



Engineering and Physical Sciences
Research Council

Quick Reference

Please note that you must read the full Call document for guidance before submitting your proposal

Manufacturing Futures: Adventurous Manufacturing Research

Call type: Invitation for outline proposals

Closing date: 16:00 on 04 December 2018

Funding Available: Up to £3 million is available for this call for highly adventurous research to address Manufacturing Research Challenges. We expect to fund approximately 12 awards of up to 24 months in duration.

How to apply: Applicants must complete an Intent to Submit form via the EPSRC call website by 16.00 on 25 October 2018, before submitting outline proposals by 16.00 on 04 December 2018.

Assessment Process: Applications will be assessed via a two stage process. Firstly, outline Case for Supports will be considered anonymously by a shortlisting panel. Invited outlines will then undergo a 'Big Pitch' interview stage, resulting in a rank ordered list.

Key Dates:

Activity	Date
Deadline for Intent to Submit	25 October 2018
Deadline for Outline Proposals	04 December 2018
Shortlisting Panel	Decisions by 25 January 2019
Pitch Dates	Week commencing 11 February 2019
Funding Decision	22 February 2019
Target Award Start Date	01 May 2019

Additional information: This call will follow a non-standard format for submissions and assessment, therefore please read this guidance documentation carefully. Any applicant considering submitting a proposal to this call must complete the Intent to Submit form on the EPSRC call website to register their intent to submit before 16:00 on 25 October 2018.

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Manufacturing Futures: Adventurous Manufacturing Research

Call type: Invitation for outline proposals

Closing date: 16:00 on 04 December 2018

Related themes: Digital economy, Energy, Engineering, Healthcare technologies, ICT, LWEC, Manufacturing the future, Mathematical sciences, Physical sciences, Quantum technologies

Summary

The Manufacturing the Future Theme is looking to invest in highly adventurous manufacturing research to address the research visions of the theme:

- 21st Century Products
- Digital Manufacturing
- Sustainable Industries
- New Industrial Systems.

These visions cover the entire manufacturing spectrum, including simulation, design, production, fabrication, systems and services leading to successful processes and products. This call is aimed at academics already working in these areas as well as those currently working at the interface between underpinning science and manufacturing who want to move their work into the manufacturing domain.

The vision for the Manufacturing the Future theme is for the research we sponsor to help solve some of the most serious challenges facing the UK today and in the future. Manufacturing makes a major contribution to the UK economy but further investment is required, particularly in high-value and specialist manufacturing, underpinned by the research base. Our aim is to create and capture the benefits of research for UK manufacturing industries, thereby supporting UK productivity and prosperity..

This initiative will look to support a portfolio of exceptional and potentially transformative science and engineering research projects that have the potential to contribute to the manufacturing research visions.

A high degree of risk in these applications is expected and welcomed to encourage speculative ideas or new ways of thinking.

EPSRC would like to stimulate the community to respond to this challenge through Bright IDEAS awards.

<https://epsrc.ukri.org/funding/applicationprocess/routes/network/ideas/brightideas/>

- **Up to £3 million** will be available for this Call through the **Manufacturing the Future Theme**, subject to research quality.
- **Bright IDEAS Awards** are intended to support **genuinely novel and potentially transformative research activities**.
- **In summary the process is:**
 - Intent to submit – to check eligibility
 - Outline Proposal – Anonymous Case for Support assessed. Successful applicants invited to Pitch
 - Pitch – applicants assessed at 'Big Pitch' interview. Successful applicants invited to submit Full Proposal
 - Full Proposals are funded.

Further information on the process follows in the call document.

- Applicants can apply for **up to £250K (80% value of the full costing)** in total
- Applications for **up to 24 months** in duration will be accepted
- Each applicant can only submit one proposal as a Principal Investigator.

Background

Bright IDEAS Awards: The Big Pitch

This is one of several approaches that EPSRC uses to stimulate and encourage individuals to express their creativity and develop pioneering, potentially transformative research. All researchers that are qualified to apply for EPSRC funding are eligible to apply for funding through the Bright IDEAS Award: the Big Pitch initiative.

The EPSRC encourages research that has the capability to contribute towards revolutionising existing fields, creating subfields, causing paradigms shifts in existing thought and knowledge, and/or supporting discoveries that might lead to new, disruptive technologies. Through previous funding activities such as the IDEAS Factory, EPSRC has aimed to help support the research community to embrace originality and novelty to promote both creative thinking and innovation within multidisciplinary teams. The Bright IDEAS Awards have been initiated to support individual researchers with adventurous and potentially transformative research ideas.

At stage 1 an independent panel will convene, selecting a small number of applications anonymously which are taken forward to stage 2 of the process – a 'Dragons Den-style' peer review pitch. The chosen academic applicants will pitch their ideas to the independent panel of academics and industrialists, followed by a period of questioning and discussion with the panel.

Scope

In May 2018 the Manufacturing the Future theme held a retreat ('Manufacturing Futures') attended by academics and industrialists to explore the future landscape of manufacturing and in particular the opportunities for UK manufacturing research and innovation. The outputs we have gathered from the retreat will inform the plans for the Manufacturing the Future theme in the medium to long term. To complement these plans, this call has been launched to encourage highly transformative research in the near term which has the potential to disrupt the future manufacturing landscape.

The Manufacturing the Future theme draws on capabilities from across the whole engineering and physical sciences research portfolio. We are seeking to provide a route for ambitious, high risk research in manufacturing with the potential to provide disruption in UK Manufacturing. Routes for accessing follow-on funding are planned which will allow research outputs to be further developed.

We would like to encourage research proposals from the breadth of the engineering and physical sciences research community that are focused on addressing key challenges in UK manufacturing. These could contribute to the following research visions identified by the Manufacturing the Future theme:

- **21st Century Products** – Century defining products might be 'smart', multi- functional or might enable or enhance our well-being. Unimaginable today, these products may be enabled by new technologies or have advanced materials incorporated into components. Research efforts will generate a suite of flexible tools, enabling the manufacturing process to be integrated in the discovery, design and development of these new products, allowing for rapid prototyping with scale-up capability embedded.
- **Digital Manufacturing** - Digital manufacturing optimises the design process, allows for simulation and visualisation of processes and enables fast and responsive control and connectivity of manufacturing systems and supply chains. Intelligent factories and industries will be categorised by automation, personalisation of products and services (including development of the digital technologies and user-interfaces that enable this); transformation of the cyber- physical production system driven, for example, by data from IoT and increased interconnectivity; and cyber security risks to manufacturing.
- **Sustainable Industries** - Manufacturing industries will be able to meet the needs of present sectors/customers without compromising the ability of future generations to meet their own manufacturing needs. This depicts a future where resource usage, resilience and security are transformed and where business models, manufacturing processes and product value/ownership are redefined.
- **New Industrial Systems** – Industrial systems may evolve from being predominantly centralised towards a portfolio that becomes more effective at creating and capturing value at a variety of scales. This vision could be interpreted at different levels. At a tangible level; introduction of alternative machine tools, cellular manufacturing, self-healing tools, systems that self-build. Different models of operation may be alternative

supply chains and business models. Finally, mass customisation in consumer products and personalisation of healthcare.

Although all genuine research is novel, we want to emphasise that the scope of this call is to encourage and support potentially highly transformative Manufacturing research which, because of its risky and speculative nature, might otherwise struggle to attract funding. Each project can be **up to 24 months** in duration and applicants can apply for **up to £250K** (80% of the full Economic Costing (fEC)) in total. In the spirit of a feasibility study, applicants should be encouraged to think creatively about their approach and explore new ways of working.

Due to the speculative nature of the projects, we will not be expecting specific industrial interest to be included in the application though in this particular Big Pitch call support from project partners is welcome and letters can be attached to the full proposal submission if appropriate. We would expect industrial engagement where and when appropriate throughout the course of the grant. Any potential involvement should be included in the pathways to impact document.

For more information about EPSRC's portfolio and strategies, see our website: <https://epsrc.ukri.org/research/ourportfolio/>.

Funding available

The Manufacturing the Future Theme expects to commit up to £3 million for approximately 12 awards.

Applicants can apply for **up to £250K (80% value of the full costing)** in total.

Applications must be costed on fEC basis and funds can be requested for staff, equipment, consumables and travel.

EPSRC will review the '**Adventurous Manufacturing Research**' portfolio after approximately 12 months from the start of the grants in order to explore the opportunity to provide further funding to extend the research in progress and enhance the impact of the initiative.

Equality, Diversity and Inclusion

The long term strength of the UK research base depends on harnessing all the available talent and the Research Councils have together developed the ambitious UK Research and Innovation Equality, Diversity and Inclusion Action Plan: <https://www.ukri.org/files/legacy/skills/action-plan-edi-2016/>

In line with the UK Research and Innovation Diversity Principles, EPSRC expects that equality and diversity is embedded at all levels and in all aspects of research practice. We are committed to supporting the research community in the diverse ways a research career can be built with our investments. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcomes applications from academics who job share, have a part-time contract, need flexible working arrangements or those currently committed to other longer, large existing grants. Please see our Equality and Diversity webpages at <https://www.epsrc.ukri.org/funding/equalitydiversity/> for further information.

Equipment

Equipment over £10,000 in value (inc. VAT) is not available through this call. Smaller items of equipment (individually under £10,000) should be recorded under Directly Incurred - Other Costs heading.

For more information on equipment funding, please see:

<https://epsrc.ukri.org/research/facilities/equipment/>

Eligibility

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:

<https://epsrc.ukri.org/funding/applicationprocess/fundingguide/>.

In terms of Investigators on the grant it is expected that this award **is for a Principal Investigator only**. If the grant crosses disciplinary boundaries, a Co-Investigator may be permitted if it is demonstrated they are from a different discipline to the Principal Investigator. For example, we would usually not expect the Co-Investigator to be from the same department as the Principal Investigator.

A list of eligible organisations to apply to EPSRC is provided at:

<https://www.ukri.org/funding/how-to-apply/eligibility/>

Eligibility to submit to the call will be checked by EPSRC following the submission of the Intent to Submit form.

How to apply

Intention to submit an application

EPSRC require all applicants to register their intention to submit a proposal to this call on the EPSRC call website before **16:00 on 25 October 2018**, so we can plan for the demand generated by this call. This requires a title for the project and a confirmation that you are eligible to apply. The Intent to Submit form is available on the webpage for this call

(<https://epsrc.ukri.org/funding/calls/adventurousmanufacturing/>).

If you are deemed ineligible to apply then you will be contacted by email by **08 November 2018**.

Submitting an application

You should prepare and submit your Outline proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

When adding a new proposal, you should select:

- Council 'EPSRC'
- Document type 'Outline Proposal'
- Scheme 'EPSRC Outline'

- On the Project Details page you should select the 'Manufacturing Futures: Adventurous Manufacturing Research - Outline Proposal' call.

Note that clicking 'submit document' on your proposal form in Je-S initially submits the proposal to your host organisation's administration, not to EPSRC. Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. EPSRC must receive your application by **16:00 on 04 December 2018**.

Guidance on the types of support that may be sought and advice on the completion of the research proposal forms are given on the EPSRC website (<https://www.epsrc.ukri.org/funding/howtoapply/>) which should be consulted when preparing all proposals.

Full proposals invited following a successful outline and pitch must have the 'Related Grant' field completed in Je-S. Please use the option 'Successful Outline'.

Guidance on writing an application

Applications will follow a non-standard format as detailed within this call document. Please note your Case for Support should be anonymised, therefore you should avoid revealing your identity and your host organisation.

The transformative element of all applications submitted against this Call should be:

- clearly articulated in the proposal
- at least 50% within the Manufacturing the Future theme's remit (with the potential that a follow-on application for funding, if appropriate, is heavily focussed in the Manufacturing the Future theme)

Bright IDEAS Awards should be for up to 24 months in duration and should, through effective management, encourage bold and radical thinking. New research directions should be pursued which have the potential to lead to high impact and/or disruptive outcomes.

At the Outline stage, applicants should use the documents submitted to highlight any relevant Ethical Information to demonstrate to peer reviewers that they have fully considered any ethical issues concerning the material they intend to use, the nature and choice, current public perceptions and attitudes towards the subject matter or research area. EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. Other relevant guidance includes: EPSRC's policy on animal use in research (<https://www.epsrc.ac.uk/about/standards/animalresearchpolicy/>) and the Responsible Innovation Framework (<https://epsrc.ukri.org/research/framework/>).

Please note that on submission to EPSRC, **all** non-PDF documents uploaded onto Je-S are converted to PDF, the use of non-standard fonts may result in errors or font conversion, which could affect the overall length of the document.

For advice on writing proposals see:

<https://www.epsrc.ukri.org/funding/howtoapply/preparing/>

Assessment

Assessment process

Applications will be assessed via a two-stage process, the Outline and the Pitch. The purpose of the Intent to Submit is establish the number of applications and the eligibility of applicants)

Stage 1: The shortlisting of outline proposals

Outline proposals may be submitted by individual eligible researchers **only**.

The following information and documentation will need to be submitted in the outline proposals:

- [Je-S](#) application form for the 'Manufacturing Futures - Adventurous Manufacturing Research - Outline Proposal' call; the summary section should contain an overview of the research proposed.
- Pathways to Impact – no more than 2 sides of A4 (this will only be assessed at Stage 2)
- Justification of Resources (mandatory template provided on the EPSRC call website) – approximately 5,000 characters (this will only be assessed at Stage 2). This should explain why the resources you've requested are required to undertake your research project. This is to help the Pitch panel to make an informed judgement about whether the resources requested are appropriate for the research proposed.
- Case for Support (mandatory template provided on the EPSRC call website) – approximately 10,000 characters. This should address **the key questions given below:**
 - 1) **What Manufacturing Research challenge are you addressing?**
 - 2) **What is the novel Manufacturing research idea? How would this research help to deliver the manufacturing challenge you are addressing? Why is this potentially transformative?**
 - 3) **What will be the key achievement at the end of the project? How will you manage the risks? What difference will this award make?**

ALL 3 questions must be clearly identified within the case for support.

If the outline proposal exceeds the page limit, or does not conform to this template format, your application will not be considered.

Your answers to the questions will be used to assess your application.

IMPORTANT: the peer review for this initiative is being performed **anonymously** and therefore your outline proposal will be considered without members of the panel having knowledge of your identity or affiliation. For that reason, please note that your academic publication or research track record should **NOT** be included in your case for support, neither should any references that may reveal your identity. Any

submitted applications which reveal your identity will be rejected by EPSRC.

This anonymous peer review approach is being taken at the Outline stage to ensure that the panel is focussed on the research idea and cannot be influenced by other factors.

In terms of Investigators on the grant it is expected that this award **is for a Principal Investigator only**. If the grant crosses disciplinary boundaries, a Co-Investigator may be permitted if it is demonstrated they are from a different discipline to the Principal Investigator. For example, we would usually not expect the Co-Investigator to be from the same department as the Principal Investigator.

Any proposals not within remit will be rejected prior to the shortlisting panel meeting.

Each applicant can only submit one proposal as a Principal Investigator.

The closing date for outline proposals is **16:00 on 04 December 2018**.

Applicants will be informed of their selection for the Pitch by **25 January 2019**.

There will be no postal peer review of applications submitted against this call.

There will be no detailed feedback given on the applications at the Outline stage.

Assessment Criteria for stage 1

At the outline stage, the panel is looking for convincing evidence of how you might approach your chosen problem and the level of creativity and pioneering foresight. The assessment of outline proposals will be based on the answers to the questions posed in the template and their alignment to the following criteria:

- **Scientific quality** of the proposed research including novelty, ambition and transformative nature (primary criterion)
- **National importance** and how the research underpins or contributes to EPSRC's strategic priorities (secondary major criterion)

Stage 2: The Pitch (for those invited from stage 1)

Applicants, who are successful at the stage 1 of the call, will be invited to Pitch in the **week commencing 11 February 2019**. Those applicants that are invited to Pitch will receive further details on the process directly from EPSRC. The process, from this stage, will no longer be anonymous.

The Pitch panel will use the outline proposal as their initial source of reference, particularly with respect to any technical aspects of the proposed research. The panel will also have access to the Pathways to Impact and Justification of Resources submitted with the original application. The panel have leave to ask the applicants during the Pitch for additional information and clarification, concentrating primarily on the fit to the assessment criteria. The panel will be asked to make funding recommendations to EPSRC.

A funding decision will be made by EPSRC by **22 February 2018**.

The Pitch panel will offer feedback and advice to applicants who are not successful at stage 2 to aid building on their ideas.

For Support available for people with caring responsibilities see:

<https://epsrc.ukri.org/funding/applicationprocess/basics/caringresponsibilities/>

Assessment Criteria for stage 2

At this stage, the panel is looking for convincing evidence that the applicant is an exceptionally creative investigator who can deliver the proposed research idea as well as examining the idea more deeply to check its potential to be transformative, adventurous and contribute to the Manufacturing visions of the Manufacturing the Future theme.

The panel's assessment will be based on the written documentation already submitted and the interview performance, focused on the following criteria:

- **Scientific quality** of the proposed research including novelty, ambition and transformative nature (primary criterion)
- **National importance** and how the research underpins or contributes to EPSRC's strategic priorities (secondary major criterion)
- **Applicant's ability** to deliver the proposed research (secondary criterion)
- **Pathways to impact** and the effectiveness of the activities identified to help realise these impacts, including the resources requested for this purpose (secondary criterion)
- Appropriateness of **management** plans including management of risks (secondary criterion)
- Cost-effectiveness and **justification of resources** requested (secondary criterion).

Although Scientific Quality and National Importance were assessed at the Outline stage this was based only on a two-page Case for Support. Through the Pitch process a greater level of detail will be available from the presentation and the question and answer session and therefore these assessment criteria will be included at the Pitch stage.

The panel will generate a rank ordered list based on the scores against the assessment criteria and advise EPSRC on which projects are recommended for funding.

Moving forward

Successful candidates will be required to submit a full proposal following the pitch stage. The full proposal submission will only constitute resubmission of the outline documentation with appropriate Project Partner Letters of Support and Ethical Information (if required). Guidance will be provided by EPSRC to successful applicants at this stage. Deadline for submission of the full proposals will be **28 February 2019**.

If you are currently restricted under the Repeatedly Unsuccessful Applicants Policy, you may submit unlimited outlines but you will only be able to submit one full proposal (as PI or CO-I) during the 12-month restricted period.

An unsuccessful application to this call would not affect an applicant's eligibility to apply for a New Investigator Award.

Submissions to this call will count towards the Repeatedly Unsuccessful Applicants Policy. Further information about the policy can be found at: <https://www.epsrc.ukri.org/funding/howtoapply/basics/resubpol/rua/>

Grant conditions:

In order to provide information for the review of the Adventurous Manufacturing Research grants after approximately 12 months' reporting of progress on the grant in addition to researchfish may be required.

EPSRC reserves the right to add further grant-specific conditions before commencement of the grant, if awarded.

Key dates

Activity	Date
Deadline for Intent to Submit	25 October 2018
Deadline for Outline Proposals	04 December 2018
Shortlisting Panel	Decisions by 25 January 2019
Pitch Dates	Week commencing 11 February 2019
Funding Decision	22 February 2019
Target Award Start Date	01 May 2019

*EPSRC aims to adhere to the key dates as published, however there may be exceptions where the Shortlisting or Pitch meetings may have to change due to panel member availability.

Contacts

Any enquiries related to this Call should be directed to:

- Gerard Davies (Gerard.Davies@epsrc.ukri.org - 01793 444233)
- Agnieszka Dzielendziak (Agnieszka.Dzielendziak@epsrc.ukri.org - 01793 444364)
- Manufacturing inbox (ManufacturingPeerReview@epsrc.ac.uk)

Your research administration should be able to offer advice about costing your proposal and the Je-S system.

Any queries regarding the submission of proposals through Je-S should be directed to the Je-S helpdesk (JeSHelp@rcuk.ac.uk - 01793 444164).

Please allow enough time before the closing date and time for your organisation's submission process.

Change log

Name	Date	Version	Change
Gerard Davies	10 September 2018	1	Initial version

Appendices

Je-S attachments Check List

Outline:

Attachment Type	Maximum Page length	Mandatory /Optional	Extra Guidance
Case for Support	Template provided	Mandatory	Please use the template provided describing proposed research and its context. This should not provide any identifiable details and should be anonymous in nature.
Pathways to Impact	Two pages	Mandatory	
Justification for Resources	Template provided	Mandatory	Please use the template provided.

Please ensure you adhere to the above attachment requirements when submitting your proposal. Any missing, over length or unnecessary attachments may result in your proposal being rejected.