Outline

Introduction to the SRCNet Development Project ● SRCNet Vision ● Core Capabilities	**Rosie Bolton**
Understanding the SRCNet Development Project (1) ● Top-Level Roadmap	**Rosie Bolton**
Understanding the SRCNet Development Project (2) ● Agile Release Train	**Jeremy Coles**
● Ways of Working	
Understanding the SRCNet Development Project (3) ● Current Delivery Progress	**Janneke de Boer**

SKAO REGIONAL CENTRE NETWORK

Introducing the SRCNet Development Project

Rosie Bolton

21/03/2024
Shanghai

SKAO Code of Conduct for Meetings & Events

The SKA Observatory (SKAO) aims to create a welcoming and inclusive environment where everyone feels they belong, there is fairness and respect for all individuals, and diverse perspectives and ideas thrive. This means cultural differences are to be respected, and harassment, bullying and discrimination will not be tolerated. More details are provided in the SKAO Code of Ethics.

All SKA meeting and event participants must contribute to an environment that encourages the creation and exchange of ideas, recognises and values differences and celebrates the diversity and contributions made by people of a range of cultures and backgrounds.

SRCNet Vision & Core Capabilities

SKAO Mission

"The SKAO's mission is to build and operate cutting-edge radio telescopes to transform our understanding of the Universe, and deliver benefits to society through global collaboration and innovation."

Staged Delivery Strategy

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 May	2025 Nov
AA2	**64 dishes 64 stations**	**2027 Apr**	**2026 Dec**
AA*	144 dishes 307 stations	2028 Jan	2028 Mar
Operations Readiness Review		2028 Apr	2028 Aug
AA4	197 dishes 512 stations	TBD	TBD

- **Target: Build the SKA Baseline design (197 Mid Dishes, 512 Low Stations = "AA4")**
- Not all funding yet secured
- Develop the earliest possible working demonstration of the architecture and supply chain (AA0.5)
- Maintain a continuously working and expanding facility that demonstrates the full performance capabilities of the SKA Design
- User interaction with data products Expected to start towards the end of AA2 when the SKA is scientifically interesting **(Science Verification)**
- SRCs expected to be involved in this

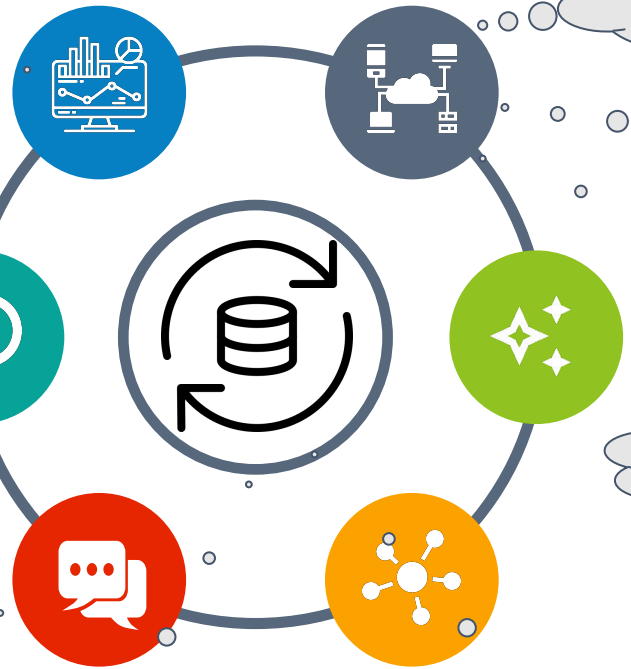
SRC Network Vision

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.**

Initially, we will do this by:

- developing a scalable, prototype SRC Network that allows authorised users and teams to access and analyse SKA data;
- developing the software, architecture, policies and processes necessary for SRC Network operations;
- growing the prototype SRC Network, as new SRCs become available and expanded or new functionalities are developed, leading towards a fully operational and global Network.

SRC Network is critical to SKA Science



Science Analysis Platform

Creation of Project-Level and Advanced Data Products

Public Science Archive

Execute pipelines/workflows on the SRC Network

Access to SKAO data for project users

Single Sign-on and Secure, Federated AAI

Monitoring of performance against pledges

Monitor SRC availability

User support and community training

Replica management

Receive data from SKAO

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)

- *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.*

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SRC Network Principles (highlighted for SRCNet0.1)

- *There will be a **common SKAO/SRC Network user account** that allows users access to SRC Network resources*

Single AAI System used by all SRCNet0.1 sites and services

Common policies for SRCNet sites (in addition to local policies)

- *Security of the SRC Network is the responsibility of the SRC Network.*

Ensure good user experience, for all users - Science Gateway UX

- *The SRC Network will be committed to providing, and abiding to, **accessible and equitable tools, practices and processes**.*

Implement IVOA standards and easy data and service discovery

- *The SRC Network will **embrace FAIR and Open Science principles** whenever possible and appropriate.*

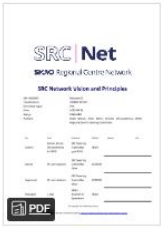
Single AAI System used by all SRCNet0.1 sites and services

- *Resources pledged into the SRC Network will enter, and be allocated from, **a global federated pool**.*

These two are related; users go to best location depending on data location and appropriate available services, replicas centrally planned / moved to optimise global access

- *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.*

Key SRCNet Documents!

Document number	Title	PDF	Description
SRC-0000001	SKA Regional Centres Network (SRCNet) Software Architecture Document		
SRC-0000002	SRC Net Top-Level Roadmap		
SRC-0000003	SRCNet Science Analysis Platform Vision		
SRC-0000004	SKA Regional Centres Network (SRCNet) Use Cases		
SRC-0000005	SRC Network Vision and Principles		
SRC-0000006	SRCNet Operational Concept		

Questions / Discussion

End!

SKAO REGIONAL CENTRE NETWORK

Understanding the SRCNet Development Project

SRCNet Program Team

21/03/2024
Shanghai

Top-Level Roadmap

Rosie Bolton

Staged Delivery Strategy

Milestone event (earliest)		SKA-Mid (end date)	SKA-Low (end date)
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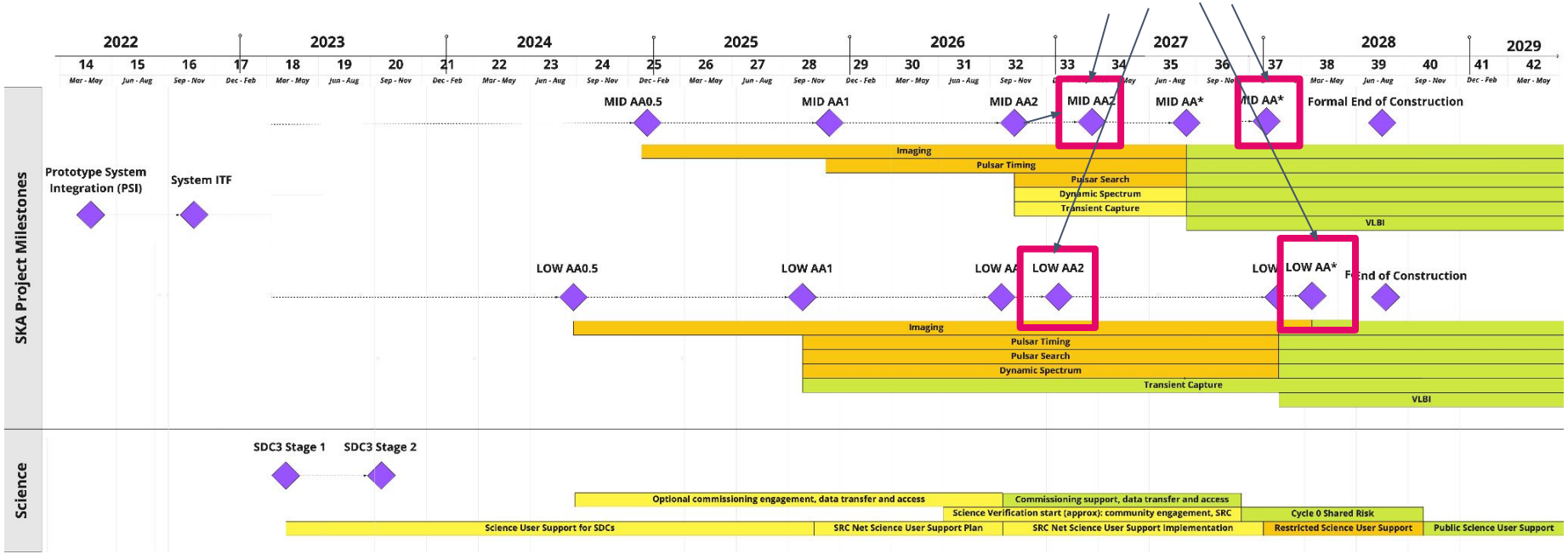
External Milestones

Shifted dates compared to document



Top Level Roadmap

SRC | Net

SKAO Regional Centre Network

SRCNet Top-Level Roadmap

SRC-0000002	Revision 01
Classification:	UNRESTRICTED
Document type:	PLN
Date:	2023-08-21
Status:	RELEASED
Authors:	Salgado, Jesús; Bolton, Rosie; Swinbank, John; Joshi, Rohini; Sánchez, Susana; Villote, Jean-Pierre; Gaudet, Séverin; Yates, Jeremy; Barbosa, Domingos; Taffoni, Giuliano; Frank, Bradley; van Haarlem, Michiel; Breen Shari; Conway, John; Akahori, Takuya; Yates, Jeremy; Tolley, Emma Elizabeth; Wadadekar, Yogesh; Lee-Waddell, Karen; de Boer, Janneke;

Signed document (August 2023) written by SRCSC members and co-opted helpers from the SRCNet ART

This sits with Architecture Document (SRC-0000001) and Science Platform Vision (SRC-0000003) to say ***Why?*** (Vision, User driven), ***When?*** (Roadmap) and ***What?*** (Architecture).

(We are here to talk about some of the **How?** and **Where?**)

What is covered?

- The Top-Level roadmap declares:
  - Required SRCNet version in-line with other SKA milestones
  - It tries to identify the needs of the scientific community on the use of the SRCNet until first public version (SRCNet1.0)
  - It tries to identify the required resources to implement this intended version on terms of:
    - FTEs and skills
    - Storage
    - Computing

What is not covered?

- The Top-Level roadmap does not declare:
  - The real resources that the SRCNet will have (it would depend on contributions)
  - Governance aspects
  - Operation plan
  - Platform and Software stack solutions
    - It could be considered the seed of an implementation plan but more information on budget, governance, operations set-up, etc is needed
  - It only covers until first operational version (although some information has been added to extrapolate figures)

Roadmap Timeline

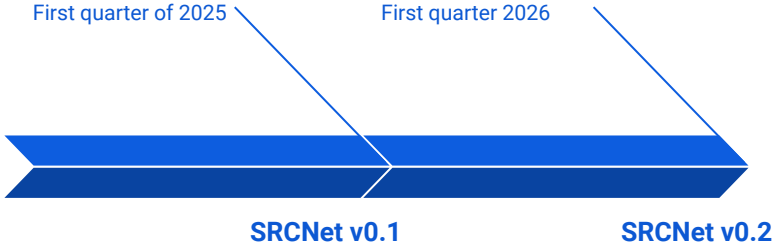
First quarter of 2025

SRCNet v0.1

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

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] (Potentialy Opportunity to engage SRCNet with AA0.5 data transfer and access.)	• 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)**

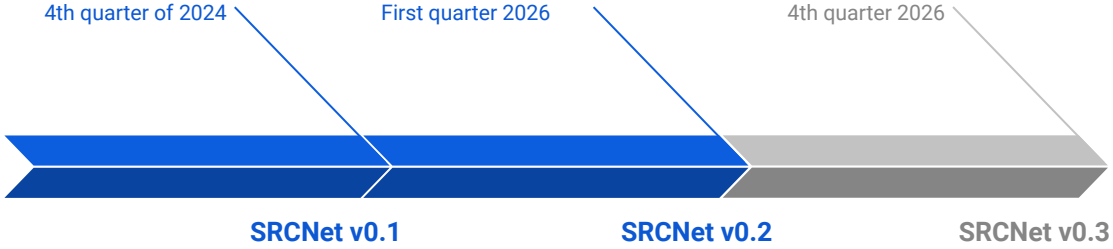
Roadmap Timeline



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	• 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

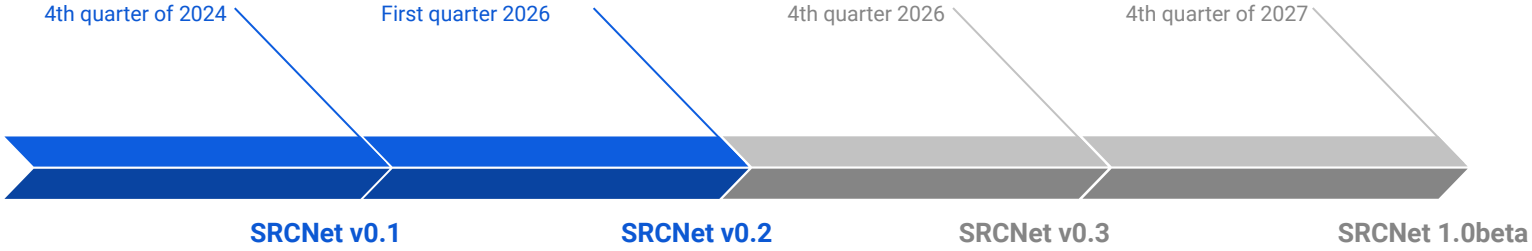
Roadmap Timeline



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

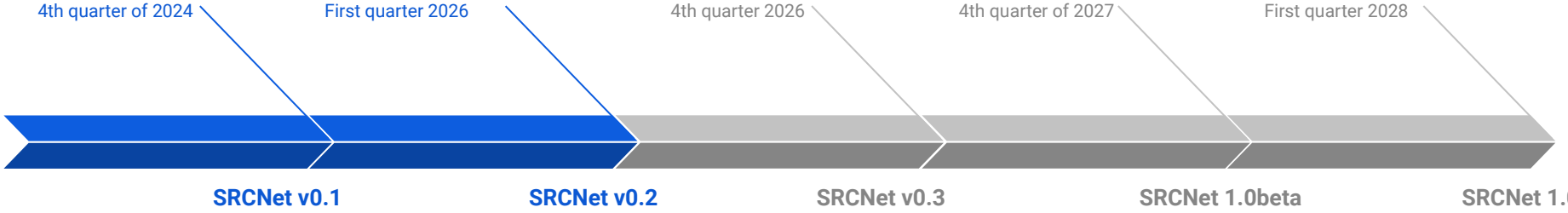
Milestone	Description	SRC Net Functionality	Scope (users)
4th quarter 2026	Cycle 0 proposals, AA2 and Science Verification	• Improved data dissemination. Use of available storage • SKA preliminary data (and some precursors data) disseminated into a prototype SRCNet • Upgraded federated computing. Basic 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	• 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	• Full support to PI and program science tasks • Complete portal wich 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

Staged Delivery and SRCNet releases side by side

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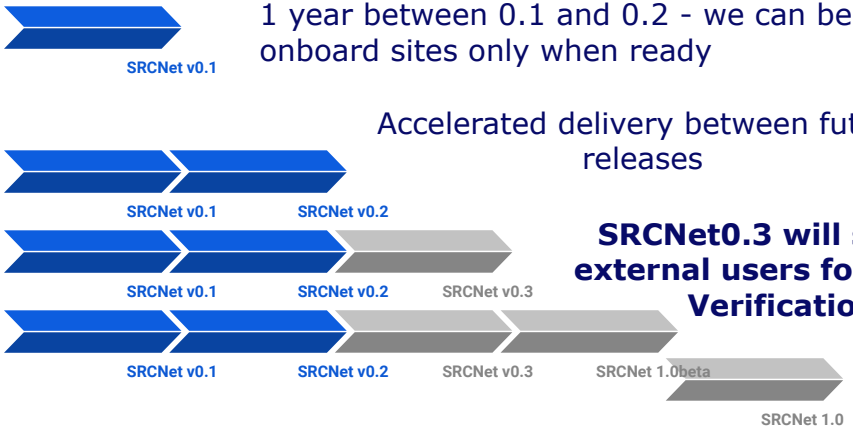


1 year between 0.1 and 0.2 - we can be gentle to onboard sites only when ready

Accelerated delivery between future releases

SRCNet0.3 will support external users for Science Verification!

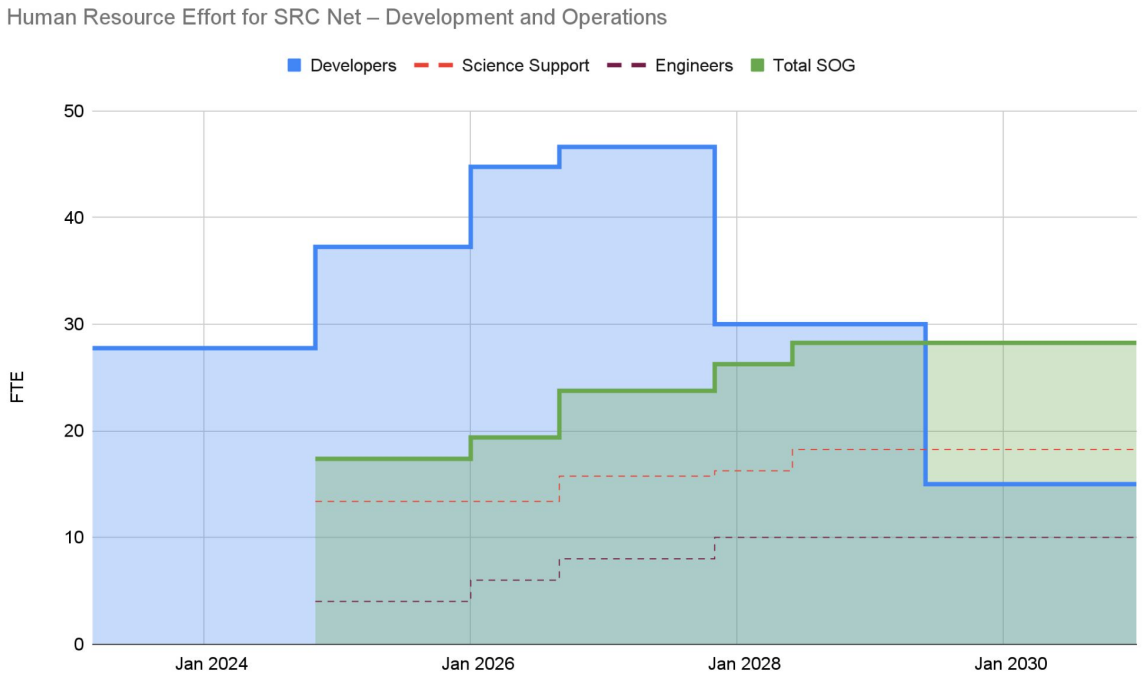
3-6 months between 1.0beta and 1.0 - user support restricted in beta

FTE - what we think we need to develop the SRCNet vision

Based on top-level roadmap document

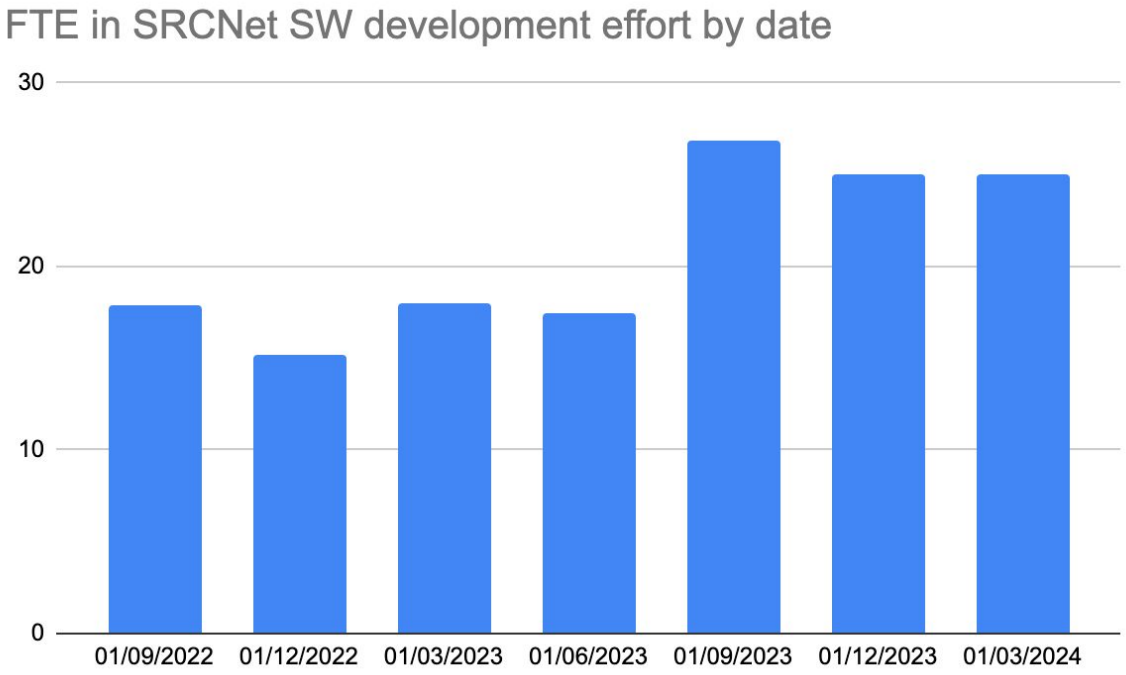
Currently anticipate needing 28 FTE of useful development effort

Increase need by about 10 FTE to add operational effort this year

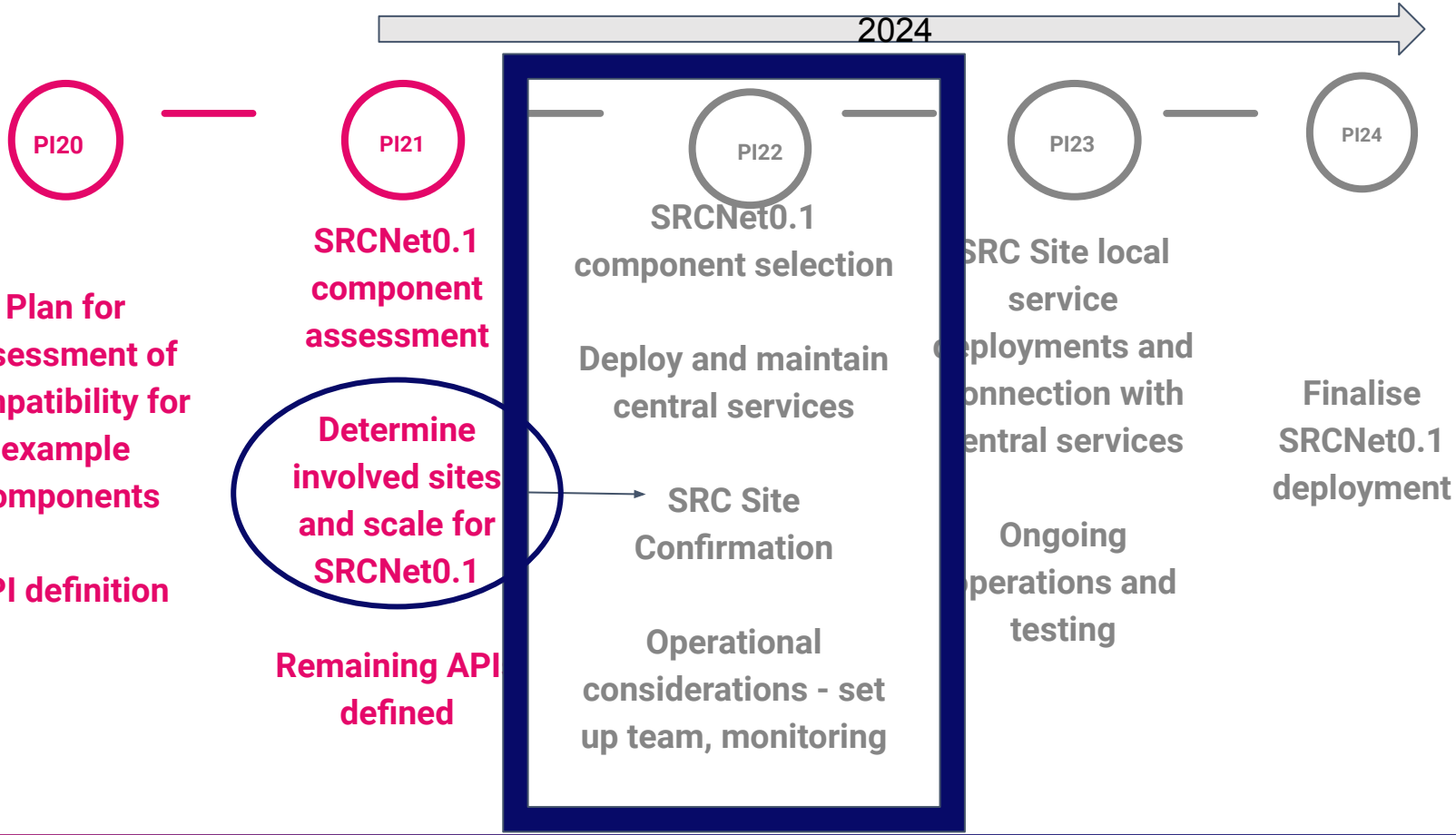


FTE - what we currently have

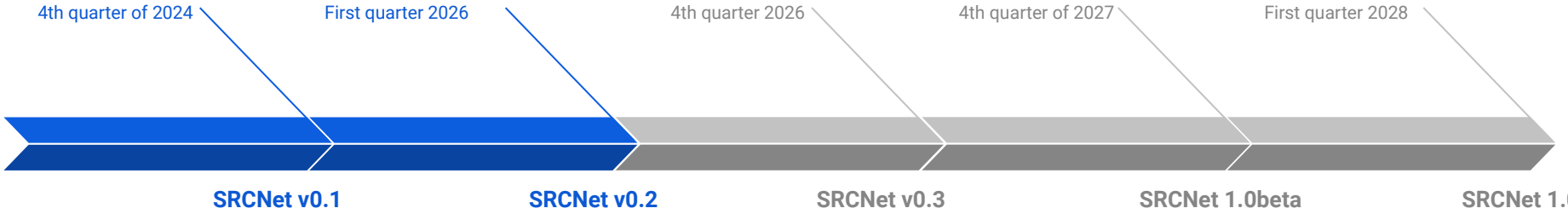
Based on PI-by-PI knowledge from SRCSC members and team members themselves



SRCNet0.1 deployment vision



SRCNet0.1 and why we are here



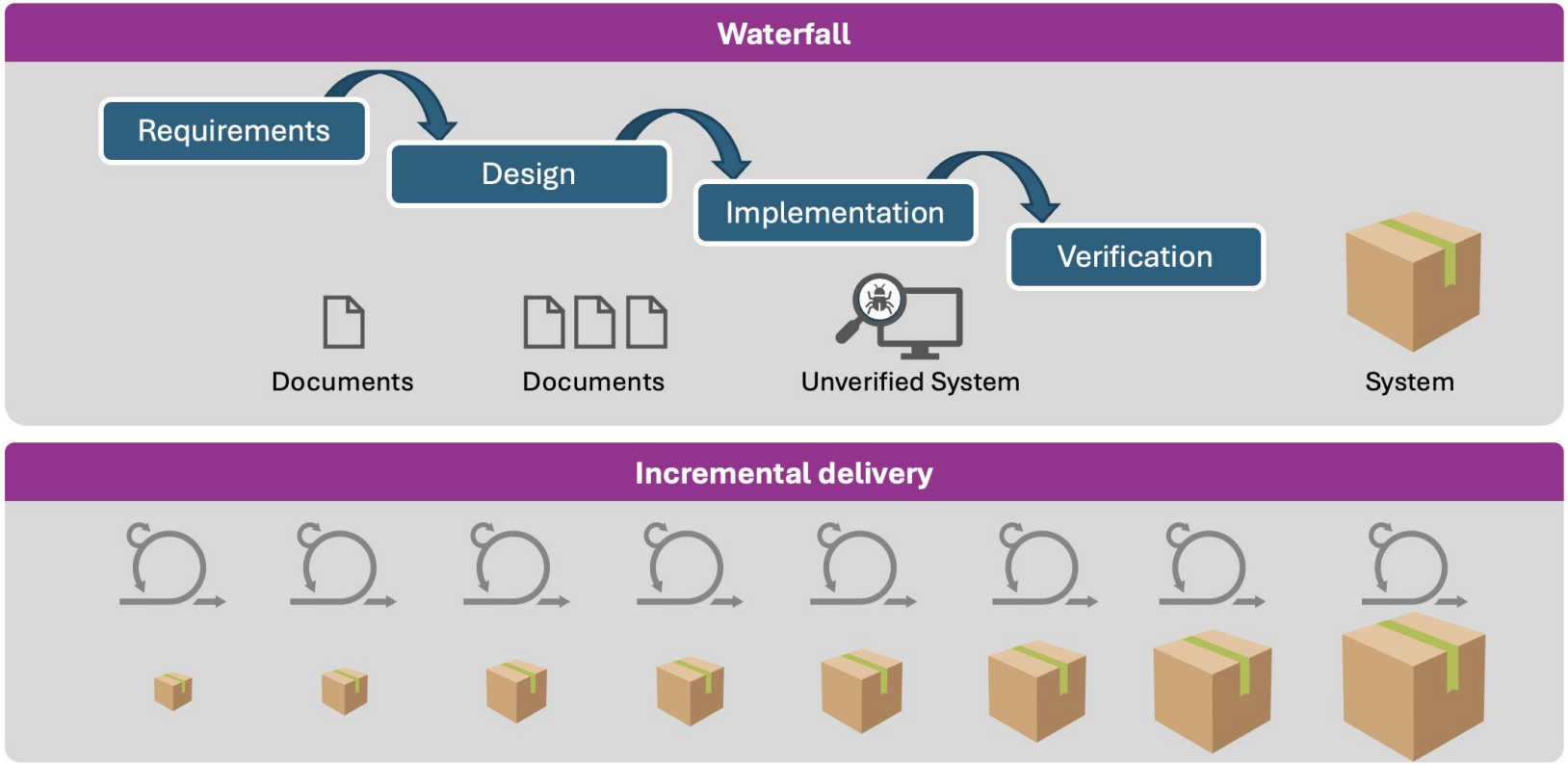
- **SRCNet0.1 is an agreed milestone (first of five) on our top level roadmap**
- We are technically ready to select software components and have skills in our teams to deploy these - this is brilliant!
- **In the past, we have been under-resourced compared to our roadmap estimates**
- Our discussions this week will help us build the implementation plan for the next few PIs, delivering a working 0.1 version ready for testing, whilst retaining the essential development work of the ART
- This week, we need to discuss the evolution of this effort as we move to deploy 0.1 - will offers of operations support reduce our effort available for development work? We need to **avoid the trap** of putting too much effort into 0.1 node deployment and operations at the expense of our future software

Top-Level Roadmap - **Any Questions?**

Agile Release Train

Jeremy Coles

Being Agile


Waterfall
Requirements
Design
Implementation
Verification
Documents
Documents
Unverified System
System
Incremental delivery

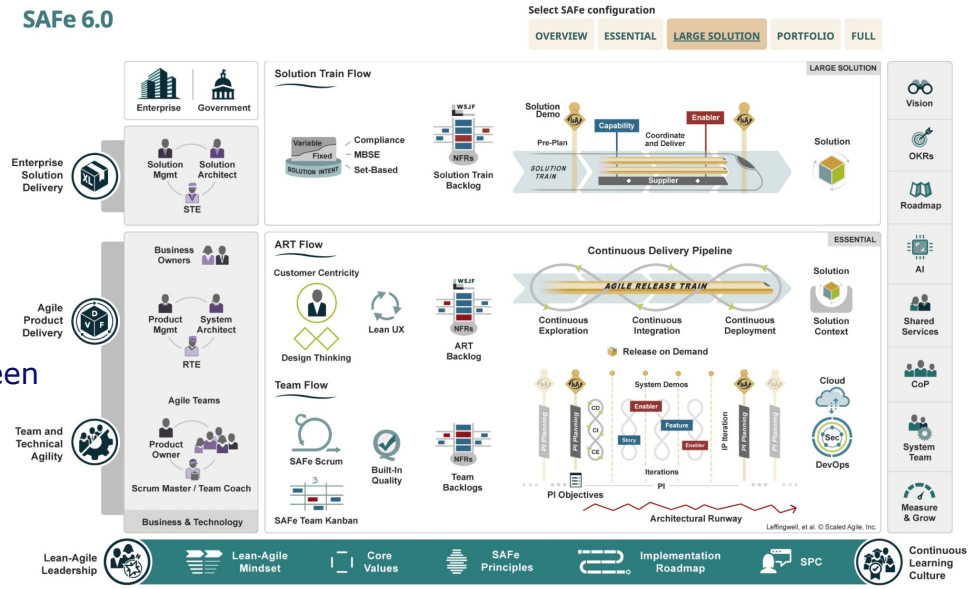
Scaling Development

Considered Five alternatives:

- Disciplined Agile Delivery (DAD)
- Dynamic Systems Development Method (DSDM)
- Large Scale Scrum (LeSS)
- Modular Framework for Scaling Scrum
- Scaled Agile Framework (SAFe™)

SKAO chose SAFe™ because:

- Covers large project, non-software issues typically seen in traditional System Engineering
- Documentation and Training courses a huge asset to help roll this out world-wide
- Largest market share so suppliers know about it and there is a big community



https://scaledagileframework.com

What is SAFe?

SAFe™ is a **knowledge base** of **proven**, integrated **principles**, **practices** and **competencies** for achieving agility by implementing **Lean**, **Agile** and **DevOps** at Scale.

https://scaledagileframework.com

Lean-Agile Mindset

Lean Thinking

Principles

1. Precisely specify value by product
2. Identify the Value Stream for each product
3. Make value flow without interruptions
4. Let the Customer pull value from the producer
5. Pursue perfection

Agile Values

We are uncovering better ways of developing software by doing it and helping others do it.

Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

agilemanifesto.org

https://scaledagileframework.com/lean-agile-mindset

SAFe Principles

SAFe Principles

#1 Take an economic view

#2 Apply systems thinking

#3 Assume variability; preserve options

#4 Build incrementally with fast, integrated learning cycles

#5 Base milestones on objective evaluation of working systems

#6 Make value flow without interruptions

#7 Apply cadence, synchronize with cross-domain planning

#8 Unlock the intrinsic motivation of knowledge workers

#9 Decentralize decision-making

#10 Organize around value

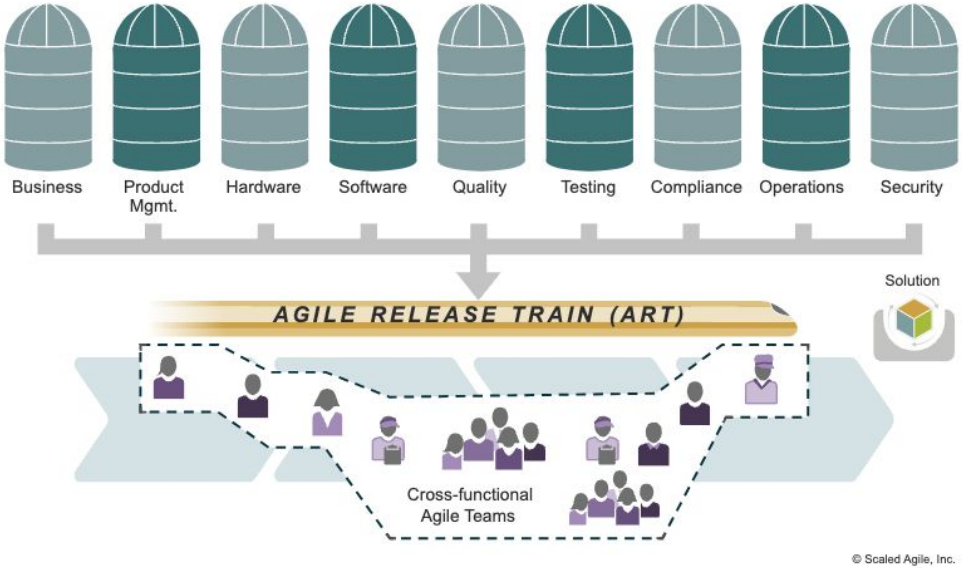
https://scaledagileframework.com/safe-lean-agile-principles/

Agile Release Trains (ARTs)

https://scaledagileframework.com

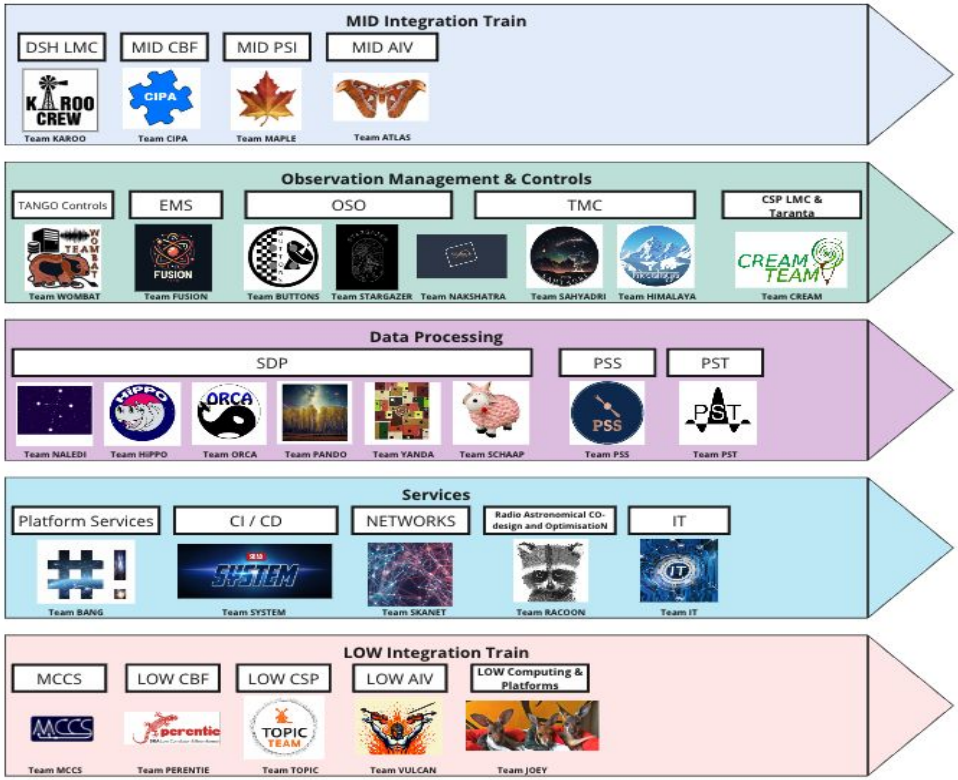
Each ART is a virtual organization of 5–12 teams (typically 50 – 125 people) that plans, commits, and develops and deploys together.

- Agile Release Trains are fully cross functional
- Aligns teams to a common mission
- Delivers a continuous flow of value



https://scaledagileframework.com/agile-release-train

Six ARTs


MID Integration Train
DSH LMC
MID CBF
MID PSI
MID AIV
Team KAROO
Team CIPA
Team MAPLE
Team ATLAS
Observation Management & Controls
TANGO Controls
EMS
OSO
TMC
CSP LMC & Taranta
Team WOMBAT
Team FUSION
Team BUTTONS
Team STARGAZER
Team NAKSHATRA
Team SAHYADRI
Team HIMALAYA
Team CREAM
Data Processing
SDP
PSS
PST
Team NALEDI
Team HIPPO
Team ORCA
Team PANDO
Team YANDA
Team SCHAAP
Team PSS
Team PST
Services
Platform Services
CI / CD
NETWORKS
Radio Astronomical CO-design and OptimisatioN
IT
Team BANG
Team SYSTEM
Team SKANET
Team RACOON
Team IT
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Team PERENTIE
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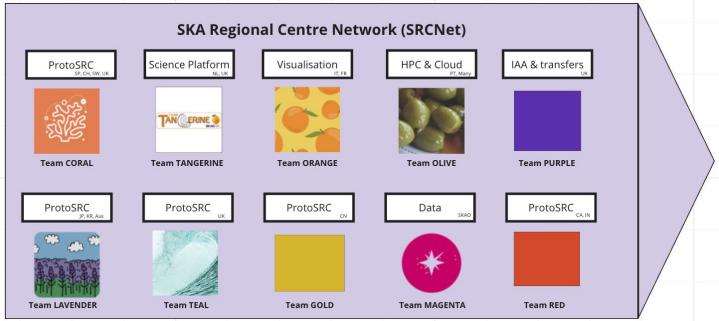
Team VULCAN
Team JOEY


SKA Regional Centre Network (SRCNet)
ProtoSRC
Science Platform
Visualisation
HPC & Cloud
IAA & transfers
Team CORAL
Team TANGERINE
Team ORANGE
Team OLIVE
Team PURPLE
ProtoSRC
ProtoSRC
ProtoSRC
Data
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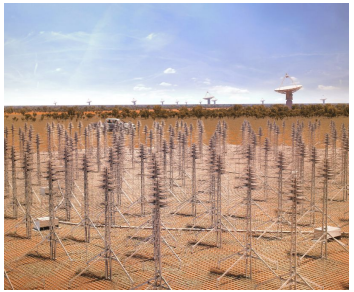
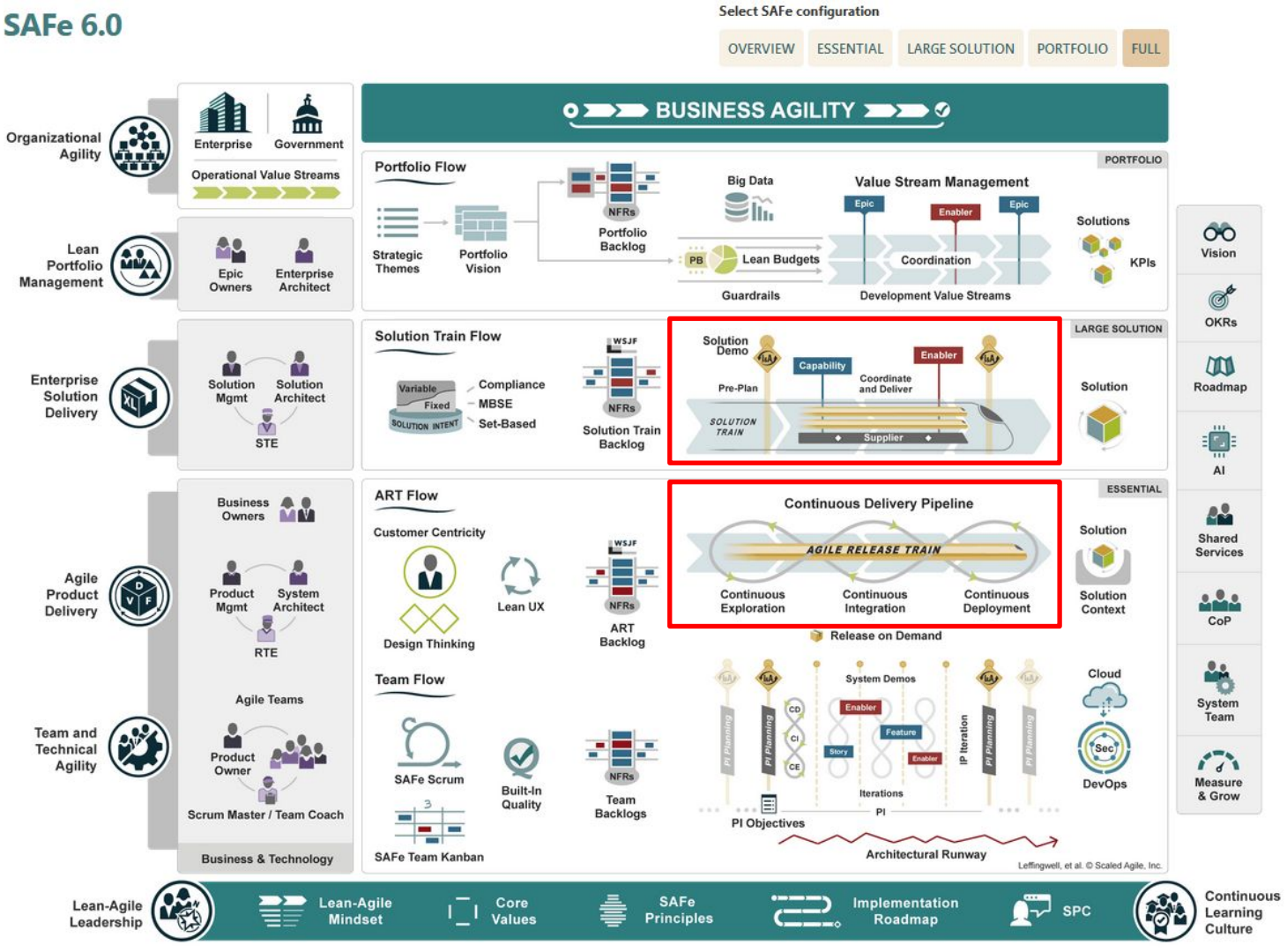
Team LAVENDER
Team TEAL
Team GOLD
Team MAGENTA
Team RED



Full SAFe

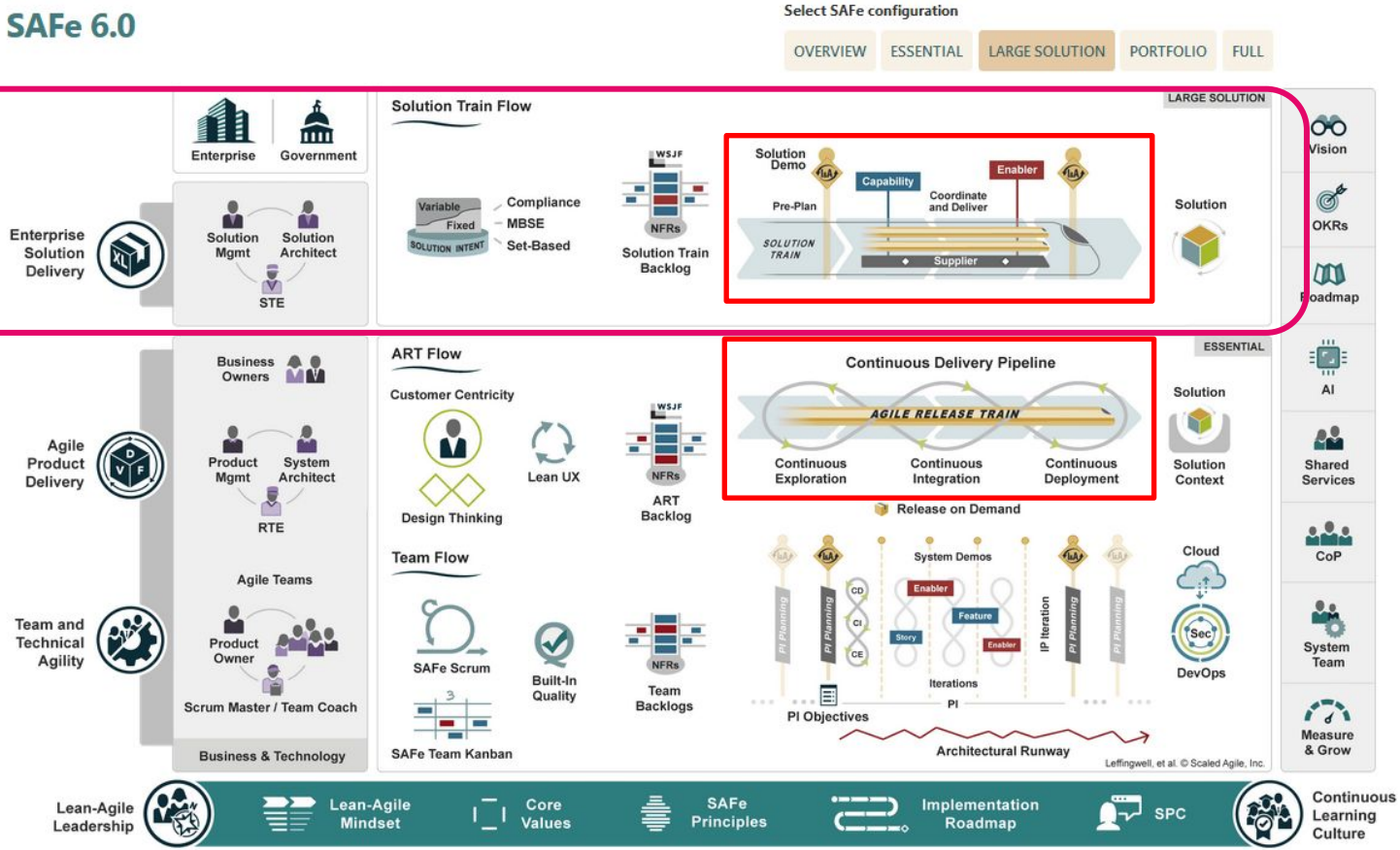
Enterprise scale.



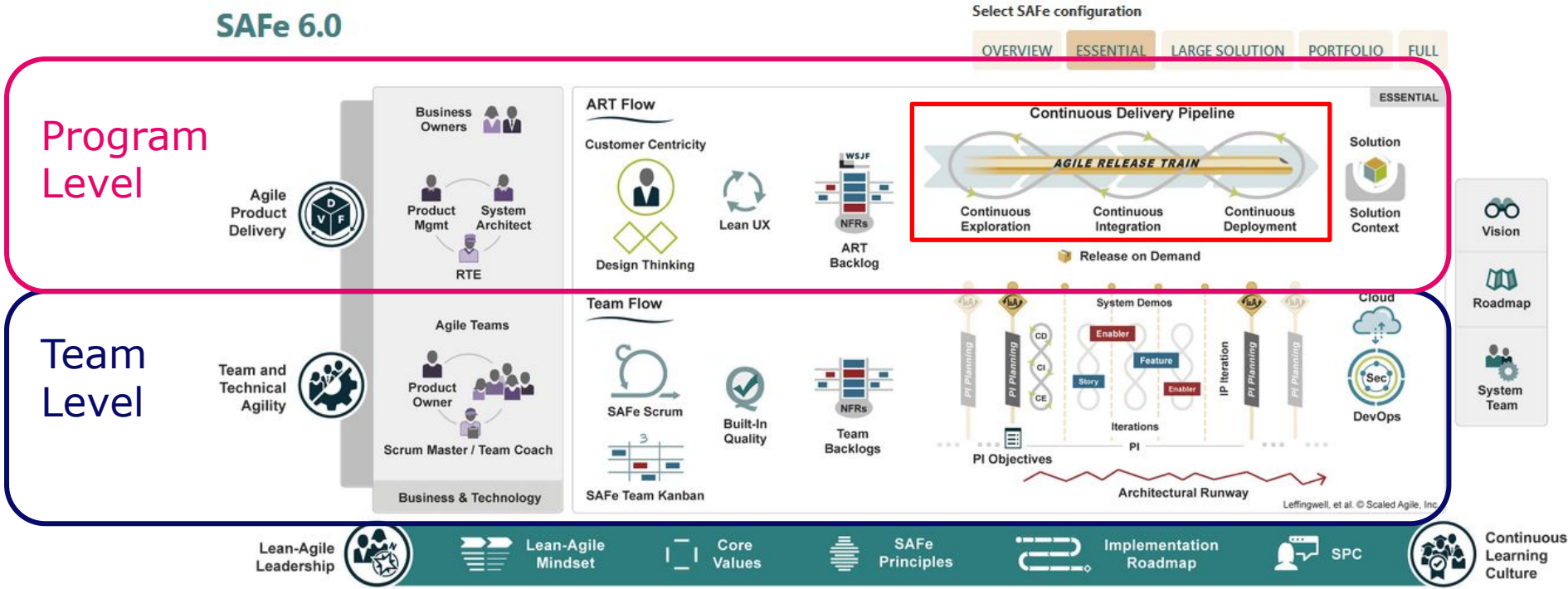
Large Solution SAFe - SKAO

Solution Level

OMC, MID, LOW, DP & Services.



Essential SAFe - SRCNet - Agile Release Train



Key SAFe Roles at the Program-Level

Governance, resources, funding, end-users…

Customer – consumes the output from the agile release train. Could be external users or people within the organisation. The customers are the people who will have the final view on whether the output was valuable.

Business Owner – key stakeholders who are ultimately responsible for the business/organisation outcome.

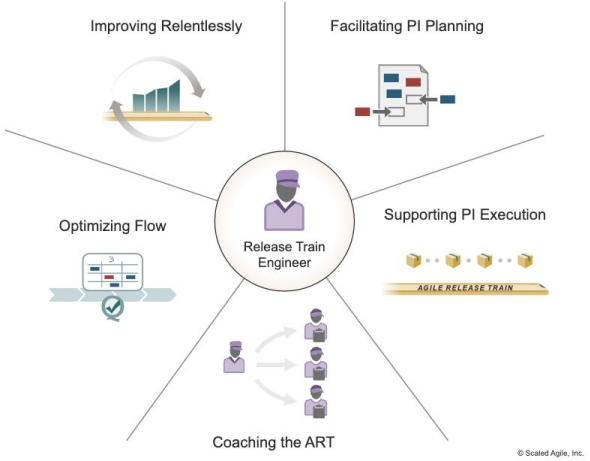
Program Team:

Product Manager – responsible for prioritising features and ensuring they are well described and understood.

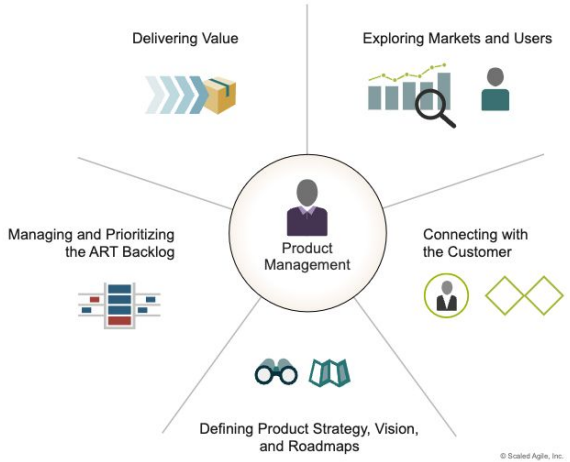
Release Train Engineer - responsible for ensuring the agile release train (the team of agile teams) work well together and follow the processes.

System Architect/Engineer – responsible for designing and sharing the architectural vision across the agile release train, which means the work delivered will be fit for purpose.

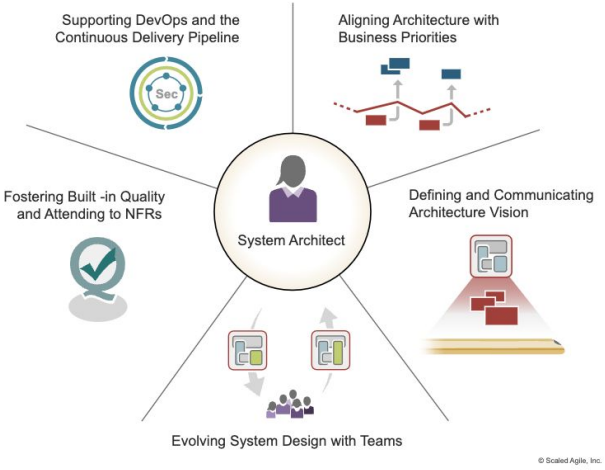
Program Team



Release Train Engineer



Product Management



System Architect

We ensure the success of SRCNet from within.

We guide the ART and program-level decisions.

We are still accountable to BOs/stakeholders… who set the criteria for success and who make governance-level decisions.

Program Team - Who's Who

Role	Name	Contributor	Background
Product Manager	Rosie Bolton	SKAO	Radio Astronomer, SDP Project Scientist
Product Manager	Robert Perry	SKAO	UK Gov Senior Delivery Manager, Software Engineer, Agile Coach
Product Manager	AusSRC recruiting		
Architect	Jesús Salgado	SKAO	ESA Astronomy Archives Tech. Leader & IVOA TCG
Release Train Engineer	Jeremy Coles	UKSRC	HEP grid operations & SDP Project manager, SPC, DP ART RTE
Project Coordinator	Janneke de Boer	NLSRC	Project Management, Software developer, Scrum Master

Critical Team Roles

Scrum Master / Team Coach

- Facilitating PI planning
- Supporting iteration execution
- Improving flow
- Building high-performing teams
- Improving ART Performance

Product Owner

- Connecting with the Customer
- Contributing to the vision and roadmap
- Managing and prioritizing the team backlog
- Supporting the team in delivering value
- Getting and applying feedback

https://scaledagileframework.com

Work closely with the Program Team

https://scaledagileframework.com/agile-teams/

Backlog Items

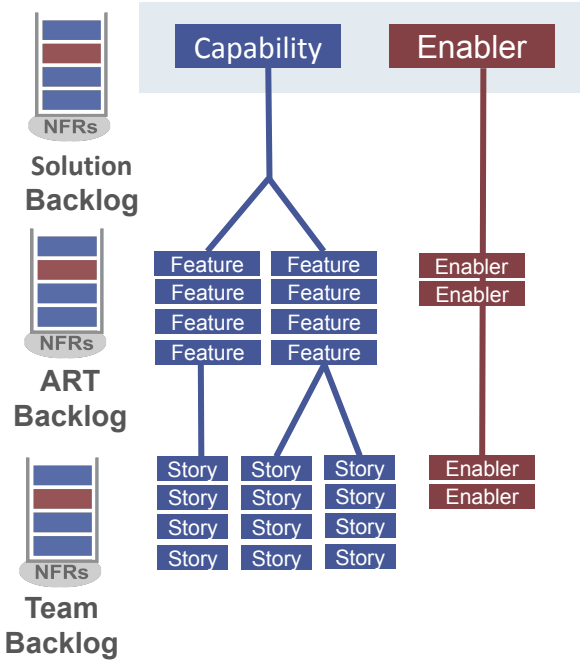
A **SAFe Capability** is a higher-level solution behaviour that typically spans multiple ARTs. They are sized and split into multiple features to facilitate their implementation in a single PI.

A **Feature** is a service that fulfills a stakeholder need. Each Feature includes a name, a benefit hypothesis, and acceptance criteria. A Feature is sized or split, as necessary, to be delivered by an ART in a PI.

Stories are short descriptions of a small piece of desired functionality. Stories are written from the perspective of the user.

Enablers support the activities needed to extend the Architectural Runway to provide future business functionality. Enablers are captured in various backlogs throughout SAFe.

https://scaledagileframework.com



The *current SRCNet* teams

Coral

Purple

Lavender

Gold

Orange

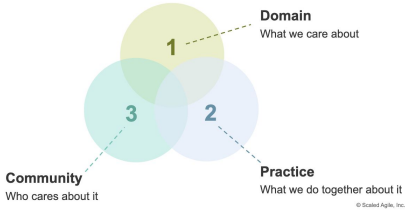
Red

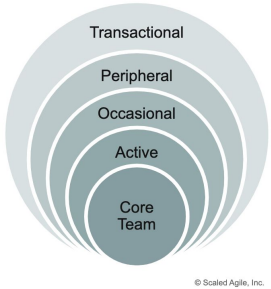
Magenta

Teal(s)

Tangerine

& communities





Olive

- Communities of Practice (CoP)
  - Architecture Community of Practice
  - CI/CD & Testing Community of Practice
  - Cloud Native Community of Practice
    - Cloud Native CoP Meetings
      - 2024-01-17 Cloud Native CoP Kickoff meeting
    - Cloud Native CoP Teas
  - Database Community of Practice
  - Feature Owner's Community of Practice
  - HPC & Cloud Community of Practice
    - HPC & Cloud CoP Meetings
      - 2024-01-23
      - 2024-02-27
  - Lean Agile Community of Practice
  - Processing Community of Practice
  - Product Owner's Community of Practice
  - RASCIL Developers Community of Practice
  - Science analaysis platform Community of Practice (SAP CoP)
    - SAP CoP Meetings
      - 2023-07-25 first SAP CoP
      - 2023-10-03 SAP CoP
      - 2023-11-28 SAP CoP
      - 2024-02-23 SAP CoP
  - SKAO Domain Specialists for Support
  - TANGO community of practice
  - UX Community of Practice (#cop-ux)
  - WIP: Identity Management Community of Practice
    - Identity Management Community of Practice: Meeting History
      - 2023-07-19 Identity Management Community of Practice Launch
      - 2023-10-31 Token Concepts & Workflow knowledge share

Agile Release Train - **Any Questions?**

Ways of Working

Jeremy Coles
(Rob Perry)

Ways of working

SAFe is our Agile methodology - how we **organise**.

How we **behave** is even more important

- between individuals, teams and organisations.

SRCNet is globally **diverse**

- some of our ways of working may be unexpected.

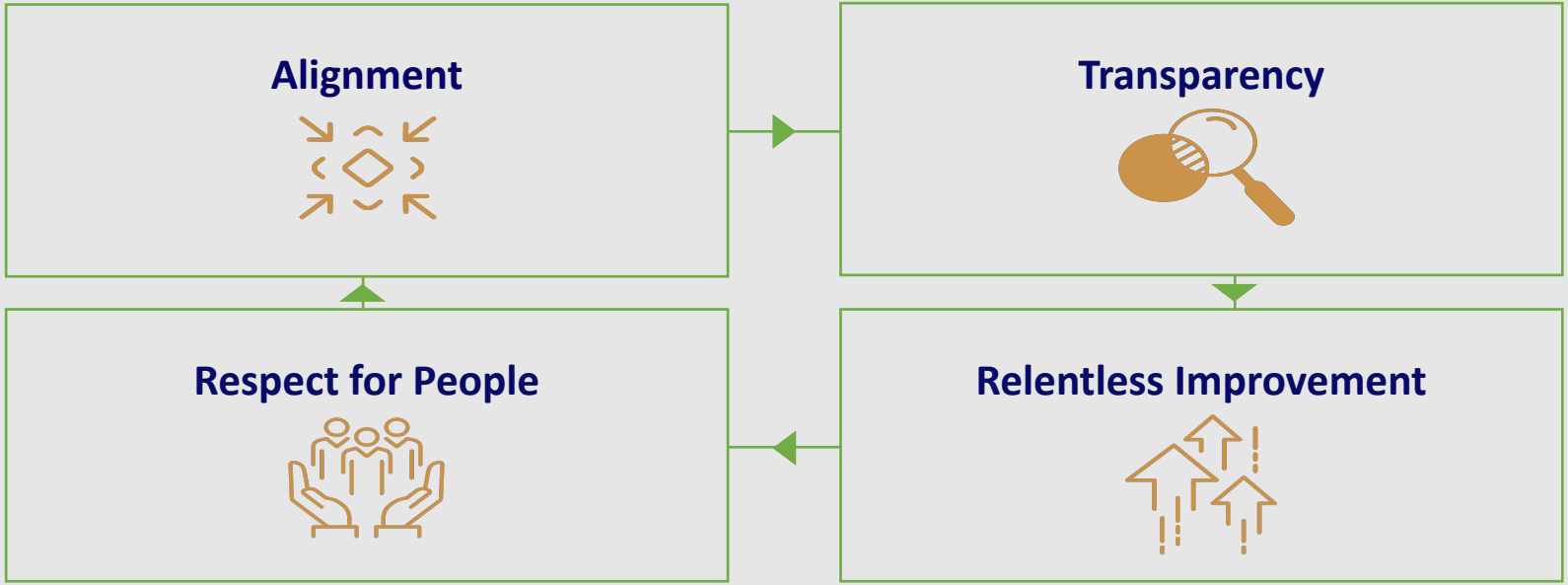
SKAO Values

You may have seen these values many times.

When everything is going well they are easy to forget!

Following these values is more important than any process…

SAFe Core Values



https://scaledagileframework.com/safe-core-values/

SKAO Core Values

- Collaboration
- Diversity and Inclusion
- Safety and Sustainability
- Excellence
- Creativity and Innovation

As leaders we:

Show sensitivity; respecting others and being prepared to amend our natural style to meet the diverse needs and preferences of our colleagues.

This can be especially challenging across languages.

It is helpful to assume positive intent.

Please feel comfortable asking for “amendments”.

As leaders we:

Encourage everyone to speak up and to listen with an open mind.
Encourage information sharing with openness and candour…
Make it safe for people to speak up…

In SRCNet, we boost autonomy by flattening our hierarchy.

Speaking up can mean challenging:

- more senior colleagues
- current norms / expectations

We welcome new ideas and candid feedback.

As leaders we:

Encourage activities that build strong team relationships, team spirit and a supportive team environment.

Working towards our common goal is more important than adhering to strict roles and responsibilities.

Meetings can be either formal or informal.

We highly value work-life balance.

As colleagues we:

Have particular consideration to the inclusion of those working in geographically distant locations to ourselves.

Diversity & Inclusion

SRCNet shall continue to rotate the host country for in-person events.

	Eastern Collaboration Time		Western Collaboration Time		Transpacific Collaboration Time	
	UK	Japan	Canada (Vancouver)	Central Europe	China	Canada (Vancouver)
Summer	UTC +1	UTC +9	UTC -7	UTC +2	UTC +8	UTC -7
	0800 - 0900	1600 - 1700	0800 - 0900	1700 - 1800	0800 - 0900 next day	1700 - 1800
Winter	UTC +0	UTC +9	UTC -8	UTC +1	UTC +8	UTC -8
	0800 - 0900	1700 - 1800	0800 - 0900	1700 - 1800	0900 - 1000 next day	1700 - 1800

We also use “preferred” virtual meeting times.

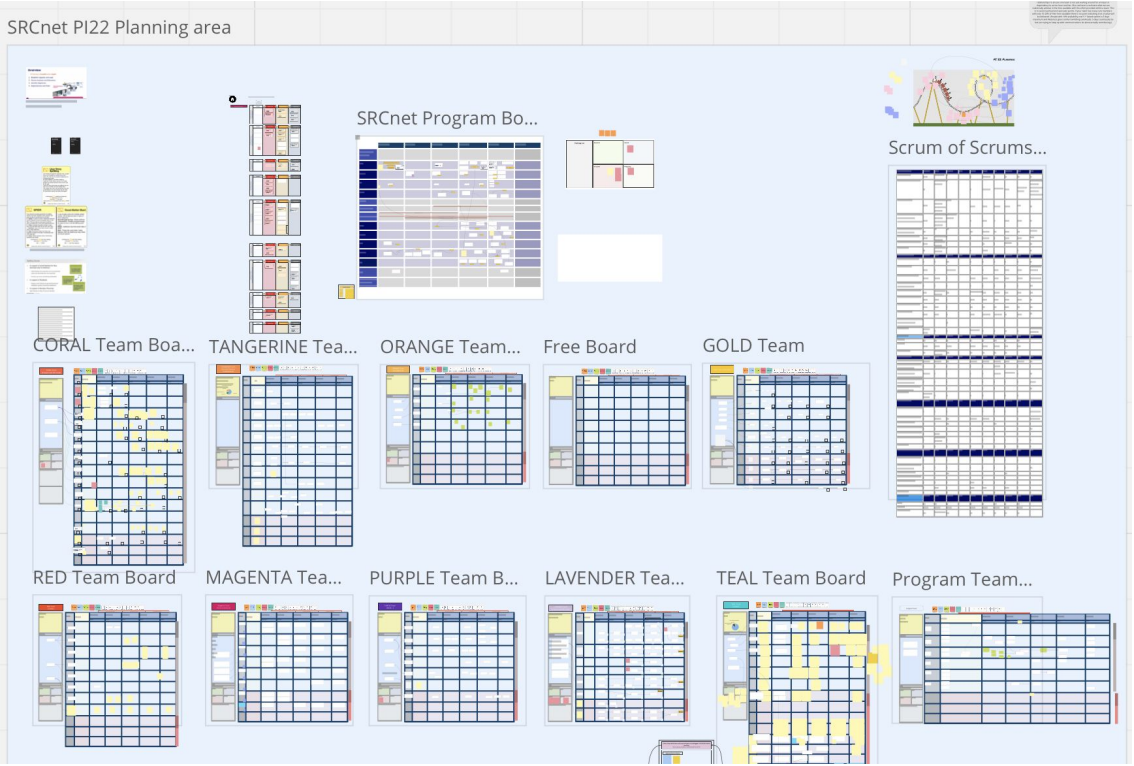
We alternate all feasible ART meetings between East & West.

SRCNet Principles

P10. The SRC Network will lead with principles of fairness, equity and inclusion in all of its activities, and seek diversity of staff…

P11. The SRC Network will adopt and uphold a Code of Conduct in its interactions with staff and users alike. The SKA code of conduct (SKAO-GOV-0000135) will be adopted and apply to all interactions and communications, inclusive of SRC Network staff, SKAO staff, and the user community.

The ART uses open approaches



Transparency

Alignment

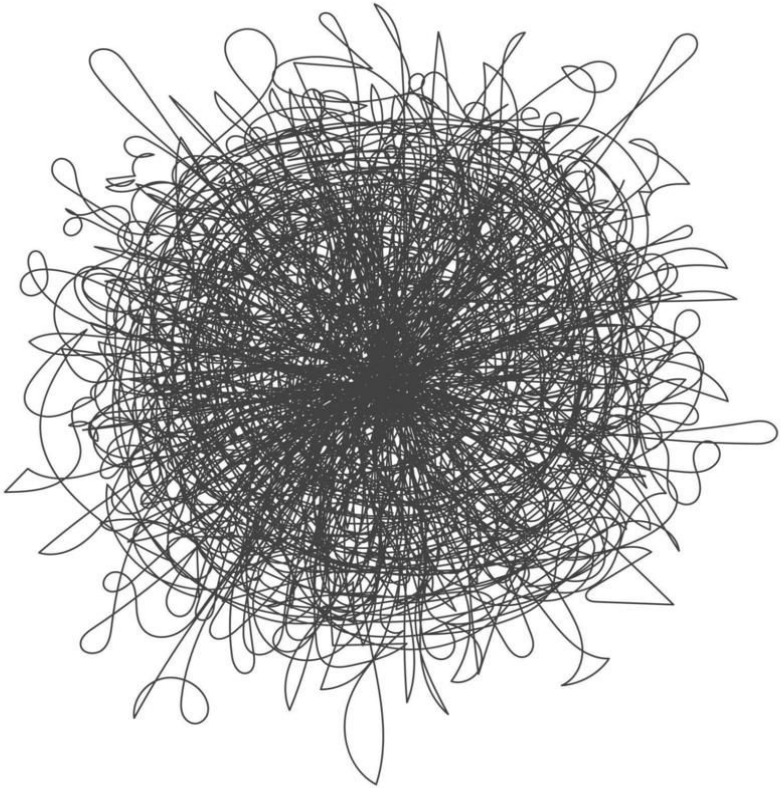
- Weekly ART Sync
- Regular demos
- Joint backlog development
- Common approach in Jira
- Share outputs via Confluence

Ways of working - **Any Questions?**

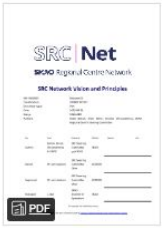
Current Delivery Progress

Janneke de Boer

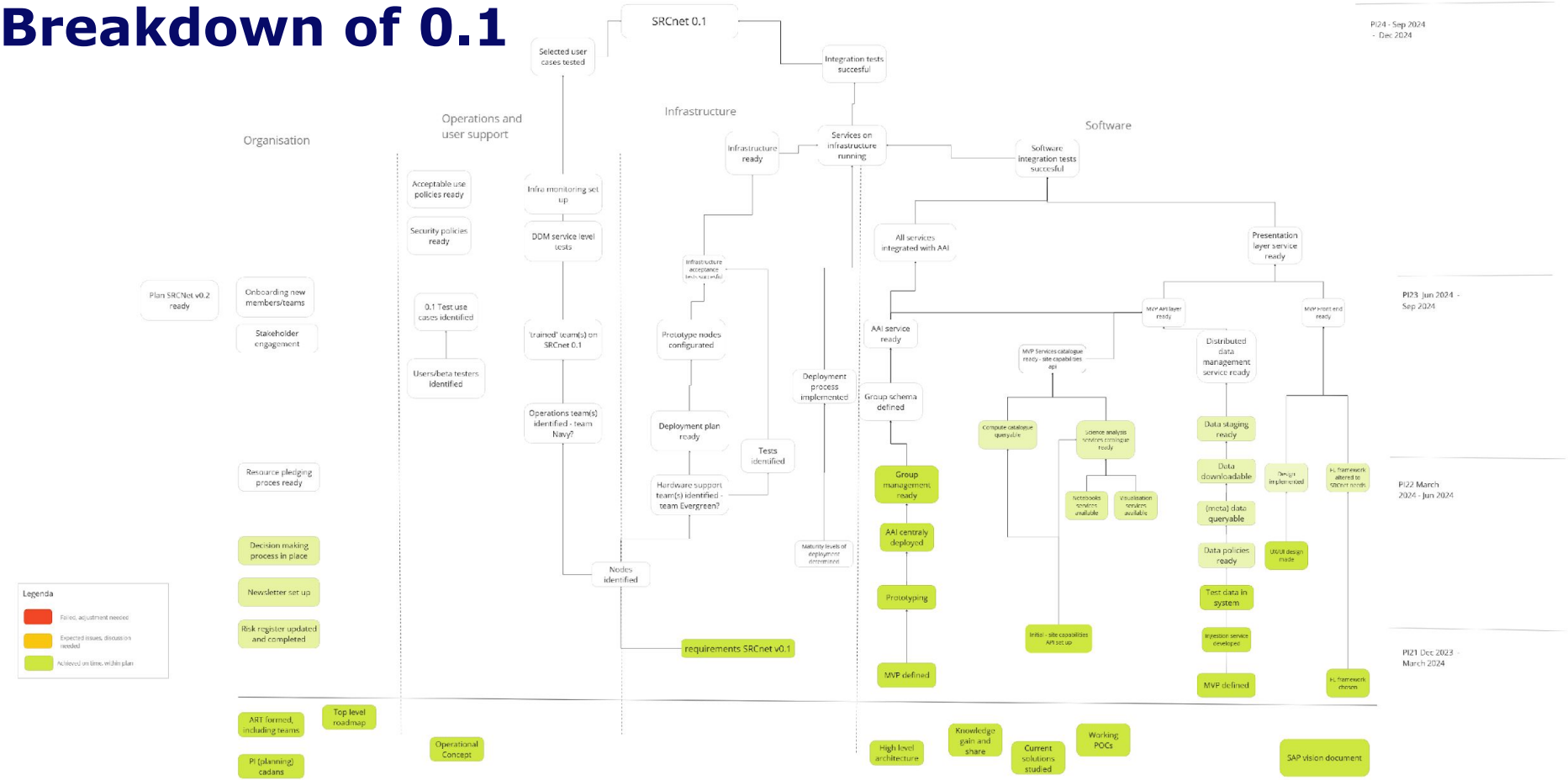
The SRCNet ART for me (previously)



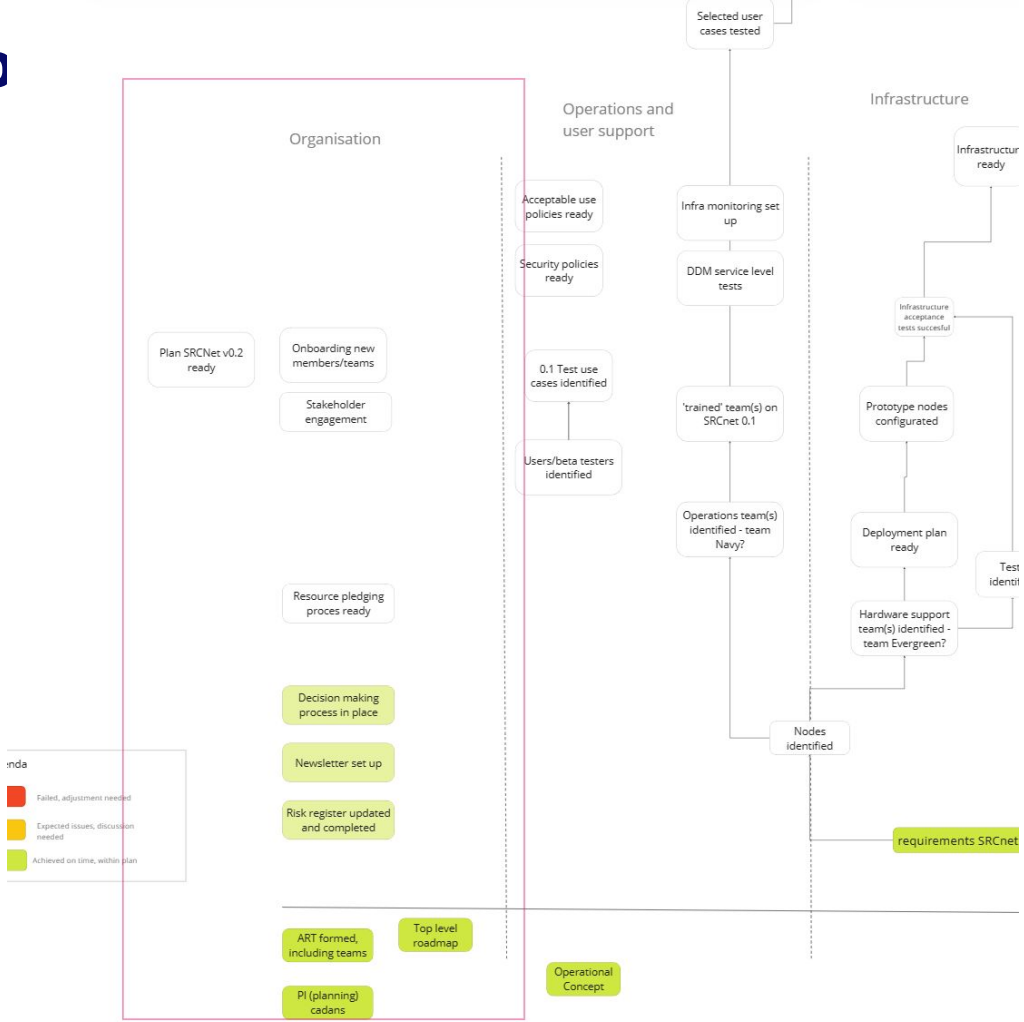
Key SRCNet Documents!

Document number	Title	PDF	Description
SRC-0000001	SKA Regional Centres Network (SRCNet) Software Architecture Document		
SRC-0000002	SRC Net Top-Level Roadmap		
SRC-0000003	SRCNet Science Analysis Platform Vision		
SRC-0000004	SKA Regional Centres Network (SRCNet) Use Cases		
SRC-0000005	SRC Network Vision and Principles		
SRC-0000006	SRCNet Operational Concept		

Breakdown of 0.1



Organisatio

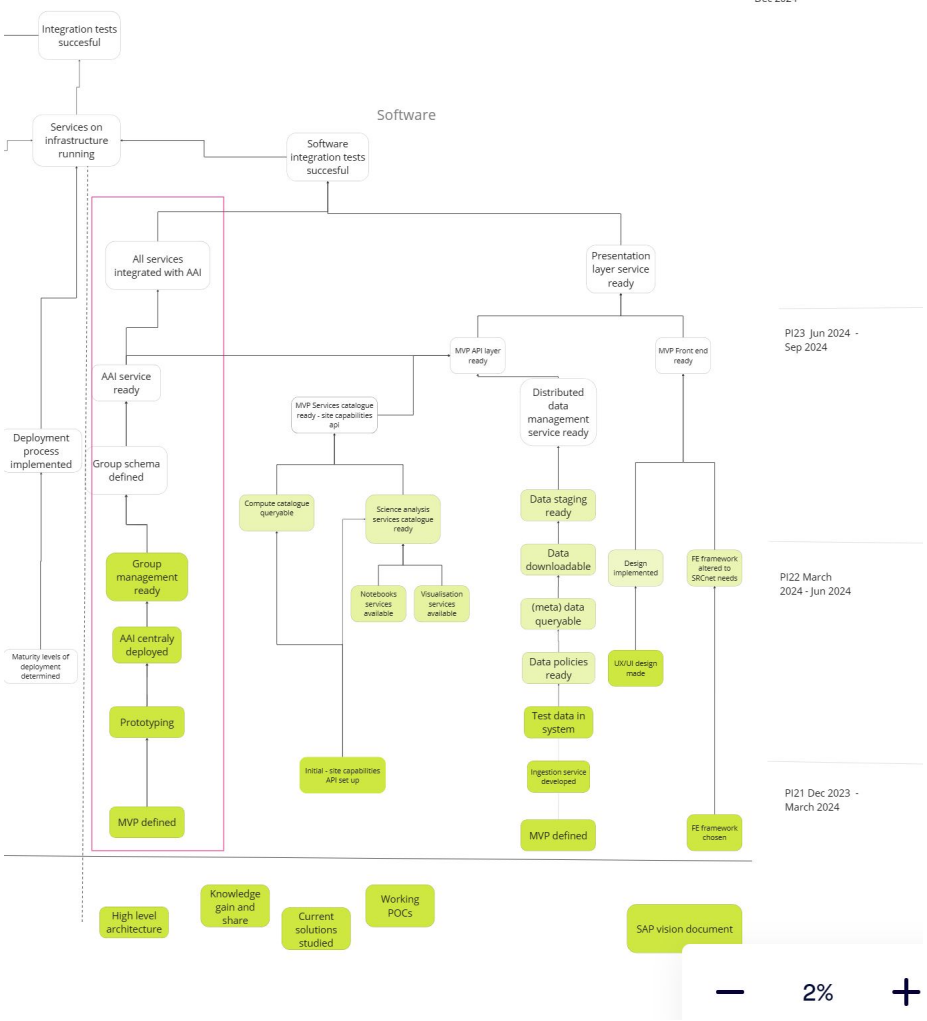


Trained team leads

Building teams

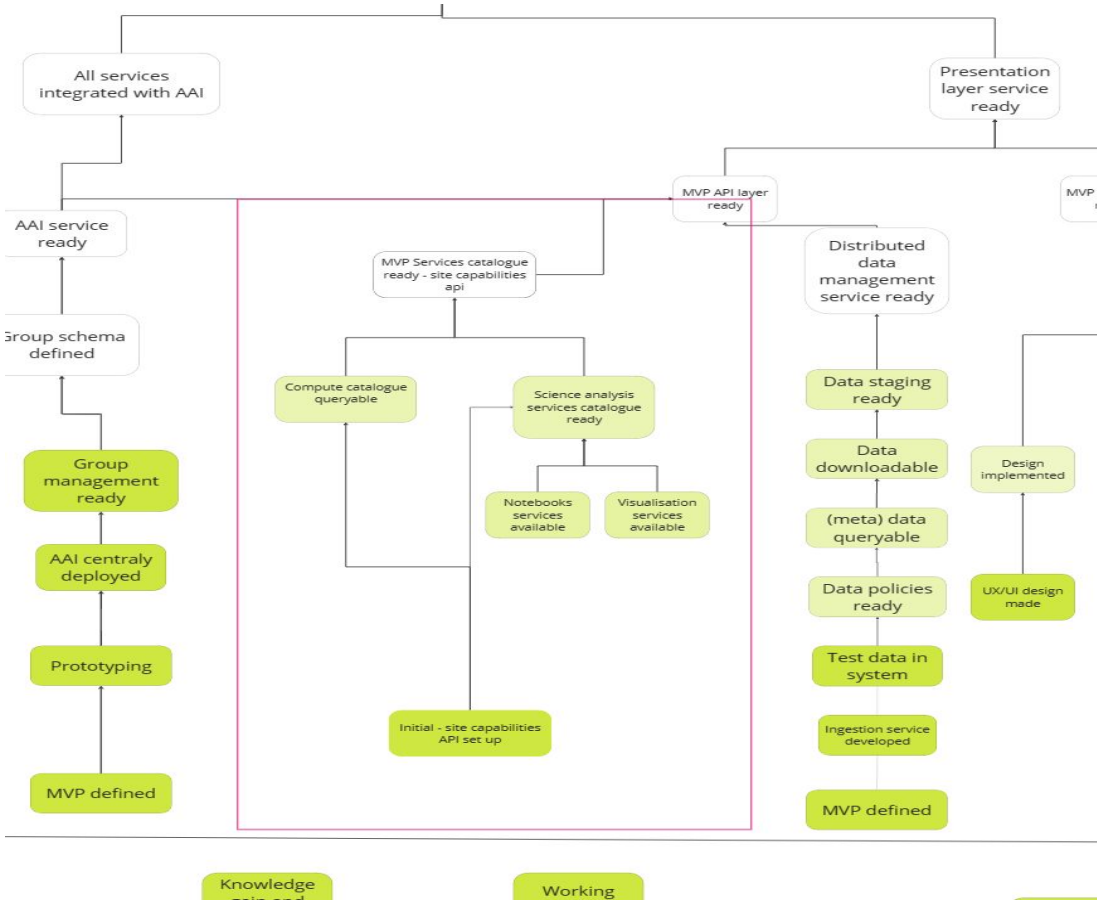
Progress - AAI

- Centrally deployed
- We can log in
- 77 users, 55 groups, 178 clients
- Working on group management



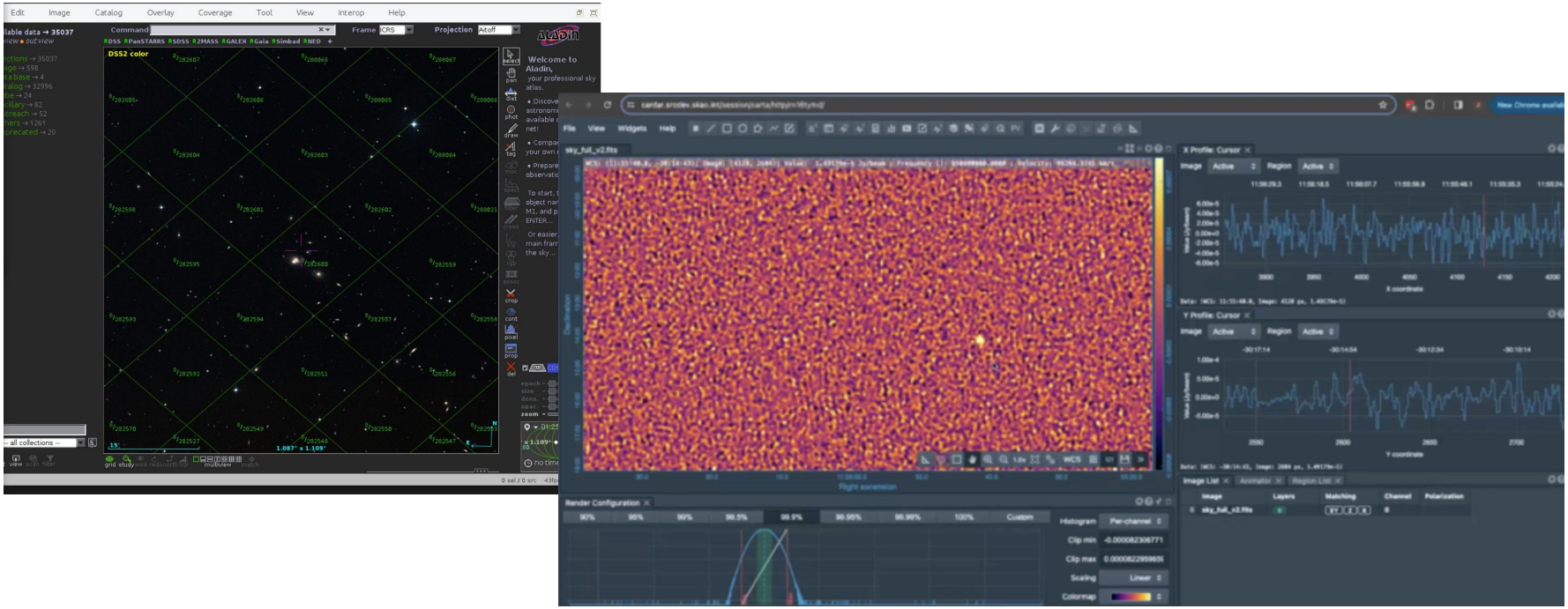
Progress - Services

- Visualization & Notebooks
- API gateway – connecting everyting as 1 system
- Demo: SRCnet System Demos - Zoom 00:24 – 7 min (pw: 74*Gtzdz)



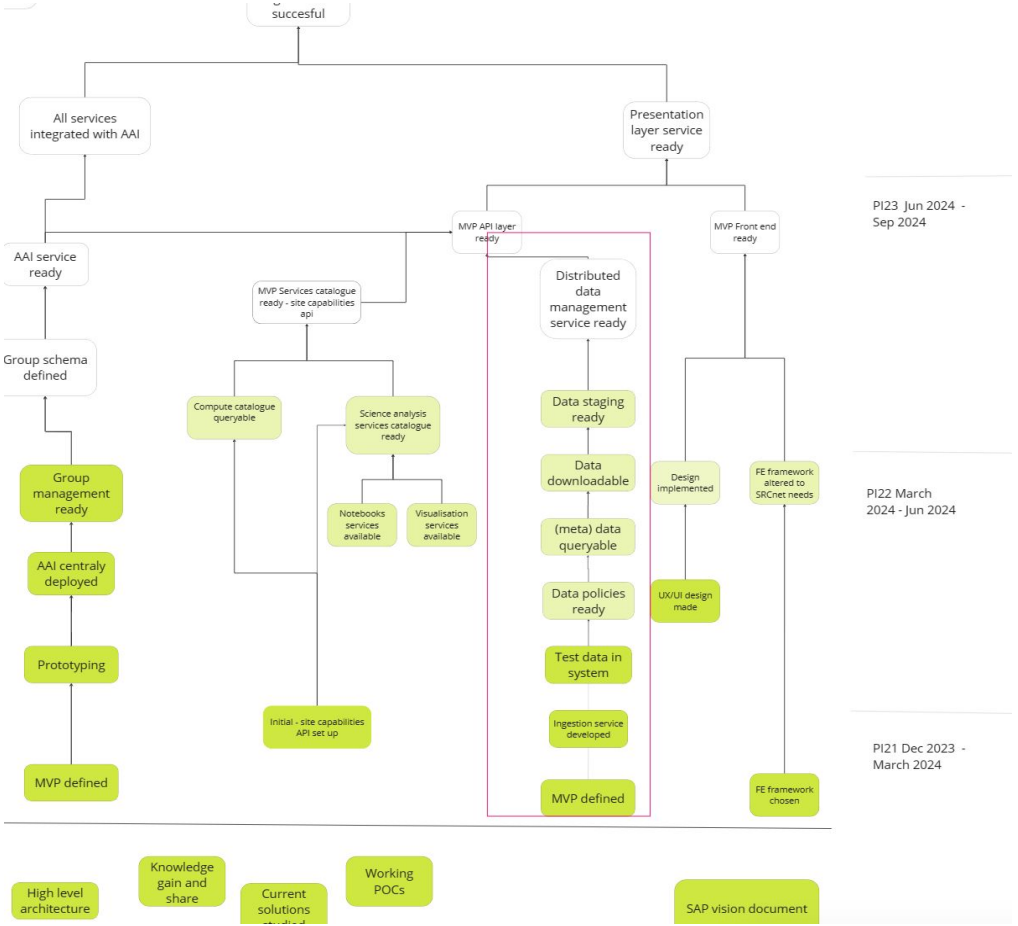
Visualization

e.g. Healpix, CARTA

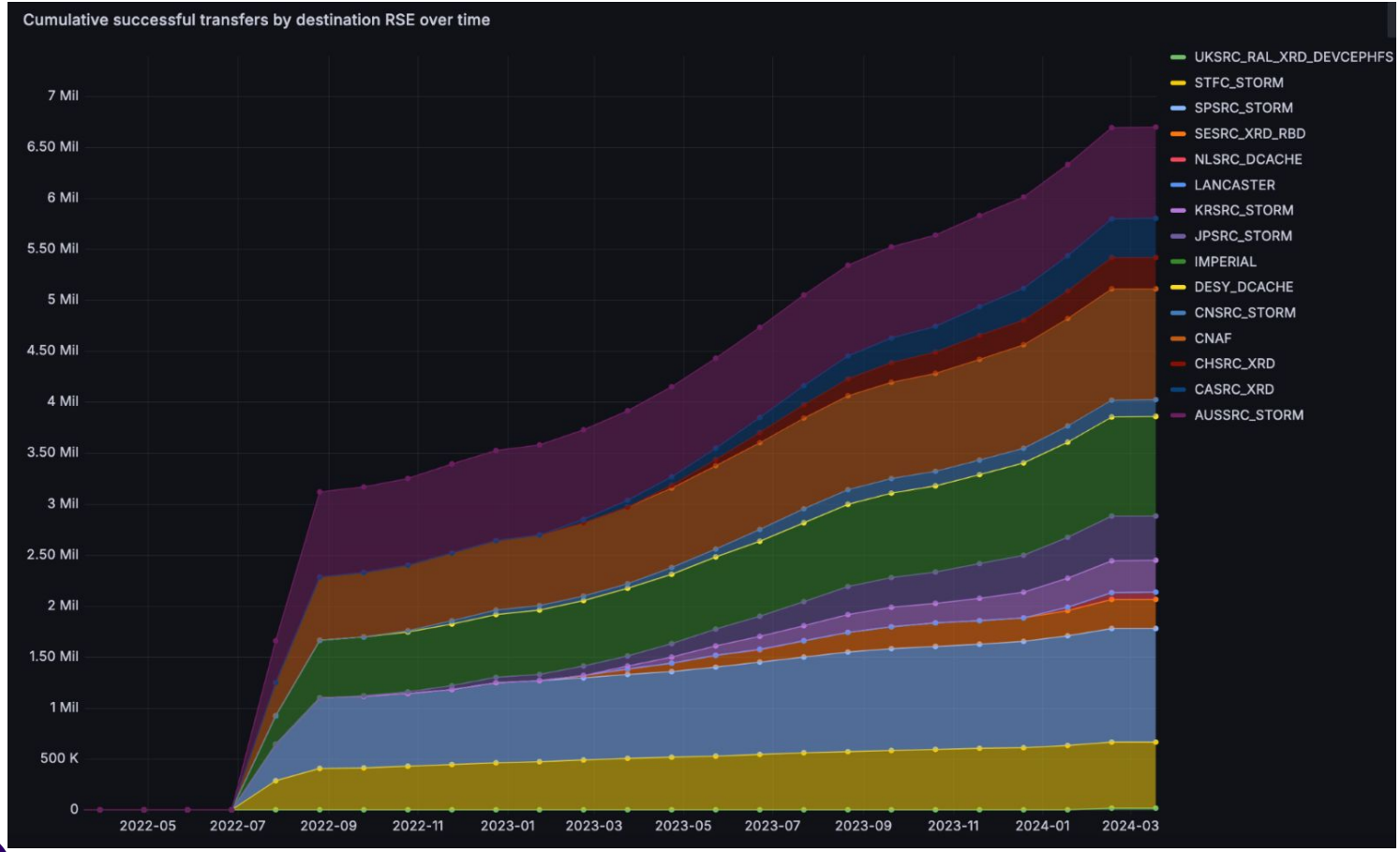


Progress -Data

- DDM assessment
- Rucio and SI



Progress - Data



~ 7 million file transfers over 2 years to all connected sites

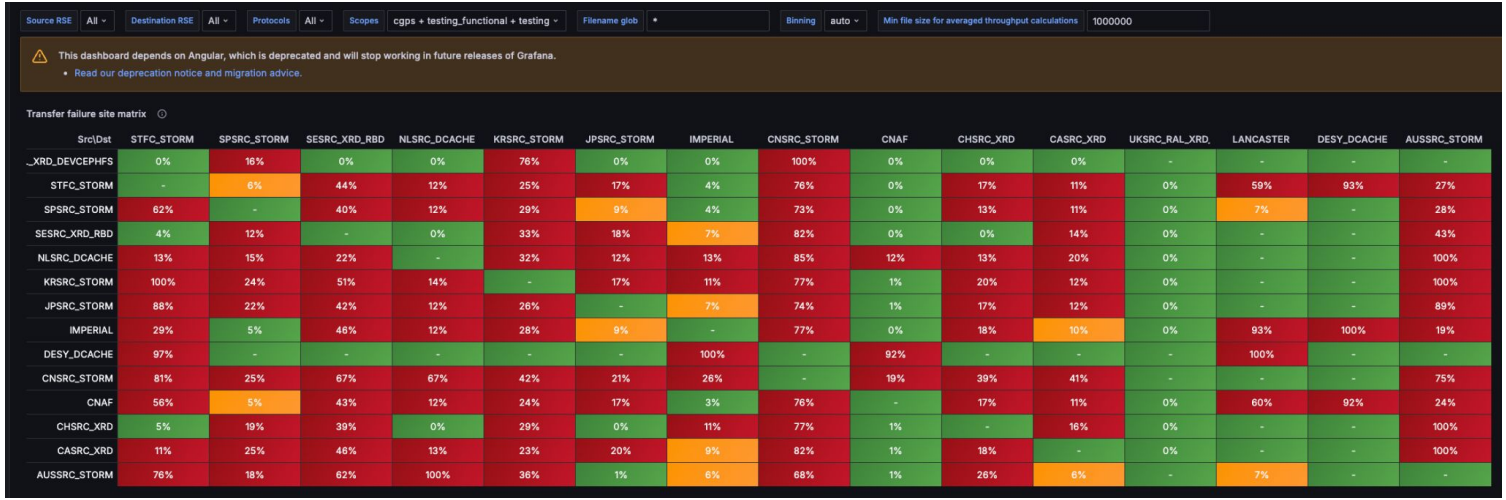
Progress - data

The Demonstrator Collections

COLLECTION	EXECUTION LOCATION	PRODUCT TYPES	DIRECTION
CGPS	LEGACY	ODP	LEGACY
VGPS	LEGACY	ODP	LEGACY
VLASS	CADC Operations	ODP	Pull from https
RACS	Science Platform	ODP, ADP	Push from Science Platform User Storage
WALLABY	Science Platform	ADP, ODP (future)	Push from VOSpace (vault)
POSSUM (future)	AusSRC, Science Platform	ODP, ADP	Push from AusSRC cache, Science Platform User Storage

Successful transfer of 395,106 (12.4 TB) files over 3 nodes

Continuously testing



Src\Dst	STFC_STORM	SPSRC_STORM	SESRC_XRD_RBD	NLSRC_DCACHE	KRSRC_STORM	JPSRC_STORM	IMPERIAL	CNSRC_STORM	CNAF	CHSRC_XRD	CASRC_XRD	UKSRC_RAL_XRD	LANCASTER	DESY_DCACHE	AUSSRC_STORM
_XRD_DEVCEPHFS	0%	16%	0%	0%	76%	0%	0%	100%	0%	0%	0%	-	-	-	-
STFC_STORM	-	6%	44%	12%	25%	17%	4%	76%	0%	17%	11%	0%	59%	93%	27%
SPSRC_STORM	62%	-	40%	12%	29%	9%	4%	73%	0%	13%	11%	0%	7%	-	28%
SESRC_XRD_RBD	4%	12%	-	0%	33%	18%	7%	82%	0%	0%	14%	0%	-	-	43%
NLSRC_DCACHE	13%	15%	22%	-	32%	12%	13%	85%	12%	13%	20%	0%	-	-	100%
KRSRC_STORM	100%	24%	51%	14%	-	17%	11%	77%	1%	20%	12%	0%	-	-	100%
JPSRC_STORM	88%	22%	42%	12%	26%	-	7%	74%	1%	17%	12%	0%	-	-	89%
IMPERIAL	29%	5%	46%	12%	28%	9%	-	77%	0%	18%	10%	0%	93%	100%	19%
DESY_DCACHE	97%	-	-	-	-	-	100%	-	92%	-	-	-	100%	-	-
CNSRC_STORM	81%	25%	67%	67%	42%	21%	26%	-	19%	39%	41%	-	-	-	75%
CNAF	56%	5%	43%	12%	24%	17%	3%	76%	-	17%	11%	0%	60%	92%	24%
CHSRC_XRD	5%	19%	39%	0%	29%	0%	11%	77%	1%	-	16%	0%	-	-	100%
CASRC_XRD	11%	25%	46%	13%	23%	20%	9%	82%	1%	18%	-	0%	-	-	100%
AUSSRC_STORM	76%	18%	62%	100%	36%	1%	6%	68%	1%	26%	6%	-	7%	-	-

average transfer rate as a function of RSE and file size

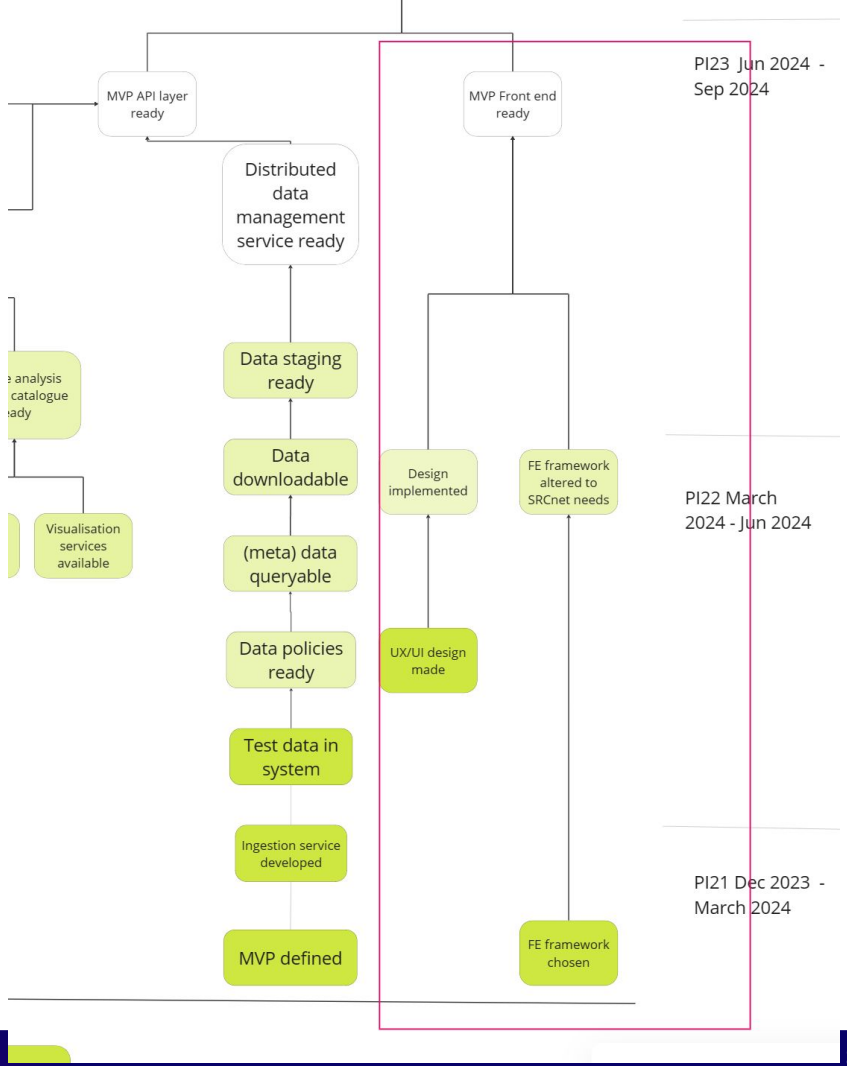
file size \ RSE	SPSRC_STORM	KRSRC_STORM	JPSRC_STORM	IMPERIAL	CNSRC_STORM	CNAF	CHSRC_XRD	CASRC_XRD
200 MB	2.30 MB/s	1.65 MB/s	1.76 MB/s	2.14 MB/s	1.65 MB/s	2.09 MB/s	2.17 MB/s	1.71 MB/s
500 MB	5.73 MB/s	3.52 MB/s	3.73 MB/s	5.11 MB/s	3.38 MB/s	4.97 MB/s	5.20 MB/s	3.72 MB/s
1 GB	10.6 MB/s	4.83 MB/s	5.25 MB/s	8.56 MB/s	4.60 MB/s	8.96 MB/s	8.84 MB/s	5.41 MB/s
1.50 GB	15.7 MB/s	6.75 MB/s	7.23 MB/s	12.3 MB/s	6.15 MB/s	13.1 MB/s	12.8 MB/s	7.50 MB/s
2 GB	20.6 MB/s	7.58 MB/s	8.09 MB/s	15.1 MB/s	6.93 MB/s	16.0 MB/s	15.8 MB/s	8.61 MB/s
3 GB	28.9 MB/s	8.71 MB/s	9.43 MB/s	19.7 MB/s	7.83 MB/s	20.8 MB/s	20.5 MB/s	9.92 MB/s
Mean	14.0 MB/s	5.51 MB/s	5.92 MB/s	10.5 MB/s	5.09 MB/s	11.0 MB/s	10.9 MB/s	6.15 MB/s

Functional tests running continuously, all-to-all replication via Rucio and FTS every few minutes

Scalable, extensible test suite, with new tests developed by Coral and Blue-Lavender teams

Gateway

- esap.srcdev.skao.int
- Existing platform assessment
- Selected ESAP, developed this further
- Worked on UI/U
- Connected with the other parts in the ART

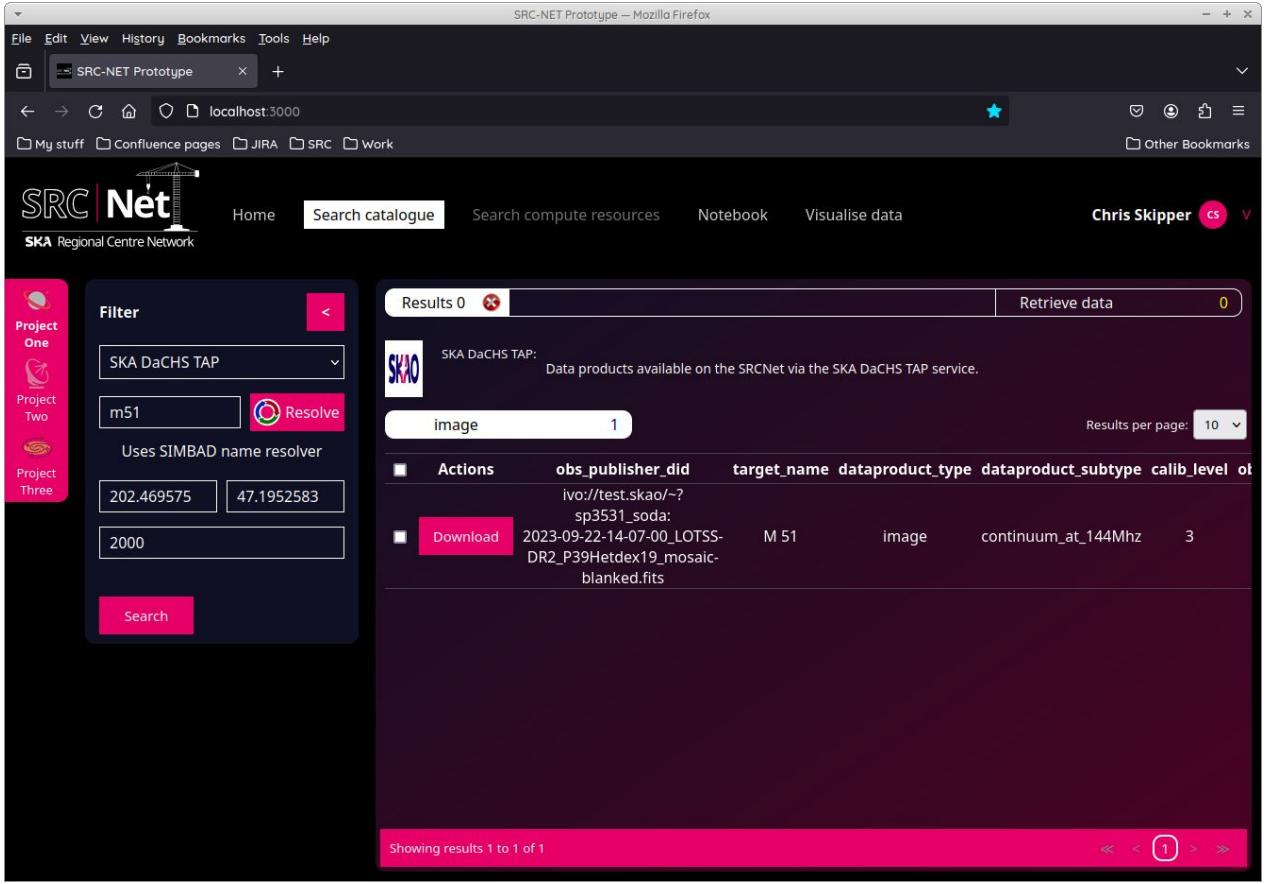


Progress - gateway

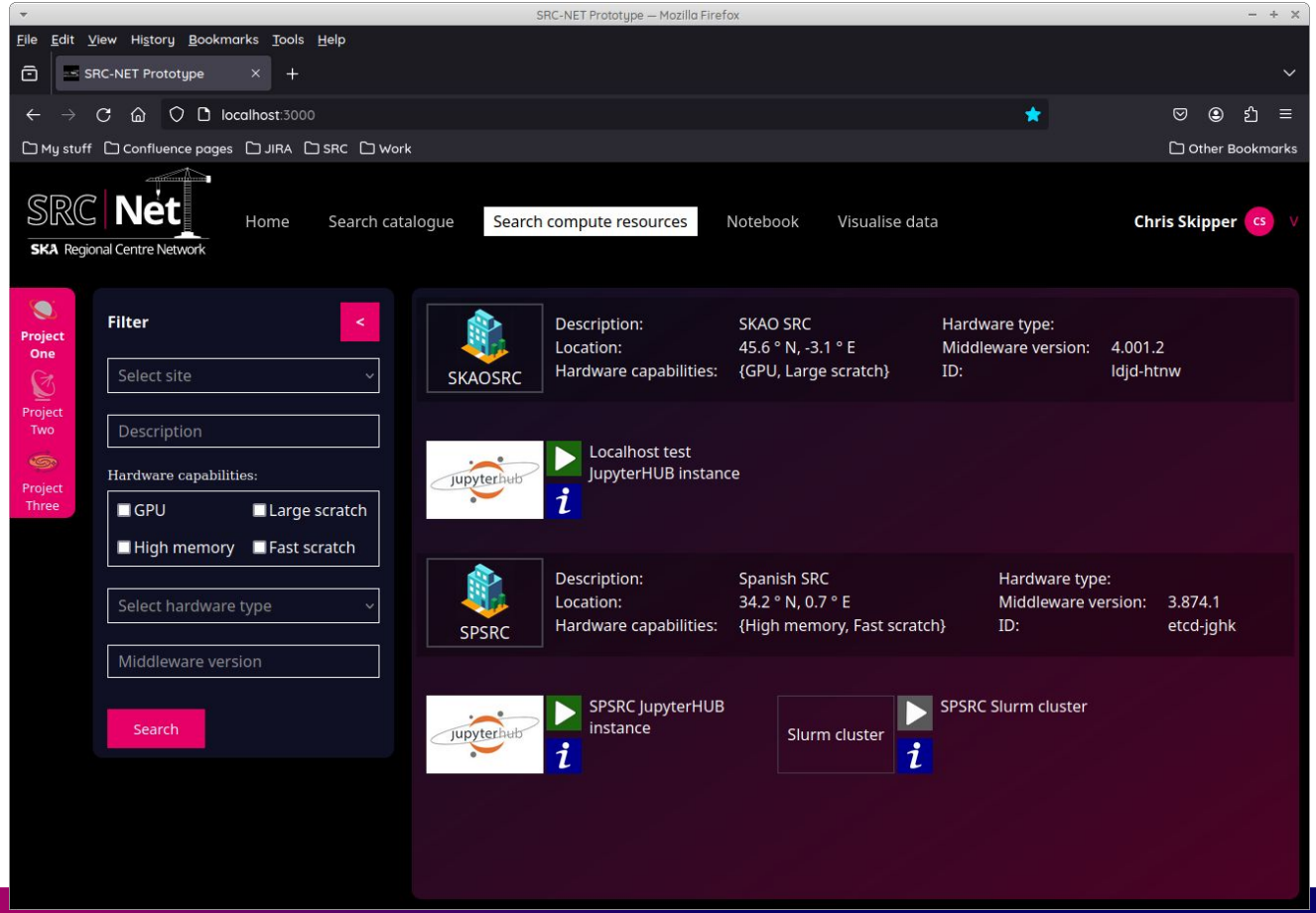
Data

- SKA DaCHS TAP
- Standard ESA P catalogs such as LOTTS.

Compuste resources SRC site-capabilities API compute endpoint.



Progress - gateway



Progress - gateway

SRC-NET Prototype — Mozilla Firefox

File Edit View History Bookmarks Tools Help

SRC-NET Prototype

localhost:3000

My stuff | Confluence pages | JIRA | SRC | Work | Other Bookmarks

SRC Net — SKA Regional Centre Network

Home | Search catalogue | Search compute resources | Notebook | Visualise data | Chris Skipper

Project One

Project Two

Project Three

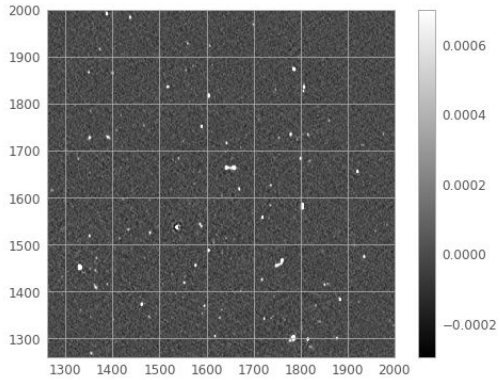
jupyterhub download-fits Last Checkpoint: 05/12/2023 (autosaved)

Logout | Control Panel

File Edit View Insert Cell Kernel Widgets Help | Not Trusted | Python 3

Run | Code

```
plt.ylim( 1260, 2000 )
plt.imshow( image_data, cmap = 'gray', vmax = 7E-4 )
plt.colorbar()
data.close()
```

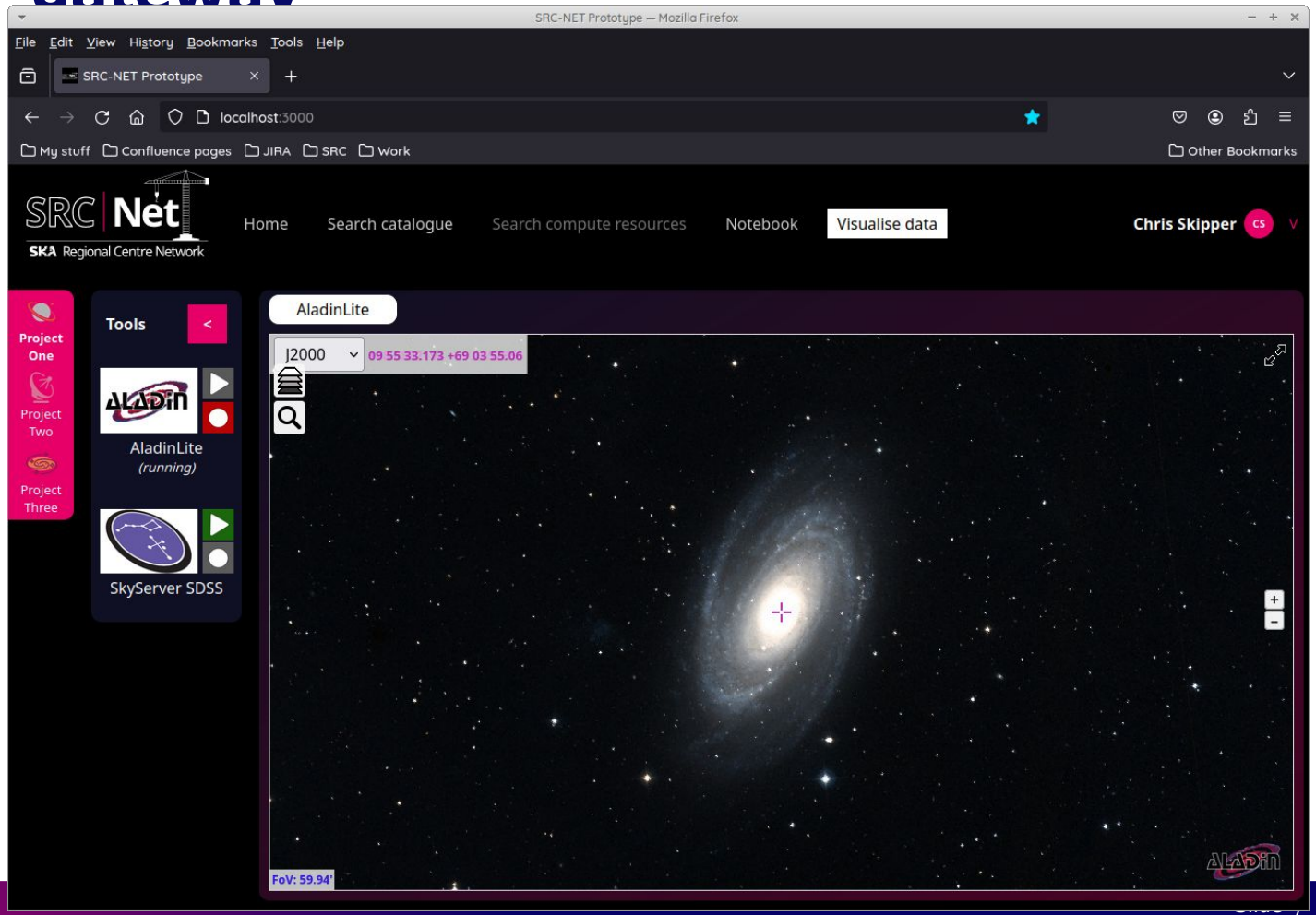


In [ ]:

Progress - gateway

- Demo SRC Net gateway demo

3:12 – 3:29.



Testing

- grafana
- personar
- Gitops
- Mini demonstrator: showcased the deployment of a distributed services network in Sweden, Switzerland and Spain

Focus this PI

Gateway

Further API integration: authentication API integration, and data access

Science platform services

Assess existing service providers, such as Azimuth and CANFAR as a suitable option for 0.1.

Visualisation tools

Assess and a deep dive into how we might want to use HiPS data in SRCNet0.1

Data Ingestion, Dissemination and Replication

Continue work on DDM and select SRCN 0.1 tool(s) and data collections

Focus this PI

AAI

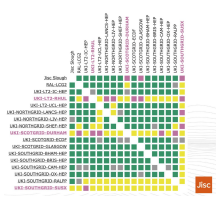
- Integration of IAM
- IAM assessment for 0.1 and beyond, inc groups

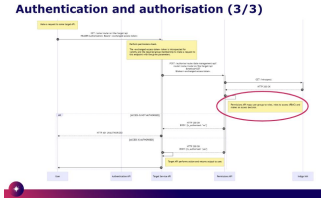
Operations, monitoring

Automated low-level data movement test suite, into a database: e.g. Gfal and perfSONAR

Last PI Demo Highlights

PerfSONAR Knowledgeshare (Purple)	Passcode: Ue!1%v$T
Prototyping API development (Magenta)	Passcode: 1Y=.hX7&
MiniSRCNet demonstrator data ingestion and CAOM metadata model (Red)	Passcode: *98rJDwd
CANFAR deployments at 4 new sites (Coral)	Passcode: %^xQ1ePP
Prototyping a data ingestion service (Magenta) List of compute service description parameters (Tangerine) Use and comparison of SODA cutout workflow (Coral)	Passcode: ND.weS1K
Measuring and optimising low level network performance (teal) Visualisation service containers within CANFAR (Orange) Data discovery with Recursive rucio datalink (Orange) CANFAR science platform with linked Rucio storage (Magenta)	Passcode: 65gy?xm6





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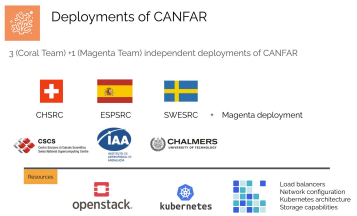
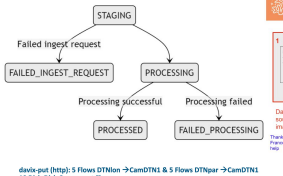
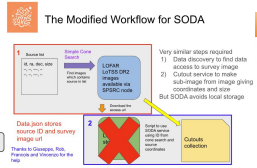
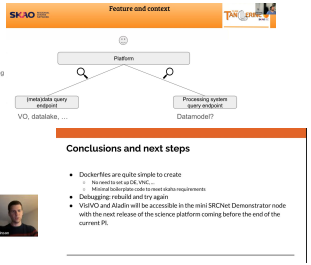
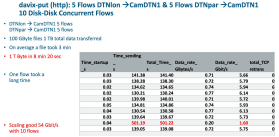
POSSUM (future)	AusSRC, Science Platform	ODP, ADP	Push from AusSRC cache, Science Platform User Storage

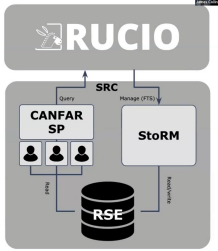




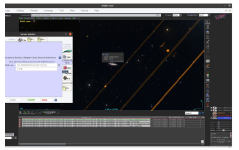


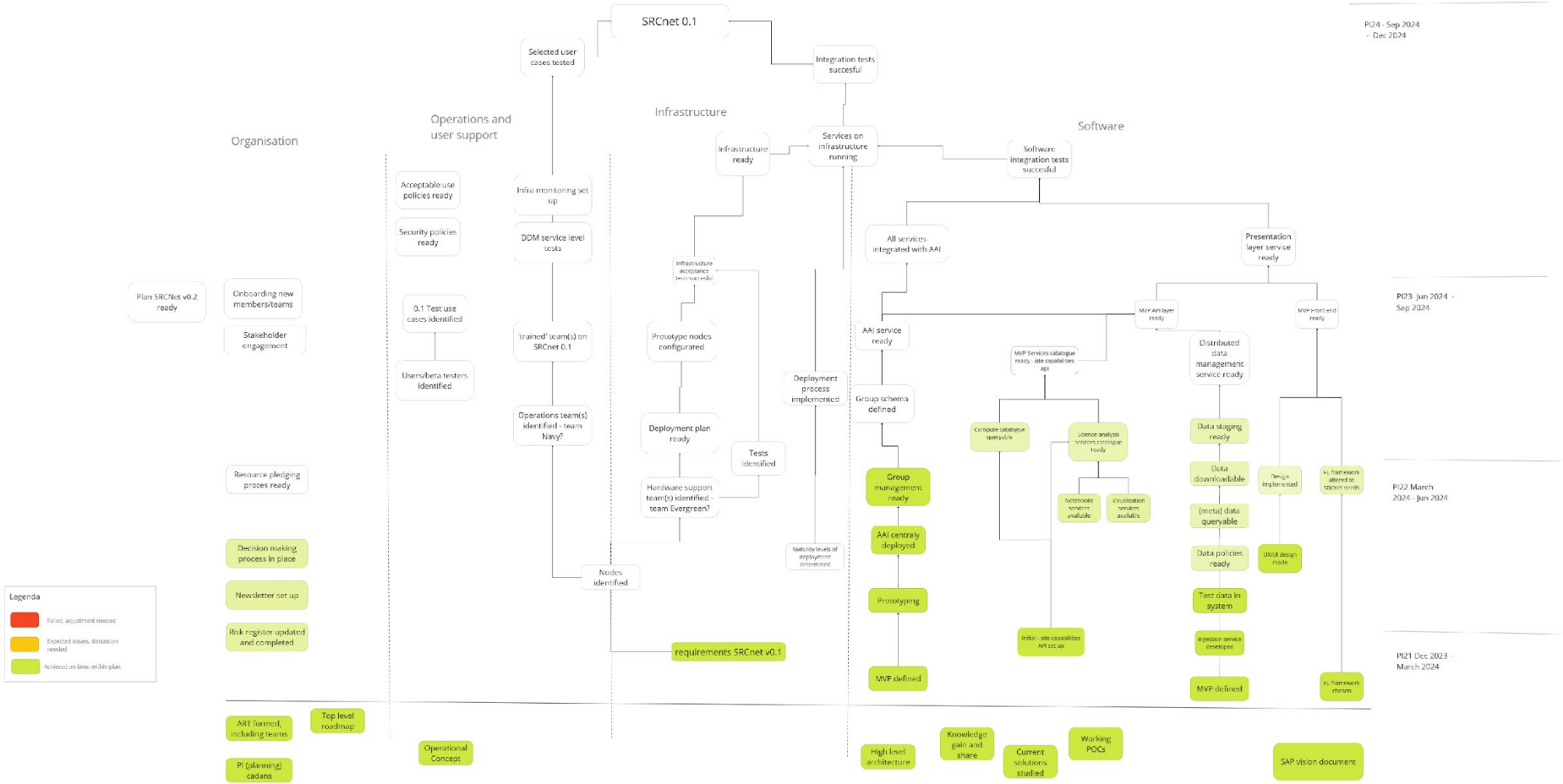






M108 dataset discovery
o data discovery service – Apertif data




SRCnet 0.1
Selected user cases tested
Integration tests succesful
Organisation
Operations and user support
Infrastructure
Software
Infrastructure ready
Services on infrastructure running
Software integration tests succesful
Acceptable use policies ready
Infra monitoring set up
Security policies ready
DDM service level tests
All services integrated with AAI
Presentation layer service ready
Infrastructure acceptance tests succesful
MVP API layer ready
MVP Front end ready
Plan SRCNet v0.2 ready
Onboarding new members/teams
Stakeholder engagement
0.1 Test use cases identified
'trained' ucam(s) on SRCnet 0.1
Prototype nodes configurated
AAI service ready
MVP Services catalogue ready - site capabilities api
Distributed data management service ready
Users/beta testers identified
Deployment process implemented
Group schema defined
Operations team(s) identified - team Navy?
Deployment plan ready
Tests identified
Compute catalogue queryable
Science analysis services catalogue ready
Data staging ready
Data downloadable
Design implemented
HL framework altered to SRCnet needs
Resource pledging proces ready
Hardware support team(s) identified - team Evergreen?
Group management ready
Notebooks services available
Visualization services available
(meta) data queryable
Decision making process in place
AAI centraly deployed
Maturity levels of deployment determined
UX/UI design made
Data policies ready
Newsletter set up
Prototyping
Test data in system
Risk register updated and completed
Nodes identified
Initial - site capabilities API set up
Ingestion service developed
requirements SRCnet v0.1
MVP defined
MVP defined
HL framework chosen
Legenda
Failed, adjustment needed
Expected issues, discussion needed
Achieved on time, within plan
ART formed, including teams
Top level roadmap
PI (planning) cadans
Operational Concept
High level architecture
Knowledge gain and share
Current solutions studied
Working POCs
SAP vision document
PI24 - Sep 2024 - Dec 2024
PI23 Jun 2024 - Sep 2024
PI22 March 2024 - Jun 2024
PI21 Dec 2023 - March 2024

Current Delivery Progress - **Any Questions?**