IRIS Digital Research Infrastructure: an update

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IRIS Collaboration Meeting

December 2023

iris eInfrastructure for Research and Innovation for STFC

IRIS is a cooperative community bringing together STFC computing interests

Formed bottom up by science communities and compute providers

Works closely with STFC but run by the community

iris eInfrastructure for Research and Innovation for STFC

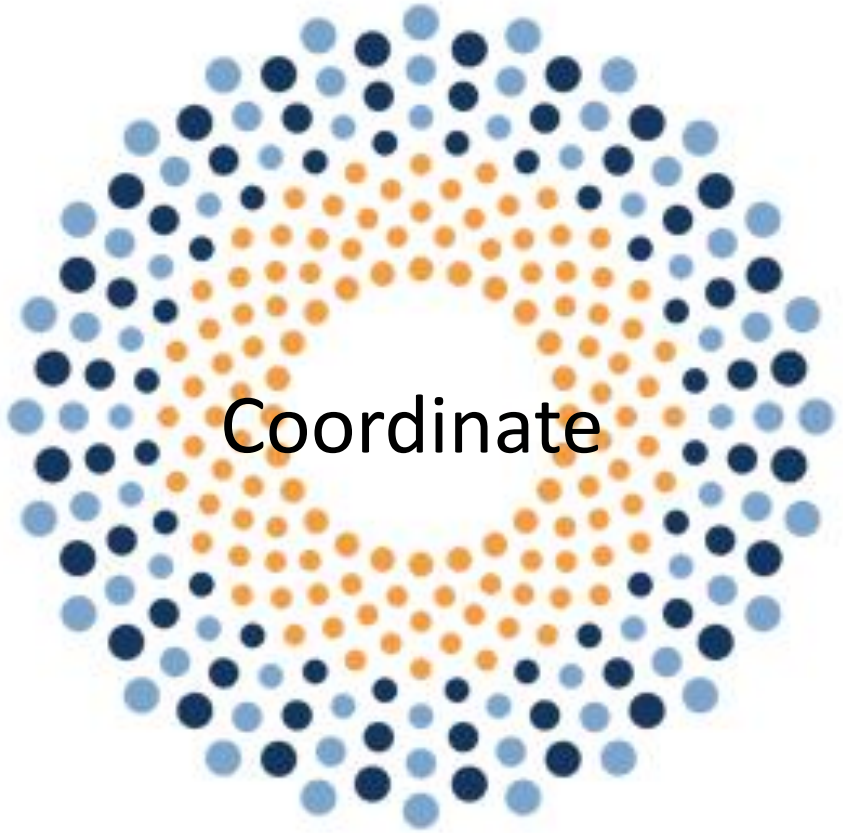
Particle Physics: GridPP, non-LHC experiments, SWIFTHEP
Astro: LOFAR, LSST, EUCLID, SKA, GAIA
Astro-particle: LZ, Advanced-LIGO, CTA
Nuclear Physics
DiRAC HPC Facility

STFC Scientific Computing Department
Diamond Light Source
ISIS Neutron Source
Central Laser Facility
CCFE
SciML
…. Others…

IRIS Activities

Build infrastructure

Build community



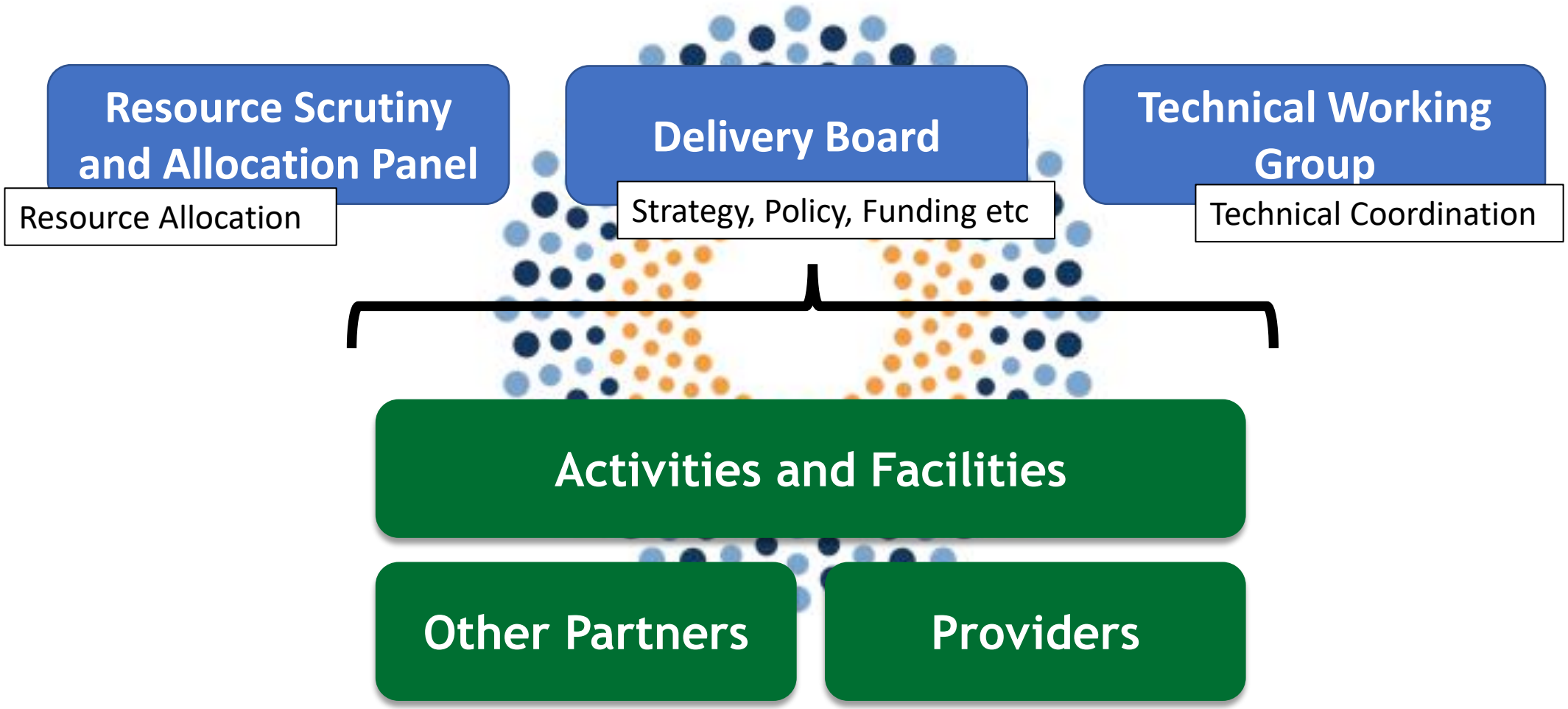
Invest in computing hardware

Support training

Support digital asset creation

Making the case for investment

IRIS Structure



Funding

- 2017:
  - £1.5m Capital : £1m hardware, 0.5m digital assets
- 2018:
  - £16m (4M / year over 4 years, 11M Hardware, 5M Digital Assets for National Facilities
- 2020:
  - Capital injections ~ £6m : 3M capital for IRIS, 2M for LSST (Rubin Observatory), 1M for SKA
- 2021:
  - UKRI Digital Research Infrastructure funding ~ £2m
- 2022:
  - STFC Capital funding £2.4m – anticipated recurrent over 3 years
  - UKRI DRI funding – £3.5m additional funding in 22/23 + 23/24
  - Additional capital supporting Astronomy programme £2.3m
- 2023:
  - STFC Capital funding £2.4m
  - UKRI DRI Phase 1b from 22/23 award - £400k
  - UKRI DRI Phase 2 - £1.4m (£400k 23/24, £1m 24/25)

IRIS and its Community

- Technical Working Group
  - Weekly meetings
    - Technical discussions – presentations, showcases etc
    - Operations reports
  - Regular ad-hoc workshops as and when needed
    - Wide range of topics from identity management, cloud computing, GPU usage, machine learning etc
- Targeted at the IRIS community but open to all

Digital Asset Creation

Digital Assets

Essentially software (or similar) products (capitalizable) – with a defined end point or delivery of the asset

Additional track of funding “Other DA” programme available to full IRIS Community

Often infrastructure related but can also be closer to science

UKRI DRI funding also allows some non-capital projects
- can be used for R&D as well as asset production

Digital Asset Creation

Digital Assets

Essentially software (or similar) products (capitalizable) – with a defined end point or delivery of the asset

Focused on:

- On-boarding
- Joining-up
- Core infrastructure
- Software “reuse and repurposing”
- Security
- Training

Digital Asset Creation

Digital Assets

Identity management - IRIS-IAM
- Working towards single-sign on
- Closely aligned with LSST and SKA work
- Integrated with the DiRAC Federation Project

Radio astronomy on-boarding
- eMERLIN, ALMA, and others
- Documentation, tutorials, community engagement
- Evaluation for IRIS integration

Algorithm Development
- Efficient random numbers on FPGAs
- Support for FAST-HEP toolkit

Data management
- RUCIO (LHC) from development for non LHC usage – multi-VO support, token based authentication support, etc (LSST, DUNE, SKA)
- High performance data transfers for SKA – using FTS and RUCIO (leveraging hardware investment by ExCALIBUR)

Core infrastructure
- Security policy
- Information Security Management – supporting STFC SOC
- Accounting development – building on work at Tier 1
- VMDIRAC – workflow management building on DIRAC (LHCb) for non-LHC
- Tools and services portfolio

What IRIS is not…

IRIS is not a turn-key computing solution

IRIS currently has no direct resource funding for user support – some community support as “best effort”

IRIS can provide physical resources for groups who can make use of it –

Activities may need their own:

- Software frameworks
- Support staff

IRIS might not have the kind of hardware needed for every activity

Future outlook - previously

From January 2023

Established funding line over three years 2022/23 through 24/25

Building stronger links through STFC Programmes to collaborate on DRI delivery for large projects

- Though more policy development needed to understand how to establish more solid footing for all our partnerships – science activities, facilities, and providers

Some additional work needed on governance and reporting

- Ensure we maintain the autonomy that we have by demonstrating we have good processes, controls, and internal review
- Also important for recording and demonstrating benefits realisation to those who make decisions about our funding

Strong participation in UKRI DRI

- Expect further funding from this direction
- Important to recognise the potential for IRIS to be a demonstrator of how to join up disparate projects and facilities into a more coherent whole

Complete our strategy work!

These continue to be key focus areas

Key Updates

New core staff

Anjali Bhatt – project manager
Deniza Chekrygine – capacity manager
Joanne Ogden – administrative support

Improved reporting

Quarterly capacity and usage reports
Monthly Finance updates

More visibility

Continue to have a session at National Astronomy Meeting
Stand at CIUK-23
Visibility as part of UKRI/STFC at SC24

Training

Key area identified in strategy exercise
Working with DiRAC and SSI on developing a training plan

Key Updates

Training

Key area identified in strategy exercise
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developing a training plan

The link to the HPC Foundation Training is:

https://dirac.ac.uk/foundation-hpc-skills-course/

The link to the Training Academy landing page which has all our training on is:

https://dirac.ac.uk/training/

Strategy…

Complete our strategy work!

See the session later this afternoon

	IRIS Strategy	Domains				
		Community & Communications	**Skills & Training**	**Services & Operations**	**Policy & Governance**	**Resources / Hardware**
Themes	**Accessibility**	How to engage with IRIS, onboarding, RACI Engaging with new communities	Reducing barriers to entry and onboarding	Reducing barriers to entry. UI & Platform provision. E.g. IDAAS, Jupyter User support	RSAP Define user scope of IRIS How to get access and what they can get access to? Engaging with new communities	RSAP Prototyping + seedcorn - hard making systems available for this
	Sustainability	Awareness around environment, community longetivity, succession planning	Adding value to people and therefore community. Maintaining critical mass of skills and people.	FTE for operations Accounting - driver for efficiency. Understanding efficiency of use and improving	Reporting, modelling future needs, advocacy. Ensure mutually beneficial relationships Be a credible and reliable programme - operation, procurement, financial, project management	Environmental, procurement / vendor management, provider relationship management. Ensure mutually beneficial relationships
	Security	Awareness, sharing and security comms plans. Who you gonna call?	Training	Operational security monitoring and incident management	Security Policies - AUP, site policy etc	Ensuring we provide funding for security on top of just boxes. Firewalls, operational monitoring, Being an active partner for site security.
	Innovation	Sharing community intelligence. Talks, funding calls, awareness of opporunities Our funding clear on this	Upskilling each other, sounding boards, TWG Knowledge sharing. Sharing community intelligence. Sharing training, and opportunities	Identify needs and develop new services and products to meet those needs.	Process for seedcorn and novel resources. Support innovation through funding decisions.	Prototyping + seedcorn. Onboarding people who are getting there.
	Flexibility	Multi-platform - communications routes, JIRA, SLACK Information sharing - website	Training to prepare people for things we *may* want to use. Variety of skills knowing what we MIGHT need to use. Skills to adapt to changing ecosystem and take advantage of other peoples innovation.	Interoperability Joining up Resilience	Get out clauses Policy must support the science Annual review to ensure policy fit for purpose RCI	Having the right mix of hardware to meet needs. Ensure diverse ecosystem to be adaptable to changing needs

Strategy…

Complete our strategy work!

Strategy work needs to lead to a delivery plan

Manage this in part by creating working groups associated with specific priorities

Looking to recruit working group leaders from the community with potential for financial support from IRIS (~10-15% FTE)

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Summary

IRIS is a cooperative community bringing together STFC (and beyond) computing interests

Bringing groups together
Building Infrastructure
Supporting Science
Lobbying for the future

https://www.iris.ac.uk/