THE SKA REGIONAL CENTRE NETWORK

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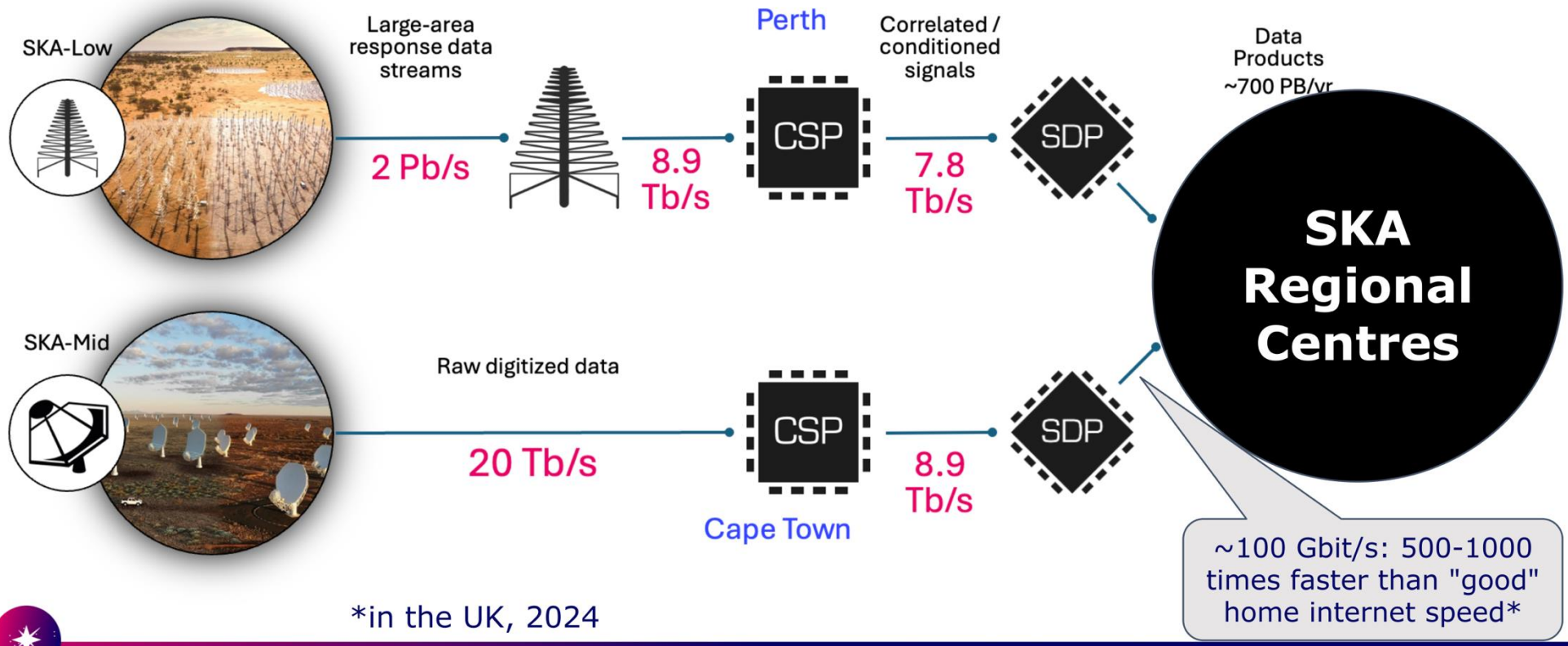
Special thanks to
Rosie Bolton (SKAO)

What are the SKA Regional Centres???

Several stages of cool, amazing, cutting edge data processing within the observatory… but **NO USER ACCESS**



*in the UK, 2024

What are the SKA Regional Centres???

Science Gateway, giving access to **Science enabling tools and applications** running on federated compute and storage

enabling users to discover data in the **global SKA archive**, develop workflows, perform analyses and collaborate

addresses the "orders of magnitude" data problem

SRC Network Vision

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.

Behind the scenes - all should be hidden from user

Several sites (around 10-20) spread globally

Data replication must be efficient, and minimised

"Move the user (or code) to the data" where possible

The bulk SRCNet science archive will be centrally managed

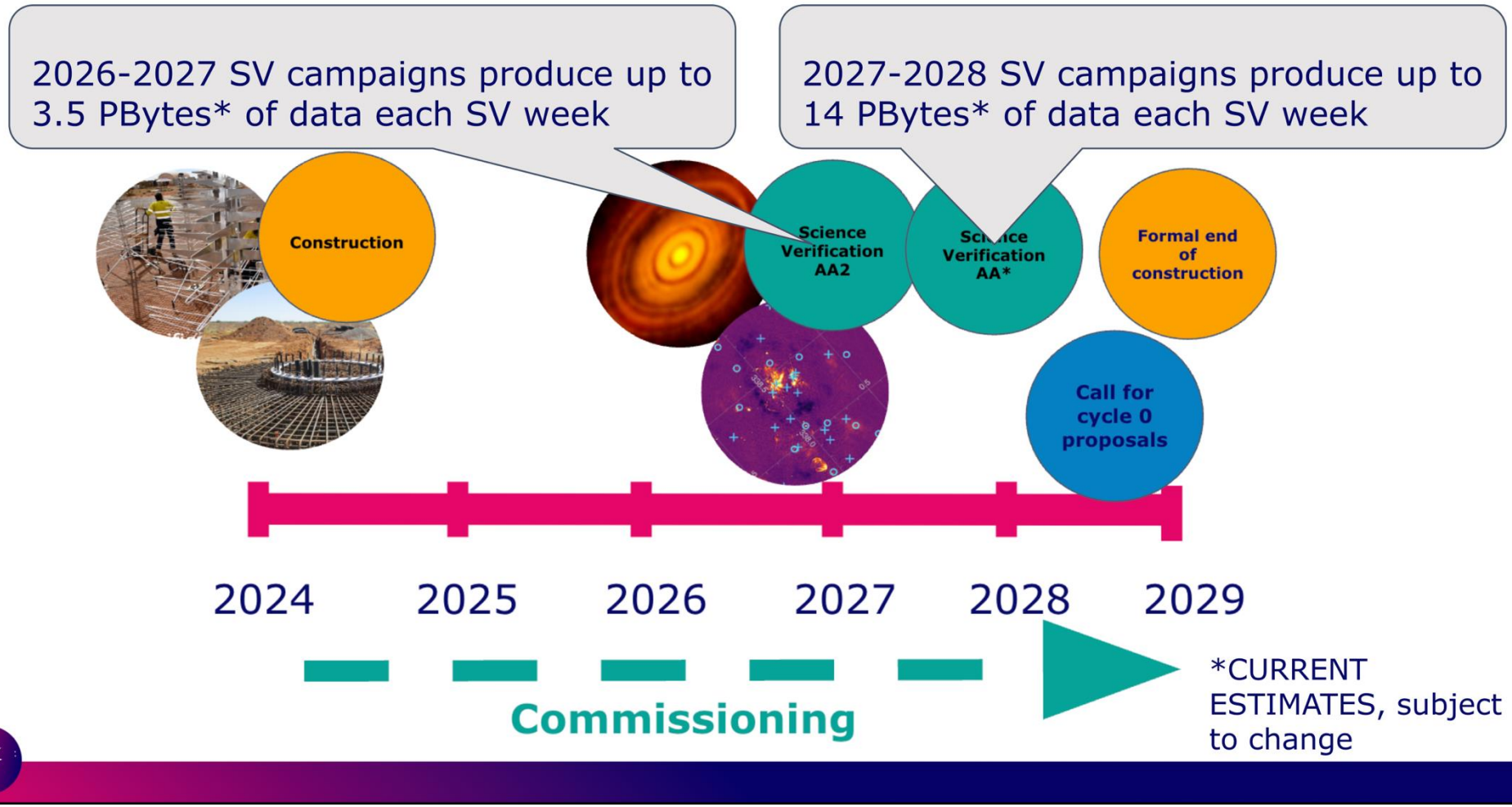
SRC Operations Group able to trigger replications

At least 2 copies on different SRCs, but also consider storage class (eg. disk faster but more expensive than tape) - data lifecycle support

Auto-recovery if one site fails

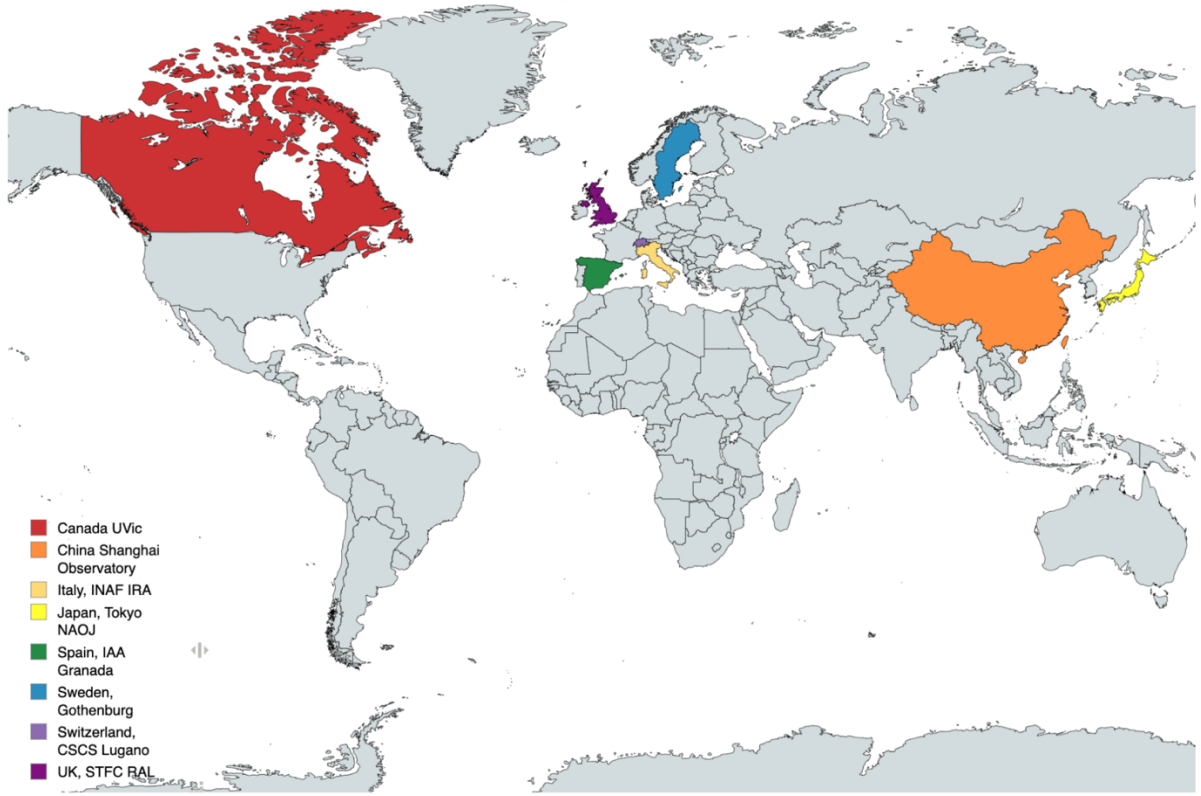
Users shouldn't have to care which site is hosting them - consistent experience across sites

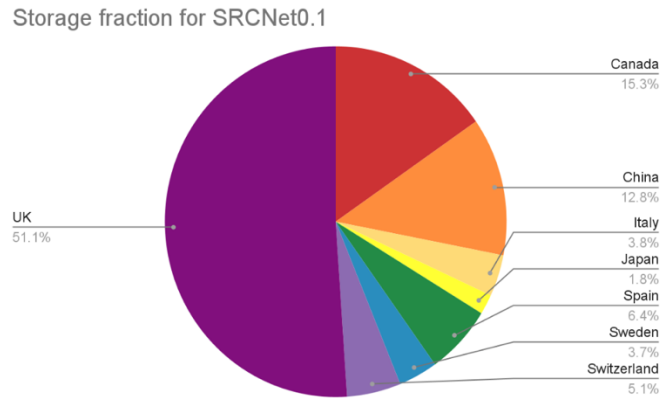
SKAO Science timeline

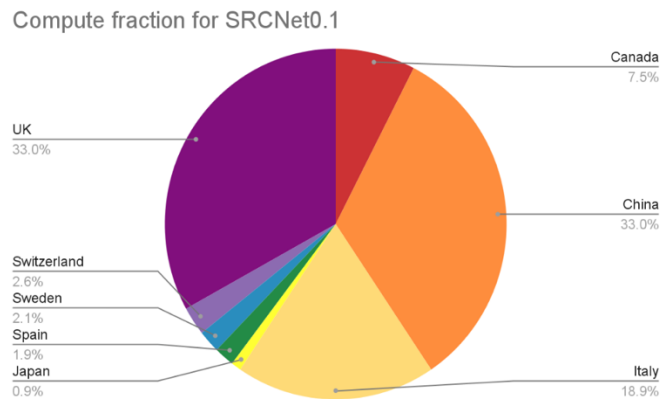


SRCNet0.1 planned sites

- 8 sites will contribute compute and storage resources to SRCNet0.1, for 2025 testing period
- 7.8 PBytes total storage; 0.5 PFLOPS Compute





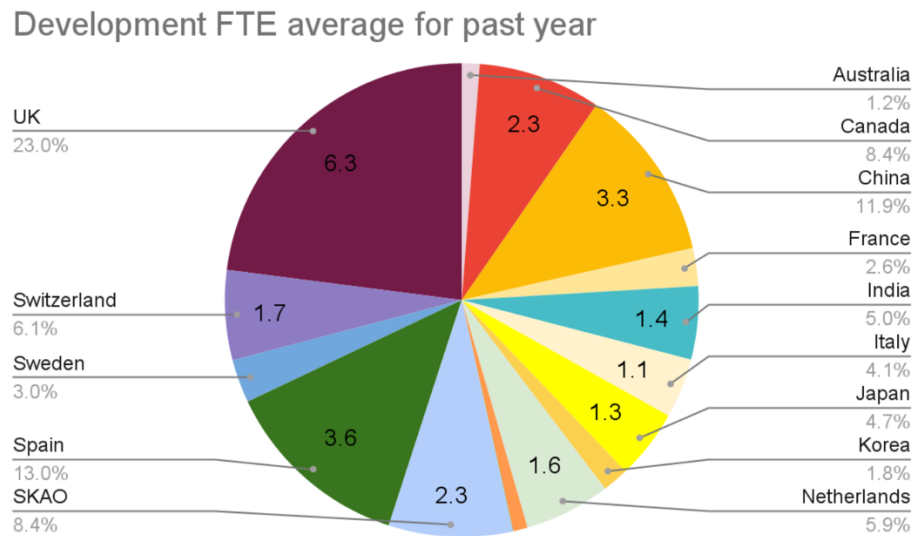


The SRCNet Project

The SRCNet Project aims to deliver a working SRC Network in time for formal start of SKAO Operations, and for intermediate science verification stages

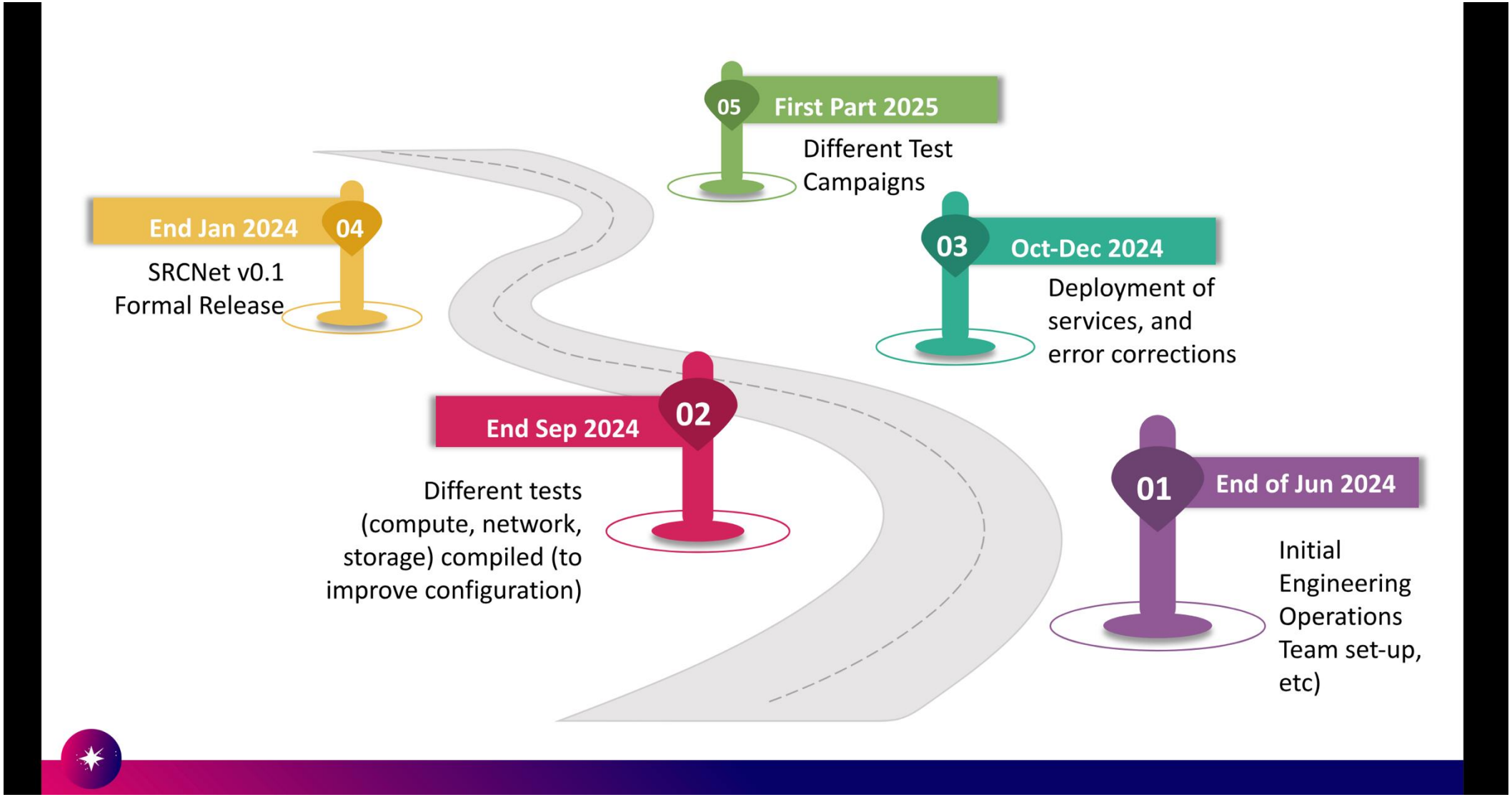
- End date July 2028

This is distinct* from the long term "steady state" functioning of the fully-formed SKA Regional Centre Network



Currently about 40 person-worth of effort** from 13 countries plus SKAO

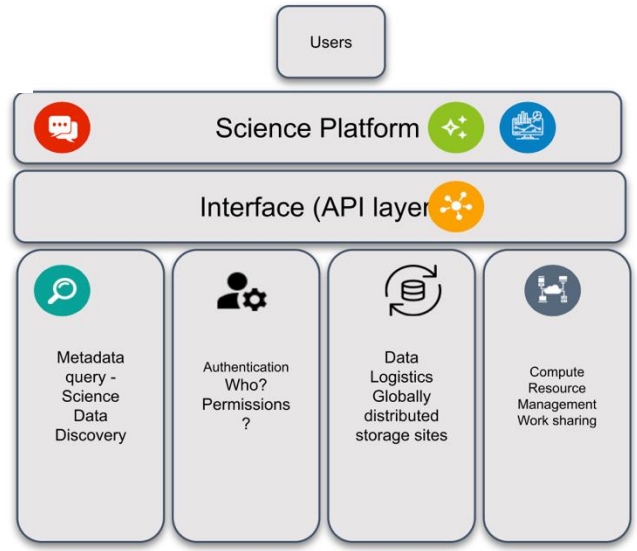
*This distinction is important because governance structures are expected to be reassessed for long term functioning **Effort mid-2023 to mid-2024


05
First Part 2025
Different Test Campaigns
End Jan 2024
04
SRCNet v0.1 Formal Release
03
Oct-Dec 2024
Deployment of services, and error corrections
End Sep 2024
02
Different tests (compute, network, storage) compiled (to improve configuration)
01
End of Jun 2024
Initial Engineering Operations Team set-up, etc)

SRCNet0.1

This is an "engineering" version

- **Built to show the architecture and test how it works**
- **Internal only** - no user-facing activities
- Exclusive storage to use in testing
- Compute to use during testing campaigns (may be backfilled when idle)
- Learn how to deploy and operate the services
- Set up of the SRC Operations Group, with limited scope



- Common Authentication: IAM
- Visualisation Tools (local)
- IVOA Protocols: TAP, SODA
- Data Discovery and Access from (Rucio)Data Lake
- Ingestion Service Prototype
- Python Client: Astroquery Module
- User Interface: Gateway **https://gateway.srcdev.skao.int/**
- Analysis Interfaces: JupyterHub (compulsory); CANFAR Science Platform, Azimuth (UK)

SRC INITIAL PLEDGES

	SP SRC	NL SRC	SW SRC	UK SRC	CH SRC	CN SRC	CA SRC	JP SRC	IT SRC	KR SRC	Total
Storage (PB)	0.500	0.100	0.300	4.000	0.400	1.000	1.200	0.651	0.300	0.270	8.711
Compute (PFLOPS)	0.010	0.010	0.011	0.175	0.014	0.175	0.040	0.022	0.100	0.010	0.567
Percentage Storage (%)	5.740	1.148	3.329	45.919	4.592	11.480	13.776	7.473	3.444	3.100	
Percentage Compute (%)	1.765	1.765	1.853	30.891	2.471	30.891	7.061	3.883	17.652	1.765	

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	SP SRC	NL SRC	SW SRC	UK SRC	CH SRC	CN SRC	CA SRC	JP SRC	IT SRC	KR SRC	Total
Storage (PB)	0.500	0.100	0.300	4.000	0.400	1.000	1.200	0.651	0.300	0.270	8.711
Compute (PFLOPS)	0.010	0.010	0.011	0.175	0.014	0.175	0.040	0.022	0.100	0.010	0.567
Percentage Storage (%)	5.740	1.148	3.329	45.919	4.592	11.480	13.776	7.473	3.444	3.100	
Percentage Compute (%)	1.765	1.765	1.853	30.891	2.471	30.891	7.061	3.883	17.652	1.765	

ITALY @ SRC NET

- Long lasting contribution to SKA NET
- Involvement in various TEAMs
- Leadership in the ORANGE TEAM for the development of Visualization tools for radioastronomy data
- From December 2024, leadership also of the AZURE TEAM for the development of the Italian node of the SRC

For 2025

- Development: 2.3 FTE
- Operation: 0.7 FTE
- Science User Support: 0.4 FTE

Two dedicated TDs under hiring process

THE ITALIAN REGIONAL CENTRE

- Where: Bologna Technopole
- When: End 2025
- What (first “release”):
  - Dedicated 2 PF hybrid computing system
  - 5 GPUs H100 nodes (>120 TF)
  - ~60 Fat CPU nodes (1TB RAM)
  - On-line storage: 5 PB
  - Long term storage: 11 PB
  - 200 Gb/s geographic network
  - Direct access to:
    Marco Polo Tier 1 system ~ 15 PF