



ISCF Manufacturing Made Smarter Research Director 2020 Call specification

Summary

UK Research and Innovation (UKRI), via the Economic and Social Research Council (ESRC), is pleased to invite applications for an Industrial Strategy Challenge Fund (ISCF) Manufacturing Made Smarter (MMS) Research Director. Their role will be to develop and support the creation of a visible and effective digital innovation ecosystem to accelerate the innovation and diffusion of Industrial Digital Technologies (IDTs). Effective innovation requires an understanding of human, economic, and business model issues as well as technical issues. The economic and social sciences have a pivotal role to play in ensuring that the full potential and impact of IDTs are realised in the UK. The MMS Research Director will work for an initial period of five months to engage with key stakeholders and develop a detailed proposal for a MMS Network+. The Network+, under the leadership of the MMS Research Director, will ensure that the full range and depth of social and economic science insights are accessed across the MMS Challenge and wider UK manufacturing sector.

Through the initial five-month scoping stage, the MMS Research Director will work with the UKRI ISCF MMS Challenge Director and team. Together they will identify how the economic and social science communities can most effectively support the UK MMS Challenge and the manufacturing sector accelerate its innovation and diffusion of IDTs. Industry engagement will be critical, including SMEs, as will the engagement of other key stakeholders including the Made Smarter Commission and Northwest pilot, and the Department for Business, Energy and Industrial Strategy.

The second stage of this call will be an application for a new Network+, a multi-disciplinary academic-led community at the heart of the MMS Challenge. The Network+ will provide academic leadership across the sectors and organise activities such as workshops, events and communications, to build sustained engagement and collaboration across business and academic partners. The MMS Network+ will be funded until December 2024.

Funding available:

In total, the UKRI ISCF MMS Challenge will invest up to £4 million through this competition.

UKRI, via ESRC, will support one successful ISCF MMS Research Director over five months (with a mid-point review panel at 3-months) to prepare a full proposal for an Economic and Social Science Research Network+. £125,000 is available for this stage at 100% fEC.

Following a peer review process of the business case, UKRI, via ESRC will provide funding to support the ISCF MMS Network+ from October 2021 to December 2024.

The Network+ will be led by the MMS Research Director. A total contribution of £3.9 million is available for the second phase.

The deadline for applications for the MMS Research Director is 16.00 on 25 November 2020. The successful applicant will be expected to start in March 2021 and submit the application for the Network+ in July 2021.

Background and scope

The Made Smarter Review published in 2017 set the goal that 'by 2030, the UK will be a global industrial leader in creating, adopting and exporting advanced digital technologies, shaping how the world does business'. The review outlined the significant impact that digital technologies could have on improving productivity and competitiveness of the full UK manufacturing sector and in addition grow the technology sector that enables the improvement.

The key digital technologies that can be harnessed to deliver the improvement were highlighted as:

- Artificial intelligence, machine learning and data analytics;
- Additive manufacturing;
- Robotics and Automation;
- Virtual reality and augmented reality;
- The Industrial Internet of Things (IIoT) and connectivity such as 5G and low-power wide-area networks

The review outlined recommendations for four priority areas, based on the challenges identified by business, and led to the creation of supporting programmes:

Leadership: Creation of a united government and industry approach, chaired by a Made Smarter National Commission. Tasked with leading and developing a vision for the future of UK manufacturing and driving the digitalisation of the sector, boosting productivity, creating more high-skilled jobs and enabling more efficient, cleaner production systems, as part of the Government's modern Industrial Strategy.

Skills: A strategic partnership, comprising of Make UK, Science, Engineering and Manufacturing Technologies Alliance (SEMTA) and the High Value Manufacturing Catapult (HVMC), focused on progressing the skills aims of the Made Smarter Review, including ambition of upskilling one million workers.

Adoption: The significant opportunity for boosting productivity through more widespread adoption of IDTs across businesses and supply chains, especially within SMEs. This includes the North West Adoption pilot and a National Adoption Programme.

Innovation: The creation of a visible and effective digital innovation ecosystem to accelerate the innovation and diffusion of technologies, including the key technologies identified. This involves harnessing our leading research, enabling the generation of new ventures and the growth of SMEs that develop

and provide IDTs, and allowing industrial companies the chance to shape and integrate the new technology to add value to their business. Faster innovation and creation of new IDTs, such as additive manufacturing and AI, new IDT companies, value-streams and new capabilities will help sustain UK manufacturing's competitive advantage. This priority area formed the basis of the ISCF Manufacturing Made Smarter (MMS) Challenge.

The ISCF MMS Challenge brings business and academia together to develop, contribute, inform and enable the innovation and diffusion of IDTs through a combination of applied research, Collaborative Research and Development (CR&D) activities, international CR&D, demonstrators, accelerators and networks. This will deliver the innovation recommendations of the Made Smarter Review and contribute to the delivery of the following Made Smarter priorities.

The Manufacturing Made Smarter (MMS) ISCF Challenge will invest up to £147m and is delivered by Innovate UK, EPSRC and ESRC on behalf of UKRI.

Call details

Call objectives

The overall aim of the ISCF MMS Challenge is to help UK manufacturing become more productive and competitive through the innovation and diffusion of digital technology.

The Challenge has a number of specific objectives to which the MMS Research Director and subsequent Network+ will be expected to contribute to directly:

- Increase UK manufacturing sector investment in industrial digitalisation R&D and increase the innovation and diffusion of IDTs
- Increase cross-sector collaboration between UK manufacturing sectors to drive the creation of common digital solutions
- Increase the number of digital technology companies providing solutions for manufacturing industries
- Increase the number of collaborations between SMEs and larger, more established companies up the value chain
- Increase UK manufacturing and digital manufacturing solution exports.

The Research Director and Network+ will act as an integral part of the MMS Challenge as it aims to maximise and harness the full potential of IDTs in the UK in order to:

- Improve productivity, competitiveness and economic advantage
- Support industry growth and recovery
- Generate and demonstrate societal impact

We expect the successful Research Director and Network+ to play a strategic role in bringing together relevant participants that cross disciplinary boundaries and stakeholder groups, including those from business and industry.

Scope

A key priority for the Research Director will be to help the Challenge identify the areas where economic and social sciences can make a significant contribution to the innovation and diffusion of IDTs in UK manufacturing. This will include both identifying resources and insights that are currently underutilised, and working with industry partners and the Challenge to identify and solve critical knowledge gaps.

Priority areas may include, but are not limited to:

- How to enable effective innovation cultures in UK manufacturing firms (including SMEs)
- Impact of digitisation on resilience, flexibility and sustainability on UK manufacturing firms (for example, has digitisation improved their resilience and ability to respond to COVID-19? Which COVID-19 responses were effective crisis responses, and which should be longer term?)
- Net-zero and sustainability (for example, how can IDT innovation enable firms to both reduce costs and environmental impact?)
- Business model innovation (for example, how can firms develop their business models around the opportunities afforded by new technologies? What help do firms need to make the business case (inc. ROI) for investing in IDT innovation?)
- How to support IDT developers based in the UK, including new businesses and SMEs (for example, how to connect IDT developers to larger established manufacturing firms?)
- Interaction of new IDTs and the wider economic context, including specific developments policy and regulation and wider economic trends (for example, COVID-19, Brexit, levelling up, growth and productivity)

Research Director – role

The Research Director will:

- Work with the MMS Challenge Director and team during the development and funding of the Network+
- Make connections between programme activity, policy and practice, the private sector, other disciplines and add value to research activity in the Challenge portfolio through their connections with key stakeholders and user communities
- Act as a key contact point with the authority to speak on the economic and social research activity to the MMS activities, key stakeholders, and user communities
- Act as a “thought leader” across disciplines, places, beyond academia, and beyond the portfolio of investments commissioned through the Challenge activity
- Be visible and a champion for economic and social research in the MMS Challenge, to both internal and external audiences
- Develop and submit a proposal to ESRC for an MMS Network+ designed to utilise the full resources of the economic and social science in support of the innovation and diffusion of IDTs to the benefit of manufacturing in the UK

- Add value across the research activity, for example by identifying opportunities for shared learning across projects and co-ordinating the activity of research groups
- Contribute to building an evidence base of knowledge and impact across the MMS Challenge and identify opportunities to ensure this evidence base is used.

These aspects of the role are not exhaustive and applicants to the MMS Research Director call are encouraged to present their vision of how they think they can add value within the Challenge and Network+.

Industry engagement will be critical, including SMEs (including both developers and users of IDTs), as will engagement with other key stakeholders including the Made Smarter Commission and Northwest pilot, and the Department for Business, Energy and Industrial Strategy.

It is expected that the Research Director will also draw upon existing UKRI investments including other ISCF activities, Research Council funded Centres and Knowledge Transfer Network (KTN).

Research Director – person specification

The successful applicant must demonstrate:

- An outstanding track record of world-leading research and impact within areas relevant to the innovation and diffusion of IDTs in manufacturing
- The ability to provide intellectual research and impact leadership
- A strong commitment to interdisciplinary and cross-sectoral approaches to research, with evidence of having previously drawn together a broad range of perspectives and approaches from across the economic and social sciences, engineering, digital technology and beyond
- Track record of building effective relationships between academics and businesses and have strong networks in the manufacturing space
- A commitment to equality, diversity and inclusion and the ability to ensure diversity in those who engage with both the development and delivery of the Network+
- A deep understanding of the needs and demands of the manufacturing sector in the UK. They will have a proven track record of engaging collaboratively with industry and academic partners and have strong networks in the manufacturing space
- Outstanding communication skills, suitable for engagement with a range of different audiences - specialist and non-specialist - within the academic community, business community, user community and beyond
- Experience of collaborative research and proven ability to engage and develop partnerships with people and organisations beyond the academic community, in particular with stakeholders at a senior level in government, industry and the private sector, particularly in a UK context
- Familiarity with UKRI's mission, and with the broader funding and policy landscape in the UK
- Familiarity with the UK Government's Industrial Strategy, and an understanding of how research will contribute to fulfilling ambitions

- A clear vision for how they will utilise their role as Research Director to help to deliver the MMS Challenge

Funding

The ESRC will be investing up to £125,000 at 100% full economic cost (fEC) for the MMS Research Director call. The fEC value refers to the total cost of the project, and is not the actual contribution paid by the ESRC. The ESRC's contribution for UK applicants for most costs headings is 80% of fEC.

Costs will be supported in-line with standard ESRC funding rules. All applicants are strongly advised to consult their institutional finance/research offices regarding the financial aspects of their proposal. Indicative costings are requested at application stage and successful applicants will be expected to provide a full breakdown and justification of all costs at contracting. Costs at contracting must not vary by more than 10% from costs at application and cannot exceed the funding available for the call.

The MMS Research Director award will have a start date no later than 31 March 2021.

When developing the Network+ proposal it is anticipated that the leadership and management team will also administer a devolved budget for research led projects, encouraging applications from both within and beyond the network membership.

Eligibility

All proposals to this call must be from a researcher based at an eligible UK Research Organisation (RO); see the UKRI website for a list of eligible organisations (www.ukri.org/funding/how-to-apply/eligibility/).

Proposals will need to be submitted electronically via the Research Councils' Joint Electronic Submission (Je-S) system.

The successful candidate will be invited to develop a full proposal for a Network+ and submit via Je-S in July 2021. Only the applicant successfully appointed as Research Director will be invited to submit to the second stage. Other applicants may be part of the second stage as Co-Investigators.

Joint applications (including job shares) for Co-Research Directors are welcome where a clear split of responsibility is given. Job share arrangements would have to be made by the applicants outside of the application process.

Multidisciplinary approach

Applicants for the Research Director will need to demonstrate a detailed understanding of the economic and social sciences as they apply to innovation and diffusion of new digital manufacturing technologies. They will be able to demonstrate their commitment to interdisciplinary working, and ability to build new collaborations between different social, economic and other disciplines including engineering, digital technology and beyond.

IP issues

Publication and Intellectual Property Rights (IPR) will be handled in accordance with normal ESRC guidelines outlined in the Research Funding Guide (www.esrc.ac.uk/rfg). Further ESRC guidance on intellectual assets and intellectual property can be found at: <https://esrc.ukri.org/funding/guidance-for-applicants/intellectual-assets-and-intellectual-property>. All research findings should be made freely and openly available.

Research ethics

Applicants must ensure that the proposed activity will be carried out to a high ethical standard and the Network+'s activity must comply with the ESRC Framework for Research Ethics: www.esrc.ukri.org/funding/guidance-for-applicants/research-ethics/ Successful applicants will be required to provide a statement on how any potential ethical and health and safety issues have been considered and will be addressed, and ensure that all necessary ethical approval is in place and all risks are minimised before the associated activity commences.

Impact

In line with the UKRI Strategic Prospectus (<https://www.ukri.org/about-us/strategic-prospectus/>), we expect that our researchers will have considered the potential scientific, societal and economic impacts of their research.

Applicants should consider how these impacts can be maximised and developed and evidenced within their proposal. Applicant's plans to maximise and develop the potential impacts of their research will form part of the peer review and assessment process.

Opportunities for making an impact may arise, and should be taken, at any stage during the research lifecycle: the planning and research design stage; the period of funding; and all activities that relate to the grant up to – and including – the time when funding has ended. The research lifecycle therefore includes knowledge exchange and impact realisation activities – including reporting and publication, and the archiving, future use, sharing, and linking of data. It is important that researchers have in place a robust strategy for maximising the likelihood of impact opportunities and their own capacity for taking advantage of these.

It is important to set out how you intend to identify and actively engage relevant users of the research and stakeholders and include evidence of any existing engagement with relevant end users. You should articulate a clear understanding of the context and needs of these users and consider ways for the proposed research to meet or impact upon these needs. The proposal should also outline how the legacy of proposed activity will be managed to engage beneficiaries and increase the likelihood of its impact in providing lasting value to participants, stakeholders and the wider social science community.

To be effective, all communication, engagement and impact activities must be planned in detail and properly evidenced and resourced in the proposal.

The ESRC's **Impact Toolkit** provides detailed advice on how to achieve the maximum impact for your work. The toolkit includes information on developing an impact strategy, promoting knowledge exchange, public engagement and communicating effectively with your key stakeholders:

<https://esrc.ukri.org/research/impact-toolkit/>.

Assessment process

Applications for the MMS Research Director role will be assessed and shortlisted by an independent panel comprising of academics, business representatives and other stakeholders in January 2021. Shortlisted applicants will then be invited to a final interview panel in February 2021. The successful applicant will be expected to start in March 2021 and to develop a full proposal and submit via Je-S in July 2021. There will be a mid-point review during the 5-month development stage. Only the applicant successfully appointed as Research Director will be invited to submit to the second stage (Network+). The Research Director will then lead the resulting Network+.

Applicants are asked to note that 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. Peer review 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.

Assessment Criteria

1. Fit to call scope - extent to which the proposed research aligns with the scope of the call, including how well the proposal:
 - a. Addresses the call objectives and the aims and objectives of the ISCF Manufacturing Made Smarter Challenge
 - b. Addresses industry-identified challenges within Digital Manufacturing, as applied to the Manufacturing Sector
 - c. Is multidisciplinary, drawing on a wide range of expertise, knowledge and experience across business and research stakeholders
 - d. Addresses the areas of knowledge exchange and impact
 - e. Ensures that planning for impact is embedded throughout the application, particularly within the Case for Support.

2. Quality and experience of the applicant in relation to MMS Research Director – Person Specification (see above)
3. Does the proposal include appropriate expertise and resources for undertaking the research, stakeholder engagement, knowledge exchange, communications, project management and reporting?
4. Demonstrate understanding of how a Network+ will be developed and managed, including appropriate consideration of diversity, ethics and responsible innovation
5. Clarity of how the 5-month development will be delivered, including management of the project funding budget

How to apply

Outline proposals must be submitted to Je-S by the call deadline **16.00 (UK time) on 25 November 2020**. Electronic acknowledgements will be sent to the principal investigator and submitting organisation. All proposals must be submitted in English, costed in pounds sterling using the Research Councils Joint Electronic Submission (Je-S) system. Proposals can only be accepted by electronic submission through the Je-S system: <https://je-s.rcuk.ac.uk/jeS2WebLoginSite/Login.aspx>

Proposals should address the aims of the call as listed in the call details and should include:

- Case for Support, including a full description of the project aims, methods and work packages (including proposed timings), as well as details of how the project will address the Programme aims as listed in the call details
- CVs for all named individuals
- Justification of Resources, including full costs associated with stakeholder engagement, project administration and travel and subsistence
- List of Publications
- Relevant final/interim reports

Generic guidance on the completion of the structured boxes and sections of the form is available from the Je-S Help screens, which can be found at the top right-hand corner of each Je-S screen.

The Je-S guidance for the call will provide details on the information that you will be required to submit as part of your proposal. All applicants are strongly advised to consult ESRC's research funding guide (<https://esrc.ukri.org/funding/guidance-for-applicants/research-funding-guide/>), which sets out the rules and regulations governing its funding. Where call-specific guidance provided in these call documents differs from generic Je-S help, the call-specific guidance should always be followed. Care and attention must be given to completing the proposal correctly and complying with all technical requirements. Proposals that are not completed correctly may be rejected by the ESRC office.

The final submission process is the responsibility of the host institution, and the ESRC cannot accept responsibility for any delays which may occur. It is recommended that applicants submit in good time before the call deadline at this stage. We strongly advise applicants to confirm with their relevant administrator that the proposal has been submitted successfully to the ESRC.

Commissioning timetable

- Call launch – 30 September 2020
- Deadline for submitting proposals (Stage 1) – 25 November 2020
- Shortlisting panel – January 2021
- Interview panel – February 2021
- Research Director start date – March 2021
- Mid-point review panel – June 2021
- Deadlines for full Network+ proposal (Stage 2) – July 2021
- Peer Review Panel – September 2021
- Network+ start date – late October 2021
- Grant ends – December 2024

Contacts

Enquiries relating to ESRC research funding rules and proposal procedures should be addressed to:

- Email: MMS@esrc.ukri.org

Enquiries relating to technical aspects of the Je-S form should be addressed to:

- Je-S helpdesk

Email: jeshelp@je-s.ukri.org

If you experience difficulties using Je-S or have questions regarding its use, helpdesk staff are currently working remotely via email. If phone assistance is required a call back can be provided. Opening hours are Monday to Thursday 8.30am to 5pm and Fridays 8.30am to 4.30pm (excluding bank holidays and other holidays) with telephone support available from 09.00am to 13.00pm.