



Department for
Science, Innovation
& Technology

Grant Award for a Cyber-Physical Infrastructure Ecosystem Capability

Guidance for applicants



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This guidance is for applicants applying to ‘CPI Ecosystem Capability’ competition.

1 Background

Cyber-physical systems and Cyber-Physical Infrastructure

Cyber-physical systems like digital twins, robotics and autonomous systems, virtual and augmented reality connect the physical and digital domains together, where data from the physical world feed insights and decision making in the digital world. Cyber-physical systems are becoming increasingly prevalent and have significant societal and economic benefits. These systems have a variety of cross sector applications, from design operation and optimisation of supply chains to scenario modelling of road traffic to reduce pollution.

The value of these systems increases once we connect them together. While individual cyber-physical systems can bring benefits to specific applications, networks of cyber-physical systems could provide significantly greater benefits to both the individual use cases and wider ecosystem. **An ecosystem of networked cyber-physical systems could be an infrastructure on which future products, services and decision-making processes are built more quickly and affordably. This ecosystem capability can be termed a ‘Cyber-Physical Infrastructure’.**

Enabling Cyber-Physical Infrastructure

In March 2022, BEIS published a [consultation](#) examining the challenges and opportunities to develop a national capability in Cyber-Physical Infrastructure (CPI).

Consultation responses strongly endorsed the CPI agenda outlined and many organisations described how they are already developing and connecting cyber-physical systems.

As a nascent technology area, individual ecosystems of networked cyber-physical systems are likely to develop without government intervention. However, responses provided strong endorsement for Government intervention to support key enablers and overcome systemic barriers to realising the full economic and social benefits of CPI.

As set out in the [government’s response to the consultation](#), this includes:

- **Security & resilience** – supporting the development of systems that can withstand attacks and failures, both at an application level and nationally, such as systemic supply chain risks
- **Interoperability** – ensuring different organisations and systems can connect and communicate as easily as possible

- **Recognised value propositions** – supporting the development and communication of the knowledge of how to develop and apply cyber-physical systems and the value they deliver, to facilitate investment
- **Frameworks, guidance and standardisation** – supporting the collaboration required to develop the common language, approaches and technical requirements for development and deployment, with the subsequent dissemination of this
- **Skills** – supporting the development of technical and non-technical skills required to develop a national capability in Cyber-Physical Infrastructure

A CPI Ecosystem Capability will bring together organisations to collaborate, coordinate, share insights and work together to overcome barriers and advance the CPI agenda. This will be primarily comprised of industry and commercial stakeholders, in collaboration with academia, the public sector and wider society. Convening CPI interested organisations will help to identify critical advances required and facilitate innovation through collaboration. Knowledge sharing will help to address systems-of-systems challenges across sectors and foster the development of shared building blocks, guidance and best practice that will enable organisations of different sizes and locations to participate and benefit from CPI and reduce siloed ways of working. This will also provide a key contact point to help government and the wider public sector to understand the application opportunities, priority interventions and opportunities for ongoing collaboration with industry.

2 Summary of Grant Funding

The Department for Science, Innovation and Technology (DSIT) is awarding up to £200,000 grant funding (up to £100,000 for both FY23/24 and 24/25 and inclusive of irreclaimable VAT) through competition for an organisation or consortium to deliver an ecosystem building capability to advance the CPI agenda and stimulate a UK CPI ecosystem.

The final selection of the successful applicant will be made by a panel appointed by DSIT, using the evaluation criteria set out in the eligibility criteria and competition questions.

Period of Funding agreement

There is up to £200,000 available from DSIT in grant funding, subject to evidence of eligible expenditure, from the date a commercial agreement is signed to 31 March 2025. £100,000 is available within each financial year and cannot be carried over between financial years.

The start date for DSIT funding is subject to satisfactory completion of pre-grant requirements, DSIT due diligence and signing a Grant Funding Agreement. DSIT funding will end by 31 March 2025.

Note: The Template Grant Funding Agreement is between BEIS (the Authority) and the Grant Recipient. The Authority will be amended to DSIT in due course.

Grants cannot be paid out for any work undertaken prior to countersignature of the Grant Agreement if the application is short listed.

The application form requires applicants to respond to all competition questions.

3 Competition Outline

Grant funding will support the development of a **CPI Ecosystem Capability**. The ecosystem capability will support the following outcomes:

The Outcomes

1. UK stakeholders will have a significantly greater awareness of the CPI agenda and understanding of the benefits of CPI to them and their stakeholders.
2. The UK will have a diverse cyber-physical ecosystem and organisations will have increased connections, coordination and collaboration between themselves bringing together individual organisations' and sector collaborations' capabilities and initiatives.
3. There will be useful and well utilised resources that accelerate investment in and development and adoption of cyber-physical systems - such as frameworks, best practice guides, use cases and business cases.

The planned delivery outputs and metrics

Applicants should propose how to achieve the Outcomes and measure success. As a guide, we have produced a table outlining an *indicative* list of outputs and metrics that could support the delivery of Outcomes and evaluate their success.

The successful applicant's proposed outputs and metrics will be finalised in the Grant Funding Agreement following review and agreement with DSIT. Applicants are encouraged to build upon existing activities, however new outputs specific to the CPI ecosystem capability are required.

Open ways of working

Open ways of working are foundational to delivery of the Outcomes. Where possible, information and resources produced should be made freely available to all stakeholders.

Working within the CPI ecosystem

There is a range of publicly and privately funded initiatives and RD&I projects to advance the state of the art of cyber-physical systems and overcome barriers related to CPI. We expect the ecosystem capability to work in partnership with existing initiatives, promoting collaboration and knowledge sharing.

Publicly funded RD&I initiatives and projects include but are not limited to:

- National Digital Twin Programme
- Digital Twin Hub
- **Innovate UK's** investment of £5.5m into [Catapult Network led Cyber-Physical Infrastructure projects](#) across energy, manufacturing, transport and digital technology
- **UKRI's Building a Secure and Resilient World theme** A £3m [funding opportunity](#) has been launched to develop a multi-disciplinary UK digital twinning research community
- **UKRI** funding for applied digital twinning research to support and improve the operation and resilience of the UK energy grid (full details to be announced)
- **Engineering and Physical Sciences Research Council (EPSRC)**'s planned research hub in digital twinning for decarbonisation and improved integration of the UK's transport system, with up to £20m allocated
- The **Alan Turing Institute**'s Turing Research and Innovation Cluster (TRIC) in Digital Twins¹
- **Department for Transport**'s investment into digital twinning for transport (full details to be announced)

¹ <https://www.turing.ac.uk/research/harnessing-power-digital-twins/turing-research-and-innovation-cluster-digital-twins>

Illustrative outputs and metrics to support Outcomes of the CPI Ecosystem Capability

Outcome	Example Outputs	Example Metrics
UK stakeholders will have a significantly greater awareness of the CPI agenda and understanding of the benefits of CPI to them and their stakeholders.	<ul style="list-style-type: none"> • Develop an online presence for a UK CPI ecosystem. • Produce a report based on findings and lessons learned from the ecosystem capability outlining the next steps for Government, industry, academia and wider society to develop a national capability in CPI. 	<ul style="list-style-type: none"> • Online engagement of CPI ecosystem capability – e.g. registrations, comments etc. • Report evaluating the success of the ecosystem capability and next steps to building a national capability in CPI
The UK will have a diverse cyber-physical ecosystem and organisations will have increased connections, coordination and collaboration between themselves bringing together individual organisations' and sector collaborations' capabilities and initiatives.	<ul style="list-style-type: none"> • Deliver a forum that enables the collaborative exploration and tackling of CPI challenges. 	<ul style="list-style-type: none"> • Number and diversity of stakeholders in aggregate (sectors, org types, demographics etc.) • Number of collaborations facilitated by the capability
There will be useful and well utilised resources that accelerate investment in and development and adoption of cyber-physical systems - such as frameworks, best practice guides, use cases and business cases.	<ul style="list-style-type: none"> • Develop resources to help organisations engage with the CPI agenda, recognise the value propositions, invest, develop and share best practice. 	<ul style="list-style-type: none"> • Number of downloads/interactions with outputs
Cross cutting	<ul style="list-style-type: none"> • Administration of the ecosystem capability such as the day to day running of a secretariat. A secretariat function will carry out activities and workstreams to meet the delivery outcomes. 	<ul style="list-style-type: none"> • Operational management information where appropriate

4 Governance

The following governance will apply to the funded activity:

- **Working level meetings:** the applicant will have regular meetings with DSIT to progress the development of the ecosystem capability (bi-weekly, with scope for higher frequency during initial stages).
- **Quarterly progress review:** DSIT and the successful applicant will meet quarterly to formally review progress against the delivery plan, agreed metrics and financial forecast. The successful applicant will be required to show how the grant has been used for funded activities in the quarter.
- **Annual senior review:** Seniors from DSIT and the successful applicant will meet annually (before end of FY23/24 and FY 24/25) to formally review overall delivery against the agreed outcomes and assess and possible changes in approach to maximise impact. An annual report must be submitted by the successful applicant in advance of each review. This should set out the progress in delivering the outcomes, how they have met the agreed milestones as set out in the delivery plan, highlight any best practice or lessons learned, and propose any improvements to the delivery of the ecosystem capability. The format of this will be agreed with DSIT e.g. in the form of a presentation.

5 Eligible Applicants

Specific eligibility criteria for the competition are below:

- Applications are accepted from individual organisations or consortium
- If the application is from a consortium there must be an agreed lead applicant who will be the prime recipient of grant funding and who will be responsible for managing the consortium's activities and for flow through of grant funding to other consortium members
- Applicants must demonstrate industry and cross-sector links needed to create a CPI ecosystem
- Companies that are not UK-registered are not eligible to receive grant funding from DSIT (Non-UK organisations may participate but will not receive grant funding)
- Individual people are not eligible applicants
- The grant must not represent more than 50% of the organisation or consortium's annual revenue (averaged over 3 years)
- Consortium members will need to have signed a collaboration agreement between themselves prior to any claim to DSIT for grant funding
- Individual organisations are allowed to apply as part of up to two consortia (in two separate applications)
- Award of the grant will be subject to the Authority being satisfied that the arrangement is compatible with the UK's domestic and international obligations governing the use of subsidies, and that the applicant/recipient must ensure that the ongoing delivery of the funded activities does not breach the Subsidy Control Act 2022 and/or any international subsidy control requirements
- Award will be made subject to successful due diligence checks

6 Competition Process and Dates

The competition process will follow these steps:

1. Applications will be submitted by (lead) applicants.
2. Applications will be assessed by DSIT against this Competition Guidance.
3. Applications will be ranked for shortlisting.
4. Shortlisted applications will be invited to an interview. Details of the interview stage will be confirmed nearer the time.

If applying as a consortium, applicants will need to submit a draft collaboration agreement that has been agreed between the consortium lead and consortium partners before interview.

5. The assessment of applications will be updated following the interview and the highest scoring shortlisted application will be selected as preferred applicant.
6. The applicant lead will be notified of the grant funding decision.

The competition process will follow this indicative timeline:

Event	Date/Deadline
Competition Opens	Monday 6 th March 2023
Deadline for potential applicants' clarification questions to DSIT (must be sent to cpiconsultation@beis.gov.uk)	Wednesday 3 rd May 2023
Deadline for submission of applications and all the required supporting evidence to DSIT (must be sent to cpiconsultation@beis.gov.uk)	Midday on Friday 12 th May 2023
Notification to applicants of whether they have progressed to interview stage. Shortlisted applicants are invited to interview.	Week commencing Monday 22 nd May
DSIT interview with shortlisted applicants	Week commencing Monday 12 th June
DSIT notifies applicants of the competition outcomes. For successful applicants, start of due diligence checks	Week commencing Monday 26 th June
Funding period and delivery commences, following completion of DSIT due diligence. Subject to timely, satisfactory completion, grant funding agreement (GFA) signed.	Estimated 4 weeks after applicants are notified by DSIT of success in this competition

7 Competition Assessment Questions

Application Structure

The structure for applications is as follows:

1. Terms and Conditions

The organisation must accept the Grant Agreement terms. This section must be completed for the application to be considered.

- Please confirm that the lead applicant has accepted the terms and conditions in the draft grant funding agreement (GFA) provided. The lead applicant will be the main point of contact between DSIT and the Applicant.
- We expect the lead applicant to sign the agreement after notification of success and to ensure satisfactory information is provided for DSIT due diligence. DSIT reserves the right to rescind offers of funding, for example if this is delayed.
- The terms and conditions set out in the GFA are non-negotiable and are available on the gov.uk competition website. We recommend that you review this with your legal advisors and raise any queries you may have with DSIT before submitting your application.

2. Applicant information (not assessed)

- Name of lead applicant. Please note that the lead applicant will be the main point of contact between DSIT and the Applicant
- Companies House or registered charity number of lead applicant if applicable
- Role of lead applicant within the consortium if applying as a consortium (50 words max)
- Contact details for lead applicant (full name, address, email address and telephone number of the lead organisation.)
- Name(s) of additional organisation(s) forming part of this application (if applying as a consortium)
- Companies House or registered charity number of additional organisation(s) if applicable
- Contact details for additional organisations (consortium partner - if applying as a consortium)
- Short description of the role of each organisation within the consortium if applying as a consortium (50 words max)
- Business sector(s) of organisation or consortium
- Region organisation HQ(s) based

Question 1: What is your vision and strategic approach? (25%, 800 words max)

This section is for applicants to set out a sufficiently ambitious and credible vision for the CPI Ecosystem Capability and explain how the ecosystem capability will advance the CPI agenda. Please address the below bullets in your response.

- *What is your vision for the CPI Ecosystem Capability and how will it contribute to the vision of the UK as a Cyber-Physical Innovation Nation, as outlined in the consultation response?*
- *Describe your approach to achieving the outcomes, including how the Ecosystem Capability will be able to work independently of Government. As part of this, please describe:*
 - *How the CPI Ecosystem Capability will be structured and organised*
 - *An outline of your vision for the types of representatives you would involve in the Ecosystem Capability*
 - *How you would act as, and be perceived by stakeholders as, a neutral convener for the CPI ecosystem (this does not necessarily exclude sourcing additional funding to support delivery e.g. through sponsorship of events etc. but you should explain how you would maintain neutrality where risks may be perceived)*
- *Please describe the potential for the CPI Ecosystem Capability to continue to develop beyond the grant funding period.*
- *Please describe how equality, diversity and inclusion will be carefully considered in the creation of the CPI Ecosystem Capability. This includes but is not limited to specific activity ensuring a diverse representation of members and supporting equitable systems.*

Question 2: What is your delivery plan? (50%, 1,200 words max excluding charts and appendices)

This section is for applicants to describe what specific activities will be carried out to deliver the outcomes and set out a delivery plan. Please address the below bullets in your response:

- *Please describe what outputs you propose to deliver against outcomes and how.*
- *Please describe what existing partners, networks, funding, mutually reinforcing activities and other resources you will leverage in support of delivering the CPI Ecosystem Capability.*
- *Provide a delivery plan for the CPI Ecosystem Capability. It is expected that this will have more detail for year 1. This must include:*
 - *A 'start to finish' Gantt chart with include phases of work, target timings*

- *Please identify key milestones, dependencies, risks and risk mitigation*
- *The metrics you propose against which delivery will be assessed along with milestone delivery*
- *Please provide a clear overview and explanation of the costs of delivery that can be related to the proposed delivery plan.*

Applicants must provide an appendix separately identifying the following:

- *The estimated cost for each work stream described in your delivery plan. If applying as a consortium, the application must clearly state the level of any contribution from each consortium partner.*
- *The spend profile by quarter, linking the profile to milestones and deliverables as applicable, noting up to £100,000 is available within each financial year and cannot be carried over between financial years. The spend profile should be fully consistent with the dates you have specified in the delivery plan.*

Question 3: What experience do you (and your partner organisations if applying as a consortium) have of delivering such a capability? (25%, 1,000 words max)

This section is for applicants to evidence their capability and experience delivering similar outcomes as required for the CPI Ecosystem Capability. Please demonstrate the following:

- *Evidence of how you have helped to influence and coordinate disparate, cross-sector activity previously to deliver similar outcomes*
- *Evidence of how you have delivered the types of workstreams and outputs you are proposing*
- *Evidence of experience and high credibility, with wide, cross-sector reach primarily within relevant industry stakeholders but also within relevant academia, wider public sector and wider society where available*
- *Evidence of a good understanding of cyber-physical systems and CPI*

Scoring

Individual responses to each question will be scored in line with the following scheme. The assessors will score your answers to these questions. Each question will be given a score 0-10:

- 0-1: Serious concerns: for example, does not meet requirements, and/or raises serious concerns (A score of 0-1 in any question will be cause to reject the application)
- 2-3 – Some concerns: for example, meets some requirements but with gaps and/or some concerns
- 4-5 – Adequate confidence: for example, meets most/all requirements, but lacks sufficient detail in some areas
- 6-7 – Good confidence: for example, meets most/all requirements and provides a response that demonstrates a good understanding of the requirements
- 8-9 – Very good confidence: for example, meets all requirements and provides a detailed response that also exceeds expectations in some areas and/or demonstrates a strong understanding of the requirements
- 10 - Outstandingly good confidence: for example, meets all requirements and exceptional detail that exceeds expectations in many areas and demonstrates excellent understanding of the requirements

Scores for each question will be weighted by the amount indicated against each question.

Your application's total score will be the sum of the weighted scores.

8 Further Information

When making decisions:

- We will give equal consideration to all applications that meet our criteria.
- We will be open and accountable in our procedures.
- All staff have to declare any interests in applications from organisations they may have connections with. If there is a conflict of interest, they will not be involved in the assessment process or the decision to award a grant.

If you are offered a grant:

- The terms and conditions available alongside this application guidance will apply to the grant award. These are subject to finalisation once the final application has been selected including incorporating the proposal and payment schedule.
- Please ensure that you read the criteria very carefully before applying. If you have any questions about eligibility or whether your project meets all our criteria, please contact us: cpiconsultation@beis.gov.uk.
- When the grant ends, the DSIT does not have a commitment to provide any further funding for the project.
- If there is any breach of the terms and conditions, or your organisation ceases to operate before the grant has been spent, it may have to be repaid.
- You must acknowledge you have received our grant in your annual report and accounts covering the period of the project.
- Grant money will not be paid until we have received your written acceptance of the terms and conditions attached to your grant offer.

If you have any complaints about the application process, please email cpiconsultation@beis.gov.uk in the first instance.

Confidentiality and data protection

Information you provide in your grant application, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004) and UK GDPR.

If you want the information that you provide to be treated as confidential (including commercially sensitive) please inform us but be aware that we cannot guarantee confidentiality in all circumstances.

We will process your personal data in accordance with all applicable data protection laws. See our [privacy policy](#).

This publication is available from: www.gov.uk/government/publications/cyber-physical-infrastructure-ecosystem-building-funding-competition

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