IMMERSIVE TRAINING FOR MUSCULOSKELETAL PHYSIOTHERAPISTS TO MASTER ADVANCED CLINICAL REASONING SKILLS

CHALLENGE OWNER

This challenge is part of the **innovPlus Challenge 2024 Run 1**, organised by the Institute for Adult Learning's inlab. As part of the iN.LEARN 2.0 initiative, innovPlus facilitates the rapid development and pilot deployment of prototypes that can address learning challenges and exploit opportunities for better Learning and Development (L&D) and Continuing Education and Training (CET) outcomes, including design, delivery and assessment.

innovPlus is organised as a competition for training providers, organisations with L&D departments, learning experts, solutionists and technology partners to collaborate and present a holistic solution to real learning challenges faced by the training provider, organisation and/or groups of learners. Please refer to Annex A for more background on innovPlus.

The Challenge Owner is an Institute of Higher Learning (IHL) that provides undergraduate and post-graduate training for allied health professionals in Singapore, and seeks to explore innovative applied learning approaches to upskill the allied health workforce. In particular, the Challenge Owner is currently expanding their continuing education and training (CET) courses for therapists such as physiotherapists.

CONTEXT

CURRENT SITUATION

In musculoskeletal (MSK) physiotherapy, interviewing the patients for history taking is a critical first step in the clinical reasoning process to formulate a working diagnosis, where thorough history taking alone can often yield enough information to lead to correct diagnoses. Patient-centric history taking can also improve clinical outcomes and enhance overall patient experience. Hence, it is vital for MSK physiotherapists to develop competencies in history taking as an integral part of the clinical reasoning process, including communication skills, knowledge of the right follow-up questions to ask patients and how to guide the interview, and pattern recognition to formulate diagnoses, while ensuring patient-centricity and efficient use of consultation time (around 15 minutes for history taking).

The Challenge Owner's CET programmes for MSK physiotherapists include an advanced clinical reasoning course that focuses on history taking and clinical reasoning skills, which runs every trimester with 10 to 15 trainees per enrolment. Trainees are mainly working MSK physiotherapists and other physiotherapists undergoing MSK rotation in hospital clinical settings, who are typically sent for training or refresher courses by their hospitals. The training will be scaled up in the next academic year to include all trainees undertaking postgraduate training in Master of MSK physiotherapy programmes.

PAST AND CURRENT SOLUTIONING EFFORTS

The advanced clinical reasoning course for MSK physiotherapists includes four key training components:

- Written case studies. Case studies developed by trainers comprise simulated patient scenarios in either script format (therapist's questions and patient's responses), or a description of the patient's clinical history and conditions accompanied by medical scans (e.g. X-rays, MRIs). Trainees are required to analyse the case studies and discuss them in class. The case studies are stored in the Challenge Owner's learning management system (LMS) for trainees' access.

- <u>Videos of simulated patient interviews</u>. Videos of a simulated history taking process between a physiotherapist and a patient (played by actors and/or the trainers themselves) are played in class for trainees to work through the patient responses and questions asked by the therapist to formulate their working hypothesis of the clinical diagnosis. The videos are stored in the Challenge Owner's LMS for trainees' access.
- <u>Role-playing</u>. Trainees role-play as patients with musculoskeletal conditions, in order for their peers to practise history taking.
- <u>Simulation labs</u>. Trainees work in groups in a simulated clinical setting with actors playing patients, and take turns to interact and practice history taking with the "patients", before coming together to work on the case presented. The ratio of trainees to actors is limited to five trainees to one actor.

The programme includes both individual and group work, and comprises 50% written case studies, 30% videos of simulated patient interviews, and 20% role-playing and simulation labs. Trainees are assessed through written case-based assignments and practical assessments with trainers where they have to answer questions on cases presented.

CHALLENGE/GAP/UNREALISED POTENTIAL

Although trainees are given a standardised format and checklist for history taking, this may not always be effective in a real-life patient scenario (e.g. patients who do not answer directly or become distressed). As each clinical case and patient interaction is different depending on the patient, trainees require more practice with history taking and exposure to a range of different clinical cases to gain experience, especially complex cases involving multiple comorbidities[1].

However, the current training methods do not allow trainees to practise in a real clinical setting, which results in an inauthentic learning experience. Written case studies and videos can become dated over time as new clinical conditions emerge and concepts of treatments change, but the time-consuming nature of preparing new materials (e.g. writing scripts, hiring actors, recording videos) limits trainers' ability to update materials frequently or generate a larger variety of diverse cases. While both case studies and videos can be made easily accessible online for trainees, they are static and do not allow trainees to practise actual patient interaction. Role-playing and simulation labs aim to replicate real-life clinical settings, but are resource-intensive, costly and not easily scalable, providing only limited opportunities for trainees to practice conducting patient interviews. It is also challenging to authentically recreate an actual patient interaction, including patients that require emotional management and the time pressure to complete patient interviews in 15 minutes as required in an actual clinical setting.

In addition, for role-plays/simulations conducted in groups, trainers are unable to provide personalised feedback for every trainee individually, and may not be aware of weaker trainees' skills gaps. Trainers are also not able to observe trainees' history taking and clinical reasoning skills when they return to actual clinical settings to assess the effectiveness of the training.

CHALLENGE STATEMENT

How might we provide musculoskeletal physiotherapists with an authentic learning experience through an immersive simulation-based training environment to master history taking and clinical reasoning skills?

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[1] Comorbidities refer to the simultaneous presence of two or more diseases or medical conditions in a patient. Common comorbid conditions may include osteoarthritis, depression, insomnia/sleep disorder etc.

WHAT ARE WE LOOKING FOR?

The Challenge Owner is looking for an immersive simulation-based training solution to enhance the existing CET programme for MSK physiotherapists and allow them to practise and build up their competencies in history taking and clinical reasoning without the constraints of simulation labs (i.e. time, space, availability constraints). If proven successful, the solution could potentially replace the current physical simulation labs.

The solution should meet the following criteria:

- Smart simulation case generation with differing difficulty levels. Able to automatically generate diverse MSK simulation cases which include patient history and characteristics, based on pre-requisites that are input by trainers (e.g. with different kinds of comorbidities). Allow trainers to adjust the generated cases and generate new cases based on new or amended pre-requisites. Simulation cases should have at least three levels of difficulty (simple, moderate, complex) based on different parameters including type, number and duration of the patient's medical conditions, social factors (e.g. patient stress), and comorbidities.
- Self-directed learning. Allow trainees to choose which simulations and difficulty levels to practise based on the areas/medical conditions they would like to focus on for self-directed learning. The trainees can make a selection based on the area of the body for a random simulated case to be created on specific conditions which affects that area (e.g selecting the ankle, a simulated case on chronic ankle instability can be generated).
- Realistic and immersive voice-based simulations. Able to realistically simulate and replicate real-life clinical scenarios that provide an experiential learning experience for trainees in history taking and clinical reasoning. Simulation inputs should be voice-based so as to create an immersive experience for trainees, like talking to a virtual patient.
- Real-time prompts and feedback on performance. Provide prompts and feedback to trainees during simulations (e.g. when they have missed details, made mistakes, or paused for a long time) to facilitate better self-directed learning.
- Timed simulations. Simulations should be timed with clear indication of elapsed time, to help trainees practice efficient time management during history taking.
- Post-simulation inputs on clinical diagnosis. Allow the trainees to input open-ended text for their clinical diagnosis and follow-up treatment plans of the simulated case after completing the history taking simulation, to be captured for evaluation and reporting.
- Data capture and reporting. Able to record the simulation attempts by trainees, and capture data on trainees' performance for review and class discussion. Generate reports with insights for instructors, including the areas of history covered and missed by the trainee, the total duration of time taken and total time of "awkward silence" during the history taking. A recorded transcript should also be included for post-activities discussion.
- Real-time multi-user mode for collaborative learning. Allow multiple users (up to around 15 users) to log into the training environment concurrently and practise the same simulation case, including trainers for observation and evaluation of trainees' performance.
- Gamification and community elements. Incorporate elements of gamification to encourage trainee engagement. Include a leaderboard/scoreboard for trainees to benchmark against their peers. Allow trainees to share interesting simulation cases with their peers and try out the ones their peers have tried.
- Multi-language simulations (optional). Simulations should be in English at prototype stage, with the potential for expansion to other languages for future implementation.
- Real-time observation and assessment (optional). Provide an assessment feature for trainers to observe and evaluate trainees doing a simulation in real-time.

- **Non-verbal communication analysis (optional)**. Able to identify and provide analysis of trainees' non-verbal cues.

OVERALL PERFORMANCE REQUIREMENTS

- **Integration with existing system**. The solution should be able to seamlessly integrate into the Challenge Owner's existing LMS, D2L Brightspace, which trainees are already using.
- **Web- and mobile-friendly**. The solution should be able to be accessed on both desktop and mobile devices, where possible.
- **Intuitive and user-friendly**. The solution should be easy to use, so as to be accessible to a diverse range of trainees and encourage self-directed learning.
- **Secure and PDPA-compliant**. As the solution will contain proprietary training materials, the solution should be secure and access should be strictly limited to registered users.
- **Ethical**. The solution must adhere to the healthcare ethics guidelines set by MOH.

TARGETED LEARNERS /USERS
Primary and Secondary targeted learners / users of the envisaged solution (including estimated numerical figures)

- Estimated primary users of 170 new physiotherapists joining the workforce each year.
- Potential secondary users include around 2,800 currently registered physiotherapists with the allied health professional council especially those undergoing MSK rotation, and undergraduates.

MEASURES OF SUCCESS

- **Improved competency levels**. Trainees should demonstrate improved history taking and clinical reasoning skills over time, including the ability to identify patterns and come up with accurate differential diagnoses and treatment plans, conduct history taking efficiently (i.e. being able to complete the simulation cases within 15 minutes), and enhanced communication skills. Competency will be evaluated via the Challenge Owner's assessment rubrics and qualitative feedback from trainers.
- **Time saved on creation of training materials**. Trainers should spend less time creating new training materials like case studies and videos over time. The trainer will be surveyed on the ease of generating new cases and the time spent per trimester on preparation time for these materials.
- **Enhanced identification of areas for improvement**. Trainers should be better able to identify weaker students or those facing difficulties and their areas for improvement, to provide targeted support and intervention. This will be measured by the scores of the students in performing the history taking (completeness) and the time spent in completing the history taking. Accuracy of their clinical diagnosis post-history taking should also be considered as a way to identify weaker students.
- **Increased engagement rate and peer learning**. With the visibility of trainees' performance scores in the solution, trainees should become more engaged over time in data-driven discussions and peer learning.

Prospective Solution Partners who choose to apply for this challenge must be registered and operating in Singapore. The prototype needs to be demonstrated in Singapore. The Solution Partner should allow the solution to be tested for at least 9 months with at least 100 users before further refinement and potential deployment.

POSSIBLE USE CASES

1. <u>Realistic simulated training</u>. Zameer is a junior MSK physiotherapist taking the CET programme for advanced clinical reasoning. After analysing written case studies and videos of patient-therapist interviews in class, he is tasked by his trainer to complete five simulation cases in the solution to practise his history taking and clinical reasoning skills. After logging into the solution, he has the option to choose cases of varying difficulty (simple, moderate, complex) and flexibility to access the simulated training at his convenience, allowing multiple practice sessions. In the simulation environment, he is able to engage in realistic patient interactions with real-time voice-based responses. He misses out asking a follow-up question on one of the virtual patient's pre-existing conditions, but is able to correct it after some prompts and tips from the solution. Throughout the simulation, he is also able to see how long he has taken for the interview so far through the time tracker, which helps him to better manage the interview efficiently. Following each simulation, he can provide input on his clinical diagnosis and treatment plan. Following that, a comprehensive performance report is generated, which highlights areas for improvement and the accuracy of his clinical diagnosis. With the feedback from the solution, he is able to hone his history taking and clinical reasoning skills, and build his confidence in being able to make accurate diagnoses and asking the right questions. With the solution's multi-user mode, he is also able to try out the same simulation cases as his classmates, and compare his responses with theirs for peer learning.

2. <u>Increased productivity and training effectiveness</u>. Yolanda, an MSK programme trainer, reviews the reports generated by the solution to assess the performance of each trainee. With the insights from the reports, she gains visibility into her class's skills gaps and areas that need improvement, and is also able to identify the weaker trainees requiring more guidance. Using the solution, she inputs various pre-requisites like specific comorbidities that she would like her class to gain more practice on. The solution automatically generates simulation cases based on the pre-requisites, which helps her to save time on preparing new case studies, and allows her to redirect her efforts towards delivering targeted guidance to her class for better training effectiveness.
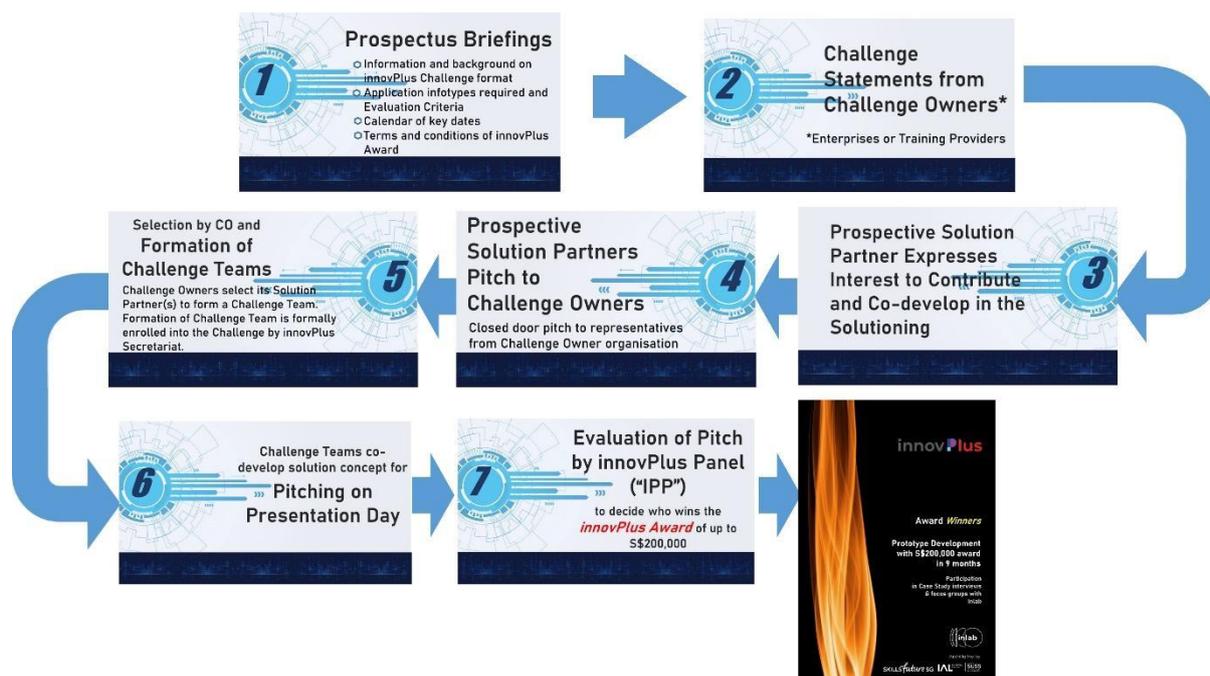
WHAT'S IN IT FOR YOU

- Up to S$200,000 of prototyping grant (innovPlus Grant) for each winning Challenge Team of the innovPlus Challenge 2024 Run 1 (see Award Model) to develop and trial an innovative, feasible and scalable prototype that advances CET practice and learning outcomes.
- Access to IMDA'S PIXEL corporate innovation hub and complimentary innovation consultancies (e.g. Design Thinking, Digital Storytelling) for prototype development, where applicable.
- Co-innovate with the Challenge Owner with access to their expertise, facilities, and human resources in developing the solution, and potential to scale the successful solution for commercialization.

INNOVPLUS COMPETITION PHASE PROCESS FLOW

Diagram 1 illustrates the innovPlus process flow in the competition phase and the requirements for active involvement of each party. Stage 3 indicates the current stage of the competition, where Prospective Solution Partners are to express interest to contribute and co-develop solutions with the Challenge Owner through IMDA's Open Innovation Platform.

<p align="center">Diagram 1 - innovPlus Competition Phase Process Flow</p>

The Challenge Owner will evaluate all proposals by Prospective Solution Partners received on the OIP based on the evaluation criteria below, and invite shortlisted partners to a second stage evaluation in the form of a pitch (Stage 4 of Diagram 1).

Solution Fit (30%)	Relevance: To what extent does the proposed solution address the problem statement effectively?
Solution Readiness (20%)	Maturity: How ready is the proposed solution to go to the market? Scalability: Is there any evidence to suggest capacity to scale? Does the proposed solution offer potential to also help other enterprises facing similar challenges (i.e. broader application, adaptation and transferability)?
Solution Advantage (30%)	Pedagogical Design: What sound pedagogical design approaches underpin the proposed solution to enhance effectiveness of learning or desired learning outcomes? Cost Effectiveness and Innovativeness: Is the solution cost effective and truly innovative? Does it make use of new technologies in the market, and can it potentially generate new IP? How sustainable and affordable is the estimated cost for pilot trial, deployment, software support and post-pilot rollout?
Company Profile (20%)	Business Traction: Does the product have user and revenue traction? Is the company able to demonstrate financial capability and resources to complete the prototype? Team Experience: Do the team members possess strong pedagogy and scientific/technical background?

Thereafter, the Challenge Owner will decide on the Solution Partner to form a Challenge Team to co-develop the idea into a potential solution (Stage 5 in Diagram 1). The Challenge Team will pitch their solution in the final round of the competition, known as the innovPlus Presentation Day. On that day, the Challenge Teams will present how the envisaged solution could deliver the stated learning outcomes with a presentation and demonstration to the innovPlus Panel (Stage 6 in Diagram 1). The

innovPlus Panel shall have the final decision on whom the eventual Grant awardees shall be (Stage 7 in Diagram 1). Please refer to the Terms and Conditions in Annex B for further details.

AWARD MODEL

Up to S$200,000 of prototyping grant (innovPlus Grant) will be awarded to each winning Challenge Team of the innovPlus Challenge 2024 Run 1 for the development and pilot deployment of a prototype solution. The grant will NOT be inclusive of any applicable taxes and duties that any of the parties may incur. Guidelines on the grant disbursement quantum, milestones, timeline and supported cost items are stated in the Terms and Conditions under Annex B.

*Note that a finalist (prospective Solution Partner) who is selected to undertake the prototype will be required to enter into an agreement with Challenge Owner(s) that will include more detailed conditions pertaining to the POC/prototype.

SUBMISSION GUIDELINES AND DEADLINE

The proposal **must** include the following:
- Completed and countersigned innovPlus Expression of Interest ("EOI") Form
- 1 deck of slides in PDF format explaining the proposed solution, how it addresses the challenge statement and meets the desired performance requirements. To include information such as the proposed data inputs, system that the proposed solution will run on, potential benefits, the envisaged learning innovation, and the team's implementation plan
- Video or pictures (300dpi) of any prototype or simulation, if applicable
- ACRA Business Profile (2023 or most recent) with certificate confirming registration of business
- Corporate Compliance and Financial Profile from BizFile (2023 or most recent)
- Track record of the company (including financial capability to complete the project) / CV of the team

All submissions must be made by **12 April 2024, 1600 hours (SGT/GMT +8)**. inlab and IMDA may extend the deadline of the submission at their discretion. Late submissions on the OIP, or submissions via GeBIZ, will not be considered.

Annex A – About innovPlus

1. iN.LEARN 2.0 is an initiative launched by SkillsFuture Singapore to drive innovation in the Training and Adult Education ("TAE") sector from ideation to commercialisation through its three key programmes – the innovPlus, innovSpur and Sandbox. It will focus on four key areas:

    i.   increasing the uptake of online and blended learning by individuals;
    ii.   amplifying enterprises' adoption of innovative learning technology;
    iii. developing effective remote assessment and proctoring solutions for individual and enterprise-led training; and
    iv.   developing effective placement solutions that tighten the industry-training nexus.

2. As part of iN.LEARN 2.0, innovPlus contributes to the initiative by facilitating the rapid development and pilot deployment of prototypes that can address learning challenges and exploit opportunities for better Learning and Development ("L&D") and Continuing Education and Training ("CET") outcomes, including design, delivery and assessment. It is organised as a competition for training providers, organisations with Learning and Development ("L&D") departments, learning experts, solutionists and technology partners to collaborate and present a holistic solution to real learning challenges faced by the training provider, organisation and/or groups of learners. innovPlus could cover any/all of the following areas of innovation:

    ● Pedagogy / Learning Design and Delivery
    ● Learning technology
    ● Training management
    ● Application of skills and workplace performance
    ● Assessment and credentialing
    ● Remote assessment and proctoring
    ● Hybrid Mode
    ● Adaptive Learning
    ● Blended Learning
    ● Workplace Learning

3. innovPlus comprises three rounds of evaluation:

    i.   inlab of Institute for Adult Learning (IAL) will assess if the stated Challenge Statement meets the eligibility criteria and competition guidelines stated in the Terms and Conditions under <u>Annex B</u>.
    ii.   Participating organisations as Challenge Owners ("CO"), who are seeking solutions to their learning challenges, will hear pitches from prospective Solution Partners ("SP") on how their challenges can be overcome and select the partners whose ideas they assess to best meet their needs. The Challenge Owners and their selected Solution Partner(s) will then form a Challenge Team ("CT") to co-develop the ideas into a potential solution.
    iii. The Challenge Teams pitch their solutions in the final round of the competition, known as the innovPlus Presentation Day. On that day, the teams will present how the envisaged solution could deliver the stated learning outcomes with a presentation and demonstration to the innovPlus Panel ("IPP").

4. innovPlus is conducted once every six months. Prototyping grants, each up to **S$200,000**, could be awarded to the winning concepts to develop a prototype[2] for pilot testing with actual learners/users[3] within a maximum duration of 9 months[4].

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[2] A *prototype* is defined as an original and novel model, form or solution, with its primary utility being to advance more effective learning. The key operators in this definition, 'original', 'novel', and 'more effective learning', must be clearly conveyable and verifiable.

[3] *Actual learners/users*, is defined as the persons, intended by the learning challenge, who would benefit from, either by way of learning enabled by or by use of the outputs of, the developed prototype. Pilot testing shall encompass minimally 30% of the **targeted learner/user population**, or 100 learners/users, whichever is lower.

[4] 6 months to complete a workable Proof of Concept with User Acceptance Test, and an additional 3 months to show scaling up of prototype (where applicable) and usability to 30% of targeted learner/user population or 100 learners/users (whichever is lower).

Annex B – innovPlus Challenge and Award Official Terms and Conditions

As part of participating in innovPlus and submitting the innovPlus application form, all participating organisations and individuals agree to accept the following terms and conditions governing the innovPlus Challenge (and all its associated processes) and the innovPlus Grant offer (if applicable):

DESCRIPTION OF THE GRANT

1. The innovPlus Challenge ("innovPlus") is a competitive learning innovation grant challenge that awards a prototyping grant of up to S$200,000 to winning organisations to develop and trial an innovative, feasible and scalable prototype that advances CET practice and learning outcomes. The innovPlus Challenge is organised by inlab of the Institute for Adult Learning ("IAL"). Winning submissions will be as determined by the innovPlus Panel ("IPP") (defined below) in accordance with the prevailing Evaluation Criteria and Terms and Conditions as administered by the innovPlus Secretariat. The innovPlus Grant is funded by SkillsFuture Singapore ("SSG") and is administered by SUSS-IAL, by appointment of SSG. IAL is an autonomous institute of Singapore University of Social Sciences ("SUSS").

ELIGIBILITY

2. The innovPlus Challenge is open to organisations that are a registered business entity in Singapore (a valid ACRA or UEN identifier will be required for application), to participate as prospective Challenge Owners. Government Agencies and Statutory Boards are not eligible to participate[5]. Prospective Challenge Owners will be subjected to financial assessments. Only Singapore-registered business entities may apply to participate as a prospective Solution Partner.

3. Challenge Owner organisation and its choice of Solution Partner(s) shall form a Challenge Team.

4. Challenge Owner organisation[6] can be granted the innovPlus Grant for up to a maximum of two grants at any time within three years from date of the first award. The clock will reset after sitting out of two innovPlus Challenge runs.

5. Solution Partner organisation can be granted the innovPlus Grant for up to a maximum of three grants at any time within three years from date of first award. The clock will reset after sitting out of two innovPlus Challenge runs. Additionally, each Solution Partner is allowed to enrol in a maximum of two Challenge Teams in each eligible run.

HOW TO PARTICIPATE

6. To participate in the innovPlus Challenge/, applicants may apply as either a Challenge Owner or as a Solution Partner. Application must be made using only the following official innovPlus application forms:

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[5] [Govt Agencies list: gov.sg | Ministries (sgdi.gov.sg)](#)

[Statutory Board list: gov.sg | Statutory Boards (sgdi.gov.sg)](#)

[6] Second Grant Award must be to another Department/Division/Business Unit of the awarded organisation.

a.   innovPlus Challenge Statement Application Form (for prospective Challenge Owner);

b.   innovPlus Expression of Interest ("EOI") Form (for prospective Solution Partner, with respect to the specific Challenge Statement published);

c.   Part 1 of innovPlus Challenge Team Formation Submission Form (for enrolment of team formation);

d.   All parts of innovPlus Challenge Team Formation Submission Form; and

e.   Projected budget and project schedule using prescribed innovPlus templates.

Only application forms downloaded from the official innovPlus webpage on SUSS-IAL's website will be accepted into the innovPlus Challenge. Completed forms must be submitted by email to the innovPlus Secretariat and inlab at the email addresses specified in the header section of all application forms. Only fully completed application forms received by the stipulated respective deadlines for each stage of the innovPlus will be considered for acceptance and enrolment into the innovPlus Challenge.

A submission may, in Secretariat's sole and absolute discretion, be rejected if it fails to follow the technical, creative, and legal requirements specified on the innovPlus webpage, the official innovPlus Infokit and in these Official Terms and Conditions. Applications that do not follow all of the instructions, provide the required information in their application form, or abide by these Official Terms and Conditions or other instructions of Secretariat may be disqualified at Secretariat's sole and absolute discretion. All entries that are late, illegible, incomplete, damaged, destroyed, forged or otherwise not in compliance with the Official Terms and Conditions may be disqualified from the innovPlus at Secretariat's sole and absolute discretion. Applications generated by script, macro or other automated means and entries by any means which subvert the entry process are void. All entries become the physical property of SUSS-IAL and Secretariat and will not be acknowledged or returned. Assurance of delivery of entries is the sole responsibility of the Applicant.

Additionally, applicants shall attend the activities organised by the innovPlus Secretariat to improve the capability of the Challenge Teams in identifying the root cause to their challenge and developing the appropriate solutioning. These include the innovPlus Prospectus Briefing, workshops and coaching sessions, and any other sessions deemed relevant to innovPlus participation. Failure to do so could lead to disqualification from the competition.

SUBMISSION GUIDELINES

7.   Submission for evaluation by IPP pursuant to the award of the innovPlus Grant, will be in the following three parts:

a.   Paper submission via the official innovPlus Challenge Team Formation Submission Form and the projected budget and project schedule, by the stipulated deadline, of no less than 21 calendar days before Presentation Day. The paper submission is to be in English. The paper submission must answer the prompting guides as set out in the innovPlus Challenge Team Formation Submission Form;

b.   Presentation and demonstration of any concept mockup/wireframe (where applicable), in English, by (up to) five members of the Challenge Team to the IPP on Presentation Day (as informed by Secretariat) of no more than 15 minutes. This will be followed by engagement with

IPP for up to 15 minutes The session will be conducted in closed-door to only the IPP in the Pitching Room.

The Challenge Team must have all rights, clearances, permissions, approvals and/or consents necessary for their Submission, including, but not limited to, music rights, releases from all persons listed in the submission, location releases for all recognisable locations, and releases from all and any person who participated in the production of the Submission. In the event that the Challenge Team does not have the appropriate rights, the Submission may be disqualified at the Secretariat's sole discretion. SUSS-IAL reserves the right to disqualify any entries if it views their materials to contain contents (e.g. text, sound or images) that in SUSS-IAL's opinion to be offensive, inappropriate, or that will cast innovPlus, Innovation Centre, SUSS-IAL or SUSS in a negative light.

The above specified three parts shall collectively form the Submission of each enrolled Challenge Team, and shall be the basis by which each Challenge Team is evaluated for the Grant. Challenge Teams awarded the Grant, shall be held accountable to the Submission, and be funded to deliver, complete or report on all parts of this Submission, to qualify for a claim on the Grant. Should the Challenge Team be unable to deliver on the Submission, the Team agrees for SUSS, acting through SUSS-IAL, to recover any grant already disbursed, and any liquidated damages resulting from the disbursement, so decided at the absolute discretion of SUSS-IAL.

EVALUATION OF SUBMISSIONS

8. On Presentation Day, all Submissions will be evaluated by the innovPlus Panel ("IPP"), which consists of a panel of institutional/industry/pedagogy experts based on the following evaluation criteria:

   a. Concept

      ▪ Provide grounds to justify why the challenge should be addressed or taken on and how the proposed solution addresses the challenge / opens up opportunity for better quality CET outcomes and delivery; and

      ▪ Extent objectives, goals and desired outcomes can be achieved.

   b. Innovation

      ▪ Extent proposed innovation goes beyond known / existing solutions with (a) clear innovative value and (b) absolute valued added;

      ▪ Potential for spin-offs to be generated from the proposed innovation e.g. in user / learning experiences for other CET professionals, learners and/or organisations; and

      ▪ Evidence of sound pedagogical design underpinning the proposed solution to enhance effectiveness of learning or desired learning outcomes.

   c. Impact and Scalability

      ▪ Demonstrates feasibility of implementation organisation-wide, sector-wide or sizeable segments of the workforce. Solutions includes an evaluation process, success indicators and impact measurement; and

      ▪ Offers potential to also help other enterprises facing similar challenges (i.e. broader application, adaptation and transferability)

d. Project and Implementation Team

▪ Team consists of members from different disciplines

▪ Has a credible and realistic plan, budget and schedule to complete project in specified duration (maximum of 9 months)

▪ Has a clear identification of all stakeholders involved in the project, with the relevant and necessary competencies and track records to ensure successful project delivery

▪ Demonstrates commitment to develop the prototype as envisioned. Presence of a dedicated project manager to oversee implementation and manage the project, including progress reporting, budget management, resource management, etc

e. Implementation Sustainability

▪ Extent of thinking and/or planning for roll-out of solution to rest of organisation, including possible costs and resources required

▪ Indication of project team's continued involvement in the roll-out plan

9. IPP shall have the final decision on whom the eventual Grant awardees shall be. The IPP may declare void any entry should they consider that there are no entries reaching the required standard, whereupon they can award prizes or not as they deem fit. No correspondence will be entered into or comment issued on any matters concerning the evaluation of entries, and no reasons be given for any decision made by the IPP.

10. Awards conferred are not transferable under any circumstances. In the event a winning team is unable and/or unwilling to accept the award or withdraw for whatever reason, SUSS-IAL reserves the right to award it to the next highest scoring team that meets the qualifying criteria.

QUANTUM AND ADMINISTRATION OF THE GRANT

11. Winners of the innovPlus Challenge shall qualify to draw down on a pre-approved innovPlus Grant ("Grant") of up to S$200,000, with a mandatory co-contribution of at least 10% of total prototype development cost, which can be in monetary form or in-kind[7].

12. The maximum grant amount of each award shall be exercised through a Letter of Award ("LOA") between Singapore University of Social Sciences ("SUSS") and the Challenge Owner organisation. Secretariat will consult the winning Challenge Team in working out and finalising the maximum grant amount and detailed budget for approval by SUSS-IAL, to constitute the LOA.

13. The Grant shall be disbursed in 4 tranches, strictly adhering to the stipulated milestone and timeline in the table below:

Tranche & Grant Quantum	Milestone	Milestone Timeline	Typical Grant amount

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[7] To be supported with evidence for actual hourly rate charged (either with the payslip or a salary statement from HR)

1st: 30% of maximum grant amount	Effect of LOA by signature of SUSS-IAL and Challenge Owner organisation	Start of prototype development	up to S$60,000
2nd: 20% of maximum grant amount	Mid-Term Progress Report, Presentation and required claim documents	3 months after start of prototype development	up to S$40,000
3rd: 20% of maximum grant amount	1st part of Final Summative Report, Prototype completion, Presentation and required claim documents	Not more than 6 months after start of prototype development	up to S$40,000
4th: 30% of maximum grant amount	2nd part of Final Summative Report, Pilot completion and Evaluation, Final Presentation and required claim documents	6 to 9 months after start of prototype development	up to S$60,000

Besides the first advance disbursement of 30%, subsequent funds will only be reimbursed on the submission and approval of the required reports and expenses incurred according to the approved budget. Proof of payment needs to be furnished before the claim can be approved.

CONDITIONS AND REQUIREMENTS OF AWARDED CHALLENGE TEAM AND PROTOTYPE

14. The innovPlus Grant is awarded on the basis of the presented prototype solution (and its proposed functionalities, features, capabilities, outputs and deliverables) and the envisioned scalability and roll out of the prototype to its intended users. As the implementation team as submitted in the application is evaluated as a criterion, any change to the composition of the Challenge Team after award of Grant must be submitted in writing, through Secretariat, for SUSS-IAL's prior approval. Failure to do so could lead to automatic disqualification.

15. The awardees of the innovPlus Grant accepts the grant by signing a Letter of Award ("LOA") within 8 weeks from Presentation Day, comprising the terms and conditions governing the grant, including piloting the prototype with learners, submitting a pre- and post-evaluation report of the prototype's strengths and weaknesses and conferring non-exclusive, irrevocable, free right and license to the use of the prototype and all intellectual property and information generated resulting from the performance of the Project to SUSS-IAL for non-commercial, academic, research and development purposes, including, but not limited to, the purposes of proliferating the knowledge gained

therefrom to the training and adult education (TAE) community. For the avoidance of doubt, the terms of the National IP Protocol[4] shall apply. For the avoidance of any doubt, the terms and conditions in the LOA are strictly non-negotiable.

16. In general, the prototype development grant offered in the innovPlus Grant will support the following cost items:

    ● Fees of expert services from entities (organisation or individual) outside the composition of the Challenge Team, that are required in the areas of technical and development work, or for purposes such as research or advice, shall be limited to a cap of 10% of the approved grant amount;

    ● Professional services as charged to the Challenge Owner organisation by the Solution Partner(s) of the Challenge Team;

    ● Supplies that are necessary for the overall operation, development and pilot of the awarded solution;

    ● Equipment that have direct contribution to the overall operation, development and pilot of the awarded solution;

    ● Software and / or other licensing that are essential for the project and for the duration of the project; and

    ● Others – items not in the above list but necessary for the conduct and successful delivery of the project could be included in the funding request, subject to the approval of SUSS-IAL.

17. The grant will not support cost items that do not contribute directly to prototype development such as marketing, networking and publicity. It will also not support capital equipment not essential to the project, maintenance cost for software licensing, GST, and travel (local and overseas).

18. The Challenge Team is required to prove cost transparency and reasonableness on request by SUSS-IAL on all cost items it is claiming for funding.

19. No claims can be made on any items that are not in the budget submitted together with the proposal made in the Challenge Team Formation form.

20. SUSS-IAL shall not be under any obligation to make any payment to the Challenge Team on claims of:

    ● unsupported cost items listed in the approved budget;

    ● qualified expenses but which no adequate proof of expenditure and proof of payments has been furnished;

    ● qualified manpower costs but which no adequate proof of cost reasonableness provided upon request;

    ● any amount that exceeds the cost items listed in the approved budget; or

- any amount that is based on expenditure / payment not in compliance with prevailing procurement practices in terms of not being value for money.

21. The Challenge Team shall be solely responsible for its own partnership management and team work, including Intellectual Property ("IP") arrangements and development / implementation plan.

22. The Challenge Team shall undertake that it will not infringe the intellectual property rights or any other rights of any person, and will comply with all applicable laws at all times.

23. The winning Challenge Team shall grant consent to SUSS-IAL disclosing, in such manner as SUSS-IAL deems appropriate, in its (SUSS-IAL's) publicity materials of the team's participation, and setting out and publishing in its publicity materials, in such manner as SUSS-IAL deems appropriate, information regarding the participation, including:

    a. the materials submitted for the innovPlus Challenge and any other information pertaining to its proposal;

    b. the contents of the findings or results, report(s) or any part thereof the awarded project; and

    c. information arising from or pertaining to the reports or any presentation, seminar, conference, or symposium conducted by the team.

24. The Challenge Team agrees to indemnify and hold harmless SUSS-IAL against any and all actions, claims, demands, and proceedings in any way arising out of or connected with SUSS-IAL's use, reproduction, publication or dissemination in the manner mentioned above, and all costs, expenses, losses and liabilities, howsoever arising.

25. The Challenge Team shall ensure that all information about the team or proposal provided to SUSS-IAL pursuant to its participation and for the subsequent purposes of or connected with making claims, are true, accurate and complete to the best of the team's knowledge. In the event that it comes to the knowledge of the team that any information already provided is or has become inaccurate, untrue, incomplete or misleading, the team shall immediately notify SUSS-IAL of such inaccuracy, incompleteness, misleading nature, or untruthfulness, and provide such information in connection therewith as SUSS-IAL may request.

26. The innovPlus Grant will be withdrawn if:

    a. the Challenge Team is unable to perform the obligations set out in the LOA; or

    b. the Challenge Team commits a breach of any of the provisions of the LOA.

SHOWCASING OF INNOVATION DEVELOPMENT

27. The Challenge Team shall undertake to collaborate with SUSS-IAL in the development of case studies and/or research papers detailing the experience and insights gleaned from the prototype development and any trialing/pilot that ensued. No confidential or private information will be revealed through this effort.

28. The Challenge Team shall undertake to allow SUSS-IAL to disseminate the case studies and/or research papers in various formats including printed materials, online articles, video, audio, and other digital recordings to any individuals or organisations that it deems will benefit from the learning and sharing; and

29. The Challenge Team shall undertake to agree for SUSS-IAL to profile the companies and individuals involved, as well as the solution and/or prototype on the following platforms:

    a. SUSS-IAL professional development seminars and workshops;

    b. SUSS-IAL partner showcase for a period of 12 months;

    c. SUSS-IAL conferences and events, e.g. the Adult Learning Symposium and Learning Roadshows; and

    d. Conferences and events SUSS-IAL is participating in and where the themes / areas covered are aligned and of interest to the participants.

30. The full and prevailing terms and conditions of the innovPlus Challenge and innovPlus Grant can be found in the Challenge Statement application form, Expression of Interest and Challenge Team Formation submission form, and all applications submitted to the Challenge will be deemed to have accepted these terms and conditions.

31. SECRETARIAT of the innovPlus Challenge and innovPlus Grant is the inlab, acting on behalf of the Institute for Adult Learning ("IAL"), of 11 Eunos Road 8, #05-03, Singapore 408601, wherein IAL is an autonomous institute of the Singapore University of Social Sciences.

GENERAL

32. Depending on the prevailing implementation challenges and needs, innovPlus Secretariat reserves the right to amend and change the terms and conditions with approval from the Director of Innovation Centre, that complies with the intent and spirit of innovPlus.

33. SUSS-IAL reserves the right to disqualify any participant at any point in time during the innovPlus Challenge.

SUSS-IAL reserves the right to change these terms and conditions at any time without prior notice. In the event that any changes are made, the revised terms and conditions shall be posted on the innovPlus website immediately. Please check the latest information posted herein to inform yourself of any changes.