Connected Everything II:  
Accelerating Digital Manufacturing Research Collaboration and Innovation

Feasibility Studies – Second Call for Proposals

Closing date: Monday 22 June 2020

Background

As digital technology advances, the manufacturing sector must adapt and respond to a great number of drivers and barriers. Key to addressing these challenges will be a strongly cross-disciplinary approach, facilitated through our Connected Everything network of academics and industry partners. In order to harness the potential from these challenges, the changes in human skills, capabilities and working environments need to be considered, alongside the development and change in business models that underpin industry and innovation.

Since its inception in 2015, the Connected Everything network has grown to over 320 members, has supported 14 feasibility studies, 2 summer schools and 6 personal placements, has held a series of national specialist conferences and events and played a leading role in informing the research challenges incorporated into the ‘Made Smarter’ Wave 3 bid to the Industrial Strategy Challenge Fund.

In 2019, Connected Everything (CEII) was awarded a further three years of funding to continue its networking and research activities. The primary goal of CEII is to build on the success of CEI by continuing to expand our multidisciplinary community of researchers and industrialists from a range of disciplines to address key challenges associated with the future of digital manufacturing. We will continue to implement a collaborative, multidisciplinary and inclusive approach to knowledge creation, knowledge transfer, new collaborations and strategic influence to achieve demonstrable impact on people, society and the economy.

Feasibility study funding call

CEII is looking to fund a round of feasibility studies with a specific focus on regulation, which is one of our core themes. Projects can be between 6 and 12 months in length and must complete before the end of September 2021. The expectation is that we will fund up to 2 projects of up to a maximum value of £60,000 at full Economic Cost (fEC). Funding will be awarded at 80% fEC. (total project value cannot exceed £75,000).

As a result of the network considering ways it can respond to the current Covid-19 challenge, we have identified that there is a specific opportunity to ask for research ideas in the area of standards and regulation arising from recent digital manufacturing advances.

The future of engineering lies in the development of products that improve in performance throughout their useful life. The new products (across a broad spectrum of industrial sectors) will exploit several levels of technology integration and highly collaborative product development. For this to be effective requires significantly reduced quality assurance and certification timescales, as well as a more continuous process that carries on throughout the product life, and this significantly challenges existing regulatory processes. Key to this will be the creation of new assurance methods that not only exploit new technologies but also use more probabilistic methodologies than they do today.
The key question is how will governance and assurance of safety in highly regulated sectors take place using a probabilistic, through-life approach?

Examples you may wish to draw from (but not limited to) are:

- The use of digital technologies (such as sensors, AI, and digital twins) enables the possible improvement of the performance of a product throughout its useful life. For example, an aircraft that can ‘learn’ from experience could conceivably reduce its CO2 emissions over time. However, products such as aircraft are heavily regulated and once their design is approved by the regulator, it cannot be changed without going through a costly and time-consuming process to demonstrate ongoing assurance. Increasing the use of probabilistic assurance models may make it possible to reduce the cost and time associated with demonstrating safety, and this could happen throughout the use phase. Adopting this way of assuring complex, highly regulated products will need a new approach relating to the development and adoption of standards and regulation, yet it is not clear what this is. An initial understanding of what future standards & regulation scenarios could look like will add a great deal of value to developments in this area.

- Supply chains need to be much more adaptable and responsive to changing demands than ever before. The use of digital technologies can enable these to be managed with both speed and precision. However, highly regulated sectors such as food need to maintain high levels of safety, and traditional modes of assurance are too slow and imprecise to be able to ensure this is done effectively. If we can investigate and understand how technology can be deployed, and what this means in terms of standards and regulations, we will make a great deal of progress in accelerating the use of supply network design and management tools.

Outputs from the proposals could include, for example:

- Investigations of options and stakeholder consultations
- Processes and tools that capture faster and more responsive ways to respond to the changing environment
- Use of digital twins to help provide assurance models
- Product design
- Identification of key principles
- Creation of data sets or models

As CEII is funded by EPSRC, our focus is on fundamental ideas that have potential to be developed into future applications or concepts that can be implemented within Digital Manufacturing. Therefore, proposals should address challenges at low Technology Readiness Levels (TRLs 1-3) and be aligned with at least one of the thematic areas.

In light of the current social distancing guidelines, all proposals submitted must be able to conduct and complete their research while adhering to government guidance.
What is the aim of the funding?

The aim of the feasibility studies is to enable cross-disciplinary, foresight, speculative and risky early-stage research. We are looking at funding pre-Responsive Mode proposals. Applications led by early career academics/researchers are particularly encouraged, and projects will also be expected to ensure that their project involves explicit collaboration with industry partner(s), providing direct or in-kind support. We are keen to support collaborations of all sorts that would otherwise not happen, and welcome applications with leading participation from people drawn from non-traditional manufacturing disciplines. The feasibility study should result in increased confidence in the proof of concept developed, which then has potential to attract further investment.

Details of the 14 projects funded through CE can be found at: https://connectedeverything.ac.uk/activities/feasibility-studies/

CEII has a strong commitment to Equality, Diversity and Inclusion (EDI). We particularly welcome applications from teams which are diverse in terms of protected characteristics and disciplinary areas.

Responsible Innovation

Responsible Innovation is a process that seeks to promote creativity and opportunities for science and innovation that are socially desirable and undertaken in the public interest. Responsible Innovation acknowledges that innovation can raise questions and dilemmas, is often ambiguous in terms of purposes and motivations and unpredictable in terms of impacts, beneficial or otherwise. CEII want to ensure that any research it funds is undertaken with the values of Responsible Innovation in mind. In this case, we expect researchers involved in funded feasibility studies to anticipate, reflect and engage on the wider ethical and societal impacts, implications and value of their work, entering into dialogue with the public and other stakeholders where appropriate, and respecting the views of others.

Application Process

Awards will be made via a short written application, followed up by a pitch to a multidisciplinary panel including representatives from industry. Each feasibility study will be expected to deliver a discipline-bridging state-of-the-art review, early stage concept development, or demonstrator technology, focussed on highlighting the transferability of technology concepts from other domains to manufacturing and industry.

Successful applicants will be expected to participate in network events and will be required to present project updates at the Connected Everything annual conferences. In addition, there is a requirement that presentations on the successful projects are made at a kick off meeting to be held online. One of the most valuable outcomes of our first cohort of feasibility studies was the informal network of researchers that emerged, and we expect our feasibility study teams to form a core part of the CEII community.

Inclusive delivery of CEII activities

CEII has a strong commitment to Equality, Diversity and Inclusion, in line with the UKRI commitment to EDI, and strives to ensure that all of our network activities are open and
accessible to all. We particularly recognise the impact of engaging with activities such as networks and are keen to challenge our own thinking as we deliver our programme. Therefore, we encourage applicants to discuss any specific requirements that will enable participation with the CEII team.

We have designed our funding allocation process with an aim to minimise any potential impact of bias at all stages of decision making. We are therefore be piloting a new approach in the application process. The application form will be in two parts: Part 1 will contain contact details, project team and track record information and Part 2 will be the outline Case for Support, which will be considered anonymously by a shortlisting panel. Please make every effort to ensure that no identifying content is included in Part 2 (e.g. host institution or industrial partner names). This will enable proposals to be considered without members of the panel having knowledge of the applicant’s identity or affiliation.

**Selection criteria**

The following criteria will be used by the review panel when assessing the proposals:

- Multidisciplinary and clear demonstration of “discipline-bridging” through activity;
- Involvement of industry stakeholders;
- Involvement of early career researchers;
- Potential for development of future funding applications from EPSRC (e.g. responsive mode), Innovate UK or other funding streams;
- Demonstration of transfer of concepts from other domains to manufacturing;
- Potential to lead to strong dissemination materials;
- Paths to accelerate impact of research to ensure rapid transfer to industry.

**Key dates**

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<tr>
<th>Date</th>
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<tr>
<td>27 May 2020</td>
<td>Call for proposals goes live</td>
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<tr>
<td>22 June 2020</td>
<td>Deadline for submissions (5PM)</td>
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<td>8 July 2020</td>
<td>Invitations to Panel Pitch Day issued</td>
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<td>Unsuccessful proposals advised</td>
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<tr>
<td>24 July 2020</td>
<td>Panel Pitch Day (online)</td>
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<td>29 July 2020</td>
<td>Successful proposals announced</td>
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<tr>
<td>26 August 2020</td>
<td>Kick off meeting (online)</td>
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<tr>
<td>September 2020</td>
<td>Feasibility studies begin</td>
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All feasibility studies should have completed before September 2021.

**Eligibility**

Guidelines on eligibility can be found [here](#). Eligible organisations include all UK Higher Education Institutions that receive grant funding from one of the UK higher education funding bodies, along with research institutes for which the Research Councils have established a
long-term involvement as a major funder. Other independent research organisations (IROs) may also be eligible and a list of such organisations is available here.

**What can the funding be used for?**

The budget outline for the proposed feasibility studies can include investigator/researcher time, travel and subsistence appropriate to delivery of the project, and consumables.

As the grant holder, the University of Nottingham is responsible for allocating funding to successful proposals and will reimburse subcontracting organisations at 80% full economic costing. Academic institutions will be required to itemise bills based on 100% FEC and then invoice at 80% FEC.

**Submitting proposals**

Feasibility study applications should be submitted, using the application form provided, via email to debra.fearnshaw@nottingham.ac.uk by 5pm on Monday 22 June 2020.

As you will see form the application form, proposals for feasibility studies should include the following content:

**Part One**
- Project Title
- Lead organisation
- Principle Investigator
- Details of the project team, including industry partners. Please indicate which members of the academic team are early career researchers.

**Part Two**
- Start date and duration.
- Context, aims and objectives, and benefits of the proposed work.
- A statement of the novelty of the proposed work.
- An outline project plan
- What are the tangible deliverables of the feasibility study?
- How could further funding in this area be obtained?

References can be included as an appendix and will not be counted in any word count. Please complete the form in Arial 11.

A breakdown of the allocation of the funds with a short justification for each category is also required. The categories are:

- Directly Allocated
- Directly Incurred
- Indirect Costs

The budget should be submitted via a separate template and be accompanied by a one-page justification of costs document.
All application form templates can be downloaded at: https://connectedeverything.ac.uk/feasibility-studies/ceii-call-for-feasibility-study-proposals/

Additional Information

In addition to the specific outputs outlined in your proposal, each feasibility study project team is required to:

1. Attend a kick off meeting on 26 August 2020.
2. Present your work (in progress or completed) to the Connected Everything annual conferences (date TBC) You will need to include conference expenses in your budget.
3. Provide information and updates for the dedicated project webpage on the Connected Everything website, when requested. Connected Everything will also promote its work across the sector, and occasionally project leads might be asked for short quotes or other information to demonstrate the activities that are taking place.
4. Work with the Connected Everything Knowledge Exchange and Research Lead to produce an information sheet and detailed case study, templates for which will be provided.
5. Ensure that the work is acknowledged as being supported by EPSRC and Connected Everything when promoting projects, either through articles, papers, presentations or interviews. Both EPSRC and Connected Everything branding should be visibly included on any presentations.

Mentoring

Each project will be provided with access to a mentor who will support the activities of the project. Your mentor will provide advice and feedback to you at appropriate times during your project activities. The aim is to provide your project with an additional level of support and guidance, rather than monitor its progress. Mentors may be asked to provide feedback to the Connected Everything II Executive Group from time to time.

Further Information

If you have any questions regarding this call for proposals, please contact the Connected Everything II Network Plus Manager, Debra Fearnshaw email: debra.fearnshaw@nottingham.ac.uk, telephone: 0115 84 66238