



Quick Reference

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

Future Vaccine Manufacturing Research Hub

Call type: Invitation for outlines

Closing date: 16:00 02 March 2017

Funding Available: The Department of Health is making up to £10 million available for a Hub for Vaccine Manufacturing Research. The competition and award call is being administered by EPSRC on behalf of the Department of Health.

How to apply: Outlines followed by invited Full proposals.

Assessment Process: Outlines will be considered by an expert panel. Invited full proposals will undergo postal peer review, followed by panel assessment, resulting in a rank ordered list.

Key Dates:

Activity	Date
Invitation to submit outline proposals	24 January 2017
Deadline for outline proposals	02 March 2017
Successful outline applicants informed	Early April 2017
Deadline for full proposals	Early May 2017
Prioritisation interview panel	Late August 2017
Announcement of successful proposals	October 2017

Additional information: Hub funded from this competition must be compliant with requirements for Official Development Assistance. The grants awarded will have a fixed start and end date with no slippage permitted.

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Future Vaccine Manufacturing Research Hub

Call type: Invitation for outlines

Closing date: 16:00 02 March 2017

Related themes: Manufacturing the future, Physical sciences, Healthcare technologies, ICT, Engineering

Summary

The Engineering and Physical Sciences Research Council (EPSRC), on behalf of the Department of Health, is inviting outline applications for a large-scale, multidisciplinary research Hub to focus on the challenges of developing, scaling up and manufacturing vaccines of benefit to and for use in low and middle income countries.

The Department of Health funding (through the UK Vaccine Network) for the Hub will be up to £10 million from project start date until March 2021. This funding forms part of the UK Government's Official Development Assistance.

The Hub will support an ambitious programme of innovative research related to the challenges in developing, scaling up and manufacturing vaccines of benefit to low and middle income countries. The Hub will focus on high quality, multidisciplinary research, take a national and international leadership role in the science behind vaccines manufacturing, and engage broadly with partners in both developed and developing countries.

A two-stage assessment process will be used, involving outline applications and full proposals.

Background

Vaccines are widely recognised as one of the most effective mechanisms through which to prevent ill-health and control infectious disease outbreaks. However, many vaccines are designed and manufactured for markets in high-income settings, which makes them ill-suited or too costly for use in low and middle income countries (LMICs). There are also broader challenges in this field around the lack of technologies that allow for rapid scale-up of production in the event of an epidemic or pandemic and the difficulty of transitioning promising early technologies from the lab effectively through to GMP manufacture and scale-up.

The UK government is taking concerted and coordinated action to address this market failure. The UK has committed to invest £120 million between 2016 and 2021 on the development of new vaccines for such diseases, in line with the expert advice provided by the UK Vaccines Network.

The UK Vaccines Network is made up of leading experts from academia, industry and policy (<https://www.gov.uk/government/groups/uk-vaccines-network>). Due to the challenges outlined above, the Network has identified vaccine manufacturing as a priority area for investment and up to £10m has been made available from this programme with a vision to bring together researchers from vaccine development and manufacturing in a programme of innovative research activities.

The objectives for this call are for the Hub to:

- Create and deliver a coherent programme of high quality, multidisciplinary research that addresses the major, long term challenges facing vaccine manufacturers, in particular ease, speed and cost of manufacture for vaccines to be used in LMICs.
- Lead and support the development of major new disruptive technologies in the field of vaccine manufacturing for the benefit of LMICs.
- Develop technologies and systems that allow for a rapid increase and scale-up of vaccines manufacturing in an epidemic or pandemic situation.
- Demonstrate national and international leadership in this area of science, working closely and collaboratively with academic and industrial partners from the UK, other high-income countries and LMICs.

The funded vaccine manufacturing research Hub will join a portfolio of other critical mass investments from the EPSRC's Manufacturing the Future theme.

Scope of call

The scope of this call is to support innovative, multidisciplinary research programmes on vaccine manufacturing.

We envision that proposals include elements on:

- Development of processes and technologies that allow for rapid scale-up and manufacture of vaccines in epidemic or pandemic settings.
- Improvements in vaccine manufacturing processes and technologies that allow vaccines to be developed, scaled and manufactured more quickly, simply and cost-effectively.
- Acting as an international Centre of Excellence, working with organisations that are at the early stage of the vaccine development process, in order to provide end-to-end advice on how to manufacture and take their ideas into real products – enabling cross talk between scientists in early discovery, manufacturers in process development and end users.
- Development of novel vaccine manufacturing technologies, creation of standardised forms of antigen presentation, and formulation/delivery systems that could be used/deployed in LMIC settings, or would improve or enhance the development and manufacture of vaccines that are used in LMICs.
- Modernising existing vaccines used in LMICs, where a modernised, reformulated or redeveloped vaccine would be a genuine improvement on the currently available vaccine and have a realistic chance (in the medium term) of replacing the currently used vaccine.
- Development of economic modelling and decisional tools to assist and demystify the vaccine development process.

The Department of Health and EPSRC are also very interested in any other areas of research, outside the six areas listed above, that would contribute towards the aims of this call.

The Department of Health and EPSRC expect the Hub to work with multiple platforms and technologies. It is not expected that the Hub will unduly focus its efforts on one type of platform or technology.

The Hub research programmes should:

- Address the areas of research highlighted above
- Include the substantive involvement of partners and users both in industry and in LMICs.
- Draw on advances in underlying science, engineering and technology, such as (but not limited to) vaccinology, biotechnology and information and communications technology.
- Demonstrate how all programmes of work will primarily benefit low and middle income countries.
- Focus on the design and development of new and existing manufacturing processes, systems, networks and technologies as part of the vaccine development chain.
- Explicitly consider the pathway to vaccine manufacture, including production scale up and integration within the wider industrial system.
- Consider the longevity of the research programme established by the Hub after 2021.

All activities funded through this research are expected to have satisfied regulatory and ethical requirements in each country prior to activities beginning.

Official Development Assistance funded activities focus on outcomes that promote the long-term sustainable growth of countries on the OECD Development Assistance Committee (DAC) list (<http://www.oecd.org/dac/stats/daclist.htm>). ODA is administered with the promotion of the economic development and welfare of developing countries as its main objective.

As the funding is provided through the UK Vaccine Network, the research activity proposed must be in line with Official Development Assistance (ODA) principles.

Although this call is not part of the Global Challenges Research Fund, the guidance regarding ODA should be followed:
<http://www.rcuk.ac.uk/documents/international/gcrfodaguidance-pdf/>.

The reasoning as to why the proposed activities would be ODA compliant should be set out in the application in the case for support at the Outline stage. It is important to note that capital expenditure on permanent, fixed facilities in the UK would not be considered ODA eligible.

Where organisations interested in applying identify expenditure that could not reasonably be classed as ODA eligible, they should look to leverage it from other funding sources.

Future Vaccine Manufacturing Research Hub characteristics

The core activity should be based in a single location, with other institutions or groups acting as 'spokes', inputting specific expertise in areas that complement those from the lead institution.

Hub / 'Core activity'

Applicants will need to demonstrate that their Hub will:

- Deliver a programme of high quality research with a strong, multidisciplinary team, building on a history of excellence in research.
- Have a clear, shared vision, encompassing a core mission for the Hub, a strategic view of the research programme and activities (i.e. not a portfolio of separate research activities), the host institutional strategy, Hub sustainability, and a mechanism for reviewing this vision
- Maintain a strong operational core to ensure the efficient operation of the Hub, with an appropriate, robust management structure in place, including good measures of progress, clear team roles and a recruitment strategy
- Demonstrate creative and innovative research approaches, drawing on emerging research opportunities and bringing in new disciplines, being self-sustaining in the generation of new research ideas and providing space to fail
- Show the added value of being a Hub, with strong connectivity between parts of the Hub, with a coherent, focussed portfolio of projects and being resilient to change, e.g. succession plans for key investigators/researchers
- Have a clear LMIC need and a clear pathway to impact.
- Actively seek to maximise the benefits from the research to LMICs and UK manufacturing industries (through commercialisation, translation into policy/practice, partnership and/or other approaches) and demonstrate these impacts to Governments, industry and other stakeholders
- Have significant direction and support from international and UK based collaborators (e.g. co-creation of the business case with industry and partners in LMICs), exposing academia to industrial problems, but not with one partner dominating
- Have a framework for engagement with collaborators, managing and evolving the group of collaborators through the lifetime of the Hub
- Drive forward the vaccine manufacturing research agenda in their area, building on the Hub and Director's high profile and authority in the research landscape
- Engage with (national & international) academia beyond core Hub membership, supporting feasibility projects, sharing equipment and promoting networking
- Provide leadership in the innovation landscape, influencing and working with other stakeholders to accelerate impact and generate growth
- Work with other public investments in the manufacturing landscape (e.g. the Catapult network) to align capabilities, link up resources and ensure that research outputs can be taken towards commercialisation

- Respond to the changing manufacturing landscape, by refreshing their research agenda and evolving their partnerships
- Work as a cohort with other Manufacturing the Future critical mass activities (e.g. Hubs, Centres, Programmes), the Department of Health, EPSRC, Medical Research Council (MRC) and Biotechnology and Biological Sciences Research Council (BBSRC) to further the manufacturing research agenda, influencing policy and contributing to the national debate in manufacturing.

Spokes

Spokes should provide specific expertise in areas that complement those from the Hub. This expertise could be in the form of research skills/capability, or in research translation and knowledge exchange.

The overall number and identity of spokes may evolve over the life of a Hub, with spokes being engaged with the Hub at differing levels of intensity and over differing timescales, in the same manner that the Hub collaborators would evolve.

Research spokes would comprise groups providing research expertise not in the core Hub research group, whether from a separate institution or from the wider Hub host institution. Research spoke engagement could cover a range of activities, including sharing platform support resources, sharing equipment, feasibility projects and promoting. The Hub is also expected to network and engage other researchers across in LMICs, the UK and internationally with relevant expertise, beyond the Hub and spokes.

Innovation spokes would act with the Hub to improve the impact of the Hub. They would act as a conduit working across Technology Readiness Levels, facilitating the translation of research outputs from the Hub to LMICs, providing a clear path to commercialisation for translation. Potential innovation spokes could be based in the UK or in partnering countries including Catapults, UK national laboratories, Government organisations having acknowledged science standing and independent verification capacity and Research and Technology Organisations. Funding for the innovation spokes' activities will depend on the business model of the spokes.

Funding available

The Department of Health will provide up to £10 million to support one Future Manufacturing Research Hub from 1 December 2017 until 31 March 2021.

The £10 million funding for the Hub is available to support the following activities.

- 'Platform' research funding, supporting:
 - Retention of key staff and nurturing collaborations
 - Networking with other Hubs and centres in the UK and overseas
 - Core research activities or technologies that are necessary or valuable to the Hub, including the appropriate dissemination of research knowledge
 - Feasibility studies to be conducted as part of the outreach programme.
- 'Grand challenge' research funding to support several major research projects/themes, the focus of which are driven by long-term vaccine manufacturing research challenges of users in LMICs and/or capturing future industrial opportunities from emerging research areas.

- Operational funding, supporting Hub administration, management and governance
- Pathways to impact in LMICs (<https://www.epsrc.ac.uk/funding/howtoapply/preparing/economicimpact/> and <http://www.rcuk.ac.uk/documents/international/gcrfodaguidance-pdf/>).

Equipment

Funding for major equipment in the UK is not available and where possible, researchers are asked to make use of existing facilities, plant and equipment, including those hosted at other universities. Where organisations interested in applying identify expenditure for equipment, they should look to leverage it from other funding sources. Consumables under £10,000 (incl. VAT) is allowed. Equipment costs for use and based in LMICs setting is allowed.

For more information on equipment funding, please see: <https://www.epsrc.ac.uk/research/facilities/equipment/>.

Eligibility

Overseas Co-Investigators from research organisations in low and middle-income countries (all countries on the Development Assistance Committee (DAC) list of the OECD) may be included on proposals through this call. We will also support costs associated with research overseas, e.g. consumables, field work. The lead institution and Principal Investigator must be based in the UK. Although proposals may be multi-institutional, only one application form should be submitted for each bid. Joint proposals on separate Je-S forms will not be accepted.

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide: <https://www.epsrc.ac.uk/funding/howtoapply/fundingguide/>.

As this call is a targeted funding opportunity provided by EPSRC, higher education institutions, and some research council institutes and independent research organisations are eligible to apply. A list of eligible organisations to apply to EPSRC is provided at: <http://www.rcuk.ac.uk/funding/eligibilityforrcs/>

How to apply

A two-stage application process will be used.

- **Stage 1 Outline proposal** - application details are detailed below.
- **Stage 2 Full proposal** - application details are contained in Annex 1, for information, and may be changed. Further details of the Je-S submission route, including the full proposal deadline, will be made available to the successful outline applicants. Only successful applicants will be invited to submit an application to the full proposal stage. No other applications will be accepted.

Submitting your outline application

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

Although both single and multi-institutional bids are welcome, only one Je-S application form should be submitted per bid. Joint Proposals will not be accepted.

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 'Future Vaccine Manufacturing Research Hub - Outlines' 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 02 March 2017**.

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.ac.uk/funding/howtoapply/>) which should be consulted when preparing all proposals.

Please also note that it is the responsibility of the lead organisation to ensure all the documentation required is submitted with the proposal form.

You should consult your Research Administration at the earliest opportunity when preparing your outline proposal, specifically with regard to costing your outline proposal and any internal procedures you need to follow.

Guidance on writing your outline application

In addition to the proposal details that you need to complete in Je-S (including outline costs and a non-technical summary of the proposal), you will also need to prepare the following attachments:

- Outline Case for Support
- CV of proposed Director
- Statement of support from the host university (ies).

Outline Case for Support

The case for support should be a maximum of five sides of A4 and should use the following headings:

- **Overall vision for the Hub.** This should include the Hub vision and how it meets the aims and expectations of the Future Vaccine Manufacturing Research Hub model. It should also include an overview of the vaccine manufacturing research opportunities and challenges and the approaches to addressing them. This should include evidence that users in LMICs have been closely involved in the preparation of this proposal from the outset. Separate letters of support from users are not required at the outline stage.
- **Leadership qualities of the Director.** In addition to the information provided in the CV, please provide evidence that the Hub Director has the necessary skills and competencies to drive the Hub vision.

- **Official Development Assistance Justification Statement.** Please state the country/ countries on the DAC list will directly benefit from the Hub and whether those countries are likely continue to be ODA eligible for the duration of the research. Please also include how the Hub is relevant to development challenges of the countries. Finally, include how you expect the outcomes of the Hub will promote the economic development and welfare of a country or countries on the DAC list.
- **Capability of the Hub team.** This should include evidence:
 - that you have the necessary skills within the team to address the proposed research challenges, or a route to access those skills
 - of user collaboration, direction and the ability to leverage cash and in-kind support from these users.
- **Appropriateness of this funding mechanism.** It will be important to articulate not only that the overall research challenges and business opportunities are best addressed through this type of funding, but also that it is appropriate for the Department of Health to provide the funds, given the funding research landscape.
- **Resources requested and management.** including the percentage of time the principal and co-investigators will be spending on the project. Explain the plan of how to spend the resource requested in the allotted time frame. Explain the distribution of funding requested for the directly incurred costs of the proposal (i.e. the 'platform', 'grand-challenge' and operational support funding).

CV of proposed Director

This should be a maximum of two sides of A4. Please provide a CV for the Director that demonstrates a track record in managing large complex research grants and of collaborating with users. The CV should be uploaded into Je-S as 'CV' attachment type.

Statement of support from the university(ies).

Please attach letters from all universities involved articulating how the Hub aligns with the university's research strategy. The letter should be signed by the Pro-VC for Research or equivalent.

Please combine all letters into one document and upload into Je-S as 'Host organisation Statement' attachment type.

Attachment formats

Please note that on submission to council **all** non-PDF documents are converted to PDF. The use of non-standard fonts may result in errors or font conversion, which may result in changes to the layout of the document and could affect the overall length of the document. For this reason we recommend that the documents are converted to PDF files before uploading.

For advice on writing proposals, see:

<https://www.epsrc.ac.uk/funding/howtoapply/preparing/>.

Assessment

Assessment process

A two-stage assessment process will be used.

Stage 1: Outline Proposal

The outline bids will be considered by an expert peer review panel against the assessment criteria outlined below. The panel will be comprised of UK and international experts in the areas of vaccine and manufacturing research. Their recommendation will be based solely on the information provided on the Je-S form, in the case for support and the accompanying attachments.

Department of Health and the EPSRC will decide, based on the advice of the peer review panel, which proposals to invite to the full stage.

Stage 2: Invited Full Proposal

Full proposals will be sent to independent peer reviewers, including at least one nominated by the applicant. The peer reviewers' role will be to comment on all the assessment criteria, but primarily on the quality of the research. Applicants will be invited to respond to the reviewers' comments.

Full proposals that receive sufficiently supportive reviewer comments will be then be rank ordered against each other via an interview stage.

The interview panel, with industrial and academic members, will rank the proposals against the full assessment criteria, using the reviewer comments, PI response and overall interview performance. The PI plus up to three others identified in the proposal will be invited to attend the interview, including at least one representative of the collaborators. If the PI is not the Director, then the Director should attend the interview as well.

The Department of Health and the EPSRC will decide, based on the advice of the interview panel, which proposal to fund.

Assessment criteria

Stage 1: Outline Proposal

The criteria for assessment of outline proposals will be:

- Fit to the scope of the call, including appropriateness of UK Vaccine Network funding and ODA compliance
- Hub vision
- Leadership qualities of Director
- Innovative nature of the vaccine manufacturing research programme
- UK and international need for the Hub, including the relevance of the collaborators
- Capability of the Hub team to tackle the research challenges, engage with users and to deliver impact, including levels of collaborator engagement

- Appropriateness of resources requested and management arrangements.

It is important that all the assessment criteria are met as outline proposal assessment will consider all of them.

Stage 2: Full Proposal

The criteria for assessment of full proposals will be:

- Quality of the vaccine manufacturing research programme
 - The appropriateness of the proposed methodology
 - Degree of novelty in the research plans and approach
 - The ambition, adventure, and transformative aspects identified
- Importance of the vaccine manufacturing research programme
 - Potential to address challenges faced by low and middle-income countries
 - Potential for secondary transformative impact on the UK research community, society and the economy including emerging industries
- Pathway to Impact
 - The effectiveness of the activities identified to help realise the Hub impacts in LMICs, including networking and outreach to other research and user groups, as well as public engagement
 - Appropriateness of the resources requested for this purpose
 - The relevance and appropriateness of the beneficiaries and collaborators
- Applicant team
 - Leadership qualities of the Director
 - Appropriateness of the track record of the applicant(s)
 - Balance of skills of the project team to deliver the aims and objectives of the Hub
 - Appropriate team training and development
- Resources and Management
 - Appropriate management and governance plans, including the ability to spend the resource with the life of the Hub
 - Appropriate resources requested and justified
- Proposal Assessment
 - Overall strategy for the Hub, including vision and plans for longer term sustainability
 - Level of commitment from the universities.

Feedback

Feedback will be given to successful applicants at the outline stage and all applicants at the full proposal stage

Moving forward

We do not expect to see large changes in requested resources from outline to full proposal. Significant changes to the bid, and therefore from the proposal considered at the outline meeting, will be considered a new proposal and rejected.

Submissions to this call will **not** count towards the Repeatedly Unsuccessful Applicants Policy. Further information about the policy can be found at: <https://www.epsrc.ac.uk/funding/howtoapply/basics/resubpol/rua/>

Guidance

Guidance for reviewers

Information about the EPSRC peer review process and guidance for reviewers can be found at: <https://www.epsrc.ac.uk/funding/assessmentprocess/>.

Peer reviewers will not only be directed to this call for proposals when contacted to review proposals but specific guidance will also be available to them based on the information in this call.

The outline and interview panels will also be given specific guidance based on the information in this call.

Additional grant conditions

In addition to the standard terms and conditions for grants, successful Hub will have the following additional grant conditions:

- EPSRC expectations for the Director of the Hub
- Hub to have a fixed start date of 01 December 2017
- Due to the availability of funding from the UK Vaccines Network, no change in start and end date is permitted. No grant extensions will be allowed.
- Hub to report progress when requested, and at least on an annual basis
- Department of Health/ EPSRC to agree the management structure, including terms of reference and membership
- Department of Health/ EPSRC involvement in Hub management and other activities throughout the grant
- Hub investigators to be advocates for Department of Health/ EPSRC
- Publicity/branding guidelines, to include the Hub being named 'Future Vaccine Manufacturing Hub'
- Hubs to undergo a mid-term review of their activities, led by EPSRC and the Department of Health, which will determine whether the Hub's funding for the last half of the grant are released
- Hub to have collaborative agreements in place with any project partner before collaboration begins
- Hub to engage as part of the cohort of Hubs.

Key dates

Activity	Date
Invitation to submit outline proposals	24 January 2017
Deadline for outline proposals	02 March 2017
Successful outline applicants informed	Early April 2017
Deadline for full proposals	Early May 2017

Prioritisation interview panel	Late August 2017
Announcement of successful proposals	October 2017

Contacts

For further information, advice or queries regarding the application procedure please contact:

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Dr Richard Bailey
 Senior Portfolio Manager – Manufacturing the Future Theme
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If you have any questions about preparing and submitting your proposal using Je-S, please contact the Je-S helpdesk (JeSHelp@rcuk.ac.uk, 01793 444164). Your Research Administration should also be able to offer advice about costing and writing your proposal and the Je-S system. Please allow enough time before the closing date for your organisation's submission process.

Change log

Name	Date	Version	Change
Rebecca Williams	23/01/16	1	N/A

Annex 1: Je-S Attachments Check List

Outline:

Attachment Type	Maximum Page length	Mandatory/Optional	Extra Guidance
Outline Case for Support	5 pages	Mandatory	
C.V.	2 pages	As required	
Letter of Support from Universities	No page limit	As required	

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.

Annex 2: Full Proposal Applications

Applicants must have been successful at the outline stage in order to submit an application to the full proposal stage. Please note that this is provided as a guide only and EPSRC reserve the right to change the application guidance. All successful applicants will be issued further guidance after Stage 1 of the process.

Please note that EPSRC reserves the right to reject a full proposal where the resources are substantially different from those indicated in the outline proposal or where there have been other significant changes from the outline proposal that have not been discussed with EPSRC.

Submitting application

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

Further details of the Je-S submission route will be made available to the successful outline proposals.

Proposals must be submitted on one Je-S proposal form even if they are multi-institutional bids. Multiple forms will not be accepted.

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 ensure you allow sufficient time for your organisation's submission process between submitting your proposal to them and the Call closing date. The call closing date will be approximately 5 weeks after the invitation is open.

Guidance on writing a full application

Your full proposal should consist of:

- single Je-S application form for each Hub
- full case for support - 14 pages
- CV of the proposed Director - two pages
- pathways to impact - four pages
- justification of resources - two pages
- work-plan - two pages
- project partners' letters of support
- a letter of support from each of the HEIs involved
- infrastructure strategy plan - two pages (equipment dependant).

Guidance on what is required in the proposal sections is below.

Full Case for Support

The case for support should be a maximum of **14 sides of A4** under the following headings:

- **Track record.** In addition to the information provided in the CV, provide evidence of the Director's leadership qualities, as well as their skills and competencies to drive the vision of the Hub. Also show that the team has the

capability and capacity to address the identified research needs (2 of the 12 pages)

- **Vision and rationale for the Hub.** Explain succinctly the overall vision for the Hub and how this will achieve the call objectives of a Future Vaccine Manufacturing Research Hub as detailed on page 1 of this call.

The vision should be set in an international context with reference to relevant academic research and business requirements, i.e.:

- how will the research contribute to, or help maintain the health of vaccine manufacturing and other research disciplines,
- how the Hub seeks to promote the economic development and welfare of countries on the DAC list of ODA recipients
- what is the national strategic need for a unique world leading research activity in this area
- how it will address users' key manufacturing and business research needs, to enable them to be innovative in a ten-year timescale
- how does the research fit with and complement other UK research already funded in the area or related areas?

The vision and rationale should also set out how the Hub will take a leadership role in the national research and innovation landscape, conducting outreach activities and working with other stakeholders.

It should articulate why funding in this area is timely and relevant.

- **'Platform' funding.** Explain the activities this part of the funding will enable in underpinning the vision and activities of the Hub. Include details of how it is envisaged the programme of research will progress, as well as the user engagement in the platform activities and how it will impact on their business.
- **'Grand Challenge' funding.** Give an overview of the research theme(s), their underlying key research challenges and the broad approach to addressing them. Provide the scientific details and the methodology for the initial projects, ensuring there is sufficient detail to allow peer review to assess the quality and ambitious nature of the research. Include details of how it is envisaged the programme of research will progress, as well as the user engagement in the platform activities and how it will impact on their business.
- **Management.** This should give details of how the Hub will be run. This should include:
 - the governance of the Hub, taking into account that the Principal Investigator is responsible for delivering the grant objectives
 - administrative support arrangements, which should be in place from the start of the grant
 - the strategy as to how the flexibility of resources will be used across the platform and grand challenge activities, including a risk management strategy
 - how the Hub will further enhance its research portfolio to increase its impact on its user community.

The case for support should be uploaded to Je-S as per standard research grant applications.

CV of the proposed Director

This should be a maximum of **two sides of A4**. Please provide a CV for the Director that demonstrates a track record in managing large complex research grants and of collaborating with users. The CV should be uploaded into Je-S as 'CV' attachment type.

Pathways to Impact

This should be a maximum of **four sides of A4**. Explain the Hub's strategy for engagement with the entire value chain (from discovery, to understanding through to integration/adaptation, demonstration and deployment), to achieve and accelerate impact from the Hub's activities.

The scale of the Hub, together with their position in the value chain, gives you the potential to be adventurous and to propose some stretching activities in this area, including people movement/secondments and proof of concept work.

This section should cover how the potential pathways to impact will be delivered, looking across the research landscape and innovation landscape, including:

- **Community outreach activities** to:
 - promote networking and collaboration with non-Hub researchers, driving research excellence
 - directly supporting non-Hub researchers in collaborative research in areas of direct relevance to the Hub
 - embed a responsible approach to innovation (<https://www.epsrc.ac.uk/index.cfm/research/framework/>)
 - engage the wider public in research.
- **Innovation chain engagement**, influencing and working with other stakeholders (particularly Innovate UK & the Catapult network), to ensure acceleration of impact and time to market, including:
 - promoting follow-on work and very early stage commercialisation
 - how to engage appropriate funding agencies (other than EPSRC) required to support the Pathways to Impact.
- **Metrics** that will be used to measure both quantitatively and qualitatively the impact and success of the Hub in terms of research, people and policy.

It is recognised that activities described in this section may well overlap in purpose and so cover a number of these headings.

Justification of Resources

This should be a maximum of **two sides of A4**. This should justify the resources required to undertake the research programme (Platform and Grand Challenge), support the Hub operations and implement the Pathways to Impact.

Please provide a table totalling the Directly Incurred resources requested for each of the four headings in the Resources Available section (i.e. the two research programmes, Hub operations and Pathways to Impact resources).

Any justification for equipment over £10k should also include justification for any maintenance or support costs that are requested and details of the proposed contribution to the cost of the equipment from the involved research organisations

or project partners. It should also include an explanation if there is only a sole supplier for the equipment.

Please note that resources cannot be requested for travel and subsistence for any of the collaborators identified in the bid. The Justification of Resources should be uploaded to Je-S as per standard research grant applications.

Two-page Workplan

It is expected that sufficient detail can be provided for the full term of the grant in the work plan. An indication of the milestones and decision points and mechanisms for shaping the research programme is also expected.

The workplan should be uploaded to Je-S as per standard research grant applications.

Project Partner Statements of Support

Statements of support are required from all project partners involved in the proposal and listed on the Je-S form. These letters from project partners should:

- confirm their rationale for support for the Hub from their business needs and drivers, and detail how they have been involved in the preparation of the proposal
- confirm the contribution of cash and in-kind support
- show an outline of their intended involvement during the lifetime of the Hub
- be dated and on headed paper, making clear the role of the signatory in the user organisation.

The letters should be uploaded into Je-S as 'project partner letter of support'.

Letter from the host university(ies).

Letters are required from all universities involved in the proposal and should be signed by the Pro-VC for Research, or equivalent. The letters should explain:

- how the new Hub would align with the university's research strategy
- what commitment (direct or in-kind) the university will be contributing
- what support will be given to the Hub Director.

Please combine all letters into one document and upload into Je-S as 'Host Organisation Statement' attachment type.

Ethical Information

Applicants should use the Ethical Information section on the Je-S form 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. All relevant parts of the Ethical Information section must be completed. If the research will involve human participation or the use of animals covered by the Animals (Scientific Procedures) Act 1986 it is recommended that applicants pay particular attention to the guidance highlighted below. EPSRC reserves the right to reject applications prior to peer review if the Ethical Information sections are not completed correctly.

Further guidance on completing the Je-S form can be found at <https://je-s.rcuk.ac.uk/Handbook/pages/GuidanceonCompletingaStandardG/EthicalInformation.h>

tm. 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://www.epsrc.ac.uk/research/framework/>).

Attachment formats

Please note that on submission to council **all** non-PDF documents are converted to PDF. The use of non-standard fonts may result in errors or font conversion, which may result in changes to the layout of the document and could affect the overall length of the document. For this reason we recommend that the documents are converted to PDF files before uploading.

For advice on writing proposals, see:

<https://www.epsrc.ac.uk/funding/howtoapply/preparing/>.

Please note that it is the responsibility of the lead organisation to ensure all the documentation required is submitted with the proposal form.