

AI SINGAPORE OPEN-THEME TECHNOLOGY CHALLENGE PLUS GRANT CALL (OTTC+)

Challenge Rules & Guidelines

Challenge Rules & Guidelines

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PART 1

OVERVIEW

Challenge Objectives and Desired Outcomes

- 1.1. **AI Singapore Open-Theme Technology Challenge Plus (OTTC+) (“the Challenge”)** is a competitive research funding initiative that supports the development of AI technologies and innovation that can be **adopted to solve important problems and create transformative disruptions** in sectors of strategic relevance¹ to Singapore, thereby generating socioeconomic benefits for Singapore.
- 1.2. Only proposals that aim to develop technologies to address challenge statements of significance defined with at least an interested agency and/or industry partner will be considered. **A letter of support from the partner(s) is required and must state their commitment and contribution (refer to Para 4.2 for details) to the project.**
- 1.3. To incentivize original solutions, the problem scope, design approach, and potential impact of the Challenge shall be defined by the team. Applications shall clearly describe the **AI techniques proposed, quality and characteristics of the data available, and explain how the outcomes from the project can benefit the target sector and lead to transformative disruptions of current practices.**
- 1.4. The Challenge is open to the **Singapore-based Institutes of Higher Learning (IHLs)² and A*STAR Research Institutes**. Proposals are invited from multidisciplinary teams and consortia of academics, researchers, scientists, engineers, domain experts, and other professionals.
- 1.5. Selected teams will receive grant support of **up to S\$10 million over five (5) years, subject to an interim review**. Each project will undergo a 2-stage developmental approach (refer to Part 2 – Programme Guidelines for details).
- 1.6. At the end of the project, **the solution developed should be an implemented, functioning prototype, ready for real world testing and adoption.**
- 1.7. The resulting Intellectual Property (IP) will be governed by the terms and conditions of the AI Singapore Technology Challenge Funding Scheme (refer to Part 5 for details).

¹ Sectors of strategic relevance to Singapore include, but are not limited to, transport and logistics, smart cities and estates, healthcare, education, and safety and security.

² Institutes of Higher Learning (IHLs): National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore Management University (SMU), Singapore University of Technology and Design (SUTD), Singapore Institute of Technology (SIT), Singapore University of Social Sciences (SUSS).

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PART 2

PROGRAMME GUIDELINES

Funding Support

2.1. The funding quantum available to each team at each stage is shown below:

Stage (Duration of Support)	Quantum per Team
Stage 1 (up to 2 years)	Up to S\$4 million
Stage 2 (up to 3 years)	Up to S\$6 million
Stage 1 + Stage 2 (up to 5 years)	Up to S\$10 million

2.2. The total duration of a project shall not exceed five (5) years, and the corresponding **budget requested, which includes Indirect Research Costs (IRC) and Industry co-funding (if applicable), shall not exceed S\$10 million**. The associated IRC for Stage 1 and Stage 2 is 20% and 30% respectively.

2.3. Each proposal must fulfill the following requirements, depending on the type of partners involved in the project.

- i. **For Partner Institutions [Industry]:** A requirement of **at least 5% cash contribution** (based on Research Performer funding), which will be managed centrally by AI Singapore.
- ii. **For Public Agency Partners:** A requirement of **at least 10% in-kind and/or cash** (based on Research Performer funding), which will be managed by the project PI.

2.4. Eligible direct R&D costs of **Partner Institutions [Industry]** can be co-funded by AI Singapore depending on the entities³ involved, subject to the overall project budget cap of \$10M, also highlighted in Para 2.2:

- i. 30% for all non-Singapore entities based in Singapore (including non-Singapore not-for-profit)
- ii. 50% for Singapore-based Large Local Enterprises
- iii. 70% for Singapore-based Small-Medium Enterprises, start-ups and not-for-profits.

2.5. A Singapore Technology Licensing Office (STLO) must be appointed in projects that fund non-SG private sector entities, regardless of whether a public research performer is involved in the project. The STLO will help to manage the sponsored foreground IP in Singapore for maximum utility, and also help to provide fair access to Singapore entities in the public and private sector. Unless explicitly agreed with the owner(s) of the background IP, the STLO will have no rights to manage background IP. Appointment of the STLO can be done on a

³ Definitions of the different private sector entity types can be found in Annex E.

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fixed term, to be mutually agreed upon by the Institutions.

- 2.6. The proposal shall be based on a realistic budget with appropriate justifications that correspond to the scope of work to be accomplished. **The total cost of each project includes all approved direct research costs⁴, indirect research costs/overheads⁵ and industry co-funding (if applicable).** All expenditure budgeted should be inclusive of any applicable Goods and Services Taxes (GST) at the prevailing rates.
- 2.7. For all direct cost items proposed for the project, please note that:
- Host Institutions must strictly comply with their own procurement practices;
 - Host Institutions must ensure that all cost items are reasonable and are incurred under formally established, consistently applied policies and prevailing practices of the host institution; and
 - All items/services/manpower purchased/engaged must be necessary for the R&D work.
- 2.8. Lead PI/Co-PIs/Host institutions shall use reasonable efforts to employ or otherwise engage Singapore citizens and/or Singapore Permanent Residents to be deployed in the work under the project.
- 2.9. Lead PI and Co-PIs should note that parallel submissions are not allowed – i.e. applicants must never send similar versions or part(s) of the current proposal application to other agencies or grants for funding (or vice versa).
- 2.10. Please refer to Annex B – Guidelines for the Management of Research Grants (AI Singapore) for more information, including the list of “Non-fundable Direct Costs”.

Review and Selection

- 2.11. Full Proposals will be reviewed by the AISG Technology Challenge Evaluation Committee (EC), based on the quality of the proposals in the following key aspects:
- Data availability and access
 - Readiness of AI technologies
 - Deployment pathway
 - Strategic relevance to Singapore
 - Potential for economic and social impact

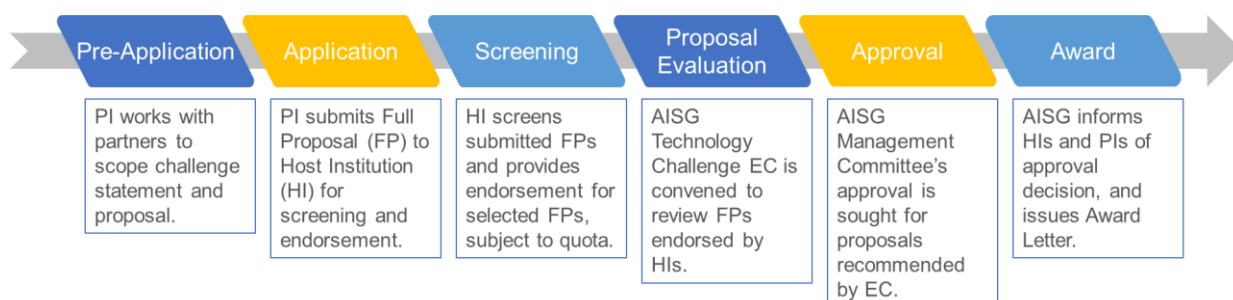
⁴ Direct costs are defined as the incremental cost required to execute the project. This **excludes** in-kind contributions, existing equipment and the cost of existing manpower as well as building cost. Supportable direct costs can be classified into expenditure on manpower (EOM), expenditure on equipment (EQP), other operating expenses (OOE) and overseas travel (OT).

⁵ Indirect costs are expenses incurred by the research activity in the form of space, support personnel, administrative and facilities expenses, depending on the host institution's prevailing policy. Host institutions will be responsible for administering and managing the support provided by AI Singapore for the indirect costs of research.

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- Team expertise

Full Proposals must also adequately address the pointers stated in Annex A – Full Proposal template. An illustration of the application process is shown below.



2.12. All applicants will be notified of the outcome but due to the volume of applications, we will not be able to provide feedback to unsuccessful applicants. **All decisions are final, and no appeals will be entertained.**

2.13. The timeline for this grant call is shown in the table below:

Event	Timeline
Grant call opens	22 Feb 2023, 12pm (SGT)
Grant Management System (GMS) Portal Opens	1 April 2023
Submission deadline	3 May 2023, 12pm (SGT)
Evaluation and Approval by EC and MC	May – Jun 2023
Release of outcome and award	Jun 2023
Project Commencement (Stage 1)	1 Jul 2023 ⁶ – 30 Jun 2025

Please note that respective institutions' internal deadline for Full Proposal submission may differ. However, all proposals selected and endorsed by the Host Institutions must be submitted to AI Singapore **by 3 May 2023, 12pm (SGT)**.

Programme Structure, Assessment and Evaluation

2.14. After a proposal is selected for award, the team will be given funding support of up to **two (2) years** to pursue **Stage 1: Technology Development**.⁷

2.15. The performance and potential of the team's solution to address the Challenge will be

⁶ Estimated start date – actual date to be communicated at a later date and subject to changes.

⁷ For Technology Readiness Level (TRL) definitions, please refer to NASA's definitions, at https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf.

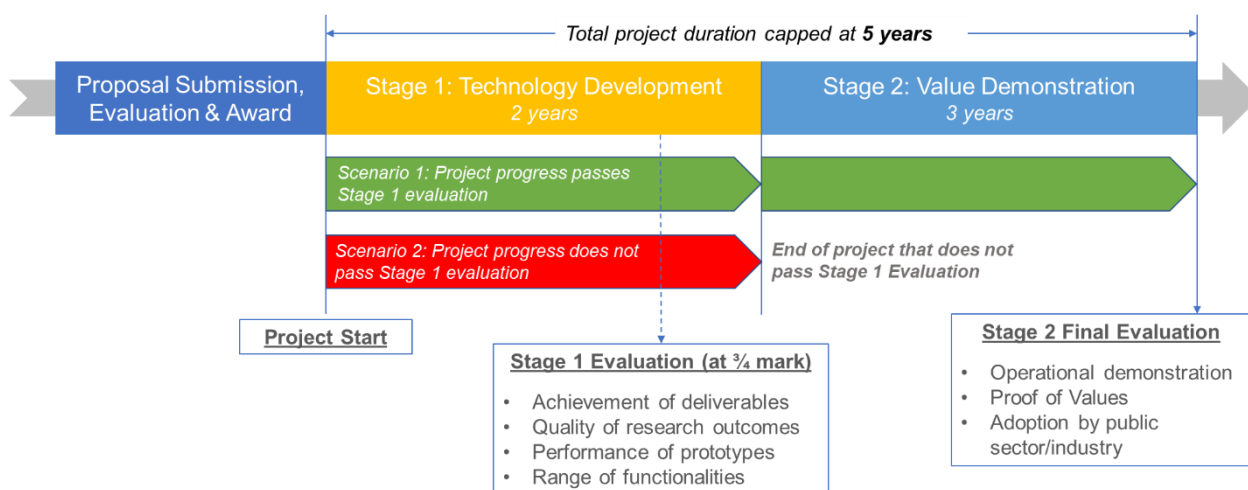
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evaluated during an interim review (Stage 1 Evaluation) which will be carried out at the **third-quarter mark of Stage 1**. The interim review will be conducted approximately 18 months into the project. Teams will be assessed primarily based on the achievement of deliverables, quality of research outcomes, performance of prototypes and range of functionalities.

2.16. If the team and its prototype pass the Stage 1 Evaluation, funding support for the team to move on to **Stage 2: Value Demonstration** and complete the AI Singapore Technology Challenge will be made available.

2.17. **The teams that succeed in moving on to Stage 2 will undergo an evaluation at the end of the project term.** The teams will be assessed on whether they have met all the evaluation criteria and the Challenge objectives.

2.18. The Programme Execution Plan is illustrated below:



2.19. AI Singapore reserves the rights to terminate, at any point in time, a project that does not meet the minimum expectations of progress and achievement, upon recommendation by the Evaluation Committee. **The Evaluation Committee may also make recommendations to maximise the outcomes of funded projects** which include, but are not limited to, adjustments to proposed durations for each stage, qualifying only certain components of a project to proceed to Stage 2.

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PART 3

HOW TO PARTICIPATE

Application

- 3.1. **Only one member from each research team can submit the application.** This is to facilitate the planning and organisation of the information and the proposal review process. The applicant will be the primary contact for the team.
- 3.2. The application must be submitted by the Host Institution to AI Singapore via the AI Singapore Technology Challenge GMS Portal. Only complete applications with the endorsement of the relevant institutional authority / director of research (or equivalent), will be accepted by AI Singapore.
- 3.3. The set of Technology Challenge terms and conditions and application materials can be downloaded [here](#).

Eligibility

- 3.4. Each eligible institution⁸ must not exceed the submission quota as shown in the table below:

Host Institution	Submission quota per Host Institution (no. of full proposals)
NUS/NTU/A*STAR	3
SMU/SUTD/SUSS/SIT	1

- 3.5. Each research team or consortium must consist of one (1) Lead Principal Investigator (Lead PI) and at least one (1) Co-Principal Investigator (Co-PI) (collectively, “Investigators”).
- 3.6. At the point of application, the Lead PI must hold a full-time⁹ appointment and be salaried in one of the eligible institutions.
- 3.7. At the point of application, Co-PIs must hold a full-time appointment in a Singapore-based IHL or Research Institution (RI)¹⁰, or from the partnering industry player. At least one of the Co-PIs must be a subject matter expert in the proposed domain.
- 3.8. The team must have the right skills and experience to deliver the project, and demonstrate

⁸ Applicable to Institutes of Higher Learning (IHLs): National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore Management University (SMU), Singapore University of Technology and Design (SUTD), Singapore Institute of Technology (SIT), Singapore University of Social Sciences (SUSS) and A*STAR Research Institutes.

⁹ Defined as at least 9 months of service a year based in Singapore or 75% appointment.

¹⁰ Research Institutions (RIs): A*STAR Research Institutes, CREATE entities.

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sufficient engagement with agencies to scope the proposal.

- 3.9. Overseas collaborators and/or visiting experts should spend sufficient time in Singapore to build up a strong local research group in new areas with the assistance of a local principal investigator to ensure continuity. If the visiting expert plays a major role in the AI Technology Challenge project, he/she should be based in Singapore for at least six (6) months each year. Alternatively, the overseas collaborators and/or visiting experts may be invited to Singapore on short-term engagements to assist with specific project tasks. In either arrangement, the costs of airfare, accommodation and per diem can be budgeted under the other operating expenses of the AI Technology Challenge project.
- 3.10. Staff of overseas collaborators can be hired directly through the local IHLs as full-time visiting research fellows (or equivalent). The staff must be based in Singapore for at least one (1) year.
- 3.11. Notwithstanding the above, AI Singapore strongly encourages international collaborations and may consider alternative special arrangements proposed by the Lead PI.
- 3.12. **Only activities conducted in Singapore may be funded under the AI Singapore Technology Challenge Funding Scheme.**

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PART 4

CHALLENGE RULES

Proposal Content

- 4.1. The Full Proposal must not exceed 10 pages, and adhere to the prescribed format and address the points as stated in Annex A. **Elaboration of a proposal's content within appendices will not be considered.**
- 4.2. Letter(s) of support to provide access to relevant proprietary datasets, and to commit accordingly:
 - i. **For Partner Institutions [Industry]:** A requirement of **at least 5% cash contribution** (based on Research Performer funding),
 - ii. **For Public Agency Partners:** A requirement of **at least 10% in-kind and/or cash** (based on Research Performer funding).
- 4.3. **A recorded presentation is also required for submission (in .mp4 format only)¹¹**, and shall adhere to the following guidelines:
 - i. Its duration is **strictly limited to 10 minutes**. Any content beyond the 10-minute mark will not be considered.
 - ii. Teams are to focus on the following aspects of the proposal:
 - Data availability and access
 - Readiness of AI technologies
 - Deployment pathway
 - Potential for economic and social impact
- 4.4. Research support office from the IHLs and/or Research institutes are required to ensure that information submitted by their researchers is complete and compliant with the requirements outlined in the application guidelines. **Failure to do so will result in rejection without review.**
- 4.5. Test plans and test suites should clearly define and explain how the solution will be evaluated based on functional metrics and outcome indicators, including, but not limited to:

Functional Metrics	Define and Explain - Example criteria (for information only)
✓ Accuracy	Effectiveness (e.g. sensitivity/specificity of tests), quality management
✓ Efficiency	Resource use (people, time, money, equipment)
✓ Usability	Ease of use, behavioral/cultural issues

¹¹ The recorded presentation(s) shall be uploaded to a platform and a download link shall be provided to AI Singapore by the submission deadline. File size shall be minimised.

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- | | |
|-------------------|---|
| ✓ Affordability | Value for money for the intended users |
| ✓ Scalability | Large-scale implementation, sustainability, competitive landscape |
| ✓ Connectivity | Synergy/Integration with other complementary solutions |
| ✓ Reproducibility | Reproducible research practices, code & data management & sharing |
| ✓ Adaptability | Different cultural or developmental settings |
| ✓ Safety | Risks vs. benefits, regulatory legislation & processes |

Outcome indicators **Define and Explain - Example criteria (for information only)**

- | | |
|---------------------|----------------------------------|
| ✓ Research outcomes | Detection rates, efficacy levels |
|---------------------|----------------------------------|

Expected Deliverables

4.6. Each project is expected to produce most, if not all, the following deliverables:

- a. Solution reference architecture
- b. Solution prototype system
- c. Processed data and development tools
- d. Robust evaluation plans and test suites
- e. Training of specialised and/or skilled manpower
- f. Demonstrated potential and clear routes for deployment, licensing, and spin-off opportunities

System Development Requirements

4.7. The solution should:

- a. Be an implemented, functioning prototype, with possibly multiple, distributed, and connected components or subsystems.
- b. Demonstrate performance in an operational environment and be ready for real world testing and performance evaluation.
- c. Conform to general guidelines for reproducible research and include a code and data management plan

4.8. The newly created and non-proprietary parts of the solution should be ready to be packaged for general distribution, for further development or commercialisation.

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- 4.9. Teams must submit their generated Intellectual Property to AISG at scheduled junctures within the project term (e.g., Mid-Term Review, project closure), but may also be asked to do so upon request by AISG. Unless otherwise stated, teams will be given up to 1 month to comply with the requests. Examples of items that may be requested include, but not limited to:
- a. Source codes
 - b. Architecture diagrams
 - c. List of dependencies necessary to build the source code/model
 - d. Instructions to build the source code/model
 - e. Developer documentation for source code
 - f. Sample data for training
 - g. Sample input/output for model verification
- 4.10. The solution must not infringe on the intellectual property rights of others; reasonable steps must be taken to ensure that all the components or subsystems can be used, and if appropriate, included for distribution according to the Terms and Conditions of the AI Singapore Technology Challenge Funding Scheme.

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PART 5

OTHER GUIDELINES AND INFORMATION

Intellectual Property

- 5.1. Intellectual Property (“IP”) developed under the Challenge (“Research IP”) shall be co-owned by the Institutions and Collaborators in accordance with their inventive or creative contributions, where such agreed terms shall be set out in a written agreement between the Institutions. The Investigators and Collaborators shall identify and disclose to the Institutions, details of all such Research IP.
- 5.2. The Institutions shall keep and maintain a fully comprehensive and updated list of all such Research IP and make such details available to AI Singapore and/or the grantors for inspection at any time.
- 5.3. The Institutions shall grant AISG Limited, a company limited by guarantee and responsible for the management, exploitation and commercialisation of Research IP, a non-exclusive, non-transferable, sub-licensable, perpetual, irrevocable, worldwide, royalty-free right and license to use, modify, reproduce and distribute the Research IP (excluding any Research IP that is solely developed by a Collaborator) for research, development and/or commercial purposes (the “AISG License”).
- 5.4. Except the rights expressly licensed or otherwise provided in this Challenge Rules & Guidelines or the terms and conditions of the AI Singapore Technology Challenge Funding Scheme, the Institutions shall in any event retain all rights, title and interest in all Research IP and shall have the free and unfettered right to use and commercialise (which include granting licenses to third parties) the Research IP for any purpose on a non-exclusive basis without seeking the consent of AI Singapore and AISG Ltd.
- 5.5. Management of all Research IP shall have reference to and be guided by the AI Singapore IP Policy. In general, Research IP may be open-sourced for research and experimentation and licensed for commercial deployment.
- 5.6. The Institutions shall use best efforts to ensure that the Research IP is properly managed and wherever feasible, fully exploited and commercialised (including being made available for research and development or commercial purposes). Where required to do so by AI Singapore, the Institutions shall attend such meetings as AI Singapore may direct to discuss the potential for exploitation and commercialisation of Research IP.
- 5.7. The Institutions shall reserve a royalty-free, irrevocable, worldwide, perpetual and non-exclusive right for the Singapore Government and public sector agencies to use any licensed

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Research IP for their statutory functions, non-commercial and R&D purposes.

Ethics and Confidentiality

- 5.8. All the Investigators, Collaborators, staff, and students working on the project must comply with the relevant local laws or regulations governing the research.
- 5.9. All teams are responsible for ensuring that ethical issues relating to their respective projects are identified and brought to the attention of the relevant regulatory bodies for approval. Approval to undertake the research must be granted before any work requiring approval begins.
- 5.10. Ethical issues should be interpreted broadly and may encompass, among other things, relevant codes of practice, the involvement of human participants, tissue or data in research, the use of animals, research that may result in damage to the environment and the use of sensitive economic, social or personal data.
- 5.11. The work should be conducted under strict international, national, and/or institutional guidelines on privacy and confidentiality protection of personal data use.
- 5.12. Whenever possible, all datasets used should be de-identified and anonymised, and/or proper consents and approvals should be obtained for the use of the data.
- 5.13. All the Investigators, Collaborators, staff, and students working on health- and biomedical-related projects should obtain CITI certification (<https://about.citiprogram.org/en/homepage/>) on biomedical data use or similar training and certification.
- 5.14. Researchers and research institutions should recognize that they have an ethical obligation to weigh societal benefits against risks inherent in their work. All research must be conducted responsibly and honestly. Researchers should also refer to their own research institution's guidelines on ethical conduct/research integrity.
- 5.15. All participating parties must fully comply with the **AI Singapore Technology Challenge (Open-Theme) Challenge Rules & Guidelines, Terms and Conditions of the AI Singapore Technology Challenge Funding Scheme, and Terms and Conditions of the AISG License.**

Project Support and Facilitation

- 5.16. Where possible, AI Singapore may facilitate or support project work in the following areas:
 - a. Expert advice and consultation (from technical experts)

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- b. Project management

Frequently Asked Questions (FAQs)

5.17. Appended are answers to FAQs that we have received:

Q: What is the Indirect Research Cost (IRC) support rate?
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A: Institutions selected to host projects awarded under the Challenge will be eligible for IRC funding of (i) 20% for Stage 1, and (ii) 30% for Stage 2, of the direct cost approved under the AI Singapore Technology Challenge Funding Scheme.

Do note that:

- The S\$4 million funding cap for Stage 1 is inclusive of the IRC as described above; and
- Unutilised funds from Stage 1 will not be rolled over to Stage 2.

Q: Does the grant support Research Scholarships (RS)?
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A: RS is not eligible for grant support under this Challenge.
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Q: Does the grant support Lead PI's and Co-PI(s)' salaries?
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A: Lead PI's and Co-PI(s)' salaries are not eligible for grant support under this Challenge.

Contact Information

5.18. For any enquiries, please contact technologychallenge@aisingapore.org.