

Where Groundbreaking Science Meets Cutting Edge Digital Research Infrastructure



IRIS Tools and Services

Federated Cloud

Federated clouds enhance computing, data sharing, scalability and resilience— STFC Cloud; Arcus Cloud, Cambridge; Imperial College Cloud, London; and Somerville Cloud, Edinburgh.

High Performance Computing cluster

Provides faster computations and large-scale data analysis at several institutions.

Grid

CERN-based grid solutions are being leveraged to enable high-throughput data processing and analysis for IRIS activities.

Tape

High-capacity automated tape libraries provide low-cost, large-scale data storage tailored for long-term retention, supporting numerous projects while minimising the carbon footprint and promoting eco-friendly data solutions.

S3 Storage

Access ensures scalable, secure data management, high availability, and seamless integration for efficient data handling.

Authentication, Authorisation, and Accounting Infrastructure

Manages access to compute resources for IRIS activities.

Workload management

Efficient allocation and scheduling of jobs across high-performance and high-throughput computing resources to ensure optimal usage.

Security

Dedicated security team and effective processes in place across all areas of distributed security and identity management.

IRIS is a cooperative community creating federated digital research infrastructure to support STFC science, facilities, and much more...

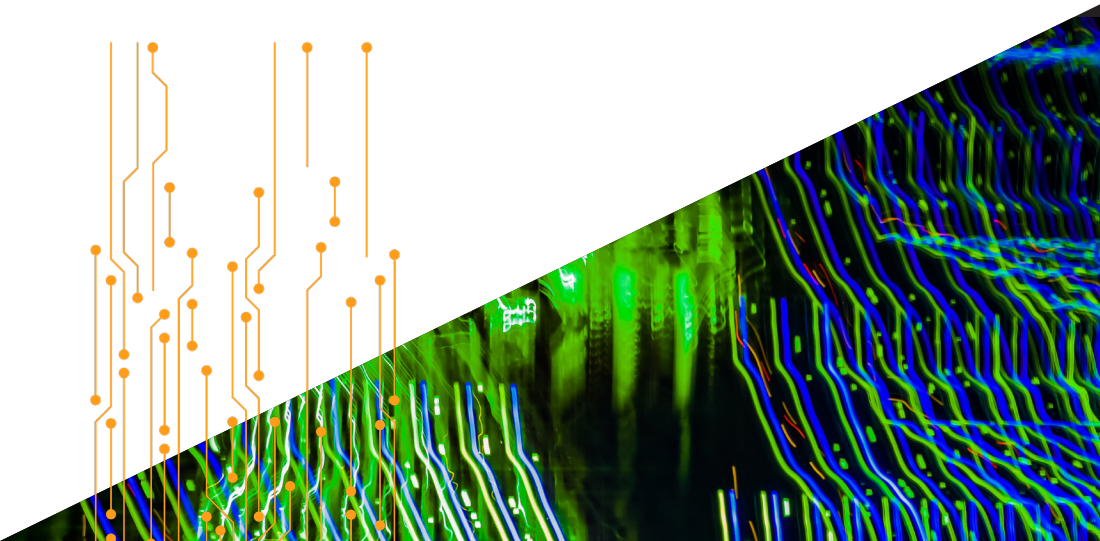
- Bringing groups together securely
- Inspiring knowledge exchange
- Investing in infrastructure
- Supporting Science
- Building for the future

IRIS is built on three foundational pillars:

A community of people passionate about research from universities and national laboratories around the UK.

Capital for resources to support researchers' computational needs.

Coordination of processes, developed through community input, to effectively meet evolving security and computational research demands.



Empowering Global Research

IRIS is developing advanced digital research infrastructure for STFC projects, positioning UK research and Innovation (UKRI) as a leader in global initiatives such as the Square Kilometre Array and the Deep Underground Neutrino Experiment.

This includes large-scale computing, versatile data storage, community platforms, and skills development—laying the groundwork for future scientific breakthroughs.

“IRIS has been hugely successful in joining-up communities around a common mission to build and operate a federated digital research infrastructure. It is a crucial component of our computing infrastructure that empowers researchers to deliver world-leading science across the diverse range of STFC’s national and international activities.”

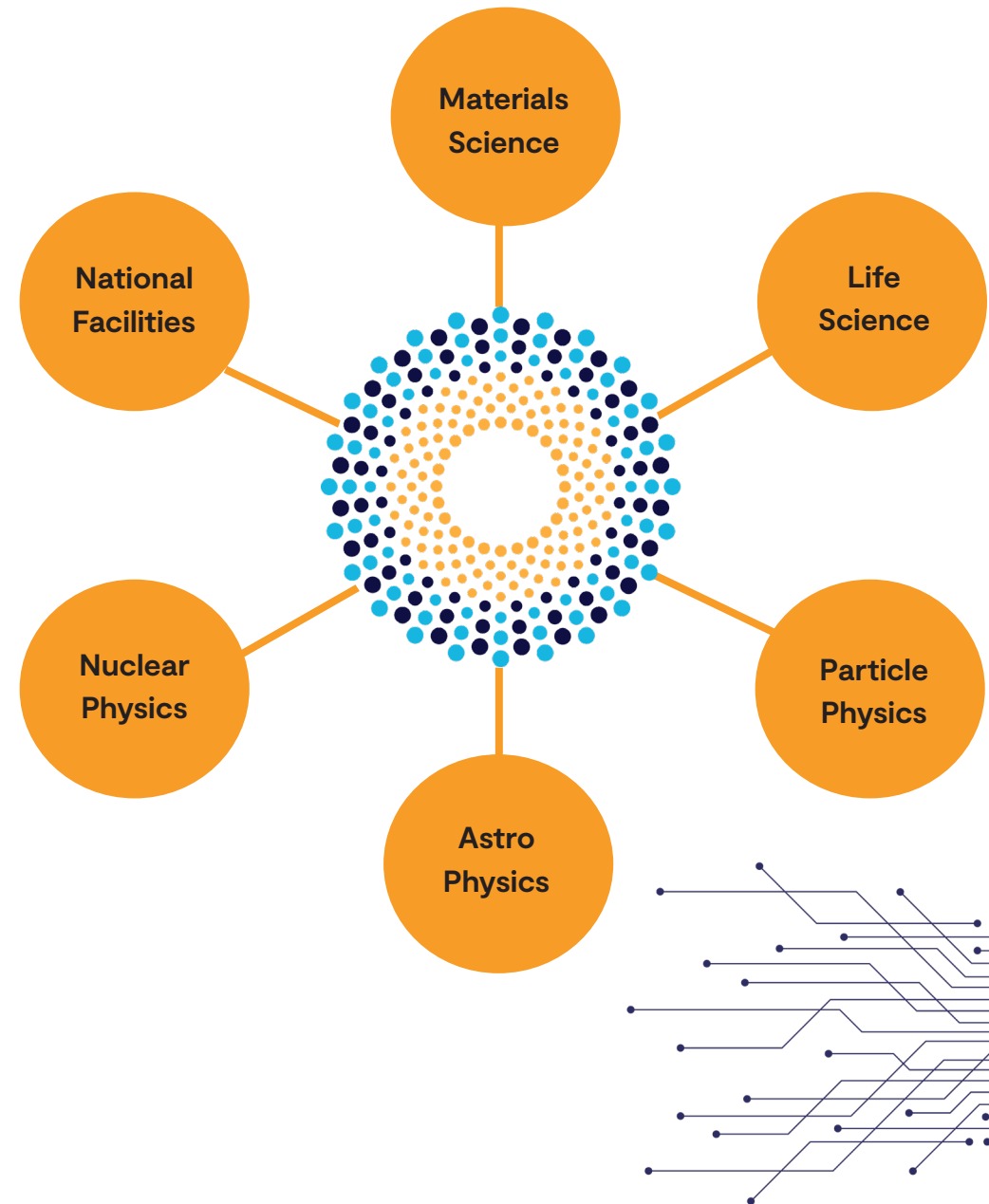
— Professor Mark Thomson,
Executive Chair, STFC



Image credit: SKAO

Advancing a Diverse Range of Science

IRIS provides heterogenous computational resources to more than 20 activities. This includes support for flagship UK facilities, as well as astrophysics and space sciences, particle physics, and nuclear physics projects worldwide.



Optimising Compute Resource Efficiency

IRIS's compute resource accounting process promotes efficiency and transparency for all stakeholders through four core principles:

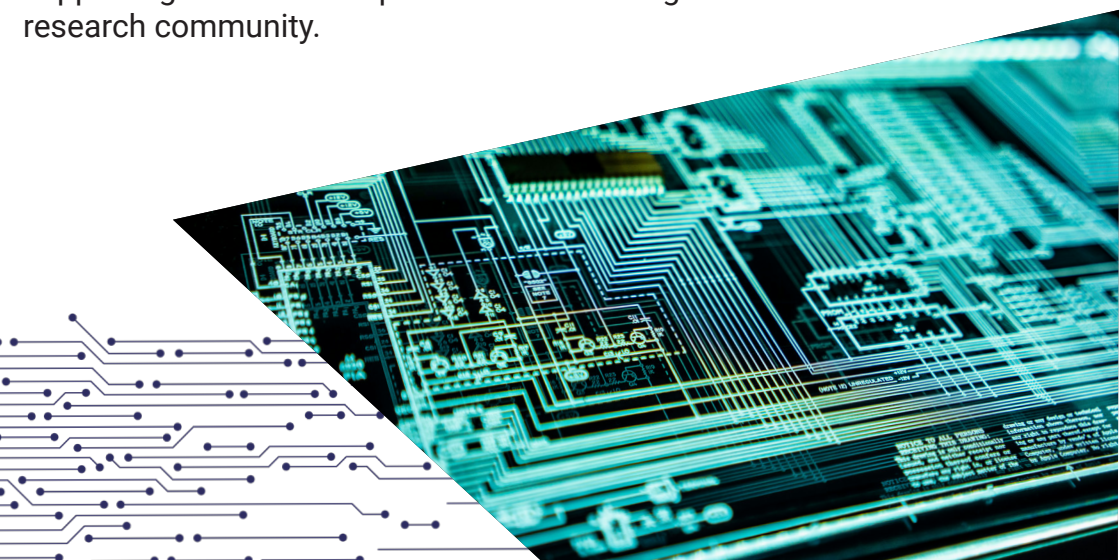
User-Friendly Dashboard: Providing quick access to essential compute accounting data for activities and providers.

Fortnightly Expert Reviews: Maintaining accuracy and identifying trends early.

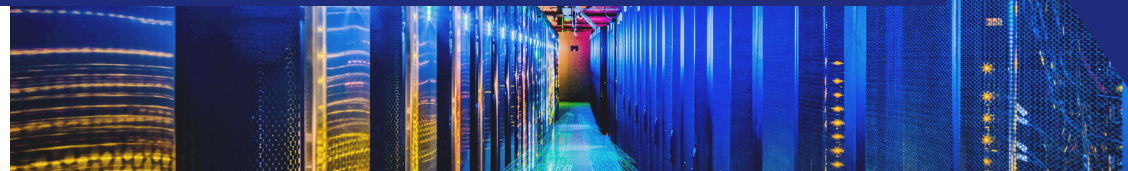
Quarterly Reports: Keeping stakeholders informed about resource allocation and usage.

Proactive Communication: Helping us adapt to changing computational needs effectively.

This approach combines practical tools and consistent oversight, supporting effective compute resource management in the research community.



Streamlining Resource Allocation



The IRIS Resource Scrutiny & Allocation Process (RSAP) is the backbone of resource allocation for computational researchers and service providers.

How does it work?

Every year, the RSAP panel evaluates resource requests and sets allocations to ensure that the technical needs of scientific projects are being supported.

Key Features:

- Rapid distribution of newly available compute resources
- Year-round Science Partners program for innovative projects
- Easy access to testing capabilities

RSAP's benefits:

- Streamlined compute resource distribution
- Support for researchers and their projects
- Access to tailored technical solutions
- A predictable process with prompt feedback

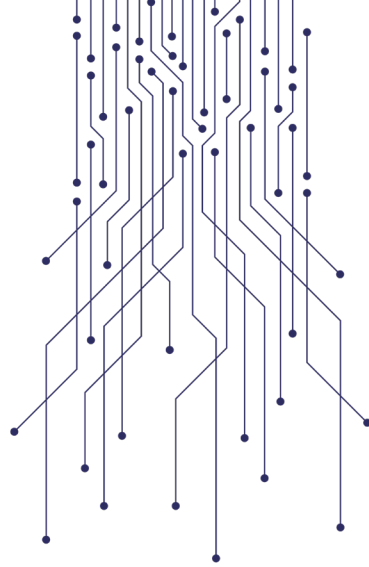
RSAP's blend of structure and adaptability catalyses research success, ensuring compute resources align with emerging priorities and opportunities.



Seamless Compute Resource Access


IRIS's Identity and Access Management (IAM) system is designed to facilitate collaboration on IRIS systems across partner organisations.

Researchers can use their home organisation user IDs to access IRIS CPU, GPU, and storage. This federated approach simplifies access to compute resources while maintaining robust security.



Welcome to **IRIS IAM**

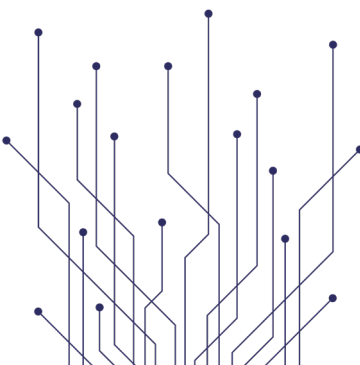
Sign in with your IRIS IAM credentials

 Username

 Password

Sign in

[Forgot your password?](#)



Securing the Future of STFC Research

IRIS maintains a secure, collaborative environment through its evolving federated operational security approach, making an impact both nationally and internationally.

Dedicated Security Team: Includes experts from Grid, HPC, and Cloud providers.

Global Expertise: We apply best practices to diverse research communities based on our experience with distributed cybersecurity in global LHC computing.

Comprehensive Security Support:

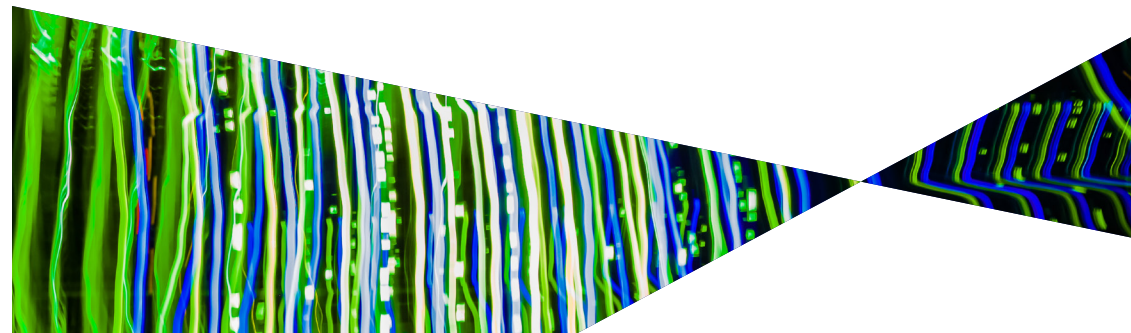
Threat Assessment: Identifying and managing threats swiftly.

Training: Building cybersecurity skills.

Incident Response: Identifying and managing vulnerabilities.

Capability Development: Adapting to new challenges proactively.

IRIS's work towards better cybersecurity influences national Digital Research Infrastructure (DRI) policies, helping shape a secure and efficient research environment in the UK and beyond.



Building a Connected Research Community

At the heart of scientific advancement is effective communication and collaboration. IRIS fosters a supportive environment for researchers, regardless of their location.

Weekly online gatherings

Regular discussions with our Technical Working Group, which include:

- Operational updates - keeping research activities, providers, and core services aligned.
- Knowledge exchange - presentations on the latest technical and research developments from our members

Monthly strategic discussions

The Delivery Board meets monthly to ensure our shared vision remains focused and responsive to new challenges and opportunities.

Biannual collaboration meetings

Twice a year, we host inspiring collaboration meetings that encourage idea exchange and encouraging cross-disciplinary opportunities.

“ IRIS transforms a dispersed network into a cohesive scientific community. We're not just sharing compute resources; we're building a supportive space where every researcher can succeed. ”

– Andrew Sansum,
IRIS Technical Director



Working Towards Carbon-Free Research

IRISCAST was a pioneering NetZero project that transformed how compute research infrastructure tracked and reduced carbon emissions. Using IRIS's digital architecture, it challenged the barriers to eco-friendly scientific computing.

Key Features:

- Comprehensive Carbon Model: Quantified emissions from computational activities.
- 24 hour Carbon Snapshots: Captured data across six facilities.
- Detailed Emission Reports: Provided precise insights into carbon costs.

Impact:

IRISCAST's success has inspired projects like the IRIS Carbon Mapping Project (IRIS-CMP) and IRIS GPU Bench, advancing sustainable practices in scientific research. It exemplifies how innovation can address global challenges while driving scientific progress.

“ To achieve sustainable research, we must have sustainable computing. Through directed funding, coordination, and collaboration, IRIS is driving the way forward on mitigating our environmental impact. ”

– Jon Hays,
IRIS Science Director



IRIS Partners and Collaborators include...



CENTRE FOR ASTROPHYSICS



Science and
Technology
Facilities Council

Scientific Computing
ISIS Neutron and
Muon Source
Central Laser Facility



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Designed by Esme Mirzoeff

