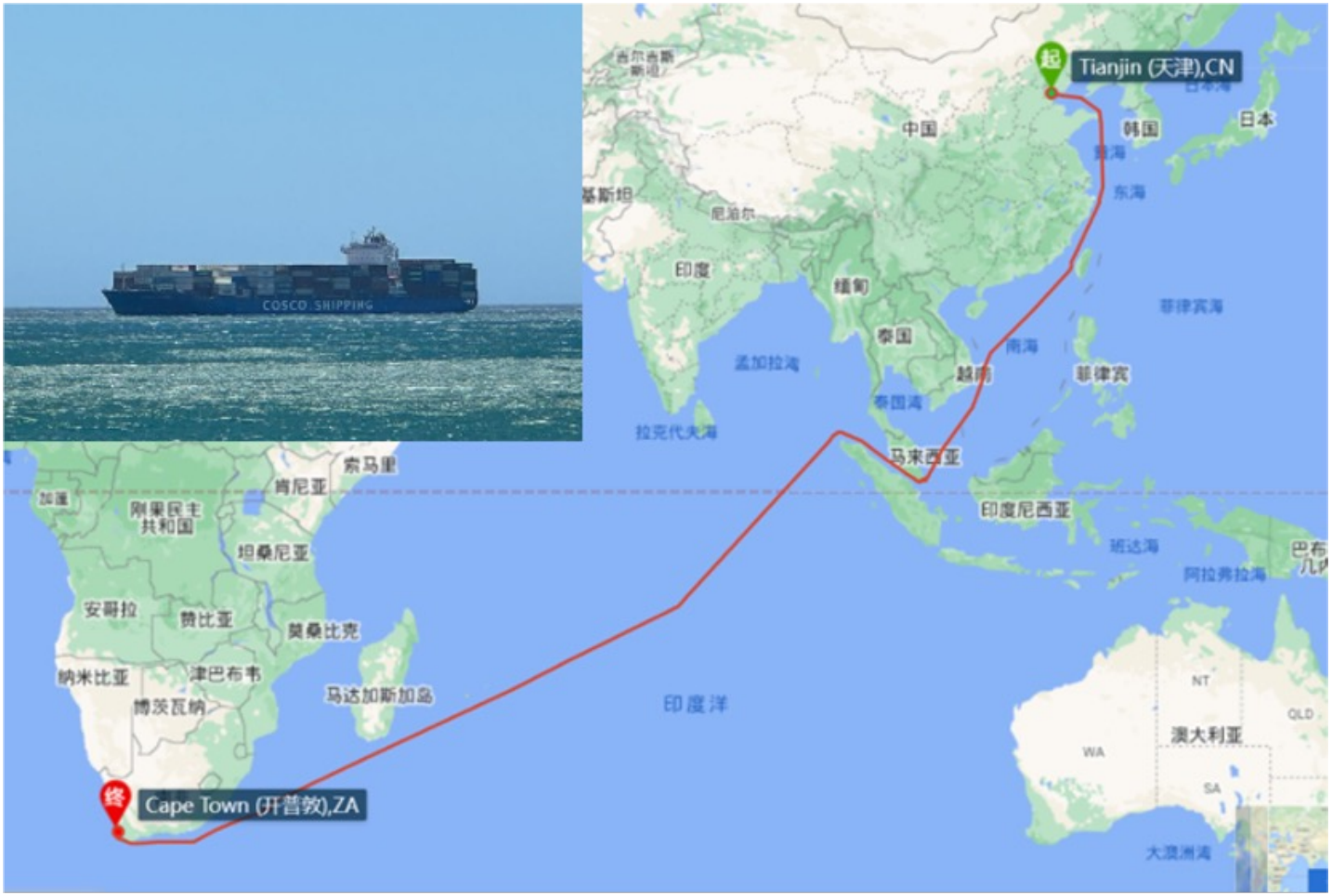


- Our data are BIG, expecting to deliver ~ 700 PB/year of *data products*
- Don't need to be a radio expert to access the SKA!
- Transformational science increasingly relies on multiwavelength data, everyone with great science is welcome :)

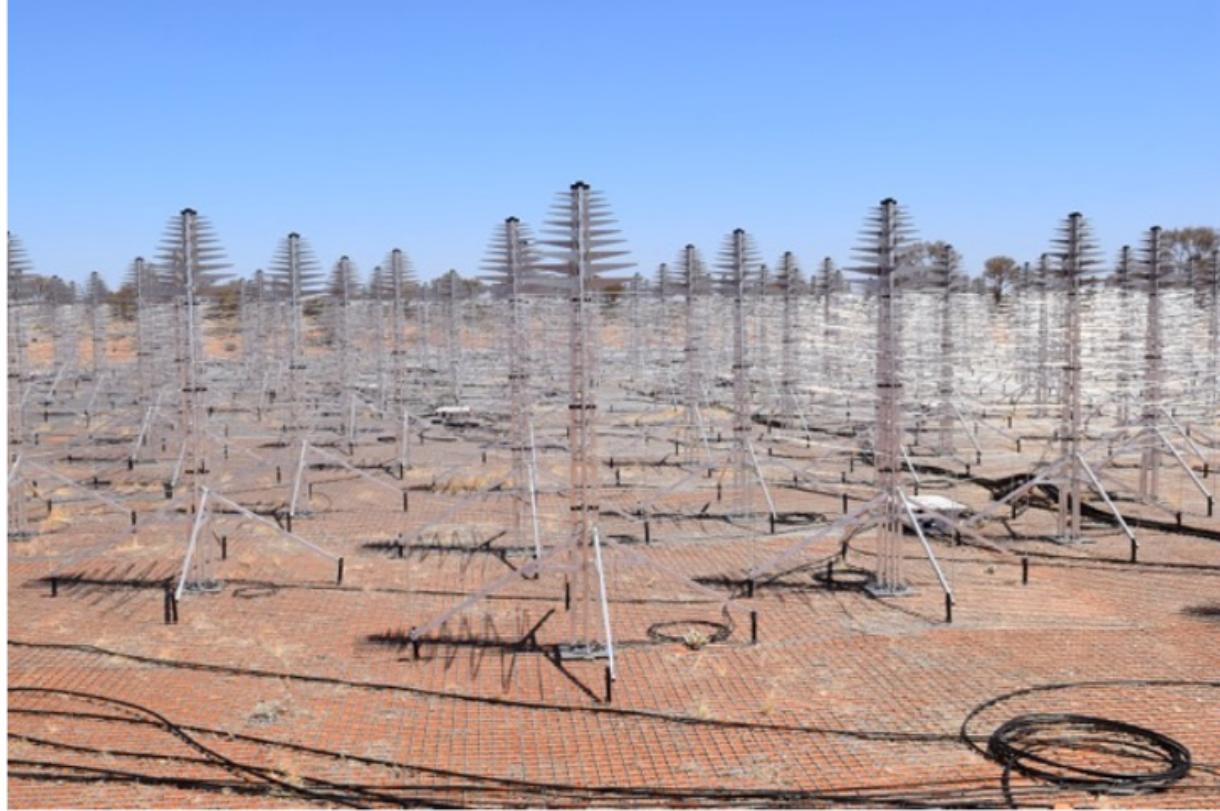
Credit: I. Heywood, SARA0



Construction steaming ahead! - Mid



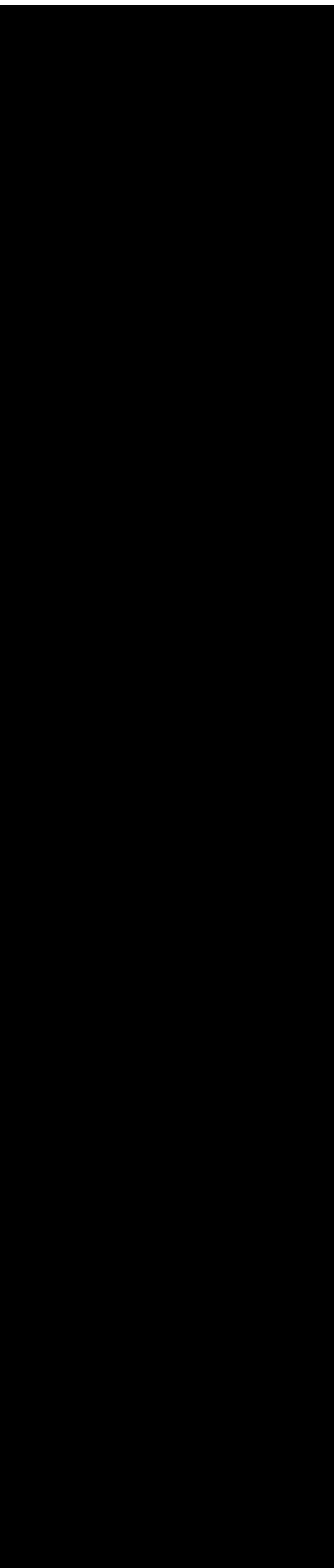
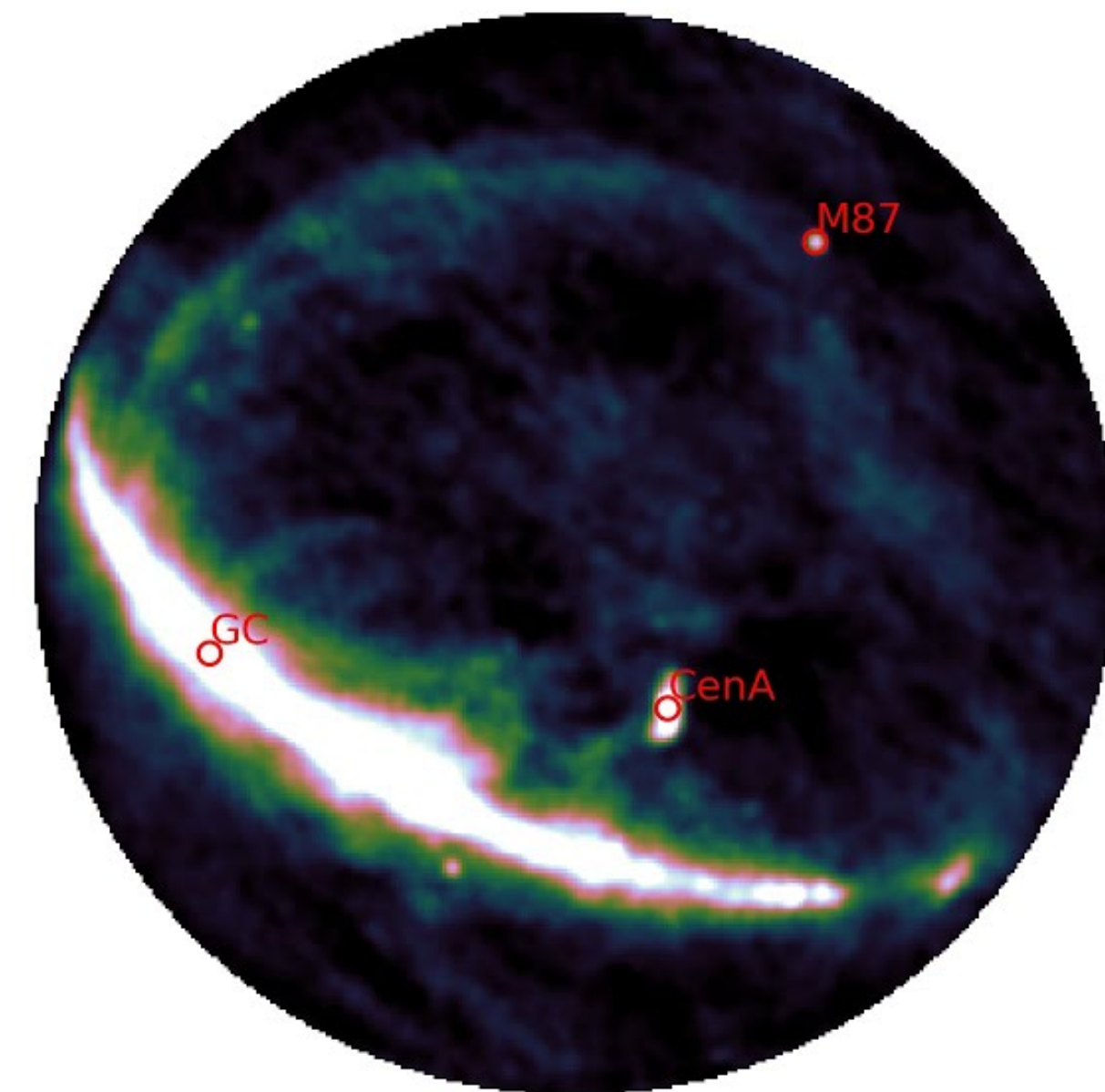
Construction steaming ahead! - Low



First image released from one SKA-Low station

- This is the first image and video from observations using **one complete SKA-Low station**, known as S-8, produced only **18 months after the start of construction** activities on site, and five months after the first antenna was installed.
- The completion of a station means not only assembling and installing the **256 antennas**, but also integrating them with all the computing systems behind them.
- The video shows a **24-hour observation**, with the Milky Way rising and passing overhead during the night time hours.

Some other bright radio sources are marked, including the galaxies Centaurus A and M87, and the Sun is also visible during the day.



Construction Strategy

- **Target:** build the SKA Baseline Design (197 Mid dishes; 512 Low stations: AA4)
- Not all funding yet secured, therefore following Staged Delivery Plan (AA*)
- Develop the earliest possible working demonstration of the architecture and supply chain (AA0.5).
- Then maintain a continuously working and expanding facility that demonstrates the full performance capabilities of the SKA Design.

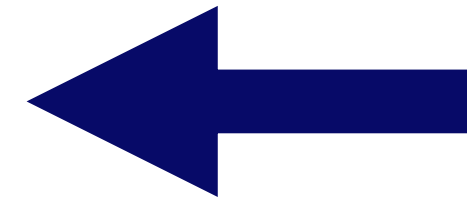
Milestone event (earliest)		SKA-Mid (end date)	SKA-Low (end date)
AA0.5	4 dishes 6 stations	2025 May	2024 Nov
AA1	8 dishes 18 stations	2026 Apr	2025 Nov
AA2	64 dishes 64 stations	2027 Mar	2026 Oct
AA*	144 dishes 307 stations	2027 Dec	2028 Jan
Operations Readiness Review		2028 Apr	2028 Apr
AA4	197 dishes 512 stations	TBD	TBD

First data release to the community expected in 2026/27 (for science verification)



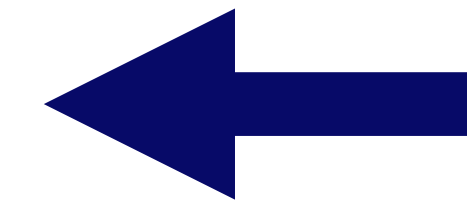
What does this mean in terms of Operations?

Milestone event (earliest)		SKA-Mid (end date)	SKA-Low (end date)
AA0.5	4 dishes 6 stations	2025 May	2024 Nov
AA1	8 dishes 18 stations	2026 Apr	2025 Nov
AA2	64 dishes 64 stations	2027 Mar	2026 Oct
AA*	144 dishes 307 stations	2027 Dec	2028 Jan
Operations Readiness Review		2028 Apr	2028 Apr
AA4	197 dishes 512 stations	TBD	TBD



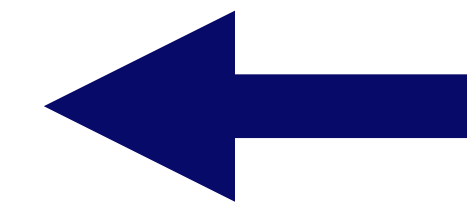
Pre science Verification

- Commissioning (+ Assembly, Integration and Verification) primary activity
- SRCs not needed to support AA0.5/AA1 commissioning
- Opportunity for testing (data, transfer, access, pipelines)!



Science Verification

- Data immediately public
- Full dress rehearsal!
- Some SRCNet resources for analysis would be an advantage
- Observed as trickle but also in dedicated blocks
- (+ Commissioning etc ongoing)

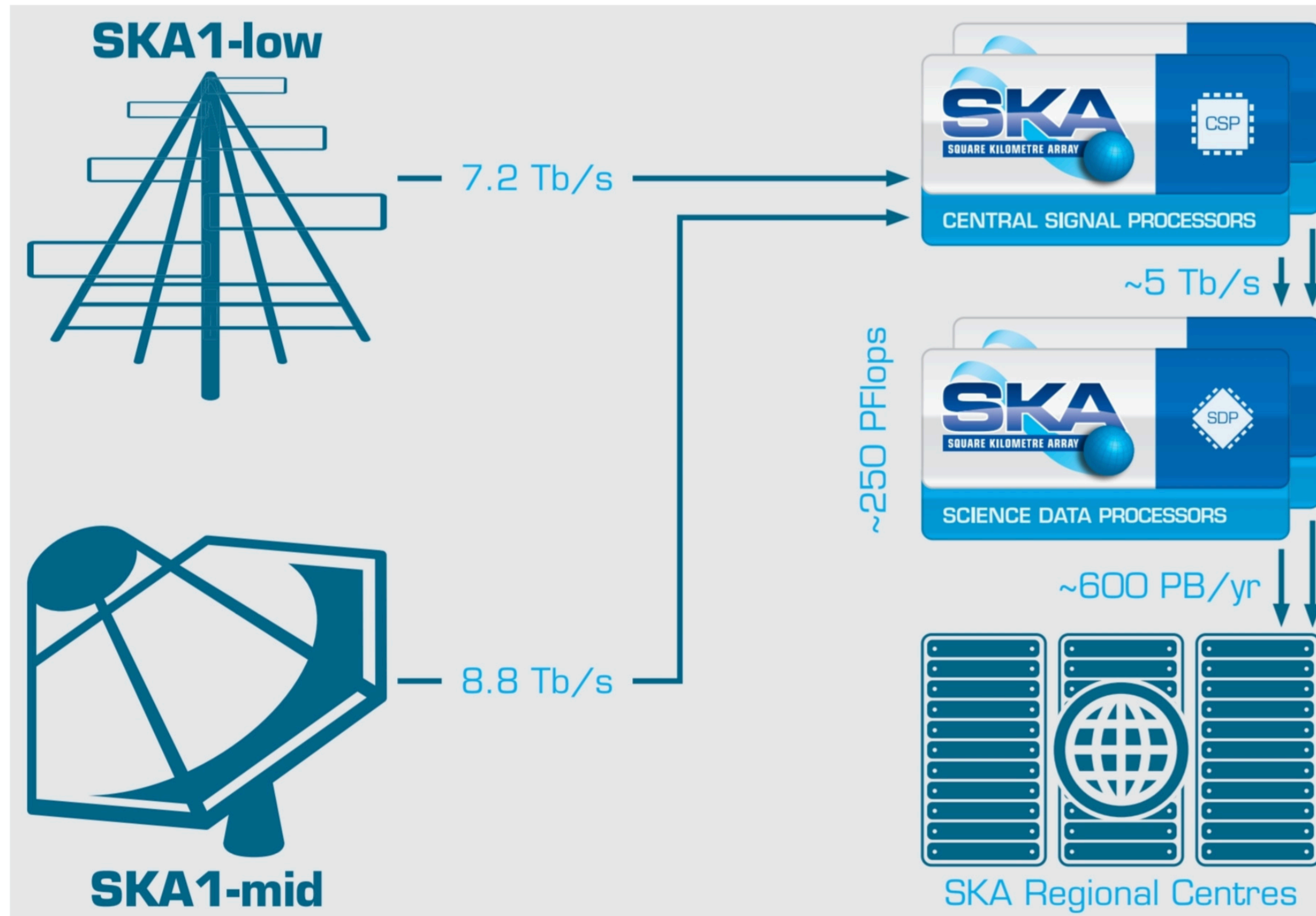


Cycle 0

- "Proper" shared risk projects
- Teams, proprietary periods, visualisation, ADP creation etc

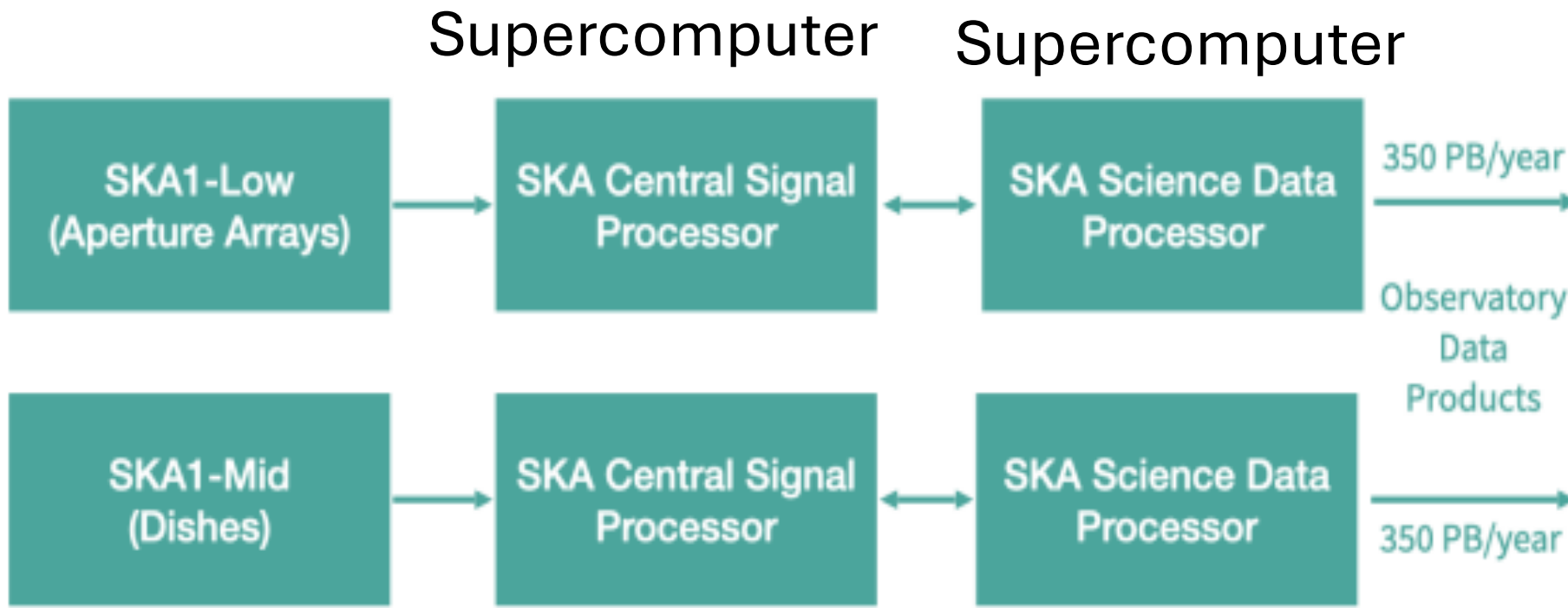
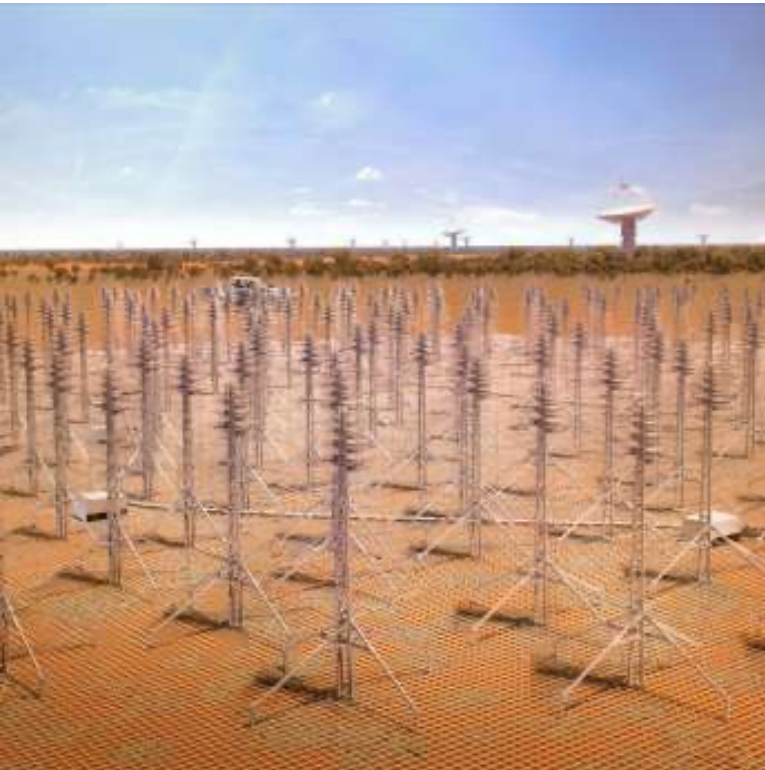


Data Rates (Full Array: AA4)

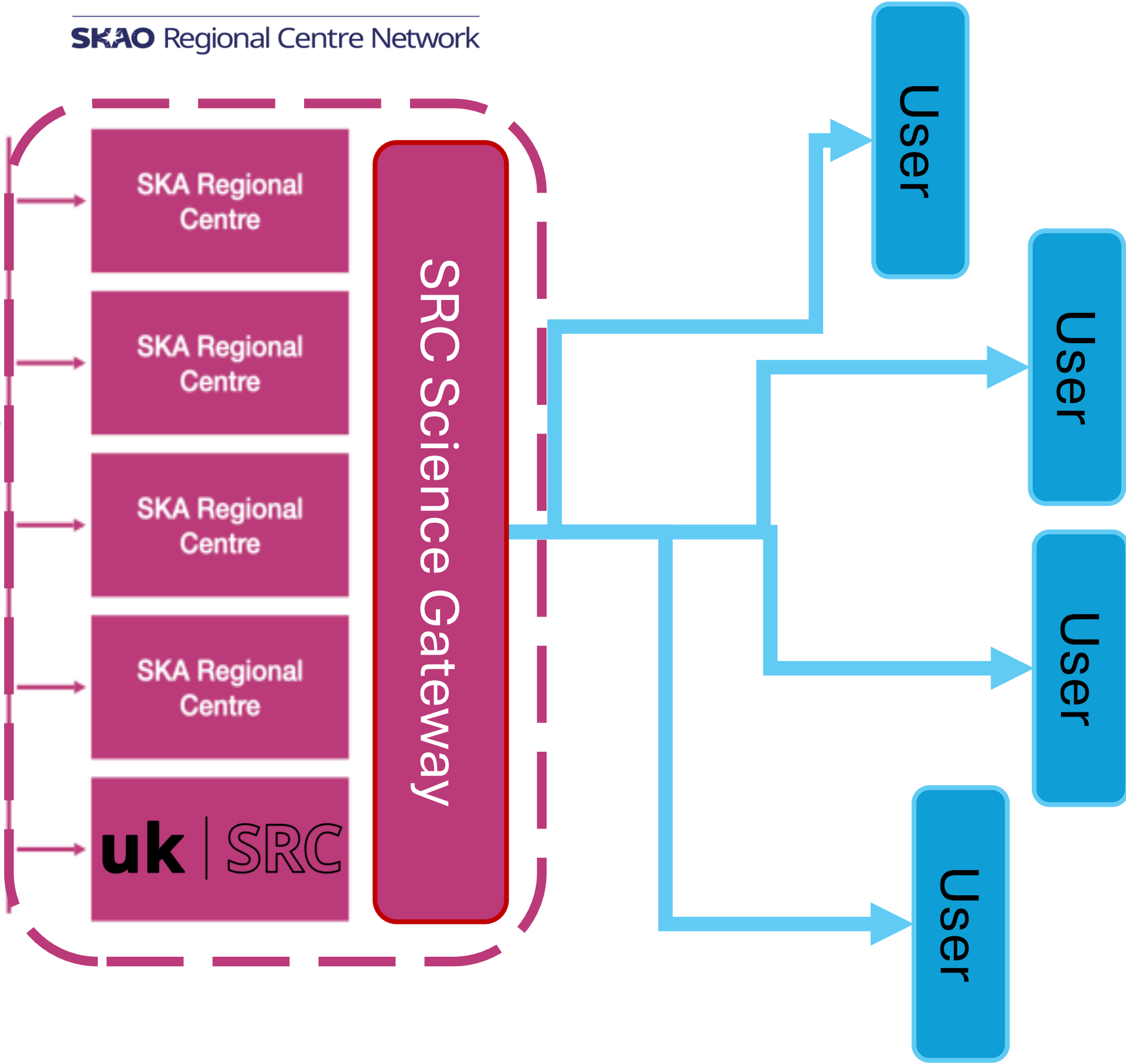


SKA Regional Centre Network

SRCNet will provide a portal for scientists to access SKA data – an exabyte data challenge!



SRC Science Analysis Platform Vision Document de Boer, et al (2023)



...SRCNet is the gateway for the science user communities to access the SKAO data and do science.

SKA expected data rates*

*these numbers should be used as a guide only - email Shari.Breen@skao.int for further information about ongoing work

- Numbers refer to data to be delivered to the science community via the SRCNet (i.e. not data used internally for commissioning etc.)

Milestone	Year	Primary activity	Estimated data rate	
			Low	Mid
AA2 • 64 Mid dishes • 64 Low stations	2026 - 2027	Science Verification - observed in dedicated ~week long blocks + single observations interspersed throughout. A higher rate of raw data products will be included at this stage.	1.5 PB/week [^] 20 Gbps	2 PB/week [^] 27 Gbps
AA* • 144 Mid dishes • 307 Low stations	2027 - 2029	Science Verification - observed in dedicated ~week long blocks + single observations interspersed throughout. A higher rate of raw data products will be included at this stage.	5 PB/week [^] 66 Gbps	9 PB/week [^] 119 Gbps
AA* • 144 Mid dishes • 307 Low stations	2029 +	Operations - Observation cycles, starting with shared risk observing, building to successful science observations ~90% of the time	173 PB/year 44 Gbps	280 PB/year 72 Gbps
Target is to deliver the SKA Baseline Design but the details of this transition between AA* and AA4 are TBD				
AA4 • 197 Mid dishes • 512 Low stations	2030 +	Operations - full SKA baseline design	216 PB/year 55 Gbps	400 PB/year 100 Gbps

[^]Data rates refer to dedicated Science Verification observing weeks, not an average over a year



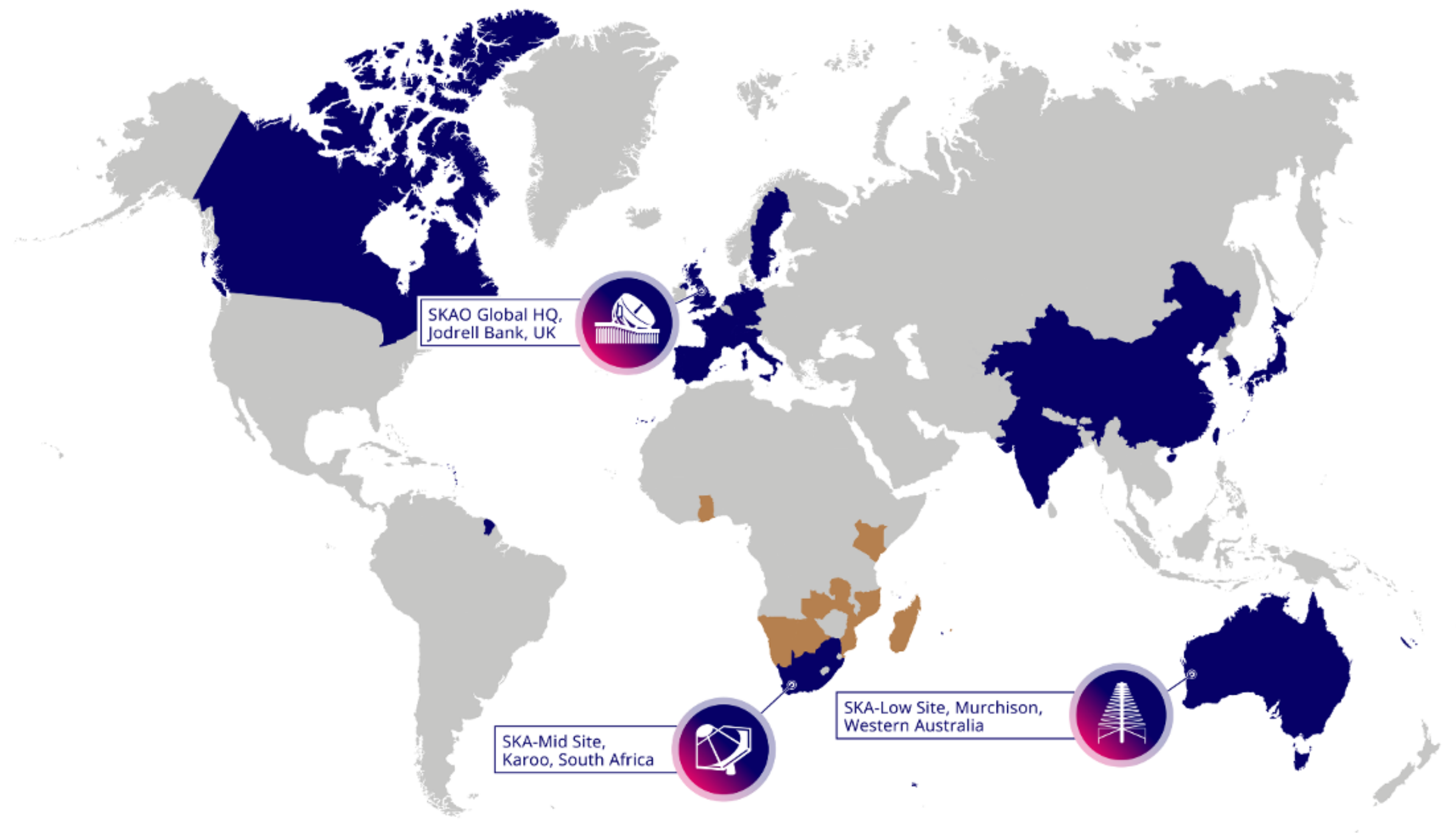
The SRC Network

- The need for a network of SKA Regional Centres formed around ~ 2016:
 - Distributed compute, storage and expertise to store, process and disseminate data to the communities

*We will develop and deploy a collaborative and federated network of SKA Regional Centres, globally distributed across SKA partner countries, to host the SKA Science Archive. The SRC Network will make data storage, processing and collaboration spaces available, while supporting and training the community, **to maximise the scientific productivity and impact of the SKA.***

My Naive mapping between LHC and SKA

Don't take too literally



SKAO Partnership - includes SKAO Member States* and SKAO Observers (as of April 2023)



African Partner Countries



LHC/WLCG	SRCNet
Cern + Experiments	~ SKAO + SKA-MID + SKA-LOW
WLCG	~SRCNet
GridPP	~UKSRC

SRC Network Principles (some of them!) - written and agreed by SRCSC

- There will be a **common SKAO/SRC Network user account** that allows users access to SRC Network resources
- English will be the primary language of communication across the SRC Network
- There will be **one Helpdesk system** for the SRC Network and the SKAO.
- The SRC Network will **optimise its energy usage** whilst meeting the scientific goals of projects carried out in the SRC Network.
- Security of the SRC Network is the responsibility of the SRC Network.
- The SRC Network will **lead with principles of fairness, equity and inclusion** in all of its activities, and seek diversity of staff.
- The SRC Network will be committed to providing, and abiding to, **accessible and equitable tools, practices and processes**.
- The SRC Network will **provide workflow templates** to carry out basic and standard processing tasks.
- The SRC Network will **embrace FAIR and Open Science principles** whenever possible and appropriate.
- Resources pledged into the SRC Network will enter, and be allocated from, **a global federated pool**.
- The **allocation of resources will be per project**.
- The **physical location of SKA data** products will be determined to **optimise access and minimise data redistribution** within the Network, as much as is feasibly possible.
- Data processed within the SRC Network will **automatically propagate all metadata and provenance information**.



SRC Network Principles (highlighted for SRCNet0.1, From Dec 2024)

- There will be a **common SKAO/SRC Network user account** that allows users access to SRC Network resources
- Security of the SRC Network is the responsibility of the SRC Network.
- The SRC Network will be committed to providing, and abiding to, **accessible and equitable tools, practices and processes.**
- The SRC Network will **embrace FAIR and Open Science principles** whenever possible and appropriate.
- Resources pledged into the SRC Network will enter, and be allocated from, **a global federated pool.**
- The **physical location of SKA data** products will be determined to **optimise access and minimise data redistribution** within the Network, as much as is feasibly possible.



SRC Network global capabilities

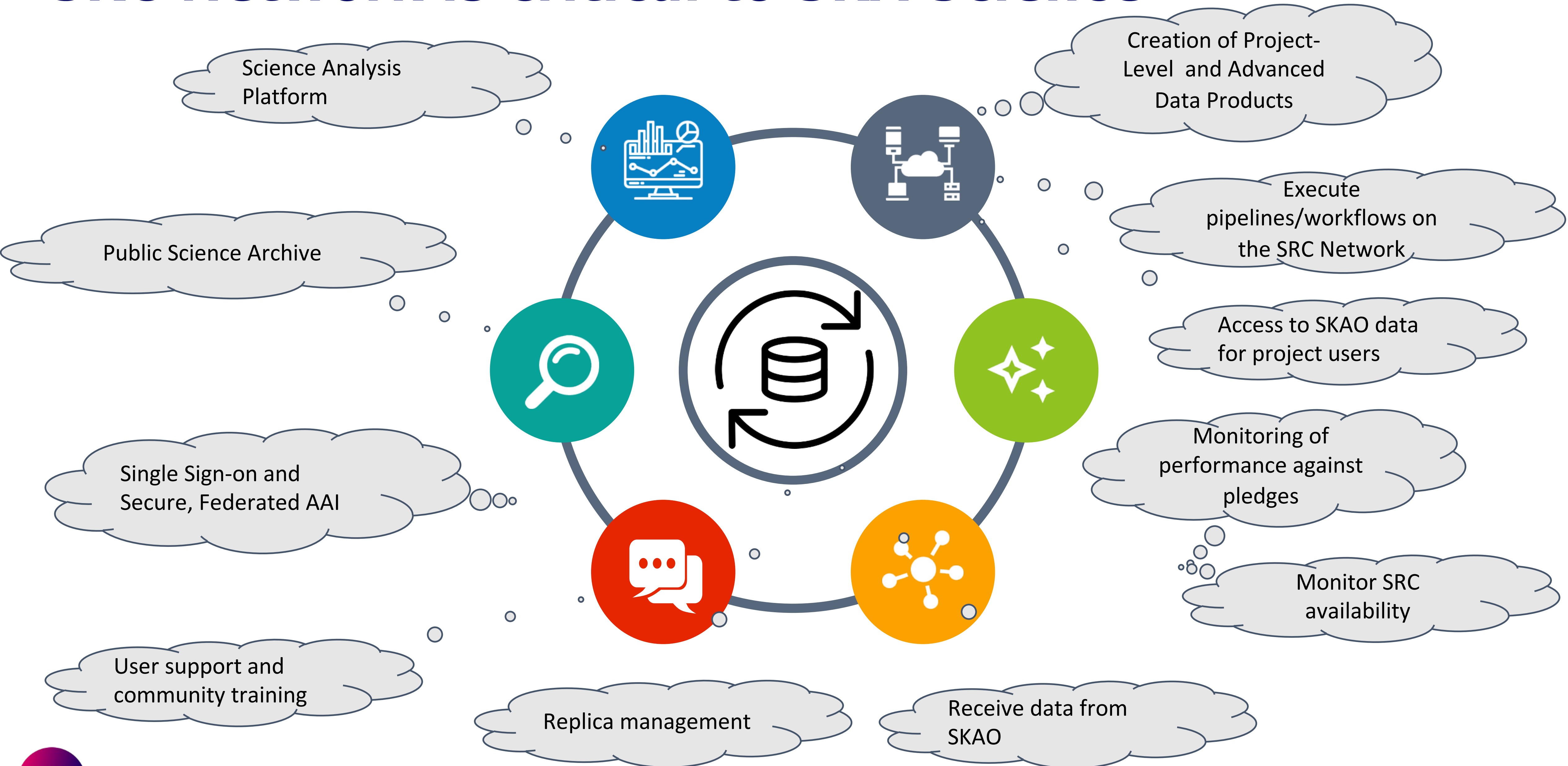


Collectively meet the needs of the global community of SKA users

Anticipate heterogeneous SRCs, with different strengths



SRC Network is critical to SKA Science



UK SKA Regional Centre – developing a facility

UK SRC infrastructure and services:
Supporting and facilitating UK science

Global SRC Network:
Developing and delivering the global SRCNet.

uk | SRC

SKAO Regional Centre **United Kingdom**



THE UNIVERSITY of EDINBURGH



Durham University

University of Hertfordshire **UH**



uk | SRC

Summary: Delivering STFC's UK SKA Regional Centre Strategy

The UKSRC Strategy covers the SRC construction phase and early operations phase (2022 to 2030). The project timing is aligned with SKAO Array Assemblies and the global SRC network. This project is funded from January 2023 – December 2025.

3 Pillars:

UK SKA Regional



Developing digital research infrastructure

Bespoke UK-based computational and data facilities, tools, and services will contribute to the analysis of 700PB of data generated per year by the SKA telescopes.

UK Science Community



Strengthening the UK astronomy community

UK astronomers will have opportunities to inform the UKSRC's development and to enhance their skills in preparation for the deployment of the SKA telescopes.

Global SRC Network



Collaborating internationally

The UKSRC team working with a global network of 14 nations and the SKA Observatory to develop interoperable functionalities to find, access, manipulate and visualise SKA Data products.

UCL

- Louise Chisholm
- Jeremy Yates
- Marcus Keil
- Rahil Alipour

University of Durham

- Leah Morabito
- Alistair Basden
- Fawada Qaiser

StackHPC

- John Taylor
- John Garbutt

University of Hertfordshire

- Martin Hardcastle
- Brendan Webster
- Bonnie Barkus

STFC Scientific Computing

- Ian Collier
- Tom Dack
- Rose Cooper
- Jonathan Churchill
- Jens Jensen
- Matt Mayer
- Chris Green
- James Walder

University of Edinburgh

- George Beckett
- Phil Best

University of Cambridge

- Jeremy Coles
- Eloy de Lera Acedo
- Paul Calleja
- Mark Ashdown
- Cassie Bradley
- Richard McMahon
- Nic Walton
- Paul Browne
- Wojciech Turek
- Duncan Watson
- Charlie Walker
- Haoyang Ye
- Tunde Oyewo
- Hammad Mehdi

UKRI-STFC

- George Madden
- Cassandra Mercury
- Cinzia Porcedda

University of Manchester

- Rob Beswick
- Keith Grainge
- Paul Harrison
- Ben Stappers
- Richard Hughes-Jones
- Bob Watson
- Chris Skipper
- Iulia Cimpan
- Anthony Holloway
- Linzi Stirrup
- Sotirios Sanidas
- Micheal Johnson
- Ian Leigh
- Steve Lloyd
- Elliot Goodwin
- Anthony Moraghan
- Jacob Burba
- Jack Radcliffe
- Julia Healy
- Tony Moraghan
- Dave Morris

**And...SRCNet team members
from around the world**

UKSRC is contributing to...

UK based teams



Data Access & Compute

Cloud & Data metadata & archive

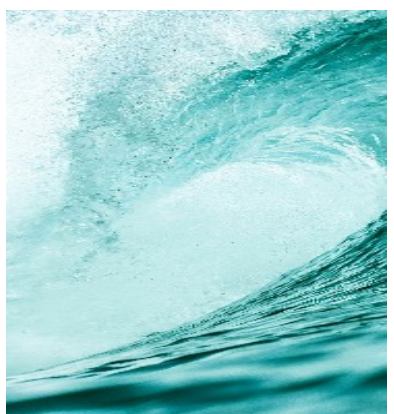
PO: Paul Harrison & Sean C



Purple

AAI, data logistics, policy, PerfSONAR

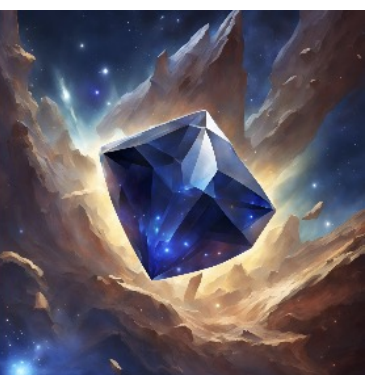
PO Ian Collier, Tom Dack



Teal

Science Platform and workflow development

PO Martin Hardcastle

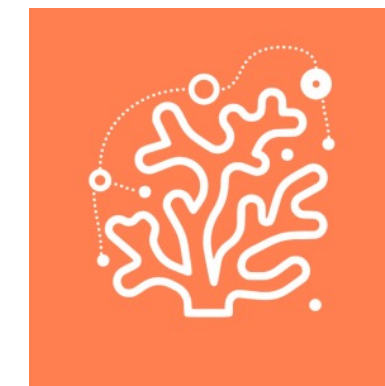


Sapphire

Science user support, training, and community engagement

PO Jack Radcliffe

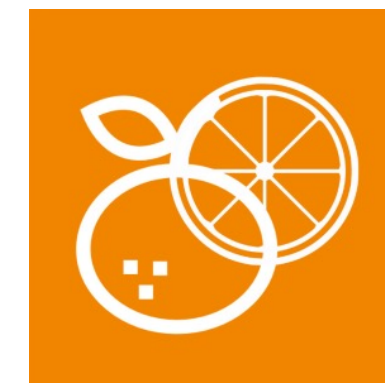
International teams



Coral

Tests node deployment and support the tech development to build a performant SRCNet.

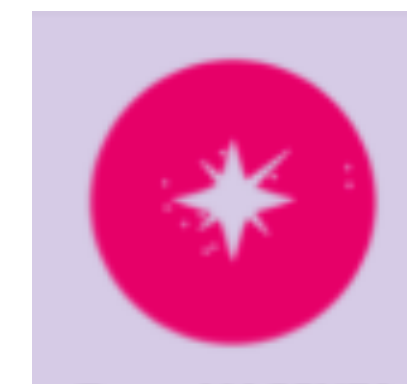
PO: Susana Sánchez (SP)



Tangerine

To deliver the SRCNet Science Gateway which provides users with access to SRCNet services

PO : Chris Skipper (UK), Yan Grange (NL)



Magenta

SRCNet Rucio data management, data management APIs

PO James Collinson (SKAO)



Program team

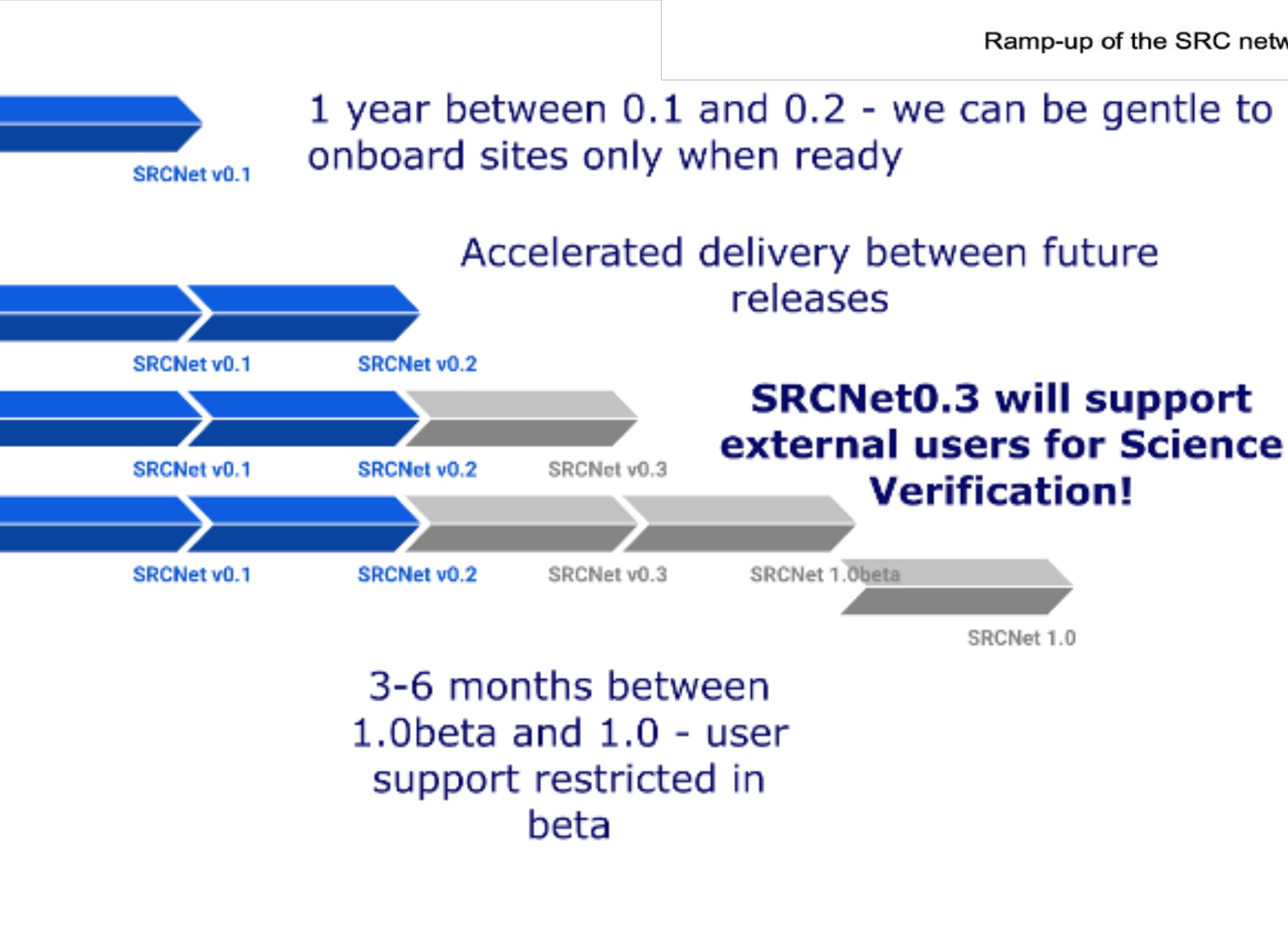
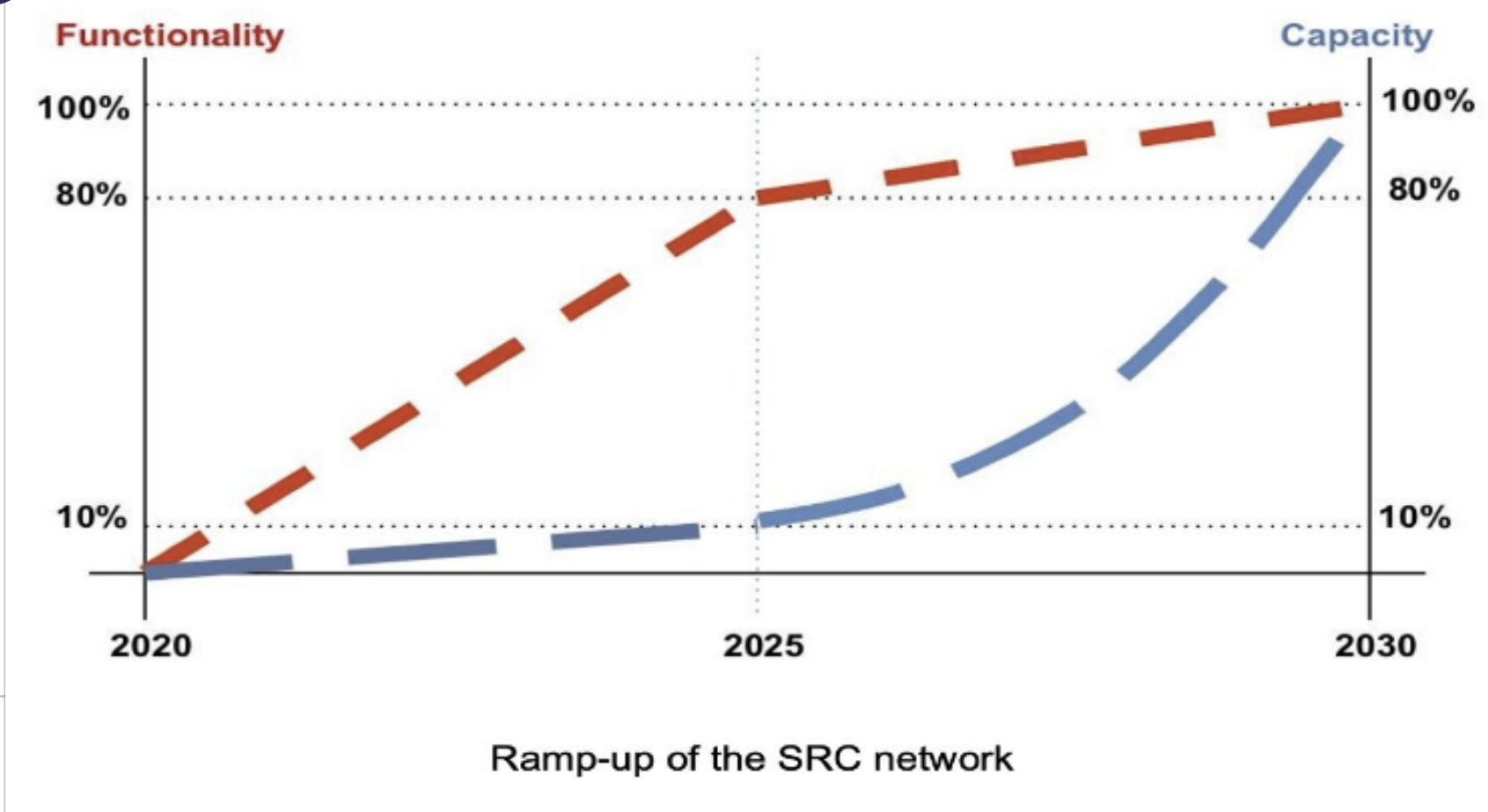
Responsible for the running of the ART

Lead : Rosie Bolton (SKAO)

SRCNet Timeline

- SRCNet timeline as mapped to the construction roadmap.
 - Increased capabilities; then scale out

Milestone event (earliest)		SKA-Mid (end date)	SKA-Low (end date)
AA0.5	4 dishes 6 stations	2025 May	2024 Nov
AA1	8 dishes 18 stations	2026 Apr	2025 Nov
AA2	64 dishes 64 stations	2027 Mar	2026 Oct
AA*	144 dishes 307 stations	2027 Dec	2028 Jan
Operations Readiness Review		2028 Apr	2028 Apr
AA4	197 dishes 512 stations	TBD	TBD



Roadmap Timeline

First quarter of 2025



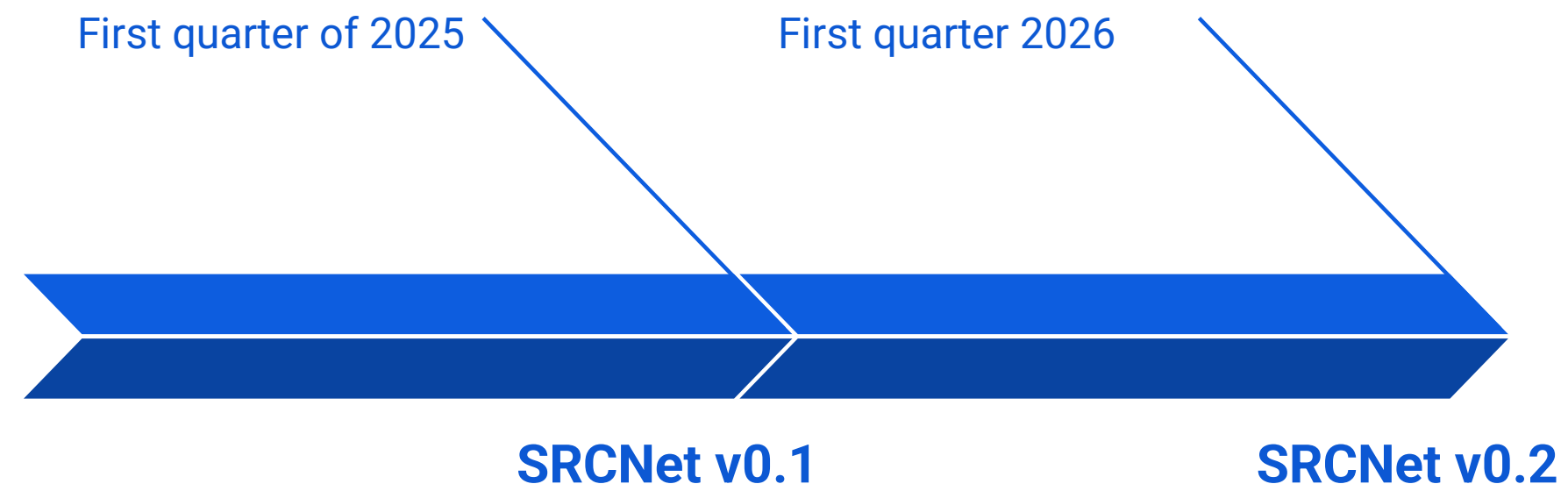
**SRCNet0.1 is an internal release
Not intended for external users
Motivation is to enable testing**

SRCNet0.1 is an agreed milestone (first of five) on our top level roadmap

Milestone	Description	SRC Net Functionality	Scope (users)
SRCNet v0.1 First quarter of 2025	First version of SRCNet sites deploying common services and connecting via SRCNet APIs. Enable technical tests of the architectural implementation. [Added c.f. document] (Potentially Opportunity to engage SRCNet with AA0.5 data transfer and access.)	<ul style="list-style-type: none"> • Test data (and some precursors data) disseminated into a prototype SRC Net • Data can be discovered through queries to the SRC Net • Data dissemination to SRC nodes • Data can be accessed through a prototype data lake • Data replication. Data can be moved to a local SRC area where non-connected local interactive analysis portals (notebooks) could allow basic analysis • Unified Authentication System for all the SRCs • Visualisation of imaging data 	SRC ART members Members of SKA Commissioning team (potentially, but not required)



Roadmap Timeline

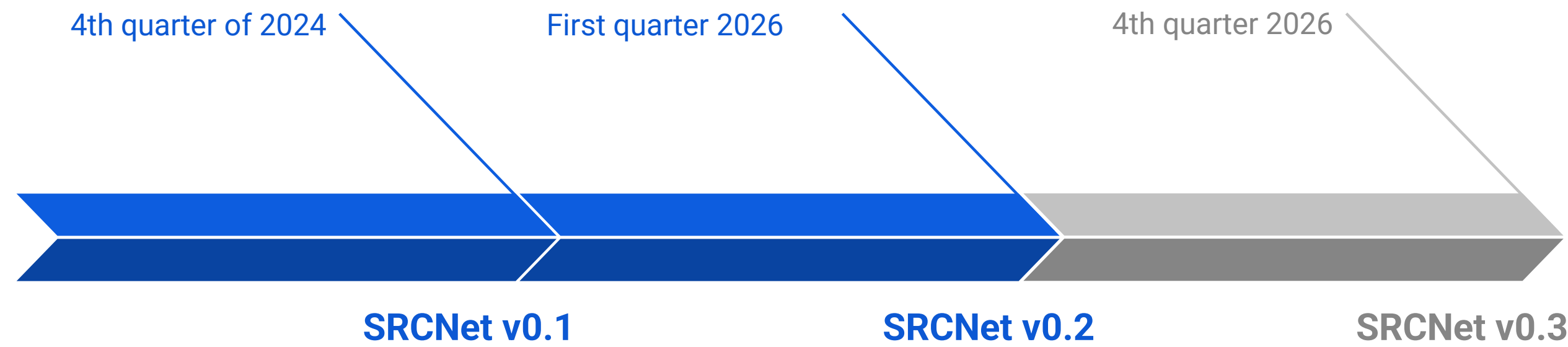


Not generally public
Small amount of science
commissioning interaction
Most SRCNet users are
within the project or SKAO

Milestone	Description	SRC Net Functionality	Scope (users)
SRCNet v0.2 First quarter 2026	AA1 and Commissioning	<ul style="list-style-type: none"> ● Data dissemination using telescopes sites interface ● First version of federated execution. Access to remote operations on data using services and the possibility to invoke execution into a relevant SRC ● Subset of SDP workflows runnable in the SRCs ● First Accounting model implementation. ● User storage areas ● Visualisation of imaging and time series data through remote operations ● Preparation of SRCNet User Support 	Selected scientists from community Members of Science Operations SRC ART members



Roadmap Timeline

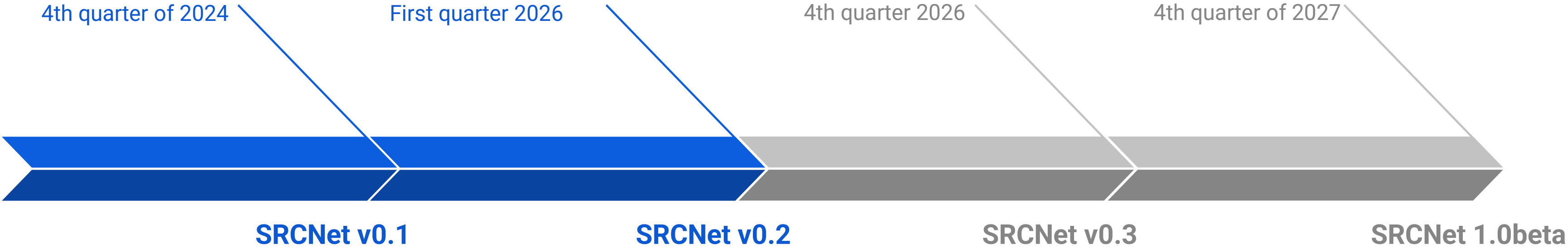


First public access intended for SRCNet0.3 community scientists undertaking Science Verification (AA2)

Milestone	Description	SRC Net Functionality	Scope (users)
4th quarter 2026	Cycle 0 proposals, AA2 and Science Verification	<ul style="list-style-type: none"> Improved data dissemination. Use of available storage SKA preliminary data (and some precursors data) disseminated into a prototype SRCNet Upgraded federated computing. Basic execution planner implementation and move execution to a selected SRC Upgrade of subset SDP workflows runnable in the SRCs Provide access to the first set of workflow templates for science analysis (light ADPs) ADPs ingestion system Spectral data visualisation and manipulation Implementation of SRCNet User Support 	Science verification community (public access) Members of Science Operations SRC ART members



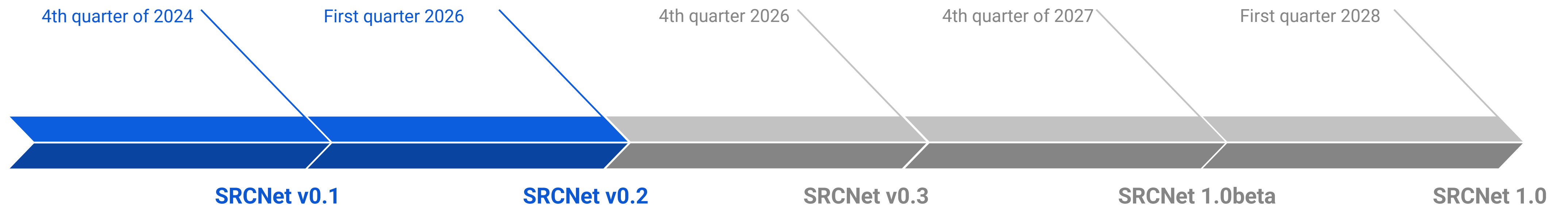
Roadmap Timeline



Milestone	Description	SRC Net Functionality	Scope (users)
SRCNet v1.0beta 4th quarter of 2027	Science verification and Cycle 0	<ul style="list-style-type: none"> • Data dissemination. Complete decision tree, including scientific program • Integrated portal with science analysis capabilities • Integrated federated computing. Workflows analysis • Complete subset SDP workflows runnable in the SRCs • Complete accounting model (storage and computational resources) • Monitoring system • Spectral data visualisation and manipulation • Data previews generation • Restricted SRC Net User Support 	Increased Cycle 0 scientists Science verification scientists (public access) Members of Science Operations SRC ART members



Roadmap Timeline



Milestone	Description	SRC Net Functionality	Scope (users)
First quarter 2028	Cycle 1	<ul style="list-style-type: none"> ● Full support to PI and program science tasks ● Complete portal with science analysis capabilities ● Public portal restricted to incoming public data ● Not restricted SRC Net User Support 	PIs and science program members Increased number of selected scientists from community Members of Science Operations SRC ART members



SKA Top-Level Roadmap Requirements

		SRCNet v0.1	SRCNet v0.2	SRCNet v0.3	SRCNet v1.0b	SRCNet v1.0
		Jan 2025	January 2026	Sep 2026	Nov 2027	Jun 2028
Deployment (%)		2.00	10.00	15.00	50.00	100.00
Country	Share (%)	Storage (PB)	Storage (PB)	Storage (PB)	Storage (PB)	Storage (PB)
UK	19	4.03	20.14	30.21	100.70	201.40
South Africa	18	3.82	19.08	28.62	95.40	190.80
Australia	18	3.82	19.08	28.62	95.40	190.80
China	10	2.12	10.60	15.90	53.00	106.00
Canada	7	1.48	7.42	11.13	37.10	74.20
Italy	6	1.27	6.36	9.54	31.80	63.60
India	5	1.06	5.30	7.95	26.50	53.00
France	3	0.64	3.18	4.77	15.90	31.80
Netherlands	2	0.42	2.12	3.18	10.60	21.20
Japan	2	0.42	2.12	3.18	10.60	21.20
Spain	2	0.42	2.12	3.18	10.60	21.20
Portugal	2	0.42	2.12	3.18	10.60	21.20
Switzerland	2	0.42	2.12	3.18	10.60	21.20
Sweden	2	0.42	2.12	3.18	10.60	21.20
South Korea	1	0.21	1.06	1.59	5.30	10.60
Germany	1	0.21	1.06	1.59	5.30	10.60
Total	100	21.20	106.00	159.00	530.00	1060.00

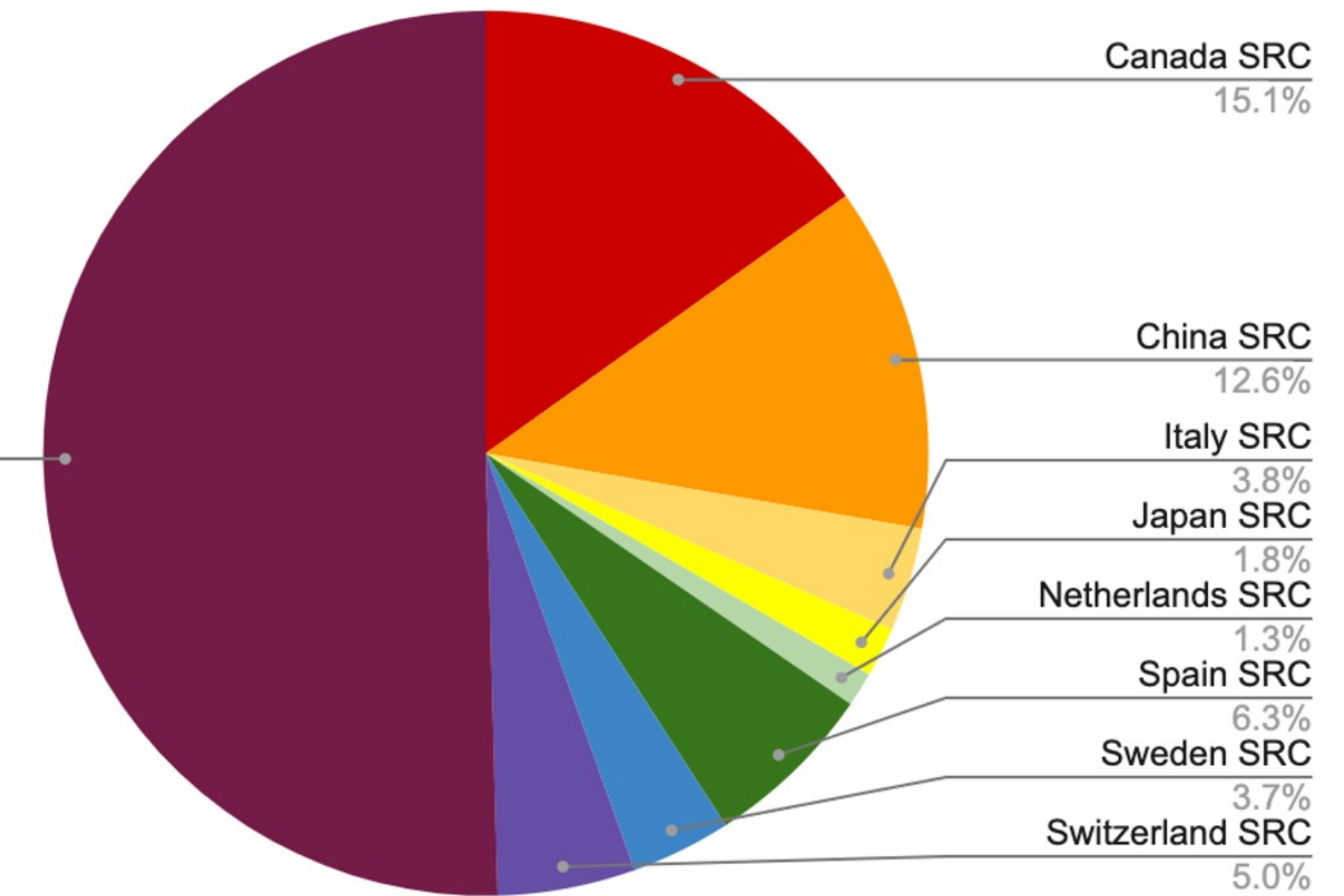
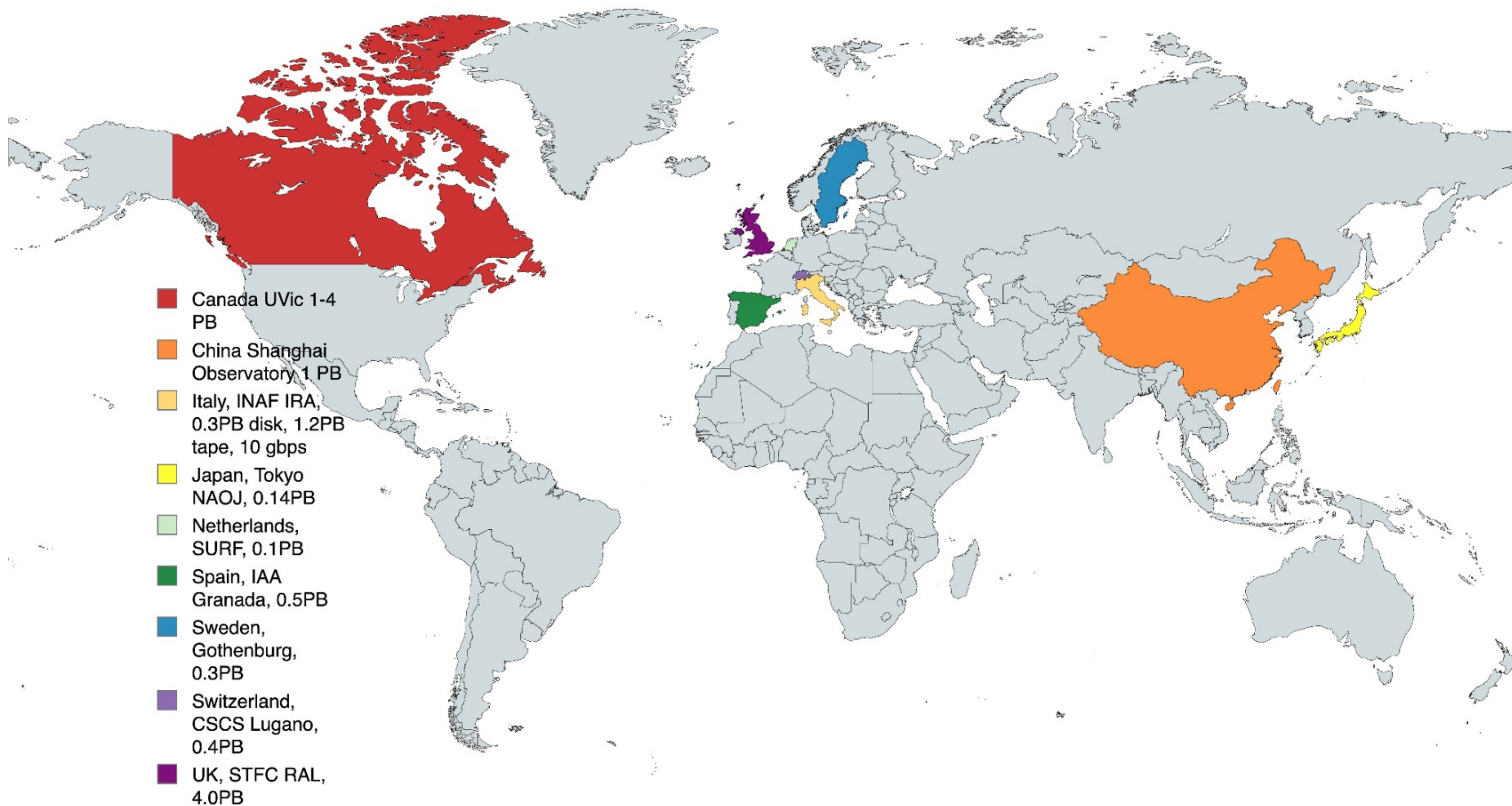
		SRCNet v0.1	SRCNet v0.2	SRCNet v0.3	SRCNet v1.0b	SRCNet v1.0
		Jan 2025	January 2026	Sep 2026	Nov 2027	Jun 2028
Deployment (%)		2.00	10.00	15.00	50.00	100.00
Country	Share (%)	Computing (PFLOPS)	Computing (PFLOPS)	Computing (PFLOPS)	Computing (PFLOPS)	Computing (PFLOPS)
UK	19	0.13	0.67	1.00	3.33	6.65
South Africa	18	0.13	0.63	0.95	3.15	6.30
Australia	18	0.13	0.63	0.95	3.15	6.30
China	10	0.07	0.35	0.53	1.75	3.50
Canada	7	0.05	0.25	0.37	1.23	2.45
Italy	6	0.04	0.21	0.32	1.05	2.10
India	5	0.04	0.18	0.26	0.88	1.75
France	3	0.02	0.11	0.16	0.53	1.05
Netherlands	2	0.01	0.07	0.11	0.35	0.70
Japan	2	0.01	0.07	0.11	0.35	0.70
Spain	2	0.01	0.07	0.11	0.35	0.70
Portugal	2	0.01	0.07	0.11	0.35	0.70
Switzerland	2	0.01	0.07	0.11	0.35	0.70
Sweden	2	0.01	0.07	0.11	0.35	0.70
South Korea	1	0.01	0.04	0.05	0.18	0.35
Germany	1	0.01	0.04	0.05	0.18	0.35
Total	100	0.70	3.50	5.25	17.50	35.00

* Numbers awaiting some refinement

SRCNet0.1 included sites

8 PBytes total storage offered for SRCNet0.1 (c.f original target of 20 PB)

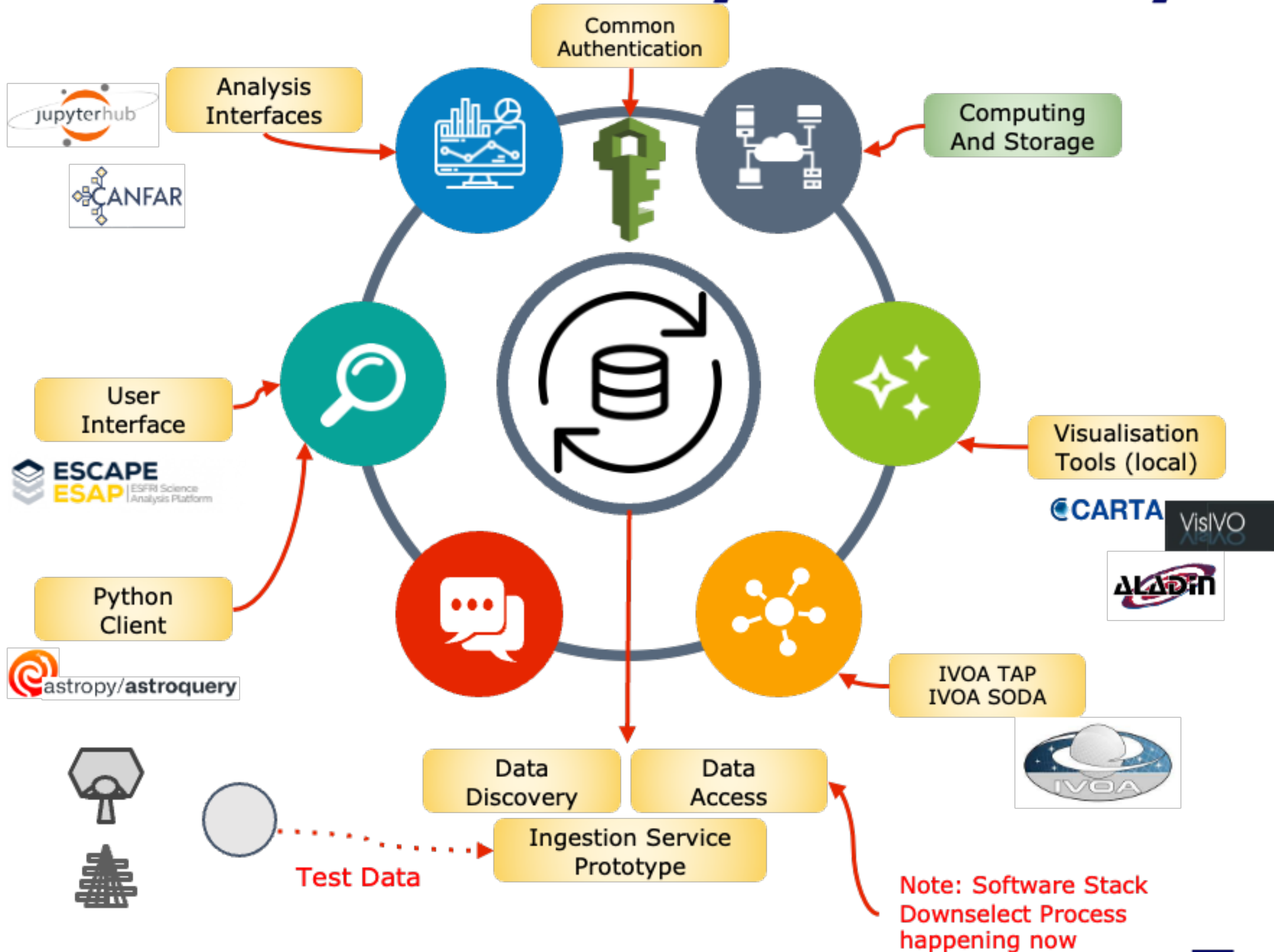
Storage (PB)



WLCG experience at some sites (Canada, Netherlands, Sweden, Switzerland, UK)

Several new sites and teams will learn by being involved

Basic Functionality Covered by v0.1



- Common Authentication
 - IAM
- Visualisation Tools (local)
- IVOA Protocols
 - TAP, SODA
- Data Discovery and Access from Data Lake
- Ingestion Service Prototype
- Python Client
 - Astroquery Module
- User Interface
 - ESAP
 - <https://esap.srcdev.skao.int/>
- Analysis Interfaces
 - JupyterHub
 - CANFAR Science Platform

Target ~20PB storage

Site Software and Services: SRCNet v0.1

- Compulsory services:

- Rucio SEs
- Basic Analysis software
- Visualisation tool
- perfSONAR (and other monitoring)

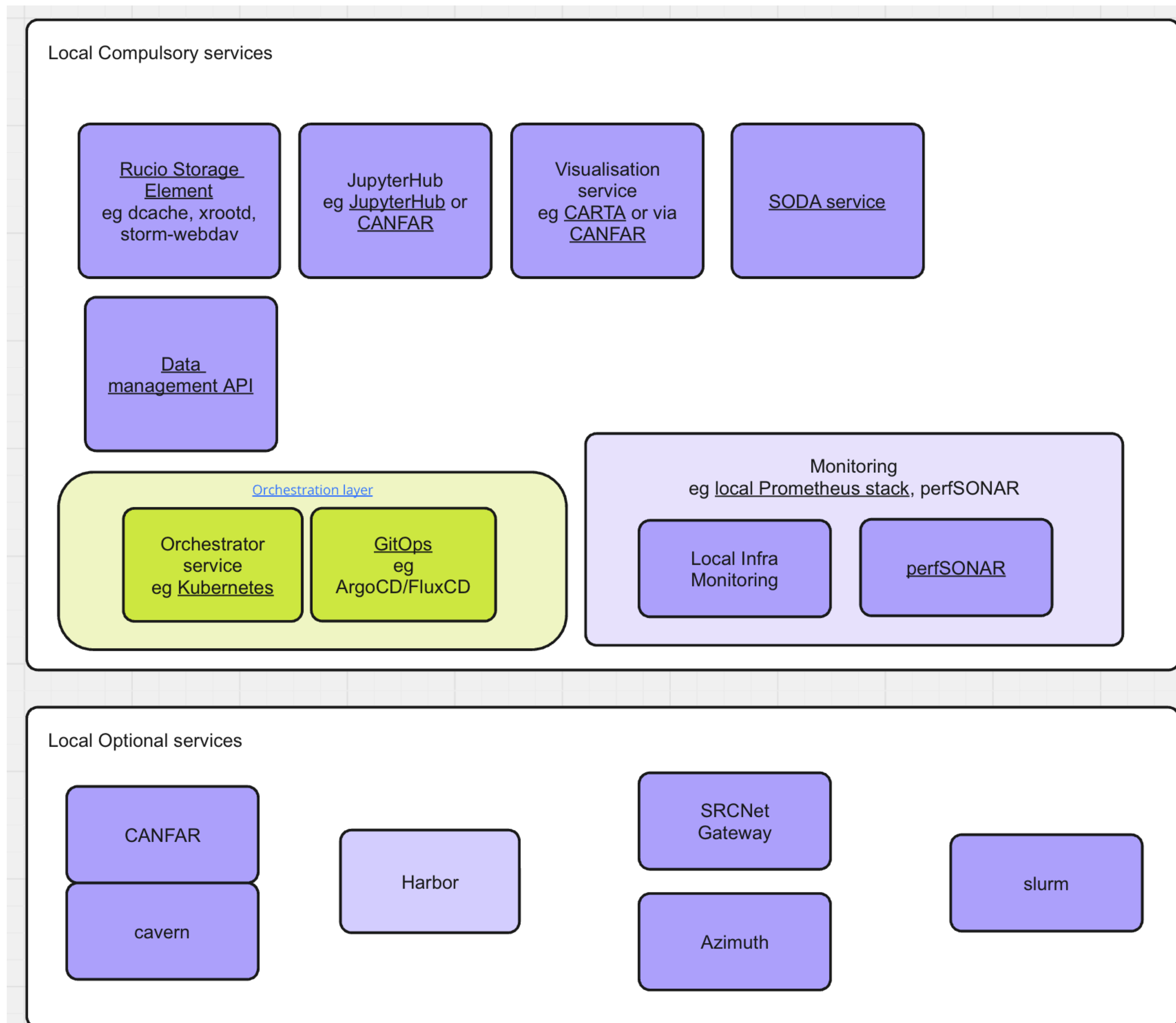
- Optional services:

- Slurm clusters
- Harbor
- Science platforms / gateways

- Global / common services (e.g. FTS) located at specific sites

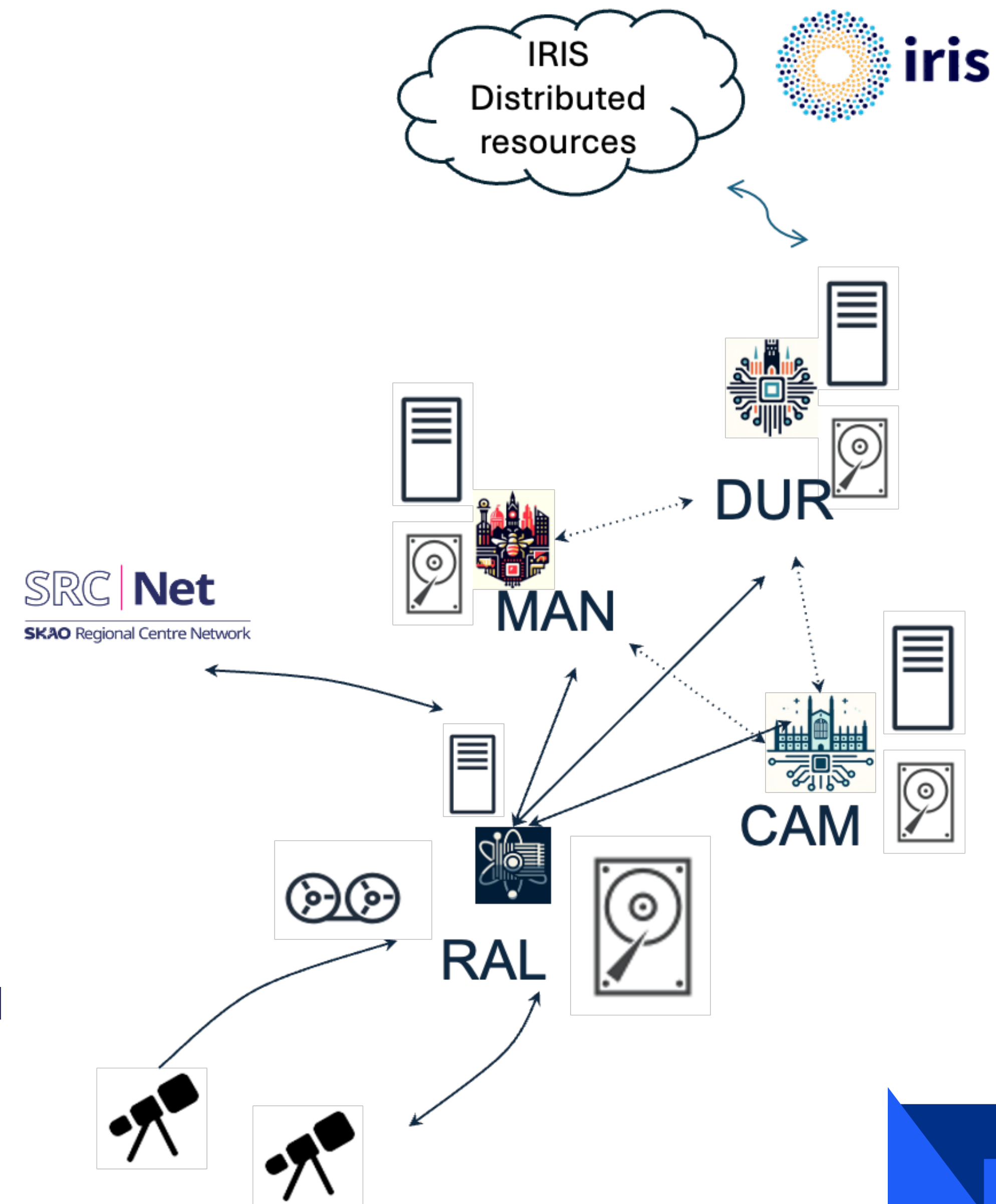
- Currently working on Implementation and deployment planning and roles of SRCNet and national Operations Teams

- Strong push for Gits Ops approach with argoCD / Flux CD



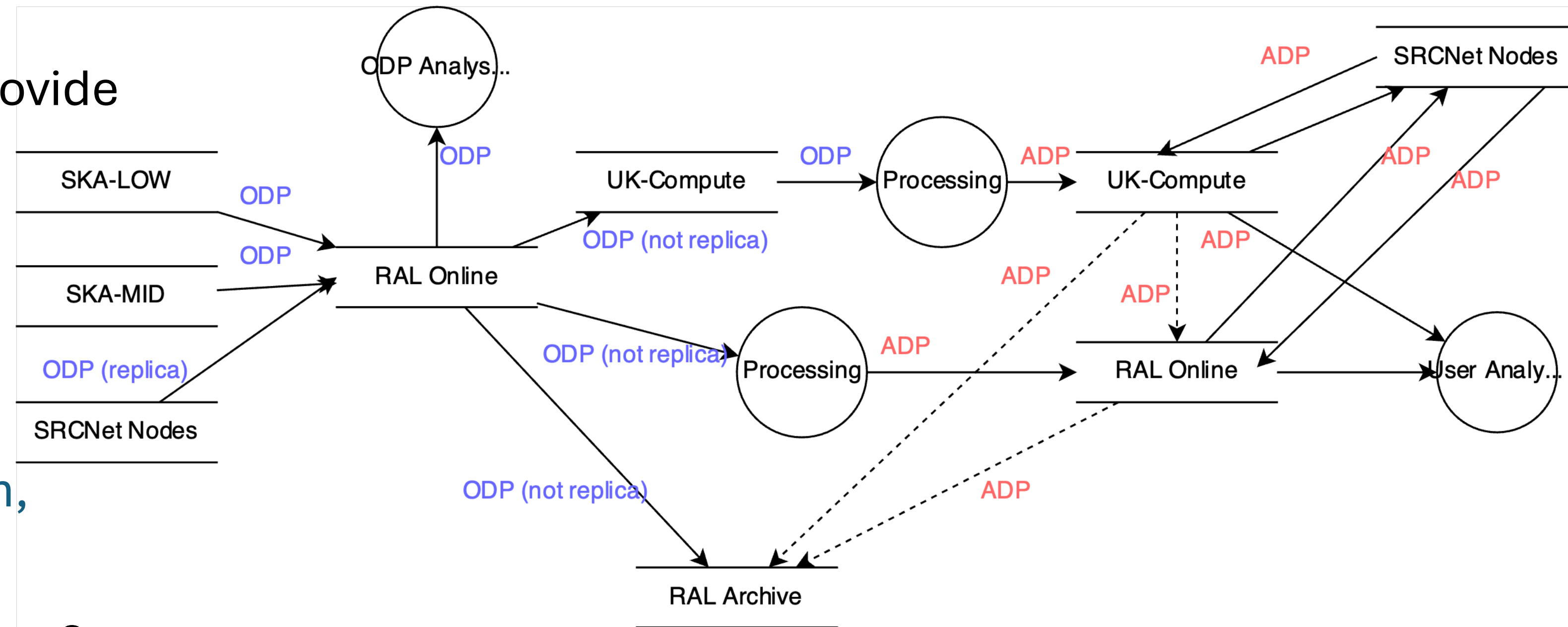
Proto-Architecture for UKSRC

- RAL Acts as “Landing Zone” For primary (and replica) data
 - ODP arrives from Mid and Low telescopes
 - (and via other SRCs).
- Custodial data stored to tape
 - Data distributed to Compute resources for processing, analysis
- Multiple sites
 - (leveraging own expertise flavours/services)
 - Manchester/JBO, Cambridge, Durham,
 - UCL (benchmarking)
- Success will require optimal use of the resources
 - with Data and Compute not always co-located.
- Federated access across the UK to leverage other HPC / ephemeral resources if available / applicable to specific projects.



UK data-flow modelling

- Model 1:
 - RAL performs all ODP->ADP processing; other UK sites provide Analysis on ADPs
- Model 2:
 - UK sites perform ODP->ADP processing as well
- Reality is likely to be a combination, workflow dependent.
- ADP size estimates range from 0.1 -> 3x ODP size (workflow dependent).
- Other models to be considered: e.g. UK as 'buffer' for primary and secondary copies at other SRC Nodes
- Modelling of Data into (and through) UK sites from other Nodes to evolve



Modelling example rates / volumes

- Assume ~500PB/yr telescope output (ODP), ~19% UK share (~@2029)
 - Use SKA current Roadmap assumptions, with one replica copy in SRC, and archiving to tape.
- Only a single processing (ODP->ADP) required (likely going to be more)
- ADP is 0.3x ODP (average) (highly uncertain)
- Rates are averaged over a year; some movement may be more bursty in nature
- No consideration for 'reprocessing' or movement of older data (i.e. data from Tape)!

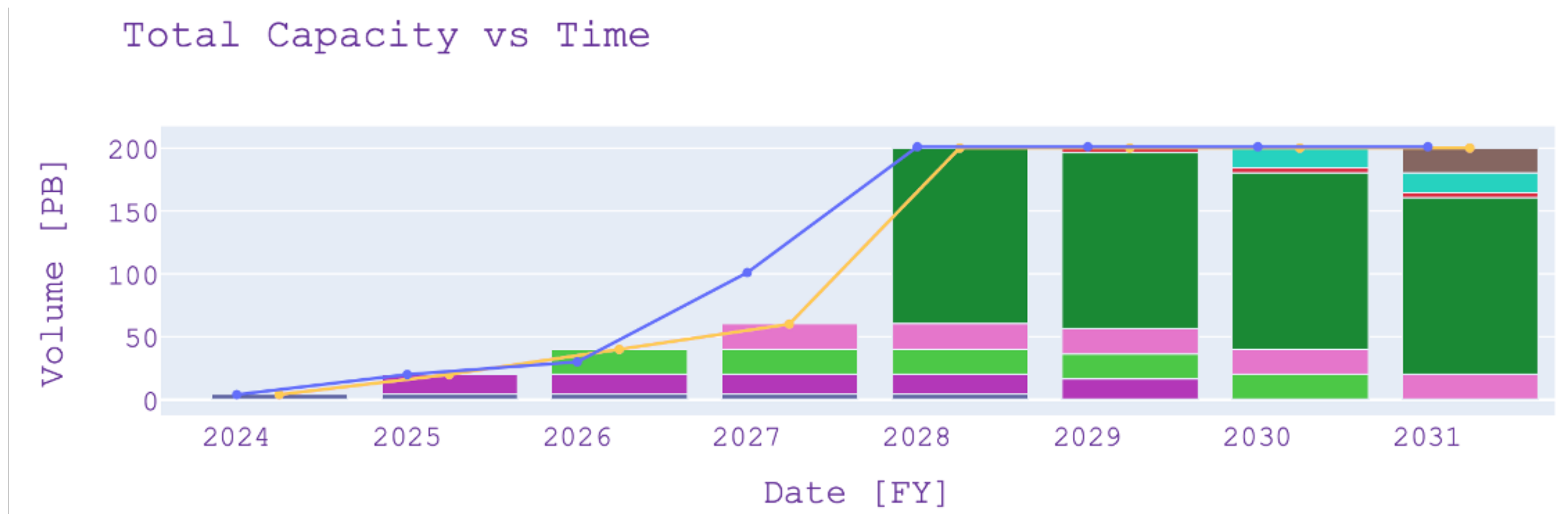
- **Numbers are indicative only!**

- With potential for:
 - Larger ADP fractions
 - Multiple movement of data within UK
 - Bursty workloads
 - End-of-Proprietary data periods
- May easily reach 100 Gb/s site to site intra-UK traffic
- Similarly for Ingress to UK

	Model 1		Model 2	
	Volume [PB]	Rate [Gb/s]	Volume [PB]	Rate [Gb/s]
Total UK Ingress	230	58	230	58
Total UK Egress	130	33	130	33
RAL -> Compute (x1)	60	15	130	33
Compute -> RAL (x1)	30	8	30	8

Roadmap for UK in SRCNet

- Based on current SRCNet Roadmap, UK component of SRCNet v1.0 (~ 2029+)
- (awaiting updates from most recent telescope figures to propagate through SRCNet modelling):
UK to provision ~:
 - O(200)PB of Online storage
 - O(100)PB of Nearline (Tape) storage, increasingly linearly with time (annually)
 - O(6.65) PFLOPS of storage
- Modelling of scenarios for Storage, Compute – Cost, Power, distribution, ongoing.



UKSRC@RAL Efforts

- RAL:

- Efforts in:

- AAI
- Policy and security
- Data logistic
- Cloud / Azimuth

- Hosts number of central services:

- SKA-IAM Instance
- FTS (fts3-ska.scd.rl.ac.uk)
- perfSONAR
- Rucio (via ska cloud stfc tenancy)
 - Rucio DDM solution selected for v0.1

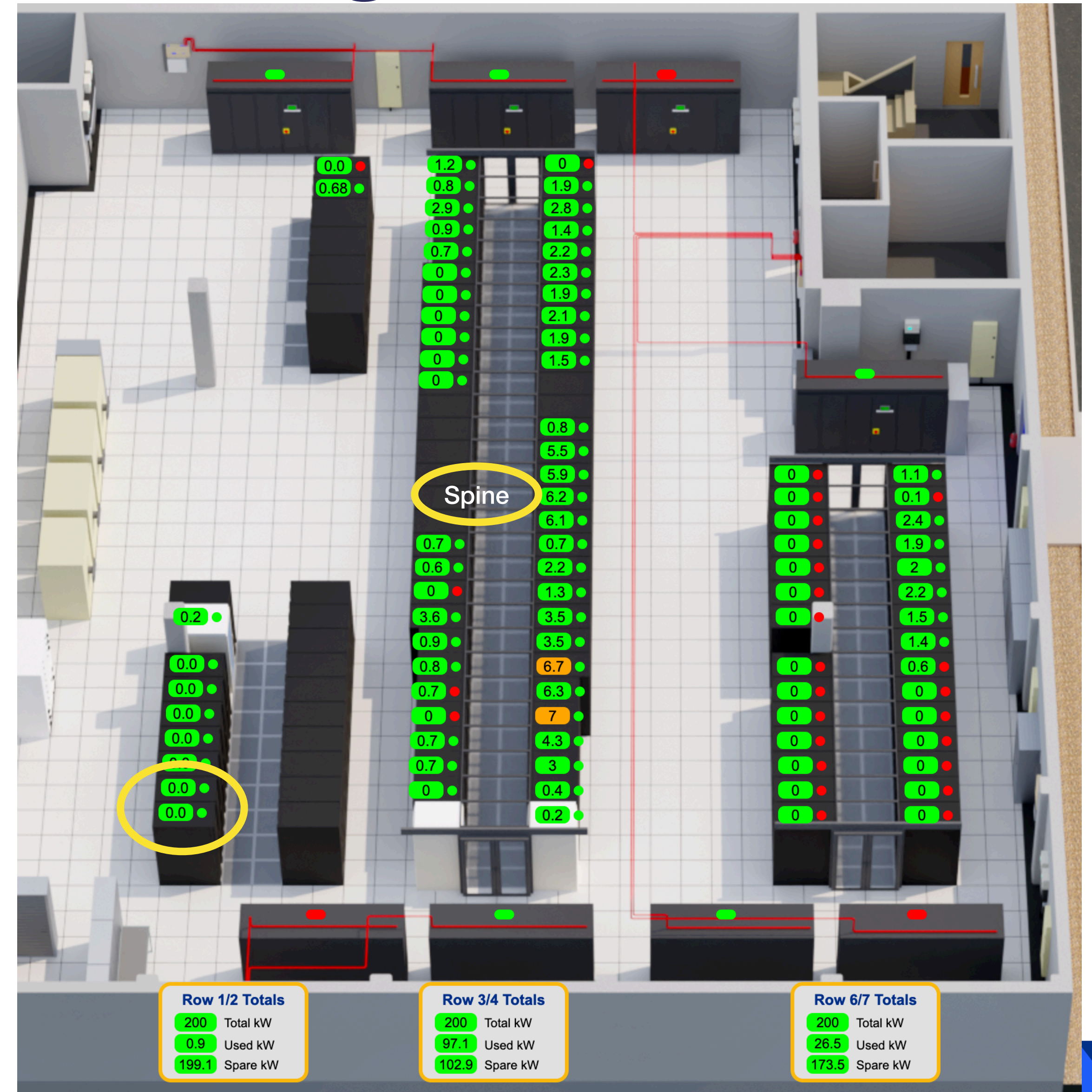
perfSONAR initial Mesh



- Compute resources aiming to be provided through Cloud (using Azimuth)
- Storage. Currently testing with Deneb-dev.

Hardware: Storage

- To be deployed in R26: Row1, racks 919,920
 - Spine switches into the Net-fibre-2 rack
- Estimated 8–10kW consumption under load
- SNs
 - 13 x PowerEdge R760xd2
 - 2x Intel Xeon Gold 5416S 2G, 16C/32T, 16GT/s, 30M Cache, Turbo, HT
 - 256GB (16 x 16GB RDIMM)
 - 528TB (24 x 22TB SAS)
 - 2x 25GbE ConnectX-6 NIC
- 7 Mons / MDS SVC nodes:
 - 7 x PowerEdge R660xs
 - 2x Intel Xeon Gold 6426Y 2.5G
 - 256GB (16 x 16GB RDIMM)
 - 960GB SSD SATA
 - 2x 25GbE ConnectX-6 NIC
- Pre-installation testing starting soon;
 - Site inspection and installation date to be arranged
- Mellanox ToR and Spine switches (delayed)
- Dell Mgt Switches
- Gateways (XRootD) in the Exit pod:
 - 1 installed, 2 awaiting work to fix DHCP routing issues
 - One additional host to install (somewhere) for internal testing



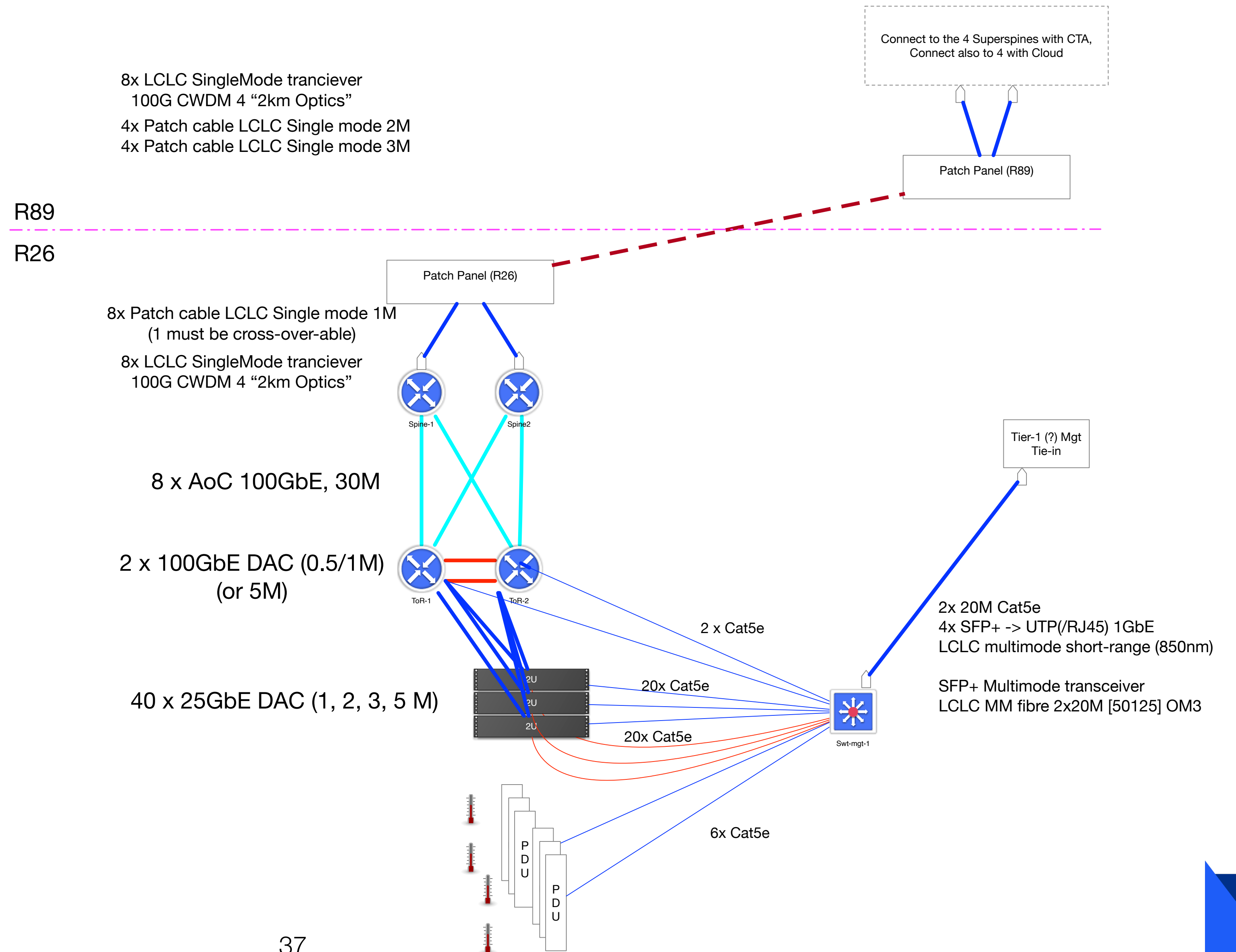
Network architecture

- High-level network architecture of SKA pod and connection into the superspine

- Most details need to be defined

- IPv4 space
- Mgt network
- Switch configuration
 - (And switches)
- Active-Active networking to servers

- ...
- ...



Summary

- SKA / SRCNet / UKSRC ramping up for SRCNet v0.1 (Operational by January '25)
 - UK to deliver 4PB (useable) storage plus compute resources at RAL
 - Other UK sites to be included in time
 - Other pathfinder and demonstrator cases can be used for prototyping and science exploration
 - SRCNet v0.2 to add functionality of federated compute, remote execution
 - Ramping up of resources after this
- Current SRCNet Roadmap for UK places requirements of:
 - 200 PB Disk (constant), some combination of SSD, HDD
 - 100PB 'nearline" (increasing by 100 – 200 PB / yr)
 - ~6.6 PFlops of compute (** needs revision*)
 - To be distributed over main UK sites
- Main (immediate) challenge is planning the integration of storage into SCD

www.uksrc.org



Joint mailing list: STFC UK SKA Observatory Science Committee
UKSKA-SCIENCECOMMUNITY@JISCMAIL.AC.UK



[uk-ska-regional-centre-uksrc](https://www.linkedin.com/company/uk-ska-regional-centre-uksrc)



[@UK_SKARC](https://twitter.com/UK_SKARC)



UNIVERSITY OF
CAMBRIDGE



THE UNIVERSITY
of EDINBURGH



Durham
University

University of
Hertfordshire **UH**

MANCHESTER
1824

The University of Manchester



Science and
Technology
Facilities Council

Scientific Computing