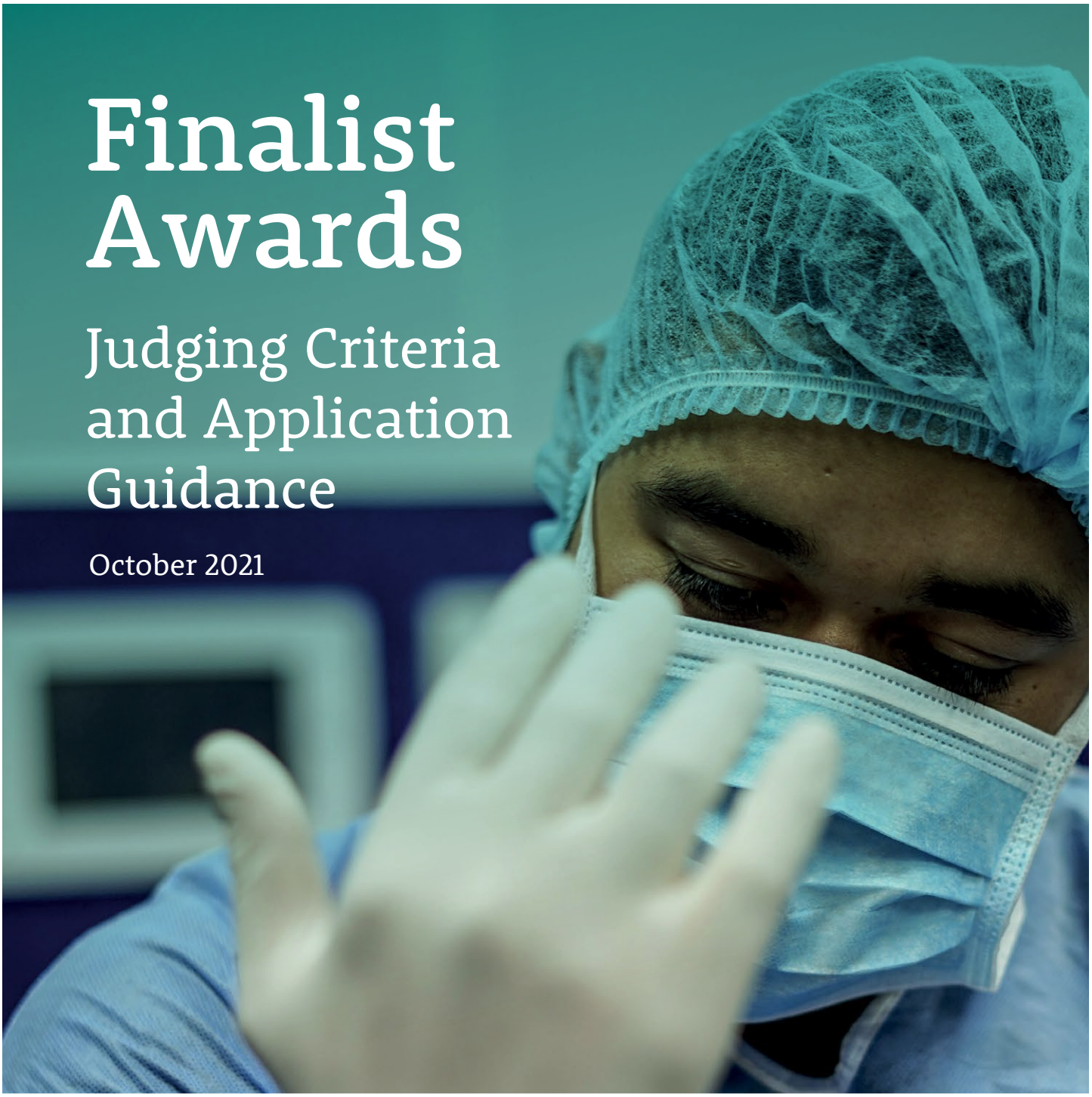

Finalist Awards

Judging Criteria and Application Guidance

October 2021

Global Surgical Training Challenge

INTUITIVE Foundation

nesta Challenges

MIT SOLVE

RCSI

APPROPEDIA

Global Surgical Training Challenge

Finalist Awards

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Introduction

This document is for applicants to the Global Surgical Training Challenge Finalists Awards. Below you will find.

- An introduction to the Finalist Awards.
- An assessment timeline.
- A description of the assessment process.
- The Judging Criteria.

If you have read this document and still have questions, or would like to speak to someone, please contact the team at **globalsurgicaltraining@challenges.org**

The Finalist Awards

The next phase of the Global Surgical Training Challenge (GSTC) will see three to five teams each be awarded up to $500,000 USD to further develop their original surgical training module and develop an additional two to three modules per team from February to November 2022. During this period an external evaluation of their original prototype will be conducted and innovators will be expected to iterate on the design of their original prototype to maximise impact.

To decide which of the teams (applications to the Finalist Awards are not limited to currently competing teams), will receive these additional grants, or Finalist Awards, the GSTC **Judging Panel** will meet in December 2021 to review applications with support from external accessors and the GSTC management team.

Assessment Timeline

Date	Stage
18 Oct 2021	Applications open.
12 Nov 2021	Applications close.
W/C 15 and 22 Nov	**Eligibility Check** Technical assessment of submitted prototypes.
W/C 29 Nov and 6 Dec	Judging Panel review submitted prototypes and applications for Finalist Awards.
13 Dec	Judging Panel meeting to decide winners of Finalist Awards.
W/C 20 Dec	Successful teams notified, contracting begins.
W/C 24 Jan	Public announcement of winners of Finalist Awards.
W/C 31 Jan	Active contract period for Finalists begins.

Assessment Process

Assessment platforms

Applications to the Finalist Awards will take place across two platforms;

- **Appropedia** – all prototype surgical training modules will be hosted on Appropedia and both technical assessors and the Judging Panel will utilise the applicant's Appropedia pages to assess their prototype.
- **Blackbaud** – Intuitive Foundation's grant management system, Blackbaud will be familiar to those who applied for a Discovery Award grant. Here, an application form will be used to flag sections of the applicant's Appropedia pages relevant to each judging criteria for the Judging Panel and applicant's will be asked to detail their proposal for additional training modules, their delivery plan and budget and an evaluation protocol for the external evaluation to take place in the next phase. **An example application form and link to the application portal will be available later in 2021**.

Support for building your Appropedia pages

All applicants to the Finalist Awards will be expected to have complete and easy-to-use Appropedia pages to host their surgical training modules. From these pages, the technical assessors and Judges will have access to all materials needed to assess the prototype modules. Assessors will also use information provided in the application to map the judging criteria to the places in the Appropedia pages where they are addressed, as well as to judge aspects of the criteria such as evaluation protocols which are not posted publicly.

Draft Appropedia pages for the ten Discovery Award winning teams will go live following the prototype showcase on 18 August 2021, with teams coached on the build of these pages at the Appropedia workshop on 22 July 2021. Entrants to the Finalist Awards outside the current cohort of innovators should utilise materials in the **GSTC toolbox** to support their Appropedia development work.

Technical Assessment

Following submission of your application form, linking to your Appropedia pages, a group of technical assessors will be invited to assess your prototype surgical training modules for ease-of-use and your model/simulator for buildability over a two week period. The profile of these assessors and criteria for assessment used by these assessors will be published closer to the Finalist Award application window opening.

Judging Panel Meeting

Following submission of applications and technical reviews of the submitted prototypes, the Panel will have two weeks to review both the original surgical training modules prototypes and future plans for additional modules, associated budget/delivery plans and evaluation protocol. The Panel will then meet to rank teams against the Judging Criteria and confirm the three to five teams to receive Finalist Awards.

Announcement of Winners

As soon as possible following the Judging Panel meeting, the GSTC management team will contact successful teams and begin the contracting process. A public announcement will be made in late January 2021, with all unsuccessful teams notified prior to this.

Judging Criteria

The high level GSTC Judging Criteria remain the same throughout the Challenge. Here teams who were part of the Discovery Award process will recognise the same criteria used in the Discovery Award assessment process but amended to reflect the increased level of development of projects.

Part One – Assessing your prototype surgical training module

Applicants to the Finalist Awards will have created a prototype surgical training module that will enable surgical practitioners and trainees to learn and assess the progress of gaining surgical psychomotor skills without requiring the presence of a teacher. All materials relating to the build, use and self-assessment of this prototype surgical training module will be held on the corresponding Appropedia page(s).

Judges will have access to these pages and the team's will be asked in their application form to link to the specific sections of their Appropedia pages that address the judging criteria. No additional information will be provided to the Judging Panel to allow assessment of these prototype modules, so team's must ensure their Appropedia pages are easy to navigate and complete.

Criteria 1. Innovation and Impact

Assessment Area	Your module should cover
Problem	**Your module should cover** • The clinical training problem your surgical training module addresses, posed in the format: *"Allow [target practitioner(s)] to become confident and competent in performing [identified psychomotor skill(s)] as part of [surgical procedure(s)] performed in [target environment]"* • You should explain why you chose this problem and what the impact of using your surgical training module will be in your region and globally.
Simulation	**Your module should cover** • How the identified psychomotor skill(s) will be acquired by the user of your prototype surgical training module. Please address both why you chose the particular technology(ies) and how you addressed the shortcoming of that type of simulation in teaching the performance of a physical skill. Please also address how the user's learnings will directly translate into clinical performance of that skill.

Procedure	**Your module should cover** • How the physical simulator(s) has been integrated into the complete surgical training module, including how the elements that do not require teaching through physical simulation (for example, anatomical knowledge, clinical decision making, pre- and post-operative management) have been integrated.
Self-Assessment	**Your module should cover** • A description of the methods you used to create your module's self-assessment framework. Self- assessment of the quality of the skill acquisition must include some mechanism for the user to self-generate targeted feedback which enables the user to: ensure they are practicing the appropriate skills; modify their performance to improve competence; and determine when they have practiced to a sufficient level of mastery to perform the procedure in a patient.
Innovation	**Your module should cover** • How your module(s) is innovative i.e. better than or more effective than traditional approaches available in that [target environment] to your [target practitioner(s)].
Evaluation	**Your module should include** • A description of how you iterated on your original prototype design following user testing throughout the development of your prototype.

Criteria 2. Adoption in resource-constrained settings

Assessment Area	Your module should cover
Users	**Your module should cover** • Who are your intended users and how have you tailored the design of your surgical training module prototype to ensure their needs are met? • How have you considered adoption in low resource settings in the design of your surgical training module?
Reproducibility	**Your module should cover** • How have you ensured reproducibility of your module in its intended place of use? Highlight design choices for your module undertaken to ensure replicability.
Accessibility	**Your module should cover** • How have you ensured that surgical practitioners from anywhere in the world will be able to engage with the content without barriers or gate keeping?

Part Two – Assessing your additional modules development proposal.

Teams applying to the Finalist Awards should be able to demonstrate the skills, commitment and capacity needed to deliver two to three additional surgical training modules per team and to undertake an evaluation on their current prototype. Teams will need to clearly articulate their planned delivery and associated budget for this work. Plans should be ambitious yet achievable within the timeframes given.

Criteria 3. Team Capability

Assessment Area	Evidence Required
Your Team	**In the application form** • Please tell us about your team, highlighting your educational, clinical and technological leads and any changes to team composition since your original application (if applicable). You must continue to have three leads in each area, with your project lead based in a LMIC.
Evaluation Protocol	**In the supplementary materials** • The Finalist delivery phase includes both internal and external evaluation of your current prototype. Please attach an evaluation protocol that your team and the external validators can use to evaluate your current prototype (**evaluation guidance attached**). NB. The external validation process will be paid for by GSTC and carried out by an institution of their choosing. You will be informed of the results throughout the process and be given an opportunity to adapt your prototype based on results from the evaluation process before submission to the Grand Prize.
Iteration of current prototype	**In the application form** • Please describe any additional development work currently planned for your current prototype presented in this application (we appreciate further development work will likely be undertaken following the results of the evaluation studies).
Additional module development	**In the application form** • For all additional modules, teams will be required to submit a proposal similar to that submitted in the Discovery Award application form, covering criteria 1 and 2. Please see Appendix I. for example proposal.
Delivery Plan and Budget	**In supplementary materials** • Please lay out your development plan for your surgical training modules and provide detail of all the major milestones you are anticipating during the active grant period between February 2022 to the end of October 2022.

Appendix I. Proposal for additional surgical training modules

Applicants to the Finalist Awards will be asked to detail in their application form the additional two to three modules they intend to build in the Finalist development phase.

The application form to the Finalist Awards will include the below questions for the additional modules. A separate proposal within the main body of the application form should be submitted for each newly proposed module. A full proposal should be submitted for the first additional module. In the proposals for subsequent modules, the sections that would be the same for each module may reference the first proposal. At a minimum there must be a separate problem statement for each proposed module.

Criteria 1. Innovation and Impact

Assessment Area	Application Questions
Problem	• State the clinical training problem you are trying to solve, posed in the format: *"Allow [target practitioner(s)] to become confident and competent in performing [identified psychomotor skill(s)] as part of [surgical procedure(s)] performed in [target environment]".* • Explain why you chose this problem and what the impact would be in your region and globally if you succeed in solving this problem.
Simulation	• Explain how the [identified psychomotor skill(s)] will be acquired by the user using the proposed simulation technology/ies. • Please address both why you chose the particular technology/ies and how you are addressing the shortcomings of that type of simulation in teaching the performance of a physical skill. Please also address how the user's learnings will directly translate into clinical performance of that skill.
Procedure	• For the aspects of the [surgical procedure(s)] surrounding the skills that you are teaching that do not need to be taught through physical simulation (for example, things like anatomical knowledge, clinical decision making, pre and post operative management), explain how you would address providing this content to the user and how the physical simulators would be integrated into the complete [surgical procedure(s)] module.
Assessment	• Self- assessment of the quality of the skill acquisition must include some mechanism for targeted feedback which enables the user to : ensure they are practicing the appropriate skills; modify their performance to improve competence; and determine when they have practiced to a sufficient level of mastery to perform the procedure in a patient. Describe the methods you propose to use for self-assessment in this framework.

Clinical Evaluation	• Describe the methods you will use to test that the simulator(s) and assessment tool(s) you develop will translate into clinically valid skills.
Innovation	• Explain how these modules will be innovative. i.e. better than or more effective than traditional approaches available in that [target environment] to your [target practitioner(s)].

Criteria 2. Adoption in resource-constrained settings

Assessment Area	Application Questions
Users	• What can you tell us about your potential users? What are their needs? • What do you consider crucial to help you drive adoption in resource-constrained settings?
Reproducibility	• How will you ensure that your module is reproducible in its intended place of use? What kind of design choices and handover documentation do you envision to ensure replicability? • Considering your proposed technology, please detail risks associated with the reproducibility of your training module. • Please detail the costs, materials, tools and expertise required by the end user to build, install, operate and maintain the module within the intended place of use. • Please tell us how this module will offer value for money in comparison to existing approaches? • Please describe how your target users will obtain the materials required to build your module and how will you ensure the materials are readily available and/or can be made locally with locally produced or imported materials.

Appendix II. Guidance on developing the Evaluation Protocol

The evaluation protocol that you submit with your proposal for the Finalist Awards should be aimed at evaluating how well your simulator and training materials meet the primary goal of the Global Surgical Training Challenge (GSTC) – that is allowing a clinician to self train to be confident and competent in the clinical procedure you have chosen.

Classical lab-based simulation evaluation techniques may be used and can be very helpful in bolstering confidence that a simulator is fit for purpose. The evaluation protocol should cover measuring the acquisition of actual clinical skills and clinical practice of those skills in patients by the target user of the first simulator that a team has developed, not just verification of the simulator in the lab. How you do this will be specific to your simulator and target clinical procedure.

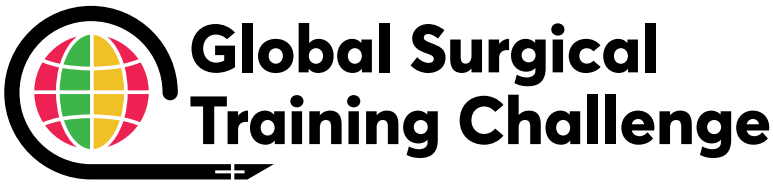
The proposing team is encouraged to run this protocol themselves to receive direct feedback from their study subjects, but it should also be written so that a third party can, in parallel, independently run the same protocol, testing out in addition to the clinical quality of the end skills acquired by the user, the completeness of the simulator construction instructions and the educational material accessibility on the Appropedia page for the skill training and the other on-line materials that it links to.

It is anticipated that these studies will take as long as six-to-nine months, and should be ready to be started soon after the beginning of the Finalist Award phase.

Examples of studies like this that have been done include a crossover study with surgical interns where differences in clinical confidence were measured after exposure to simulation based training: **pubmed.ncbi.nlm.nih.gov/20510808**

Or pre/post studies like what was done at Northwestern after they introduced simulation based training for central lines and measured the effect by looking at hospital-wide central line infection rates pre- and post-introduction of training: **jamanetwork.com/journals/jamainternalmedicine/fullarticle/1108514**

The key point of both of these studies is that the outcome measures are purely clinical – numbers of procedures being done and line infection rates.



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