

DEVELOPING AI SKILLS IN THE UKRI-SUPPORTED COMMUNITY

Extended Summary & Key Findings

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September 2026

In 2025, UK Research and Innovation (UKRI) commissioned the Innovation and Research Caucus (IRC) to scope opportunities to support the development, attraction, and retention of AI (Artificial Intelligence) skills and talent within the UKRI-supported community. The project aims to understand mismatches in the demand for, and supply of, AI skills and inform future business cases for AI skills development.

The research comprised a literature review, 33 qualitative interviews (mostly with colleagues across the UKRI-supported community but also including industry and government representatives and an external research institution), an on-line consultation with Centres for Doctoral Training (CDTs) and two workshops to test the findings. Although the UKRI-supported community spans universities, research institutes and industry, the interviews informing this research were conducted primarily with participants from universities, research councils and publicly funded research institutes, with only a small number of industry representatives included. As a result, the findings are likely to reflect the demand for, and supply of, AI skills in universities and research institutes more strongly than in the industry segment of the UKRI-supported community.

The project ran from October 2025 to March 2026.

The purpose of developing AI skills in the UKRI-supported community

The ultimate purpose of developing AI skills within the UKRI-supported community, and underpinning any future business case, is to support the achievement of key policy objectives relating to AI. The Government sees AI as potentially the biggest lever to delivering its manifesto. As well as featuring AI within the Digital and Technologies sector in the 2025 *UK's Modern Industrial Strategy* (Department for Business and Trade, 2025), it has also published the *AI Opportunities Plan* (Department for Science, Innovation and Technology [DSIT], 2025a) which identifies a need for government to create a deeper pool of AI skills to build, diffuse and use AI products across the economy. Later in 2025, the government published the *AI for Science Strategy* (DSIT, 2025b), with two objectives:

- » To develop frontier capability in AI-driven science and
- » To ensure the UK retains its position of global scientific leadership through the successful integration of AI into science.

Of most direct relevance to this study, UKRI's *AI Research and Innovation Strategic Framework* (UKRI, 2026a) outlined a role for UKRI as an investor, convenor and enabler, delivering a vision where the UK harnesses the power of AI to drive economic growth, improve lives and tackle global and societal challenges. It detailed a 'people first' approach to build skills and talent, encompassing both deep technical expertise and enabling those across domains to adopt and use AI (UKRI, 2026a).

The objectives articulated in these key policy documents indicate an expectation of widespread, responsible and impactful use of AI in the UKRI-supported community, supporting the achievement of economic growth and improved public services. Any skill development activities should be designed to support delivery of these broader objectives.

Defining AI skills within the UKRI-supported community

We reviewed existing literature and skills frameworks to consider how AI skills are defined, alongside exploring this issue through the qualitative research. Analysis of both the literature and the interview data revealed considerable variation in how AI skills are conceptualised. Interviewees offered a wide range of definitions, often using terms related to types of AI use, AI knowledge, and AI skill requirements interchangeably. Similarly, existing frameworks differed in their organising principles, variously structuring AI skills around competencies, skills, or modes of AI use. Drawing on this diversity of definitions, the research has developed a typology of AI skills in the UKRI-supported community, with AI User Type as its primary organising concept. Five AI User Types are identified:

AI Workers: individuals who use AI tools in their work, in any context.

AI Adapters: go beyond the first group as they can apply or adapt existing AI tools to enhance workflows, drawing on both domain-specific knowledge and AI development skills. This may include, e.g., adapting machine-learning models for data analysis in biosciences or humanities. In addition to research applications, AI Adapters may also use AI in operational contexts, such as engineers applying AI to the management of scientific facilities. AI Adapters may have a background in either AI or computer science, or alternatively in the relevant domain, complemented by sufficient AI expertise to adapt tools effectively.

AI Developers: have the deep technical skills and knowledge required to develop new AI models and algorithms, or to advance AI research more broadly. This includes world-leading researchers in AI. They are often from computer science, maths, statistics or engineering backgrounds. Interviewees used varied terminology to describe this group, including references to 'foundational' or 'fundamental' AI researchers or developers, but these terms were generally used to denote the same underlying type of use.

AI Leaders: manage others who are using AI or are responsible for the strategic use of AI within institutions or within projects.

AI Skills Champions: promote the use of AI or support the development of AI skills amongst others.

Separating out the five User Types suggests clear boundaries between them, but this is unlikely to be the case. There will be blurring between AI Workers and AI Adapters and between AI Adapters and AI Developers, depending on AI tools and technologies in use. Additionally, AI Workers, AI Adapters and AI Developers might also be AI Leaders and/or AI Skills Champions.

In addition to considering how AI is used by different people within the UKRI-supported community, AI skills are also defined by three broad knowledge areas:

- » knowledge of AI tools and technologies
- » knowledge of the safe, responsible and ethical use of AI
- » domain knowledge

and two broad skill types:

- » **technical skills** – the skills needed to perform specific, practical tasks using AI, including AI literacy (fundamental skills in the use of AI, including when to use AI or not); programming skills; skills in the use of AI sub-disciplines such as machine learning and symbolic AI augmentation; skills in data science, maths, research and statistics
- » **non-technical skills** – that enable the effective application of AI, including communication, critical thinking, teamwork (including interdisciplinary work), project/programme management and leadership, strategy, innovation, commercialisation, and public engagement.

The typology of AI skills in the UKRI-supported community brings these factors together and is presented in Table 2.3 of the main report.

AI skill shortages and barriers to addressing shortages

Interviewees reported shortages of AI skills in the UKRI-supported community in 3 broad areas, which are not necessarily mutually exclusive:

- » AI literacy, including assessments of whether to use AI in a task, which AI tool to use and how.
- » Responsible use of AI in research.
- » People who can apply AI and, if necessary, adapt AI to their domain.

Interviewees identified a range of barriers to addressing AI skill shortages. One of the most frequently cited was the rapid pace of AI development and its increasing proliferation, which makes it challenging to stay abreast of safe and trustworthy new tools and techniques, particularly for those with lower levels of AI understanding. In addition, respondents noted that the crowded AI training market, characterised by a proliferation of courses and providers, makes it difficult to identify and access training opportunities which are relevant to individual needs.

There are also staff retention issues in academia which means skilled individuals do not stay in the community. Retention challenges were reported for research support staff with AI or digital skills (who are often employed on short-term contracts to deliver grant-funded research) and for doctoral students (with some reportedly taking up employment in the private sector before completing their studies). This might impact on the future availability of AI Adapters and AI Developers. Respondents reported that academia cannot compete on salary

with the private sector. While this is a long-standing reason for difficulties in retaining staff with digital skills, traditionally academia has been able to compete on the basis of conducting interesting and groundbreaking research. However, some respondents noted that in the case of AI, the interesting research is just as likely - if not more likely - to be conducted in the private sector.

Respondents also reflected on wider literature highlighting the lack of socio-demographic diversity among AI developers, particularly the under-representation of women. Although interviewees were cautious about drawing firm conclusions given the limited evidence specific to the UKRI-supported community, several expressed concern that such imbalances may heighten the risk of bias in AI-enabled products and services.

Several barriers to ensuring the UKRI-supported community has the AI skills it needs were linked to the education system. These included too few students progressing through relevant courses (such as computer science) and graduates entering Masters courses lacking the technical and non-technical AI skills required. Again, this might impact on future availability of AI Adapters and AI Developers.

Some respondents also raised funding-related barriers. These included a lack of dedicated funding for training within universities and limited UKRI support for interdisciplinary research, particularly in non-priority areas. Interdisciplinary work was viewed as an effective way to bring AI skills into new domains: in the short term, AI specialists gain domain knowledge through project collaboration, while domain experts develop AI skills that can be applied over the longer term.

The CDT survey reported that a lack of access to data and/or compute for the specific purpose of upskilling the UKRI-supported community is an important barrier to enhancing AI skills. This is likely to apply only to AI Adapters or AI Developers – those with the most advanced usage of AI.

AI skills supply

AI skill development opportunities are diverse and expanding, with growing investment from government, universities and other training providers. For example:

- » [AI Skills Boost](#), launched in January 2026, provides free learning in basic AI skills aimed at 10 million workers, via Innovate UK's [AI Skills Hub](#).
- » Increase in the scale of Higher Education AI provision (e.g., in a search of UCAS on 19th November 2025, there were 315 postgraduate courses in, or with, AI offered across 90 providers; by mid-February 2026, this had risen to 406 from 107 providers).
- » Scholarship awards for undergraduate and postgraduate students in AI or similar disciplines, funded by UKRI and the Department for Science, Innovation and Technology (DSIT), such as the [Spärck AI scholarships](#) for 100 AI Masters students beginning their studies in 2026.

- » [Centres for Doctoral Training](#) specifically focused on AI or with AI components.
- » [Turing Fellowships](#) to attract international expertise or develop domestic expertise, including the [AI Pioneer Interdisciplinary Fellowship](#) programme, commencing in 2026.
- » Research institutes, infrastructures, hubs or projects which provide training and development opportunities in AI as well as access to expertise and/or data and compute. For example, the [Hartree Centre](#) offers live and online training courses, such as 'Beginner's Guide to Artificial Intelligence' and 'Beginner's Guide to Programming in Python'; the ESRC funded [National Centre for Research Methods](#) offers training in topics including 'Large-scale Data Analysis – Traditional Statistical Modelling, Machine Learning and AI-supported Methods'.
- » The [Digital Research Infrastructure Programme](#) includes the [Artificial Intelligence Research Resource](#), the [Software Sustainability Institute](#), the [BIOFAIR](#) network and 13 'Digital Infrastructure: new approaches to skills' projects.
- » As well as Fellowships, the government is seeking to attract international expertise through programmes such as the [Global Talent Fund](#) and initiatives such as reimbursing the visa fee for people with AI skills.
- » The [Demystifying AI](#) programme, developed by the Association for Science and Discovery Centres, aims to engage the public with AI through activities delivered at 15 Centres across the UK.

Although there is significant activity in place, our evidence suggests: those who lack AI literacy skills may not be able to identify the right provision; there is a lack of clarity on the responsible use of AI; and there are insufficient development opportunities to facilitate the application (or adaptation) of AI across domains. These issues may hamper the achievement of the policy goals set out in *AI for Science Strategy* and the *AI Research and Innovation Strategic Framework*.

Opportunities to develop AI skills in the UKRI-supported community

Interviewees were asked to reflect on how best to develop AI skills across the UKRI-supported community. Emerging suggestions were subsequently explored through an online consultation with CDTs and two dedicated workshops. The resulting opportunities to address the skills shortages and structural challenges identified in this research are designed to align with current policy direction and with UKRI's role as an 'investor, convenor and enabler' as set out in the *AI Research and Innovation Strategic Framework* (UKRI, 2026a). These opportunities, presented below, are likely to have greater impact if pursued collectively, rather than individually. The research also indicates a degree of urgency in progressing them, even if on a pilot basis. However, they will not address all the barriers or challenges identified in this research, some of which fall outside the scope of this skills-focused project and beyond UKRI's direct sphere of influence.

Opportunity 1: Invest in AI Skills Champion resources

This research - together with other evidence reviewed for this study (De Silva et al., 2025; Innovate UK and Bridge AI, 2025) - highlights the potential value of a dedicated Champion role/resource in addressing the information barriers identified in our findings. In particular, our work points to the emergence of AI Champions within institutions: senior academics who drive AI adoption and serve as visible, trusted points of contact for advice, coordination, and knowledge exchange. Across these sources, a consistent message emerges: consolidating and curating intelligence through a clearly identifiable focal point can play a critical role in supporting effective uptake.

On this basis, we suggest resourcing an AI Skills Champion role to coordinate and drive capability development across the research community. Ideally, each research council would host its own Champion to ensure strong visibility, close alignment with disciplinary needs, and direct engagement with their respective communities. An alternative model would be a single UKRI-wide AI Skills Champion, with each research council grant-funding supporting activities that remain clearly visible within each domain. A UKRI-wide AI Skills Champion could also facilitate sharing and learning across and between research councils¹.

Under either structure, the Champion's responsibilities could include collating intelligence on how AI tools and technologies are being used across disciplines; identifying emerging use cases and examples of best practice and mapping relevant skills needs and development opportunities.

Across UKRI, there is significant investment in programmes or projects which have some relevance to AI skill development, such as the CDTs, [RAI UK](#), [BRAID](#) and other non-AI specific programmes and projects which still have an AI component (e.g., Training Needs Analyses of distinct parts of the community which encompass AI). An AI Skills Champion resource (at UKRI or research council level) could also curate and synthesise insights from these activities and share effectively.

Opportunity 2: Enable access to curated AI training and best practice

The AI Skills Champion resource could further reduce information barriers by signposting and promoting relevant AI training opportunities. To be considered relevant, providers should be expected to provide metadata about each course, including skills and knowledge entry requirements; target audience; learning methods and outcomes. Providers would be expected to update their offerings proactively to ensure continued relevance.

Access to the skill development opportunities might be enabled through a dedicated AI skills section on UKRI and research council websites; by building on existing platforms such as the [AI Skills Hub](#); or, ideally, by offering a curated user-friendly route to AI skills development

¹ The role may align with the new AI Programme Director role within UKRI.

opportunities. Such a route could include a self-assessment tool to help users identify appropriate skill development opportunities, relevant use cases and examples of best practice.

The development opportunities could focus on the needs of AI Workers and AI Adapters, drawing initially on existing provision across the UKRI-supported community, for example, short courses developed by CDTs, research institutes and universities, and Master's conversion programmes. This approach might support UKRI in its commitment to 'broaden access to UKRI-supported AI training beyond specialist communities' as detailed in the *AI Research and Innovation Strategic Framework* (UKRI, 2026a).

The online resource could also showcase best practice in addressing inequalities, whether in recruitment practices, support for applications or curriculum development, along the lines of, or linked to, the emerging EPSRC [EDI Hub +](#).

Opportunity 3: Develop guidelines on the safe, responsible and ethical use of AI in research and incentivise appropriate skill development

The responsible use of AI in research was raised almost unanimously in interviews as an important skill for the UKRI-supported community, with many interviewees identifying it as a specific skills gap. While applicants for UKRI grants are already assessed against Responsible Research and Innovation (RRI) criteria, including ethical research practices, some interviewees reported that these considerations are not always reviewed in sufficient depth during the assessment process.

Taken together, these findings indicate an opportunity for UKRI to strengthen expectations and capability in Responsible AI (RAI) by using a coordinated set of incentives and supports. In particular, UKRI could:

- » enhance existing RRI guidance by integrating guidance on the responsible and ethical use of AI in UKRI-funded research;
- » use funding levers to support adherence to RAI guidance, with applicants for grant-funded research required to demonstrate compliance. Where appropriate, institutions may also be expected to provide RAI training for staff to ensure sufficient competence. Panel Chairs and reviewers may likewise require training, given their role in rigorously assessing applications against RAI expectations;
- » embed evaluation and continuous improvement mechanisms to assess the impact of these interventions over time.

There is a strong foundation on which these activities could build. Existing work includes the development of an RRI competency framework for PhD students by RAI UK, which could be extended to cover a broader range of researchers and include a dedicated focus on RAI; analysis of institutional guidance on the use of AI in research which highlights that examples of best practice show strong alignment between strategy, policy and operational guidance, often underpinned by structured training provision (Uttley, 2026) and an evaluation framework for RAI education that identifies five key considerations to guide both learners and developers,

including ensuring a definition of RAI and a clear implementation context (Klyshbekova et al., 2026).

Developing clear, consistent guidance on the responsible and ethical use of AI, alongside targeted incentives for skills development, represents a significant opportunity for UKRI to strengthen research quality, integrity and public trust. Over time, this approach has the potential to contribute to a more confident, skilled and responsible research culture capable of maximising the benefits of AI while effectively managing its risks.

Opportunity 4: Evaluate initiatives to support retention and supply of AI skills and use the evidence gathered to inform further actions

Retaining skilled technical staff was reported as a challenge in the research. The *AI Research and Innovation Strategic Framework* commits to incentivising ‘recognised career frameworks and workforce development for technical and specialist staff including RSEs [Research Software Engineers], data scientists and ethics specialists’ (UKRI, 2026a). This commitment has the potential to address retention challenges for skilled staff and represents an important action for UKRI to take forward. Rather than proposing new initiatives at this stage, this research suggests that existing activity (such as those referenced in the *AI for Science Strategy*) should be evaluated to identify barriers to the take-up of career frameworks within institutions. Evaluations of these initiatives could inform consideration of complementary approaches to supporting retention, for example, by convening pooled resources of AI RSEs across domains or geographic areas or identifying means through which UKRI can incentivise and influence recruitment and retention practices through grant mechanisms.

UKRI investment in doctoral students should also be evaluated to assess impact on AI skills supply across the UKRI-supported community (including the industry segment).

Opportunity 5: Foster a culture of inclusive training across funded organisations through funding conditions

To address reported inequalities in access to training within universities, several interviewees suggested that UKRI could do more to incentivise and promote a culture of learning within funded organisations. UKRI has an opportunity to do this through the forthcoming, more detailed guidance on the ‘Strategy, People and Research Environment’ (SPRE) element of the 2029 Research Excellence Framework (MEDR et al., 2025), or through conditions attached to grant funding - for example, by assessing the quality and implementation of institutional training strategies as part of funding applications.

In the meantime, all UKRI training investments could reflect the ‘inclusive research culture’ criteria used in the UKRI AI CDT call. This sought to ensure that everyone employed by or connected to the CDT can be part of a positive culture, in which everyone can flourish. Suggested actions to achieve this included consideration of providing professional development opportunities to all staff and fostering a culture of respect and inclusivity (UKRI, 2022).

Opportunity 6: Convene Data, Compute and People

Access to data and compute is likely to be a more significant challenge for upskilling AI Adapters and AI Developers than for AI Workers. These concerns may begin to ease as initiatives, launched during our fieldwork period, come into effect. For example, the *AI for Science Strategy* includes an action for the UKRI community to be provided with up to 10,000 GPU hours of AI Research Resource (AIRR) services for first-time users, enabling testing and benchmarking of algorithms, code, and workflows before applying for larger AIRR opportunities (DSIT, 2025d). There is clear potential for this to support upskilling, however, as with retention, it is difficult to predict how far this and other actions will address the barriers to skill development highlighted in this research. We therefore recommend robust evaluation of their implementation and impact on skill development.

As an interim step, the AI Skills Champion resource (within the research councils) could help prepare for these opportunities by convening cross-functional teams (AI, infrastructure, data, and domain expertise) to identify emerging research needs and coordinate with the AIRR or other compute and infrastructure providers. For example, the ESRC has recently opened a call for expressions of interest to attend a two-day in-person sandpit event to develop high-level ideas on AI-supported social science using UKRI data (UKRI, 2026b).

UKRI might also commission guidance to universities on use of existing sites and/or locally hosting tools/technologies on existing hardware to allow broader learning through experimentation.

Conclusion

UKRI has an opportunity to shape the delivery of AI skills training and, in so doing, embed the principles of the organisation's AI strategy. This will require greater coherence, visibility, and rigour within a currently fragmented skills and training landscape. The opportunities represent important steps to take to tackle some of the most critical issues identified in the research, building on UKRI's role as investor, convener and enabler, and drawing too on its commitment to effective evaluation (UKRI, 2024).

While the opportunities presented in this research would not address all the challenges identified, the findings also provide a basis for initiating a wider conversation across the UKRI-supported community about how different parts of the system can work together to develop AI skills. This includes clarifying the role of individuals in engaging with trusted AI skill development, the role of employers in providing meaningful training opportunities and improving staff retention and the role of Higher Education Institutes in providing the flow of people into AI Adapter and AI Developer roles through expansion of high quality provision.

Taken together, these actions could contribute to building a more coherent, capable and resilient AI skills ecosystem across UKRI.

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Acknowledgements

This work was supported by Economic and Social Research Council (ESRC) grant ES/X010759/1 to the Innovation and Research Caucus (IRC) and was commissioned by the Engineering and Physical Sciences Research Council (EPSRC). The interpretations and opinions within this report are those of the authors and may not reflect the policy positions of EPSRC.

About the Innovation and Research Caucus

The IRC supports the use of robust evidence and insights in UKRI's strategies and investments, as well as undertaking a co-produced programme of research. Our members are leading academics from across the social sciences, other disciplines and sectors, who are engaged in different aspects of innovation and research system. We connect academic experts, UKRI, IUK and the ESRC, by providing research insights to inform policy and practice. Professor Tim Vorley and Professor Stephen Roper are Co-Directors. The IRC is funded by UKRI via the ESRC and IUK, grant number ES/X010759/1. The support of the funders is acknowledged. The views expressed in this piece are those of the authors and do not necessarily represent those of the funders.

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