Digital Design & Manufacturing Systems and Physical Devices Funding Call Information for Applicants

About TIDAL N+

TIDAL Network+ is an EPSRC-funded collaboration between UCL, Strathclyde, Salford, and Loughborough Universities. We are building an interdisciplinary network of researchers, assistive technology (AT) users, entrepreneurs, and clinical practitioners, to identify and tackle new research challenges that will help us to transform AT. Together we will create novel, innovative solutions that will lead to improvements in the quality of AT and enhance the lives of the people who use them. Our vision is for innovative, sustainable, and equitable AT, both physical and digital.

Our research themes

We have identified three research priorities:

- Responsible Engineering
- Digital Design and Manufacturing Systems (DMS) and Physical Devices
- Sensors and Data Science for Communication Aids

One or more additional priorities will be developed in consultation and collaboration with the TIDAL N+ community as the project progresses.

Purpose of this funding

TIDAL N+ aims to grow a network to support the development of technologies and services which will improve the quality and affordability of Assistive Technology (AT) available to people, and hence the lives of the people who use them.

TIDAL N+ has been awarded funding by EPSRC (EP/W000717/1) including a budget for us to award feasibility research funds of up to £60k to each of eight interdisciplinary teams. We are planning to run four separate funding calls, of which this is one, and aim to award up to £60k to two projects from each call.

The aim of this feasibility funding is to provide short term support (about 6 months duration) to enable fundamental, interdisciplinary, early-stage research. We aim to fund interdisciplinary teams who have an excellent research hypothesis for solving a clear unmet need. Whilst teams are interdisciplinary, the hypothesis, when answered, should advance the engineering or physical sciences field. The feasibility study should result in increased confidence in the proof of concept developed, which then has potential to attract further investment. We expect all proposals funded through TIDAL N+ to be developed with stakeholders including AT users alongside healthcare services and manufacturing partners, as appropriate.

What we are looking to fund

The theme for this funding call is **Digital Design and Manufacturing Systems (DMS) and Physical Devices**. All applications should be directly and strongly aligned to this theme.

Our **DMS & Physical Devices** theme seeks to investigate novel ways to exploit the potentials and advantages of digital design and manufacturing. Sometimes referred to as the 4th industrial revolution or Industry 4.0, DMS is characterised by the following:

- The exploitation of advanced digital software and telecommunication systems
- The use of digital tools to enable the semi-automated capture of patient / user data
- The remote, redistributed or semi-automated computer-aided design of typically custom-fitting or personalised Assistive Technology products.
- Flexible, adaptable, on-demand and or redistributed manufacture closer to or at the point of care

Without AT, people are at risk of being excluded, isolated and economically and socially marginalised, making their health problems worse[i]. Despite healthy levels of innovation, societies still lack equitable AT provision globally, and NHS services lack resources. One of the most critical shortages is in personnel – there are simply too few clinicians able to prescribe and design AT and conventional manufacture is too labour intensive and time-consuming.

Current AT provision often requires an iterative hands-on design and manufacturing approach and this process is often time consuming. Although, face-to-face contact is crucial to provide the best clinical care, minimising contact has the potential to alleviate the burden of travel and the need to take time away from work or caring responsibilities, which incur the costs of travel and lost earnings. In addition, most AT interventions are one-off and custom-made, making users dependent on only one device. Replication, repair or replacement requires the whole process to be repeated. These situations can be massively exacerbated for users in remote locations and low-resource environments.

It is important to recognise the depth of knowledge, training, skills and expertise that underpins the design and manufacture of AT. The exploitation of the potentials and advantages of DMS must aim to empower clinicians and providers of AT rather than aiming to make them redundant. **We are seeking proposals that seek to capture knowledge and expertise, empower clinicians and therapists by providing them with tools that can provide an order of magnitude gain in efficiency and responsiveness, driving down cost, accelerating processes, eliminating waste and improving the experiences of the user and the clinicians.**

We are funded by EPSRC, the Engineering and Physical Sciences Research Council, so the kinds of projects we are looking to fund are engineering and physical sciences projects that fall within in the remit of what EPSRC fund. We are looking to fund projects that are at an early research stage rather than a commercialisation or implementation stage; technologies at low TRL (Technology Readiness Level) probably TRL 2 or 3, so just beyond the initial idea.

We want fundamentally research-driven ideas that will then enable a shift in the design of a particular design or service. We are looking for projects that will facilitate a transformation – ideas that will produce a step change.

Projects should have a multi-disciplinary, co-creation approach. This is very important. There should be involvement of industry, stakeholders, service providers, service users, clinicians etc. as appropriate to your project.

Projects should be deliverable for around £60k. The idea is to fund a few months of research to prove enough to allow you to apply for much bigger funding.

We are particularly keen to fund proposals that demonstrate clear plans for how the work will lead to a full proposal to be submitted to a UK funder at a future time.

Applications led by early career academics/researchers are particularly encouraged.

Please note that if your proposal includes sensors and data science for communications devices it might be better to wait for the third funding call.

What we are not looking to fund

We are not looking to fund:

- Projects which are not directly and strongly aligned with the theme of this call
- Incremental product development projects which might be better served by Innovate UK funding or commercial funding
- People who just want funds to get their product to market
- Activities that are normally the responsibility of central or local government
- Evaluations of your organisation's own programmes
- Research studies that are already underway, though we would consider funding a new study that is part of a wider programme of research that has already begun

Eligibility for funding

To be eligible for funding, the PI and Co-Is must be academic employees of an organisation that qualifies for EPSRC funding and be resident in the UK.

For employees on a fixed term contract, their contract must extend beyond the duration of the proposed research project. Although EPSRC rules say that ordinarily a Co-I would not be required to have a contract that extends beyond the term of the grant, we will require this as the project timeframe is only 6 months.

We actively encourage ECRs to apply for TIDAL N+ funding, and they can be the Principal Investigator so long as:

- They are employed in an eligible UK academic institution.
- Their contract lasts until at least the end date of the project.
- They hold, or are expected to hold, a doctorate by the start date of the funding being awarded, or can demonstrate equivalent research/innovation experience and/or training There are no eligibility rules based on years since PhD.
- They have the approval of their own institution before submission: there are often local eligibility criteria which need to be met.

Please see FAQs for further information about eligibility.

Funding and other support available

You can apply for up to £60k.

Note that EPSRC funding is awarded at 80% of Full Economic Cost (FEC), so if you apply for £60k FEC and your project is selected for funding, we will actually reimburse 80% of your FEC i.e., £48k not the full £60k.

The contracting organisation (lead applicant's institution) will cover the other 20%. You must get the permission of your Head of Department or Head of Finance (or other appropriate financial

authorities, as required by your organisation) before applying for funding. This is to ensure that you have their commitment to cover the other 20% and provide the usual support to PIs.

Successful projects will also be provided with access to a mentor who will support the activities of the project. Your mentor will provide advice and feedback to you at appropriate times during your project activities. The aim is to provide your project with an additional level of support and guidance, rather than monitor its progress. Mentors may be asked to provide feedback to TIDAL N+ team from time to time.

What funding can be used for

Your budget can include direct costs such as researcher salaries, consumables, research expenses, participant compensation, sub-contracting an individual or service to deliver a specialist service or input; also indirect costs such as overheads and estate costs. Open access publication charges are not eligible costs.

Our expectation is that travel costs will be for essential travel only, that essential travel will be minimal, and only within the UK. We do not anticipate funding any international travel.

We will NOT fund air travel other than in exceptional circumstances and with prior permission from the TIDAL N+ team. We would consider a request to cover air travel if the travel was essential and there was no alternative means of travel, or if an individual would be significantly disadvantaged (not merely inconvenienced) in some way if unable to travel by air. In all cases, you would need to request permission for air travel from the TIDAL N+ team before incurring the costs.

Required deliverables

Your research proposal will set out what your project will deliver. At a minimum this will include:

- A report of 4- 6 pages
- A 3-minute video
- A presentation at the annual TIDAL N+ symposium

Where a proposal is successful, the lead applicant's organisation will be required to sign a contract committing you to deliver what the proposal says you will deliver.

Lead investigators will be required to attend and present their work, either in progress or complete, at TIDAL N+ events, and to provide certain information to the TIDAL N+ team on request (see Terms and Conditions below).

IP and publication of funded research

This will be grant funding. None of the institutions involved in the TIDAL N+ project (UCL, Loughborough University, Salford University, Strathclyde University) will claim ownership of the IP in the work arising from this funding, although we will reserve the right to disseminate the work and publish it on the TIDAL N+ website and in other media owned by the collaborating institutions. Such publishing would not prevent publication of the material in a scientific journal.

Equality, diversity and inclusion

TIDAL N+ committed to Equality, Diversity and Inclusion. We know that diverse teams deliver high quality research outcomes. We want to encourage, support and respect ideas from everyone and ensure our inclusive activities are representative of our network's community.

We particularly welcome applications from teams which are diverse in terms of protected characteristics and disciplinary areas.

We have designed our funding allocation process with an aim to minimise any potential impact of bias at all stages of decision making. We are therefore piloting a two-part application form: Part 1 will be the outline case for support, which will be considered anonymously by a shortlisting panel; Part 2 will contain contact details, project team and track record information. The Expression of Interest form will also be in two parts.

Please make ensure that no identifying content is included in Part 1 of either form (e.g., host institution). This will enable proposals to be considered without members of the panel having knowledge of the applicant's identity or affiliations.

Upon receipt of a proposal, we will ask the PI to (voluntarily) complete an anonymous EDI monitoring form for their team so we can learn how we can support increasing diversity in our activities.

Applicants do not need to have attended any of the workshops within a call to submit a proposal.

Access needs at workshops will be provided – these will include requests for supporting neurodiverse colleagues in taking part in the workshop environment. Please let us know what you need to feel able to take part.

We are keen to challenge our own thinking as we deliver our programme. We therefore encourage applicants to discuss with the TIDAL N+ any specific requirements that will enable them to participate in the network.

How to apply

The process for the funding call and submitting applications is as follows. See 'Key dates and deadlines' below for dates.

1. An agenda setting workshop (2 hours) and a collaboration workshop (2 hours), online, on two consecutive days, to generate awareness of the research challenges, and stimulate collaboration and engagement with relevant stakeholders. We encourage you to attend these workshops but it is not compulsory as we recognise that some people do not flourish in workshop-type environments. Recordings of the workshops will be made available.
2. Applicants submit an expression of interest form 2 weeks after the workshops to indicate their intention to submit a full application. **ALL** lead applicants must submit an expression of interest, whether or not they attend the workshops.
3. Applicants submit full application forms 6 weeks after the workshops.
4. Applications are reviewed.
5. Shortlisted applications are considered by the Steering Committee and TIDAL N+ investigators, who then make the final selection of proposals for funding.

As noted above, we are piloting two-part Expression of Interest and Application Forms: Part 1 will be the outline Case for Support, which will be considered anonymously by a shortlisting panel; Part 2 will contain contact details, project team and track record information.

Please make ensure that no identifying content is included in Part 1 of either form (e.g., host institution). This will enable applications to be considered without members of the panel having knowledge of the applicant's identity or affiliations.

You must also submit a completed budget spreadsheet using the template provided. Planned expenditure must be in line with your host institution's financial regulations.

We require your application to be approved by an appropriate authority in your organisation, who will undertake both to fund the additional 20% of your budget, and to provide the support they normally provide to PIs. This would usually be your Head of Department and/or Head of Finance, but you should follow your organisation's rules on who needs to approve your application. Make sure your application form has been approved and signed by an appropriate authority before you submit it.

Please submit your application form in Word format. Your budget should be in Excel. Please do not submit these as PDFs. Please do an accessibility check on your documents before submitting them and correct any issues that are flagged as likely to cause problems for people using screen readers.

Assessment process

Applications will be peer reviewed by at least 2 reviewers representing different perspectives: academic and/or business and/or AT user.

Applicants will be given the ability to respond to reviewer comments before funding decisions are made by the Steering Committee and TIDAL N+ investigators.

Reviewers, Steering Committee members and TIDAL N+ investigators will be required to declare any conflicts of interest and will not be involved in any decisions relating to projects where they may be conflicted.

Assessment criteria

Shortlisting and funding decisions will be based on the following criteria:

Research question

- Is there a strong research question which addresses a clear, unmet need within the scope of TIDAL N+? Are the research question(s) important, novel and likely to lead to significant new understanding?
- Is the research question directly and strongly aligned to the theme of the call?

Multidisciplinary team and co-creation approach

- Multidisciplinary team in place?
- How will ECRs be involved?
- How will industry and/or other relevant stakeholders such as AT users be involved?

Future funding potential

- Does the application demonstrate potential for development of future funding applications from EPSRC, Innovate UK or other UK funding streams?

Dissemination and impact

- How will this grant help enable better futures for assistive technology users?
- How will this grant impact healthcare technology systems?
- How will the team maximise impact through dissemination of their work?
- Have criteria for assessing the success of the project been clearly articulated?

Feasibility

- Is the project realistic, given the budget and time constraints?

Research team

- Does the team have the expertise, skills and experience to complete this project successfully?
- Will this funding make a tangible difference to the research trajectory of the lead researcher?
- If relevant, does the researcher have sufficient support in place, e.g., appropriate collaborations established?
- Is there adequate institutional support for this project?

Financial justification and value for money

- Are the funds requested essential for the work and justified by the importance and potential of the research?
- Does the proposal demonstrate value for money in terms of the resources requested?

Ethical issues

- Are there ethical and/or research governance issues?
- Are there satisfactory plans in place to address these?
- Are there clear plans in place for storing and, if appropriate, sharing data in accordance with GDPR?

Equality, diversity and inclusion

- How does the proposal demonstrate excellence in commitment to equality, diversity and inclusion?

Responsible research and carbon impact

- How does the proposal demonstrate responsible research e.g., measuring and limiting the carbon footprint of the project and other sustainable research practices?

Contracting

The following will apply if your application is successful:

1. Contracting between UCL and the successful lead applicant's organisation

A contracting process will be initiated by UCL with your institution to formally agree the contract for the funding. EPSRC terms and conditions will apply, as well as any terms and conditions specific to the TIDAL N+ grant, and any terms and conditions specific to this award. We will ask you for details of your contract team if you are successful.

The lead applicant's (PI's) institution should sign and return the contract as soon as possible. If the lead applicant's institution wants to request any revisions to the draft agreement, the lead applicant is responsible for ensuring all requested changes are made and tracked in a single Word document. This document with requested revisions must be submitted to the UCL contracts manager as soon as possible. Our contracts manager will discuss the proposed changes with the lead applicant's institution and will then send a final version of the agreement for signature. The lead applicant on the successful project is responsible for having the amended document signed by their institution and returning it to UCL within one week of it being sent out. We would strongly recommend that you are proactive in following-up progress on the contract negotiations with your contracts manager.

2. Contracting between the successful lead applicant's organisation and their project partners

Successful applicants will be expected to put in place a collaboration agreement or other suitable agreement with any of their project partners or collaborators (including Co-Is and other

collaborators/partners), governing the terms of the collaboration. This agreement should reflect all applicable terms of your organisation's contract with UCL, the role and contribution of each individual/organisation, any financial payments to be made, IP arrangements, and delivery deadlines. Successful lead applicants should seek the advice of their contracts team to put appropriate agreements in place.

Terms and conditions

EPSRC terms and conditions will apply to this funding, as well as any terms and conditions specific to the TIDAL N+ grant, and any terms and conditions specific to this award. We will ask you for details of your contract team if you are successful.

Specific terms and conditions for this award are as follows:

1. Lead applicants will be required to:
   i. Ensure that their organisation puts in place a collaboration agreement or other suitable agreement with any of their project partners or collaborators (including Co-Is and other collaborators/partners), governing the terms of the collaboration. This agreement should reflect all applicable terms of your organisation's contract with UCL, the role and contribution of each individual/organisation, any financial payments to be made, IP arrangements and delivery deadlines.
   ii. Participate in TIDAL N+ events and present the work of their project (in progress or completed) at the TIDAL N+ symposia, and/or other events.
   iii. Provide information and updates for the TIDAL N+ website and other media when requested. This may include short quotes or other information to demonstrate the activities that are taking place.
   iv. Ensure that the work is acknowledged as being supported by EPSRC and TIDAL N+ when promoting projects, either through articles, papers, presentations or interviews. Both EPSRC and TIDAL N+ logs should be visibly included on any presentations and in other documents and media where appropriate. Journal publications must include a funding acknowledgement, with the TIDAL N+ grant number, the format for which will be provided.
   v. Discuss any proposed changes to spend or milestones with the TIDAL N+ team in advance and secure approval in writing before making the proposed changes.
   vi. Comply with the financial and other regulations of their institution.
   vii. Ensure best value in any expenditure of any grant funding.
   viii. Ensure all funding is tracked and is in line with the budget submitted as part of the application form (or any amendments subsequently agreed in writing with the TIDAL N+ team).
   ix. Submit to UCL on request any receipts or other confirmation of payments made from grant funding. UCL reserves the right to withhold payment where these cannot be produced.
   x. Incur no expenditure before the funding contract with UCL has been signed by both UCL and their organisation. UCL will not be responsible for any expenditure incurred before the contract has been signed.
   xi. Keep detailed records of, and supply to UCL on request and in the requested format, all data required for ResearchFish and any other EPSRC reporting, including (but not limited to) publications arising from the work undertaken; collaborations and partnerships including interactions with external individuals / organisations / partners / the public / other stakeholders undertaken during the funded activity; any further funding obtained; next

destinations for any team members; engagement activities, influence on policy, practice, patients and the public; new research tools or methods which have been created or commissioned by you or your team; any new research datasets, databases and models or data analysis techniques you create; intellectual property arising from the research; software and technical products created; awards or other recognition; other outputs/outcomes; use of any shared national or international research facility or service; PPI involvement.

xii. Liaise with the TIDAL N+ administrator and TIDAL N+ investigator team as appropriate.

2. The host institution will be required to:
   i. Cover any expenditure beyond the agreed value of any award.
   ii. Itemise bills based on 100% FEC and then invoice at 80% FEC.

3. UCL reserves the right to disseminate the work arising from this funding and publish it on the TIDAL N+ website and in other media owned by the collaborating institutions.

Key dates and deadlines

22nd June 2022	**Agenda-setting workshop** at 10 am to 12.00 pm. Online.
23rd June 2022	**Collaboration workshop** 10 am to 12.00 pm. Online.
7th July 2022 5pm BST	**Deadline for expressions of interest** to be submitted.
4th August 2022 5pm BST	**Deadline for full proposals** to be submitted.
8th August – 26th August 2022	Review of proposals.
w/c 29th August 2022	Shortlisting notices and reviewers' comments sent to applicants.
8th September 2022	**Deadline for applicants to respond** to reviewer comments.
11th October 2022	Panel makes final decisions on which projects to fund.
13th and 14th October 2022	Emails sent to applicants with funding decision
17th Oct 2022 to 3rd Feb 2023	Contracting process.
February 2023	Projects begin. (They may begin earlier or later depending on how long contracting takes. A project can begin as soon as the contract with UCL has been signed by the lead applicant's institution.)

NOTE: the workshop dates and submission deadlines are confirmed. Other dates are to be confirmed. We will endeavour to keep to this schedule but dates may vary slightly. We will keep the website updated with the most current dates.

Useful links

Connected Everything Podcast 01 - Writing a successful feasibility study application
Professor Sarah Sharples of The University of Nottingham and Connected Everything network manager Debra Fearnshaw share their advice and tips for writing a successful feasibility study application.

Connected Everything Podcast 02 – developing a successful panel pitch

Connected Everything Executive Group member Susan Reiblein and network manager Debra Fearnshaw share their thoughts on how to present an engaging and successful feasibility funding pitch from the perspective of the panel members.

Any other questions?

We want you to put in a great application so we are really happy to answer any other questions and queries you may have, or to clarify anything that isn't clear in the call documentation. Please contact TIDAL@ucl.ac.uk

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[i] Smith et al., 'Assistive Technology Use and Provision During COVID-19: Results from a Rapid Global Survey', International Journal of Health Policy and Management, vol. 0, Nov. 2020, doi: 10.34172/ijhpm.2020.210