

SCIENCE FOUNDATION IRELAND

Science Foundation Ireland - Defence Organisation

Innovation Challenge

2024 Call Application Handbook

Version: May 20, 2024

KEY DATES

- | | |
|--------------------------------|-----------------------------|
| • Call Launch | May 20, 2024 |
| • SESAME Open for Applications | May 20, 2024 |
| • Webinars | June 11 and August 1, 2024* |
| • Open Day(s) | July 2024* |
| • Application Deadline | September 6, 2024 |
| • Funding Decision | October 25, 2024 |
| • Award Start Date | January 1, 2025 |
| • Prize Award Start Date | January 1, 2026 |

* See Call website for more information.

Terms of Reference

While every effort has been made to ensure the accuracy and reliability of this document, it is provided for information purposes only and as a guide to expected developments. It is not intended, and should not be relied upon, as any form of warranty, representation, undertaking, contractual, or other commitment binding in law upon Science Foundation Ireland¹, the Government of Ireland, or any of their respective servants or agents. Science Foundation Ireland Terms and Conditions of Research Grants shall govern the administration of SFI grants and awards to the exclusion of this and any other oral, written, or recorded statement.

All responses to this Call for Submission of Proposals will be treated in confidence and no information contained therein will be communicated to any third party without the written permission of the applicant except insofar as is specifically required for the consideration and evaluation of the proposal or as may be required under law, including the Industrial Development (Science Foundation Ireland) Act, 2003, the Industrial Development (Science Foundation Ireland) (Amendment) Act 2013 and the Freedom of Information Acts 2014.

¹ SFI is in the process of amalgamating with the Irish Research Council to form Taighde Éireann – Research Ireland. This SFI-Defence Organisation Innovation Challenge call in 2024 will not be materially affected by the amalgamation process. Adjustments, if any, will be communicated to the Lead Applicant and via FAQ documentation on our website. Awards will be made by SFI or Research Ireland, depending on the timeline of the amalgamation.

SFI-Defence Organisation Innovation Challenge Programme 2024

CHALLENGES

The SFI-Defence Organisation Innovation Challenge is a collaboration between Science Foundation Ireland and Irish Dept. of Defence and Defence Forces (collectively referred to as the Defence Organisation). This programme is intended to support the Defence Organisation (DefOrg) to explore collaborative and capacity building opportunities with the Irish STEM research community. The 2024 call highlights four challenges to focus collaborative engagement and research activity to explore STEM-based solutions. Given the rapid rate of technology advancement, the DefOrg is interested in exploring solutions based on cutting-edge technologies. The solutions, and underlying technologies proposed, should be innovative and advance the state of the art. The SFI-Defence Organisation Innovation Challenge employs a phased funding programme under which finalists compete for an overall Prize Award of €1M.



- **Advanced Shelter Concepts** - Design, prototype and demonstrate manufacture feasibility of a novel, modular, multipurpose shelter structure system.
- **Maritime Situational Awareness** - Develop and demonstrate the feasibility of a solution that significantly enhances the Irish Naval Service's capabilities in Maritime Situational Awareness.
- **Search and Rescue** - Develop and demonstrate the feasibility of a solution that minimises the amount of time to deliver critical assistance to a person in distress either on land or sea, in a range of weather conditions, as part of a SAR operation.
- **Aeromedical Emergency Dispatch** - Develop and demonstrate the feasibility of a solution that supports rapid, reliable dispatch decisions for aeromedical services and enables intelligent monitoring to support situational adaptiveness.



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1 About the SFI-Defence Organisation Innovation Challenge

In September 2020, the Department of Defence and the Defence Forces (hereinafter referred to collectively as the *Defence Organisation* or abbrev. *DefOrg*) published a feasibility study which examined the establishment of a Research, Technology and Innovation (RTI) capability for the Defence Organisation². The study concluded that the establishment of such a capability is “*feasible and would deliver a range of benefits to the DefOrg and would contribute to national prosperity through an economic multiplier effect*”. Establishment of this capability was included in the Department of Defence and Defence Forces Strategy Statement 2021 – 2023³. In support of efforts to establish this capability and the common objective to deliver positive impact for Irish society from research and innovation, SFI, the Department of Defence and Defence Forces launched the SFI-Defence Organisation Innovation Challenge in 2021.

The SFI-Defence Organisation Innovation Challenge 2024 call builds on this successful partnership and provides researchers with an opportunity to work with the Irish Defence Forces to address a new set of strategically important challenges with strong positive societal impact potential for Ireland. Given the cross-cutting nature of challenges, this programme call will be supported by the Civil Defence. These partners will support research teams in developing a deeper understanding of the challenges to be addressed and the conceptualisation of solutions.

The SFI-Defence Organisation Innovation Challenge follows the SFI Future Innovator Prize programme model and comprises three phases: Concept, Seed and Prize Award. Following application review, successful teams will initially be provided with access to funding of €20k to undertake team building, challenge/solution scoping and validation activities. At the conclusion of the Concept Phase, the progress of teams will be reviewed to determine those most competitive to progress to the Seed Phase. Teams that progress to the Seed Phase will be provided with access of up to €200k to further validate and prototype their proposed solutions. These finalists will compete for an overall prize award of €1M. Further details on the structure of the programme are provided in Section 8.

² <https://www.gov.ie/en/publication/d8cab-feasibility-study-for-the-establishment-of-a-research-technology-innovation-rti-capability-for-the-defence-organisation/>

³ <https://www.gov.ie/en/publication/114cb-department-of-defence-and-defence-forces-strategy-statement-2021-2023/>

2 SFI Strategy 2025 – *Shaping Our Future*

Science Foundation Ireland’s strategy, *Shaping Our Future*⁴, has been developed to unlock the potential of Irish research to meet current challenges, seize future opportunities and support the priorities outlined in Ireland’s recent Programme for Government: Our Shared Future⁵, SFI’s strategy has two core ambitions: *Delivering Today* and *Preparing for Tomorrow*. As part of *Delivering Today*, a key focus will be to deliver tangible benefits that improve the lives of people in Ireland. SFI will build strategic, national and international partnerships to drive economic impact and to address societal challenges. The SFI Defence Organisation Innovation Challenge contributes to this effort.

3 State aid and SFI Grant funding

As per SFI’s Grant Conditions (inclusive of SFI’s General Terms & Conditions⁶, Letters of Offer and SFI Policy documents⁷), all SFI funding granted is subject to, and must be compliant with, State aid legislation based on Article 107(1) of the Treaty on the Functioning of the European Union (TFEU)⁸.

Namely, research activities undertaken as part of a Grant awarded under the SFI-Defence Organisation Innovation Challenge, and agreed to subject to SFI’s Grant Conditions, must be “non-economic” in nature and be designed to ensure that any funding received does not, directly or indirectly, give rise to the granting of State aid.

Where a proposed programme of research involves collaboration with an ‘undertaking’⁹ or industry party, the activities **must** comply with the definition of “effective collaboration” and the conditions relating to the allocation between the parties of the results and/or intellectual property rights arising from the collaboration as per the 2022 Framework for State aid for research and development and innovation (2022/C 414/01) (the “Framework”¹⁰). SFI has set out guidance to support how the programme of research or project is developed and undertaken in accordance with these conditions.

⁴ <https://www.sfi.ie/strategy/shaping-our-future/index.xml>

⁵ <https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/>

⁶ <https://www.sfi.ie/funding/sfi-policies-and-guidance/sfi-general-terms-and-conditions/>

⁷ <https://www.sfi.ie/funding/sfi-policies-and-guidance/>

⁸ [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016XC0719\(05\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016XC0719(05)&from=EN)

⁹ The concept of an “undertaking” under EU competition law rules is an entity that is engaged in an “economic activity” regardless of its legal status or the way that it is financed. An activity is economic in nature when it involves offering goods or services on a market.

¹⁰ https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=uriserv:OJ.C_.2022.414.01.0001.01.ENG

See 'Guidance on State aid for applicants to, and recipients of, SFI Grant funding' for further information.¹¹

Where a proposed programme of research activities involves a collaboration with an industry party or "undertaking", for all or part of the term of the Grant, applicants must demonstrate compliance with the conditions of "effective collaboration" and complete an "Industry Collaboration Form" (ICF). The ICF is to assist applicants in defining the relationship with the relevant industry partners in order to comply with the conditions of "effective collaboration". SFI require that the ICF is completed and returned to SFI on or before the date that the Collaborative Research (or Intellectual Property Rights) Agreement has been 'agreed' with, or signed by, the relevant partner(s). For the SFI SFI-Defence Organisation Innovation Challenge the form should be submitted by the Principal Investigator and uploaded to SESAME. A download of the ICF and related guidance, inclusive of an FAQ document, can be found on the SFI website.¹²

A copy of each CRA arising from the Grant must be held on file by the relevant Research Body. SFI may request a copy of the signed CRA to be provided (as advised in the Grant Terms & Conditions) and held on file by SFI for audit purposes. Further information on the role of the CRA and SFI's ex-post State aid verification checks (i.e., on-going checks after the granting of funds / partial funds) can be found in 'Guidance on State aid for applicants to, and recipients of, SFI Grant funding' on the SFI website.¹³ The ICF and related guidance, inclusive of an FAQ document, can be found on the SFI website.¹⁴

The costs of the proposed programme of research activities should be calculated on the basis of generally accepted accounting principles.¹⁵ Grant holders are required to put in place a full economic costing model for all activities carried out with SFI funds. Where SFI funded Research Bodies carry out activities of both economic and non-economic nature, the costs, funding and revenues of each of the two activities must be clearly accounted for separately.¹⁶

¹¹ <https://www.sfi.ie/funding/sfi-policies-and-guidance/state-aid>

¹² <https://www.sfi.ie/funding/sfi-policies-and-guidance/state-aid/ICF-FAQs.pdf>

¹³ <https://www.sfi.ie/funding/sfi-policies-and-guidance/state-aid/State-Aid-Guidance.pdf>

¹⁴ <https://www.sfi.ie/funding/sfi-policies-and-guidance/state-aid>

¹⁵ <https://www.sfi.ie/funding/sfi-policies-and-guidance/state-aid/>

¹⁶ Where SFI funded Research Body engage in both economic and non-economic activities, the economic uses must consume exactly the same inputs (such as material, equipment, labour and fixed capital) as the non-economic activities and the capacity allocated each year to such economic activities does not exceed 20 % of the Research Centre's overall annual capacity. Please see paragraph 21 of the Framework: "Where the research organisation or research infrastructure is used almost exclusively for a non-economic activity, its funding may fall outside State aid rules in its entirety, provided that the economic use remains purely ancillary, that is to say

Applicants are advised to seek independent legal advice in advance of applying to SFI for funding where further clarification is sought.

4 Objectives of the SFI-Defence Organisation Innovation Challenge

The overarching ambition of the SFI-Defence Organisation Innovation Challenge is to develop new technologies aligned with national defence policy that also have potential to deliver significant societal impact in Ireland.

The specific objectives of the SFI-Defence Organisation Innovation Challenge are:

- To promote the development of new technologies that support missions and capabilities aligned with national defence policy;
- To accelerate the development and demonstration of technologies that have broad potential for utilisation and impact across the Defence Organisation with positive impact for Irish society;
- To raise awareness of the role that STEM research plays in addressing Defence Organisation capability requirements;
- To foster collaboration between the Defence Organisation, researchers and Research Performing Organisations (RPOs).

These objectives are underpinned by those of the SFI Future Innovator Prize which are:

- To support the development of novel, potentially disruptive, technologies to address significant national and global challenges;
- To support the formation of high-performance, interdisciplinary teams based on integration of diverse STEM disciplines and complementary skillsets;
- To promote the convergence of knowledge, practice and methods from different disciplines and diverse sectors;
- To promote engagement between researchers and stakeholders/beneficiaries of research;
- To accelerate societal impact from publicly funded research.

corresponds to an activity which is directly related to and necessary for the operation of the research organisation or research infrastructure or intrinsically linked to its main non- economic use, and which is limited in scope.”

Whilst the SFI-Defence Organisation Innovation Challenge is based on the Future Innovator Prize there are differences relating to application process and team composition.

5 What is Challenge-Based Funding?

Challenge-based funding (or challenge funding) is a solution-focused approach to research funding that uses a combination of grants, competition, incentive prizes and strict timelines to direct research activities at specific, often complex, problems. It focuses on finding the most innovative and impactful solutions using competitive processes to incentivize innovators. SFI's approach to challenge funding places strong emphasis on:

- **Interdisciplinarity and teamwork** – The complex nature of challenges requires experts from different disciplines to work effectively together. SFI's challenge funding programmes strongly encourage interdisciplinary teams to apply. As part of applications to this programme, teams should highlight interdisciplinarity and the advantage it gives them.
- **Engagement & Validation** – Engaging with stakeholders, beneficiaries and end-users of research in an area relevant to a challenge is critical to understanding and exploring the nature and boundaries of specific problems, in testing assumptions and developing new perspectives. It is also crucial as part of the validation process that solutions are co-created with these groups to ensure they address real needs.
- **Acceleration** – Working at pace requires both extensive engagement and efficient exploration and modification of ideas based on learnings. This approach is encouraged in challenge-based funding through the use of strict, often stage-gated or phased, timelines and competitive processes involving incentives such as prizes.

6 Challenges

Under the SFI-Defence Organisation Innovation Challenge, five challenge areas have been nominated to focus engagement with researchers to explore STEM-based solutions. Given the rapid rate of technology advancement, the DefOrg is interested in exploring solutions based on cutting-edge technologies. The solutions, and underlying technologies proposed, should be innovative and advance the state of the art. The solutions, and underlying technologies proposed, should be innovative and advance the state of the art.

Challenge 1 - Advanced Shelter Concepts

Portable structures play a crucial role in providing shelter to people affected by emergencies such as humanitarian crises or natural disasters. As part of emergency response efforts, portable structures are not only used to accommodate people but are also used as hospitals, schools, offices, workshops for the repair of equipment, and vehicle (incl. aircraft) storage. In terms of characteristics, these structures are expected to be portable, rapidly deployable and robust against a range of environmental conditions. To achieve these characteristics in comparison to traditionally built structures, there are certain trade-offs with respect to design, cost, durability, and lifespan. While different types of portable structures solutions based on tents, inflatable coverings and shipping containers have been developed to address these issues, this challenge seeks to explore advanced shelter concepts that leverage innovative materials, advanced construction methods and design, to create environmentally sustainable, cost-effective, multi-purpose next generation shelters.

Under this challenge, applicants are invited to address the following:

- Design, prototype and demonstrate manufacture feasibility of a novel, modular, multipurpose shelter structure system. The shelter structure system should permit rapid assembly/disassembly requiring minimal human interaction with low requirements for technical skills or specialised equipment. The shelter structure system should be lightweight, highly portable and provide protection against a range of weather conditions enabling it to be deployed in a variety of operating environments. Especially compelling approaches will incorporate modularity, allowing for easy repurposing or reconfiguration to create more complex structures as needed. Ideal approaches would also consider technology integration whereby services (e.g., power and water), communications or intelligent monitoring of structure or contents, are integrated in the structure.

As part of proposals to this challenge, consideration must be given to the environmental impact of the materials used and how shelters will be environmentally sustainable. Applicants are invited from a wide range of disciplines, including but not limited to, science, engineering, architecture, construction and design.

Challenge 2 – Maritime Situational Awareness

Ireland's marine territory is vast covering an area of 880,000 km² making up 16% of the EU's territorial waters. The size of Ireland's marine territory presents significant challenges for the Irish Naval Service

in maintaining Maritime Situational Awareness (MSA). MSA refers to the generation of a clear understanding of the maritime environment, by sensing, monitoring and predicting situations, and enabling management and decision making. An increasingly global issue in MSA, that requires immediate attention, is the identification and tracking of so-called *dark vessels*. Dark vessels (or other maritime “dark” objects) are sea-going vessels that employ measures to hide their identities, locations and activities. Typically, a vessel is considered dark when it deactivates its Automatic Identification System (AIS) or employs other measures to prevent it from being identified and tracked by authorities. Dark vessels pose a significant challenge to MSA as they operate covertly and are an increasing concern worldwide due to associated illegal activities (e.g., illegal fishing, illegal dumping, contraband smuggling) which have significant economic and societal impacts. Dark vessels are also often older ships that are poorly maintained, less reliable and present a harmful environmental risk. Moreover, dark vessels or objects can pose a significant threat of collision with other vessels and infrastructure at sea (e.g., windfarms, undersea cables).

Under this challenge, applicants are invited to address the following:

- Develop and demonstrate the feasibility of a solution that significantly enhances the Irish Naval Service’s capabilities in Maritime Situational Awareness. The solution should enable detection and localisation of dark vessels to enhance maritime situational awareness, and enable timely and effective response to potentially unsafe or illegal activities. The system may leverage a range of sensing modalities, data sources and approaches to achieve its functionality and performance. Especially compelling solutions will consider integration of data and information from different modes or across various services (e.g., Irish Naval Service, An Garda Síochána, Revenue Commissioners, Irish Coast Guard etc.). Ideal solutions will position the Irish Naval Service as a world-leader in the detection of dark vessels and/or other dark objects on, or below, the sea surface.

Applicants are invited from a wide range of disciplines, and encouraged to consider solution development based on technologies such as, but not limited to, sensors/sensor networks, image analysis, machine learning, data analytics, satellite imagery and system design. Solutions are also encouraged to consider leveraging data from new and/or multiple existing sources, using novel methods.

Challenge 3 – Search and Rescue

Search and Rescue (SAR) is the search for, and provision of aid to, people who are in distress or imminent danger. Typically, SAR is categorised by domain either as land (incl. mountain, subterranean, rural and urban ground SAR), sea (marine SAR) or air (aeronautical SAR). These different environments and the requirement for operations to be conducted in all weather conditions and at any time, create significant challenges in locating people, and coordinating the delivery of critical assistance to them. Additionally in large-scale or cross-border SAR operations, multi-agency or international collaboration may be required, introducing further logistical, communication or legal complexities. While the safety of those in distress or danger is at the forefront of these operations, there is also a need to consider the safety of those conducting the SAR operation. The difficult conditions and circumstances under which responders work can be dangerous, with fatigue also being a significant risk factor in their safety.

Under this challenge, applicants are invited to address the following:

- Develop and demonstrate the feasibility of a solution that minimises the amount of time to deliver critical assistance to a person in distress either on land or sea, in a range of weather conditions, as part of a SAR operation. The solution should explore the potential for autonomous location of people in these environments and enhance the efficiency of coordination of resources assisting them. Especially compelling approaches should consider how health data from people in distress can be gathered by autonomous location systems and how health data from SAR responders can be monitored to inform SAR operations. Ideal solutions will also consider the integration of resource allocation and coordination, and communications.

Applicants to the challenge may have a diverse range of expertise in domains including but not limited to engineering, aeronautics, rescue coordination, meteorology, topology, geology, communication technologies, remote sensing and GIS, mechanical engineering, electrical/electronic engineering, automobile engineering, operations, statistical modeling, machine learning/AI, behavioral sciences.

Challenge 4 – Aeromedical Emergency Dispatch

Air medical, or Aeromedical, services involve the use of aircraft, usually helicopters, as part of a coordinated emergency response to deliver pre-hospital emergency care at the scene of an accident



and critical care to patients during transportation to hospital. The use of aircraft introduces significant speed as part of an emergency response but can increase the complexity of response management owing to specific operational requirements of aircraft. This is particularly the case when the aircraft are used in conjunction with road-based emergency vehicles such as ambulances. Following notification of an emergency, an assessment must be undertaken as to the benefit of assigning an aircraft to respond before deciding to task the aircraft. This assessment is based on a number of factors including the time to scene (or nearest appropriate landing zone in the case of aircraft), and onward time to hospital. It is dependent on mapping data and detailed knowledge of suitable landing zones in proximity to an emergency scene. The current approach is inefficient and time-consuming, and lacks the flexibility to adapt to changing weather conditions or technical issues that may require aircraft and road vehicles to rendezvous at unplanned locations or deliver patients to unplanned destinations.

Under this challenge, applicants are invited to address the following:

- Develop and demonstrate the feasibility of a solution that supports rapid, reliable dispatch decisions for aeromedical services and enables intelligent monitoring to support situational adaptiveness. The solution should ensure that overall response times are minimised, and the level of patient care delivered is maximised.

Applicants are invited from a wide range of disciplines, and encouraged to consider solution development based on technologies such as, but not limited to, machine learning, AI-driven data analytics, satellite imagery and GIS. Solutions are also encouraged to consider leveraging data from new and/or multiple existing sources, using novel methods.

6.1 Disruptive Ideas

Additionally, under the SFI-Defence Organisation Innovation Challenge, the DefOrg is keen to foster engagement with researchers who may have disruptive ideas that do not directly align to the challenge areas identified. In such cases, researchers are encouraged to consider a number of areas of interest to the DefOrg (see Appendix 1) and engage with DefOrg stakeholders to discuss potential applications.

NOTE: Researchers funded under the SFI-Defence Organisation Innovation Challenge 2024 Call will work closely with the Irish Defence Forces as part of this programme and may be required to sign a collaborative agreement with the Irish Defence Forces prior to any research activities commencing.

7 Who Can Apply?

The SFI-Defence Organisation Innovation Challenge is intended to support interdisciplinary and collaborative STEM-led research teams. It is expected that teams will encompass a range of technical (both scientific and engineering) and non-technical skills to address activities associated with problem understanding and solution development.

Applications to the programme will be accepted from core (applicant) teams comprising two researchers who are either at established or postdoctoral (incl. Research Fellow) career stage based at an eligible research body¹⁷.

Equality, Diversity and Inclusion Strategy

The SFI Strategy: *Shaping Our Future* underscores SFI's commitment to building equality, diversity and inclusion (EDI) within the Irish research and innovation sector¹⁸. SFI recognises that excellent research stems from diverse and inclusive teams which reflect our society and the communities we serve. As such, SFI aspires to pro-actively lead in driving the EDI agenda forward through the research and research teams that it funds.

In the External Equality, Diversity, and Inclusion (EDI) Strategy 2023-2028¹⁹, increasing the number of women and members of Historically Underserved Communities²⁰ in Applicant Teams are key objectives. As such, women and members of Historically Underserved Communities are strongly encouraged to apply to this programme. Further details on SFI's data concerning application submission and success rates by gender (binary) can be found on the SFI website.²¹

Gender data fields on the SFI Grants and Awards Management System, SESAME, have been expanded to encompass more inclusive gender identifiers. These expanded gender identifier fields support those objectives described in SFI's External EDI Strategy, which aims to be a key driver of an inclusive research culture, lead in minimising barriers to participation in the research endeavour, and ensure that its investment reflects the input of researchers that are representative of society, and thus the outputs are relevant to society. Gender data gathered will inform the diversity of the applicant group. It will help to inform future iterations of this and similar programme calls. The data gathered will also inform how we can best improve

¹⁷ <https://www.sfi.ie/funding/sfi-policies-and-guidance/eligibility-related-information/>

¹⁸ <https://www.sfi.ie/strategy/SFI-Strategy-2025.pdf>

¹⁹ <https://www.sfi.ie/funding/sfi-policies-and-guidance/gender/>

²⁰ For the purposes of this Strategy, Historically Underserved Community encompasses a broad and diverse range of historically marginalised groups including but not limited to the nine protected grounds established in the [Equal Status Acts 2000-2018](#) and socioeconomic status.

²¹ <https://www.sfi.ie/funding/sfi-policies-and-guidance/gender/>

the representation of other Historically Underserved Communities, including individuals from underrepresented genders, in our portfolio of grants awarded.

Furthermore, as part of its EDI Strategy, SFI aims to increase awareness of the sex and gender dimension in research, by requesting that researchers demonstrate that they have considered any potential biological sex and/or socio-cultural gender aspects in their proposed research (see Section 8.1.1).

Applications to the SFI-Defence Organisation Innovation Challenge must identify a core applicant/leadership team comprising:

- **Team Lead** (Lead Applicant) - It is expected that the Team Lead will have responsibility for managing the activities of the team, will provide technical leadership and have overall responsibility for delivery of research programme objectives.
- **Team Co-Lead** (Co-lead Applicant) – It is expected that the Team Co-Lead will provide leadership as part of the research programme and should bring complementary technical/disciplinary expertise to that of the Team Lead.

Under the SFI-Defence Organisation Innovation Challenge, following successful application, a *DefOrg Liaison* from a branch of the Defence Forces will be assigned to work with the team lead and co-lead. The DefOrg Liaison will be integral to the team and will work as part of the team to provide insights as well as organisational, operational or mission context to support the team in understanding and validating problems, and the development of a solution. It is anticipated that the DefOrg Liaison will, through their participation as a core team member, assist in establishing an innovation culture with the Defence Organisation and garner support and buy-in that will assist the team in planning for potential future deployment/demonstration.

Teams successful at application stage will have the opportunity to expand during the course of their award and be able to recruit additional researchers (e.g. at postgraduate or postdoctoral career stage) or collaborators (e.g., researchers, beneficiaries, end-users) if required. Applications may reference individuals outside the core team who are anticipated to play a future role as team members. In such cases, it is important to highlight the discipline and skill set that these individuals will bring to the team. Consideration should also be given to the broader challenge/solution context which may require input from experts in disciplines outside of STEM such as the arts, humanities and social sciences (AHSS).

Given the nature of the SFI-Defence Organisation Innovation Challenge programme and the important role industry can play in addressing societal challenges, the participation of industry (in particular, small and medium-sized enterprises), as part of the extended team may be appropriate. Please refer to Section 3 for guidance on State aid and SFI Grant Funding. However, please note that the SFI-Defence Organisation Innovation Challenge is not an industry-academia research programme.

7.1 Applicant Team Composition & Eligibility

For the SFI-Defence Organisation Innovation Challenge, applications will be accepted where the Lead Applicant and Co-Applicant satisfy the following eligibility criteria.

Eligibility Criteria

- Be a **member of academic staff** of an eligible Research Body²² (permanent or with a contract that covers the period of the award),
or
- Be a **contract researcher** with a contract that covers the period of the award (contract may be subject to receipt of the award).
and
- Hold a PhD or equivalent. Please consult the SFI Policy on PhD Equivalence⁶ for further information. In certain cases, SFI will accept applications from teams where the Co-Applicant does not hold a PhD or equivalent. In such cases, pre-approval from SFI should be sought no later than one month in advance of the application deadline. Pre-approval requests should be sent by email to challenges@sfi.ie and provide strong rationale for the request.

NOTE: Members of the Core Team (Lead Applicant and Co-Applicant) are permitted to be named on only one application to the programme. Core Team members may not be named in the Core Team of applications to concurrent, open calls of the SFI challenge programmes. They may, however, participate in an application through inclusion in the broader challenge team. Applicants who are already Lead or Co-Lead on an active SFI challenge award (including a National Challenge Fund award) may be required to provide a plan to SFI as to how they will manage concurrent awards if successful.

Applications will not be accepted where the lead applicant or co-applicant is a postgraduate researcher (e.g., MSc, MEng or PhD student).

²² <https://www.sfi.ie/funding/sfi-policies-and-guidance/eligibility-related-information/>

In cases where the Lead and/or Co-Lead is a postdoctoral researcher, the application must include a Letter of Support from an established researcher confirming they will act as a mentor to the Lead/Co-Lead for the duration of the award (see Section 9.6 for further details).

8 Programme Structure and Funding

The SFI-Defence Organisation Innovation Challenge comprises three phases: **Concept, Seed and Prize Award** (see Figure 1).

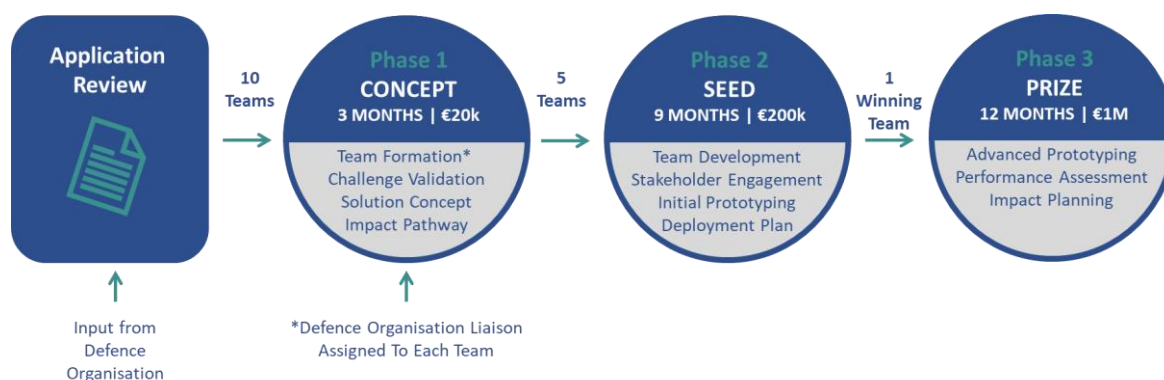


Figure 1. Phased structure of the SFI-Defence Organisation Innovation Challenge.

Applications to the programme can request up to €220,000 in total direct costs over a duration of 12-months. Up to €20,000 can be allocated for use during the Concept Phase of the programme (Months 1-3) while the remaining request of up to €200,000 can be allocated to the Seed Phase (Months 4 – 12). It is expected that up to ten²³ teams will be funded through the programme and enter the Concept Phase. At the conclusion of the Concept Phase, up to five teams will progress to the Seed Phase as finalists. At the conclusion of the Seed Phase, one team will be awarded the €1M prize award.

Under this programme, teams successful at application stage will undertake significant engagement activities with subject matter experts from the Defence Forces during the Concept Phase. The Concept Phase will focus strongly on validating and scoping the challenge or idea selected by the team, as well as exploring problem-solution fit. This engagement process is expected to continue during the Seed Phase. This process will be facilitated throughout the award by the assignment of a DefOrg Liaison to work closely with the academic team.

²³ SFI reserves the right to fund a greater or fewer number of teams at either phase depending on quality and budget availability.

8.1 Application

Applications to this programme should provide information on four key areas:

- expertise and experience of the core team relevant to the selected challenge (reference to other team members and their expertise may be included);
- challenge validation undertaken through engagement with subject matter experts in the Defence Organisation;
- description of the solution concept, and a justification as to why it is feasible;
- a description of the potential impact and societal benefit of solving the problem.

In this context, *challenge (or problem) validation* refers to a process whereby stakeholders, beneficiaries and end-users have been consulted in order to: identify/define a problem and establish its significance; and assess the potential impact were the problem to be solved.

Following submission, applications are checked for eligibility²⁴. As part of these eligibility checks, input will be sought from the Defence Organisation on the alignment of applications to the Innovation Challenge programme. Teams that submit applications that are not deemed eligible under the programme or do not strongly align with the programme will be notified and their application withdrawn.

Following these checks, eligible applications are then assigned to a panel of international experts secured by SFI which reviews the applications based on the following criteria:

- **Quality, experience and ambition of the applicant team** – Consideration will be given to the team's ambition, complementarity of expertise, the appropriateness of its composition for addressing the proposed challenge and that necessary partnerships/collaborations are in place to deliver the proposed impact. Consideration will also be given to the quality, significance and relevance of the individual team members' track record and key achievements (in particular, generation and translation of knowledge, leadership, teamwork and collaboration, delivering societal or economic impact, and stakeholder engagement).
- **Significance of the challenge/problem** – Consideration will be given to recognition and articulation of understanding of the significance of the problem identified and any insights

²⁴ Applications are checked for compliance with: non-technical mandatory criteria (e.g. all sections complete, page numbers not exceeded); technical mandatory criteria (e.g. any publication and prior funding requirements, alignment with the legal remit of SFI and alignment with Research Priority Areas, where required); and any other requirements outlined in the call document.

contributing to its formulation. Any stakeholder/beneficiary engagement undertaken in validation of the problem will also be taken into account.

- **Novelty of the proposed solution, including its potential to deliver disruptive innovation** – Consideration will be given to the innovation potential of the overall proposed solution, including the novelty of the technology, comprehension of the current state of the art, value for money, the sex and gender dimension etc. Note that novelty may arise through combination or convergence of technologies in a new or unforeseen way.
- **Transformative societal impact potential of the solution** – Consideration will be given to the potential for the solution to create significant beneficial societal change or impact. Any stakeholder/beneficiary engagement undertaken in validation of the solution will also be taken into account.
- **Feasibility of execution within the budget and timeframe permitted** – Consideration will be given to the feasibility of delivering the project within the budget and timeframe of the Concept and Seed Phases and likelihood that this can lead to successful delivery of the solution during the Prize Award Phase.

NOTE: The Sex and Gender Dimension Statement will be evaluated as part of **Significance of the challenge/problem, Novelty of the proposed solution, Transformative societal impact potential of the solution and Feasibility of execution** components of the review, if relevant.

As part of application review, key stakeholders from the Defence Organisation will provide input on each application for consideration by the panel of international experts. This input will be used to inform the recommendations of the application review panel.

Only applications deemed to be of both excellent scientific/engineering/technical quality and demonstrating strong impact potential will be recommended for funding by the panel. Applicant teams whose proposals do not proceed will be notified by SFI. Applicant teams that do not proceed at this stage will not receive feedback.

The identity of international experts who conduct reviews shall remain confidential and will not be disclosed to applicants. SFI shall not be liable for the release of information concerning proposals to third parties by those international peer reviewers involved in the review process.

SFI reserves the right to modify the review process. Applicants will be notified of any relevant modification to the review procedure. The final funding decisions are at the sole and exclusive discretion of SFI.

Ethical and Scientific Issues

In preparing your application to the programme, please review the SFI guidance on ethical and scientific issues.²⁵

8.1.1 Sex and Gender Dimension in Research Statement (max. 1000 words)

In accordance with the SFI External Equality, Diversity, and Inclusion (EDI) Strategy²⁶, all applicants must complete a statement articulating the consideration of biological sex and/or social gender variables in their research programme. Please consult the Guidance for Applicants on Ethical and Scientific Issues²⁷ for resources on how to address the sex and/or gender dimension of research in your grant.

Do not include information on how you have addressed gender equality, diversity and inclusion in your research team/environment; this should be addressed in the body of the proposal and/or in your CV, as appropriate.

To complete this section, please consider the following questions:

1. Is sex as a biological variable taken into account in the research design, methods, analysis and interpretation, and/or dissemination of findings?
2. Is gender as a socio-cultural factor taken into account in the research design, methods, analysis and interpretation, and/or dissemination of findings?

If the answer is yes, please describe how sex and/or gender considerations will be integrated into your research proposal. If no, please explain why sex and/or gender are not applicable to your research proposal.

8.2 Concept Phase

The Concept Phase is intended to support teams to develop a deeper understanding of the challenge/problem they propose to address and to explore the feasibility and viability case for the solution concept presented in their application.

For this programme, teams will be assigned a DefOrg Liaison who will be a subject matter expert on the challenge/problem to be addressed. It is expected that the DefOrg Liaison will become an integral

²⁵ <http://www.sfi.ie/funding/sfi-policies-and-guidance/ethical-and-scientific-issues/>

²⁶ <http://www.sfi.ie/funding/sfi-policies-and-guidance/gender/>

²⁷ <https://www.sfi.ie/funding/sfi-policies-and-guidance/ethical-and-scientific-issues/>

part of the team and play a key role during the Concept Phase providing technical input/insights as well as assisting teams to gain insight on procedural or organisational issues that may affect project development. The DefOrg Liaison will also assist teams in broader engagement with other DefOrg subject matter experts or site visits to observe facilities or equipment.

Teams will be expected to further validate the challenge/problem selected, provide detail on the proposed solution and its implementation, and describe an impact pathway for their solution. As part of the impact pathway, teams must describe technical and non-technical barriers to be overcome, the opportunity associated with addressing those barriers and how the solution will achieve impact.

During this process, the core team will have the opportunity to recruit additional team members with skills and knowledge to support the objectives of the proposal. It may be appropriate for a broader range of stakeholders and beneficiaries to be considered for inclusion as members of a team as it expands.

At the end of the Concept Phase, representatives from each team will be invited to pitch their concept to a panel of international experts drawn from a range of sectors including academia, industry, entrepreneurship and investment. This panel will assess the progress of each team and the likelihood of success and make recommendations as to what teams should progress to the Seed Phase of the programme. In preparation for the end of phase review, teams will be required to submit progress reports several weeks in advance.

The role of this panel will be to review team progress and select the most competitive teams to progress to the Seed Phase. It is expected that up to five teams will progress to the Seed Phase.

8.3 Seed Phase

The Seed Phase enables teams to undertake further stakeholder engagement and collaborative co-development of a prototype. The development of this prototype should be guided by the needs of stakeholders and beneficiaries and be informed by key measures of success identified through engagement with stakeholders and beneficiaries. During this prototyping process, the team should commence planning for further development and deployment of the solution. The programme is intended to support pre-commercial activities only, and as such development of existing products is not permitted. Notwithstanding this, as part of the Seed Phase it may be necessary for successful applicants to consider potential commercialisation routes as part of the project to fully scope solution deployment. In this context, teams should take into consideration the necessary requirements to facilitate this process and it is anticipated that the collective skill set of the challenge team will support

such activity. The Seed Phase will culminate with teams pitching to an international prize panel who will assess progress made in developing the prototype and validation of the deployment plan. In preparation for the end of phase review, teams will be required to submit progress reports a number of weeks in advance.

Following assessment of the finalist teams in the Seed Phase, one team will be selected to receive the prize award to support further development of their solution.

8.4 Prize Award

The winning team will finalise and implement their plan for solution deployment with a view to translating the solution within two years of the end Prize Award Phase.

NOTE: SFI reserves the right not to grant the Prize Award(s) if the review panel does not identify a winning team. In addition, the final funding decisions are at the sole and exclusive discretion of SFI, which are arrived at following consideration and approval by the SFI Executive Committee and the SFI Grant Approval Committee. SFI reserves the right to modify the review process. Applicants will be notified of any relevant modification to the review procedure.

8.5 Skills Development

In addition to the provision of funding, SFI will organise training workshops during the Concept and Seed Phases to support team skills and knowledge development. The topics of these workshops are selected to complement team activities within the specific phases of the programme. Further details of these workshops will be provided to teams successful in securing funding under the programme. It is expected that core team members attend training workshops.

9 Application Procedure

Applications to the SFI-Defence Organisation Innovation Challenge Programme must be submitted through SESAME, SFI's online grants and awards management system in advance of the application deadline. Applying through SESAME involves completion of an online form with details including team members, alignment to remit and requested budget. In addition, applicants will be required to upload information in PDF documents. These uploaded documents must use the templates provided on the programme website.

Application through SESAME, involves completion of an online form with details on, for example, team members and requested budget. In addition, applicants will be required to complete application forms (MS-Word templates available on the challenge website) which are then uploaded to SESAME (in PDF

format). The content of these forms is dependent on the application stream (i.e., Challenge or Disruptive Ideas stream), so applicants are advised to select the appropriate form. These forms are available for download from the call webpage.

Applications to the SFI-Defence Organisation Innovation Challenge comprise several sections which are highlighted below:

9.1 Idea

This section of the application should provide a clear, concise summary of the idea. Applicants should ensure that they clearly describe what elements of the challenge/problem they intend to address and the proposed solution. Describe what is novel or unconventional about the approach, why applicants expect it to succeed and how it will deliver impact.

9.2 Pre-Application Defence Organisation Engagement

It is important that applicants engage with Defence Forces stakeholders in advance of application submission. This is to ensure that the ideas proposed in their application are relevant to the Defence Forces and have potential to deliver impact. Evidence that engagement has taken place must be provided as part of an application. Information about any engagement (i.e. name of stakeholder(s), when meetings/calls took place or how often) along with any key insights about the challenge or problem to be addressed should be provided.

Information webinars will be held for researchers to provide further context for the call. These webinars will be jointly hosted by SFI and the Defence Organisation. Furthermore, to facilitate researchers in gaining a greater understanding of challenges and operational context and requirements, it is anticipated that a number of open days may be arranged whereby researchers can visit Defence Forces installations to see equipment and speak with Defence Forces subject matter experts. Individual follow-on sessions with experts may also be arranged. Further details of these arrangements will be provided as part of call information webinars and on the programme call website.

9.3 Team, Challenge/Problem, Solution & Societal Impact

This section provides applicants with the opportunity to provide more detailed information on the team, problem, proposed solution and the societal impact that your solution will deliver. It is important to complete each section.



- **Team:** Briefly describe the applicant team. Describe how, through its composition and formation, the team brings a unique perspective and unfair advantage in addressing this problem. Applicants are advised not to use this section to provide biographies of team members rather it should convey the team's ambition and ability to deliver. This section should articulate why the team is competitive. The information provided in this section should be complemented by the curricula vitae submitted as part of the application.
- **Challenge/Problem:** Describe clearly the challenge/problem to be addressed and the team's understanding of it. Applicants should consider as part of this description, providing information on the importance/significance of the issue along with the opportunity for the Defence Organisation and Ireland in addressing it. How have the key insights from engaging with stakeholders/beneficiaries allowed applicants to validate the problem? Describe what are the key issues and how the team will overcome these? Has this problem national/international relevance?
- **Solution:** Describe clearly the solution proposed. Applicants should describe how the proposed solution is novel and/or unconventional? What is its current stage of technical development? What is the current state-of-the-art? How will the proposed approach (technical/non-technical) lead to disruptive innovation? How feasible/viable is the solution? What are the risks? As part of this description, applicants should consider providing a number of high-level milestones/deliverables (and achievement times).
- **Societal Impact:** Describe the societal impact the solution can achieve. What outcomes will the solution deliver for the Defence Organisation and when (provide an indication of key milestones, deliverables and timelines)? How will the solution have a beneficial impact on society? Can the impact of the solution be transformative?

Please download the application form from the challenge website. All fields should be completed, the document should be converted to PDF and then uploaded in SESAME as part of an application.

NOTE: In preparing your application to the programme, please consult the Guidance for Applicants on Ethical and Scientific Issues.²⁸ In particular, applicants should fully consider potential biological sex and socio-cultural gender dimensions associated with challenge identification/definition and solution development.

²⁸ <https://www.sfi.ie/funding/sfi-policies-and-guidance/ethical-and-scientific-issues/>

9.4 Budget

This section should be used to describe the budget (direct costs) and resources needed. Given the phased structure of the SFI-Defence Organisation Innovation Challenge programme, it will not be possible to provide significant detail in relation to requirements for the Seed Phase. As such, the requested budget and resources for this phase may not be as detailed. It is recommended that applicants maximise the budget requested at each stage. In this section:

- Provide a breakdown of the indicative eligible direct costs (in €) associated with the application.
- Please review the SFI Grant Budget Policy²⁹ for eligible costs and team member salary scales.
- Please include any subcontracting to be undertaken in the Materials & Consumables section.

As part of this section, please also provide a high-level justification for Concept Phase requests. In addition to direct costs, SFI also makes an indirect or overhead contribution to the host research body, which is reflected as a percentage (30%) of the direct costs (excluding equipment). Overheads are payable as a contribution to the Research Body for the indirect costs of hosting SFI-funded research programmes and are intended to enable the research body to develop internationally competitive research infrastructure and support services.

NOTE: Please refer to SFI's Grant Budget Policy and team member salary scales for further information. All staff salary requests must include the team member scale description.³⁰

9.5 Authorisation

For an application to be accepted, it must be authorised for submission by the host research body of the Lead Applicant. It should be noted that Research Body submission of an application confirms that the SFI Grant General Terms & Conditions have been read and understood³¹. Submission may only be made by an authorised Research Body representative. In particular, the Research Body is approving:

- The eligibility of the applicants.
- That the applicants are, or will be upon receipt of the grant, recognised as employees of the Research Body for the duration of the grant.

²⁹ <http://www.sfi.ie/funding/sfi-policies-and-guidance/budget-finance-related-policies/>

³⁰ <https://www.sfi.ie/funding/sfi-policies-and-guidance/budget-finance-related-policies/>

³¹ <https://www.sfi.ie/funding/sfi-policies-and-guidance/sfi-general-terms-and-conditions/>

- That the requested budget including salaries/stipends, equipment, travel and consumables are in line with accepted institutional guidelines.
- The availability of infrastructure within the institution as outlined by the applicant in the research proposal.
- That the proposed research programme has not been funded by other sources.
- That relevant ethical and regulatory approval has been or will be sought and must be granted prior to the award commencing.
- That the relevant licences will be in place at the time of award.
- That the details provided in relation to research funding history i.e., current, pending or expired grants, as detailed in the application, are valid and accurate.
- That permission from all team members and collaborators has been obtained, such that SFI may receive their personal information, and may process such data for the purpose of peer review.
- That the information supplied in the application is correct and the research proposal is the applicant's own work

SFI's Grant Conditions shall govern the administration of SFI grants and awards to the exclusion of this and any other oral, written, or recorded statement.

9.6 Curricula Vitae

A Narrative CV for the core applicant team members (i.e. Lead and Co-Lead) using the templates available on the programme website, must be completed and uploaded in SESAME. The SFI Narrative CV not only provides an opportunity to give information about education, employment record and research outputs where relevant, but also allows you to identify key achievements in research and impact. The current Narrative CV template allows for the provision of additional information such as that relating to periods of leave from research, where relevant.

NOTE: Reference to metrics such as journal impact factor, h-index and total number of publications are not permitted. If these metrics are included, they will be redacted prior to expert review.

San Francisco Declaration on Research Assessment (DORA)

SFI became a signatory of the San Francisco Declaration on Research Assessment (DORA)³² in 2019 and as such, is aligning its review and evaluation processes with DORA principles. In January 2022, SFI reinforced its existing commitment to the core principles by joining DORA as a member³³. To this end, all types of research output are recognised, and SFI is committed to assessing the quality and impact of research through means other than journal-based metrics and research performance-based metrics such as impact factors and H-index. In the spirit of supporting open research and as a signatory of Plan S,³⁴ SFI will also consider a commitment to making data and other types of research open and accessible. SFI is also a signatory to Ireland's National Action Plan for Open Research 2022-2030³⁵. To complement these activities and further reinforce SFI's commitment to the overarching objectives of the Narrative CV, during 2022, SFI became a signatory to the Agreement on Reforming Research Assessment³⁶ and thus became a member of the Coalition for Advancing Research Assessment (CoARA).³⁷

9.7 Letters of Support

As part of an application to the prize, several Letters of Support must be provided. These include:

- A Letter of Support from the **Host Research Body of the Lead and Co-Lead applicants** which should comment on the significance of the proposal and related infrastructure and services available to the applicant. In addition, in cases where team members will be transferring from another active SFI research grant, an outline of the management plan (i.e., a description of how the individual will be replaced on the original award) to assure how these awards progress satisfactorily should be provided. Note also the Host Research Body Letter of Support should contain a description of the institutional policy regarding management of conflicts of interest.
- In cases where one applicant is an established researcher and the other is a postdoctoral researcher, the application must include a Letter of Support from the established researcher endorsing the postdoctoral researcher. This Letter of Support must confirm that the established researcher has agreed to act as mentor for the duration of the award. In cases

³² <https://sfdora.org/read/>

³³ Contributor level membership.

³⁴ <https://www.coalition-s.org/>

³⁵ <https://norf.ie/national-action-plan/>

³⁶ https://coara.eu/app/uploads/2022/09/2022_07_19_rra_agreement_final.pdf

³⁷ <https://coara.eu/>



where the established researcher is not the current mentor/supervisor, the Letter of Support must outline how this situation will be managed and must be countersigned by the current mentor/supervisor of the postdoctoral researcher. The Letter of Support must include details of the postdoctoral researcher's current role and funding arrangements including remuneration level. The grant identification code and grant title under which the postdoctoral researcher is currently funded should also be provided.

- In cases where both applicants (i.e. Team Lead and Co-Lead) are postdoctoral researchers, a Letter of Support must be provided for each researcher from an established researcher from their Host Research Body endorsing the application. Each Letter of Support must confirm that the established researcher has agreed to act as mentor for the duration of the award. In cases where the established researcher is not the current mentor/supervisor, the Letter of Support must outline how this situation will be managed and must be countersigned by the current mentor/supervisor of the postdoctoral researcher. The Letter of Support must include details of the postdoctoral researcher's current role and funding arrangements including remuneration level. The grant identification code and grant title under which the postdoctoral researcher is currently funded should also be provided.

Members of the applicant team may be located at different eligible research bodies. In this case, funding awarded under the prize programme will be administered through the Research Body of the Lead Applicant.

NOTE: No additional Letters of Support may be included at the application stage. Any additional/unsolicited Letters of Support will be removed from an application.

10 Intellectual Property

Intellectual Property (IP) management practices will be in accordance with national guidelines. In particular, the management of IP arising out of the SFI-Defence Organisation Innovation Challenge Programme must comply with the practices and procedures described in the national IP protocol

document Ireland's National IP Protocol 2019³⁸. Applicants are also encouraged to review the Department of Defence and the Defence Forces Intellectual Property Policy³⁹.

The arrangements related to the management of IP arising from the SFI-Defence Organisation Innovation Challenge Programme are the responsibility of the Research Bodies and shall reflect the collaborative nature of the project, the level of commitment of partners and compliance with State aid regulations.

11 Data Management Plans

Good data governance and stewardship are key components of good research practice. **While data Management Plans are not required to be submitted at the application stage of this programme, teams are encouraged to consider data management at an early stage in their project.** At the end of the Seed Phase, as part of the Seed Phase Progress Report, teams will be required to provide a short (2 page) Data Management Plan (DMP). In preparing this plan, consideration should be given to [SFI's Guidance on Data Management Plans](#).⁴⁰ A DMP is a living document which details the procedures for careful handling of data and other research outputs. A DMP follows the data through the lifecycle of the programme of research⁴¹, from collection to analysis and interpretation, sharing and dissemination, and long-term storage.

Data Management Plan Requirements for SFI Grant Applicants

DMPs will be reviewed to ensure that they contain sufficient information on practices and standards as guided below; this assessment will be incorporated into the overall scoring criteria for the Research Programme section of the application. Although practices and standards vary across disciplines, SFI recommends the use of [Science Europe DMP templates and guidelines](#). Each DMP should include the following as appropriate to the programme or project⁴²:

³⁸ <https://www.knowledgetransferireland.com/Reports-Publications/Ireland-s-National-IP-Protocol-2019-.pdf>

³⁹ <https://www.gov.ie/pdf/?file=https://assets.gov.ie/138814/db9632ec-44cd-45d1-afdf-aac284d4a5ba.pdf#page=null>

⁴⁰ <https://www.sfi.ie/funding/sfi-policies-and-guidance/open-research/SFI-DMP-Guidance-FINAL-140322.pdf>

⁴¹ SFI-funded research programmes, as described in call documents, can range from a single research project to a collection of research projects encompassed in several work packages. The data management plan should reflect the relevant standards for individual research projects while describing a cohesive approach to managing data across the overall programme of research as appropriate.

⁴² Based primarily on guidance provided by Science Europe: <https://www.scienceeurope.org/our-resources/practical-guide-to-the-international-alignment-of-research-data-management/> and supplemented by guidance from the European Research Council of the European Commission: https://erc.europa.eu/sites/default/files/document/file/ERC_info_document-Open_Research_Data_and_Data_Management_Plans.pdf



1. Data description and collection or re-use of existing data
2. Documentation and data quality
3. Storage and backup during the research process
4. Legal and ethical requirements, codes of conduct
5. Data sharing and long-term preservation
6. Data management responsibilities and resources including institutional or project-specific resources dedicated to managing data and ensuring adherence with the [FAIR](#) principles (Findable, Accessible, Interoperable, Re-usable).

12 Review Process

SFI became a signatory of the San Francisco Declaration on Research Assessment (DORA)⁴³ in 2019 and, as such, is aligning its review and evaluation processes with DORA principles. In January 2022, SFI reinforced its existing commitment to the core principles by joining DORA as a member⁴⁴. To this end, all types of research output are recognised, and SFI is committed to assessing the quality and impact of research through means other than journal-based metrics and research performance-based metrics such as impact factors and H-index. In the spirit of supporting open research and as a signatory of Plan S,⁴⁵ SFI will also consider a commitment to making data and other types of research open and accessible. SFI is also a signatory to Ireland's National Action Plan for Open Research 2022-2030⁴⁶. To complement these activities and further reinforce SFI's commitment to the overarching objectives of the Narrative CV, during 2022, SFI became a signatory to the Agreement on Reforming Research Assessment⁴⁷ and thus became a member of the Coalition for Advancing Research Assessment.

The SFI-Defence Organisation Innovation Challenge programme involves three stages of review: Application, Concept and Seed/Prize. Panel members secured by SFI are internationally-based experts in their respective fields and may be drawn from a range of backgrounds relevant to a challenge programme or area including: academia, industry, investment and civil society.

Application Review

Application review is undertaken by a sitting panel of international experts secured by SFI. In advance of the panel meeting, all applications are made available to the panel members for review. In addition, each application is assigned to at least two members of the panel who act as lead reviewers at the

⁴³ <https://sfdora.org/read/>

⁴⁴ Contributor level membership.

⁴⁵ <https://www.coalition-s.org/>

⁴⁶ [National Action Plan | National Open Research Forum \(norf.ie\)](#)

⁴⁷ https://coara.eu/app/uploads/2022/09/2022_07_19_rra_agreement_final.pdf

panel meeting. All panel members submit scores, against the criteria above, for each application in advance of the panel meeting. At the panel meeting, the lead discussants introduce each of the applications to the panel for discussion by the panel. Following discussion, the panel may rescore each application. Having reviewed all applications, the panel then ranks the applications based on order of priority of funding and makes a funding recommendation to SFI.

Following submission of applications, the average time to award notification under this programme is approximately one month.

Concept Phase Review

Teams successful in their application to the programme undertake challenge and solution validation activities over the 3-month course of the Concept Phase. A number of weeks in advance of the conclusion of the Concept Phase, teams must submit a progress report and participate in an interview-based review by a sitting panel of international experts (Concept Phase Review Panel). The purpose of this panel is to review the progress/performance of the teams over the course of the Concept Phase and recommend those teams that should progress to the Seed Phase.

Prior to the interview-based review, teams submit a progress report. These reports along with the original application and any feedback provided by the application review panel are made available to the panel for review. Each team report is assigned to at least two members of the panel who act as lead reviewers at the panel meeting. All panel members submit scores, against the criteria above, for each report in advance of the panel meeting. At the panel meeting, the lead discussants introduce each of the reports to the panel in advance of the interview. Following the presentation from the team and Q&A session with the panel, each panel member may rescore the team based on its review of the report, presentation and responses provided during the Q&A session. Having interviewed all teams, the panel then ranks teams in order of priority of progression and makes a recommendation to SFI.

NOTE: SFI may invite some members of the Application Review Panel to sit on the Concept Phase Review Panel to ensure that a robust evaluation of progress can be undertaken.

Seed Phase/Prize Panel Review

Toward the end of the Seed Phase of the programme, teams must submit a final progress report and participate in an interview-based review by a sitting panel of international experts (Seed Phase

Review/Prize Panel). The purpose of this panel is to review the progress and performance of the teams over the course of the Seed Phase, evaluate their future plans, and recommend an overall prize winner.

Prior to the interview-based review, teams submit a progress report which is, along with the original application, concept phase report and any feedback provided by previous review panels, made available to the panel for review. Each team report and associated documentation is assigned to at least two members of the panel who act as lead reviewers at the panel meeting. All panel members submit scores, against the criteria above, for each report in advance of the panel meeting. At the panel meeting, the lead discussants introduce each of the reports to the panel in advance of the interview. Following the presentation from the team and Q&A session with the panel, each panel member may rescore the team based on its review of the report, presentation and responses provided during the Q&A session. Having interviewed all teams, the panel then recommends an overall prize winner to SFI. The panel may also, at its discretion, recommend runner-up prize winners.

NOTE: SFI may invite some members of the Application Review or Concept Phase Review Panels to sit on the Seed Phase/Prize Panel to ensure that a robust evaluation of progress can be undertaken.

13 Progress Review and Prize Award Management

Review of progress at the end of the Concept and Seed Phases will be undertaken by a sitting panel of international experts. This process will involve the completion and submission of a progress report to SFI and an interview with the sitting panel. The sitting panel will review progress and future plans and make a recommendation to SFI as to whether the team should progress to the subsequent phase of the programme. Guidance on progress reports will be provided to applicants at the start of each phase.

Prior to completion of the Seed Phase, the remaining teams will submit a progress report to SFI, followed by a final presentation and interview with a prize panel. This panel will assess the potential societal and economic impact of the work undertaken to date, through the Concept and Seed Phases of the programme, and recommend an overall winning team that will receive the prize award.

14 Conflict of Interest

Experts engaged by SFI are required to abide by the SFI Reviewer Code of Conduct⁴⁸. Amongst other requirements, this includes operation in a confidential, fair, independent and equitable manner. Experts are required to confirm, in advance of carrying out their review(s), that they will do so in a confidential manner. The identity of experts who conduct the postal reviews shall remain confidential and shall not be disclosed to the applicant. SFI shall not be liable for the release of information concerning proposals to third parties by those international experts involved in the peer-review process. Adherence to the SFI Reviewer Code of Conduct also requires experts to immediately identify and declare where a conflict of interest exists or arises; in such cases, alternative reviewers will be appointed. Reviewers must adhere to high standards of integrity during the peer-review process. They must not compromise the intellectual property integrity of the application and may not appropriate and use as their own, or disclose to any third party, ideas, concepts or data contained in the applications they review.

15 SFI's Policies and Positions

In addition to complying with the GT&Cs applicants are expected to be familiar and consult with SFI policies/positions and with all relevant national policies when preparing their application to any SFI programme. All members involved in the funded research should be apprised of the following non-exhaustive list of relevant policies, which may be revised from time to time:

Clinical Trials

Research programmes that include clinical trials as part of the study must adhere to the **SFI Clinical Trial and Clinical Investigation Policy**⁴⁹, as well as with the requirements set out by the Health Products Regulatory Authority (HPRA).

Animal Usage

Applicants intending to use animals in their research projects are obliged to comply with the **SFI Use of Animals in Research Policy**⁵⁰ and should also ensure that their studies are in line with the HRPAs' position on the use of animals in research.

⁴⁸ <http://www.sfi.ie/funding/sfi-policies-and-guidance/review/>

⁴⁹ <https://www.sfi.ie/funding/sfi-policies-and-guidance/ethical-and-scientific-issues/>

⁵⁰ http://www.sfi.ie/resources/SFI-Policy-on-the-Use-of-Animals-in-Research_June_2016.pdf

Research Integrity

SFI places paramount importance on ensuring that the highest standards of research integrity underpin all aspects of the research that it supports. To this end, SFI endorses the **National Policy Statement on Ensuring Research Integrity in Ireland**;⁵¹ that is, all institutions and SFI award holders are expected to abide by this policy statement and the **European Code of Conduct for Research Integrity**.⁵²

Doctoral Education

For postgraduate students funded by SFI, the host Research Body is expected to adopt the principles, standards and good practice for doctoral education as described in the **National Framework for Doctoral Education (2023)**,⁵³ which SFI has endorsed.

Intellectual Property Management

Intellectual Property (IP) should be managed according to the policies set out in the Government publication: **Ireland's National IP Protocol 2019** and must comply with State aid Regulations.⁵⁴ The IP arrangements are the responsibility of the Research Body and shall reflect the collaborative nature of the project, the level of cash and in-kind commitment made by the Industry Partner. IP arrangements should be explicitly described in collaborative research agreements (CRAs).

Equality, Diversity and Inclusion Strategy

SFI's ambition is that Equality, Diversity and Inclusion Strategy 2023-2028 will be a key driver of an inclusive, engaged research culture and, through this Strategy, SFI will be an agent of change. As such, the SFI EDI Strategy presents a vision and strategy for SFI, as a leading research funder, to help reduce systemic barriers to participating in the research endeavour.

SFI has already demonstrated leadership in improving the representation of women in science, technology, engineering and mathematics (STEM) research more broadly in the entire education talent pipeline. Whilst gender will remain a central tenet of the new EDI Strategy, SFI will now

⁵¹ <https://www.iua.ie/wp-content/uploads/2021/04/National-Policy-Statement-on-Ensuring-Research-Integrity-in-Ireland.pdf>

⁵² <https://allea.org/wp-content/uploads/2023/06/European-Code-of-Conduct-Revised-Edition-2023.pdf>

⁵³ http://hea.ie/assets/uploads/2017/04/national_framework_for_doctoral_education_0.pdf

⁵⁴ <https://hea.ie/assets/uploads/2023/02/National-Framework-for-Doctoral-Education-2023.pdf>

proactively consider other areas of inequality or disadvantage to support an intersectional approach, in keeping with our values and best practice.

In the SFI Strategy 2025 *Shaping Our Future*,⁵⁵ targets are set for 35% of SFI's funded leadership positions (PIs & Co-PIs) to be women and for research teams to be composed of at least 40% of the underrepresented gender by 2025. As such, applicants should consider and describe how these targets can be achieved at all levels of the research team.

Research should fully consider potential biological sex and socio-cultural gender dimensions as key analytical and explanatory variables. As articulated in the SFI EDI Strategy, applicants are advised to demonstrate that they have considered any potential sex/gender aspects in their proposed research programme.

Maternity Supplement

SFI is committed to removing and mitigating any existing or perceived factors that may limit the participation of women in Science, Technology, Engineering and Mathematics (STEM) careers. SFI invites its award holders to apply for a supplemental discretionary allowance to support their SFI funded award when either an SFI Awardee or a team member, including PhD students funded on an SFI award takes a period of maternity or adoptive leave.⁵⁶

Appeals Process

The Appeals Policy establishes procedures and responsibilities for the appeal of the declination of a proposal by SFI.⁵⁷

State aid

Please refer to the State aid section (section 3) above

Child Protection

Where relevant, applicants and Research Bodies are required to comply with the provisions of the **Children First Act 2015**,⁵⁸ and the **National Guidance for the Protection and Welfare**

⁵⁵ <https://www.sfi.ie/strategy/>

⁵⁶ <https://www.sfi.ie/funding/sfi-policies-and-guidance/gender/>

⁵⁷ <http://www.sfi.ie/funding/sfi-policies-and-guidance/review/>

⁵⁸ <http://www.irishstatutebook.ie/eli/2015/act/36/enacted/en/pdf>

of Children 2017.⁵⁹ It is the responsibility of the Research Body to ensure that they are compliant with all applicable law.

Data Protection Policy

The General Data Protection Regulation⁶⁰ is a legal framework that sets out guidelines for the collection and processing of personal information of individuals within the European Union. Applicants are advised that they must be compliant with this regulation if they collect or process personal data.

SFI may collect, use and disclose personal data provided in the application and/or otherwise obtained under, or in connection with, the application for processing the submission, for the performance of its statutory powers and functions, and for the general activities of SFI. Further details regarding SFI's collection, use and disclosure of personal data, and the rights of individuals with respect to any personal data held by SFI, are available in the **SFI Privacy Statement**.⁶¹

During peer-review procedures, information may be sent to external experts in countries outside of the European Economic Area, including countries that are not recognised by the European Commission as having adequate data protection laws. By submitting an application to SFI, the Research Body and members of the Research Team are agreeing that they consent to the processing and transfer of personal information in this way.

During the application process or at any time thereafter, SFI may contact the Research Body, the Principal Investigator, or any member of the Research Team with regard to funding opportunities, activities or events organised by SFI or other relevant bodies, or for the purposes of monitoring and evaluation (including, but not limited to, the collection of scientific data or data relating to the application process). SFI may choose to authorise a third party to contact the Research Body, the Principal Investigator or any member of the Research Team on its behalf.

⁵⁹ http://www.tusla.ie/uploads/content/Children_First_National_Guidance_2017.pdf

⁶⁰ <https://www.dataprotection.ie/docs/GDPR/1623.htm>

⁶¹ <http://www.sfi.ie/privacy/>

Conflict of Interest

SFI recognises that applicants may have a prior relationship with an industry partner engaged in an application for funding to SFI (e.g., industry consultancy role, founder of an academic spin-out company) which may be perceived as a conflict of interest. Where a potential conflict of interest exists, SFI requires that it is disclosed by the applicant to SFI and their Research Body and that any such situations are managed by the Research Body in accordance with the principles and mandates laid out in **Ireland's National IP Protocol 2019**.⁶²

Open access

In line with the principles espoused by Plan S⁶³ and those of the National Action Plan for Open Research 2022-30⁶⁴ SFI is committed to ensuring that all publicly funded research articles are openly available. Where a research publication arises in whole or in part from SFI funded research (i.e., where at least one of the researchers concerned receives SFI funds in support of their endeavours), **SFI's Open Access policy**⁶⁵ should be adhered to. SFI monitors compliance with this policy through scientific and financial reporting, financial audits and other reviews, and data gathered through Research Outputs.

Data Management

Good data governance and stewardship are key components of good research practice. Science Foundation Ireland is part of an initiative for the voluntary international alignment of research data management policies.⁶⁶ Applicants may find it helpful to consult with this and Science Europe's framework for discipline-specific research data management if preparing a data management plan as part of their application for funding to SFI.⁶⁷ Applicants should review individual programme funding call requirements regarding data management plans and timelines as to when they are required to be submitted.

Current SFI policies and positions will be reviewed on a regular basis; applicants are advised to consult the policy information in advance of submission of a proposal.

⁶² <http://www.sfi.ie/funding/sfi-policies-and-guidance/national-policies-sfi-positions/>

⁶³ <https://www.coalition-s.org/principles-and-implementation/>

⁶⁴ <https://norf.ie>

⁶⁵ <https://www.sfi.ie/funding/sfi-policies-and-guidance/open-research>

⁶⁶ <https://www.scienceeurope.org/our-resources/practical-guide-to-the-international-alignment-of-research-data-management/>

⁶⁷ <https://www.scienceeurope.org/our-resources/guidance-document-presenting-a-framework-for-discipline-specific-research-data-management/>

16 SFI Resubmission Policy

Applications to any call that are based primarily on unsuccessful submissions (following peer review) to any SFI programme must demonstrate that the review comments resulting from the initial application have been considered in the preparation of the new submission. SFI will not review resubmissions that have not clearly considered the major comments or concerns resulting from the prior review and these proposals will be withdrawn without review. Please see SFI Policy on Resubmission of Grant Applications⁶⁸ for further information. Applicants to an SFI call for proposals must declare whether a new submission relates to a previously submitted application to any SFI scheme. If the application is a resubmission, a statement referencing the previous application and explaining the differences must be provided and making reference to reviewer comments where relevant. Please email this statement to challenges@sfi.ie prior to the deadline. This statement will assist SFI Scientific Staff in the assessment of eligibility of a revised application and will not be shared with reviewers.

17 Further Information

All information related to the SFI-Defence Organisation Innovation Challenge is available on the programme webpage:

<https://www.sfi.ie/funding/funding-calls/future-innovator-defence/>

For all additional queries please contact: challenges@sfi.ie

⁶⁸ <http://www.sfi.ie/funding/sfi-policies-and-guidance/eligibility-related-information/>

Appendix 1.

Disruptive Ideas.

Under the SFI-Defence Organisation Innovation Fund, the DefOrg is keen to foster engagement with researchers who may have ideas that do not align directly to the challenge areas identified. In such cases, researchers are encouraged to consider a number of technology areas of interest to the DefOrg and through engagement with DefOrg stakeholders submit proposals for disruptive/radical technology to address challenges in these areas.

The areas of interest under this call are:

- **Information and Communications Technologies (ICT)** including:
 - Wireless Communications.
 - Artificial Intelligence (incl. Machine Learning).
 - Generative AI Solutions.
 - Wearable Edge Devices (NFC).
 - Virtualisation and Simulation (incl. Cyber-physical systems, Augmented Reality (AR) and Virtual Reality (VR)).
 - Internet of Things (IoT).
 - 5G technology.
 - Edge Computing.
 - Quantum Computing.
 - Blockchain technology.
 - Big Data analytics and predictive analytics.
 - Robotics and automation technologies.
 - Biometric authentication and recognition technologies.
 - Advanced human-computer interaction technologies, including natural language processing and gesture control.
 - Smart infrastructure technologies.
 - Sustainable ICT.

- **Peacekeeping** including:
 - Imaging Systems – Imaging systems capable of operating in a range of settings and environments during day and night.
 - Drone Technologies – Drone and other aerial platforms for detection tasks.
 - Geographic Information Systems (GIS) for mapping and spatial analysis in conflict zones
 - Biometric identification technology for verifying identities and managing access in peacekeeping operations.
 - Satellite technology for remote sensing and communication in areas with limited infrastructure.

- **Climate Change and Sustainability** including:
 - Novel energy storage strategies and systems.
 - Robust, portable and efficient solar panel technologies.

- **Disaster Relief** including:
 - Water Systems - High-performance, low-cost water purification, detection, storage and supply systems.
 - Survivor Detection - Remote or at-distance technologies capable of detecting survivors in a range of land and/or water-based scenarios.
 - Humanitarian Aid Delivery – Systems to support and assist in the delivery and management of humanitarian aid.

- **Medical Technologies** including:
 - Diagnostics – Rapid, portable, low-cost disease diagnostics capable of reliably operating in low-resource or challenging environments.
 - Virtual health – Tele-health/medicine, mobile apps and other technology-based solutions enabling patient health to be managed remotely over large distances.
 - Wearables – Unintrusive or small form factor devices that may be worn or integrated with personal equipment to monitor physical activity, health or bio-signals.
 - Advanced medical technologies for providing healthcare in challenging environments.