**Mathematical and computational foundations of artificial intelligence**

Following an outline stage, successful applicants are invited to submit full proposals for an artificial intelligence (AI) research hub to advance the fundamental mathematical, statistical, and computational concepts that underpin AI.

You must be based at a UK research organisation eligible for EPSRC funding.

This investment seeks to support this aim through the creation of three cross-disciplinary hubs that will bring together researchers from across the mathematical and computational sciences to tackle the foundational problems that exist within AI.

Funding for each hub will be awarded over 60 months (at 80% full economic cost (FEC)). Successful projects must begin on 1 February 2024.

### Disciplines

We would like to welcome and encourage researchers from across these disciplines to apply, including but not limited to:

* artificial intelligence
* computer science
* statistics and applied probability
* applied mathematics
* pure mathematics
* operational research
* data science
* research software engineers

### Eligibility

Before applying for funding, check the following:

* [the EPSRC eligibility guidance for applicants](https://www.ukri.org/councils/epsrc/guidance-for-applicants/check-if-you-are-eligible-for-funding/)
* [the eligibility of your organisation](https://www.ukri.org/apply-for-funding/before-you-apply/check-if-you-are-eligible-for-research-and-innovation-funding/eligibility-as-an-organisation/#contents-list)
* [your eligibility as an individual](https://www.ukri.org/apply-for-funding/before-you-apply/check-if-you-are-eligible-for-research-and-innovation-funding/eligibility-as-an-individual/)

### Restrictions

The full proposal stage of this funding opportunity is only open to invited applicants who were successful at the outline stage.

It is anticipated that those applications which are invited to submit a full proposal may expand their leadership group or collaborators, including to those who may have been named on or involved in an unsuccessful outline application.

### EPSRC repeatedly unsuccessful applicants

Submissions to this funding opportunity will count towards the [EPSRC repeatedly unsuccessful applicants policy](https://www.ukri.org/councils/epsrc/guidance-for-applicants/unsuccessful-applicants-and-resubmissions/repeatedly-unsuccessful-applicants-policy/).

### Overview

There is a growing need for next-generation AI technologies that have the capabilities to meet the demands of real-world applications, both now and in the future. To realise the vast potential of AI, and for the UK to remain a global leader within the field, we must further develop our understanding of the theoretical foundations of AI and overcome existing methodological barriers.

This major investment will form part of EPSRC’s new [strategic delivery plan](https://www.ukri.org/publications/epsrc-strategic-delivery-plan/) and will grow investments in AI, digitisation and data along with other priority areas. This underpins UK Research and Innovation’s (UKRI) strategic theme ‘building a secure and resilient world’.

This investment seeks to support this through the creation of up to three cross-disciplinary hubs that will, through advancing underpinning mathematical and computational concepts, develop novel approaches to methodological challenges in AI.

It is anticipated that the hubs will bring together researchers from across the mathematical and computational sciences to tackle the foundational problems that exist across a range of AI methods, fields, or capabilities.

EPSRC encourages you to include representation from different mathematical disciplines, as well as AI researchers, within your core research team. Evidence of co-creation, and leveraging the interface between AI and mathematics, is expected to be evident within the proposed research questions.

EPSRC is not specifying research priorities for the hubs beyond the need for them to tackle the foundational or underlying theoretical problems that exist within AI (such as the ‘how’ and ‘why’ questions of modern AI systems). This is due to the breadth of potential research, and the importance of investing in approaches that can address both current and future needs of AI technologies.

You should think beyond the optimisation of current systems and are asked to propose innovative, and creative research programmes that will advance our fundamental understanding of AI and AI systems. For illustrative purposes only, this may include tackling the challenges that are associated with:

* uncertainty quantification
* integrating causality and inference into AI models
* vulnerabilities (for example, interpretability, verifiability, robustness)
* algorithm development
* algorithmic bias
* fundamentals of optimisation

Aspects of ethics, and responsible research and innovation, should be considered where appropriate.

Proposals that are based on applying current AI methods to an application area will not be accepted.

You should:

* highlight why your proposed hub is nationally important
* outline how your cross-disciplinary approach will enable for novel approaches to current and future methodological challenges in AI to be developed

### Expectations

Funded hubs under this programme will be expected to:​

* deliver world class fundamental research in AI, building capability and capacity around advancing the underpinning mathematical and computational concepts of AI, delivering a wide range of outputs and impact for the UK society and economy
* form new cross-disciplinary partnerships, both within and across mathematical and computational sciences that establish the long-term capability that is critical in underpinning the future of AI
* be inclusive. Each hub will coordinate and collaborate across their relevant UK research communities. Hubs should be responsive to the wider stakeholder and investment landscape, maximising the value of this investment through alignment to other strategic activities, either existing or new. Particular consideration should be given to the inclusion of, and connectivity to, local and regional stakeholders
* engage research users and key stakeholders, to establish an ongoing dialogue and opportunities for collaboration focusing on their key priorities. These stakeholders may include:
  + the UK wide national and international research community
  + policymakers
  + government departments and bodies
  + industry and businesses
  + non-governmental organisations
  + third sector
  + funders of research
* support the development of a healthy, diverse, and inclusive AI talent and skills pipeline. Consideration should be given to the advancement and training of those engaged in the hub from every career stage. Consideration should also be given towards how any skills programme can be offered more broadly to enhance digital skills in the broader community. This could include:
  + the provision of skills training
  + supporting research software engineers
  + setting expectations around data and software management

### Structure of AI hubs

A typical hub will comprise of (but is not limited to):

* a virtual or physical centre which is multi-institutional but based around a ‘lead’ research organisation
* a hub director (academic) with a proven track record of managing large investments and excellence within their disciplines or sector
* a wider leadership team, representative across the different disciplines involved in the hub, from varying career stages with a track record of excellence within their disciplines. It is expected that this team will be diverse against protected characteristics
* a small coordinating management body (which includes a full-time hub manager) and an administrative team that will ensure that the programme runs efficiently
* a named lead from one of the host institutions for knowledge transfer and external communications, whose role will include coordinating knowledge exchange between the hub and the wider landscape
* postdoctoral research assistants (PDRAs) distributed across the project. Funding cannot be requested from these grants for PhD studentships or related funding. However, students funded from other sources can be incorporated into the broader project plan, provided that PhD students’ work is not part of the critical path of the hub’s research
* appropriate advisory and governance structures, including as a minimum, an independent advisory board. The board should meet at least annually and include key academic, industrial, relevant policy officials and other stakeholders. It is expected that a UKRI representative will sit on this advisory board, who will be appointed by UKRI. Provision of the precise and full membership of such a board will not be required at point of application
* demonstrate a commitment to making data, code, and implementation as open as possible

It is expected that management of hubs will require more investigator time (whether for the principal investigator or distributed across the team) than standard UKRI grants.

Principal investigators will be expected to participate in broader UK AI ecosystem discussions with UKRI and other governmental stakeholders and participate in events.

The expectation of a dedicated project manager reflects the need for coordination across the hub and with the AI ecosystem, enabling the required cross-disciplinary approach and the facilitation of engagement with users of the research.

As part of the management process, hubs will be expected to set an appropriate statement of objectives and internal key performance indicators (KPIs) focused on key outputs and outcomes within six months of the hub grant starting. KPIs should be appropriately set against baselines, to be considered at the start of the hub.

You are expected to have a clear plan for supporting diversity, in a broad sense (for example, protected characteristics and career background). It is anticipated that proposals will evidence a strong commitment to supporting the development of researchers (including early career researchers) across the hub and its activities.

Activities focused on early career researchers and wider capacity building including for stakeholders will be welcome. We also expect hubs to demonstrate a commitment to making data, code and implementation as open as possible.

In order to deliver the aims of this investment, EPSRC expects the hubs to be cross-disciplinary. We encourage you to include a breadth of capability both across and within the mathematical and computational sciences.

### Funding available

The total EPSRC funding available for this funding opportunity is expected to be up £20 million to fund up to three hubs. Funding for each hub will be awarded over 60 months (at 80% FEC).

Due to the nature of the programme, there will be additional requirements on reporting, monitoring and evaluation, and grant extensions. This will be reflected in the grant additional conditions, and those funded will need to comply with them. Further details are provided in the ‘additional information’ section.

Resources may be used for research expenses including:

* UKRI-funded research facilities. Please note that if you plan to use a major facility in your research, contact the facility before applying to EPSRC. EPSRC will check if your proposed research is feasible and obtain a technical assessment if Je-S marks it as required. Major facilities include those funded centrally by EPSRC or a European facility
* travel
* research technical support including research software engineers, data scientists, PDRAs and fellow salaries
* training
* other standard expenses

Resources may also be used for activities that initiate, grow and maintain collaborations with stakeholders (for example academia, business, government, third sector) such as:

* secondments
* staff exchanges
* regular travel

Although this is not a funding opportunity designed for significant capital expenditure, equipment over £10,000 in value (including VAT) and up to £400,000 is available through this funding opportunity. All equipment should be fully justified and essential to the mission of the hub.

Smaller items of equipment (individually under £10,000) should be in the ‘Directly Incurred – Other Costs’ heading.

Maximum funding per application (at 80% FEC): £8 million

Minimum funding per application (at 80% FEC): £6 million

### Stakeholder collaboration

Due to the scale of these awards, significant collaboration and leverage (cash or in-kind) will be expected from project partners (for example, business, public sector, third sector). This may include models such as endowing chairs, supplementing to academic salaries or hosting academics within facilities.

It is expected that the leadership team of the hub should contain a demonstrable track record of engagement of this type.

We expect collaborations to build a mutually beneficial two-way relationship based on:

* expertise
* secondments in both directions
* products
* infrastructures

To ensure the awards are inclusive of a variety of approaches and research fields, no specific leverage expectations are being set for eligibility to this programme. The appropriateness and strength of collaborations and plans for each hub to form additional partnerships will be a factor in peer review of proposals.

Clear plans for engaging with new and existing collaborators over the duration of the hub should be detailed in the case for support. Please see the document guidance section for more information.

We expect bidders to demonstrate how they will engage and collaborate with stakeholders across all parts of the UK. This is in recognition of the diverse nature of the research and innovation landscape for AI across the UK, and the national role that the awards will play in the EPSRC portfolio. You should apply for the resources you need to enable strong connectivity with all parts of the UK (England, Northern Ireland, Scotland and Wales).

### Involvement of The Alan Turing Institute

As the UK’s national centre for data science and AI, The Alan Turing Institute is well-positioned to work with successful projects from this programme. The exact nature of the institute’s interaction with successful projects will be dependent on the details of each project. The Turing will not be offering specific support (this includes offering letters of support) to individual applications.

It is expected that all hubs will either have, or will develop, links with the Turing as part of facilitating the flow of ideas and methods across the AI ecosystem, but these will not be mandated. Previous engagement is not required at the point of application, nor will it be considered as part of the peer review process.

### Responsible innovation and trusted research

EPSRC is fully committed to developing and promoting responsible innovation and trusted research.

Research has the ability to not only produce understanding, knowledge and value, but also unintended consequences, questions, ethical dilemmas and, at times, unexpected social transformations.

We recognise that we have a duty of care to:

* promote approaches to responsible innovation that will initiate ongoing reflection about the potential ethical and societal implications of the research that we sponsor
* encourage our research community to do likewise

The hubs will be required to embed principles of [responsible innovation](https://www.ukri.org/about-us/policies-standards-and-data/good-research-resource-hub/responsible-innovation/) and those of [trusted research](https://www.ukri.org/about-us/policies-standards-and-data/good-research-resource-hub/trusted-research-and-innovation/) throughout their activities and will be expected to engage with the relevant regulatory bodies where concerns may arise under the [National Security and Investment Act](https://www.gov.uk/government/collections/national-security-and-investment-act). Aspects of bias, privacy, security and ethics should be considered where appropriate.

### Sustainability

UKRI’s [environmental sustainability strategy](https://www.ukri.org/publications/ukri-environmental-sustainability-strategy/) lays out our ambition to actively lead environmental sustainability across our sectors. This includes a vision to ensure that all major investment and funding decisions we make are directly informed by environmental sustainability, recognising environmental benefits as well as potential for environmental harm.

In alignment with this, UKRI is tackling the challenge of environmental sustainability through our ‘building a green future’ strategic theme, which aims to develop whole systems solutions to improve the health of our environment and deliver net zero, securing prosperity across the whole of the UK.

Environmental sustainability is a broad term but may include consideration of such broad areas as:

* reducing carbon emissions
* protecting and enhancing the natural environment and biodiversity
* waste or pollution elimination
* resource efficiency and a circular economy

EPSRC expects hubs to embed careful consideration of environmental sustainability at all stages of the research and innovation process and throughout the lifetime of the hub.

Hubs should ensure that environmental impact and mitigation of the proposed research approaches and hub operations, as well as the associated project outputs, methodologies developed across science and engineering and outcomes is considered.

Hubs must also seek opportunities to influence others and leave a legacy of environmental sustainability within the broader operations of your academic and industry partners.

### Equality, diversity and inclusion (EDI)

As leaders in the community, the hubs will be expected to embed EDI in all their activities throughout the lifetime of the investment.

If funded, this will include identifying the specific EDI challenges and barriers in their own environment and developing a strategy to address these, with reference to EPSRC’s published [expectations for EDI](https://www.ukri.org/about-us/epsrc/our-policies-and-standards/equality-diversity-and-inclusion/expectations-for-equality-diversity-and-inclusion/).

Hubs must ensure that they request appropriate resources to develop and deliver their EDI strategy effectively. This must include at least one costed staff post with responsibility for EDI (the hub EDI lead).

Hubs should include information on EDI resources (including the mandatory costed staff post for the EDI lead and any other resources, for example mentoring schemes, training, workshops and data exercises) in the justification of resources document.

EPSRC does not specify any particular full-time equivalent, salary level or career stage for the EDI lead post. Hubs may decide what is most appropriate for their programme, while giving due consideration to flexible working.

You must apply using the [Joint Electronic Submission (Je-S) system](https://je-s.rcuk.ac.uk/JeS2WebLoginSite/Login.aspx). Please ensure sufficient time is allocated for creating Je-S accounts for investigators who do not currently have one.

You can find advice on completing your application in:

* the [Je-S handbook](https://je-s.rcuk.ac.uk/Handbook/index.htm)

We recommend you start your application early.

Your host organisation will also be able to provide advice and guidance.

### Submitting your application

Before starting an application, you will need to log in or create an account in Je-S.

When applying:

* select ‘documents’, then ‘new document’
* select ‘call search’
* to find the opportunity, search for: ‘mathematical and computational foundations of artificial intelligence (full proposals)’

For full proposals, this will populate:

* council: EPSRC
* document type: standard proposal
* scheme: standard research
* call/type/mode: mathematical and computational foundations of artificial intelligence (full proposals)

You can save completed details in Je-S at any time and return to continue your application later.

After completing the application:

* you must click ‘submit document’, which will send your application to your host organisation’s administration
* your host organisation’s administration is required to complete the submission process
* applicants should allow sufficient time for your organisation’s submission process between submitting your proposal to them and the funding opportunity closing date

### Deadline

EPSRC must receive your outline application by 8 June 2023 4:00pm UK time.

You will not be able to apply after this time. Please leave enough time for your proposal to pass through your organisation’s Je-S submission route before this date.

You should ensure you are aware of and follow any internal institutional deadlines that may be in place.

### Attachments

You should attach your documents as PDFs to avoid errors. They should be completed in single-spaced Arial 11 font or similar-sized sans serif typeface. EPSRC will not accept any other attachment types under this opportunity.

Read our advice on [writing proposals for EPSRC funding](https://www.ukri.org/councils/epsrc/guidance-for-applicants/what-to-include-in-your-proposal/).

Your application must include these attachments:

* case for support (eight pages, two on your track record and six on the scientific case)
* workplan (one page)
* justification of resources (two pages)
* CVs (up to two A4 sides each) for named:
  + principal investigator
  + postdoctoral staff, researcher co-investigators (research assistants who have made a substantial contribution to the proposal and will be employed on the project for a significant amount of time)
  + visiting researchers
* letters of support from all project partners included in the Je-S form (no page limit), [EPSRC guidance on project partners letter of support](https://www.ukri.org/councils/epsrc/guidance-for-applicants/what-to-include-in-your-proposal/project-partners-letter-of-support/)
* quotes for equipment above £25,000 (no page limit)
* equipment business case for any items of equipment or combined assets with a value above £138,000 (up to two pages)
* technical assessments for facilities listed as requiring one in the Je-S guidance (no page limit)
* cover letter (optional attachment, no page limit, not seen by peer review)

#### Case for support

Up to a maximum of eight sides of A4 which includes:

* the hub’s vision (which includes how the hub will drive forward cross-disciplinary fundamental research that focuses on the theoretical computational and mathematical concepts that underpin AI)
* details relating to the organisations that are involved with the hub’s consortium (including detail around geographical reach)
* track record highlighting the skills, expertise, and experience of the applicant team as relevant to the programme. Consider non-academic partners or collaborators part of the team and provide detail around geographical reach
* a brief summary of the plans that the hub has for engaging with, and facilitating knowledge transfer across, the wider UK AI ecosystem

#### Work plan

This is a mandatory document of one side of A4.

The work plan should be illustrated with a simple diagrammatic work plan, such as a programme evaluation and review technique or Gantt chart.

#### Justification of resources

This is a mandatory document of up to two sides of A4.

The justification of resources should explain the necessity of your requested resources. This helps reviewers make informed judgements about whether the resources requested are appropriate and justified.

EPSRC recommends that you follow the ‘cost to the proposal’ headings used in the application form.

For more information on what to do, see [how to write a justification of resources](https://www.ukri.org/councils/epsrc/guidance-for-applicants/what-to-include-in-your-proposal/justification-of-resources/).

#### Curriculum vitae

Up to two sides of A4.

This should be submitted for the principal investigator, plus any named postdoctoral staff, researcher co-investigators (research assistants who have made a substantial contribution to the proposal and will be employed on the project for a significant amount of time), and visiting researchers.

#### Host organisation letters of support

Letters of support from host organisations will not be accepted as part of the Je-S process for this investment. Letters of support are not detailed on this page for this funding opportunity and therefore should not be submitted.

Due to the collaborative nature of these investments, EPSRC expect host organisations’ support to be detailed throughout the Je-S submission, particularly in the case for support.

One of the aims of these new AI investments is to encourage a collaborative ecosystem and therefore, EPSRC hope to see the details of collaborating organisation support entwined throughout all documentation as the focus is on the hub, not on individual universities.

Principal investigators are expected to detail university support in the cover letter submitted, although this will only be seen by EPSRC staff and will provide us with the assurance that the support detailed in the application can be delivered by the consortium members. You may either directly attach institutional letters of support to the cover letter or have the principal investigator detail the support being provided to the consortium within the cover letter.

#### Project partner letters of support

Included in the Je-S form, no page limit.

Project partner letters are not capped in number. These should be submitted by adding details to the project partners section on Je-S where you will be prompted to add a letter of support for each of these.

#### Proposal cover letter

Up to two sides of A4.

This letter will only be seen internally by UK Research and Innovation and should include any information they feel is relevant to their application.

### Ethical information

EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. All relevant parts of the ‘ethical information’ section must be completed.

[Guidance on completing ethical information on the Je-S form](https://je-s.rcuk.ac.uk/Handbook/pages/GuidanceonCompletingaStandardG/EthicalInformation.htm).

EPSRC guidance can be found under ‘additional information’.

### Nominating reviewers

As part of the application process, you will be invited to nominate up to three potential reviewers who you feel have the expertise to assess your proposal. Please ensure that any nominations meet the [EPSRC policy on conflicts of interest](https://www.ukri.org/councils/epsrc/guidance-for-reviewers/peer-reviews/epsrc-conflicts-of-interest-policy/).

### Assessment process

A three-stage assessment process will be used.

#### Stage one: outline proposals (completed)

Outline proposals were assessed by an expert panel from academia and industry.

The panel assessed:

* fit to call
* applicants and partnerships
* novelty of the proposed research

Following the outline stage, the panel and EPSRC took into account the portfolio, geographic and subject matter diversity of applications received when deciding which applicants to invite to submit full proposals.

While outline proposals only included the core leadership team, this should be expanded upon in a full proposal. There will be scope to include new collaborators and you will be able to add further detail. To enable this, EPSRC will not be limiting the change in proposal costs to 10% difference between outline and full proposal to allow additional collaborators to be brought in.

Please note that the vision for the hub and the core leadership will not be allowed to change between the outline and full proposal stages. The core leadership team should consist of the hub director and up to five co-investigators, that were identified on the outline proposals.

Upon completion of the outline stage, titles of applications that are invited to full proposal will be published online along with a brief description of proposed work. This is designed to allow additional project partnerships to evolve and stakeholders to be incorporated prior to full application.

We encourage the addition of further project partners and collaborators between outline and full proposal stage and once the investments are funded.

#### Stage two: invited full proposals

The applicants that are successful at the previous stage will be invited to submit a full proposal. Full proposals will be sent out for postal peer review. Prior to this, you will be given the opportunity to include additional project partner letters of support.

Postal peer review will consider all assessment criteria. Where the majority of reviews are unsupportive, the proposal will be ‘review rejected’ at the review stage. The applicant will no longer qualify for the right to reply.

If your application has received enough support from reviewers, it will go forward to the interview panel. Prior to the interview panel, usable reviewer comments that were included in the decision process will be sent to you. This gives you the opportunity to correct factual inaccuracies and respond to any queries raised by the reviewers in a principal investigator response document.

Feedback at stage two will be provided in the form of reviewer comments.

#### Stage three: interview panel

Proposals with sufficiently supportive postal peer review will be invited to interview in order to select the final successful applicants.

The principal investigator and up to two others identified on the proposal will be invited to attend the interview. It is expected that at least one of the attendees will be from a collaborating institution.

All criteria will be assessed in determining the final rank ordered list, taking into consideration the peer review comments, principal investigator response and interview. Full details of the interview process will be sent to candidates before the interviews.

### Assessment criteria

#### Core criteria

Please note that while the criteria headings mirror EPSRC’s standard criteria, additional aspects have been added to all criteria and the ‘applicant and partnerships’ criterion has been made a primary criterion.

These criteria apply to both the full proposal and interview stages.

##### Quality (primary)

We will assess research excellence, referring to:

* the hub’s vision, including the ambition and adventure of the proposed programme and the potential for its outcomes to have a transformative effect on the research and innovation landscape of AI
* the degree of novelty in the research programme to advance to the field of AI, the relationship to the broader context of the current AI research area internationally and timeliness and relevance to identified stakeholders
* the suitability of the proposed methodology and the appropriateness of the approach to achieving impact
* the plans to embed the principles of responsible innovation and trusted research throughout the activities

##### National importance (secondary major)

We will assess how the research programme:

* provides evidence that world-class research will be undertaken and that it will contribute to the development of a unique world-leading activity in AI
* complements other UK research funded in the area, including any relationships or alignment to the UK Research and Innovation (UKRI) portfolio, the UK’s national AI strategy, or UKRI’s statement of opportunities on AI
* contributes to addressing key UK societal challenges or contributes to future UK economic success and development of emerging industry or industries, or both

##### Applicant and partnerships (primary)

We will assess the ability to deliver the proposed hub, referring to:

* track record of the director (hub lead), including excellence within their disciplines and their ability to manage large cross-disciplinary investments
* relevance, appropriateness, and balance of the applicant team
* appropriateness and balance of skills and expertise within the applicant team for the delivery of the proposed programme of activities
* appropriateness of plans to engage with, and facilitate knowledge transfer across, the wider UK AI ecosystem (including geographic distribution of involved stakeholders)

##### Resources and management (secondary)

We will assess the effectiveness of the proposed planning and management of the hub, and whether the requested resources are appropriate and have been fully justified, making reference to:

* appropriateness of the resources requested to deliver the proposed programme of work, including those to support collaboration with the wider UK AI ecosystem
* effective integration of different disciplines, sectors, and expertise as appropriate to tackle the research challenges posed by this investment

#### Funding opportunity-specific criteria

##### Fit to call (primary)

We will assess the:

* potential for the hub to advance cross-disciplinary fundamental research that focuses on the theoretical computational and mathematical concepts that underpin AI
* evidence that the proposed hub will establish new cross-disciplinary partnerships, both within and across, the mathematical and computational sciences
* extent to which the hub will build skills and capability at the interface between the mathematical and computational sciences

### Background to the investment

AI will transform the UK over the next 20 years. UK Research and Innovation (UKRI) has an opportunity to ensure that:

* this transformation brings the maximum benefits to the UK economy and society
* it results in new technologies that we can all trust and rely on

UKRI published our [statement of opportunities on AI](https://www.ukri.org/about-us/strategy-plans-and-data/strategies-and-reviews/ai-review-transforming-our-world-with-ai/), where we set out our vision for AI and our aspiration to play a key role in realising the vast potential benefits of AI. This follows our extensive review exercise.

Our vision is for advances in AI in the UK to benefit society, provide skilled employment and deliver significant economic growth. Our vision is founded on:

* building ambitious new UK AI capability
* growing the UK AI research and innovation capacity in a sustainable way
* achieving positive economic, societal, and environmental impact through growth of the sector and wider adoption of AI that works for everyone
* enabling adventure and creativity in AI research and innovation
* increasing the connections across the UK’s AI research and innovation communities

Over the next year, UKRI will be releasing funding opportunities that build towards its AI programme. These will contribute towards delivering against the statement of opportunities on AI and the national AI strategy.

### AI, digitalisation, and data

Future success of economies and societies will be driven by new and improved industries and services. This will be through transformational technologies that connect people, things and data together in a safe, smart, secure, trustworthy and productive ways.

We will generate scientific and technical advances to enable this connectivity and ensure the benefits of digital technologies can be realised for the UK economy and society. This priority underpins the UKRI strategic theme ‘building a secure and resilient world’.

### Ambitions

Our ambitions are to:

* bring communities together to solve key challenges in AI and digital twins that enable the UK to lead in its development and deliver on the promise of transformation across the economy and society
* encourage adventure in research: pushing out the boundaries and exploring the edge of the possible, keeping our position as a thought leader developing transformative new technologies
* realise the transformational impact of digital technologies across industry sectors, society and the public sector: developing technologies of the future in real world situations that are trusted, reduce negative unintended impacts and realise their potential benefits for society as well as the economy
* develop technologies that can fully embrace privacy, security, fairness, reliability, safety, transparency and accountability and inclusiveness, addressing the trade-offs that currently exist between them
* build a more secure and resilient digital society from the component through to the system level and address key challenges in the application of digital technologies in defence and security
* bring academics and users (industry, government and other key stakeholders) closer together in AI, digital twins and broader digital technology research and training. This will co-create research, increase translation of research into practice, build flexible and stimulating career pathways

### Grant additional conditions (GAC)

Grants will be subject to the standard UKRI grant conditions however the following additional grant conditions will be added to this funding opportunity.

#### GAC one: start date of the grant

Notwithstanding RGC 5.2 Starting procedures, this grant must start by 1 February 2024. No slippage of start date beyond 1 February 2024 will be permitted. Expenditure may be incurred prior to the start of the grant and be subsequently charged to the grant, provided that it does not precede the date of the offer letter.

#### GAC two: grant extensions

No slippage or grant extensions (beyond exceptional circumstances in line with the Equality Act 2010) will be allowed. We will not be responsible for any cost overrun incurred during the course of this grant. You will be required to make up any shortfall from alternative sources.

#### GAC three: equality, diversity and inclusion

In addition to RGC 3.4, you are expected to prepare a full equality diversity and inclusion plan for the duration of this grant. The plan should demonstrate best practice in equality, diversity and inclusion throughout the lifetime of this funding award.

This must be recorded through the grant reporting process.

#### GAC four: naming and branding

In addition to RGC 12.4 Publication and acknowledgement of support, you must make reference to the UKRI AI programme and UKRI funding. They must include the UKRI logo and relevant branding on all online or printed materials (including press releases, posters, exhibition materials and other publications) related to activities funded by this grant.

References to the Strategic Priorities Fund must be included.

#### GAC five: collaboration and collaboration agreements

This grant is awarded on the condition that it will remain aligned to the wider mathematical and computational foundations of AI programme.

A formal collaboration agreement must be in place with the basis of collaboration between any organisations involved in the grant, that takes into account the provision of flexible funds.

This agreement should include the following:

* the allocation of resources throughout the project
* ownership of intellectual property
* rights to exploitation

It is your responsibility to put such an agreement in place before the research begins. The terms of collaboration agreements must not conflict with the UKRI terms and conditions.

We must be informed within three months of the start of the grant, that the collaboration agreement is in place and has been signed by all partners or the progress made (unless some alternative timeline has been agreed with EPSRC beforehand).

If sufficient progress has not been made within three months of the start of the grant, we reserve the right to enact RGC 11.1.

Arrangements for collaboration or exploitation, or both, must not prevent the future progression of research and the dissemination of research results in accordance with academic custom and practice.

#### GAC six: governance

We will nominate a member of our staff (the project officer) who will be your primary point of contact. The project officer will ensure that the project is being run in accordance with the terms and conditions and in line with financial due diligence.

As funding administrators, all UKRI staff have agreed to maintain the confidentiality required by all parties involved in EPSRC-funded research.

#### GAC seven: monitoring and reporting

Notwithstanding the requirements set out in standard grant conditions RGC 7.4.3, you are responsible for providing to the project officer progress reports twice a year against financial and non-financial performance metrics. A detailed list of performance metrics and instructions for reporting will be agreed with you upon commencement of the grant.

We reserve the right to suspend the grant and withhold further payments if the performance metrics requested are not provided by the stated deadlines or are determined to be of an unacceptable standard by our project officers.

Additional financial or non-financial information may occasionally be requested outside of the standard annual and quarterly reporting cycle. You agree to undertake all reasonable endeavours to comply with these requests in a timely manner.

#### GAC eight: expenditure

At the start of the grant the financial spend profile will be agreed by Us.

In addition to any reporting requirements set out in GAC eight, you must immediately notify our project officers in writing of any accumulation, slippage or variation in expenditure greater than 5% of the annual profiled funding.

We reserve the right to re-profile the grant if required. Any deviation from the agreed allocation of funding and profiled costs must be negotiated and approved through written consent by us. The approval of profile changes should not be assumed and will be dependent on spend across all associated grants.

At the end of the grant period a breakdown of the expenditure should be submitted along with the final expenditure statement.

#### GAC nine: embedding trusted research

The hub is expected to embed [trusted research](https://www.ukri.org/about-us/policies-standards-and-data/good-research-resource-hub/trusted-research-and-innovation/) throughout their activities.

We reserve the right to suspend the grant and withhold further payments if trusted research is not embedded throughout the programme or is deemed to be of an unacceptable standard by us.