

Quick Reference

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

ISCF Manufacturing Made Smarter Research Centres

Call type: Expression of interest

Closing date: 16:00, 23 September 2020

Funding Available: We expect to fund up to 4-5 Centres, with total funding available of up to £20 million.

How to apply: Expression of Interest, followed by Full Proposal.

Assessment Process: Applicants **must** submit an Expression of Interest (EOI) in order to apply to the full call. Full Proposals will undergo postal peer review. Applicants receiving supportive reviews will be invited to attend an interview panel. Final funding decisions will be made using a portfolio approach, to ensure coverage across the four Innovation Themes.

Key Dates:

Activity	Date
Deadline for Expressions of Interest	23 September 2020
Deadline for Full Proposals	17 December 2020
Interview Panel	12 - 23 April 2021
Funding decision	May 2021
Earliest grant start date	07 June 2021

Additional information:

- This funding originates from the Industrial Strategy Challenge Fund (ISCF), as part of the ISCF Manufacturing Made Smarter Challenge.
- To be eligible, **applicants must submit an Expression of Interest**.
- Grant duration is fixed at 42 months.
- Project partners are mandatory and project partner co-funding contributions (cash or in-kind) must total at least 25% of the EPSRC contribution.
- Submissions to the Expression of Interest stage **will not** count towards the Repeatedly Unsuccessful Applicants Policy; however submissions to the Full Proposal stage **will** count.

- To facilitate collaborations, some parts of the Expressions of Interest will be published on our website.

Contacts: Please copy all enquiries to the EPSRC Manufacturing Made Smarter mailbox: iscf.mms@epsrc.ukri.org

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ISCF Manufacturing Made Smarter Research Centres

Call type: Expression of interest

Closing date: 16:00, 23 September 2020

Related themes: Manufacturing the Future, Digital Economy, Engineering, ICT, Mathematical Sciences, Physical Sciences, Artificial Intelligence & Robotics, Business and Management Studies, Social Anthropology, Innovation Studies

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Summary

In this call we expect to fund 4-5 Research Centres, delivering cross-cutting research in the area of Digital Manufacturing. Research is expected to cover both technological and societal aspects of the digital manufacturing space, and should be driven by industry-identified needs and challenges. For this reason, strong industry support is expected, with at least 25% of the EPSRC contribution committed at the point of full application (rising to 50% by the end of the grant).

All Centres will be expected to undertake 3 strands of activity:

1. Underpinning programme of research (up to 50%). This research must be co-created with industry and focused on application to the Manufacturing sector. Centres are encouraged to include ambitious, transformative ideas within their programme.
2. Response to emerging industry needs (up to 50%). Centres are expected to be agile in addressing new industry challenges as they evolve.
3. Networking (up to 5%). Centres must collaborate and network with the cohort of ISCF Manufacturing Made Smarter Research Centres and with other ISCF Manufacturing Made Smarter Challenge investments and activities, as appropriate.

Research should be focused on at least two of the Innovation Themes described below. We are looking to fund Centres delivering multidisciplinary research across themes (although Centres may choose to focus on one/some more than others, and do not have to include them all). All Centres must include some research from the fourth theme (societal and cultural change); this may be as a major or minor component of the research effort. Although this call is being delivered by EPSRC, **there is no requirement for the majority of the research to fall within EPSRC's remit.**

1. Smart connected factory

The overall intent of this theme is to harness technologies to optimise the design and execution of current and future factories. Whilst not a complete list, areas of potential interest include:

- Manufacturing process and operations
 - Use of robotics or additive manufacturing to accelerate processes
 - Dynamic, real time production planning and scheduling
 - Digital twins of facilities and processes to optimise future designs or optimise current state
 - Real time/in process quality monitoring and process optimisation
 - Digital track and trace systems
- Asset management optimisation
 - Predictive analytics
 - Augmented support for maintenance
- Embedded certification, verification and validation - simulation and statistical analysis
- Use of robotics and autonomous systems in manufacturing or warehouse operations to improve productivity or worker safety
- Connected worker – augmented & virtual solutions for task assistance, training or safety
- The integration of cyber and physical production systems

2. **Connected and versatile supply chain**

The overall intent of this theme is to harness technologies to optimise the design and execution of current and future supply chains. Areas of potential interest include:

- Interoperability and understandability of data across value chains
- Supply chain design:
 - End to end supply chain visibility and effective risk management through transparency, collaboration & trust
 - Inventory optimisation
 - Sustainable supply chains for increased flexibility
 - Warehouse optimisation through the consideration of logistics and infrastructure usage
 - Confidence in shared data considering provenance, traceability, verification & quality management
 - New business models that affect the supply chain configuration, such as distributed manufacturing or manufacturing as a service
- Supply chain execution:
 - Demand management, sensing and shaping
 - Proactive use of demand data for supply chain performance optimisation
 - Improved decision-making through analytics and artificial intelligence (AI)
 - Production planning or scenario modelling
 - Track-and-trace technologies, traceability and provenance

3. **Adaptable, flexible manufacturing operations and skills**

- Enabling customisation: adapting processes to smaller batch size production, rapidly configurable processes with reduction of design and production time.
- Flexible /distributed manufacturing using a flexible network of supply and skills to manage volatility/disruption effectively.
- Simulation and understanding of real work using data from people and industrial systems, efficient transfer of trial results to the workplace.
- Safety and human-machine interactions - ergonomics, sensing, big data, and psychosocial effects.

We expect **all Centres** to include aspects of the fourth Innovation Theme and to consider these aspects across all the research carried out by the centre:

4. **Societal and cultural change - managing the disruptive impact of digital technologies**

- Reconsidering the design of jobs, roles and organisations to incorporate new skills and activities (e.g. Artificial Intelligence or Internet of Things) to optimise the future of work in manufacturing.
- Fully understand the human factors in design of technology solutions to optimise their impact including human interactions with safety, cyber and ethics issues.
- Developing people with broader skills in order to thrive in more diverse and flexible teams.
- Acceptability of working in a technology rich environment.
- Ethical and privacy considerations of data ownership and use.

- Disruption to regulatory processes and approaches to safety and audit of production processes.

Applicants must submit an Expression of Interest by **16:00 23 September 2020** if they intend to submit a Full Proposal. The Expression of Interest form will include a section for publication, which will be made publicly available on the EPSRC website in advance of the closing date for Full Proposals. The intention of this is to publicise a high-level summary of the developing Research Centre proposals, in order to facilitate additional collaborations outside of applicants' existing networks.

Full Proposals will be assessed by postal peer review and applicants receiving supportive reviews will be invited to an Interview panel. The funding decision will take a portfolio approach, meaning that the balance of coverage across the Innovation Themes and regions/nations of the UK will be considered, in addition to the panel's recommendations against the assessment criteria.

Background

This funding originates from the Industrial Strategy Challenge Fund (ISCF) and the call is part of the ISCF Manufacturing Made Smarter Challenge. The overall aim of the Manufacturing Made Smarter Challenge is to help the UK's manufacturing industry become more productive and competitive through innovation and adoption of digital technologies.

The Manufacturing Made Smarter Challenge has a number of objectives. Those that are relevant to this call, and to which Research Centres will be expected to contribute, are listed below.

Manufacturing Made Smarter Challenge Objectives

- Increase UK manufacturing sector investment in industrial digitalisation R&D and increase the adoption of new Industrial Digital Technologies.
- Increase cross-sector collaboration between UK manufacturing sectors to drive the creation of common digital solutions.
- Increase the number of collaborations between SMEs and larger, more established companies up the value chain.

This call also has a number of additional objectives, which should be addressed in your Full Proposal. These are listed below.

Research Centre Call Objectives

- Bridge the gap between basic research and its application in manufacturing to provide a pipeline of digital technologies for the future.
- Co-create projects with industry, focusing on addressing user needs.
- Integrate technological and societal aspects of manufacturing research, ensuring technologies are developed with people in mind to improve adoption and acceptance of new ways of working.

- Network with the portfolio of Manufacturing Made Smarter investments and other relevant projects, to ensure connectivity across the landscape and leverage the maximum benefits.

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

Funding available

We expect to fund up to 4-5 Centres, with total funding available of up to £20 million.

At the point of submitting the Full Proposal, Project Partners are expected to make a total financial co-funding commitment of at least 25% of the EPSRC contribution (demonstrated by Project Partner Letters of Support). As part of the Industry Collaboration Plan, which will be required as part of the Full Proposal, Research Centres will need to describe how they plan to secure additional co-funding over the lifetime of the Centre. This may be through increasing commitments of existing Project Partners and/or by bringing additional Project Partners on board. The total co-funding requirement to be achieved by the end of the grant is at least 50% of the EPSRC contribution.

Equality, Diversity and Inclusion

The long term strength of the UK research base depends on harnessing all the available talent. EPSRC expects that equality and diversity is embedded at all levels and in all aspects of research practice and funding policy. We are committed to supporting the research community, offering a range of flexible options which allow applicants to design a package that fits their research goals, career and personal circumstances. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcome applications from academics who job share, have a part-time contract, or need flexible working arrangements.

Peer review is central to EPSRC funding decisions, we require expert advice and robust decision making processes for all EPSRC funding initiatives. We are committed to ensuring that fairness is fully reflected in all our funding processes by advancing policy which supports equality, diversity and inclusion. Please see our Equality and Diversity webpages

<https://epsrc.ukri.org/funding/equalitydiversity/> for further information.

Responsible Innovation

EPSRC is fully committed to develop and promote responsible innovation. 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 and to encourage our research community to do likewise.

Responsible innovation creates spaces and processes to explore innovation and its consequences in an open, inclusive and timely way, going beyond

consideration of ethics, public engagement, risk and regulation. Innovation is a collective responsibility, where funders, researchers, interested and affected parties, including the public, all have an important role to play. Applicants are expected to work within the EPSRC Framework for Responsible Innovation given on the EPSRC website (<https://epsrc.ukri.org/research/framework/>).

Guidance on Journal-based metrics

As part of our commitment to support the recommendations and principles set out by the San Francisco Declaration on Research Assessment (DORA; <https://sfdora.org/read/>), UKRI reviewers and panel members are advised not to use journal-based metrics, such as journal impact factors, as a surrogate measure of the quality of individual research articles, to assess an investigator's contributions, or to make funding decisions.

The content of a paper is more important than publication metrics, or the identity of the journal, in which it was published, especially for early-stage researchers. Reviewers and panel members are encouraged to consider the value and impact of all research outputs (including datasets, software, inventions, patents, preprints, other commercial activities, etc.) in addition to research publications. We advise our peer reviewers and panel members to consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

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 in the Directly Incurred - Other Costs heading.

For more information on equipment funding, please see: <https://epsrc.ukri.org/research/facilities/equipment/>

Eligibility

Please ensure sufficient time to create Je-S accounts for Investigators who do not currently have one.

Please note, that although this call is being delivered by EPSRC, there is no requirement for the majority of the research effort to fall within EPSRC's remit. We welcome and encourage applications from Investigators (both as Principal Investigators and other Staff on the proposal) working outside of EPSRC's remit, provided that the proposed research activity fits with the guidance outlined in this document.

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/>

A list of eligible organisations is provided at: <https://www.ukri.org/funding/how-to-apply/eligibility/>

How to apply

Submitting an application

You should submit your Expression of Interest using Smart Survey, at the following link by **16.00, 23 September 2020**:

<https://www.smartsurvey.co.uk/s/3BB5JG/>. Email submissions will not be accepted.

It is recommended that you prepare your Expression of Interest responses offline in advance, and then add them into the survey when you are ready to submit. To help you with this, a pdf version of the survey is appended to this document. Please take care only to submit the survey when you are happy with your responses and do not submit "test" responses to us. You should make your research office aware of your application before submitting.

Guidance on writing an application

To submit an Expression of Interest, you must complete the Smart Survey questionnaire. You will be asked to provide:

- Details of the Principal Investigator (PI) and up to four Co-Investigators (Co-Is).
 - You cannot add Researcher Co-Is at this stage, but you can add them at the Full Proposal Stage.
 - You cannot add more than four Co-Is at this stage, but you can add additional staff at the Full Proposal stage. (If you have fewer than four Co-Is, please enter N/A as appropriate).
 - If the listed staff have Je-S accounts, please provide the email currently registered to their Je-S account.
 - You must provide the ORCID ID for the PI, but this is optional information for the Co-Is (enter N/A for Co-Is where you are not providing this).
- A list of all the academic organisations currently partnering on the application.
 - You should include the lead organisation and all partners.
 - If further organisations join your consortium after the Expression of Interest is submitted, they can be added at the Full Proposal stage.
- A list of all the Project Partners currently partnering on the application.
 - You should include all partners where you have at least a verbal agreement that they will provide support, but should not include partners you haven't approached yet.
 - You do not need to state the value or nature of the support and you do not need to provide Project Partner Letters of Support (these will be required at the Full Proposal stage).

- We assume that you will continue to bring Project Partners on board after the Expression of Interest is submitted, therefore, you can add additional Project Partners to your application at the Full Proposal stage.
- We encourage you to consider partnering with Project Partners from across different manufacturing sectors, to ensure that solutions arising from the Centres can have wider benefit and impact.
- An estimate of your Centre's coverage across the four Innovation Themes.
 - You should indicate this with percentages, adding up to 100%.
 - You do not have to cover all the themes, and should use 0% to indicate where you will not cover a theme.
 - You must cover at least two of the themes, and one of these must be theme 4 (Societal and cultural change).
 - There is no limit to how many themes you may cover.
- A summary (500 words max.) of your proposed Research Centre, **which will be published on our website**.
 - We suggest that you use this published summary to help encourage partnerships.
 - Your summary should use plain English and could include:
 - The focus of your Centre in terms of the Innovation themes to be covered
 - The context of the research
 - Its aims and objectives
 - Its potential applications and benefits
 - Any information that could be relevant to potential project partners or other collaborators.
 - If you want potential partners to be able to contact you, please provide appropriate contact details. (This is optional and you may leave it blank).

For the Expression of Interest stage, you do not have to submit anything through Je-S; submission is entirely through the Smart Survey. Full Proposal submission will be through Je-S.

Industry Collaboration Plan

As part of the Full Proposal, applicants will be required to describe how the Centre will:

- Bring more Project Partners on board.

- Ensure additional co-funding (to achieve at least 50% of the EPSRC contribution by the end of the grant).
- Ensure that development and delivery of research projects is carried out with users, diffusion, and adoption in mind.
- Make best use of the financial, in-kind, and intellectual contributions of Project Partners to ensure that projects are co-created and co-delivered.
- Continue engaging with existing Project Partners, ensuring they remain a core part of the delivery team.

The Industry Collaboration Plan will be requested and assessed at the Full Proposal stage. Details are not required in the Expression of Interest.

Assessment

Assessment process

Expressions of Interest will be checked by EPSRC and may be rejected on remit or eligibility grounds if they do not meet the requirements outlined in this document. There will be no formal assessment at this stage.

Full Proposals will be assessed by postal peer review and applicants receiving supportive reviews will be invited to an Interview panel. The funding decision will take a portfolio approach, meaning that the balance of coverage across the Innovation Themes and regions/nations of the UK will be considered, in addition to the panel's recommendations against the assessment criteria.

In the event of this call being substantially oversubscribed as to be unmanageable, EPSRC reserve the right to modify the assessment process.

Assessment criteria

There is no assessment at the Expression of Interest stage (however EPSRC reserve the right to reject your application if it does not meet the conditions described in this document).

The assessment criteria for the Full Proposal stage are listed below. Further details will be provided when the Full Proposal stage opens.

- 1. Fit to call scope** (Primary)
- 2. Quality** (Primary)
- 3. Importance** (Secondary major)
- 4. Applicant and partnerships** (Secondary)
- 5. Resources and management** (Secondary)

There will be no feedback provided at the Expression of Interest stage (although if your application is rejected, we will tell you why). You will receive feedback on your Full Proposal in the form of reviewer reports from the postal peer review stage. You will have the opportunity to respond to this. There will be no further feedback at the interview stage, unless specifically requested by the panel.

Moving forward

After your Expression of Interest is submitted, it will be checked to ensure it meets the requirements of the call (as described in this document). We will then publish your summary on our website.

The call for Full Proposals will open shortly after the Expression of Interest closing date. Further details on how to apply will be published at this time.

If you are currently restricted under the Repeatedly Unsuccessful Applicants Policy, you may submit unlimited Expressions of Interest but you will only be able to submit one full proposal (as PI or Co-I) during the 12 month restricted period. Further information about the policy can be found at:

<https://epsrc.ukri.org/funding/howtoapply/basics/resubpol/rua/>

Key dates

Activity	Date
Deadline for Expressions of Interest	23 September 2020
Deadline for Full Proposals	17 December 2020
Interview Panel	12 - 23 April 2021
Funding decision	May 2021
Earliest grant start date	07 June 2021

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

Contacts

Please copy all enquiries to the EPSRC Manufacturing Made Smarter mailbox:
iscf.mms@epsrc.ukri.org

Laura Totterdell – laura.totterdell@epsrc.ukri.org

Richard Bailey – richard.bailey@epsrc.ukri.org

Change log

Name	Date	Version	Change
Laura Totterdell	30 July 2020	1	N/A

Appendix – Expression of Interest Smart Survey Questionnaire

1. Privacy notice

EPSRC complies with the General Data Protection Regulations 2016/679 (EU) GDPR). We process and handle personal information according to these regulations. The personal information that you provide on this form will only be used for the processing of your application. The information will be viewed by EPSRC staff and those who are part of the decision making process. Your information will not be used/shared for any other purpose without your specific consent. EPSRC reserves the right to publish and share anonymized aggregated information with stakeholders. For further information on how your personal data is used, how we maintain the security of your information, and your rights to access that information we hold about you, please contact the UK Research and Innovation Information Rights Team.

The UK Research and Innovation privacy notice can be found on the [UKRI website](#). This form has been developed using [SmartSurvey](#). Data entered and submitted to EPSRC via the form will be held in SmartSurvey for a period in accordance with UK Research and Innovation policy.

1. Some organisations' firewalls will block the email that allows you to return to your survey at a later date. *

Understood

2. Applicant details

2. Please confirm that your Research Office (RO) is aware of this submission. *

Yes

3. Please confirm the RO contact who will be advised of the outcome of this application. *

Name *

Email *

4. Please provide details for the Principal Investigator and up to 4 Co-Investigators. Please note that additional staff may be added at the Full Proposal stage. *

	PI	Co-I 1	Co-I 2	Co-I 3	Co-I 4
Title					
First name					
Surname					
Organisation (If not affiliated to an organisation, enter "N/A")					
Country					
Email (if you have a Je-S account, please use the email that is currently in your Je-S account)					
ORCID ID (mandatory for PI)					

5. Please give the PI's current job title *

Choose from:

- Research assistant or named postdoctoral researcher (fellow) on a research grant or equivalent
- Lecturer or Assistant Professor or equivalent
- Senior Lecturer or Associate Professor or equivalent Reader or equivalent
- Professor or equivalent
- Fellow
- Other (please specify)

If selected 'Other', please specify here

6. Please list all academic organisations currently partnering on the application (including the lead organisation). Additional organisations can be added at the full proposal stage. Please enter each organisation on a new line. *

3. Project partners

7. Please list all project partners that you currently have agreed. Please enter each project partner on a new line. Please do not include project partners you have not approached yet. Please do include all those where you have at least a verbal agreement that they will provide support. The value or nature of the support is not required at this stage (letters of support are not required at this stage). You may add additional project partners to your application at the full proposal stage (and we would encourage this). *

4. Innovation themes

8. Please estimate using percentages, how the focus of your centre's research activity will be split across the Innovation Themes. Percentages should total to 100%. You must cover at least two of the four themes, and you must include some coverage of theme 4 (Societal and cultural change). You do not have to cover all the themes. *

- 1. Smart, connected factory
*
- 2. Connected and versatile supply chain
*
- 3. Adaptable, flexible manufacturing operations and skills
*
- 4. Societal and cultural change (mandatory)
*

5. Summary for publication

9. Please provide a short summary of your proposed Research Centre. **This summary will be published on publicly available sites shortly after the EOI closing date (before the full**

proposal closing date). By publicising a high-level summary of your planned centre, we hope to help you to form additional collaborations beyond your existing networks.

Your summary should use plain English and could include:

- The focus of your Centre in terms of the Innovation Themes to be covered (and the sub-topics within them).
- The context of the research
- Its aims and objectives
- Its potential applications and benefits
- Any information that could be relevant to potential project partners or other collaborators
500 words max. *

10. If you wish to enable prospective collaborators to contact you, please provide appropriate contact details for us to publish on our website, alongside your summary. These may be different to the contact details provided in section 2. If you do not want us to publish your contact details, please leave this question blank.

Contact 1
name

Contact 1
email

Contact 1
telephone

Contact 2
name

Contact 2

email

Contact
telephone

6. Ready to submit?

You have now completed the form. Please use the "previous page" button to check you are happy with your responses. When you are sure you are ready to submit, please complete the question below. This will end the survey and submit your EOI.

Important note: your responses to questions 9 and 10 (section 5) will be published on our website. Please ensure you only submit responses that you are happy for us to publish.

The remainder of the questions are for internal use only, in line with the privacy statement at the start of this survey.

11. Are you ready to submit your EOI? *

Yes