Baseline evaluation of the AI Research Resource (AIRR)

Process and early impact evaluation of the UK Government's investments into Dawn (Cambridge) and Isambard-AI (Bristol) supercomputers

Final report

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UKRI

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Glossary

Term	Description
AI	Artificial Intelligence
AI accelerators	Specialised hardware designed to perform AI computations more efficiently than general-purpose processors, typically used to train and run AI models at scale.
AI compute	Specialised High-Performance Compute capacity for AI use-cases such as training, validating, and deploying AI models
AI hyperscalers	Large technology companies that provide cloud computing services and infrastructure to support AI development and applications. Key players include Microsoft, Google and Amazon
AIRR	The AI Research Resource, a suite of publicly funded advanced supercomputers that provides AI-specialised compute capacity to researchers, academia, and industry
AIRR 20x	The 20x expansion of AIRR by 2030, committed to in the UK Compute Roadmap[1]
AIRR Phase 1	The initial investment as part of the AIRR programme into two AI supercomputers – Dawn (Cambridge) and Isambard-AI (Bristol)
AIRR Portal	A unified access point for the AIRR programme
AISI	The AI Security Institute, a UK state-backed organisation dedicated to ensuring advanced AI is safe, secure and beneficial
Alan Turing Institute	The UK's national institute for data science and Artificial Intelligence
AMD MI300X	A discrete GPU chip from AMD designed to deliver leadership performance for Generative AI workloads and HPC applications.
BriCS	The Bristol Centre for Supercomputing, which hosts Isambard-AI
Cloud-based compute	Referring to cloud-based compute offerings from commercial cloud providers (e.g., Amazon AWS, Google Cloud, Microsoft Azure, etc.)
Co-processor technologies	Specialised processors that work alongside a central processing unit (CPU) to perform specific tasks more efficiently, such as AI or high-performance computing workloads.
CPU	Central Processing Unit, a traditional general-purpose computing processor designed to handle a wide range of tasks sequentially and efficiently
Dawn	The AIRR AI supercomputer at the University of Cambridge
BIST	The UK Government Department for Business, Innovation, Science and Trade
EPCC	The Edinburgh Parallel Computing Centre, a supercomputing centre based at the University of Edinburgh

[1] DSIT (2025). UK Compute Roadmap. Policy paper. Available at: https://www.gov.uk/government/publications/uk-compute-roadmap/uk-compute-roadmap

Term	Description
EuroHPC	The European High Performance Computing Joint Undertaking, a joint initiative between the EU, European countries and private partners to develop a World Class Supercomputing Ecosystem
Federated access	An authentication approach that allows users to log in to multiple independent systems using a single, trusted identity provider
Frontier AI	Highly capable leading-edge general-purpose AI models that can perform a wide variety of tasks
Generative AI	Artificial intelligence that can create new content, such as text, images, music, or code, based on the data it has been trained on.
Gigafactories	Very large-scale computing facilities designed to train and run advanced AI models, typically using significant amounts of specialised hardware and energy.
GPU	Graphics Processing Unit, specialised processors designed to perform many calculations simultaneously
HPC	High-Performance Computing
HPE	Hewlett Packard Enterprise
Intel Data Centre GPU Max	Intel's highest performing, highest density, general-purpose discrete GPU for data centre, AI, and HPC workloads
IP	Intellectual property (e.g., patents)
Isambard-AI	The AIRR AI supercomputer at the University of Bristol
M&E	Monitoring & Evaluation
Machine learning	A subset of artificial intelligence that enables computer systems to learn patterns from data and make predictions or decisions without being explicitly programmed for each task.
MyAccessID	A centralised identity management layer and single sign-on across the different portals
NVIDIA A100	A high-performance GPU (Graphics Processing Unit) widely used for AI training and high-performance computing workloads. It was a leading AI compute chip prior to newer generations such as the H100 (released two years later in 2022).
NVIDIA Blackwell B200	A high-performance GPU from Nvidia based on the Blackwell architecture, designed for AI and high-performance computing workloads. It represents a newer generation of AI hardware with improved performance compared to earlier chips such as the H100 and H200.
NVIDIA Feynman	A future-generation AI compute architecture referenced in Nvidia's product roadmap, expected to succeed current architectures such as Blackwell and support advanced AI and high-performance computing workloads.
NVIDIA GH200 Grace-Hopper Superchip	A state-of-the-art compute chip from Nvidia combining CPU and GPU processing in a single chip designed for at-scale AI and high-performance compute applications.
NVIDIA H100	A previous leading discrete GPU chip for AI applications from Nvidia, now succeeded by its successor the H200.
PFlop/s	Petaflops per second, a unit of measurement for how many numerical calculations a processor or supercomputer can perform each second: One PFlop/s is equal to one quadrillion floating-point operations per second

Term	Description
PSRE	Public Sector Research Establishment, a diverse collection of public bodies that carry out research to support a wide range of government objectives
R&D	Research & Development
RAG	Red-Amber-Green, a widely used status classification system for reporting progress, performance, or risk in projects and operations
RCS	The University of Cambridge's Research Computing Service, which hosts Dawn
SMEs	Small- and Medium-sized Enterprises
Sovereign-AI	Sovereign-AI refers to the UK government's initiative (backed by around £500m) to invest directly in promising UK AI companies, provide R&D funding to build strategic assets, offer access to public compute, offer government as an early customer through procurement, and provide hands-on support to help companies navigate wider government opportunities including data, regulatory pathways and talent support
Tier-1	National-scale HPC services such as ARCHER2 designed to run the largest and most complex computational simulations
Tier-2	Mid-scale HPC facilities providing targeted access at a regional level or for specific disciplines
Tier-3	Local-scale HPC facilities provide HPC access to users within a specific institution or department
Top500	The Top500 list ranks, twice a year, the world's most powerful supercomputers
TRL	Technology Readiness Level, a widely used framework for assessing a technology's stage of maturity
UKAEA	The UK Atomic Energy Authority, an executive non-departmental public body, sponsored by the Department for Energy Security and Net Zero.
UKRI	UK Research and Innovation, a non-departmental public body sponsored by BIST, that brings together the seven disciplinary research councils, Research England, which is responsible for supporting research and knowledge exchange at higher education institutions in England, and the UK's innovation agency, Innovate UK

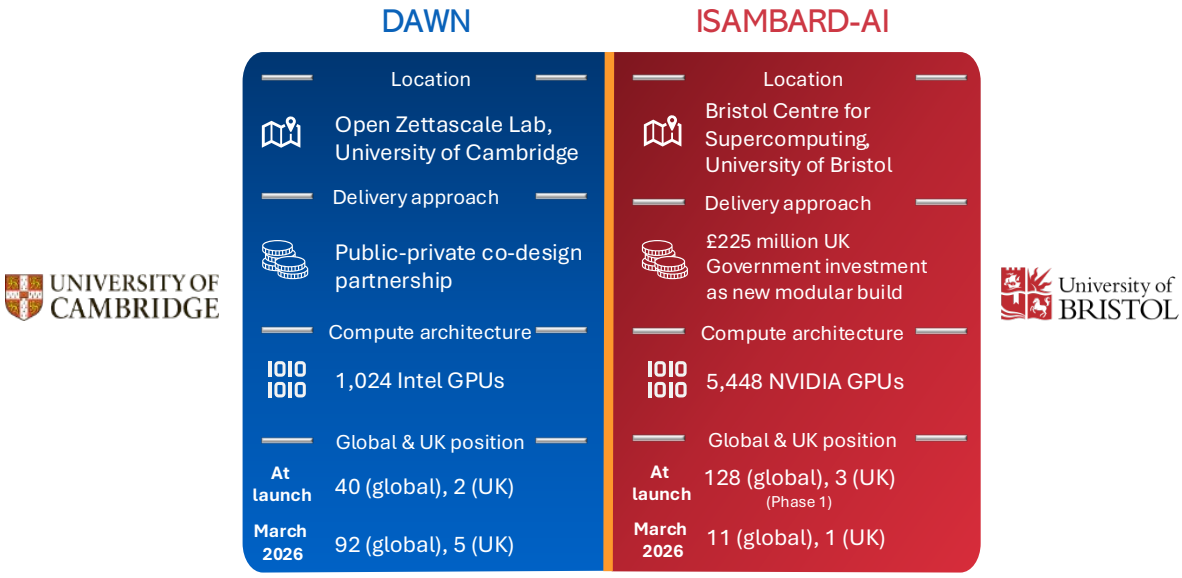
Executive Summary

Background and context

In February 2025, London Economics and IFF Research were commissioned by the Department for Business, Innovation, Science and Trade (BIST) to undertake a monitoring & evaluation exercise of the initial investments into the AI Research Resource (AIRR) programme.

The initial AIRR programme comprised investments, totalling £250 million, into two new AI-optimised supercomputers: Dawn (hosted at the University of Cambridge) and Isambard-AI (hosted at the University of Bristol). These systems provide users in the research and development (R&D) community with access to specialised public compute capabilities to support ambitious AI research and innovation projects.

Figure 1 Overview of Dawn and Isambard-AI



Note: The Top500 ranking, on which Isambard-AI's and Dawn's global position are based does not capture all advanced large-scale compute systems. In particular, it is well known that China is underrepresented in the ranking as it stopped submitting new entries to the Top 500 list (see TheNewStack (2024). Top500: China Opts Out of Global Supercomputer Race. Available at: https://thenewstack.io/top500-chinas-supercomputing-silence-aggravates-tech-cold-war-with-u-s/). Further, the performance measure used (the LINPACK benchmark) is unfavourable to AI-compute systems as it measures double-precision floating maths figures (FP64) while most AI compute tends to operate on lower precisions (FP34-FP8). As such, the ranking may not be truly reflective of systems' real-world comparative position.

Source: London Economics based on data from the AIRR programme and Top500.org

This initial investment is part of the UK Government's broader response to addressing the UK's shortage of publicly available compute by significantly expanding AI research capacity by 20x by 2030. It forms part of several UK government initiatives and programmes aimed at ensuring the UK harnesses the substantial opportunities of AI, while promoting its safe and responsible development. These include, among others, the UK Compute Roadmap (July 2025), the AI Opportunities Action Plan (January 2025), the AI for Science Strategy (November 2025), the establishment of the AI Security Institute (November 2023) as well as the UK's wider modern Industrial Strategy (Invest 2035, (published in June 2025).

The present study investigates whether the AIRR programme so far is on track to fulfil its objectives: i) improved public provision and access to compute; ii) greater scientific output; iii) a skilled AI workforce; and iv) increased AI adoption.

This report presents the findings of the process evaluation and the early-impact evaluation. The findings are based on a multi-modal approach beginning with a mapping of AIRR's activities and benefits; a review of relevant AIRR documentation; desk research; discussions and interviews with the Department for Business, Innovation, Science and Trade (BIST), UK Research and Innovation (UKRI), whose role is BIST's delivery partner, and the two host sites (the University of Bristol and the University of Cambridge); and evidence gathering from users of Dawn and Isambard-AI.

Process evaluation

The process evaluation assessed the programme set-up and governance of the initial AIRR investments into Dawn and Isambard-AI, the delivery of the two supercomputing capabilities, and the initial operational phase up to Autumn 2025. Overall, this study found that delivery of the initial AIRR systems has been a success. The speed and efficiency with which the systems have been delivered is remarkable, particularly when compared to the multi-year lead time in procurement and delivery of typical HPC systems or other Government infrastructure projects. Although the focus on rapid delivery meant that some considerations usually addressed at the appraisal and business case stages were initially less fully developed, these were addressed and refined as implementation progressed.

Delivery and early operational challenges

Early challenges experienced included: limited availability of sites ready to deliver and host an AI-compute system of the required scale in the timeframe; initial challenges in project governance and coordination (e.g., overlapping responsibilities in the early stages, escalation processes), which were clarified over time; and initial delivery challenges such as construction delays, securing grid connection and site security, which resulted in minor delays. Challenges such as these are expected in any major infrastructure project, particularly when delivered at pace, and these early challenges were recognised and dealt with effectively, whilst operating within a context of evolving governmental priorities.

AI software has historically been optimised for NVIDIA hardware, so diversifying hardware naturally involved some initial compatibility adjustments. However, increased hardware diversification is beneficial in the medium term, strengthening supply chain diversity and reducing the risk of future vendor lock-in. Early software-related issues have been effectively addressed through user support and close coordination with users and AI software suppliers.

Phased delivery approach: AIRR's two-phase delivery approach, with an initial investment into Isambard-AI and Dawn, followed by a 20x scale-up of capabilities by 2030, has proven sensible. The approach facilitated rapid delivery and ensured that users gained access to initial AI-compute capacity quickly, while allowing time to learn from inevitable initial challenges posed by projects of this scale.

BIST, UKRI and the teams in Bristol and Cambridge rightly recognise that there are benefits to the wider AI ecosystem in terms of skills development and knowledge-sharing from overcoming challenges during the initial operational period.

The phased approach also contributed to lower initial uptake by industry, which likely reflects both the intentionally sequenced initial industry engagement and the academic community's greater familiarity with public HPC compute. Early stages focused on understanding demand and testing the system, with targeted engagement of industry users being pursued at a later stage. Subsequent

growth in SME and other industry participation (see Section 8) indicates that this staged approach was effective in enabling later industry engagement on a stable and well understood platform.

Access to AIRR and user experience

The early operational period also suggests an overall positive picture of the first phase of AIRR. Current access routes are seen as appropriate and effective by the host sites and users, although it is recognised that fully identifying the potential user base is inherently challenging.

The user survey highlighted several clear strengths:

- 78% of respondents gained access to their resource within one month and 86% were satisfied with the application process.
- 83% of respondents felt the benefits of accessing AIRR outweighed the time and resources needed to access it. Only 3% disagreed.
- Just under 90% of respondents felt that the quality of training and information resources provided were adequate.
- All respondents felt that the AIRR is suited to their project needs, with 77% finding that it is "very well suited". Almost all respondents were satisfied with the performance of AIRR.

The survey suggested that clarity around eligibility criteria could be improved, with only around half of respondents indicating it was clear how decisions were made. Access routes and eligibility criteria have since been expanded and refined, enabling a broader range of pathways to access AIRR.

Early-impact evaluation

The early-impact evaluation sought to assess how effectively the two AIRR projects are progressing towards achieving their intended outcomes. Although the evaluation was undertaken at an early stage in the operational life of the AIRR with many benefits not yet fully realised, early evidence shows very positive signs of the benefits already emerging from Dawn and Isambard-AI and are likely to continue developing along a positive trajectory.

Impact on the UK's AI capabilities

The AIRR programme set out to significantly increase AI compute capability available to UK researchers, industry and the public sector. It has delivered on this objective with a significant increase in available AI compute in the UK:

- Both systems are already among the world's most powerful large-scale compute resources, with Dawn currently being ranked 92nd and Isambard-AI ranked 11th among the world's Top 500 most powerful supercomputers.[2]
- Moreover, following the initial AIRR programme becoming operational, the UK's performance share among the Top 500 most powerful supercomputers globally rose from 0.7% in November 2024 to 2.9%[3] in June 2025, now slightly exceeding France. (Figure 14)

[2] Top 500 (2025). TOP500 List - November 2025. Available at: https://top500.org/lists/top500/list/2025/11
[3] Excluding Dawn and Isambard-AI the UK's performance share in June 2025 would have been equivalent to 1.1%.

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Impact on research and innovation

Usage ramped up significantly between December 2025 and March 2026, with demand for compute time in March outstripping available allocations on the system, highlighting the appetite for publicly-funded AI capabilities.

Allocated time on the resource has been utilised in several ground-breaking projects. One example is Nightingale-AI, an initiative led by Imperial College London, to develop an advanced health AI model designed to transform healthcare by leveraging vast repositories of NHS data such as electronic patient records, biomedical data, and published medical literature.[4]

Interviews with users and user feedback from the surveys undertaken for this study suggest that AIRR is already having a significant positive impact on UK AI research outputs, despite its relatively short operational life to date:

- Nine in ten users reported an improvement in their ability to undertake AI research, with seven in ten users rating their ability as much better. Users overwhelmingly reported improvements both to the efficiency and quality of their research, as well as noting that AIRR has enabled them to undertake a greater volume of research and allowed them to pursue new types of work that would not otherwise have been feasible.
- Four in ten survey respondents reported that their work on AIRR has already resulted in research outputs such as publications or conference submissions and almost all of the remaining respondents expect the work they are undertaking on AIRR to lead to research outputs in the future.
- Early evidence also suggests AIRR is already facilitating tangible improvements in UK innovation capacity as well as early commercial impacts: 41% of respondents reported that AIRR has already enabled new innovations, products or services, and 4% of respondents reported that that their work on AIRR has already led to new commercial products (e.g. software, platforms, APIs), with almost all industry users expecting that their work on AIRR will lead to the IP generation (e.g., patents or proprietary methods) in the future.

Wider impacts

Beyond research outputs, early evidence indicates that AIRR has a positive impact on the skills development of the UK workforce, both in terms of training new talent and attracting existing talent. Around half of respondents indicated that access to the AIRR has already had at least some impact on both attracting and retaining skilled staff at their organisation.

AIRR's alignment with key national priorities and the government's five missions also means that significant progress is already being made in areas of critical national importance such as healthcare, education, and green energy. Examples include AI research to support early detection of cancer and early-signs of Alzheimer's and other forms of dementia, the development of vaccines, and protein structure prediction for diseases such as Alzheimer's and heart disease.

Summary of progress towards objectives

Overall, the two capabilities have provided a significant boost to the UK's large-scale compute provision and while it is too early for many of the expected impacts to be measured by concrete data,

[4] For more information on Nightingale AI, see Imperial College London (2025). Launching 'Nightingale AI': A New Foundation World Model for Health. Available at: https://www.imperial.ac.uk/news/261693/launching-nightingale-ai-new-foundation-world/

early evidence demonstrates the AIRR's importance to the UK AI research community and the UK's international competitiveness.

AIRR has delivered increased access to AI compute and delivery of its other outputs (increased AI research and increased opportunities for users) are assessed to be on track. In terms of outcomes, evidence gathered to date provides confidence that AIRR is on track to deliver higher quality research using AI. While similar evidence for commercial impacts is not yet available, early indications of future impact are positive. Similarly, while too early to assess impact of knowledge exchange, early evidence on collaborations and partnerships is overall encouraging.

It is too early to assess progress towards longer term impacts due to the early nature of the evaluation. Nevertheless, early evidence on AI developments for public good, evidence of use of facilitating AI-safety related research, and early evidence of facilitation of AI use beyond immediate AIRR research projects has already emerged.

A more detailed summary of progress towards Theory of Change objectives, for all groups of outputs, outcomes, and impacts set out in the Theory of Change (provided in Section 7.1) is provided in Section 9.5.

Final observations

The process and early-impact evaluations show an overall very positive and promising picture of the initial AIRR programme. Although the focus on speed presented unavoidable early challenges, the value of rapid delivery and potential early mover advantage should be recognised and given sufficient weight in future decision making.

The AIRR programme takes place against a background of expanding compute capacity globally, driven by very large investments by the private and public sectors. International comparison shows that UK compute provision has been losing ground to European and international comparators, and the 2023 Future of Compute Review plainly highlighted the urgent need for compute capacity.

Evidence shows that the additional compute capability from the initial AIRR investment accommodates existing demand but the optimal rate and scale of expansion remains uncertain. However, now that the full range of allocations are taking place, including the new, large, Sovereign AI allocations, demand indicators are starting to already appear constrained by system capacity arguing against overly conservative, purely reactive scaling approaches.

Finally, it should be noted that AI has the potential to accelerate the scientific discovery process and the long-run returns to early R&D investment could be even higher than suggested by historical literature. As such, the magnitude and persistence of such effects remain uncertain and may be understated by the existing evidence.

Recommendations for future expansion

Based on the findings of this study, the following recommendations should be considered for future expansion of AIRR:

Table 1 Recommendations for future expansion

Phase	Recommendation
Set-up phase	Maintain the phased, pilot-first approach (limited roll out to early users first) for future expansions to enable rapid user access while generating early insights.
	Ensure evidence-based and clear allocation targets and priorities as well as joint understanding between BIST, UKRI, and host sites to effectively reach key user groups, particularly SMEs and startups, as laid out in the Compute Roadmap.
	Ensure early consideration of service and software infrastructure and other supporting services to improve usability and alignment with policy objectives.
	Consider whether less time-sensitive procurement options could be considered for some components of the programme where time sensitivity is lower (such as marginal or medium-term capacity increases) to encourage participation from a broader range of sites and suppliers.
Delivery phase	Continue using a phased model (providing limited rollout to early users first) as a core design principle for future expansions to manage uncertainty while enabling rapid progress.
	Incorporate additional contingency planning for unexpected challenges, including provisions and mitigation strategies for potential time slippage.
	Ensure early confirmation of operational funding or establish contingency mechanisms to prevent bottlenecks.
	Maintain early, well-resourced hiring strategies to ensure operational capacity keeps pace with accelerated technical delivery, especially for specialised HPC/AI roles.
	Define escalation pathways clearly at the outset, specifying which issues should go to which forum, when, and at what level of detail.
	Establish clear understanding of responsible individuals, meeting structures, required expertise, and invitees to support efficient communication.
	Retain dedicated project managers and implement shared visibility tools early in future expansions.
Operational phase	Appoint a dedicated communications officer to manage external communication and engagement with potential user groups.
	Implement smaller-scale test allocations or incentive models, or upskilling days for less experienced users to address patterns of late usage and improve utilisation. Note that this must be balanced with the extent to which flexibility is a priority.
	Maintain up-to-date and clear information on the AIRR and continue to develop the AIRR Portal while monitoring user satisfaction.
	Continue to assess whether the blended operational approach (combining cloud-style with more traditional large-scale HPC) appropriately meets user needs.
	Utilise individual experiences, expertise and processes of new host sites, while retaining beneficial centralised aspects such as the federated access model as a requirement for all new host sites.

Source: London Economics

PART I: BACKGROUND AND CONTEXT

Key findings:

- **Strong and growing demand for AI compute:** Access to advanced, AI-optimised compute remains a key constraint across academia, industry, and the public sector.
- **Clear case for public intervention:** Existing cloud and HPC provision do not fully meet the requirements of cutting-edge AI workloads.
- **AIRR delivers a step-change in capacity:** The programme, including the planned 20x expansion, significantly increases national AI compute capability and access.
- **Aligned with wider UK strategy:** Investments support broader policy priorities, including growth, innovation, and public service transformation.
- **Global competition reinforces urgency:** Rising international investment and the UK's declining compute share strengthen the need for action.

1 Introduction

1.1 About this study

In February 2025, London Economics and IFF Research were commissioned by BIST to undertake a monitoring & evaluation exercise of the initial investments into the AI Research Resource (AIRR) programme.

The initial AIRR programme comprises investments into two new AI-optimised supercomputers: Dawn (hosted at the University of Cambridge) and Isambard-AI (hosted at the University of Bristol). These systems provide users in the research and development (R&D) community with access to specialised public compute capabilities to support ambitious AI research and innovation projects.

The study investigates whether the AIRR programme so far is on track to fulfil its objectives:

- improved public provision and access to compute;
- greater scientific output;
- a skilled AI workforce; and,
- increased AI adoption.

The scope of the evaluation was to:

1) devise a comprehensive monitoring and evaluation (M&E) plan for the Isambard-AI and Dawn facilities covering the next 5 years;
2) to evaluate the delivery of the two investments (process evaluation) from commissioning up to late 2025; and,
3) to establish a baseline of impacts achieved so far that will serve as a reference point for evaluating future impacts (early impact evaluation).

The evaluation will help BIST and wider government to understand whether the AIRR programme is making progress towards meeting its objectives. The results will also support in directing the delivery of future projects of a similar nature by providing lessons learnt, as well as the specific challenges the project came across during delivery and how they were overcome.

This report presents the findings of the process evaluation (in Part II) and the early-impact evaluation (in Part III). The remainder of Part I of this report provides background on the AIRR programme, AIRR's place in the UK compute infrastructure landscape, and wider context. Part IV provides concluding remarks.

The monitoring and evaluation plan developed for this study has been expanded and refined into a more comprehensive benefits realisation plan capturing the breadth of UK Government AI compute investments. The updated benefits realisation plan is presented in the *Benefits realisation of UK AI compute investments* report published alongside the present report, and so is not reported again in this document.

1.2 Approach, caveats and limitations

The research followed a multi-modal approach, beginning with a review of the existing Theory of Change of the AIRR programme and mapping of AIRR's activities and benefits. An initial scoping phase involved a review of relevant AIRR documentation, desk research, and initial discussions with stakeholders from the Department for Business, Innovation, Science and Trade (BIST) and UK Research and Innovation (UKRI) to ensure a clear understanding of AIRR's activities, outputs, outcomes, and impacts.

This informed the development of a Monitoring and Evaluation (M&E) plan and the further study design, including the selection of impact indicators and evaluation methods, and further data collection and research activities to be undertaken. Underpinning the M&E plan and later evaluation activities, three refined Theories of Change were developed; two for the set-up phase of the AIRR compute centres (one for Dawn and one for Isambard-AI, both provided in Section 4) and one for the operational phase (considering both of the initial AIRR capabilities collectively, provided in Section 7). A joint workshop between LE, BIST and UKRI was held in March 2025 to validate and further refine the Theories of Change.

Evidence gathering comprised desk research, two user surveys (one for the process evaluation and one for the early-impact evaluation), and stakeholder interviews with the relevant organisations involved in the AIRR programme (BIST, UKRI, the University of Bristol, and the University of Cambridge) as well as users of the two compute capabilities, and the collection of application and operational data from UKRI. Further details on the stakeholders engaged through these activities are provided in Annex 1. The remaining annexes provide the survey questionnaires and topic guides used.

This research was conducted by a team of independent professional economists. The evaluation followed established best practice and professional judgment to ensure the findings and lessons learned are robust, balanced, and insightful.

However, there are some limitations and caveats which should be considered whilst reading this report:

- Evaluation commenced relatively early in the implementation process, before AIRR had reached full operational capacity. This timing was a deliberate design choice to capture initial user experiences and inform ongoing refinements; however, it also meant that evidence collection took place while usage was still ramping up and the user experience was evolving.
- In particular, the timing of the process evaluation primarily reflects the perspectives of early users. While this provides valuable insight into initial implementation and adoption, it may not fully represent the experiences of later users as AIRR became more established. To partially address this limitation, process-related questions were incorporated into subsequent interviews with later users. However, repeating structured survey-based data collection at a later stage was not feasible due to respondent burden, as the latter impact survey already sought to collect significant data from users.
- Similarly, while usage had sufficiently ramped up at the time of the impact evaluation, the evaluation was done at an early stage in AIRR's operational life. Therefore, while the impact evaluation captures early-impacts and provides a baseline against which future impacts can be evaluated against, many impacts have not yet materialised.

- While uptake among industry users has ramped up over the course of the evaluation, response rates from industry to the user engagement were low. As such, insights and impacts from industry are less well captured in this baseline evaluation.
- Similarly, only a small number of responses were received from users undertaking AI safety research.
- Responses are based on a (biased) sample of users who did get access to AIRR (i.e., successful applications). No information from potential users who applied to the programme but did not get access was collected (i.e., unsuccessful applicants).

2 The AIRR programme

2.1 Background and context

Artificial Intelligence (AI) has seen rapid advances in recent years, reflecting AI's potential for transformative change across a wide range of sectors, including the public sector. The UK Science and Technology Framework identifies AI as one of the five most critical technologies for the UK economy.[5]

Alongside data and software that effectively leverages compute hardware, compute is fundamental for AI to unlock its transformative potential. Existing cloud-computing solutions, such as Google Cloud's Vertex AI (an AI development platform by Google), and local/regional supercomputing clusters enable researchers and businesses to train, deploy and scale AI to a degree.

However, while commercial cloud services should be seen as a key component of the UK compute infrastructure, they may be unsuitable for certain users who need specific networking or compute performance, and for those who need to port large datasets between systems.[6] Similarly, existing supercomputing offerings are not optimised to service cutting-edge AI developments and typically lack sufficient provision of hardware accelerators (Graphics Processing Units, or GPUs, specialised processors designed to perform many calculations simultaneously), which cutting-edge AI are reliant upon.

The 2023 Independent Review of The Future of Compute found that there are significant shortages in public accelerator capacity (specialised hardware used for high-performance computing) in the UK. Facilities providing this capability are already running at capacity or being oversubscribed. At the time of the review, fewer than 1,000 NVIDIA A100 GPUs (a type of high-performance AI chip, see Glossary for details) were available to researchers, compared to at least 3,000 top-spec accelerators needed to meet the immediate needs of academic and commercial users in the AI community.[7]

In light of this AI compute gap and the findings and recommendations from the Future of Compute review, in particular to Recommendation 6: "*Immediately and significantly increase compute*

[5] DSIT (2025). Science and Technology Framework. Available at: https://www.gov.uk/government/publications/science-and-technology-framework/science-and-technology-framework
[6] DSIT (2023). Independent Review of The Future of Compute: Final report and recommendations. Available at: https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts
[7] DSIT (2023). Independent Review of The Future of Compute: Final report and recommendations. Available at: https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts

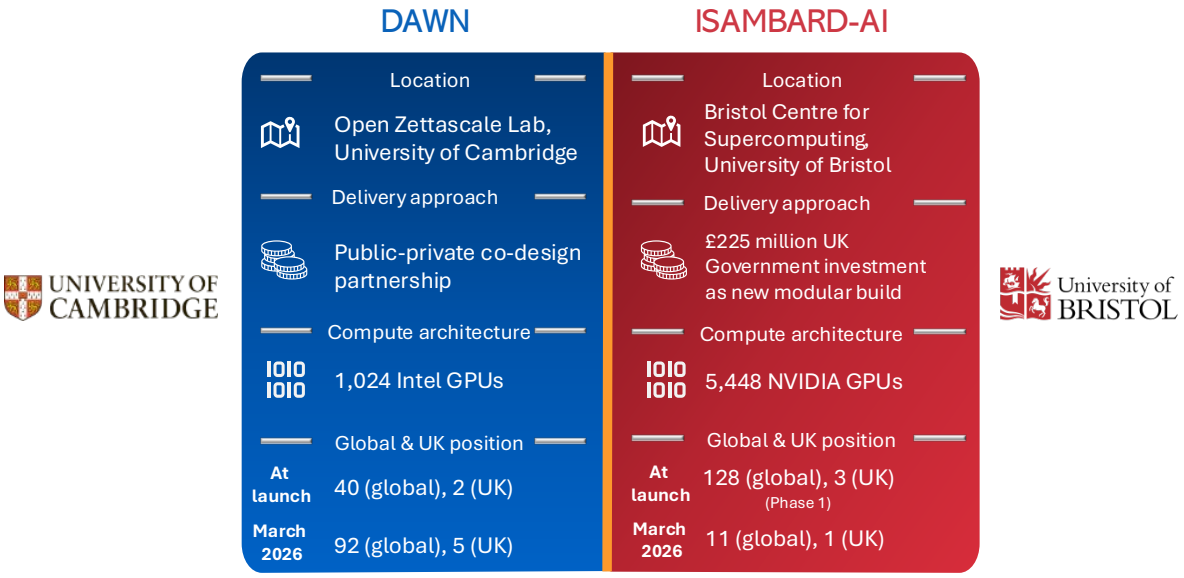
capacity for AI research",[8] the AIRR programme aims to increase compute capacity for AI research through creating a national AI research resource.

2.2 Overview of the AIRR programme

The first stage of the AIRR programme, in scope of this evaluation, comprised a £250 million investment establishing two supercomputers dedicated to AI research; Dawn located at the University of Cambridge and Isambard-AI located at the University of Bristol.

Isambard-AI and Dawn are two of the fastest supercomputers in the UK and among the most powerful in the world. Isambard-AI has been ranked as the 11th fastest supercomputer in the world by the prestigious Top 500 ranking, which twice per year ranks the most powerful supercomputers across the world.[9] Dawn entered the Top500 list at position 40 making it the second fastest supercomputer in the UK and Ireland, and the fastest AI supercomputer, at the time of its launch.[10] In the latest Top 500 ranking, from November 2025, Dawn occupies position 92.[11]

Figure 2 Overview of Dawn and Isambard-AI



Note: The Top500 ranking, on which Isambard-AI's and Dawn's global position are based does not capture all advanced large-scale compute systems. In particular, it is well known that China is underrepresented in the ranking as it stopped submitting new entries to the Top 500 list (see TheNewStack (2024). Top500: China Opts Out of Global Supercomputer Race. Available at: https://thenewstack.io/top500-chinas-supercomputing-silence-aggravates-tech-cold-war-with-u-s/). Further, the performance measure used (the LINPACK benchmark) is unfavourable to AI-compute systems as it measures double-precision floating maths figures (FP64) while most AI compute tends to operate on lower precisions (FP34-FP8). As such, the ranking may not be truly reflective of systems' real-world comparative position.

Source: London Economics based on data from the AIRR programme and Top500.org

[8] DSIT (2023). Independent Review of The Future of Compute: Final report and recommendations. Available at: https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts

[9] University of Bristol (2025). Isambard-AI is 11th fastest supercomputer in the world. Available at: https://www.bristol.ac.uk/research/centres/bristol-supercomputing/articles/2025/isambard-ai-is-11th-fastest-supercomputer-in-the-world.html

[10] University of Cambridge Research Computing Services (2023). Dawn enters the Top500 list. Available at: https://www.hpc.cam.ac.uk/dawn-enters-top500-list

[11] Top 500 (2025). TOP500 List - November 2025. Available at: https://top500.org/lists/top500/list/2025/11

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Isambard-AI was built from scratch, using a modular build approach (see Section 5.2), with £225 million initial funding from the AIRR programme.[12] Isambard-AI is based on 5,448 GH200 Grace-Hopper Superchips, one of the most advanced AI processing chips available at the time from leading AI hardware supplier NVIDIA (see Glossary).

Dawn was created via a long-term co-design partnership between the University of Cambridge, UK Research and Innovation (UKRI), the UK Atomic Energy Authority (UKAEA) and major hardware suppliers Intel and Dell Technologies. The AIRR programme provided funding for operational delivery (staff) of Dawn.

At the time of the evaluation, Dawn was based on 1,024 Intel Data Centre GPU Max 1550 GPUs (see Glossary). However, in spring 2026, the existing Intel hardware will be supplemented with additional capacity provided by AMD Instinct's latest MI355X GPUs (see Glossary), through additional funding of £36 million. This will further enhance Dawn's compute capability, making the system up to six times more powerful.[13]

The initial funding in Dawn and Isambard-AI is part of a wider programme, with up to £2 billion of investment committed by the UK Government between 2025 and 2030 to build a modern public compute ecosystem and deliver on the vision set-out in the Government's UK Compute Roadmap and the AI Opportunities Action Plan (discussed below). This includes over £1 billion of funding to expand the AI Research Resource by 20x by 2030, and up to £750 million for a new national supercomputer service in Edinburgh.[14]

2.3 Wider policy context

The AIRR programme is one of several UK government initiatives and programmes aimed at ensuring the UK harnesses the substantial opportunities of AI, while promoting its safe and responsible development. This includes:

- the published (in July 2025) **UK Compute Roadmap** setting out the Government's plan to build a world-class UK compute ecosystem[15];
- the **AI Opportunities Action Plan** (launched in January 2025), which sets out a roadmap for government to capture the opportunities of AI to enhance growth and productivity and create tangible benefits for UK citizens, including expanding the UK's sovereign compute capacity by at least 20x by 2030[16, 17];

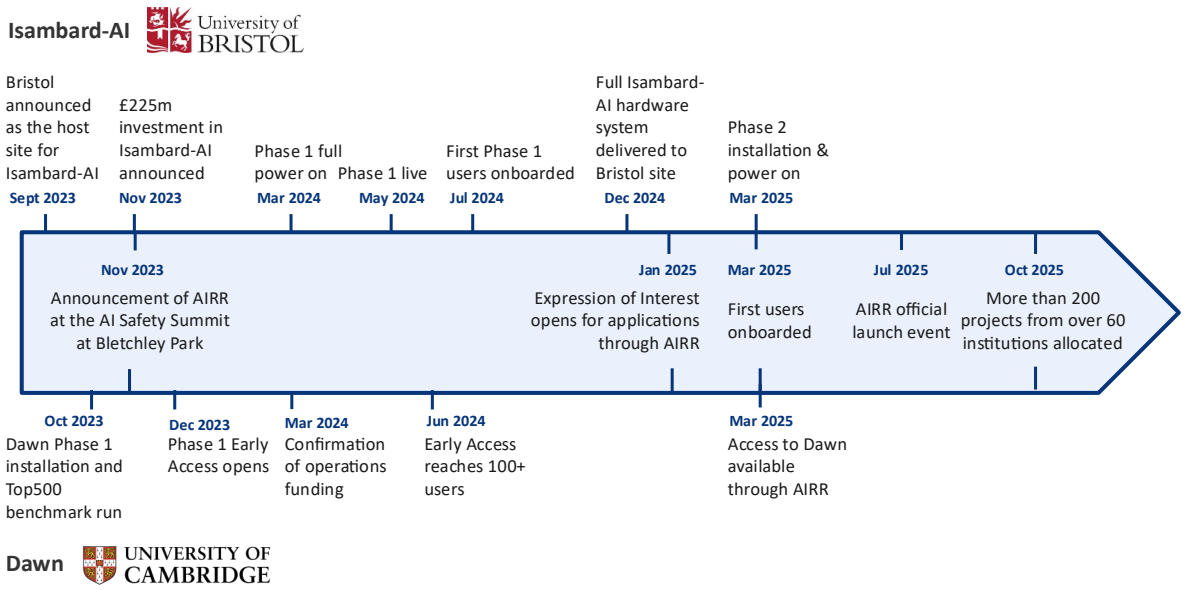
[12] University of Bristol (2025). Unprecedented £225m investment to create UK's most powerful supercomputer in Bristol. Available at: https://www.bristol.ac.uk/news/2023/november/supercomputer-announcement.html
[13] DSIT (2026). Cambridge supercomputer set to get 6 times more powerful as government backs British AI innovation. Press release. Available at: https://www.gov.uk/government/news/cambridge-supercomputer-set-to-get-6-times-more-powerful-as-government-backs-british-ai-innovation
[14] DSIT (2025). UK Compute Roadmap. Policy paper. Available at: https://www.gov.uk/government/publications/uk-compute-roadmap/uk-compute-roadmap
[15] DSIT (2025). Policy paper. UK Compute Roadmap. Available at: https://www.gov.uk/government/publications/uk-compute-roadmap/uk-compute-roadmap
[16] DSIT (2025). Artificial Intelligence (AI) Opportunities Action Plan. Available at: https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan
[17] DSIT, PMO, 10 Downing Street (2025). Press release: Prime Minister sets out blueprint to turbocharge AI. Available at: https://www.gov.uk/government/news/prime-minister-sets-out-blueprint-to-turbocharge-ai

- the **AI for Science Strategy** (November 2025) setting out the UK's plans for developing frontier capability in AI-driven science and ensuring the UK retains its position of global scientific leadership[18];
- the **AI Security Institute** (established in November 2023), the world's first state-backed organisation focused on advanced AI security for the public interest[19];
- the **Technology Adoption Review** (launched in December 2024), which will identify the barriers businesses face when adopting both established and novel technologies[20];
- specific government initiatives aimed at boosting AI adoption such as the **AI Upskilling Fund**[21] (which was open for application for funding until August 2024) and the **Prime Minister's AI Exemplars programme**[22] (announced in August 2025); as well as,
- the UK's wider modern **Industrial Strategy**, Invest 2035, (published in June 2025), the government's 10-year plan to deliver the certainty and stability businesses need to invest in the high growth sectors expected to drive UK growth[23].

2.4 Timeline for the AIRR programme

Figure 3 outlines a high level timeline for the AIRR programme including key milestones for both Dawn and Isambard-AI, as well as the overall programme.

Figure 3 Timeline for the AIRR programme



Source: London Economics

[18] DSIT (2025). AI for Science Strategy. Policy Paper. Available at: https://www.gov.uk/government/publications/ai-for-science-strategy/ai-for-science-strategy

[19] DSIT (2024). Introducing the AI Safety Institute. Available at: https://www.gov.uk/government/publications/ai-safety-institute-overview/introducing-the-ai-safety-institute

[20] DSIT (2024). Technology Adoption Review. Available at: https://www.gov.uk/government/calls-for-evidence/technology-adoption-review/technology-adoption-review

[21] DBT (2024). Flexible AI Upskilling Fund pilot. Available at: https://www.gov.uk/business-finance-support/flexible-ai-upskilling-fund-pilot

[22] GDS (2025). The Prime Minister's AI Exemplars programme: A portfolio approach to public sector innovation. Available at: https://gds.blog.gov.uk/2025/08/18/the-prime-ministers-ai-exemplars-programme-a-portfolio-approach-to-public-sector-innovation/

[23] DBT (2024). Invest 2035: the UK's modern industrial strategy. Available at: https://www.gov.uk/government/consultations/invest-2035-the-uks-modern-industrial-strategy/invest-2035-the-uks-modern-industrial-strategy

3 UK compute landscape and international context

3.1 AIRR's place in the UK compute infrastructure

The UK large-scale compute landscape outside of AIRR

The UK has a long tradition of public compute provision. The UK's first national supercomputing service ("CRAY T3D") was launched at EPCC (the University of Edinburgh's supercomputing centre) in 1994, building on EPCC's earlier experience with production-scale parallel computers dating back to the 1980s[24].

The UK's High-Performance Computing (HPC) ecosystem, outside of AIRR, can be broadly categorised into three tiers:

- **National-scale** (Tier-1) services, such as ARCHER2, the UK's previous flagship national supercomputer, designed to run the largest and most complex computational simulations.
- **Mid-scale** (Tier-2) facilities such as Isambard-3 (a High-Performance Computing system located at the University of Bristol designed to support a broad range of scientific workloads) and JASMIN (a High-Performance Computing and data analysis platform for environmental science at STFC's Rutherford Appleton Laboratory), among others, provide targeted access at a regional level or for specific disciplines.
- **Local-scale** (Tier-3) facilities provide access to HPC to users within a specific institution or department.

Beyond domestic compute capabilities, UK users benefit from international HPC resources via partnerships (e.g., Euro HPC and the US Department of Energy's INCITE programme) and can access compute resources via commercial cloud providers (e.g., Amazon AWS, Microsoft Azure, Google Cloud).

The different HPC tiers provide important and complementary functions across the full spectrum of innovation stages, known as Technology Readiness Levels[25], or TRLs. At the earliest stages (TRLs 1–3), HPC supports R&D while organisations explore new ideas and theories. At the middle stages (TRLs 4–6), it supports technology prototyping and simulation, while at later stages (TRLs 7–9), it helps with product development and performance optimisation.

Small-scale theory development codes typically begin on Tier-3 or Tier-2 systems, where early models and algorithms are tested and refined. As these codes mature and are optimised, they scale up and are promoted to Tier-1 systems.

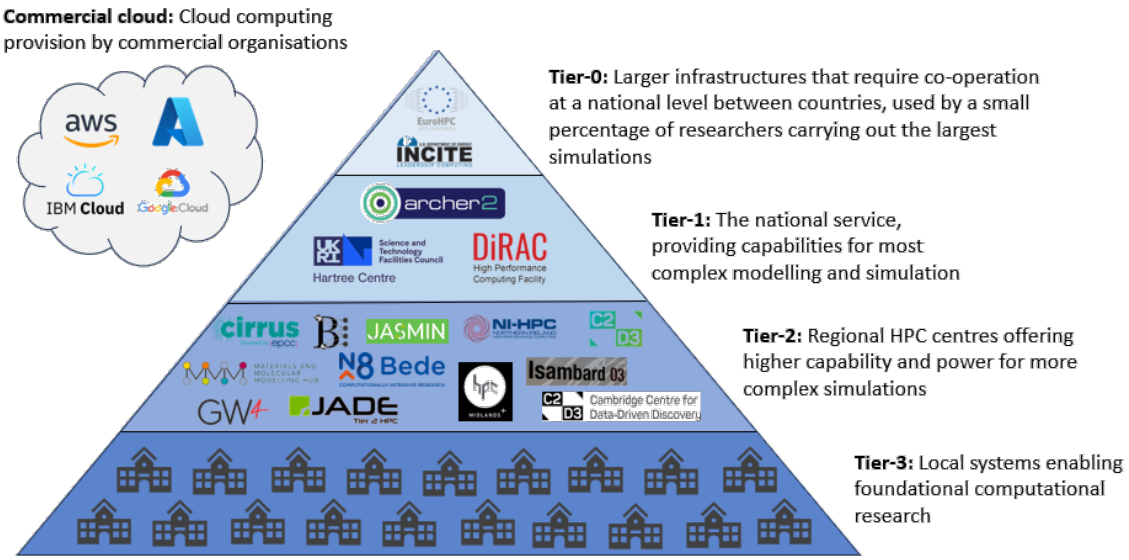
Cloud-based compute resources further extend the ecosystem, enabling users, especially in industry or those new to HPC, to access high performance compute in a flexible, on-demand, and scalable way.

Figure 4 provides an overview of the UK large-scale compute landscape, outside of AIRR.

[24] EPCC (n.d.). History of Machines. Available at: https://www.archer2.ac.uk/community/outreach/materials/history_of_machines
[25] The Technology Readiness Level (TRL) scale is a widely used framework for assessing a technology's stage of maturity. See Heder, M. (2017). From NASA to EU: the evolution of the TRL scale in Public Sector Innovation for further information. Available at: https://innovation.cc/wp-content/uploads/2017_22_2_3_heder_nasa-to-eu-trl-scale.pdf

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Figure 4 Large-scale compute provision accessible by UK researchers and innovators



Source: London Economics based on the classification provided in DSIT (2023). Independent Review of the Future of Compute: Final report and recommendations. Available at: https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts

AIRR's place in the UK compute infrastructure

Traditional High-Performance Computing (HPC) infrastructure is designed primarily for scientific research. Its primary purpose has been to run large-scale simulations and calculations that help researchers understand complex systems; for example, simulating the climate, exploring how novel materials behave under different conditions, or modelling the behaviour of complex engineering systems.

These workloads typically involve solving complex mathematical problems many times, often in parallel, using large clusters of compute processors (CPUs, see Glossary). Traditional HPC systems are therefore optimised to distribute many simulation tasks across thousands of processors efficiently.

Artificial Intelligence (AI) workloads are different. Instead of running large numbers of scientific simulations, AI systems focus on training and running machine learning models (see Glossary) that learn patterns from very large datasets. This process relies heavily on performing large numbers of matrix and vector calculations, which are better suited to specialised AI processors (GPUs/AI accelerators, see Glossary).

As a result of these differences, compute systems designed for traditional HPC workloads do not always perform efficiently for AI tasks. AI-optimised large-scale compute systems are specifically designed for the different types of problems these systems are built to solve.

However, as highlighted in Section 2.2, UK large-scale computing systems have previously lacked a sufficient number of AI-specific processors. Investments into AI-specific compute infrastructure, such as Dawn and Isambard-AI, will fill this gap, providing AI researchers and innovators with access to the specialised public compute capabilities they need for their work.

3.2 International context and trends

AI is increasingly a strategic national priority around the world. Many governments now see advanced AI capabilities as a key component of economic competitiveness, national security, and future public service delivery. As a result, governments around the world are increasingly investing in AI infrastructure at scale.

In 2024 alone, the (Stanford) AI Index, a leading publication produced by the Stanford Institute for Human-Centered Artificial Intelligence (HAI) providing one of the most comprehensive global overviews of developments in AI, estimates that the U.S. government awarded approximately $5.1 billion in AI-related grants and a further around $0.8 billion in AI-related contracts and other transaction agreements. Other nations are also increasingly investing in AI infrastructure and AI enabling technologies; for example, Canada pledged to invest $2.4 billion, China launched a $47.5 billion semiconductor fund, France committed €109 billion, India pledged $1.25 billion, and Saudi Arabia's Project Transcendence represents a $100 billion initiative.[26]

Sovereign public AI compute capabilities form a key part of governments' AI infrastructure strategies. For example, the European Commission, in 2024, pledged a €20 billion fund intended to support AI "gigafactories" (very large computing sites designed to train and run advanced models) as part of its wider "InvestAI" plans aiming to mobilising €200 billion for AI.[27] As of March 2026, the European Union has established 19 AI Factories and 13 AI Factory Antennas that offer free, customised support to Small- and Medium-sized enterprises (SMEs) and Startups.[28] More widely, among the Top 500 most powerful supercomputers in the world, more than half (a total of 255 systems) were using accelerator or co-processor technologies (specialised chips that speed up tasks like AI processing) as of November 2025.[29]

Alongside public AI investment, private companies including the leading commercial cloud platforms (Amazon AWS, Microsoft Azure, and Google Cloud) and frontier AI developers (e.g., Open-AI, Anthropic, Alphabet) are also heavily investing in state-of-the-art AI systems. Global private AI investment recorded record highs in recent years, having reached $252.3 billion in 2024 with total investment growing more than thirteenfold since 2014.[30]

However, advanced AI compute capabilities are increasingly concentrated in certain regions. In 2025, U.S. private AI investment accounted for more than four-fifths of global AI investment ($285.9 billion of the total $344.7 billion). This is around 23 times higher than China's $12.4 billion and 48 times the U.K.'s $5.9 billion. The gap is even more pronounced in generative AI (AI systems that can create content such as text, images, or code), where U.S. investment exceeded the combined total of Europe and China by $158.9 billion.[31]

Moreover, due to the vast amounts of capital required for AI accelerators as well as associated infrastructure (power, cooling, networking, and data centres), developing leading AI systems now

[26] Stanford Institute for Human-Centered Artificial Intelligence (2026). Artificial Intelligence Index Report 2026. Available at: https://hai.stanford.edu/ai-index/2026-ai-index-report
[27] Innovation News Network (2024). EuroHPC unveils €1.5bn funding for Europe's first AI factories. Available at: https://www.innovationnewsnetwork.com/eurohpc-unveils-e1-5bn-funding-for-europes-first-ai-factories/53817/
[28] EuroHPC Joint Undertaking (n.d.). AI Factories. Available at: https://www.eurohpc-ju.europa.eu/ai-factories_en [Accessed 13th March 2026]
[29] Top 500 (2025). Highlights - November 2025. Available at: https://top500.org/lists/top500/2025/11/highs/
[30] Stanford Institute for Human-Centered Artificial Intelligence (2026). Artificial Intelligence Index Report 2026. Available at: https://hai.stanford.edu/ai-index/2026-ai-index-report
[31] Ibid

requires very substantial financial resources.[32] As a result, access to capital has become a significant barrier to entry, meaning that only a relatively small number of companies and organisations have the resources needed to build and operate the most advanced AI systems. The high demand for AI hardware in turn, puts pressure on prices and availability of advanced computing resources, making it more expensive and difficult for researchers, start-ups, and smaller companies to develop and train advanced AI systems.

Public compute initiatives such as AIRR aim to democratise access to advanced AI computing resources, ensuring that innovative research projects across the academic, private, and public sectors can access the AI compute resources they need even without large amounts of private capital. By lowering barriers to entry, AIRR seeks to enable a wider range of AI-related innovations and contributes to ensuring that the UK remains competitive as other nations invest heavily in large-scale AI infrastructure.

[32] Cottier, B et al. (2024). The rising costs of training frontier AI models. Available at: https://arxiv.org/abs/2405.21015

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PART II: PROCESS EVALUATION

Key findings:

- **Successful delivery:** Overall, this study found that delivery of the initial AIRR systems has been a success. The speed and efficiency with which the systems have been delivered is remarkable particularly when compared to delivery of typical HPC systems.
- **Challenges encountered:** At the same time, the focus on rapid delivery also meant that some considerations were initially less fully developed and have continued to be refined as implementation progressed, and delivery encountered a number of early challenges.
- **Challenges were met effectively:** However, such challenges are expected in any major infrastructure project and especially so given the rapid delivery of AIRR. Early challenges were recognised and dealt with effectively and the overall delivery timeline remained exceptionally rapid compared with typical compute infrastructure projects of this scale.
- **Positive user feedback:** The early operational period suggests an overall positive picture of the first phase of AIRR. Current access routes are seen as appropriate and effective and users highlighted clear strengths including rapid access to systems, satisfaction with the application process, and the value and quality of training and information resources.
- **Future learnings:** The phasing of the AIRR Investments has ensured that users gain access to initial AI-compute capacity quickly, while having provided an opportunity to gather insights and lessons learned, refine plans, and reflect early experiences gained in future developments prior to further rollout.

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4 Introduction and approach

This process evaluation assessed the programme set-up and governance of the initial AIRR investments into Dawn and Isambard-AI, the delivery of the two supercomputing capabilities, and the initial operational phase up to autumn 2025. Specifically, the process evaluation reviewed:

- the **set-up** of the AIRR programme, including the programme objectives, governance, targeting;
- the **delivery** of the capabilities, including delivery approach and design choices, and the procurement process; and
- the **early operation** of AIRR, including users experience, centre operations and communication.

The process evaluation is based on a review of programme documentation, interviews with BIST, UKRI and centre personnel, UKRI data on AIRR access and a survey of AIRR users. In total, 30 responses were received to the process user survey and nine consultations with BIST and other AIRR stakeholder organisations were undertaken.

Of the thirty users who responded to the process survey:

- 1 respondent had used Dawn only, 25 respondents had used Isambard-AI only, and a further 4 respondents had used both systems.
- 83% of respondents (25 out of 30 respondents) had used other compute resources before.
- 67% were from academia, 20% from research organisations, 7% from the third sector (incl. charities and not for profits), 3% from industry / the private sector, and 3% from the AISI.

Further breakdowns in terms of access routes and research areas are provided in Annex 1.

The user survey explored topics around: i) the effectiveness of the AIRR application and onboarding process; ii) the accessibility and useability of AIRR interfaces such as the AIRR Portal; iii) the appropriateness of the provided capacity allocations and the process for requesting further capacity; iv) the extent to which AIRR meets users' requirements and technical performance expectations; and, v) early insights on the adequacy of the user support, training and feedback mechanisms provided.

Consultations with AIRR stakeholder organisations were used to gather complementary insights from BIST, its delivery partner (UKRI), and the host sites on what went well and areas that could have been improved across programme set-up, delivery and early-operation. Together, the collected information informed lessons learned for the continued operation of the AIRR programme as well as the planned twentyfold expansion.

Finally, a lessons-learned workshop with BIST, UKRI and the host sites was undertaken to facilitate structured discussion across organisations on experiences in programme delivery so far and draw out key lessons for future operation and delivery of additional capacity. These lessons have also been reflected in process evaluation findings.

5 Process evaluation results

5.1 Programme set-up

5.1.1 Programme objectives

The objectives of the programme have been refined over time. Initial focus in the early stages was on AI safety and the ambition to train large language models at the forefront of AI research and development. As the project has matured, the objectives as of February 2026 have been determined as:

- broadening access to cutting-edge AI compute;
- accelerating scientific discovery and R&D;
- supporting UK innovation and economic growth;
- building sovereign capability in AI compute infrastructure; and,
- upskilling the UK research community.

The iterative adjustment of the programmes objectives reflected resulting changes in policy direction and lessons learned during delivery. While the programme experienced some policy and funding uncertainty, this refinement is expected and appropriate for an investment of this scale, developed to meet national needs. AIRR is now better aligned with the gaps the compute roadmap and the UK's growth strategy.

5.1.2 Approach to programme delivery

The AIRR programme is being delivered in two phases: an initial investment into Isambard-AI and Dawn, followed by a scale-up of the AIRR capabilities of 20x the initial capacity by 2030.

This approach is sensible and demonstrates a pragmatic response to the pace and complexity of delivery of the AIRR programme, in particular given i) the significant investment, ii) the early-stage development of in-house capabilities and familiarity with delivering significant High-Performance Computing infrastructure projects within BIST, iii) the differences between AI-compute and traditional HPC architectures and audiences, and iv) the policy urgency related to the UK's international positioning in relation to the key technology.

The phased approach ensures that users gain access to initial AI-compute capacity quickly, while providing an opportunity to gather insights and lessons learned, refine plans, and reflect early experiences gained in future developments prior to further rollout.

5.1.3 Procurement process

Given the policy significance and fast-paced developments in AI research and innovation, a high priority procurement process was implemented by BIST to ensure the AIRR capabilities could be delivered faster than the multi-year timeline commonly seen in large-scale HPC systems.

The Bristol Centre for Supercomputing (BriCS) was chosen as the site for Isambard AI because it was the only site ready to deliver and host an AI-compute system of the required scale in the timeframe

required.[33] In particular, the significant power requirements for GPUs meant that many of the sites that were considered as part of the initial shortlisting process were not suitable as they lacked the necessary connection points.

Hewlett-Packard Limited (trading as Hewlett-Packard Enterprises (HPE)) was the only tenderer for the equipment of Isambard AI. Nevertheless, the tender response was evaluated and scored following due process and was found to have met the requirements.[34]

In the case of Dawn, the University of Cambridge's Research Computing Service (RCS) was already in the process of procuring a supercomputing system through a long-term co-design partnership between the University of Cambridge, UKRI, UKAEA and Intel and Dell Technologies.

Given the AIRR programme's ambition and the characteristics of the HPC ecosystem, a decision was made to bring Dawn into the scope of AIRR to consolidate delivery of AI compute under one unified programme. As hardware was already being provided by Intel, AIRR only provided funding for operational delivery (staff) of Dawn.

The decision to bring Dawn into AIRR appears sensible to ensure a joined-up national AI compute programme and avoid compute infrastructure fragmentation particularly in light of the insights from the 2023 Future of Compute review, which found the UK's public compute infrastructure fragmentation to make the UK compute ecosystem challenging and overly complex to use.[35]

5.1.4 Choice of compute architecture

The two centres use different hardware: Isambard-AI uses 5,448 NVIDIA GH200 Grace-Hopper Superchips, while Dawn uses 1,024 Intel Data Centre GPU Max 1550 GPUs (see Glossary).

While the NVIDIA hardware is currently state of the art[36], diversity in compute-architecture is, in many ways, valuable. It allows for greater flexibility in matching workloads to the most suitable hardware, encourages innovation through varied design approaches, and reduces dependence on a single vendor or technology stack. This is particularly important to prevent future lock-in, were prices of NVIDIA chips to rise significantly in future due to strong continued and accelerating global demand for its chips.

However, the choice of Intel chips also presented initial challenges concerning software operation and compatibility, as AI software is not always optimised for Intel hardware. These challenges were expected and dealt with efficiently.

5.1.5 Non-hardware procurement considerations

Successful operation of a large-scale national supercomputing resource is not solely a function of hardware. It relies on a broad foundation of supporting elements, such as highly qualified staff,

[33] While Edinburgh also met the required characteristics for a suitable host site, the site was already reserved for delivery of the proposed UK Exascale system.
[34] See Isambard-AI award notice available at: https://www.find-tender.service.gov.uk/Notice/033353-2023
[35] DSIT (2023). Independent Review of The Future of Compute: Final report and recommendations. Available at: https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts
[36] Isambard AI was the second fastest supercomputer in the UK and Ireland, and the fastest AI supercomputer, at the time of launch. University of Cambridge Research Computing Services (2023). Dawn enters the Top500 list. Available at: https://www.hpc.cam.ac.uk/dawn-enters-top500-list

robust computational software infrastructure, and effective user support systems such as an efficient helpdesk and computational software support.

The initial conceptualisation of AIRR placed a strong emphasis on hardware, with the service layer and associated personnel requirements for a national AI compute service becoming more defined as implementation progressed, particularly for supporting elements.

In addition, early phases focused on understanding demand and testing the system, with less emphasis on actively targeting specific user groups, such as industry. This approach reflects the realities of delivering a novel infrastructure, where user needs and demand patterns are not yet fully established.

Nevertheless, the, by design, more limited early targeting and communication towards SMEs and startups, combined with a service offer initially more aligned with established HPC users, may have contributed to lower initial uptake among businesses compared to academic users who are more familiar with public HPC compute.

Since launch, however, uptake among industry users has increased, and continued targeted engagement is expected to further support demand. This suggests that the initial pattern of uptake reflects the intentional choice of a sequenced initial industry engagement approach and the greater familiarity of academic users, rather than a lack of interest from industry.

Delivery of novel large-scale AI compute infrastructure at speed also meant that other considerations normally dealt with at appraisal, planning or business case stages were resolved in parallel with delivering the infrastructure. For example, this includes memoranda of understanding and service level agreements for the operational of the capabilities between BIST and the host sites.

Overall, these considerations reflect the need for rapid delivery in a fast-moving international context, alongside the novel nature of the infrastructure. Future expansion plans provide an opportunity to build on learnings from the experience gained in delivery of the first two AIRR sites and address such considerations upfront. At the same time the experiences at Isambard AI and Dawn demonstrate that rapid AI infrastructure delivery depends critically on pre-existing site readiness, power availability, and accumulated operational expertise. Replicating these capabilities elsewhere is non-trivial and should not be underestimated.

5.2 Delivery phase

5.2.1 Isambard AI

Isambard-AI required a purpose-built modular data centre, extensive civil works, and full integration of new hardware and software systems. While this sovereign “build-and-own” approach delivers full domestic control over critical AI infrastructure, it also introduces additional complexity, including construction risks, power and security requirements, and longer overall timelines.

Ground was broken on the main site in Bristol in June 2024, with the full Isambard-AI (Phase 2) system reaching full capacity around 12 months later in the Summer of 2025[37] (only 18 months from

[37] University of Bristol (2025). Lifting the lid on Isambard-AI, the UK’s fastest AI supercomputer. Available at: https://www.bristol.ac.uk/research/centres/bristol-supercomputing/articles/2025/lifting-the-lid-on-isambard-ai.html

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the original announcement). This compares to typical commercial data centre build timelines of around 18 to 30 months, from concept to commissioning (i.e., including planning and final acceptance)[38], though some hyperscalers are planning to build Gigawatt-scale AI data centres within just 1-2 years from the start of construction[39].

A phased approach was critical to the successful delivery. Phase 1 first brought online a relatively small capacity, before the full scale was delivered in Phase 2. In the case of Isambard-AI, Phase 1 involved rapid installation of a 168-GPU AI testbed, while Phase 2 expanded this by an additional 5,280 NVIDIA Grace Hopper chips, providing a total capacity of 5,448 AI chips. In the case of Dawn, Phase 1 focused on onboarding early-access users to the existing system, with Phase 2 scaling up user access through additional routes and operational capacity.

This pilot-first approach allowed the delivery teams to secure early operational capability, build momentum, and gather insights to inform the larger rollout. Political emphasis and high-level support enabled rapid decision-making and acceptance of higher delivery risk than is typical in central government programmes, which was likely necessary to meet the compressed timescales. However, this approach necessarily also required operating with minimal contingency, particularly during the programme's early stages.

The accelerated delivery relied on careful coordination across multiple stakeholders, including BIST, Bristol's Centre for Supercomputing (BriCS), Hewlett Packard Enterprise (HPE), contractors, local authorities and the National Grid. Key challenges included:

- Construction delays due to site redesign and hardware delivery;
- Securing a resilient connection to the National Grid;
- Security of the initial design, which was deemed insufficient for an asset of this value; and
- Slippage in expenditure across financial years.

As a result of the challenges, acceptance testing and wider user access, which were originally planned for March 2025, were delayed to August 2025. However, such challenges are expected and reflect the complexities of delivering novel infrastructure at pace.

Moreover, even accounting for these delays, the overall timeline remained exceptionally rapid compared with typical High-Performance Computing projects of this scale and can be considered a strong achievement.

5.2.2 Dawn

Dawn leveraged an existing private partnership with Intel, and many operational and technical processes had been pre-established. This enabled delivery (onboarding Dawn as part of a centralised system) to proceed largely on schedule, with minimal delays. Success was underpinned by established vendor relationships and the ability to focus early-access efforts on user workflow testing and process refinement rather than building the physical centre from scratch.

[38] Mastt (2025). Data Center Construction: Costs, Timeline, and Delivery Steps. Available at: Data Center Construction: Costs, Timeline, and Delivery Steps
[39] Epoch AI (2025). Build times for gigawatt-scale data centers can be 2 years or less. Available at: https://epochai.substack.com/p/build-times-for-gigawatt-scale-data

Phase 1 for Dawn focused on testing and launching early access to the machine for a smaller user group. Early access by University of Cambridge users began in December 2023, with over 100 users on the system by June 2024. The initial early access period provided a controlled environment in which the team could test user workflows, identify potential issues, and refine processes before moving to full operational delivery. The early-access phase therefore functioned not only as a technical shakedown period but also as a form of user-experience testing, enabling Cambridge to gather feedback, set expectations clearly, and make iterative improvements to the service.

There were delays in operational funding, which in turn delayed recruitment and limited the pace at which Cambridge could progress certain activities. This delay meant key technical and support posts could not be advertised or filled as early as planned. As a result, the Cambridge team entered the early-access period with fewer staff than intended, slowing aspects of onboarding, user support, and service development.

5.2.3 Federated access model

Alongside the delivery of the two centres, the AIRR programme also created a centralised portal for user access. BIST, Bristol, and Cambridge worked, in collaboration with StackHPC and Waldur, to develop a unified access point for the AIRR programme - the AIRR Portal.

The AIRR Portal is critical to the cohesion of the AIRR programme, with its importance highlighted in consultations with stakeholders. It provides a unified user experience, with a common centralised platform that offers users an integrated and seamless experience across the various compute systems and provides a single “front door” for access to the UK’s national AI research infrastructure.

Users seeking to gain access to AIRR make applications for compute time via the AIRR Portal. This enables researchers to submit a single application to access either Isambard-AI or Dawn. Applications are evaluated by UKRI, who then pass successful users to the relevant centre. Applications are, by design, agnostic to the specific system for which access is granted, though users are given the opportunity to express a preference.

The federated access model is sensible and aligns with the approach taken by other HPC joint undertakings, such as EuroHPC, which uses a similar type of software to securely control user access. It should be retained for future expansion of capacity.

5.2.4 Stakeholder relations

Successful delivery of such a complex programme relied heavily on strong relationships between stakeholders. Coordination among BIST, UKRI, the university partners, and delivery contractors was effective, with all parties working towards a shared goal, despite the ambitious timelines and challenging conditions. The project’s status as a high-profile, flagship initiative for government, universities, and suppliers helped motivate teams and encouraged rapid problem-solving.

For Isambard AI, while some frictions in project governance were identified in the early stages of the project around roles, coordination and escalation processes, these were recognised and addressed as part of the Gateway 4 (Readiness for Service) review’s recommendations.

The AIRR Portal has since further improved transparency, giving UKRI and BIST unfiltered visibility of calls and service activity. Bristol’s interactions with HPE, the supplier of the NVIDIA chip system, were smooth, supported by dedicated project and relationship managers.

Future expansion of AIRR should maintain dedicated project managers and aim to implement shared visibility tools as early as possible.

Over the course of delivery, communication and mutual understanding of priorities and expectations also strengthened further. However, to avoid uncertainty in the early stages of any new developments, clear definition of expectations around timing, the level of information provided, and communication channels for all stakeholders should be prioritised early on.

The relationship between BIST and Cambridge differed due to its funding pathway and the nature of delivery, with Dawn created via a long-term co-design partnership between the University of Cambridge, UKRI, UKAEA and Intel and Dell Technologies[40]. This resulted in comparatively less direct oversight from BIST. Nevertheless, strong communication between the Cambridge and BIST teams, as well as with UKRI, was maintained.

5.2.5 Role of UKRI

UKRI played a central bridging role between BIST and the technical delivery teams at Bristol and Cambridge. In the early stages there were times when the partnership between BIST and UKRI was overlapping, though roles and responsibilities were clarified and refined throughout delivery.

Over time, UKRI's experience in compute delivery and understanding of government decision-making enabled it to facilitate productive conversations about the strategic goals of AIRR and manage relationships with the host sites.

At the same time there is a question on whether the adopted multi-agency approach is the most effective delivery strategy or whether future delivery of capacity under the 20x expansion should more clearly sit within UKRI's remit, with BIST providing oversight, as was the approach for delivery of previous Tier-1 national HPC capabilities[41].

However, regardless of the approach chosen, this experience highlights the importance of clear delineation of roles and responsibilities early on.

5.3 Operational phase

5.3.1 Access

Access to the AIRR compute capabilities for researchers and innovators was opened using a phased approach as detailed below.

As part of the testing phase of the Isambard-AI and Dawn services, early access was provided to suitable researchers and innovators who can demonstrate a clear need for AI compute. Early access

[40] University of Cambridge (n.d.). Dawn. One of the UK's fastest artificial intelligence supercomputers has been built by the University of Cambridge's Research Computing Service, Intel, and Dell Technologies. Available at: https://www.hpc.cam.ac.uk/d-w-n

[41] Note that ARCHER2 delivery was a managed project rather than a strategic project and so DSIT had oversight while UKRI had responsibility for delivery.

provided users with opportunities to test the systems up until launch. This enabled BIST, UKRI and the centres to monitor user demand and inform the future development of services.

The objectives of this initial early access phase were to:

- identify parties interested in using AIRR;
- identify potential pilot projects suitable for early access to Isambard AI and Dawn during the commissioning period;
- understand user demand;
- help design access process to suit a range of users; and
- understand the range of different user requirements.

By July 2025, three access routes were available to gain access to the AIRR systems[42]:

- **Gateway route:** Providing access for up to 10,000 GPU hours on AIRR services, to be used within 3 months of project start. The gateway route is designed for researchers from academia, industry, or other UK organisations. It supports first-time users of AI supercomputing resources; testing of (novel) algorithms, code, and workflows; and benchmarking of algorithms, code, and workflows before applying for larger AIRR opportunities. Eligible activities include fundamental research (research organisations only), feasibility studies, industrial research, and experimental development.
- **Rapid Access route:** Providing access for up to 20,000 GPU hours on AIRR services, to be used within 3 months of project start. The Rapid Access Route is open to UK-registered micro, small and medium organisations and is designed to support early-stage development of AI products prior to market launch. Eligible activities include feasibility studies, industrial research, and experimental development.
- **Sovereign AI** launch call (June-July 2025) provided targeted compute access for high-impact projects aligned with the Government's priority areas, focusing on areas such as fundamental AI, biosciences, materials discovery, and defence and national security. The call again emphasised projects with clear strategic value and real-world impact, contributing directly to mission-led outcomes.

All projects applying through these routes must be conducted in the UK and aim to deliver benefits within the UK. Other routes for larger-scale projects, such as the Innovator call[43], have been introduced as the AIRR service continues to evolve.

5.3.2 Service models

Despite the unified federated access model (the authentication approach allowing users to log in to multiple independent systems), the host sites retain unique approaches and visions to service provision.

The **Isambard-AI model** (hosted by the University of Bristol) draws on principles of a modern, AI native, cloud inspired approach, informed by practices used by commercial AI platforms that support thousands of users with relatively small support teams. Users are expected to set up and

[42] See https://www.gov.uk/government/publications/ai-research-resource/airr-advanced-supercomputers-for-the-uk
[43] Offering between 50,000 and 150,000 GPU hours for projects which have previously applied for and used an AIRR Gateway award.

manage their own projects, supported by extensive documentation and training materials that allow technically capable user groups to get started quickly.

This approach is a deliberate design choice that enables reallocation of effort towards platform reliability, documentation, and structured training design. Under this model, the core host site team can focus on running and maintaining the platform itself, while technical responsibility lies in the first instance with users' own teams. Agile allocation cycles and rapid onboarding processes help minimise idle time and keep the system productive.

The overall aim is to deliver an efficient, scalable service for large and technically skilled user communities, avoiding the high staffing overheads associated with traditional HPC models that rely on intensive, hands-on support. As such this model works best for mature research groups or organisations with their own in-house technical expertise, where much of the day-to-day knowledge sits with the users rather than the central platform team.

The **Dawn model** (hosted by the University of Cambridge) is closer to the traditional high-support approach used in many HPC centres, with an emphasis on user-centric allocation. The underlying principle is that AI as a service should be actively supported and highly visible, particularly for researchers who may not have prior experience with HPC or large-scale compute. In-house AI engineers provide direct technical assistance and carry out proactive outreach to low-use projects to help identify and resolve barriers. The focus is on making the platform accessible to a wide range of disciplines, including those new to advanced computational methods.

This approach is built on the belief that visible, hands-on support is key to driving uptake, especially in the early stages of a programme. By lowering the technical threshold and ensuring users feel supported, the model aims to broaden participation and encourage engagement from communities that might otherwise find large-scale AI resources difficult to approach.

Taken together, these two models offer a complementary way of serving a diverse user base with varying levels of experience and support needs. A cloud-style, self-service approach provides efficiency and scalability for technically mature groups, while a more traditional, high-support model ensures that less experienced users can engage confidently and make effective use of the platform.

Combining both models allows the service to remain flexible and inclusive, matching support levels to user capability and project complexity. Insights from the user survey reveal that around two thirds of respondents required some form of support during their experience using AIRR. A blended approach is well-positioned to meet the broad spectrum of requirements[44] across the diverse target user community, driving wider uptake while maintaining efficient use of resources.

Host sites' experiences of demand

Offering a smaller proportion of system capacity and slowly ramping up to full resource (as modelled by the pilot phase) is a sensible approach to ensure early teething problems can be ironed out and the systems and processes can be established. Full allocation early on can create avoidable operational challenges and strain untested workflows. A phased rollout allows the teams to validate

[44] See Section 4.4 for details on the current users.

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stability of the system, identify configuration or scheduling issues, tune system parameters, and establish support and operational processes.

Consistent with this approach, the host sites reported a gradual ramp-up in demand after launch, with interest in accessing the AIRR growing as more potential users became aware of the opportunity. In a lessons-learned workshop between London Economics, BIST and the host sites, the current access routes were seen as appropriate and effective in terms of providing opportunities to different types of users.

However, it was also recognised that it is difficult to know if there are additional user groups (outside of the host sites' existing networks) who have potential demand but are not aware of the opportunity. To ensure future allocation and design choices are informed by a robust understanding of demand, BIST are conducting research to gather insights on future demand for AI-compute across different potential user groups.

In some cases, users accessing the Dawn system were found to need a significant level of support. This may partly be a reflection of the user base typically being less familiar with Dawn's more novel architecture, as well as early teething problems as software needs to be optimised for this architecture and users gain trust in and experience working on the system.

However, it may also partly reflect the level of readiness of some early users accessing the system with users tending to wait to use their allocations near their project deadlines. This results in many projects requesting extensions, having not yet used their full allocation by project deadlines. However, extensions often resulted in a slowing of usage rates, indicating urgency also drives consumption.[45]

Moreover, some users are reported to have applied for compute time without fully understanding the system architecture, which resulted in them using a large proportion of their three-month allocation to reach a point where they could run models. In this regard, the current three-month allocation windows for users accessing the systems through AIRR was seen as too short, as users often needed one or two months for setup and data preparation, thereby leaving too little time for actual experimentation. BIST has since introduced the Innovator access route providing a springboard for existing users who have gained familiarity with the systems to access larger allocations.

As usage on the systems continues to ramp up training for users less familiar with large-scale compute environments clear communication around usage expectations will be important. BIST's approach to offer small test allocations to allow users to get comfortable with the system (through the Gateway route) and develop their workflows, followed by larger allocations once they are ready (through the Innovator route) appears sensible in this regard.

Continuing to offer structured training to users is important for supporting these users in building confidence and proficiency throughout their journey. Further detail on training already offered to users can be found in Box 1.

[45] AIRR Operational Group minutes 30th October 2025

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Box 1 Training opportunities for AIRR users

Since September 2024, the University of Bristol has hosted a **series of Isambard-AI workshops and tutorials** for academic, industrial, and government users:

- Introductory sessions
- One-day workshops on AI tools and distributed computing
- Specialised tutorials

The University of Cambridge also delivered **four one-hour training** sessions in March 2026:

- Use of the Dawn system
- Web-based tools
- AI software setup
- Container management

Participation in the sessions hosted by both centres ranged from around 15-50 AIRR users from academia and industry at each.

5.3.3 Early user feedback

The early operational period suggests an overall positive picture of the first phase of AIRR. Current access routes are seen as appropriate and effective, although it is recognised that fully identifying the potential user base is inherently challenging. Stakeholders rightly recognise that there are benefits to the wider AI ecosystem in terms of skills development and knowledge-sharing from overcoming challenges during the initial operational period.

As outlined in Section 4, one element of the evidence base is feedback gathered directly from AIRR users through a process survey. In total, 30 responses were received, covering the application and onboarding process, the usability of AIRR interfaces, capacity allocation and requests for additional resources, how well AIRR meets user needs and performance expectations, and the quality of user support, training, and feedback mechanisms.

The user survey highlighted several clear strengths:

- 78% of respondents gained access to their resource within one month and 86% were satisfied with the application process.
- 83% of respondents felt that the benefits of accessing AIRR outweighed the time and resources needed to access it. Only 3% disagreed.
- Just under 90% of respondents felt that the quality of training and information resources provided were adequate.
- All respondents felt that the AIRR is suited to their project needs, with 77% finding that it is “very well suited”. Almost all respondents were satisfied with the performance of AIRR.

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The figures and tables below provide further detail on user feedback received.

> *"I was genuinely impressed by how quickly I was able to do things."*

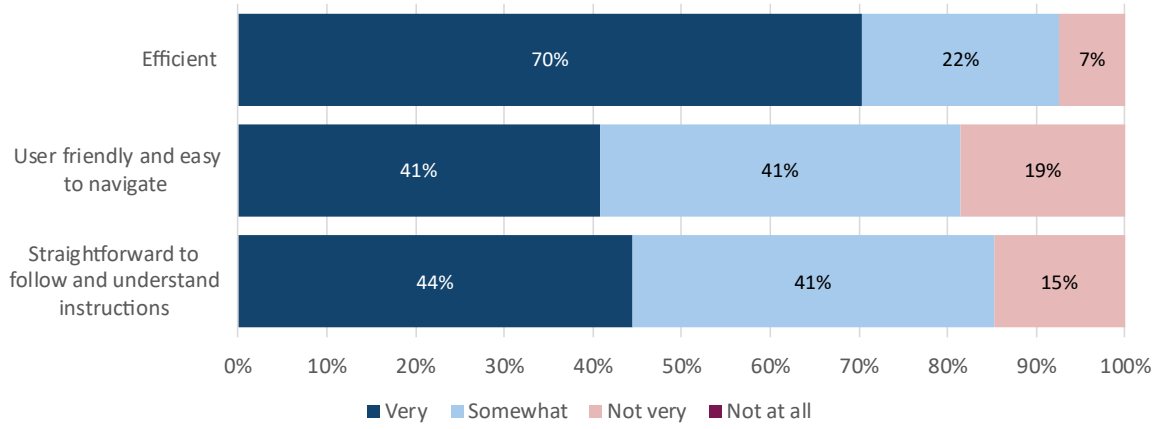
Source: Interview with AIRR user

> *"There were no significant challenges at all".*

Source: Interview with AIRR user

In terms of the application process, among early users surveyed for this study, 93% felt that the process to apply for time on AIRR was 'very' or 'somewhat' efficient, with seven in ten (70%) saying it was very efficient. Reported experiences of the user-friendliness, and clarity and ease of following the instructions, were lower with only around four in ten users (44%) finding the process very user friendly and easy to navigate. A further four in ten (41%) felt the process was somewhat user friendly and easy to navigate. (Figure 5)

Figure 5 User experience of the application process for access to the AIRR (% of respondents)

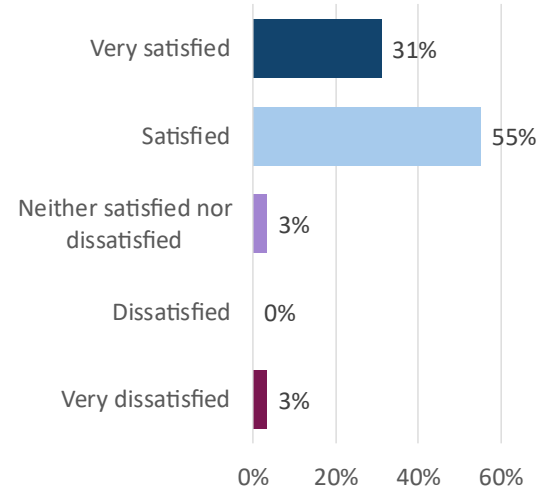


Note: based on 27 responses to the question: "To what extent did you find the application process for access to the AIRR…"

Source: London Economics analysis based on survey response

In terms of overall satisfaction with the application process, the vast majority (86%) said they were satisfied (with 30% saying they were very satisfied). Only one user said they were dissatisfied (Figure 6). Moreover, users responding to the survey strongly felt that the benefits/value of AIRR outweighed the time and resources of accessing it; with 59% agreeing strongly and a further 24% agreeing (Figure 7).

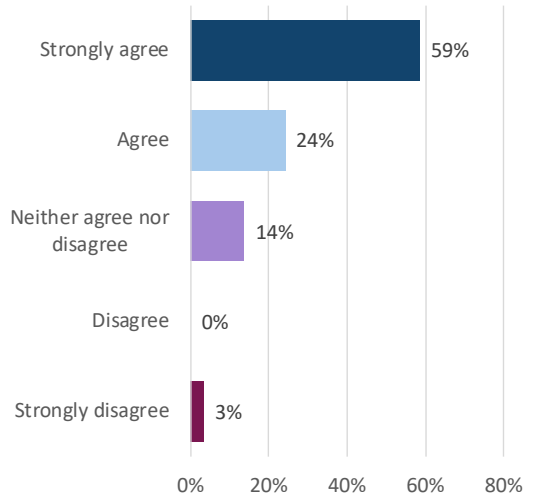
Figure 6 Satisfaction with application process



Note: based on 27 responses to the question: "To what extent do you agree or disagree that the benefits/values of using AIRR outweigh the time and resources needed to access it?"

Source: London Economics analysis based on survey responses

Figure 7 Perceived value of AIRR relative to access costs



Note: based on 29 responses to the question: "To what extent do you agree or disagree that the benefits/values of using AIRR outweigh the time and resources needed to access it?"

Source: London Economics analysis based on survey responses

Among users responding to the survey, 43% said that they needed support from AIRR staff for onboarding; 57% said they needed general operations support.[46] One-third of respondents did not need any support (Table 3). In interviews, users consistently highlighted that user support responded quickly and helped to resolve their issues.

Table 2 Satisfaction with support received

Type of support	Very	Somewhat	Not very	Not at all	Total responses
Onboarding support received from AIRR staff	6 (46%)	7 (54%)	0 (0%)	0 (0%)	13
General operations support received from AIRR staff	10 (59%)	3 (18%)	3 (18%)	1 (6%)	17
Quality of training and information resources	12 (44%)	13 (46%)	3 (11%)	0 (0%)	28

Note: based on 30 responses to the question: "Thinking about your time using the AIRR so far, to what extent do you feel the support you have accessed was adequate, in terms of the following…?"

Source: London Economics analysis based on survey responses

Overall survey responses received suggest the AIRR adequately serves users' needs. More than 3 in five respondents said that the system is very well suited to their needs, with the remainder stating that the system is somewhat well suited to their needs (Table 3). A majority (65%) of respondents said that they are very satisfied with the system's performance, with the remainder stating that they are somewhat satisfied or neither satisfied nor dissatisfied (Table 4).

[46] Based on 30 responses to the question "Have you needed to receive support from AIRR staff, for any reason?"

Table 3 Perceived suitability of AIRR to project needs

Response	Total responses	%
Very well suited	23	77%
Somewhat well suited	7	23%
Not very well suited	0	0%
Not at all well suited	0	0%

Note: based on 30 responses (29 of which had used Isambard-AI and 5 had used Dawn) to the question: "To what extent would you suggest the AIRR system infrastructure is well-suited to your/your team's project needs?"

Source: London Economics analysis based on survey responses

Table 4 Satisfaction with system performance

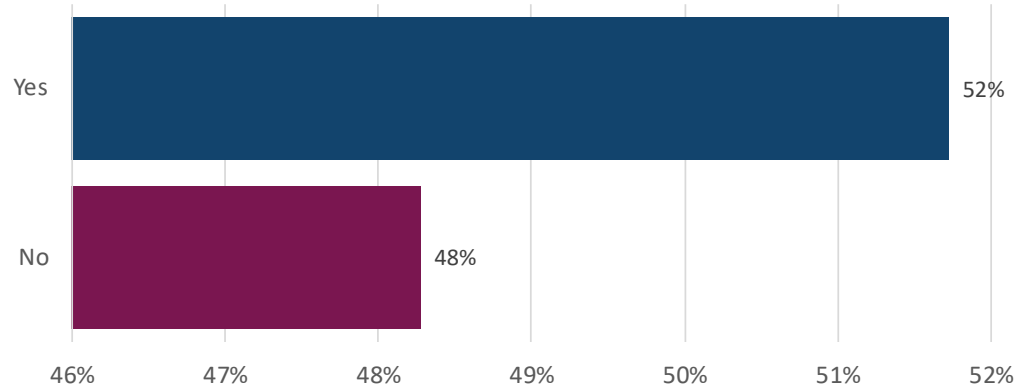
Response	Total responses	%
Very satisfied	22	65%
Somewhat satisfied	9	26%
Neither satisfied nor unsatisfied	1	3%
Somewhat dissatisfied	0	0%
Strongly dissatisfied	2	6%

Note: based on 30 responses (29 of which had used Isambard-AI and 5 had used Dawn) to the question: "How satisfied are you with the performance of the AIRR?"

Source: London Economics analysis based on survey responses

One key area that the survey revealed could be improved is clarity around eligibility criteria, with only around half of respondents reporting that it was clear how decisions were made during the application process. Similarly, several users highlighted in interviews that the need to re-apply to continue their research projects after the three-month allocation causes uncertainty and makes it difficult to plan larger-scale projects.

Figure 8 Perceived clarity of decisions about AIRR access



Note: based on 29 responses to the question: "Was it clear to you how decisions were made about who can access the AIRR?"

Source: London Economics analysis based on survey responses

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6 Key takeaways and lessons for future expansion

This section summarises the key takeaways from the process evaluation and the resulting recommendations. Overall, delivery of the initial AIRR systems has been a success. The speed and efficiency with which the systems have been delivered is remarkable, particularly when compared to the multi-year lead time in procurement and delivery of typical HPC systems. Moreover, initial evidence provides confidence that the AIRR is meeting the needs of the current users. The phased, pilot-first approach (limited roll out to early users first) also proved to be a sensible approach to enable rapid user access while generating early insights and should be retained as a core design principle for future expansions to manage uncertainty while enabling rapid progress.

At the same time, the focus on rapid delivery also meant that some considerations usually addressed at the appraisal and business case stages were initially less fully developed and have continued to be refined as implementation progressed. Moreover, the investment in AIRR has faced a number of initial challenges and required adaptability due to evolving governmental priorities. Such challenges are expected and on the whole were found to have been dealt with effectively.

Nevertheless, expansion should incorporate additional contingency planning for unexpected challenges, including provisions and mitigation strategies for potential slippage; define escalation pathways clearly at the outset; establish clear understanding of responsible individuals, meeting structures, required expertise, and invitees to support efficient communication; and retain dedicated project managers and implement shared visibility tools early in future expansions.

Moreover, with initial capacity being operational, it is important to ensure that any expansion in capacity, system configuration, and access routes is evidence-based and aligned with user needs and policy goals. Future expansion should also ensure there is clarity early on allocation targets and priorities and joint understanding between BIST, UKRI, and host sites to effectively reach key user groups, particularly SMEs and startups, as laid out in the Compute Roadmap. To manage external communication and engagement with potential target user groups, a dedicated communications officer should be appointed. We understand such an appointment has already been made.

Consideration should also be given to the renewal approach, with typical replacement cycles for large-scale compute around the five-year mark. This means that long-term planning must account for ongoing investment, lifecycle management, and the future need for technology refreshes to maintain performance and relevance. One option to minimise downtimes and ensure capacity is brought online in a managed way is to adopt a phased approach where new centres are brought on in stages. This has the advantage that replacement cycles do not overlap and that compute capacity remains available while a share of the sites is being refreshed.

In planning future phases of expansion, it will also be important to consider whether new capacity should be built directly by government, as with Isambard-AI, or whether it is more effective to leverage existing national resources, as was done with Dawn. Each approach carries different implications for cost efficiency, delivery risk, local expertise development and long-term sustainability, and should therefore be evaluated against policy objectives.

Careful thought should also be given to the degree of site-specific individuality versus the benefits of adopting common approaches, to ensure consistency where appropriate while allowing flexibility in approaches. Valuable common elements such as the AIRR Portal have proven successful to ensuring a consistent and user-friendly experience and should be retained for any future sites. At the same time, having different delivery approaches and leveraging the variety of specialisms and

expertise across host institutions can be helpful to meet the differing needs of a varied user base. User experience should continue to be monitored to ensure the approach is appropriate.

In this regard, expansion approaches should take into account the level of large-scale compute experience available at different target user groups. Here expansion should retain smaller-scale test allocations and continue to offer structured training to support less experienced users. Consideration should also be given to implementing incentive models, which may help address patterns of late usage and improve utilisation. Note that this must be balanced with the extent to which flexibility is a priority.

Future expansion plans should include in planning important non-hardware support elements, such as the service and software infrastructure, the right mix of qualified staff needed, training provision, and effective user support systems such as an efficient helpdesk and dedicated computational software support provision. This is particularly important where target users are less experienced with large-scale compute systems to ensure skills gaps are addressed effectively. To support these services, expansion should maintain early, well-resourced hiring strategies and ensure early confirmation of operational funding or establish contingency mechanisms to prevent bottlenecks.

A tiered-approach, similar to that of the previous UKRI HPC landscape, where less experienced users can gain experience on lower-level machines to build skills before graduating to national-scale facilities, could also prove helpful to mitigate access barriers due to skills gaps and to ensure effective use of top-Tier facilities. The tiered approach would also enable users who do not require the scale of the largest machines to access public compute resources, while freeing up capacity for those that do need large-scale resources. Therefore, expansion of AIRR should not only consider the scale of additional capability to deliver but also the service model under which this is provided.

At the same time, both the Bristol and BIST teams gained considerable expertise through delivery of Isambard-AI. Recreating this at multiple other sites may introduce frictions relative to a strategy of concentrating on expanding capacity at Bristol/Cambridge or a small number of additional sites. Considerations here should be given to ensuring that the experience gained is not lost or diluted when other sites are brought online but rather that lessons learned are utilised in delivery of additional sites and built expertise is preserved and strengthened with the expansion of AIRR.

It will also be important to consider the right balance between utilising commercial cloud providers, for example as is already being pursued by the Met Office's partnership with Microsoft to deliver their own new supercomputing capabilities[47], versus maintaining domestic expertise in compute. This is particularly the case with reducing costs of commercial cloud provision. At the same time, the skills benefits of retaining domestic large-scale compute provision are undeniable; regaining this expertise would be very difficult and costly once lost.

Consideration should also be given upfront to the choice of compute architectures. While diversity in architecture is generally a good decision, future architectural choices should be made based on match with policy objectives and user needs. In this regard, consideration should be given to whether less time-sensitive procurement options, could be appropriate for some components of the programme where time sensitivity is lower (such as marginal or medium-term capacity increases) to encourage participation from a broader range of sites and suppliers.

[47] See Microsoft (2025). Better forecasts ahead as Met Office transitions to a supercomputer in Azure cloud. Available at: https://news.microsoft.com/source/emea/features/better-forecasts-met-office-supercomputer-azure-cloud/

PART III: EARLY IMPACT EVALUATION

Key findings:

- **Increase in AI compute capability:** The AIRR programme set out to significantly increase AI compute capability available to UK researchers, industry and the public sector. It has delivered on this objective with a significant increase in available AI compute in the UK.
- **Early nature of the evaluation:** The evaluation was undertaken at an early stage in the operational life of the AIRR capabilities with many of the benefits not yet having had time to filter through into tangible impacts.
- **Positive early signs of impact:** Nevertheless, early evidence shows very positive signs of the benefits already emerging from Dawn and Isambard-AI and are likely to continue developing along a positive trajectory:
  - Interviews with users and user feedback from the surveys undertaken for this study suggest that AIRR is already having a significant positive impact on UK AI research.
  - While downstream impacts such as commercial products take time to materialise, early evidence indicates AIRR is already facilitating tangible improvements in UK innovation capacity as well as early commercial impacts.
  - AIRR's alignment with key national priorities and the government's five missions also means that significant progress is already being made in areas of critical national importance such as healthcare, education, and green energy.
  - Users also indicated that access to AIRR is already supporting AI skills development among less familiar users, supporting academic, academia-industry and public sector collaborations, and helping to expand the application of AI tools across their wider research and work.
- **Critical importance of AIRR:** AIRR is of critical importance to the UK AI research community, both in terms of widening access as well as through its contributions to the competitiveness of the UK AI ecosystem and as a place to undertake AI science. Users consistently cited that not being able to access AIRR would have had a significant impact on their ability to undertake their AI-related research or work.
- **Importance of continued investment:** Nevertheless, demand for AI compute resources is already starting to exceed available allocations and the UK is still at risk of falling behind international competitors who are also heavily investing in large-scale and AI compute. Continued investment in AI and other large-scale compute infrastructure, including the 20x expansion of AIRR, therefore remain of critical importance.

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7 Introduction and approach

The early-stage impact evaluation presented in this part of the report sought to assess how effectively the two AIRR projects are progressing towards achieving their intended outcomes and impacts, as defined in the Theory of Change.

The evaluation was undertaken at an early stage in the AIRR programme, with Isambard-AI and Dawn only having become fully operational in Spring 2025 with usage continuing to ramp up throughout 2025 and early 2026.

Given the early stage in the centre's operational life, many of the intended impacts have naturally not yet fully materialised. As such, this evaluation does not seek to provide a definitive assessment of long-term outcomes. Instead, it focuses on identifying benefits that are already beginning to emerge, as well as understanding whether the programme is on track to delivering its objectives.

Despite these limitations, conducting an early impact evaluation remains valuable. It enables an initial assessment of emerging outcomes and early signs of impact, while considering whether the anticipated changes set out in the Theory of Change are beginning to occur. As such, the evaluation aims to establish an initial evidence base, providing a structured baseline against which future outcomes and longer-term impacts can be monitored and evaluated.

The impact evaluation adopted a theory-based approach using outcome harvesting through primary data collection from stakeholders and secondary sources and contribution analysis. To understand the outcomes and impacts, the evaluation began with the development of a Theory of Change (ToC). This mapped the logical pathway from programme inputs and activities through to short-term outputs, medium-term outcomes, and longer-term impacts, aligned with the overall programme objectives. The ToC provided a structured framework to guide the evaluation, ensuring that evidence collection and analysis were focused on assessing progress toward the intended outcomes and impacts.

Evidence for each of the elements set out in the ToC were gathered via primary data collection in the form of a survey of users, alongside more detailed follow-up consultations. These methods were designed to capture early evidence of outcomes and emerging impacts from users from Dawn and Isambard-AI. To assess the contribution of AIRR to these outcomes, the survey and consultations also explored the extent to which AIRR contributed to the observed outcomes; as well as the extent to which not having access to AIRR would have impacted realisation of benefits and how feasible achieving these outcomes in the absence of AIRR would have been in practice.

Specifically, the survey collected data on:

- the type of research undertaken by users of AIRR and their experience with large-scale compute infrastructure;
- the extent to which AIRR met users' computational needs and their satisfaction with AIRR;
- the impact of AIRR on users' AI research and its contribution to scientific outputs and collaborations;
- AIRR's role in facilitating innovations and industry impacts;
- the contributions of AIRR to computational skills development and retention;
- AIRR's role in enabling and supporting research related to AI-safety;
- the extent to which AIRR has already facilitated wider benefits; and,

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- the extent to which users could have accessed alternative compute and the impact on their research/work this would have had.

Interviews were designed to complement evidence collected through the user survey and explore topics in more detail. This included more granular understanding of how users are using AIRR and the value AIRR adds to their work or research, to understand in more detail the impacts that might already be flowing (or are expected to flow) from their work or the wider AIRR programme, as well as to understand the additional value of AIRR relative alternative infrastructures such as commercial cloud. The interview questionnaire and topic guides are provided in Annex 2 and Annex 4.

In total, 46 responses were received to the user survey, and 25 follow-on interviews were undertaken. Among users responding the survey:

- 44 respondents had used Isambard-AI and 9 respondents had used Dawn.
- 78% were from academia, 17% from industry, and 2% each from the AISI and the third sector (including charities and not for profits).

Further breakdowns in terms of access routes and research areas are provided in Annex 1.

Stakeholder evidence collection was complemented by desk-based research, including a review of relevant programme documentation and existing evidence, to contextualise findings and triangulate insights. Analysis focused on linking the collected evidence back to each element of the Theory of Change to assess the extent to which anticipated impacts are beginning to materialise as well AIRR's role in facilitating these impacts.

Section 7.2 provides an overview of the dimensions assessed for each of the different impacts expected to materialise from AIRR, as well as the relevant sections in the report presenting the gathered evidence. A summary of the assessment of progress towards each element of the ToC is provided in Section 9.5.

7.1 Operational Theory of Change

Figure 9 provides the Theory of Change (ToC) developed for the operational phase of the two existing AIRR compute centres, Dawn and Isambard-AI. The ToC builds on early work undertaken by the BIST, which was expanded and refined during the course of this study. The refinement of the ToC was informed via a review of programme documentation, desk research and a review of the economic literature exploring the benefits of similar large-scale compute infrastructure and AI innovations, and consultations with BIST, UKRI, and the host sites. A workshop with BIST and UKRI was also undertaken to validate the ToC.

The operational Theory of Change builds directly on the foundations established during the set-up phase, ensuring continuity between programme design and delivery. The ultimate outcomes from the set-up phase are treated as the starting inputs for the operational phase. In this way, the operational ToC reflects a progression from initial programme establishment and set-up of the AIRR compute centres to active operational functioning, translating earlier achievements, such as successful installation of the hardware, hiring a team of expert staff, and ultimately the successful delivery of the centres, into the enabling conditions necessary for generating impact.

From this starting point, the ToC then maps how these inputs, alongside ongoing activities, are expected to lead to a sequence of outcomes and impacts across different time horizons. It articulates the pathways through which activities produce immediate or **short-term outputs** (such

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as increased public provision of AI compute and associated usage, and increased opportunities for users), which in turn contribute to **medium-term outcomes** (e.g., increased AI-related research and development, higher quality AI research, and increased partnerships). These outcomes are then linked to **longer-term impacts** (such as increased sovereign UK AI capabilities, increased AI adoption in the UK, and increased public trust in AI) aligned with overarching policy objectives.

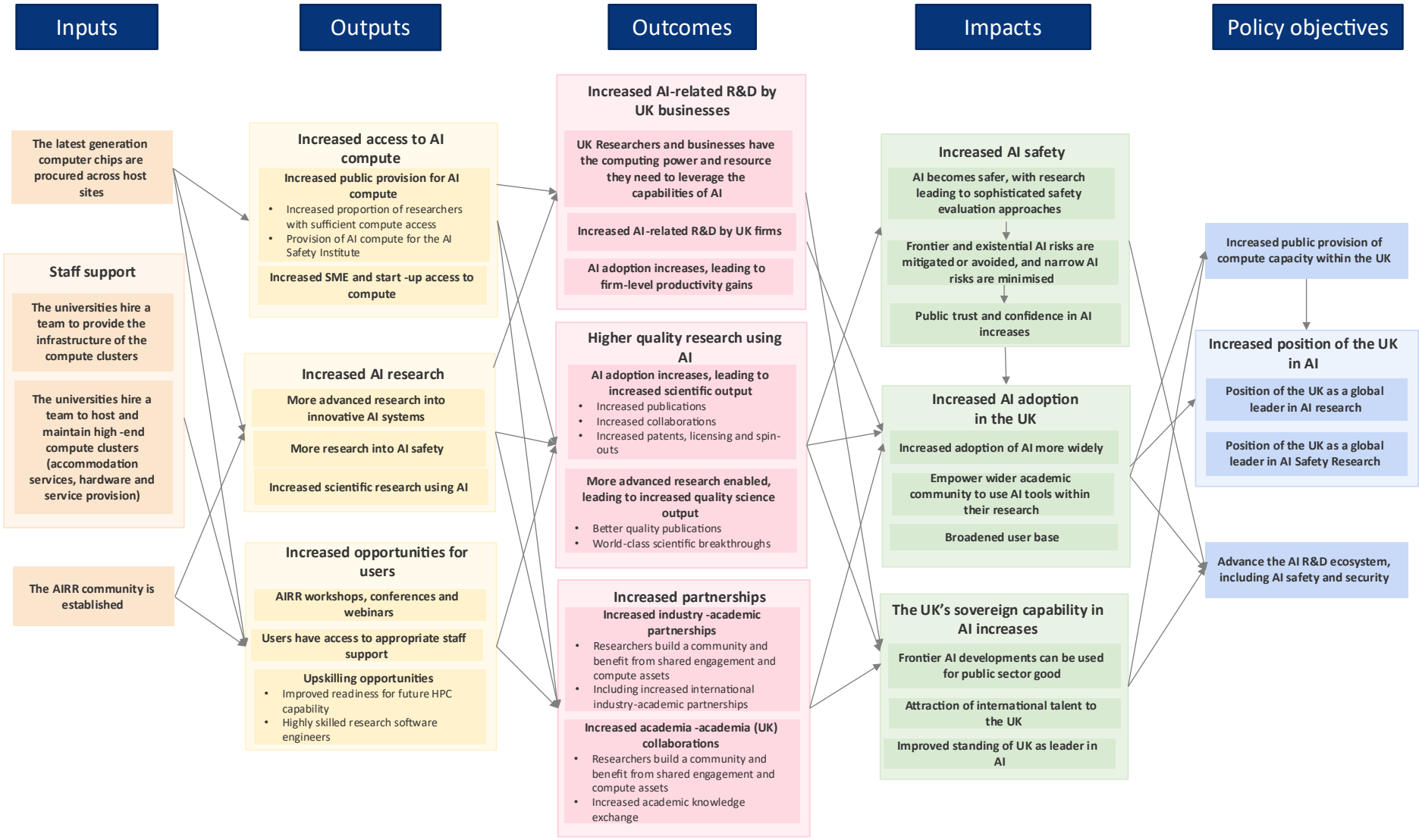
By structuring these relationships clearly, the operational ToC provides a coherent framework for assessing whether and how early outputs and outcomes are beginning to translate into the intended impacts.

It is important to note that the Theory of Change was developed in Spring 2025 during an early stage in the operational life of AIRR. It reflects the programme objectives at a particular point in time and may not reflect current or future direction.

The operational ToC for Dawn and Isambard-AI further formed the basis for the wider Theory of Change of the UK's investments in the twenty-fold expansion of AIRR and related national AI compute capabilities presented in the *Benefits realisation of UK AI compute investments* report published alongside the present baseline evaluation.

The benefit realisation report further provides a detailed discussion on how the benefits of investments in AIRR and related AI compute will be realised, who is responsible and accountable for ensuring this, and the timelines for when and why benefits may or may not appear.

Figure 9 AIRR Operational Theory of Change



Note: The Theory of Change was developed in Spring 2025 during an early stage in the operational life of AIRR. It reflects the programme objectives at a particular point in time and may not reflect current or future direction. ***Source: London Economics based on discussions with BIST and UKRI***

7.2 Measuring progress towards ToC objectives

The remainder of this part of the report discusses the available evidence and assesses progress towards each of the objectives set out in the Theory of Change provided in Figure 9. Table 5, below, provides an overview of the relevant sections discussing each of the different elements of the ToC, alongside the dimensions assessed. To avoid duplication certain ToC elements have been consolidated, with individual sections addressing multiple elements where appropriate. A summary of the assessment of progress towards each element of the ToC is provided in Section 9.5.

Table 5 Progress towards ToC objectives – section key

ToC element	Report section	Assessment dimension
Outputs		
Increased access to AI compute	Section 9.1.1: Increased provision of AI compute Section 8: How AIRR is being used	Provision of AI compute relative to existing compute and international comparators Uptake by user groups
Increased AI research	Section 8: How AIRR is being used Section 9.1.2: Impact on AI research	Volume and type of AIRR research undertaken and changes over time Impact of AIRR on volume of research
Increased opportunities for users	Section 9.2: Enhancing AI-driven opportunities for users	Volume and appropriateness of training provision and staff support Upskilling opportunities provided
Outcomes		
Higher quality research using AI	Section 9.1.2: Impact on AI research	Impact of AIRR on quality of research User evidence on research outputs
Increased AI-related R&D by UK businesses	Section 8: How AIRR is being used Section 9.1.1: Increased provision of AI compute Section 9.3.1: Early innovation and industry impacts	AI R&D activity by industry users Suitability of compute to users' need Evidence on innovation and commercial products
Increased partnerships	Section 9.2.2: Impact on collaborations and partnerships	Number of collaborations/partnerships AIRR's role in facilitating these partnerships
Impacts		
Increased AI safety	Section 9.3.3: Impact of AI safety research	Volume of AI safety research Impact of AIRR on ability to undertake AI safety research
Increased AI adoption in the UK	Section 8: How AIRR is being used Section 9.1.2: Impact on AI research Section 9.3: Scaling AI-related R&D and adoption for economic growth and public impact	Breadth of user base Role of AIRR in facilitating AI use beyond AIRR research projects Early evidence on innovations
Increased sovereign capability in AI	Section 9.3.2: Public sector impacts Section 9.2.1: Workforce development and skills impacts Section 9.4: The strategic importance of AIRR	Early evidence on innovations for public sector good Role of AIRR in attracting/retaining talent Strategic importance of AIRR for UK competitiveness and international standing

Source: London Economics

8 How AIRR is being used

8.1 Projects by organisation type

The initial Early Access programme (live throughout the first half of 2025) was heavily dominated by universities, which accounted for roughly three-quarters of all projects. This dominance persists in the main Open Access routes (Rapid Access, Gateway and Innovator calls for academic and industry organisations), where universities represent the majority in terms of number of projects (414 projects by 43 universities). Across all access routes, the average university has undertaken approximately 10 projects each, reflecting the fact that they might have multiple research teams across the institution with research applications on the AIRR. In contrast, small industry users are more likely to undertake just one project, sometimes with an extension to build on initial work.

Industry uptake was initially relatively low, particularly during the Early Access phase. As mentioned earlier, this is likely a reflection of the initial focus on understanding demand and testing the system, with more limited active targeting of users, rather than an indication of a lack of demand from industry. Indeed, uptake has gradually ramped up with micro enterprises[48] now representing the largest share of unique organisations (57 organisations, around 40%), yet they account for only 70 projects (around 12% of total projects). There is evidence for increasing industry interest with 61 new projects from micro and small enterprises since the start of 2026.

Table 6 User figures as of March 2026

Unique organisations accessing AIRR:

Organisation type	No. of organisations
University	43
Micro enterprise	57
Government	3
Small enterprise	29
Public Sector Research Establishment (PSRE)	2
Facility	6
Other	3
Medium enterprise	2
Large enterprise	1
Enterprise (Unknown)	1
Total	**147**

Projects by organisation:

Organisation type	No. of projects
University	414
Micro enterprise	70
Government	36
Small enterprise	33
Public Sector Research Establishment (PSRE)	15
Facility	6
Other	5
Medium enterprise	2
Large enterprise	1
Enterprise (Unknown)	1
Total	**583**

Projects by allocation track:

Organisation type	Early Access	Open Access	Strategic AI functions	R&D for national priorities	Total projects
University	45	341	13	15	**414**
Micro enterprise	2	64	3	1	**70**
Small enterprise	0	20	8	5	**33**
Public Sector Research Establishment (PSRE)	6	9	0	0	**15**
Government	0	3	33	0	**36**
Other	2	3	0	0	**5**
Facility	4	1	0	1	**6**

[48] UK SMEs are defined as micro (fewer than 10 employees), small (fewer than 50), and medium (fewer than 250), with corresponding turnover/balance sheet thresholds of €2m/€2m, €10m/€10m, and €50m/€43m, respectively.

Medium enterprise	1	1	0	0	**2**
Large enterprise	0	0	1	0	**1**
Enterprise (Unknown)	0	1	0	0	**1**
Total	**60**	**443**	**58**	**22**	**583**

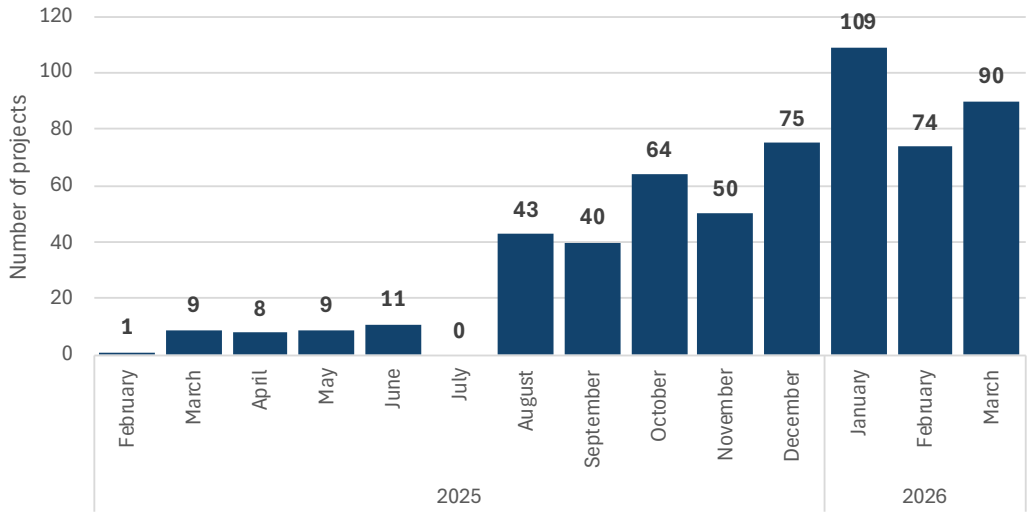
Note: Data captures projects up to and including 23/03/2026. In terms of organisation type, "facility" includes UK publicly funded research institutes, national laboratories, and large-scale scientific facilities; "other" includes international research organisations, independent UK institutes, and specialist educational/charitable bodies not classified elsewhere; Public sector research establishments (PSREs) are organisations that are significantly funded by a government department or UKRI, are legal entities with a clear research remit, mainly provide services for the government. UK SMEs are defined as micro (fewer than 10 employees), small (fewer than 50), and medium (fewer than 250), with corresponding turnover/balance sheet thresholds of €2m/€2m, €10m/€10m, and €50m/€43m, respectively. In terms of allocation tracks: Open Access includes projects through the Early Access, Gateway and Rapid Access routes and through the Innovator call; Strategic AI functions includes AISI and SovAI projects, as well as other ad hoc BIST awards; R&D for national priorities refers to projects through the AI for Science call.

Source: UKRI – AIRR Portal

8.2 Projects over time

The number of projects using the AIRR resource has grown steadily since the first 'early users' were onboarded through the Early Access route throughout the first half of 2025. During this period the number of projects starting each month remained relatively stable, with around 10 new projects each month, as shown in Figure 10.

Figure 10 Number of new projects by project start date as of March 2026



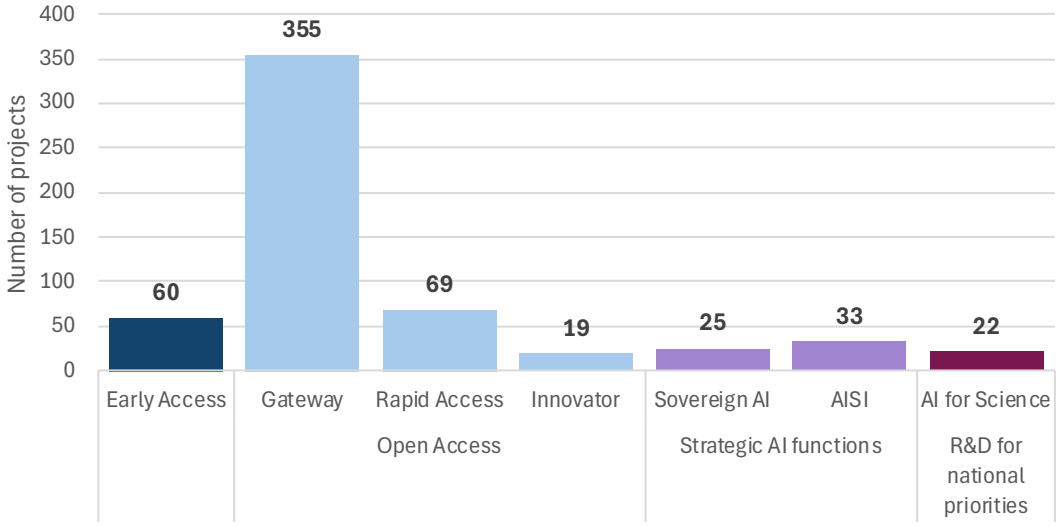
Note: Data captures projects up to and including 23/03/2026. ***Source: UKRI AIRR Portal***

From August 2025 onwards, projects through the Gateway and Rapid Access routes began to be onboarded, as well as a number of projects through other access routes (see Section 8.3). Similar to the initial Early Access phase, the number of new projects was relatively stable in the first few months of Open Access. From the end of 2025 onwards, however, there has been a significant ramp-up with more than 70 new projects every month since December 2025. Particularly high numbers of new projects were seen in January 2026 (109) and March 2026 (90, as of 23rd March).

8.3 Projects by access route

The majority of projects (around 76%) on AIRR are through the Open Access routes: Rapid Access, Gateway and Innovator. A smaller number (less than 15% combined) of additional projects have been awarded resource for strategic AI functions and to support R&D for national priorities. See Section 9.3 for more detail on the routes through which users can access AIRR.

Figure 11 Number of projects by access route



Note: Data captures projects up to and including 23/03/2026. The Gateway and Rapid Access routes (ongoing) offer flexible entry points, supporting early-stage research, startups, and SMEs. The AI for Science, Sovereign AI, and Innovator calls provide more targeted access for large-scale, high-impact projects aligned with government priorities such as clean energy, healthcare, and economic growth, with a strong emphasis on real-world outcomes.

Source: UKRI AIRR Portal

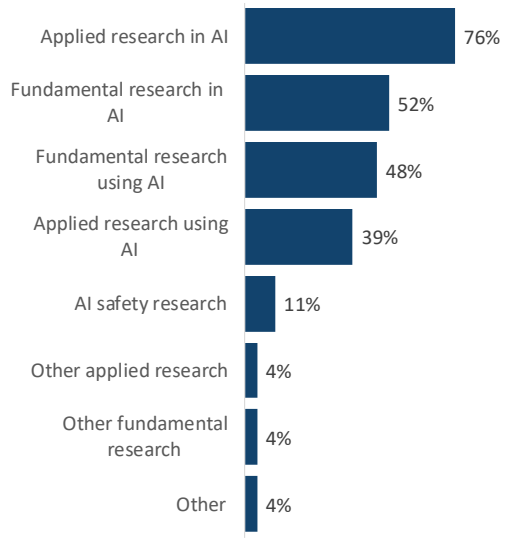
8.4 Projects by research area

Users of AIRR are undertaking projects with applications to a wide range of disciplines. Based on survey data of AIRR users, more than three-quarters (76%) of respondents' projects involve applied research in AI, including practical development or refinement of AI techniques for solving real-world problems. More than half (52%) are doing fundamental research in AI, including fundamental exploration of AI algorithms, architectures, or theory. (Figure 12).

A large proportion of projects are also doing research *using* AI. 48% of respondents indicated their research involves using existing AI tools to support fundamental research in another field (fundamental research using AI) and 39% are applying AI tools to solve practical problems in other domains (applied research using AI).

In terms of the research areas explored as part of AIRR projects, the most commonly cited topic areas are machine learning and AI (68%) and medical sciences (38%). Nearly a quarter of respondents (24%) indicated that their research relates to other topics, not shown in Figure 13. Commonly mentioned topics include astrophysics, cosmology, computational biology and genomics.

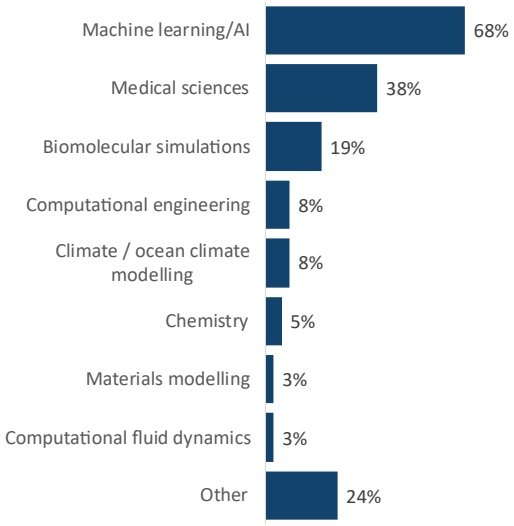
Figure 12 Type of research undertaken



Note: based on 46 survey response to the question: "What type of research do you undertake using the AIRR? Please select all that apply."

Source: London Economics analysis based on survey data

Figure 13 Research areas of AIRR projects



Note: based on 37 survey responses to the question: "What is your research area/topic? Please select all that apply."

Source: London Economics analysis based on survey data.

9 Early-impact evaluation results

9.1 Increasing sovereign AI research capability and supporting scientific research and discovery

9.1.1 Increased provision of AI compute

Dawn and Isambard-AI became fully operational in Spring 2025 and were officially launched in July that year. While only the start of the UK Government's planned substantial expansion of UK public AI compute capability, the two compute facilities already provide a significant improvement in the AI compute capability available to UK researchers and innovators.

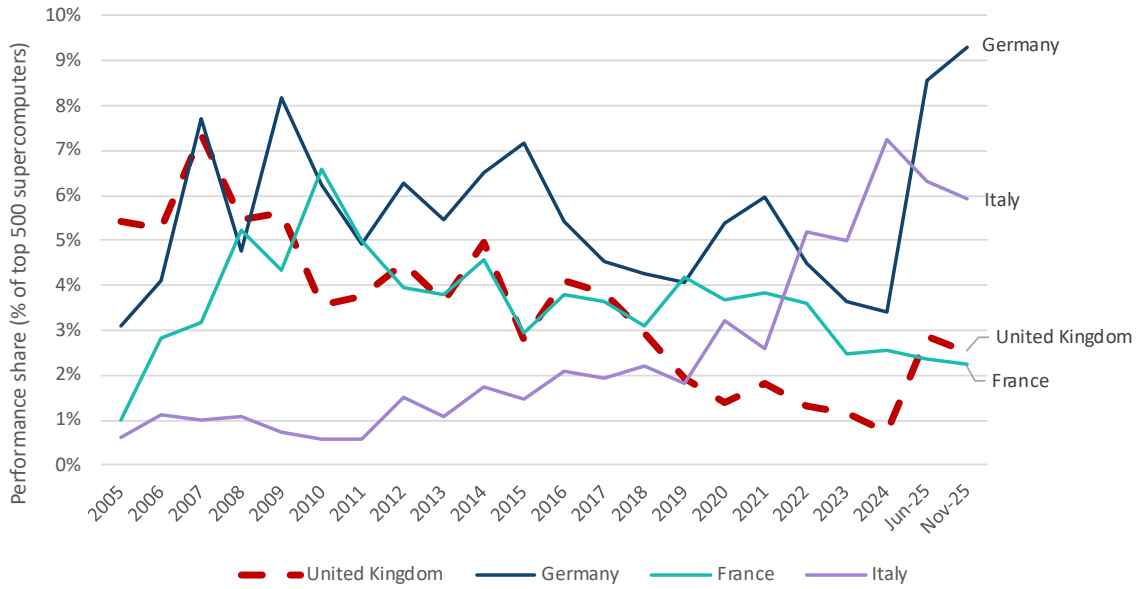
Between Dawn and Isambard-AI, the two compute centres currently provide access to more than 6,470 advanced AI chips (1,024 Intel chips at Dawn and on 5,448 NVIDIA chips at Isambard-AI). This is more than four times the available number of AI chips compared to the fewer than 1,000 NVIDIA A100 chips (the most powerful AI chips available at the time) and just over 500 previous-generation NVIDIA V100 chips available to researchers at the time of the Future of Compute Review in 2023.[49] Moreover, capacity at Dawn will further be expanded in spring 2026 through additional funding of £36 million, increasing Dawn's compute capability up to six-fold.[50]

[49] DSIT (2023). Independent Review of The Future of Compute: Final report and recommendations. Available at: https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts

[50] DSIT (2026). Cambridge supercomputer set to get 6 times more powerful as government backs British AI innovation. Press release. Available at: https://www.gov.uk/government/news/cambridge-supercomputer-set-to-get-6-times-more-powerful-as-government-backs-british-ai-innovation

This provides a significant boost to the UK's large-scale compute provision, which has been steadily falling relative to peers over the last two decades. In the mid-2000s, the UK's share of global large-scale compute capacity, measured by the performance of systems within the Top 500 most powerful supercomputers globally, was on par with Germany, and much higher than that of Italy and France. (compare leftmost values for the UK (dashed red line) with comparators in Figure 14, below)

Figure 14 UK large-scale compute performance share over time against comparator countries



Note: Shows performance share of the UK against other European comparator countries over the last decade. Performance measure = maximal LINPACK performance achieved. A country's performance share is the proportion of the total rmax GFlops (the maximum measured performance of a supercomputer running the LINPACK benchmark) of the combined Top500 computers held by that countries' computers.
Note 2: The Top500 ranking does not capture all advanced large-scale compute systems. In particular, it is well known that China is underrepresented in the ranking as it stopped submitting new entries to the Top 500 list (see TheNewStack (2024). Top500: China Opts Out of Global Supercomputer Race. Available at: https://thenewstack.io/top500-chinas-supercomputing-silence-aggravates-tech-cold-war-with-u-s/). Further, the performance measure used (the LINPACK benchmark) is unfavourable to AI-compute systems as it measures double-precision floating maths figures (FP64) while most AI compute tends to operate on lower precisions (FP34-FP8). As such, the ranking may not be truly reflective of systems' real-world comparative position.

Source: London Economics analysis based on Top500.org data

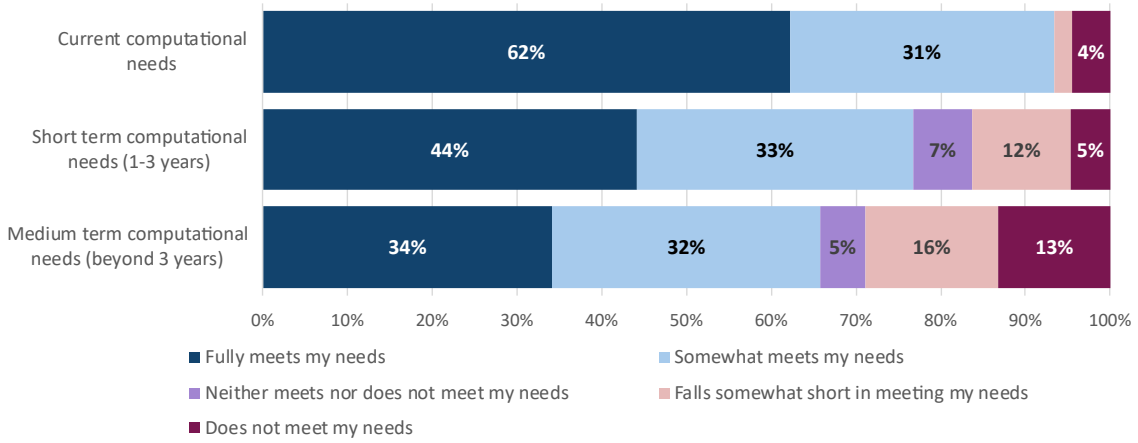
However, as of November 2024, the latest ranking prior to the launch of AIRR, the UK's most powerful supercomputers only accounted for 0.7% of global computational power among the Top 500 High-Performance Computing systems (see decline in dashed red line representing the UK with low in 2024 in Figure 14). This is only around one-third of France's and 10% of Italy's large-scale compute provision, which has substantially expanded investments in large-scale compute infrastructure over the same time period.[51]

Following the initial AIRR programme becoming operational, the UK's performance share has risen to 2.9% as of June 2025, now slightly exceeding France (see increase in dashed red line between 2024 and June 2025 in Figure 14). In the latest Top500 rankings, as of November 2025, the UK accounted for 2.6%[52] of global Top 500 performance share. This marks a significant improvement in the large-scale compute capability available to UK researchers and innovators.

[51] It should be noted however that the UK's systems are sovereign systems for UK users, whereas a fraction of the compute time of the German and French HPC systems will be spent on supporting computational work from non-host countries via EU-HPC resource sharing.
[52] Excluding Dawn and Isambard-AI from the UK's November 2025 figures would entail a performance share of 0.9%.

Nevertheless, a significant gap to similar European nations such as Germany and Italy, who alongside other European nations are also investing heavily into AI compute infrastructure, remains. Moreover, while most (93%) of the current AIRR users said that AIRR meets their current computational needs, either fully or somewhat, only around two-third of users (66%) believe the current AIRR capabilities will be sufficient to meet their medium-term (beyond the next three years) computational needs, and only one-third believe AIRR will fully meet their medium-term computational needs. (Figure 15). The most common reasons respondents gave for AIRR not meeting future needs were insufficient hardware accelerators (GPUs) and insufficient compute time allocations.

Figure 15 Extent to which access to AIRR meets users current, short-term and medium-term computational needs (% of respondents)



Based on 45 survey responses to the question: "To what extent does AIRR meet your current and future computational needs?"

Source: London Economics analysis based on survey responses

This was generally reflected in interviews, where users mostly reported having enough, or more than enough, compute for their needs, especially for pilot or early-stage projects. A minority of users, especially those undertaking more intensive or publication-driven work, reported insufficient compute and in some cases required substantially more to fully explore their research.

The main concern, however, was that the three-month allocation period, provided during Early Access and Gateway phases, is too short and misaligned with typical research cycles, which often span 6–12 months. However, it should be noted that this issue has since been partially mitigated through the introduction of longer duration routes (such as the Innovator access route) and staged allocation pathways, reflecting an evolution of the access model rather than a persistent design limitation. Moreover, shorter allocations can also help reduce "hoarding" of compute resource and increase agility in the allocation process. The introduction of staged allocation pathways appears to strike an effective balance between these considerations.

This highlights the importance of continued investment in national compute capacity including the 20x expansion of AIRR as well as related national large-scale compute infrastructure in order for the UK to meet the needs of researchers and innovators and remain competitive internationally.

9.1.2 Impact on AI research

As shown in Section 8, a total 583 AI research projects have been allocated compute time on Dawn or Isambard-AI between launch and March 2026, with AIRR usage having seen a significant and sustained increase in demand over time.

A total of 109 new projects were given allocations on AIRR in January 2026 alone, with another 74 projects awarded allocations in February. More projects were awarded in these two months combined than the total number of projects allocated between August and December 2025.

Moreover, as of March 2026, demand for AIRR compute allocations has for the first time since launch of the full operational capacity outstripped available compute time on the systems. This evidences the high demand for public AI compute capabilities within the UK AI research community.

Users overwhelmingly report a positive impact of access to AIRR on their ability to undertake AI research.

90% of users responding to the user survey undertaken for this study rated their ability to undertake AI research as better compared to before gaining access to AIRR. 70% rated their ability to undertake AI research as much better.[53]

"If I didn't have access to AIRR, I would not be able to complete the research projects that I have in the last year. It is basically a make or break in terms of the work that I can do."

Source: Interview with AIRR user

"There were things that wouldn't have happened if we didn't have that AIRR access during that trial period."

Source: Interview with AIRR user

Users surveyed reported improvements both to the efficiency (85%) and quality (72%) of their research as well as noting that AIRR has enabled them to undertake a greater volume of research (70%) and to pursue new types of work that would not otherwise have been feasible (87%). (Table 7)

Moreover, among those who reported improvements in the efficiency, quality, or volume of their research or work, the vast majority indicated that the impact of AIRR was significant, rating the improvements as “a lot” or “a great deal”. (Figure 16)

[53] Based on 46 survey responses to the question: “Compared to before you gained access to the AIRR, how would you rate your overall ability to undertake AI research?”.

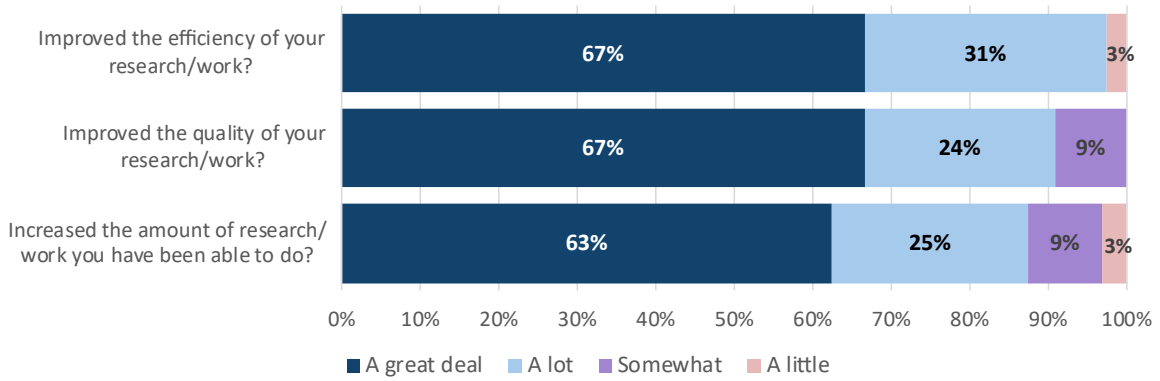
Table 7 Improvements enabled by AIRR

Response	Responses	%
Enabled you to undertake research/work you would not otherwise have been able to conduct	40	87%
Improved the efficiency of your research/work	39	85%
Improved the quality of your research/work	33	72%
Enabled you to do more research/work	32	70%
Other	3	7%
None of these	0	0%
Total	**46**	**100%**

Note: Based on 46 survey responses to the question: "What improvements, if any, has the AIRR enabled that were previously unavailable to you?". Respondents could select more than one response.

Source: London Economics analysis based on survey responses

Figure 16 Extent to which AIRR led to positive improvements (% of respondents)



Note: based on survey responses to the questions: "To what extent has AIRR improved the efficiency of your research/work" (39 responses), "To what extent has AIRR improved the quality of your research/work?" (33 responses), and "To what extent has AIRR increased the amount of research/work you have been able to do?" (32 responses).

Source: London Economics analysis based on survey responses

Despite AIRR's relatively short operational life to date, user feedback suggests that AIRR usage is already resulting in material research outputs, with 41% of respondents stating that their work has already resulted in research outputs such as publications or conference submissions.[54]

A further 57% of respondents expect their work to lead to research outputs in the future. Only one user, from industry, responding to the survey said they do not expect their work to lead to research outputs.[55]

Interview evidence supports these findings, with users citing academic papers they have already produced or expect to produce as a result of their work on AIRR. In addition to traditional academic

[54] Based on 46 survey responses to the question: "Has your work on AIRR already led, or is it expected to lead to the creation of any of the following? Please select all that apply."

[55] Note, while these results are for all respondents undertaking research on AIRR, the picture remains broadly the same when only respondents from academia are considered with 39% stating their work has already result in research outputs and the remaining academic respondents expecting their work to lead to research outputs in future.

outputs, users highlighted the development of software and code (including open-source models), often designed as reusable research tools and pipelines that can be applied across multiple domains.

Several users also pointed to the potential for scientific breakthroughs and domain-specific advances enabled by AIRR. Examples include:

- New models for disease research (e.g. Alzheimer's, muscular dystrophy, heart regeneration, pandemic preparedness);
- Improved techniques for cell classification and structural biology (e.g. identifying macromolecules within cells); and
- Insights into complex biological systems such as cancer-related microbiomes.

Box 2 Building a UK-centred Large Language Model (LLM)

Researchers have used Isambard-AI, to develop a large language model tailored to the UK's languages, public services, and legal frameworks.[56]

Research teams from University College London, Bangor University, and industry partners have trained and optimised the UK-LLM, a model designed to handle both English and Welsh, while reflecting the UK-specific context. The goal is to produce a freely available large language model (LLM) centred on the UK's needs and languages, in contrast to many popular LLMs that are trained on US-centred data.



Access to Isambard-AI has enabled researchers to handle extremely large datasets, including over 30 million translated entries in Welsh, combined with UK-specific digital resources. This scale of compute, previously inaccessible to most academic teams, has allowed rapid experimentation, model optimisation, and testing at the national scale.

The project has also produced Caernarfon-3B, the first large language model trained entirely on UK-based compute. Despite its relatively compact size, Caernarfon-3B outperforms models more than twice its size on tasks across English, Irish, Welsh, and Scottish Gaelic, demonstrating the power of national AI infrastructure for high-impact multilingual research.

The project demonstrates how AIRR accelerates the development of nationally relevant AI applications. The UK-LLM is intended for deployment across public services, supporting healthcare, education, and legal information, while ensuring bilingual access and culturally appropriate outputs. By hosting all training on UK-based infrastructure, AIRR has also helped establish sovereign AI capability, ensuring sensitive public sector AI development remains secure and aligned with national priorities.

Picture credit: Unsplash/Amy W

[56] gen ai (n.d.). UK unveils Sovereign AI collaboration designed for its languages and public services. Available at: https://www.genai.ac.uk/news/uk-unveils-sovereign-ai-collaboration-designed-for-its-languages-and-public-services

9.2 Enhancing AI-driven opportunities for users

9.2.1 Workforce development and skills impacts

Evidence suggests that the AIRR programme plays a role in strengthening the UK's human capital in advanced technology. By providing an environment for users to test out new AI-enabled workflows, AIRR can contribute to overall skills development in AI technology.

The host sites (based at the University of Bristol and the University of Cambridge) themselves provide user support and training resources to help ensure allocations can be used effectively. The structured training include:

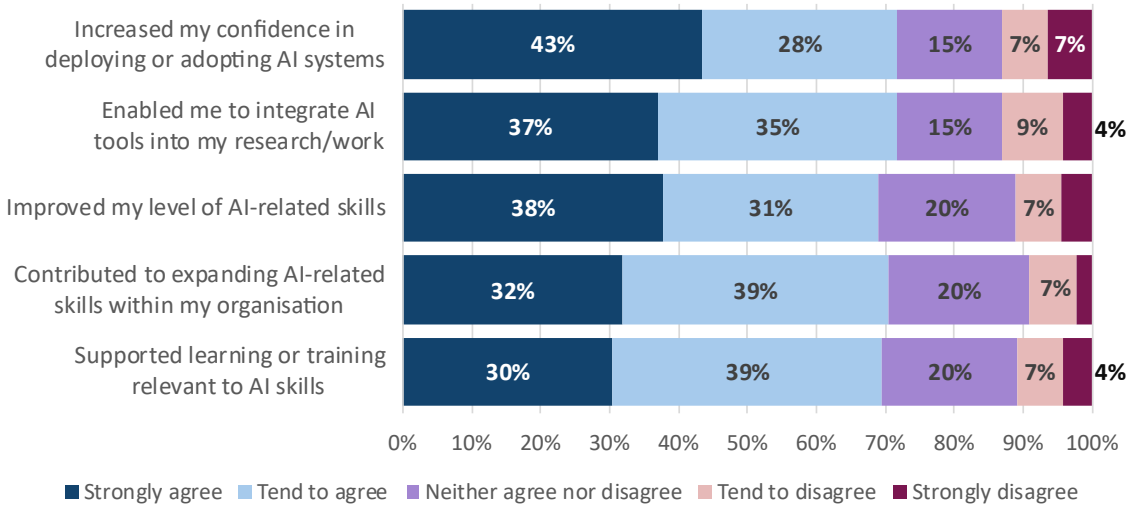
- A series of Isambard-AI workshops and tutorials hosted by the University of Bristol since September 2024, aimed at academic, industrial, and government users. These include introductory sessions on using Isambard-AI, one-day workshops on AI tools and distributed computing, and specialized tutorials such as PyTorch, AlphaFold, and high-performance computing with NVIDIA/HPE platforms. Attendance typically ranged from 15 to 50 participants per session, with most workshops accommodating around 25–35 participants. All materials are publicly available online for reference and self-paced learning.
- Four one-hour structured training session hosted by the University of Cambridge in March 2026 on topics such as using the Dawn computing system, accessing tools through a web interface, setting up software for AI projects, and managing software containers. These sessions attracted around 18 participants each from both industry and academia.

Results from the process survey undertaken in the early parts of this research, indicate that the vast majority of respondents felt that the quality of training and information resources provided was adequate, with 89% stating that they are "very" or "somewhat" satisfied.[57]

Data from the latter user survey undertaken for this baseline impact evaluation further indicates that access to AIRR is a significant driver of individual and organisational capability. The majority of respondents agree that access to AIRR has increased their confidence and understanding of AI and AI-related skills, enabled them to integrate AI tools into their research or work and supported AI skills and integration more widely in their organisation. (Figure 17).

[57] Based on 28 survey responses to the question: "Thinking about your time using the AIRR so far, to what extent do you feel the support you have accessed was adequate, in terms of the quality of training and information resources?"

Figure 17 Impact of access to the AIRR on AI skills (% of respondents)



Note: based on 46 survey responses to the question: "To what extent do you agree or disagree with the following statements? Access to the AIRR has…".

Source: London Economics analysis based on survey responses

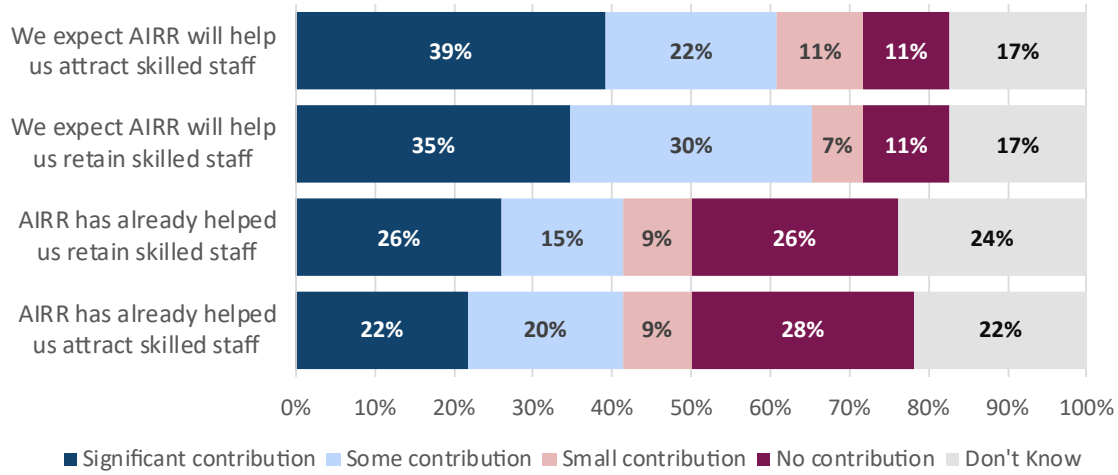
Beyond the immediate development of technical competencies, AIRR is well positioned to support UK organisations to attract and retain global talent. In a competitive international market for AI expertise, world-class compute infrastructure is a critical factor in attracting and developing talented researchers and engineers.[58]

Survey data indicates that a number of organisations are already realising these recruitment benefits, with around half of respondents indicating that access to the AIRR has already had at least some impact on both attracting and retaining skilled staff at their organisation (Figure 18). A relatively high proportion of respondents, however, found it difficult to assess how AIRR has contributed to their recruitment (more than one in five respondents indicated that they "don't know").

Users are slightly more certain of future impacts, with more than 70% indicating that they expect AIRR to have at least some contribution to both attracting and retaining skilled staff in the future, although there remains a relative high proportion who responded that they "don't know".

[58] Bianchini et al. (2025). AI and Supercomputing are Powering the Next Wave of Breakthrough Science - But at What Cost? Available at: https://arxiv.org/abs/2511.12686

Figure 18 Impact of access to the AIRR on attracting and retaining skilled researchers or staff (% of respondents)



Note: based on 46 survey responses to the question: "To what extent has access to AIRR influenced, or do you expect it will influence, your organisation's or team's ability to attract or retain skilled researchers or staff?"

Source: London Economics analysis based on survey responses

9.2.2 Impact on collaborations and partnerships

Another key benefit of the AIRR programme is its role in facilitating collaboration and partnerships across academia, industry, and the public sector. This objective is explicitly embedded within programme design, for example through the AI for Science call for applications[59], which emphasises collaboration as a core function of funded projects.

AIRR enables collaboration both through shared access to high-performance compute infrastructure and through community-building activities. Events such as Isambard Day[60] and user workshops provide opportunities for researchers, engineers, and stakeholders to exchange knowledge, develop joint projects, and build cross-institutional networks.

"It's just a perfect fit for academia and building collaborations. And I think that's the sort of thing that will […] have long-term consequences."

Source: Interview with AIRR user

Interviews and survey evidence suggest that collaboration is already a significant feature of AIRR-enabled activity. Among respondents, the most common types of collaborations were within academia (59% of all collaborations) and between academia and industry (23%). (Table 8)

[59] UKRI (2025). AIRR compute opportunity: AI for Science. Funding opportunity. Available at: https://www.ukri.org/opportunity/airr-compute-opportunity-ai-for-science/

[60] Bristol Centre for Supercomputing (n.d.). Isambard Day 2025. Available at: https://docs.isambard.ac.uk/events/isambard_day_2025/

Table 8 Collaborations as part of working on AIRR

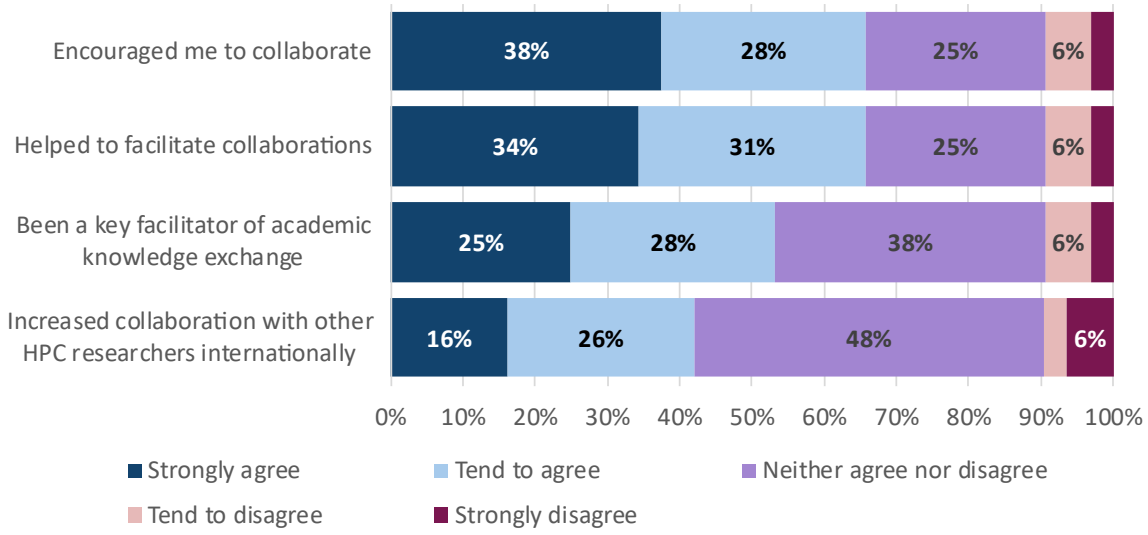
Collaboration type	Number of collaborations	% of collaborations
Academia - academia	26	59%
Academia - industry	10	23%
Academia/industry - public	6	14%
Public - public	1	2%
Industry - industry	1	2%
Total	***44***	***100%***

Note: based on 46 survey response to the question: "As part of your AIRR work, were you part of any collaborations with industry, the public sector or other academics (in the UK or abroad)? Please select all that apply."

Source: London Economics analysis based on survey responses

Around two-thirds of respondent agree that AIRR encouraged them to collaborate (66%) and has helped to facilitate collaborations (65%). Around half of respondents (53%) also agree that AIRR acted as a key facilitator of academic knowledge exchange (Figure 19). In comparison, slightly fewer respondents agreed (42%) that AIRR has increased international collaboration, suggesting that the early-stage impacts on collaboration are more strongly felt within the UK.

Figure 19 Effect of access to AIRR on collaborative activities (% of respondents)



Note: based on 33 survey responses to the question: "Thinking about AIRR and opportunities it may have provided for collaboration, to what extent would you agree or disagree with the following statements? The AIRR has…"

Source: London Economics analysis based on survey responses

9.3 Scaling AI-related R&D and adoption for economic growth and public impact

In its Plan for Change, the UK Government has set five national missions: i) kickstart economic growth; ii) build an NHS fit for the future; iii) safer streets; iv) break down the barriers to opportunity; and v) make Britain a clean energy superpower.[61]

> ***"All my researchers are saying we need to get access to AIRR because it's got the biggest, best resource [and] because the way we are working now is not ideal."***
>
> ***Source: Interview with AIRR user***

AIRR is designed to directly support delivery of these national missions by providing sovereign, large-scale compute infrastructure for innovative AI research to public bodies, academia, and industry. By expanding access to large-scale AI computing, AIRR is envisaged to support economic growth through increased AI innovation and its downstream effects on productivity through subsequent adoption across industry and the public sector.

AIRR calls for research projects have been explicitly mission-aligned, for example:

- **The *AI for Science AIRR compute call*[62]** (November–December 2025) provided mission-driven access to large-scale national AI infrastructure, aligned with the strategic vision set out in the UK Compute Roadmap[63] and the AI for Science strategy[64]. It targeted transformative research in priority areas such as materials science, nuclear fusion, medical research, engineering biology, quantum technologies, and AI-enabled discovery, with a strong emphasis on real-world impact. Of particular interest were research projects directly supporting key government missions, including clean energy (e.g. climate modelling, fusion, advanced materials), an NHS fit for the future (biomedical and health innovation), and economic growth (productivity and scientific advancement).
- **The *Sovereign AI launch call***[65] (June–July 2025) provided targeted compute access for high-impact projects aligned with the Government's priority areas, focusing on areas such as fundamental AI, biosciences, materials discovery, and defence and national security. The call again emphasised projects with clear strategic value and real-world impact, contributing directly to mission-led outcomes.
- **The *Innovator route***[66] (November 2025–January 2026) supports larger, more ambitious AI projects that build on earlier-stage work, enabling cross-sector collaboration, experimentation, and development of novel AI tools and workflows. Similarly to the AI for Science and Sovereign AI calls, it is explicitly mission-oriented, encouraging projects aligned to all five government missions, with particular emphasis on economic growth,

[61] See https://www.gov.uk/missions
[62] UKRI (2025). AIRR compute opportunity: AI for Science. Funding opportunity. Available at: https://www.ukri.org/opportunity/airr-compute-opportunity-ai-for-science
[63] DSIT (2025). UK Compute Roadmap. Policy paper. Available at: https://www.gov.uk/government/publications/uk-compute-roadmap/uk-compute-roadmap
[64] DSIT (2025). AI for Science Strategy. Policy Paper. Available at: https://www.gov.uk/government/publications/ai-for-science-strategy/ai-for-science-strategy
[65] DSIT (2025). Sovereign AI AIRR launch opportunity: call for researchers. Notice. Available at: https://www.gov.uk/government/publications/sovereign-ai-airr-launch-opportunity-call-for-researchers/sovereign-ai-airr-launch-opportunity-call-for-researchers
[66] DSIT (2025). AIRR Innovator route (UKRI guidance). Guidance. Available at: https://www.gov.uk/government/publications/ai-research-resource/airr-innovator-route-ukri-guidance

NHS transformation, and clean energy, while also strengthening the UK's research capacity and multidisciplinary innovation ecosystem.

The ***Gateway***[67] and ***Rapid Access***[68] routes (both ongoing) meanwhile provide complementary entry points to AI compute for early-stage AI research and product development. The Gateway route enables broad access for testing, benchmarking, and exploratory work, helping to build skills and widen participation, while the Rapid Access route is designed for startups and SMEs to quickly develop and validate AI applications. Together, they support the Government's opportunity and skills mission by lowering barriers to and building capability for AI compute research among users less experienced with large-scale compute and set the foundation for delivery against the other missions though supporting early-stage innovation and prototyping.

9.3.1 Early innovation and industry impacts

Large-scale AI compute is a central enabler of innovation across multiple industrial sectors. HPC infrastructure such as AIRR allows organisations to train complex machine learning models, simulate large-scale processes, and analyse massive datasets at speeds and scales that are otherwise unattainable. Access to compute is widely recognised as a key driver of technological innovation in AI, process optimisation, and product development.[69]

> ***"Being able to generate all these structures and then run the calculations on these structures gives us a huge competitive advantage that others don't have in the field."***

Source: Interview with AIRR user

In industry, access to advanced AI compute has been shown to support both incremental and transformative innovation. Firms can develop new AI-enabled products and services, accelerate R&D cycles, and integrate AI into existing business processes, thereby enhancing competitiveness.[70] Moreover, national AI infrastructure provides shared resources that lower the barrier to entry for smaller organisations and startups, enabling them to leverage AI capabilities without the prohibitive costs of accessing commercial supercomputing.[71]

While the downstream effects of adoption of AIRR-enabled AI innovations within the UK economy and public sector will take time to materialise, early evidence indicates that AIRR is already facilitating tangible improvements in UK innovation capacity as well as early commercial impacts.

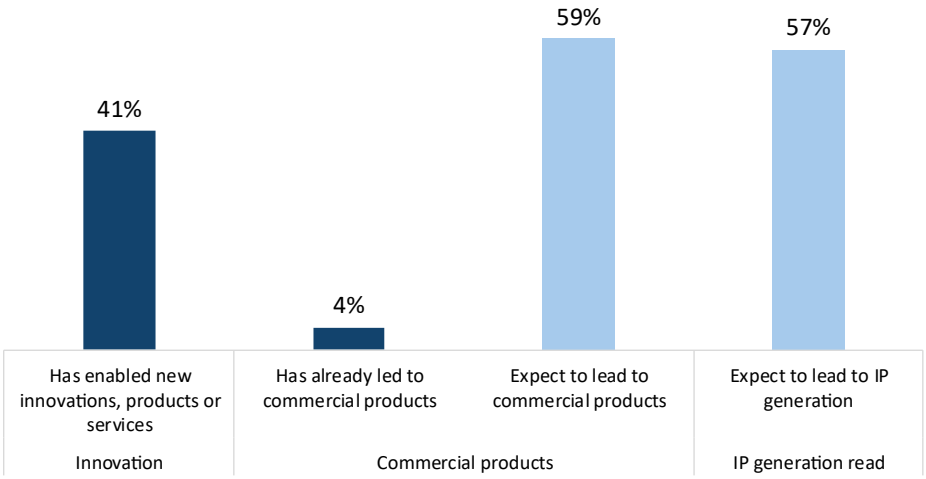
[67] DSIT (2025). AIRR Gateway route (UKRI guidance). Guidance. Available at: https://www.gov.uk/government/publications/ai-research-resource/airr-gateway-route-ukri-guidance
[68] DSIT (2025). AIRR Rapid Access route (UKRI guidance). Guidance. Available at: https://www.gov.uk/government/publications/ai-research-resource/airr-rapid-access-route-ukri-guidance
[69] See Yesuf, Y and Fields, Z (2025). Artificial Intelligence Adoption as a Driver of Innovation and Competitiveness in SMEs: A Bibliometric and Systematic Review. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC12749562/
[70] See OECD (2025). Competition in artificial intelligence infrastructure. OECD Roundtables on Competition Policy Papers. Available at: https://www.oecd.org/en/publications/competition-in-artificial-intelligence-infrastructure_623d1874-en/full-report/component-6.html
[71] See Faraboschi et al. (2024). Reducing the Barriers to Entry for Foundation Model Training. Available at: https://arxiv.org/abs/2404.08811

In particular:

- Among users responding to the user survey undertaken for this study, 41% reported that AIRR has already enabled new innovations, products or services. (Figure 20)
- When considering only industry users[72], seven of the eight respondents from industry[73] agreed that access to AIRR has accelerated innovation for their organisation.
- In terms of commercial impacts, two respondents reported that that their work on AIRR has already led to commercial products (e.g. software, platforms, APIs) and a further 59% expect that their work will lead to commercial products in the future. Of the 37% (17 respondents) who said that they do not expect to generate commercial products, 16 were academic users and the other one was third sector/charity/not for profit. (Figure 21)
- While no respondents reported that their work on AIRR has led to new IP yet (e.g., patents or proprietary methods), 57% of respondents expect that their work will lead to IP generation in the future. 18 out of the 20 respondents who said they do not expect their work to lead to IP generation were users from academic organisations. (Figure 21)

This is despite the early stage of AIRR's operational life and the fact that users within the sample have so far only had access to smaller-scale allocations, with the majority of projects accessing AIRR through the Gateway and Rapid Access entry points (see Annex A1.2).

Figure 20 Early evidence of innovation, IP generation and commercial products



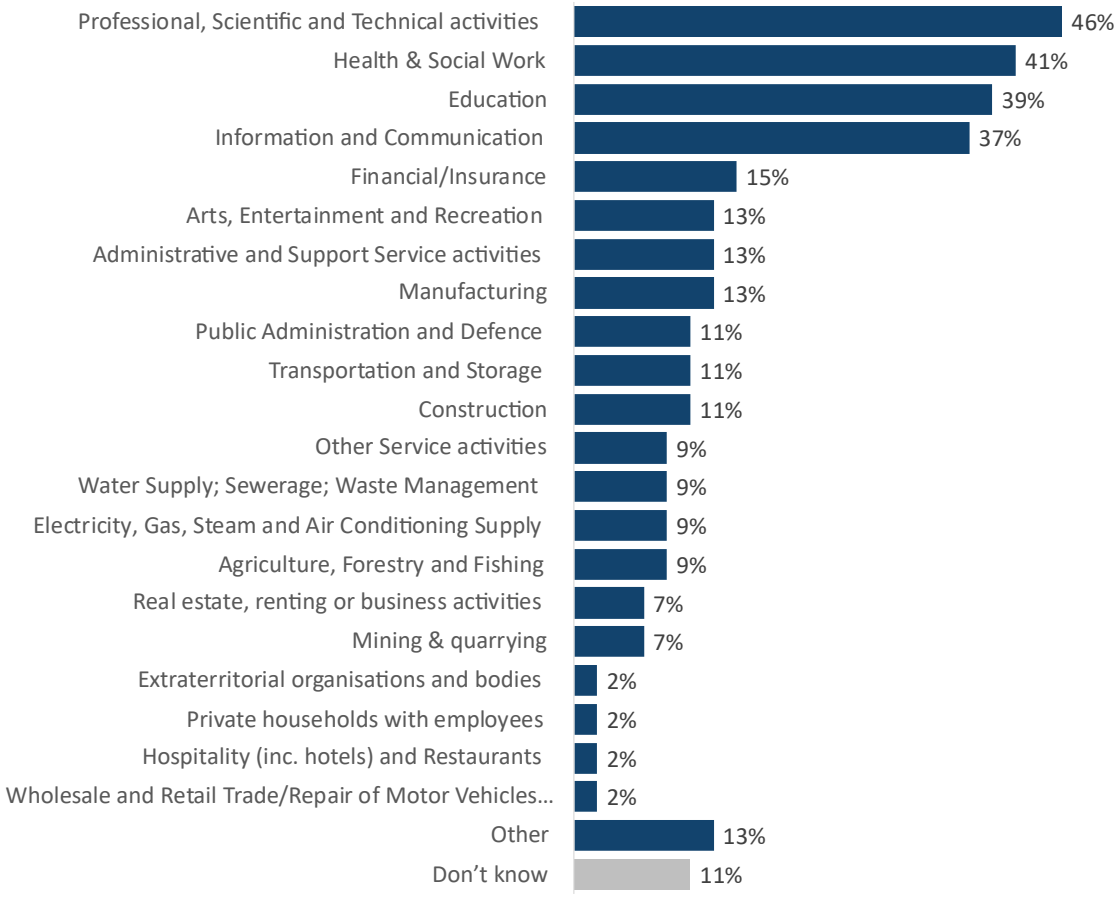
Note: based on 46 survey responses to the questions: "What improvements, if any, has the AIRR enabled that were previously unavailable to you?" (innovation) "Has your work on AIRR already led, or is it expected to lead to the creation of any of the following? Please select all that apply.?" (commercial products and IP generation) ***Source: London Economics analysis based on survey responses***

In terms of the sectors that will benefit from work done on AIRR, users expect their outputs to benefit a diverse range of industries. The four most commonly cited industries for potential impact include:[74] Professional, scientific and technical activities (46%); Health and social work (41%); Education (38%); and Information and communication (37%). Other users also mentioned potential

[72] Note that due to the relatively small proportion of all AIRR users that from industry, the sample of industry users who completed the survey is small. These responses should be interpreted with caution.
[73] As shown in Section 8, as of March 2026, there were 89 organisations form industry using AIRR.
[74] Based on 46 survey responses to the question: "Which of the following sectors, if any, do you expect will make use or benefit from the results of the research/work you undertake using AIRR? Please select all that apply."

benefits to the finance and insurance sector, manufacturing, administrative and support service activities, as well as arts, entertainment and recreation. (Figure 21)

Figure 21 Sectors expected to make use of or benefit from work undertaken on AIRR



Note: based on 46 survey responses to the question: "Which of the following sectors, if any, do you expect will make use or benefit from the results of the research/work you undertake using AIRR? Please select all that apply.?"

Source: London Economics analysis based on survey responses

Beyond individual firm benefits, large-scale AI compute can promote knowledge transfer, both within sectors and across sectors, as explored in Section 9.2.2.

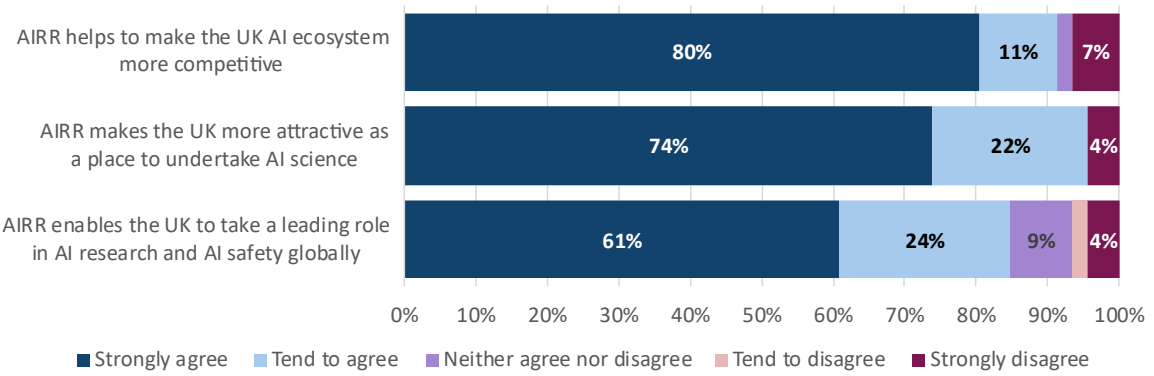
A shared AI infrastructure supports knowledge spillovers and the wider adoption of advanced AI techniques across firms and sectors.[75] In this sense, national AI resources not only support immediate technical outputs but can also function as strategic assets that help maintain international competitiveness and foster a resilient, innovation-driven economy.

Users overwhelmingly reported a positive impact of AIRR on the UK's AI ecosystem, with the vast majority of users agreeing that AIRR helps to make the UK AI ecosystem more competitive, makes

[75] See OECD (2025). Competition in artificial intelligence infrastructure. Available at: https://www.oecd.org/en/publications/competition-in-artificial-intelligence-infrastructure_623d1874-en/full-report.html

the UK more attractive as a place to undertake science and enables the UK to take a leading role in AI research and AI safety globally. (Figure 22)

Figure 22 Effect of AIRR on the UK's AI ecosystem (% of respondents)



Note: based on 46 survey responses to the question: "To what extent do you agree or disagree with the following statements about AIRR?" ***Source: London Economics analysis based on survey responses***

9.3.2 Public sector impacts

As shown in Table 8 in Section 9.2.2, 14% of collaborations reported by survey respondents were between academia or industry and the public sector. Many more reported that they expect impacts in public sector applications such as health and social work (41%), education (39%), energy (9%), the water sector (9%) and the public administration and defence sector itself (11%) (see Figure 21).

For example, in health, AI models are being used to analyse large-scale medical imaging datasets. Work in this area includes research using AIRR, by researchers from University College London, on improving the **early detection of cancer** which could support cancer screening in the NHS, reduce wait times and contribute to earlier diagnosis.[76] Earlier diagnosis not only brings benefits to patients themselves, through better health outcomes, but also saves the taxpayer money with treatment for late stage (stage 3 and 4) colon, rectal, lung and ovarian cancer found to cost the NHS nearly two and a half times the amount spent on early stage (stage 1 and 2) services.[77] It also includes work using AIRR, undertaken in collaboration between the Alan Turing Institute and scientists at the University of Cambridge, to train AI models to recognise signs of Alzheimer's and other forms of dementia in MRI scan images.[78]

Researchers at the University of Oxford's Nuffield Department of Medicine are using AIRR to build AI foundation models for vaccine design in order to accelerate **cancer vaccine development**. By analysing large-scale tumour datasets, the team aims to identify new vaccine targets across multiple cancer types and contribute to national resources such as the Oxford Neoantigen Atlas.[79] (Box 3)

AIRR also supports the next phase of **Nightingale-AI**, which has been awarded one million hours of GPU compute time on Isambard-AI. Nightingale-AI is an initiative, led by Imperial College London,

[76] Reuters (2025). Britain boosts computing power in $1.3 billion AI drive. Available at: https://www.reuters.com/world/uk/britain-boosts-computing-power-13-billion-ai-drive-2025-07-17

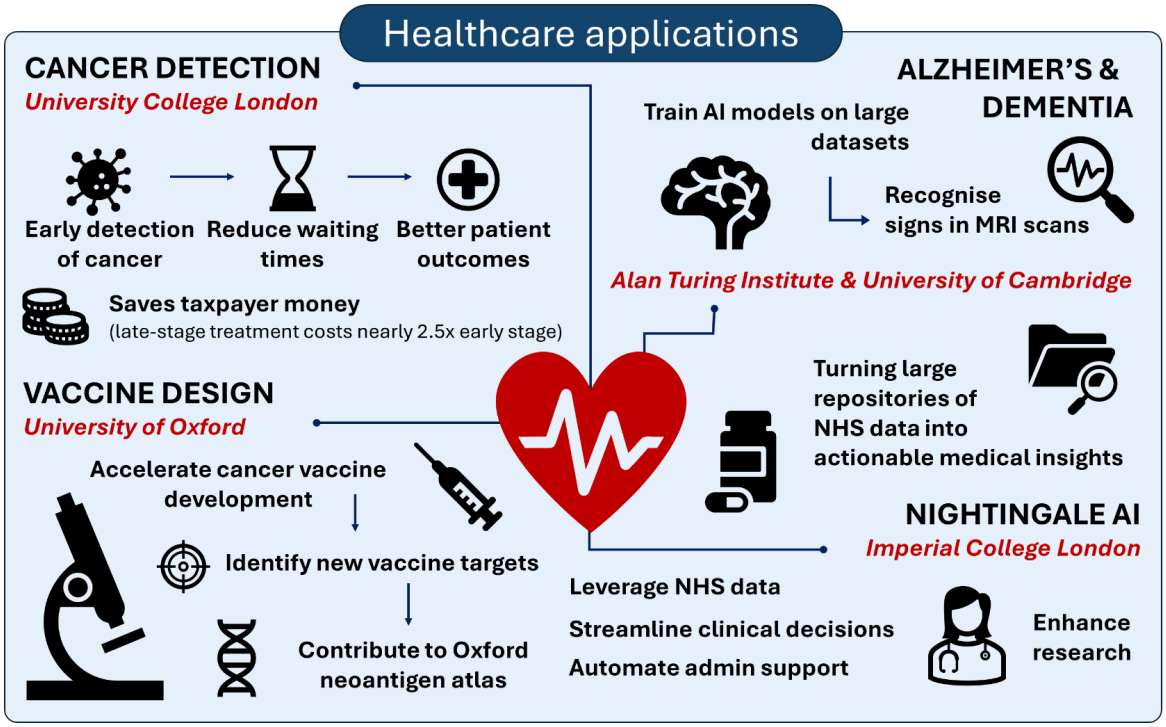
[77] Cancer Research UK (2014). Saving lives and averting costs? The case for earlier diagnosis just got stronger. Available at: https://news.cancerresearchuk.org/2014/09/22/saving-lives-and-averting-costs-the-case-for-earlier-diagnosis-just-got-stronger

[78] University of Cambridge (n.d.). AI & Image Recognition in Alzheimer's Research. Available at: https://www.hpc.cam.ac.uk/ai-image-recognition-alzheimers-research

[79] University of Oxford (2025). Researchers granted AI supercomputing award to advance cancer vaccine work. Available at: https://www.ndm.ox.ac.uk/news/researchers-granted-ai-supercomputing-award-to-accelerate-cancer-vaccine-work

to develop an advanced health AI model designed to transform healthcare by leveraging vast repositories of NHS data such as electronic patient records, biomedical data, and published medical literature. The system could enhance medical research, streamline clinical decision-making, enable personalised treatment plans, and automate administrative support for healthcare professionals, thereby increasing operational efficiency and ultimate patient outcomes.[80, 81]

Figure 23 Healthcare applications of AIRR research



Source: London Economics

Building on these and other advances in healthcare AI, artificial intelligence forms a key part of the Department of Health and Social Care's (DHSC) national cancer strategy (*The National Cancer Plan for England*). The strategy sets out the use of AI to improve diagnosis and service delivery, for example for speeding up lung cancer detection, digitising imaging services with AI-enabled MRI technology, and supporting cancer administration, while aligning efforts across government on life sciences, AI and technology. The strategy also emphasises the role of the UK's sovereign AI capability, including the AI Research Resource, for example by using AIRR compute to train AI models on the NHS's rich cancer data to support the development of a new generation of more personalised cancer treatments.[82]

Beyond healthcare, AIRR supports a range of other public-interest sectors including research in clean energy and climate. For example, the UK Atomic Energy Authority was among the first users to access Dawn, with AI compute helping UKAEA scientists design the UK's prototype fusion energy power plant. Large-scale computing capabilities enable fusion scientists and researchers to analyse and optimise the design and efficiency of fusion power plants. Fusion energy has the potential to

[80] Imperial (2025). Health model Nightingale AI powers ahead with new supercomputer time and data. Available at: https://www.imperial.ac.uk/news/271293/health-model-nightingale-ai-powers-ahead/

[81] Imperial (2025). Launching 'Nightingale AI': A New Foundation World Model for Health. Available at: https://www.imperial.ac.uk/news/261693/launching-nightingale-ai-new-foundation-world/

[82] DHSC (2026). The National Cancer Plan for England: delivering world class cancer care. Available at: https://assets.publishing.service.gov.uk/media/699ec931532c9ad91ebbcc64/national-cancer-plan-for-england-delivering-world-class-cancer-care.pdf

revolutionise energy generation and deliver near limitless clean electricity.[83, 84] Building on the experience gained with delivery of Dawn and on Cambridge's long-established collaboration with UKAEA, the UK Government has recently announced investments of a further £45 million into Sunrise, a new dedicated supercomputer aimed at utilising AI to accelerate fusion energy.[85]

Dawn has also been running IceNet, a novel AI sea ice forecasting system led by the British Antarctic Survey (BAS) and The Alan Turing Institute. IceNet was trained on observational data to forecast three months of daily sea ice concentration maps. The system has advanced the range of accurate sea ice forecasts and was found to outperform a state-of-the-art dynamical model in seasonal forecasts of summer sea ice, particularly for extreme sea ice events.[86]

[83] University of Cambridge (2024). The rise of Dawn. How the UK's fastest AI supercomputer is supporting goals in clean energy, personalised medicine and climate. Available at: https://www.cam.ac.uk/stories/ai-supercomputer-dawn-research-energy-medicine-climate

[84] University of Cambridge (2024). UKAEA and Turing get early access to Dawn. Available at: https://www.csd3.cam.ac.uk/ukaea-and-turing-get-early-access-dawn

[85] UKAEA, DESNZ (2026). £45M for UK's first AI supercomputer to accelerate fusion energy. Available at: https://www.gov.uk/government/news/45m-for-uks-first-ai-supercomputer-to-accelerate-fusion-energy

[86] University of Cambridge (n.d.). Dawn: Powering a cutting-edge sea ice forecasting system. Available at: https://www.hpc.cam.ac.uk/dawn-powering-cutting-edge-sea-ice-forecasting-system

Box 3 Accelerating cancer vaccine discovery

Researchers at the University of Oxford are using AIRR to accelerate the discovery of next-generation cancer vaccines.[87]



The research team from the Nuffield Department of Medicine is using Dawn to develop advanced AI models that can identify promising vaccine targets across different cancer types.

The project, titled "A foundation model for cancer vaccine design", applies machine learning to analyse tumour datasets and predict the neoantigens (mutated proteins found on cancer cells) that can trigger an immune response. By training specialised AI models on large genomic datasets, the researchers aim to rapidly identify targets for personalised or preventative cancer vaccines.

Access to AIRR enables the research team to run large-scale AI experiments that would previously have been inaccessible to most academic researchers. High-performance computing is a major bottleneck in vaccine discovery, and access to national AI infrastructure allows analyses that previously took years to be completed in weeks.

The project will also contribute to the Oxford Neoantigen Atlas, an open scientific resource designed to support cancer vaccine research across the UK. By sharing data and models, the initiative aims to accelerate immunology research nationally and enable more rapid development of personalised immunotherapies.

This work demonstrates how AIRR's national AI infrastructure can support data-driven breakthroughs in biomedical science, enabling UK researchers to combine large-scale genomic data with advanced AI to develop new treatments and improve outcomes for cancer patients.

Cancer imposes substantial financial costs on the UK healthcare system, in addition to its profound personal impacts. Premature death from cancer are estimated to cost the UK between £7.5bn to 11.6bn a year in lost productivity, while cancer-related morbidity and informal care for patients with cancer are estimated to cost a further £1.7bn to £2.0bn and £4.0bn to £4.5bn per year, respectively.[88] This highlights the significant burden of the disease; if even a small proportion of cases could be prevented through vaccines, the benefits would be considerable.

Picture credit: Unsplash/Louis Reed

[87] University of Oxford (2025). Researchers granted AI supercomputing award to advance cancer vaccine work. Available at: https://www.ndm.ox.ac.uk/news/researchers-granted-ai-supercomputing-award-to-accelerate-cancer-vaccine-work

[88] Cancer Research UK (2025). Cost of cancer in the UK. June 2025. Available at: https://assets.ctfassets.net/u7vsjnoopqo5/6BxLojtrBNtv6pOskBaflc/4fe83632ad604086b93c70cfd0a8913f/cost_of_cancer_in_the_uk.pdf

9.3.3 Impact of AI safety research

A portion of AIRR allocation has been directed to the AI Security Institute (AISI). As described in Section 8.3, this has supported 33 projects focused on advancing AI safety research and capabilities. Ensuring that AI systems are reliable, robust, and aligned with societal values is critical for mitigating risks and maintaining public trust in AI technologies. This focus also aligns with broader government priorities, including the mission to strengthen online safety and ensure that digital technologies are developed and deployed in a secure and responsible manner.

Given the relatively small number of AI safety projects to date, survey results are based on a small sample of only five respondents. Of these, three respondents agreed that AIRR has supported their organisation's ability to conduct AI safety research and strengthened their capacity to evaluate or mitigate AI system risks. The remaining two respondents either "neither agreed nor disagreed" or indicated "don't know." Similarly, three respondents reported that AIRR has been extremely important in enabling their organisation to meet AI safety-related research objectives, while the other two selected "don't know."

One interview with an AISI researcher highlights how access to the Isambard-AI system has been critical for empirical AI safety research. The user works on projects that investigate how pre-training data influences model behaviour, including the potential for undesirable or misaligned outcomes. Access to Isambard-AI enables large-scale pre-training experiments that would otherwise be unfeasible, allowing the team to scale models from billions to tens of billions of parameters. The user described these capabilities as essential to "being at the table" in frontier AI research.

"It's a difference between not being at the table and being at the table."

Source: Interview with AIRR user from AISI

9.4 The strategic importance of AIRR

AIRR is of critical importance to the UK AI research community. While other large-scale public compute resources are available in the UK, these are also already heavily subscribed.

This is evidenced by findings from the 2023 Future of Compute Review[89], that found that, at the time, existing provision of compute was not sufficient to meet demand and that, without targeted action, the UK would have insufficient compute capacity and capability at all tiers over the next decade.

Moreover, many of the UK's existing large-scale public compute capabilities have historically focused on academic research, with the Future of Compute Review further noting that Small- and Medium sized Enterprises (SMEs) in particular find it difficult to navigate the UK compute landscape and identify compute resources that meet their requirements.

Other existing public large-scale compute resources are also not optimised for AI research, typically lacking a sufficient quantity of the necessary AI chips required for AI workloads. As explained in the introduction to this report (Section 3.1), traditional large-scale compute infrastructure is designed

[89] DSIT (2023). Independent Review of The Future of Compute: Final report and recommendations. Available at: https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts

to run many separate simulations at the same time, whereas training AI models depends on repeatedly performing large volumes of mathematical operations on large amounts of data, making these systems less well suited to AI workloads.

This lack of dedicated AI compute limits the scale and speed at which researchers can train and evaluate advanced AI models, forcing compromises in model complexity or dataset size, thereby slowing UK scientific progress in AI research and concentrating cutting-edge AI research within well-resourced private organisations that have access to specialised infrastructure, or researchers able to access international infrastructure.

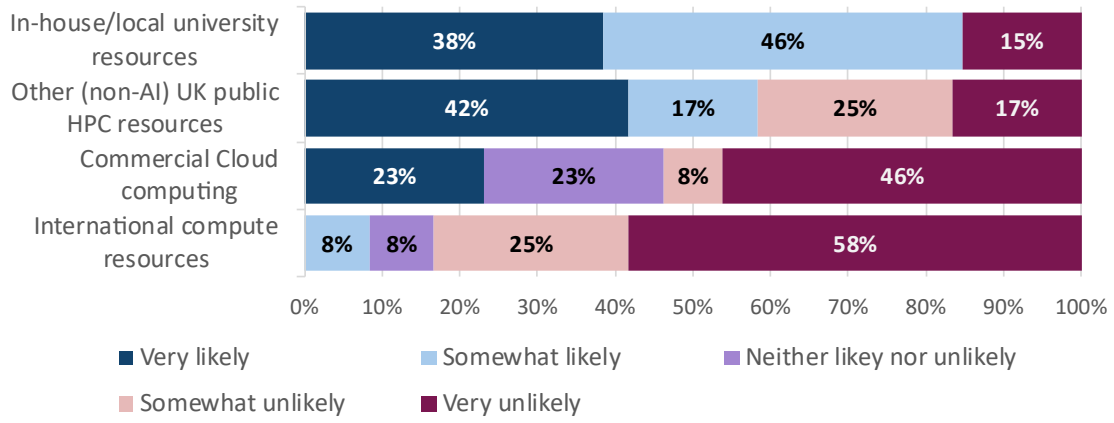
"The more AIRR resource there is available, the better [the UK] is going to do in terms of AI development, data analytics, and in terms of competitiveness."

Source: Interview with AIRR user

The importance of AIRR to the UK AI research community was consistently highlighted across consultations undertaken for this study and reflected in user survey responses. In interviews, users described AIRR as "critical" or "very important" for their research, citing the ability to undertake research at a scale that otherwise would not have been possible. Both SMEs and academic users emphasised that AIRR provides scalable access to high-spec hardware that would otherwise be prohibitively expensive or unavailable.

Among respondents to the survey, only 30% said they would have been able to access alternative compute resources had they been unable to access AIRR.[90] Among the 14 respondents that said they would have been able to access alternative compute resources, in-house or local university resources were the most likely alternative. However, these systems are typically much smaller and typically lack the scale and frontier-AI capabilities to support large-scale AI workloads effectively. (Figure 24)

Figure 24 Likelihood of accessing an alternative compute resource (% of respondents)



Note: Based on 14 survey responses to the question: "How likely or unlikely would you have been able to use any of the following compute resources instead?". ***Source: London Economics analysis based on survey responses***

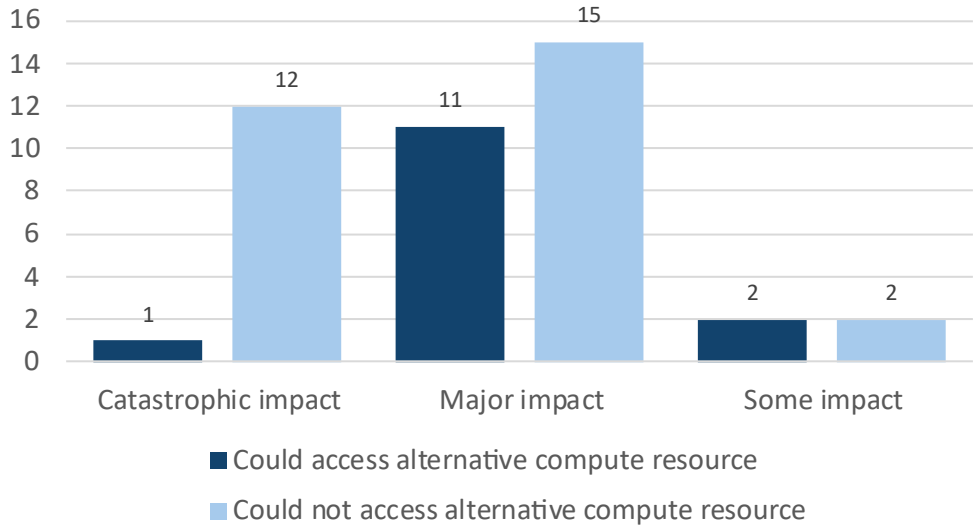
Around 60% of respondents identified other non-AI UK public HPC resources as possible alternatives; while only 23% (three respondents) considered commercial cloud computing as a plausible alternative. The extent to which cloud is a realistic alternative to large-scale public

[90] Based on 46 survey responses to the question: "If you had not been able to access the AIRR, would there have been an alternative compute resource you could access?". See Annex 2 for more detail.

compute is further explored in Box 4. Only a small proportion of users felt international compute resources were a realistic alternative.

Moreover, all users responding to the survey noted that not being able to access AIRR would have at least some impact on their research or work with 30% saying the impact would have been catastrophic and a further 60% saying there would have been a major impact. (Figure 25)

Figure 25 Impact of not being able to access the AIRR on research/work (no. of respondents)



Based on 43 survey responses to the question: "What would the impact on your research/work have been in this [no access to AIRR] scenario?". ***Source: London Economics analysis based on survey responses***

In interviews, users reported that without access to AIRR their work would have been limited in scale, speed, and quality, and in some cases would not have been possible at all. The proportion of research reliant on AIRR varies across projects, but most users indicate that at least half of their work depends on AIRR, with some estimating that up to 90% could not be conducted without access.

Many users noted that local or institutional resources (e.g., smaller servers or clusters) are insufficient to handle their workloads. Using these alternatives would limit the scale of experiments and reduce confidence in results. Where work would still be possible, it would shift toward more theoretical or less ambitious outputs. Several respondents highlighted a potential drop in research quality and outcomes, with less advanced models leading to weaker and less robust insights.

In terms of survey respondents, around three in five users (59%) said they would have been unlikely to achieve similar outcomes without AIRR, while a further 28% said they would have been unable to achieve all of the outcomes that they have achieved with AIRR. (Table 9)

Only just over one in ten users (13%) believe they would have achieved similar outcomes without AIRR, though all but one of these users noted that this would have meant achieving these outcomes would have been slower than with AIRR. Two-thirds (4 out of 6) of these responses were from users that indicated that they believed they could have accessed alternative compute resources, thereby counteracting the impact of a loss of AIRR to some extent.

Table 9 Effect of access to AIRR on research outcomes

Response	Responses	%
We would have achieved similar outcomes without AIRR	1	2%
We would have achieved similar outcomes without AIRR, but not as quickly	5	11%
We would have achieved some but not all of the outcomes that we have achieved with AIRR	13	28%
We probably would not have achieved similar outcomes without AIRR	11	24%
We definitely would not have achieved similar outcomes without AIRR	16	35%
Total	**46**	**100%**

Note: based on 46 survey responses to the question: "Which of the following best describes your view on the contribution AIRR has made, or is expected to make to your organisation's work/research?"

Source: London Economics analysis based on survey responses

Box 4 Cloud as an alternative to large-scale public AI compute



Commercial cloud services can provide flexible, on-demand access to AI compute and are a viable option for many workloads, particularly for smaller-scale experimentation or short-term projects. Cloud providers are also rapidly expanding capacity, and access to high-end systems is improving, making them an increasingly credible option for some AI research use cases.

However, this progress does not fully address the needs of advanced AI research, at least not at present, as access to the largest-scale systems can be costly and, in some cases, constrained by limited availability of high-end compute resources as demand outpaces supply.[91] As a result, commercial cloud is an important complement but does not at present fully replace dedicated large-scale public AI compute for frontier research.

In particular, costs can rapidly escalate and become prohibitive for sustained training runs, particularly for start-ups and SMEs as well as academic researchers without public grant funding covering compute access costs. Data governance or security requirements can also restrict cloud use in academic research.

Table 10 overleaf provides an illustration of the costs to users of accessing commercial cloud for AI research compared to accessing AIRR (which at present is free of charge at point of use) based on:

- Compute allocations similar to current allocations on AIRR which range from relatively small allocations of between 10,000 and 20,000 GPU hours (through the Gateway and Rapid Access routes) to more substantial allocations of between 50,000 and 150,000 GPU hours (through the innovator route).
- Commercial GPU prices in the region of between $3.72 to $10.60 per GPU hour[92], equivalent to between £2.80 and £7.97 based on the most recent quarterly average spot exchange rate data from the Bank of England.

This indicative calculation suggests costs to users of commercial cloud compute in the region of between £28,000 to just under £160,000 for the smallest allocations available on AIRR and up to between £420,000 to just under £1.2 million to replicate the largest allocations currently available to AI researchers on AIRR.

For comparison average annual turnover of Small- and Medium-Sized Enterprises in 2025 was around £600,000 for micro firms (those employing between 1 and 9 staff), around £3.5 million for small enterprises employing between 10 and 49 staff), and just under £24.7 million for medium-sized firms (those employing between 50 and 249 staff)[93].

[91] For further discussion see Vexxhost (2026). The GPU Capacity Crisis: Why Enterprises Are Rethinking Where AI Runs in 2026. Available at: https://vexxhost.com/blog/gpu-capacity-crisis-ai-infrastructure-2026/

[92] Based on typical commercial cloud prices for NVIDIA H200 GPUs obtained from Jarvislabs (2026). NVIDIA H200 Price Guide 2026: GPU Cost, Rental & Cloud Pricing. Available at: https://docs.jarvislabs.ai/blog/h200-price

[93] Based DBT (2025). Business population estimates for the UK and regions 2025. Available at: https://www.gov.uk/government/statistics/business-population-estimates-2025/business-population-estimates-for-the-uk-and-regions-2025-statistical-release

Table 10 Indicative cost comparison for AIRR allocations using commercial cloud

Allocation (GPU hours)	Price (per GPUh)	Total cost
10,000	£2.80	£28,000
20,000	£2.80	£56,000
50,000	£2.80	£140,000
100,000	£2.80	£280,000
150,000	£2.80	£420,000
10,000	£4.05	£40,500
20,000	£4.05	£81,000
50,000	£4.05	£202,500
100,000	£4.05	£405,000
150,000	£4.05	£607,500
10,000	£7.97	£79,700
20,000	£7.97	£159,400
50,000	£7.97	£398,500
100,000	£7.97	£797,000
150,000	£7.97	£1,195,500

Source: London Economics analysis based on typical commercial cloud prices for NVIDIA H200 GPUs obtained from Jarvislabs (2026). NVIDIA H200 Price Guide 2026: GPU Cost, Rental & Cloud Pricing. Available at: https://docs.jarvislabs.ai/blog/h200-price and converted to £-Sterling using the Bank of England Average Spot Exchange rate for the latest available quarter ending December 2025.

9.5 Summary of progress towards ToC objectives

The table below provides, for all groups of outputs, outcomes, and impacts set out in the Theory of Change, a summary of available evidence and assessment on progress towards achieving the objectives in the Theory of Change.

Table 11 Progress towards ToC objectives

Benefit	Evidence on progress	Assessment
Outputs		
Increased access to AI compute	- Significant increase in AI compute capacity delivered - Demand by users evident, with applications now exceeding capacity - Initial lower uptake by industry, though industry uptake increasing	Delivered, though outreach to industry should continue to facilitate sustained uptake
Increased AI research	- Strong uptake by the AI research community and evidence of user demand - Strong user feedback on impact AIRR is already making on users' ability to undertake AI research	On track
Increased opportunities for users	- User support and structured training resources are already being provided by both host sites - Training resources are generally judged adequate by users - Host sites have organised several user days to contribute to knowledge sharing - Positive early feedback from users on AI-related skills impacts	On track
Outcomes		
Higher quality research using AI	- Strong user feedback on impact of AIRR on users' - Evidence that research outputs have already emerged from earlier projects - Too early for research outputs from more recent projects, though user feedback appears promising	On track
Increased AI-related R&D by UK businesses	- Strong early evidence from users on AIRR's contribution to facilitating innovations - Some early evidence of IP generation, with promising user feedback on further innovation impacts - Too early for evidence of commercial impacts to materialise	Early indication of impact, but too early to assess commercial outputs due to the early nature of the evaluation
Increased partnerships	- Good evidence of collaborative working among early users of AIRR, including evidence of academia-industry and public sector partnerships - Some evidence of AIRR's contribution to knowledge exchange, though too early to observe longer term outcomes such as joint innovations	On track, too early to assess impact of knowledge exchange due to the early nature of the evaluation
Impacts		
Increased AI safety	- Evidence of use of AIRR for AI-safety related research - Too early to assess longer term impacts on risk mitigation and public trust as these benefits take time to materialise	Too early to assess due to the early nature of the evaluation
Increased AI adoption in the UK	- Early evidence of facilitation of AI use beyond immediate research projects undertaken on AIRR - Too early to assess longer term impacts on adoption more widely as these benefits take time to materialise	
Increased sovereign capability in AI	- Delivery of sovereign AI capabilities, and plans for 20x expansion including early-calls for interested suppliers - Early evidence of AI developments for public good, particularly in healthcare - Too early to assess impact of adoption and improvements in UK public standing in AI as these benefits take time to materialise	

Source: London Economics

10 Summary and key takeaways

This section summarises the key takeaways from the early-stage impact evaluation. The evaluation sought to assess how effectively the two AIRR projects are progressing towards achieving their intended outcomes. The evaluation was undertaken at an early stage in the operational life of AIRR with many of the benefits not yet having had time to filter through into tangible impacts. Nevertheless, early evidence shows very positive signs of the benefits already emerging.

AIRR set out to significantly increase the AI compute capability available in the UK. It has delivered on this objective, with both Dawn and Isambard-AI already among the world's most powerful large-scale compute resources. Moreover, a total of 583 AI research projects have, as of mid-March 2026, been allocated compute time on Dawn and Isambard-AI, with demand for compute time now exceeding available allocations on the systems. This is testament to the high appetite for public AI compute capabilities within the UK AI research community.

Interviews with users and user feedback from the surveys undertaken for this study suggest that AIRR is already having a significant positive impact on UK AI research. Large proportions of users reported improvements in their ability to undertake AI research, including improvements both to the efficiency and quality of their research, as well as noting that AIRR has enabled them to undertake a greater volume of research and pursue new types of work not otherwise feasible.

Moreover, despite AIRR's relatively short operational life to date, user feedback suggests that AIRR usage is already resulting in material research outputs such as publications or conference submissions. While downstream impacts such as commercial products take time to materialise, early evidence suggests AIRR is also already facilitating tangible improvements in UK innovation capacity and a large majority of users expect commercial impacts to materialise in future. AIRR's alignment with key national priorities and the government's five missions means that significant progress is also being made in areas of critical national importance such as healthcare, education, and green energy. Examples include AI research to support early detection of cancer and early-signs of Alzheimer's and other forms of dementia, and the development of vaccines.

Users also indicated that access to AIRR is already supporting AI skills development among less familiar users, supporting academic, academia-industry and public sector collaborations, and helping to expand the application of AI tools across their wider research and work.

Overall, AIRR is of critical importance to the UK AI research community, both in terms of widening access as well as through its contributions to the competitiveness of the UK AI ecosystem and as a place to undertake AI science**.** While other public compute resources exist, these systems typically lack both the sufficient quantity of the necessary AI chips required for AI workloads as well as sufficient available capacity to meet demand.

At the same time, commercial cloud alternatives exist and are expanding. These capabilities provide important complementary access to AI compute and are a viable option for many workloads, particularly for smaller-scale experimentation or short-term projects. However, accessing large-scale compute resources through the cloud at present remains costly and, in some cases, is constrained by limited availability of high-end compute resources as demand outpaces supply.[94] As a result, commercial cloud is an important complement but does not at present fully replace dedicated large-scale public AI compute for cutting-edge AI research. This is echoed by users, who

[94] For further discussion see Vexxhost (2026). The GPU Capacity Crisis: Why Enterprises Are Rethinking Where AI Runs in 2026. Available at: https://vexxhost.com/blog/gpu-capacity-crisis-ai-infrastructure-2026/

consistently cited that not being able to access AIRR would have had a significant impact on their ability to undertake their AI-related research or work.

In conclusion, the two capabilities have provided a significant boost to the UK's large-scale compute provision and while it is too early for many expected impacts to be measured by concrete data, early evidence provides confidence in the contribution that AIRR is already making and the importance of the system to the UK AI research community and the UK's international competitiveness.

Nevertheless, demand for AI compute resources is already starting to exceed available allocations and the UK is still at risk of falling behind international competitors, such as Germany and Italy, who have also heavily invested in large-scale compute, including AI compute. Moreover, while AIRR appears to meet the current computational needs of users, most users believe AIRR will be insufficient to fully meet their medium-term (beyond the next three years) needs.

In addition, a key takeaway from interviews with users is that many view the typical three-month allocation period, provided during Early Access and Gateway phases, as too short and not aligned with standard research cycles, which often last six to twelve months. They also felt that the requirement to reapply for additional resources each time introduces uncertainty and disrupts project continuity. At the same time, shorter allocations may help reduce "hoarding" of compute resource and increase agility in the allocation process. It should be noted that longer allocations are now available via, for example, the Innovator access route while staged allocation pathways offer pathways to additional compute resources following initial access via routes such as Gateway.

This highlights the importance of continued investment in AI and other large-scale compute infrastructure including the UK Government's planned additional investments in Dawn, further enhancing Dawn's compute capability by up to six times by spring 2026[95], and the wider 20x expansion of AIRR in order for the UK to meet the needs of researchers and innovators and remain competitive internationally.

[95] DSIT (2026). Cambridge supercomputer set to get 6 times more powerful as government backs British AI innovation. Press release. Available at: https://www.gov.uk/government/news/cambridge-supercomputer-set-to-get-6-times-more-powerful-as-government-backs-british-ai-innovation

PART IV: CONCLUDING REMARKS

11 Concluding remarks

This study assessed the programme set-up and governance of the initial AIRR investments into Dawn and Isambard-AI, the delivery of the two supercomputing capabilities, and the initial operational phase. It also assessed the extent to which evidence of impacts has already emerged from the early operational life of the two compute centres to understand how effectively the two AIRR projects are progressing towards achieving their intended outcomes.

Overall, this study found that delivery of the initial AIRR systems has been a success. The speed and efficiency with which the systems have been delivered is remarkable, particularly when compared to the multi-year lead time in procurement and delivery of typical HPC systems. User evidence also suggests an overall positive experience with the application process, onboarding and use of the two compute centres.

The focus on speed has meant that some aspects of AIRR were initially less fully developed, and in some cases are still being refined, and delivery experienced a number of unavoidable challenges. However, the phasing of AIRR investments with initial investments into Dawn and Isambard-AI and later scaling up of AIRR has proved to be a pragmatic and sensible approach to ensure rapid provision of capacity and an opportunity to learn from the initial delivery.

Dawn and Isambard AI have increased the overall compute capacity available in the UK, but also offer alternatives in terms of hardware and service philosophy that provide users with choices and the overall ecosystem with a certain resilience against lock-in or supply constraints in the hardware market. Iterative expansion should preserve these benefits.

The AIRR programme takes place against a background of expanding compute capacity globally, driven by very large investments by the private and public sectors. International comparison shows that UK compute provision has been losing ground to European and international comparators. Given the ecosystem benefits of AIRR, for which there is already an emerging body of evidence, the value of rapid delivery of compute capacity and the strategic dimension of the investment (potential early mover advantage) should be recognised and given sufficient weight in future decision making.

Moreover, while the evaluation was undertaken at an early stage in the operational life of the AIRR capabilities, with many of the benefits not yet having had time to filter through into tangible impacts, early evidence shows promising signs of the benefits already emerging from Dawn and Isambard-AI. In particular, the available evidence already highlights that access for researchers is seen as highly beneficial.

While there are also positive emerging signs, similarly clear evidence for commercial users is not yet available due to the early nature of the evaluation. Careful attention will need to be paid to how longer-term benefits materialise for different groups and how these benefits can be maximised through the future direction of AIRR, not just via the provision of compute, but also the access model and support infrastructure.

While there is clear evidence that the increase in compute capability delivered by AIRR accommodates already existing demand, the optimal rate of expansion and ultimate future sizing of AIRR remains uncertain. At the same time, now that the full range of allocations are taking place, including the new, large, Sovereign AI allocations, demand indicators are starting to already appear constrained by system capacity arguing against overly conservative, purely reactive scaling approaches.

Finally, it should be noted that the impact of AI-enabled R&D may be understated by the existing evidence. AI has the potential to accelerate the scientific discovery process. If this leads to faster accumulation and diffusion of knowledge, the long-run returns to early R&D investment could be even higher than suggested by historical literature. However, the magnitude and persistence of such effects remain uncertain.

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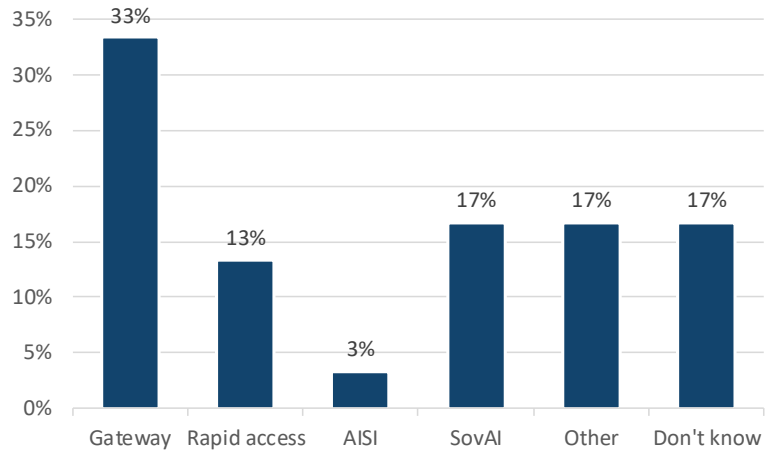
ANNEXES

Annex 1 Breakdown of survey responses received

A1.1 Process survey

Thirty responses were received to the process user survey undertaken by IFF Research. Of these, 1 respondent had used Dawn only, 25 respondents had used Isambard-AI only, and a further 4 respondents had used both systems. 83% of respondents (25 out of 30 respondents) had used other compute resources before. Further breakdowns in terms of access routes, user types, and type and topics of research undertaken are provided below.

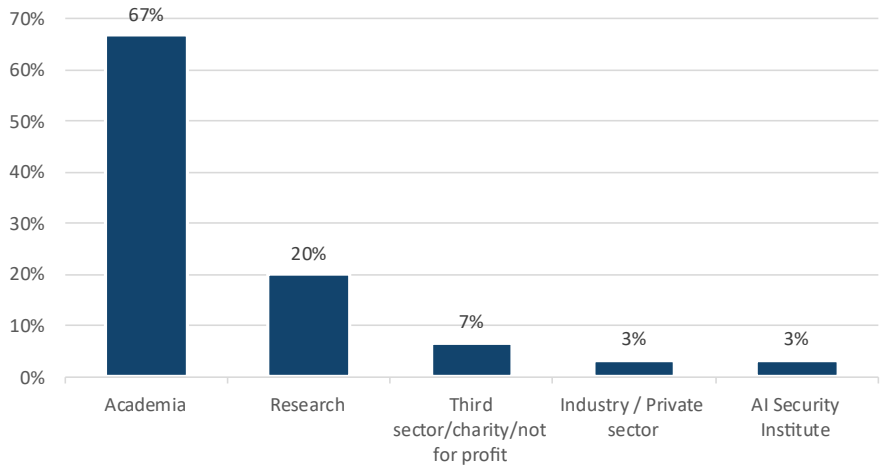
Figure 26 Responses by access route



Note: based on 30 responses to the question: "Through which stream/route did you gain access to the AIRR?"

London Economics analysis based on survey responses

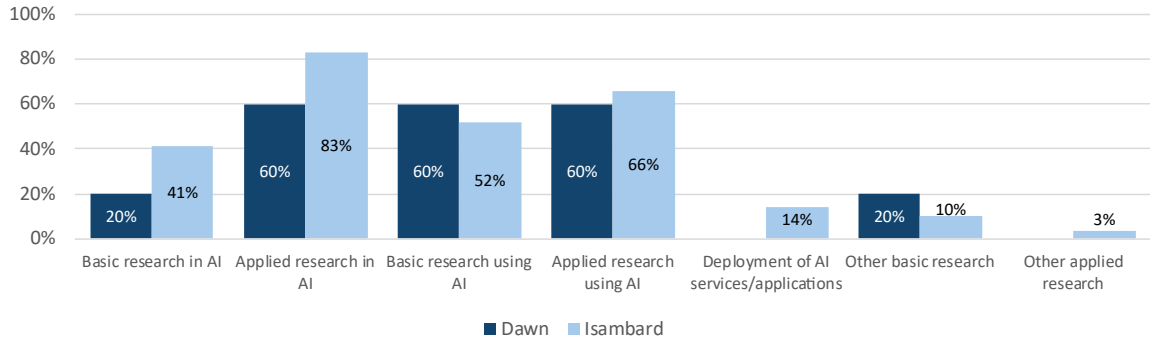
Figure 27 Responses by user type



Note: based on 30 responses to the question: "Which of the following sectors best describes the organisation you work for?"

London Economics analysis based on survey responses

Figure 28 Responses by type of research



Note: based on 30 responses to the question: "What type of research do you undertake using the AIRR?"

London Economics analysis based on survey responses

Table 12 Responses by research topic

Research topic	No. of responses	%
Atmosphere modelling	1	5%
Biomolecular simulations	5	24%
Chemistry	5	24%
Climate/ocean climate modelling	1	5%
Combustion modelling	0	0%
Computational engineering	2	10%
Computational fluid dynamics	2	10%
Geophysics	0	0%
Machine learning/AI (including natural language processing, generative AI, computer vision)	15	71%
Materials modelling	3	14%
Medical sciences	6	29%
Plasma sciences	1	5%
Quantum mechanics	3	14%
Other	5	24%
Don't know	0	0%

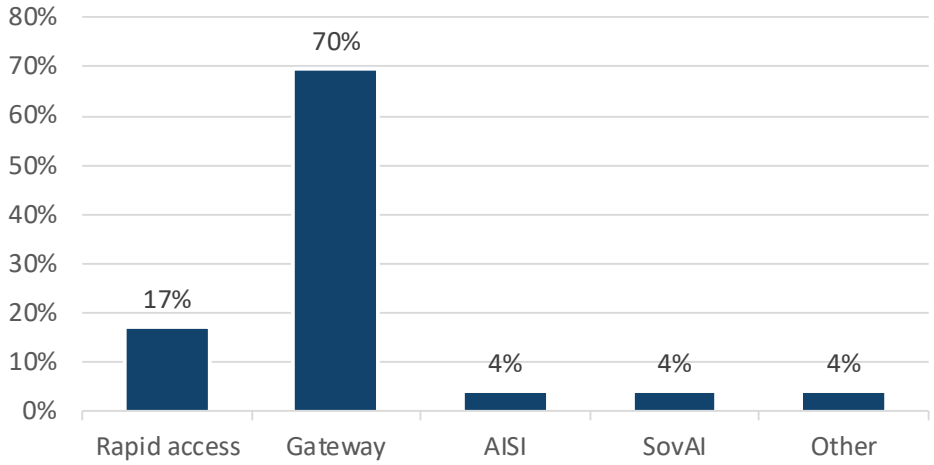
Note: based on 21 responses to the question: "What is your research area/topic?"

Source: London Economics analysis based on survey responses

A1.2 Impact survey

Forty-six responses were received to the impact user survey undertaken by IFF Research. Of these, 44 respondents had used Isambard-AI and 9 respondents had used Dawn. Further breakdowns in terms of access routes, user types, and type and topics of research undertaken are provided below.

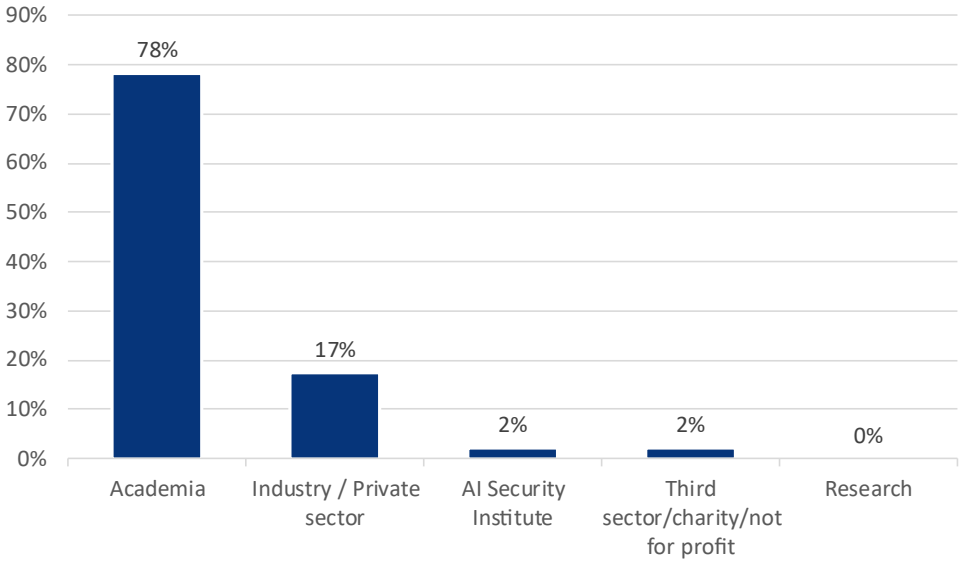
Figure 29 Responses by access route



Note: based on 46 responses to the question: "Through which stream/route did you gain access to the AIRR?"

London Economics analysis based on survey responses

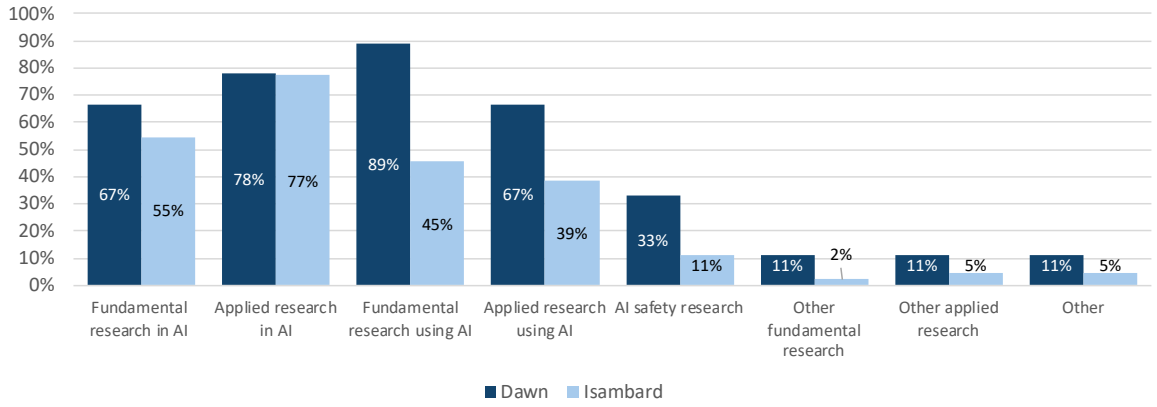
Figure 30 Responses by user type



Note: based on 46 responses to the question: "Which of the following sectors best describes the organisation you work for?"

London Economics analysis based on survey responses

Figure 31 Responses by type of research



Note: based on 46 responses to the question: "What type of research do you undertake using the AIRR?"

Source: London Economics analysis based on survey responses

Table 13 Responses by research topic

Research topic	No. of responses	%
Atmosphere modelling	0	0%
Biomolecular simulations	7	15%
Chemistry	2	4%
Climate/ocean climate modelling	3	7%
Combustion modelling	0	0%
Computational engineering	3	7%
Computational fluid dynamics	1	2%
Geophysics	0	0%
Machine learning/AI (including natural language processing, generative AI, computer vision)	25	54%
Materials modelling	1	2%
Medical sciences	14	30%
Plasma sciences	0	0%
Quantum mechanics	0	0%
Other	9	20%
Don't know	0	0%

Note: based on 46 responses to the question: "What is your research area/topic?"

Source: London Economics analysis based on survey responses

Annex 2 Impact survey questionnaire

A Introduction

INTRO: Firstly, we'd like to ask you a few questions about your role, your organisation and the capacity in which you have used the AI Research Resource (AIRR).

ASK ALL

A1 **Which of the following sectors best describes the organisation you work for?**

SINGLE CODE.

Academia	1	
Industry / Private sector	2	
Third sector/charity/not for profit	3	
Public sector organisation (including central government)	4	
Other (please specify)	5	WRITE IN
Don't know	6	

ASK ALL IN INDUSTRY/PRIVATE SECTOR (A1 = 2)

A2 **Which of the following categories best describes your organisation?**
SINGLE CODE.

Start-up company *DS TO ADD FURTHER INFORMATION BOX:* *A company that is young, typically operating for two years or less, which is independent and operates privately. These companies are usually founded by one or more entrepreneurs who want to develop a product or service for which they believe there is demand.*	1	
Micro business (i.e. 0-9 employees)	2	
Small/medium enterprise (i.e. more than 10 but less than 250 employees)	3	
Large business (i.e. 250 or more employees)	4	
Other (please specify)	5	WRITE IN
Don't know	6	

ASK ALL IN INDUSTRY/PRIVATE SECTOR (A1=1)

A2a **Which phase is your company in?**

SINGLE CODE.

Seed	1	
Series A	2	
Series B	3	
Series C	4	
Other (please specify)	5	WRITE IN
Don't know	6	

ASK ALL

A4 **What type of research do you undertake using the AIRR?**
MULTICODE.

Fundamental research in AI (e.g., fundamental exploration of AI algorithms, architectures, or theory)	1	
Applied research in AI (practical development or refinement of AI techniques for solving real-world problems)	2	
Fundamental research using AI (using existing AI tools to support fundamental research in another field)	3	
Applied research using AI (applying AI tools to solve practical problems in other domains)	4	
AI safety research (e.g., AI model evaluation, bias mitigation, etc.)	5	
Other fundamental research (foundational research not related to AI)	6	
Other applied research (practical research not related to AI)	7	
Other (Please specify)	8	WRITE IN
Don't know	9	EXCLUSIVE

ASK IF IN ACADEMIC OR POLICY (A1 = 1 OR 8)

A5 **What is your research area/topic?**
MULTICODE.

Atmosphere modelling	1	
Biomolecular simulations	2	
Chemistry	3	
Climate / ocean climate modelling	4	
Combustion modelling	5	
Computational engineering	6	
Computational fluid dynamics	7	
Geophysics	8	
Machine learning/AI (including natural language processing, generative AI, computer vision)	9	
Materials modelling	10	
Medical sciences	11	
Plasma sciences	12	
Quantum mechanics	13	
Other (please specify)	14	WRITE IN
Don't know	15	

ASK ALL

A6 **Which of the AIRR facilities have you used?**
MULTI CODE.

Dawn	1	
Isambard	2	
Don't know – but I have used one of them previously	3	EXCLUSIVE

ASK ALL

A7 **Through which stream/route did you gain access to the AIRR?**
SINGLE CODE.

Rapid access	1	
Gateway	2	
AISI	3	
SovAI	4	
Other (please specify)	5	WRITE IN
Don't know	6	

B Access to compute resource

INTRO: The following questions will ask about your experience of compute resources.

ASK ALL

B1 **Thinking of your experience from the application process to gaining access and using the AIRR, how would you rate your overall satisfaction? (B12 in process survey)**
SINGLE CODE.

Very satisfied	1	
Satisfied	2	
Neither satisfied nor dissatisfied	3	
Dissatisfied	4	
Very dissatisfied	5	
Don't know	6	

ASK ALL

B2 **To what extent do you agree or disagree that the benefits of using AIRR are worth the time and resources required to use it?**

Strongly agree	1	
Agree	2	
Neither agree nor disagree	3	
Disagree	4	
Strongly disagree	5	
Don't know	6	

ASK ALL

B3 **Since you began using the AIRR, have you needed more or less than your original allocation of compute?**
SINGLE CODE.

Less than originally allocated	1	
The same as originally allocated	2	
More than originally allocated	3	
Don't know	4	

ASK ALL

B4 **If you had not been able to access the AIRR, would there have been an alternative compute resource you could access?**

Yes	1	
No	2	
Don't know	3	

ASK IF COULD NOT ACCESS AN ALTERNATIVE COMPUTE RESOURCE (B4=2)

B5 **What would have been the main barrier to accessing alternative compute resource?**

WRITE IN		
Don't know	1	

ASK IF HAD AN ALTERNATIVE COMPUTER RESOURCE TO ACCESS (B4=1)

B6 **How likely or unlikely would you have been able to use any of the following compute resources instead?**
PLEASE SELECT ONE RESPONSE PER ROW.

	Very likely	Somewhat likely	Neither likely nor unlikely	Somewhat unlikely	Very unlikely	Don't know
Other (non-AI) UK public HPC resources (e.g., ARCHER2, Tier-2 centres)	1	2	3	4	5	6
Commercial Cloud computing	1	2	3	4	5	6
In-house / local university resources	1	2	3	4	5	6
International compute resources (e.g., Euro-HPC)	1	2	3	4	5	6
Other (please specify)	1	2	3	4	5	6

ASK ALL

B7 **What would the impact on your research/work have been in this scenario [IF B4 = 2:(I.e., no access to AIRR][IF B4=1(I.e., access to alternative compute resources only)]?**

Catastrophic impact (would have been unable to undertake my work/research)	1	
Major impact (a large part of my work/research would have been affected)	2	
Some impact (some of my research/work affected)	3	
Negligible impact (a small proportion of my research/work affected)	4	
No impact (none of my research/work affected)	5	
Don't know	6	

C AI Research capability and scientific output

Intro: The following set of questions are about your experience of using AIRR and the impact this has had on your research/work.

ASK ALL

C1 **Within your organisation, approximately what proportion of your AI-related research/work relies on access to AIRR?**
SINGLE CODE.

None of my AI-related research/work relies on AIRR	1	
A small proportion of my AI-related research/work relies on AIRR	2	
About half of my AI-related research/work relies on AIRR	3	
More than half of my AI-related research/work relies on AIRR	4	
Most or all of my AI-related research/work relies on AIRR	5	
Don't know	6	

C2

ASK ALL

C3 **To what extent does AIRR meet your current and future computational needs?**
SINGLE CODE.

	Fully meets my…	Somewhat meets my…	Neither meets nor does not meet my…	Falls somewhat short in meeting my…	Does not meet my…	Don't Know
_1 Current computational needs	1	2	3	4	5	6
_2 Short term computational needs (1-3 years)	1	2	3	4	5	6
_3 Medium term computational needs (beyond 3 years)	1	2	3	4	5	6

C4 ASK IF ANY C3_X = 4 OR 5

Why does AIRR not meet your current/future computational needs?
MULTICODE

Insufficient hardware accelerators (GPUs)	1	
Insufficient processing capacity (CPUs)	2	
Insufficient storage	3	
Insufficient compute time allocations	4	
Unsuitable hardware architecture	5	
Insufficient capacity resulting in long wait times	6	
Wrong architecture for my/my organisation's needs	7	
It is slow	8	
There is often operational downtime	9	
Insufficient memory per node	10	
Other (please specify)	11	WRITE IN
Don't know	12	EXCLUSIVE

ASK ALL

C5 **Compared to before you gained access to the AIRR, how would you rate your overall ability to undertake AI research?**
SINGLE CODE.

Much better	1	
Better	2	
About the same	3	
Worse	4	
Much worse	5	
Don't know	6	

ASK ALL

C6 **What improvements, if any, has the AIRR enabled that were previously unavailable to you? (G1 in process survey)**
MULTICODE.

Improved the quality of your research/work	1	
Improved the efficiency of your research/work	2	
Enabled you to undertake research/work you would not otherwise have been able to conduct	3	
Enabled new innovations, products or services	4	
Enabled you to do more research/work	5	
Other (please specify)	6	WRITE IN
None of these	7	EXCLUSIVE
Don't know	8	EXCLUSIVE

ASK IF C6 = 1, 2 or 4

C7 **To what extent has AIRR…**

	A little	Somewhat	A lot	A great deal	Don't know
_1 [IF C6=1] Improved the quality of your research/work?	1	2	3	4	5
_2 [IF C6=2] improved the efficiency of your research/work?	1	2	3	4	5
_3 [IF C6=5] increased the amount of research/work you have been able to do?	1	2	3	4	5

ASK ALL

C8 **How would you rate the impact that having access to the AIRR has had on your research/work? (G2 in process survey)**
SINGLE CODE.

Very positive	1	
Positive	2	
Neither positive nor negative	3	

Negative	4	
Very negative	5	
Not applicable – it has had no impact on my research/work	6	
Don't know	7	

ASK ALL

C9 **Which of the following best describes your view on the contribution AIRR has made, or is expected to make to your organisation's work/research?**
SINGLE CODE.

We would have achieved similar outcomes without AIRR	1	
We would have achieved similar outcomes without AIRR, but not as quickly	2	
We would have achieved some but not all of the outcomes that we have achieved with AIRR	3	
We probably would not have achieved similar outcomes without AIRR	4	
We definitely would not have achieved similar outcomes without AIRR	5	
Don't know	6	

D Computing Skills and Capability

ASK ALL

D1 **To what extent do you agree or disagree with the following statements?**

	Strongly disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Strongly agree	Don't Know
_1 AIRR has improved my level of AI-related skills	1	2	3	4	5	6
_2 AIRR has supported learning or training relevant to AI skills	1	2	3	4	5	6
_3 AIRR has contributed to expanding AI-related skills within my organisation or team	1	2	3	4	5	6
_4 AIRR has increased my confidence in deploying or adopting AI systems	1	2	3	4	5	6

	Strongly disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Strongly agree	Don't Know
_5 AIRR has enable me to integrate AI tools into my research/work	1	2	3	4	5	6

ASK ALL

D2 **To what extent has, or do you expect will, access to AIRR influenced your organisation's or team's ability to attract or retain skilled researchers or staff?**

	Significant contribution	Some contribution	Small contribution	Negligible / no contribution	Don't Know
_1 AIRR has already helped us attract skilled staff	1	2	3	4	5
_2 AIRR has already helped retain skilled staff	1	2	3	4	5
_3 We expect AIRR will help us attract skilled staff	1	2	3	4	5
_4 We expect AIRR will help us retain skilled staff	1	2	3	4	5

E Wider benefits

ASK ALL

E1 **Which of the following sectors, if any, do you expect will make use or benefit from the results of the research/work you undertake using AIRR? Please select all that apply.** *MULTICODE.*

Agriculture, Forestry and Fishing	1	
Mining & quarrying	2	
Manufacturing	3	
Electricity, Gas, Steam and Air Conditioning Supply	4	
Water Supply; Sewerage; Waste Management	5	
Construction	6	
Wholesale and Retail Trade/Repair of Motor Vehicles and Motorcycles	7	
Transportation and Storage	8	

Hospitality (inc. hotels) and Restaurants	9	
Information and Communication	10	
Financial/Insurance	11	
Real estate, renting or business activities	12	
Professional, Scientific and Technical activities	13	
Administrative and Support Service activities	14	
Public Administration and Defence	15	
Education	16	
Health & Social Work	17	
Arts, Entertainment and Recreation	18	
Other Service activities	19	
Private households with employees	20	
Extraterritorial organisations and bodies	21	
Other (please specify)	22	WRITE IN
Don't know	23	EXCLUSIVE

ASK ALL

E2 **As part of your AIRR work, were you part of any collaborations with industry, the public sector or other academics (in the UK or abroad)? Please select all that apply.** *MULTICODE.*

Yes, with industry	E3 1	
Yes, with academia	E4 2	
Yes, with the public sector	E5 3	
No, we were not part of any collaborations	E6 4	EXCLUSIVE

ASK ALL THAT COLLABORATED WITH OTHER ORGANISATIONS AS PART OF THEIR AIRR WORK (E2 = 1, 2 OR 3)

E7 **Thinking about AIRR and opportunities it may have provided for collaboration, to what extent would you agree or disagree with the following statements?**

	Strongly disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Strongly agree	Don't Know
_1 AIRR has encouraged me to collaborate	1	2	3	4	5	6
_2 AIRR has helped to facilitate these collaborations	1	2	3	4	5	6
_3 AIRR has increased collaboration with other HPC researchers internationally	1	2	3	4	5	6
_4 AIRR has been a key facilitator of academic knowledge exchange	1	2	3	4	5	6

ASK ALL

E8 **To what extent do you agree or disagree with the following statements about AIRR?**
SINGLE CODE.

	Strongly disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Strongly agree	Don't Know
_1 AIRR helps to make the UK AI ecosystem more competitive	1	2	3	4	5	6
_2 AIRR makes the UK more attractive as a place to undertake AI science	1	2	3	4	5	6
_3 AIRR enables the UK to take a leading role in AI research and AI safety globally	1	2	3	4	5	6

F Innovation and Industry Impacts

ASK INDUSTRY USERS ONLY (A1 = 2)

F1 **To what extent would you agree or disagree that AIRR has accelerated innovation within your organisation?**
SINGLE CODE.

Strongly disagree	1	
Disagree	2	
Neither disagree nor agree	3	
Agree	4	
Strongly agree	5	
Don’t know	6	

ASK ALL

F2 **Has your work on AIRR already led, or is it expected to lead to the creation of any of the following? Please select all that apply.**
PLEASE SELECT A SINGLE CODE PER ROW.

	Yes, our work has already resulted in…	We expect our work to lead to…	No, we have not and do not expect our work to lead to…
_1 Research outputs (e.g. publications, conference submissions)	1	2	3
_2 Commercial products (e.g. software, platforms, APIs)	1	2	3
_3 IP generation (e.g. patents, proprietary methods)	1	2	3

ASK ALL

F3 **To what extent would you agree or disagree that having access to AIRR contributed to, or will contribute to, your ability to do/produce the following?**
PLEASE SELECT A SINGLE CODE PER ROW.

	Strongly disagree	Disagree	Neither agree nore disagree	Agree	Strongly agree	Don't know
_1 [IF F2_1 = 1] Research outputs (e.g. publications, conference submissions)	1	2	3	4	5	6
_2 [IF F2_2 = 1] Commercial products (e.g. software, platforms, APIs)	1	2	3	4	5	6
_3 [IF F2_3 = 1] IP generation (e.g. patents, proprietary methods)	1	2	3	4	5	6

ASK INDUSTRY USERS ONLY (A1 = 2)

F4 **To what extent do you agree or disagree with the following statements in relation to AIRR?**

	Strongly disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Strongly agree	Don't Know
_1 My organisation has reduced costs as a direct result of access to AIRR (e.g. because access is cheaper than accessing a commercial facility, not for cost savings resulting from the usage of AIRR)	11	22	33	44	55	66
_2 AIRR has helped, or is expected to help my organisation reduce costs through efficiency gains, or growth of the wider business as a result of AIRR usage (cost	71	82	93	104	115	126

	Strongly disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Strongly agree	Don't Know
saving resulting from use, not cost savings from cheaper access)						
_3 AIRR has helped, or is expected to help, my organisation to increase its sales/turnover or profit (e.g. through efficiency gains as a result of AIRR usage)	131	142	153	164	175	186
_4 AIRR has contributed to, or is expected to contribute to, growth for my organisation	191	202	213	224	235	246
_5 AIRR has contributed to, or is expected to contribute to, my organisation securing funding/investment	251	262	273	284	295	306

G AI Safety and Security

ASK USERS THAT SELECTED “AI SAFETY RESEARCH” IN A4 (A4 = 5)

G1 **To what extent would you agree or disagree with the following statements?**
SINGLE CODE PER ROW

	Strongly disagree				Strongly agree	Don't Know
_1 AIRR has supported my organisation’s ability to conduct research related to AI safety	1	2	3	4	5	6
_2 AIRR has strengthened my organisation’s ability to evaluate or mitigate AI system risks	1	2	3	4	5	6

ASK ALL WHO ARE UNDERTAKING AI SAFETY RESEARCH (A4 = 5)

G2 **How important has AIRR been in enabling you/your organiastion to meet your AI safety-related research objectives?**
SINGLE CODE.

Extremely important	1	
Somewhat important	2	
Neither important nor unimportant	3	
Somewhat important	4	
Not at all important	5	
Don’t know	6	

H Re-contact and Close

ASK ALL

H1 **You have now completed the survey, thank you very much for your time.**

Do you give permission for IFF Research to re-contact you if they need to clarify any of the information you have provided in the survey?

Yes	1	
No	2	

ASK ALL

H2 **IFF and London Economics will shortly be conducting some further research to explore these topics in more detail in a number of in-depth discussions. Would you be happy for someone from IFF to re-contact you and invite you to take part?**

Yes	1	
No	2	

ASK ALL WHO WISH TO PARTICIPATE IN QUAL FOLLOW UP (H2 = 1)

H3 **Thanks so much for agreeing to participate.**

Finally, please could you confirm your name and re-confirm your email address.

WRITE IN NAME	1	
WRITE IN EMAIL ADDRESS	2	
WRITE IN TELEPHONE NUMBER	3	

FINAL SCREEN – SHOW ALL

On behalf of the Department for Science, Innovation and Technology, London Economics and IFF Research, thank you very much for your time.

If you'd like a copy of your data, to change your data or for your data to be deleted then please go to http://www.iffresearch.com/gdpr/ for more information.

Annex 3 Process survey questionnaire

I Introduction

INTRO: Firstly, we'd like to ask you a few questions about your role, your organisation and the capacity in which you have used the AI Research Resource (AIRR).

ASK ALL

I1 **Which of the following sectors best describes the organisation you work for?**

SINGLE CODE.

Academia	1	
Industry / Private sector	2	
AI Security Institute	3	
Third sector/charity/not for profit	4	
Research	5	
Other (please specify)	6	WRITE IN
Don't know	7	

ASK ALL IN INDUSTRY/PRIVATE SECTOR (A1 = 2)

I2 **Which of the following categories best describes your organisation?**
SINGLE CODE.

Start-up company *DS TO ADD FURTHER INFORMATION BOX:* *A company that is young, typically operating for two years or less, which is independent and operates privately. These companies are usually founded by one or more entrepreneurs who want to develop a product or service for which they believe there is demand.*	1	
Micro business (i.e. 0-9 employees)	2	
Small/medium enterprise (i.e. more than 10 but less than 250 employees)	3	
Large business (i.e. 250 or more employees)	4	
Other (please specify)	5	WRITE IN

Don't know	6	

ASK ALL IN INDUSTRY, PRIVATE SECTOR (A1 = 2)

I3 **What is the main activity of your business?**
SINGLE CODE.

Agriculture, Forestry and Fishing	1	
Mining & quarrying	2	
Manufacturing	3	
Electricity, Gas, Steam and Air Conditioning Supply	4	
Water Supply; Sewerage; Waste Management	5	
Construction	6	
Wholesale and Retail Trade/Repair of Motor Vehicles and Motorcycles	7	
Transportation and Storage	8	
Hospitality (inc. hotels) and Restaurants	9	
Information and Communication	10	
Financial/Insurance	11	
Real estate, renting or business activities	12	
Professional, Scientific and Technical activities	13	
Administrative and Support Service activities	14	
Public Administration and Defence	15	
Education	16	
Health & Social Work	17	
Arts, Entertainment and Recreation	18	
Other Service activities	19	
Private households with employees	20	
Extraterritorial organisations and bodies	21	

Other (please specify)	22	WRITE IN
Don't know	23	

ASK ALL

I4 **What type of research do you undertake using the AIRR?**
MULTICODE.

Basic research in AI (e.g., fundamental exploration of AI algorithms, architectures, or theory)	1	
Applied research in AI (practical development or refinement of AI techniques for solving real-world problems)	2	
Basic research using AI (using existing AI tools to support fundamental research in another field)	3	
Applied research using AI (applying AI tools to solve practical problems in other domains)	4	
Deployment of AI services/applications (real-world implementation and operation of AI systems or products)	5	
Other basic research (foundational research not related to AI)	6	
Other applied research (practical research not related to AI)	7	
Other (Please specify)	8	WRITE IN
Don't know	9	EXCLUSIVE

ASK IF IN ACADEMIC OR POLICY (A1 = 1 OR 3)

I5 **What is your research area/topic?**
MULTICODE.

Atmosphere modelling	1	
Biomolecular simulations	2	
Chemistry	3	
Climate / ocean climate modelling	4	
Combustion modelling	5	
Computational engineering	6	
Computational fluid dynamics	7	

Geophysics	8	
Machine learning/AI (including natural language processing, generative AI, computer vision)	9	
Materials modelling	10	
Medical sciences	11	
Plasma sciences	12	
Quantum mechanics	13	
Other (please specify)	14	WRITE IN
Don't know	15	

ASK ALL

I6 **Which of the AIRR facilities have you used?**
MULTI CODE.

Dawn	1	
Isambard	2	
Don't know – but I have used one of them previously	3	EXCLUSIVE

ASK ALL

I7 **Through which stream/route did you gain access to the AIRR?**
SINGLE CODE.

Rapid access	1	
Gateway	2	
AISI	3	
SovAI	4	
Other (please specify)	5	WRITE IN
Don't know	6	

ASK ALL

I8 **Have you used other compute resources before?**
SINGLE CODE.

Yes	1	
No	2	
Don't know	3	

IF USED COMPUTE RESOURCES BEFORE (A8=1)

I9 **If yes, which ones?**

WRITE IN		
Don't know	1	

J Application and Onboarding process

INTRO: The following questions will ask about your experience of the application process to access the AIRR and the onboarding process.

ASK ALL

J1 **How did you become aware of the AIRR? Please select all that apply.**
MULTICODE.

UK Research and Innovation (UKRI)	1	
Research Council	2	
University of Bristol	3	
University of Cambridge	4	
Other University	5	
Colleagues/word of mouth	6	
Press release	7	

Online (e.g. search engine)	8	
High-performance computing consortia	9	
Department for Science, Innovation and Technology (DSIT)	10	
Other (please specify)	11	WRITE IN
Don't know	12	EXCLUSIVE

ASK ALL

J2 **To what extent do you agree that information about the AIRR's performance capabilities was…**
PLEASE SELECT ONE RESPONSE PER ROW.

	Strongly disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Strongly agree	Don't Know
_1 Easily available	1	2	3	4	5	6
_2 Comprehensive	1	2	3	4	5	6
_3 Accurate	1	2	3	4	5	6

ASK ALL

J3 **Thinking about the application process for access to the AIRR, to what extent did you find it…?**
PLEASE SELECT ONE RESPONSE PER ROW.

	Very	Somewhat	Not very	Not at all	Don't know
_1 Straightforward to follow and understand instructions	1	2	3	4	5
_2 User friendly and easy to navigate	1	2	3	4	5
_3 Efficient	1	2	3	4	5

ASK ALL

J4 **Which, if any, of the following issues did you experience during the application process to AIRR?**
MULTICODE.

Difficulty assessing how much resource(s) you would need for the application	1	

Missing information and support on application process	2	
Information and support that was available during the application process was unclear or unhelpful	3	
Was not clear how to assess the amount of capacity access needed	4	
Too much information was requested	5	
Once application was submitted, there was a slow response time	6	
Other (please specify)	7	WRITE IN
Not applicable: I did not experience any issues during the application process to AIRR	8	EXCLUSIVE
Don't know	9	EXCLUSIVE

ASK ALL

J4b **What could have improved your experience of the application and onboarding processes to the AIRR? Please give as much detail as possible.**

WRITE IN		
Not applicable: Nothing could have improved my experience of the application and onboarding processes	1	
Don't know	2	

ASK ALL

J5 **Was it clear to you how decisions were made about who can access the AIRR?**

Yes	1	
No	2	
Don't know	3	

ASK ALL WHO HAVE USED COMPUTE RESOURCES BEFORE (A8=1)

J6 **Thinking about other compute resources you have previously used, how would you rate using the AIRR in terms of the following?**
PLEASE SELECT ONE RESPONSE PER ROW.

	Much worse	A bit worse	About the same	Better	Much better	Don't Know
_1 Ease of using the AIRR system	1	2	3	4	5	6
_2 User-friendliness of the AIRR system	1	2	3	4	5	6
_3 Efficiency of the AIRR system	1	2	3	4	5	6
_ 4 Amount of information required to access the AIRR system	1	2	3	4	5	6

ASK ALL

J7 **Approximately how long did it take to gain access to the AIRR from your application being approved?**
SINGLE CODE.

Less than a week	1	
A week – 2 weeks	2	
2 – 4 weeks	3	
More than 4 weeks	4	
Don’t know	5	

ASK ALL

J8 **Did the time it took to gain access to the AIRR meet your expectations?**
SINGLE CODE.

Yes	1	
No – it was quicker than expected	2	
No – it took longer than expected	3	
Don’t know	4	

ASK ALL

J9 **To what extent do you agree or disagree that the benefits/values of using AIRR outweigh the time and resources needed to access it?**

Strongly agree	1	

Agree	2	
Neither agree nor disagree	3	
Disagree	4	
Strongly disagree	5	
Don't know	6	

ASK ALL

J10 **How informed, or not, did you feel about the following?**
PLEASE SELECT ONE RESPONSE PER ROW

	Very well informed	Well informed	Somewhat informed	Not well informed	Not informed at all	Don't know
_1 AIRR system updates	1	2	3	4	5	6
_2 Maintenance (i.e. service downtime)	1	2	3	4	5	6
_3 Policy changes (e.g. changes in allocation/usage, access and security etc.)	1	2	3	4	5	6
_4 Other (general updates)	1	2	3	4	5	6

ASK ALL

J11 **Have you used the AIRR portal (applying to use AIRR)?**
SINGLECODE.

Yes, I have used the AIRR portal	1	
No, I have not used the AIRR portal	2	
Don't know	3	

ASK ALL

J12 **Thinking of your experience of the application process to gaining access and using the AIRR, how would you rate your overall satisfaction?**
SINGLE CODE.

Very satisfied	1	
Satisfied	2	

Neither satisfied nor dissatisfied	3	
Dissatisfied	4	
Very dissatisfied	5	
Don't know	6	

K Capacity utilisation

Intro: The following set of questions are about your experience of accessing the AIRR's additional capacity.

ASK ALL

K1 **Since you began using the AIRR, have you found the access you have needed was…?**
SINGLE CODE.

Less than originally allocated	1	
The same as originally allocated	2	
More than originally allocated	3	
Don't know	4	

ASK IF RESPONDENT HAS NEEDED ACCESS TO MORE AIRR RESOURCES THAN ALLOCATED (C1 = 3)

K2 **Have you requested access to additional capacity of the AIRR?**
SINGLE CODE.

Yes	1	
No	2	
Don't know	3	

ASK ALL WHO HAVE REQUESTED ACCESS TO ADDITIONAL CAPACITY (C2 = 1)

K3 **To what extent did you find the process of requesting access to additional capacity of the AIRR…?**
SINGLE CODE PER ROW.

	Very	Somewhat	Not very	Not at all	Don't know
_1 Straightforward	1	2	3	4	5
_2 User friendly	1	2	3	4	5
_3 Efficient	1	2	3	4	5

ASK ALL WHO DID NOT FIND THE PROCESS STRAIGHTFORWARD (C3_1 = 3 OR 4)

K4 **Which, if any of the following, were reasons you did not find the process for requesting access to additional capacity straightforward?**
MULTI CODE. RANDOMISE.

There is no established process	1	
There was a lack of information/clarity about the process	2	
There was a lack of dedicated support staff to help with my request	3	
There was a lack of response to my raised request	4	
The time taken to respond to my request was too long	5	
The process is too complex	6	
Other (please specify)	7	WRITE IN, FIX
Don't know	8	EXCLUSIVE

ASK ALL WHO DID NOT FIND THE PROCESS USER-FRIENDLY (C3_2 = 3 OR 4)

K5 **Which, if any of the following were reasons you did not find the process for requesting access to additional capacity user-friendly?**
MULTI CODE. RANDOMISE.

There is no established process	1	
There was a lack of information/clarity about the process	2	
There was a lack of dedicated support staff to help with my request	3	
There was a lack of response to my raised request	4	
The time taken to respond to my request was too long	5	
The process is too complex	6	
Other (please specify)	7	WRITE IN, FIX

Don’t know	8	EXCLUSIVE

L User Requirements and Technical Performance

ASK ALL

L1 **To what extent would you suggest the AIRR system infrastructure (e.g. the number and type of central processing units (CPUs) and graphics processing units (GPUs), cores per node, memory per node, etc.) is well-suited to your/your team’s project needs?**
SINGLE CODE.

Very well suited	1	
Somewhat well suited	2	
Not very well suited	3	
Not at all well suited	4	
Don’t know	5	

ASK ALL WHO SAID AIRR INFRASTRUCTURE IS NOT SUITED TO PROJECT NEEDS (D1 = 3 OR 4)

L2 **What do you think could be improved within the AIRR infrastructure to better suit your project needs?**

WRITE IN		
Don't know	1	

ASK ALL

L3 **To what extent do you feel confident that you/your team have the right skills to use the AIRR?**
SINGLE CODE.

Very confident	1	
Somewhat confident	2	
Not very confident	3	

Not at all confident	4	
Don't know	5	

ASK ALL

L4 **How satisfied are you with the performance of the AIRR?**
SINGLE CODE.

	Very satisfied	Somewhat satisfied	Neither satisfied nor unsatisfied	Somewhat dissatisfied	Strongly dissatisfied	Don't Know
_1 [IF A6 = 1] Dawn	1	2	3	4	5	6
_2 [IF A6 = 2] Isambard	1	2	3	4	5	6

ASK ALL DISSATISFIED WITH AIRR'S PERFORMANCE (D4_X = 4 OR 5)

L5 **Why have you been dissatisfied with the AIRR's computational performance? Please select all that apply.**
MULTI CODE. RANDOMISE.

It is slow	1	
There is often operational downtime	2	
Operational downtime can last a long time	3	
Insufficient **computing performance** (GPU processing power) to serve research needs	4	
Insufficient memory per node	5	
Insufficient **hardware accelerators** (GPU processing power) to serve research needs	6	
Insufficient storage	7	
Insufficient compute time to allow the level of usage I need	8	
Insufficient capacity resulting in long wait times	9	
Wrong architecture for my needs	10	
Other (please specify)	11	WRITE IN, FIX
Don't know	12	EXCLUSIVE, FIX

M User support, training and feedback

ASK ALL

M0 **Have you needed to receive support from AIRR staff, for any reason?**
MULTICODE.

Yes, for onboarding support	1	
Yes, for general operations support	2	
No	3	EXCLUSIVE
Don't know	4	EXCLUSIVE

ASK ALL

M1 **Thinking about your time using the AIRR so far (including the onboarding process), to what extent do you feel the support you have accessed was adequate, in terms of the following?**
SINGLE CODE.

	Very	Somewhat	Not very	Not at all
_1 [if E0=1]: Onboarding support received from AIRR staff	1	2	3	4
_2 [if E0=2]: General operations support received from AIRR staff	1	2	3	4
_3 Quality of training and information resources	1	2	3	4

ASK ALL WHO DO NOT FEEL THEY HAVE ACCESS TO ADEQUATE STAFF SUPPORT
((E1_1 = 3 OR 4) OR (E1_2 = 3 OR 4))

M2 **Why do you feel that you do not have access to adequate AIRR staff support?**
MULTI CODE.

Time taken to receive responses is too long	1	
Poor communication of key updates and notifications (e.g. planned system maintenance, breaches)	2	
Support staff have insufficient knowledge to provide the support needed	3	
Other (please specify)	4	WRITE IN, FIX
Don't know	5	EXCLUSIVE, FIX

ASK ALL WHO DO NOT FEEL THEY HAVE BEEN GIVEN SUFFICIENT TRAINING ON AIRR (E1_3 = 3 OR 4)

M3 **What do you think is missing from the training and information resources you have been given?**

WRITE IN		
Don't know	1	

ASK ALL

M4 **Have you ever given feedback on your experience with the AIRR?**
SINGLE CODE.

Yes	1	
No	2	
Don’t know	3	

ASK ALL WHO HAVE GIVEN FEEDBACK ON EXPERIENCE WITH THE AIRR (E4 = 1)

M5 **To your knowledge, has your feedback been implemented?**
SINGLE CODE.

Yes	1	
No	2	
Don’t know	3	

N Accessibility of AIRR Interfaces

ASK ALL

N1 **How easy or difficult did you find the following to use?**
SINGLE CODE PER ROW

	Very easy	Easy	Neither easy nor difficult	Difficult	Very difficult	Don't Know
_1 [IF B11=1] AIRR portal	1	2	3	4	5	6
_2 Any other access route used	1	2	3	4	5	6

ASK ALL WHO FOUND AIRR PORTAL DIFFICULT TO USE (F1_1 = 4 OR 5)

N2 **What do you think could be done to make the AIRR portal for federated access easier to use?**

WRITE IN		
Don't know	1	

O Early Impact

ASK ALL

O1 **What improvements, if any, has the AIRR enabled that were previously unavailable to you?**
MULTICODE.

Improved the quality of your research	1	
Improved the efficiency of your research	2	
Enabled you to undertake research you would not otherwise have been able to conduct	3	
Enabled new innovations	4	
Enabled you to do more research	5	
Other (please specify)	6	WRITE IN
None of these	7	EXCLUSIVE
Don’t know	8	EXCLUSIVE

ASK ALL

O2 **How would you rate the impact that having access to the AIRR has had on your research/work?**
SINGLE CODE.

Very positive	1	
Positive	2	
Neither positive nor negative	3	
Negative	4	
Very negative	5	
Not applicable – it has had no impact on my research/work	6	
Don't know	7	

P Re-contact

ASK ALL

P1 **You have now completed the survey, thank you very much for your time.**

Do you give permission for IFF Research to re-contact you if they need to clarify any of the information you have provided in the survey?

Yes	1	
No	2	

ASK ALL

P2 **IFF and London Economics will shortly be conducting some further research to explore these topics in more detail in a number of in-depth discussions. Would you be happy for someone from IFF to re-contact you and invite you to take part?**

Yes	3	
No	4	

ASK ALL WHO WISH TO PARTICIPATE IN QUAL FOLLOW UP (H2 = 1)

P3 **Thanks so much for agreeing to participate.**

Finally, please could you confirm your name and re-confirm your email address.

WRITE IN NAME	1	
WRITE IN EMAIL ADDRESS	2	
WRITE IN TELEPHONE NUMBER	3	

FINAL SCREEN – SHOW ALL

On behalf of the Department for Science, Innovation and Technology, London Economics and IFF Research, thank you very much for your time. If you'd like a copy of your data, to change your data or for your data to be deleted then please go to http://www.iffresearch.com/gdpr/ for more information.

Annex 4 Interview topic guide

A Background and Role (5 mins)

INTERVIEWER NOTE: This section is to establish context about the interviewee and their organisation.

ASK ALL

A1 **To start off, can you tell me a bit about yourself/your organisation? Can you describe the type of work/research that you/your team/your organisation does?**

PROBE ON:

- Academic institution and department, SME, start-up, government body, other
- Discipline/domain (e.g. science, engineering, social impact, industry)
- Industry (e.g., life sciences, finance, etc.)

INTERVIEWER NOTE: the second question is to establish what the organisation does in general, not just in regard to high-performance computing (HPC).

A2 **What is your specific role within your organisation/on the project?**

PROBE ON: Size of the team?

A3 **How experienced are you/your organisation with using High-performance computing (HPC)/AI compute?**

PROBE ON:

- How long have you used HPC for?
- IF USED: Which centres?
- First time user? IF YES: Do you have experience with using commercial cloud services?

ASK IF RESPONDENT IS FROM THE PROCESS (FIRST) SURVEY (see booking sheet):

A4 **To confirm, which AIRR facility are you using: Dawn, Isambard-AI, or both?**

B AIRR Research/work context (8 mins)

INTERVIEWER NOTE: This section is to understand the work they are using AIRR for, how that fits into the work their organisation does, and where AI compute comes in.

B1 **Can you tell us about the specific research/work you are undertaking on the AIRR?**

PROBE ON:

- Is it an academic research project/industry project with view to create a product (what is the product?), early-stage industrial research, etc.

A)

- Is it undertaken by them alone or in collaboration with partners? If collaborating, who are their partners (industry/academia, etc.)?

B2 **How does your project fit in with the wider work that your team/organisation does?**

B3 **What are the primary goals or problems that your work seeks to address?**

PROBE ON:

- Who is the target audience of your work? (e.g. businesses in a certain sector; government; other academics; themselves for academic purposes only)

B4 **Please walk me through a typical project or workflow in your work/research.**

B5 **And how are you currently using the AIRR within that workflow, where does it fit in?**

PROMPT:

- What is your frequency of use of AIRR?
- What kind of workloads or tasks do you run on the AIRR system?

C **Importance/benefits of AIRR (5 mins)** ***(PRIORITY SECTION)***

INTERVIEWER NOTE: This section is to understand the importance of AIRR for their research/work and what benefits it has brought to their research/work.

C1 **How important would you say the AIRR is to your work/research? Why?**

INTERVIEWER NOTE: Try to assess if Very/somewhat/neutral/not so/Not important for the Framework

C2 **What proportion of your overall project time is dependent on AIRR/AI compute?**

INTERVIEWER NOTE: Looking to get an idea of what proportion of their overall work/research is AI compute vs. non-AI compute work – percentage range would be ideal.

- What level of value does your work which uses AIRR/AI compute deliver compared to its proportion of the research?

C3 **What benefits, if any, has access to the AIRR provided for your work?**

PROMPT:

- How has AIRR changed what you are able to do? (e.g. has it improved/decreased the 'time-to-results', have you been able to tackle more complex problems, has it improved the quality/rigour of your research, has it enabled you to do completely new work?)

D **Outcome/impact of their work (6 mins) - *(PRIORITY SECTION)***

INTERVIEWER NOTE: This section is to understand the impact of compute access on broader outcomes.

D1 **What outputs do you expect to produce from the work you have done using the AIRR?**

PROBE:

- New scientific publications/citations
- New software/AI tools
- IP/patents

D2 **What impact do you expect your work to have for you or your organisation (if any)?**

PROMPT: revenue generation, potential sales, cost savings, productivity gains. Short-term vs long-term outcomes; impact on stakeholders/beneficiaries

IF INDUSTRY: organisational growth

IF ACADEMIA: cost savings on experiments / simulations, productivity gains, improved quality of work, etc.

D3 **And what wider impact, if any, do you expect your work to have beyond your organisation?**

PROMPTS:

- Some examples could be: scientific advances, societal benefits, policy influence, cost savings / productivity improvements for other firms or government departments (e.g., reduced wait times in the NHS if work targets healthcare sector).

D4 **Has access to the AIRR influenced the scale or reach of that impact?**

IF YES: How has it influenced the scale/reach?

E Counterfactual: Without Access (5 mins) - *(PRIORITY SECTION)*

INTERVIEWER NOTE: To explore the additional value of AIRR.

E1 **If you did not have access to the AIRR, what would you have done instead?**

PROMPT:

- Alternative infrastructure? (commercial cloud, local clusters, downsized models)

E2 **How would that have affected your work? Would your work still be possible? Would you have achieved the same outcomes/impacts?**

E3 **What would be lost (for you/your organisation or your field) if access to AIRR was reduced or removed?**

F Willingness to Pay relative to commercial cloud (5 mins) - *(PRIORITY SECTION)*

INTERVIEWER NOTE: This is a hypothetical set of questions to help put a monetary value on the economic value of AIRR. The information will not be used to set charges for AIRR.

F1 **If access to compute on AIRR had a cost attached, would you be willing to pay for it compared to not having access to it at all? Why?**

F2 **And now thinking about if access to compute on AIRR had a cost attached, would you expect to pay more than, about the same as, or less than commercial cloud services for equivalent workloads? Why?**

INTERVIEWER NOTE: Commercial cloud examples:

Amazon AWS P5 instances with NVIDIA H100 GPUs charge $55 / GPU hour on demand - though 45% savings are available for a 1 year commitment.

P5en with NVIDIA H200 GPUs charge around $63 / GPU hour on demand - 25% savings are available for a 1 year commitment.

F3 **What specific aspects of the AIRR facility, if any, would justify paying a premium for AIRR over commercial cloud services?**

PROMPT:

- Performance, scale/availability
- Larger, more specialised hardware
- Compliance, data locality or governance
- Dedicated support and expertise

F4 **And are there any aspects that make you expect a lower price for AIRR than commercial cloud services?**

PROMPT:

- Less flexible access to AIRR

F5 **Approximately how much more or less (e.g., a percentage range) would still represent good value for money for you before you would reconsider using AIRR? Why?**

INTERVIEWER NOTE: If respondent is unable to give a percentage range, try to test question with suggested percentage ranges e.g. 'if the price of AIRR was 25-30% higher or lower than commercial cloud services, how would that impact your decision to use AIRR?'

G User Requirements (8 mins)

INTERVIEWER NOTE: This section is to help understand the fit of AIRR to the user's requirements.

G1 **How well suited is the AIRR system infrastructure to your project needs?**

PROMPT (IF DAWN USER): How suitable do you find the Intel chips?

(INTERVIEWER NOTE: Dawn uses 1000+ Intel graphics processing units (GPU).

G2 **Were you given enough AIRR compute time to meet your project needs?**

PROBE: Before applying for compute time, did you have a clear understanding how much time you would need to avoid underuse?

ASK H3 IF DID NOT HAVE ENOUGH AIRR COMPUTE TIME AT H2:

G3 **If you requested additional compute allocation, did you find the process for requesting this straightforward? Were you successful in obtaining additional compute allocation?**

G4 **When during your allocation period did you consume the majority of your compute allocation, and why?**

INTERVIEWER NOTE: Expected responses: early in the allocation period/used it continuously throughout/used most of it towards the end

ASK H5 IF USED COMPUTE ALLOCATION TOWARDS THE END:

G5 **Why did you consume most of your compute allocation towards the end of the allocation period?**

PROMPTS:

Was this because you needed to develop code?

Did you need to familiarise yourself with the system first?

ASK ALL:

G6 **How, if at all, are you currently giving user feedback?**

ASK H7 IF GIVING FEEDBACK AT H6:

G7 **Do you feel this approach of providing feedback is effective? Do you feel that your feedback is being acknowledged and acted upon?**

H Application/onboarding process (3 mins) *(LOWER PRIORITY)*

INTERVIEWER NOTE: This section is to gain insights on the application and onboarding processes.

H1 **How did you hear about the opportunity to access the AIRR?**

IF IT WAS SHARED DIRECTLY WITH THEM BY DSIT/UKRI/AISI (i.e. all who did not seek it out themselves): **Did you feel the outreach to the user community was effective?**

IF NO: How could this have been improved?

H2 **How was your experience applying for access to the AIRR?**

PROBE: Did you feel adequately supported during the application process?

H3 **How confident did you feel using the system after onboarding?**

PROBE: Did you feel adequately supported during the onboarding process and in the period that followed?

H4 **How did you find the onboarding information? (e.g., documentation, training, induction sessions)**

I **Usage experience (8 mins)**

I1 **How easy was it to get started with the AIRR? And how easy or difficult have you found it to use the system overall? How does it compare to other facilities you have used or commercial cloud services?**

PROBE:

- How did you find running your first jobs / using the system's interfaces or job submission and scheduling tools?

I2 **Have you encountered any barriers or challenges in using the AIRR facility so far (e.g., technical, support, etc.)?**

IF YES: Please describe the barriers/challenges you have encountered so far.

I3 **Thinking specifically about speed, capacity and overall performance, would you say the AIRR facility meets your expectations?**

I4 **Have you had to request support from the AIRR support staff?**

IF YES: Did you feel well-supported by the support staff, e.g. both in terms of their responsiveness and understanding of your specific research or technical needs?

I5 **From your perspective, what aspects of the AIRR facility worked well? And what hasn't worked so well, or has felt unnecessarily complex, inefficient, or unclear?**

J **Final reflections (3 mins) - (LOWER PRIORITY)**

J1 **If you were advising a decision-maker about whether to continue or expand the AIRR, is there anything that would you emphasise?**

J2 **What is one change that would most improve the value of AIRR for you/your project/your team?**

PROBE: This could be a technical, operational, or policy change.

J3 **Is there anything else about your experience with the AIRR that we haven't discussed but you would like to add?**

Thank and close (2 mins)

J4 **Thank you so much for your time today. Do you have any questions for me?**

J5 **Would you be happy for us to recontact you if we need to clarify something?**

Yes – happy to be re-contacted for clarification purposes	☐
No – prefer not to be contacted again	☐

J6 **Would you willing for an anonymised transcript of this interview, with all identifiers removed, to be passed on to DSIT?**



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