Discovery Awards

Mentoring Programme Handbook

March 2021

Global Surgical Training Challenge

INTUITIVE Foundation

nesta Challenges

MIT SOLVE

RCSI

APPROPEDIA
the sustainability wiki

How to use this handbook

This handbook is for Discovery Award Winners of the Global Surgical Training Challenge and contains information on the Mentoring Programme led by The Royal College of Surgeons in Ireland.

- An introduction to the Mentoring Programme.
- A who's who.
- Timeline for the Programme.
- Key information on Challenge stages.
- Key information on Challenge resources.
- A team-led FAQ.
- Key contacts.

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

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Global Surgical Training Challenge

Discovery Awards
Mentoring Programme Handbook

Introduction

In an effort to support you as Discovery Award winners, the Global Surgical Training Challenge (GSTC) partners; Nesta Challenges, MIT Solve, Appropedia, and the Intuitive Foundation have partnered with the Royal College of Surgeons in Ireland (RCSI) to establish a mentoring programme. This programme aims to create a learning community, with structured mentorship and opportunities for peer learning. The mentorship programme will continue for the length of both the Discovery Award and Finalist delivery phases.

At the kick-off meeting on the 18th of February, you were invited to meet with your assigned Mentor Manager from the RCSI. You will meet with your Mentor Manager regularly so they can uncover your needs, discuss progress, build key relationships with Subject Matter Experts and adapt the mentorship programme to your evolving needs.

Over the coming weeks and months, your Mentor Manager will work to link you to a large network of Subject Matter Experts to provide project-specific support. These experienced individuals have expertise in the following areas:

- Management and leadership;

- Education and assessment;

- Simulation technology and;

- Scaling simulation innovations for impact.

You will by now have completed your needs assessment developed by MIT Solve. The goal of the assessment is to highlight the needs of the cohort and to inform development of events and tools needed by the team as a whole. It will also encourage peer-to-peer support on these issues throughout this development period.

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Who's who

Below you will find details of all Discovery Award winners, your assigned Mentor Managers and the Subject Matter Experts. All introductions to other teams and to specific Subject Matter Experts should be made through your Mentor Manager.

Discovery Award Winners

Team name	Team lead	Project
ALL-SAFE	Dr David Jeffcoach	Laparoscopic treatment of ectopic pregnancy
ASAP: AMPATH Surgical App	Dr JoAnna Hunter-Squires	Open appendectomy
CrashSavers	Dr Sabrina Asturias	Hemorrhage control techniques
ETALO: Education To Advance Limb-Saving Options for Open Fractures and Osteomyelitis	Dr Moses Muhumuza Fisha	External fixation placement and debridement of infectious material
IntelliVision	Dr Ramesh Makam	Laparoscopic cholecystectomy
OpenSurgiSim	Dr Vikas Karade	Bone deformity correction
Operation Smile	Dr Priyanka Naidu	Local flap design and dissection
Pediatric Colostomy Training	Dr Emmanuel Adoyi Ameh	Colostomy procedures performed in newborns
Tibial Fracture Fixation	Dr Habila Umaru	Tibial fracture open reduction internal fixation
SELF-Training: Set Every Little-heart Free by Training closure	Dr Marissa Seepersaud	Patent ductus arteriosus

Mentor Managers

Name	Position	Email	DA Team 1	DA Team 2
Mr Eric O'Flynn	RCSI Inst. of Global Surgery – Programme Director for Education, Training & Advocacy	ericoflynn@rcsi.ie	ALL-SAFE	OpenSurgiSim
Dr Clare Condron	RCSI SIM, Director of Simulation Education	ccondron@rcsi.ie	Operation Smile	IntelliVision
Dr Claire Mulhall	RCSI SIM, Research Programme Manager	clairemulhall@rcsi.ie	CrashSavers	SELF-Training
Dr Gozie Offiah	RCSI, Senior Clinical Lecturer, General Surgeon, Beaumont Hospital	gozieoffiah@rcsi.ie	Paediatric Colostomy Training	Tibial Fracture Fixation
Dr Marie Morris	RCSI Dept. of Surgical Affairs, Senior Lecturer	mariemorris@rcsi.ie	ETALO	ASAP

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Subject Matter Experts

This list is not final and will be updated regularly with new Subject Matter Experts.

Area of expertise	Name	Position
Management and Leadership Team Development	Prof. Ciaran O'Boyle	Director, Centre for Positive Psychology, RCSI
Management and Leadership Project needs analysis and impact evaluation	Prof. Mark Shrime	Chair of Global Surgery, Institute of Global Surgery, RCSI
	Dr Jakub Gajewski	Programme Director, Research, RCSI
Education and Assessment Clinical educational theory	Prof. John Tarpley	Professor of Surgery and Head of Department, University of Botswana
	Prof. Jan Illing	Health Professions Education Centre, RCSI
Education and Assessment Assessment	Prof. Richard Arnett	Director of Psychometrics, Quality Enhancement Office, RCSI
	Ms Dara O'Keefe	Simulation Lead, Surgical Affairs, RCSI
	Dr Jane Holland	Senior Lecturer, Anatomy And Regenerative Medicine, RCSI
Education and Assessment E-learning methodologies	Dr Orleigh Bogle	Director, Medical Content Strategy and Analysis, Touch Surgery
	Dr Dara Cassidy	Head of Online Education, RCSI
Education and Assessment Simulation in surgical training in low-resource contexts	Prof. Dhananjaya Sharma	Professor, Head of Department of Surgery & General Surgeon, Government Medical College and Allied Hospitals
	Dr Tihitena Negussie Mammo	Global Clinical Director and Head of Programs for East Africa, Lifebox
Education and Assessment Simulation in surgical training in specific specialties/techniques	Dr Ruchi Garg	Gynecologic Oncologist & Partner, Mid-Atlantic Gynecologic Oncology and Pelvic Surgery Associates
Simulation Technology Design thinking for simulation	Dr Walter Eppich	Chair of Simulation Education and Research, Simulation, RCSI
Simulation Technology Models and Materials – Biomedical	Dr Leonie Heskin	Simulation Technology Lead in Postgraduate Surgical Education, Surgical Affairs, RCSI
	Mr Miroslav Voborksy	Clinical Skills And Simulation Technician, Simulation, RCSI
	Mr Adam Roche	Senior Clinical Skills And Simulation Technician, Simulation, RCSI

Subject Matter Experts (continued)

Area of expertise	Name	Position
Simulation Technology Models and Materials – Synthetic	Dr Leonie Heskin	Simulation Technology Lead in Postgraduate Surgical Education, Surgical Affairs, RCSI
	Mr Caoimhin O'Conghalie	Clinical Skills And Simulation Technician, Simulation, RCSI
	Ms Rebecca Kirrane	Clinical Skills And Simulation Technician, Simulation, RCSI
Simulation Technology AR & VR	Mr Donncha Ryan	Lead Technology Officer, Surgical Affairs, RCSI
Simulation Technology AI & Data Science	Mr Fintan Guihen	BI Development and Data Architecture Lead, IT Department, RCSI
Images, Video and Sound Photography	Mr Antonio Osuna	Communication Specialist, Institute of Global Surgery, RCSI
Images, Video and Sound Video & Audio	Mr Conor Dunphy	Web and e-learning content developer/ Videographer, Surgical Affairs, RCSI
	Mr Tim Lawler	Clinical Skills and Simulation Technician, Simulation, RCSI
Scaling Simulation Innovations for Impact	Mr Donncha Ryan	Lead Technology Officer, Surgical Affairs, RCSI

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Challenge timeline

Below are key dates for the Mentor Programme and Challenge. The Challenge management team will send corresponding diary holds. More details will be added over time.

Please note: not included here are dates for one-one sessions between teams, Mentor Managers and Subject Matter Experts, which will be organised directly between teams and Mentor Managers.

Date	Event	Further details
28/01/2021	**Public announcement of Discovery Award Winners**	Video highlights from this event can be found here.
Jan-March 2021	**First grant payment milestone**	Teams sign grant agreements and receive 50% of funds.
18/02/2021	**Mentoring Programme kick-off meeting**	RCSI introduced the Mentorship Programme, with all teams, Mentorship Managers and Subject Matter Experts. Recording here.
11/03/2021	**Team mentorship training session**	RCSI introduced the teams to the principles underlying successful mentorship. Recording here. More details below.
28/04/2021	**Workshop 1**	MIT Solve will facilitate three workshops to support learning between cohort teams. The themes, content, and agendas for each workshop will be shared starting in early April.
15/05/2021	**Second grant payment milestone** Released on submission of brief status update.	To release the next 25% of funds, teams will be asked to complete a short status update on their progress against their development plan.
10/06/2021	**Workshop 2**	MIT Solve will facilitate three workshops to support learning between cohort teams. The themes, content, and agendas for each workshop will be shared starting in early April.
22/07/2021	**Workshop 3**	MIT Solve will facilitate three workshops to support learning between cohort teams. The themes, content, and agendas for each workshop will be shared starting in early April.
18/08/2021	**Prototype Showcase**	More details below.
31/08/2021	**Final grant payment milestone** Released on satisfactory attendance at Prototype Showcase.	All teams who attend the Prototype Showcase will receive the final 25% of their grant.
01/11/2021	**Finalist Awards – Applications Open**	Applications to the Finalist Awards will be made through the Intuitive BlackBaud grant system and Appropedia. More details below.
26/11/2021	**Finalist Awards – Applications Close**	
TBC/01/2022	**Finalists Announcement**	

Challenge stages

Prototype showcase

On the **18th of August 2021**, all Discovery Award teams will meet together (in-person or virtually, to be confirmed) with members of the GSTC Judging Panel and Challenge management team.

This **one day pitch event**, run by MIT Solve, will allow innovators the opportunity to workshop issues with peers and to receive valuable feedback from the Judging Panel before submission to the Finalist Awards in November 2021.

More details on the timeline for the day will be provided in this document in due course. The day will be made up of both private sessions between individual teams and the Panel and group workshop sessions.

Please note: participation in this event is mandatory for the release of the final payment of your Discovery Award grant.

Photo by JC Gellidon on Unsplash

Finalist awards

On 1st November 2021, the Finalist Awards will open to applications from the 10 Discovery Award teams. These awards (up to $500,000) are grants to allow teams to further develop and improve their original prototype and to develop further prototypes.

The applications will be assessed against the following criteria.

Eligibility	Entrants must be eligible to compete as assessed against the Eligibility Criteria.
Handover Documentation	At a minimum: • Simulation-based training module handover documentation (how-to manuals detailing procurement, assembly and operation of training modules together with the educational/theoretical portion of the module). • Skill self-assessment framework. • A library of expert videos demonstrating the skills being trained (or other innovative digital media including augmented or virtual reality).
Validation Protocols	Proposed internal and external validation protocols for the next phase of development.
Budget	Proposed budget required to develop additional proposed prototypes (from $100,000 to $500,000 depending on the level of technological complexity).
Application Forms	Completing a template provided that will detail: • The effectiveness of your simulation training module at delivering the training and self-assessment. • Testing you have undertaken to test the prototype with the target users and demonstrate your lessons learnt. • How your prototype addresses the risks of teaching anti-skills and 'gaming' simulation results as well as measures taken to prevent them from happening. • How your prototype addresses any potential risks of simulation aftereffects (e.g. feeling of dizziness after VR training) as well as measures taken to prevent them from happening.

Challenge resources

Platform

Surgical modules created as part of the Challenge will be freely available for download on the newly-created GSTC platform hosted by Appropedia, and will be packaged with your know-how on how to build the model and psycho-motor skills self-assessment.

To support your understanding and use of the Appropedia platform, the Challenge partners have hired a product learning specialist, Mr Hanif Wicaksono. For any queries regarding the platform, please reach out to him (details below).

Training on the platform will be organised later in the Mentor Programme (likely as one of the three MIT Solve-led workshops) and details on this will be provided shortly.

Name	Position	Email
Hanif Wicaksono	Learning Product Specialist	hanif.wicaksono@solve.mit.edu

Toolkit

As well as using the GSTC platform on Appropedia to build your surgical training modules, you should also utilise the toolbox, built specifically for the Discovery Award winners to support your needs as you create your surgical training module and learn to use Appropedia.

Both your Mentor Managers and Mr Wicaksono will provide further details on the content and uses of this toolbox, but we encourage you to browse the content yourselves.

Supporting frameworks for mentees

Those team members who attended the team training session with RCSI on successful mentoring were introduced to the following concepts, more details in the meeting recording found here.

Principles underpinning successful mentoring

- **Mentee led process** – not a passive endeavour.

- **Contracting up front** is essential. There needs to be clarity on:
  - Purpose of relationship
  - Potential topics to discuss
  - Practical arrangements

- **Respect for the Mentors time** – thorough preparation before sessions.

- **Honesty and openness** will lead to much richer and more useful mentoring discussions.

- **Don't just focus on problems! Listen out for solutions**. Have a group mindset.

GROW Framework – for coaching conversations with Mentorship Managers

You will be using the GROW framework for meetings with your Mentorship Managers to help you guide the framework of the conversations you will have throughout the process. The framework will discuss where you are going, what are the steps and how you will get there. This will help you access and measure your success when you actually achieve your goals.

The GROW Framework consists of:

G **Goal**
- Help the team set and articulate goals for their learning.
- Agree priority areas of focus.
- Get clarity on the real challenge the team is facing.

R **Reality** (Where are you now?)
- Invite self assessment.
- Acknowledge strengths and achievements to date.
- Check assumptions/help to reframe.

O **Options** (What could you do?)
- Help breaden their thinking about what's possible.
- Brainstorm a wide range of solutions or options.
- Invite them to make choices.

W **What will you do?**
- Commit to action.
- Identify possible obstacles and how to overcome them.
- Agree timescales and support needed.

PEARLS Framework – for coaching conversations with Subject Matter Experts

You will be using the PEARLS framework (Figure 1.) during your one hour meetings with your Subject Matter Experts to get the best from your time together.

Here are some of the main goals for the learning and coaching conversations:

- Establish a safe space for dialogue.

- Identify strengths and obstacles.

- Understand any issue(s).

- Offer targeted solution(s).

- Clarify next steps.

A consultation should be thought of as a meeting between two experts:

1. The Subject Matter Expert who will provide expertise on the topic at hand.

2. The Team who will provide expertise on their idea and vision.

The Subject Matter Expert is a partner who will work with the team to:

- Explore the situation.

- Get the best possible handle on the issue.

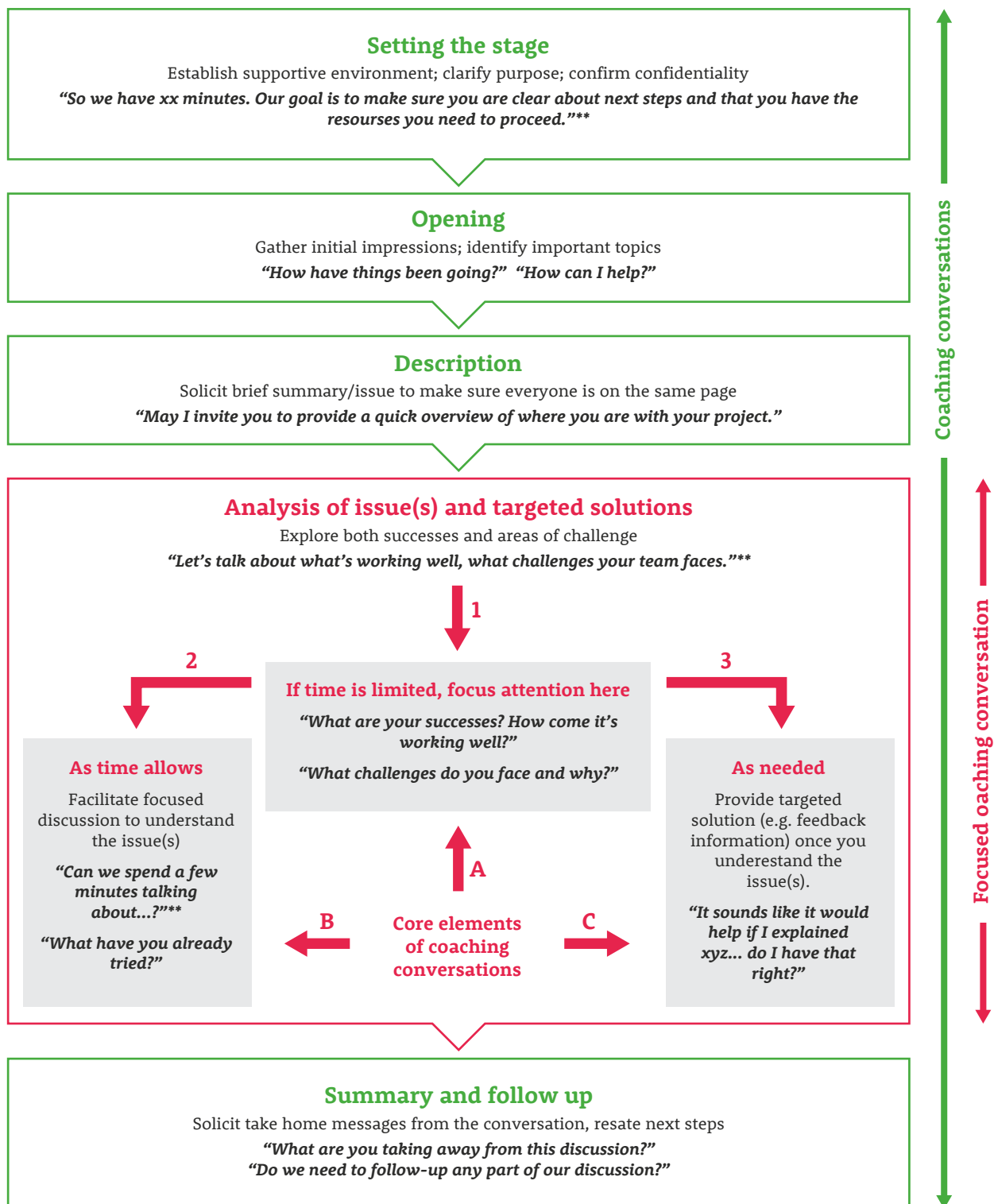- Discuss options and fine tune solutions as necessary.

Core elements of the Coaching Conversation:

- Identify areas of strength and areas requiring support.

- Seek to understand the issue(s).

- Diagnose learning needs.

- Provide targeted solution(s) to the challenges the teams and the SMEs have identified (e.g. feedback, subject matter expertise).

Figure 1. PEARLS approach to clinical debriefing and coaching conversations

Redrawn from Eppich *et al.* 2016, *Let's Talk About It: Translating Lessons From Health Care Simulation to Clinical Event Debriefings and Coaching Conversations.*

Setting the stage
Establish supportive environment; clarify purpose; confirm confidentiality
*"So we have xx minutes. Our goal is to make sure you are clear about next steps and that you have the resourses you need to proceed."***

Opening
Gather initial impressions; identify important topics
"How have things been going?" "How can I help?"

Description
Solicit brief summary/issue to make sure everyone is on the same page
"May I invite you to provide a quick overview of where you are with your project."

Analysis of issue(s) and targeted solutions
Explore both successes and areas of challenge
*"Let's talk about what's working well, what challenges your team faces."***

1

If time is limited, focus attention here
"What are your successes? How come it's working well?"
"What challenges do you face and why?"

2

As time allows
Facilitate focused discussion to understand the issue(s)
*"Can we spend a few minutes talking about...?"***
"What have you already tried?"

3

As needed
Provide targeted solution (e.g. feedback information) once you underestand the issue(s).
"It sounds like it would help if I explained xyz... do I have that right?"

A

B Core elements of coaching conversations **C**

Summary and follow up
Solicit take home messages from the conversation, resate next steps
"What are you taking away from this discussion?"
"Do we need to follow-up any part of our discussion?"

Coaching conversations

Focused oaching conversation

**Statements to frame the upcoming discussion; may vary based on topic area and time available
In time limited settings, consider focusing on coaching elements with prominent borders

FAQ

Questions asked by Discovery Award winners in correspondence with Challenge management, shared here for all teams. This list will be updated periodically.

1. Questions on the mentoring programme

Can the teams change their needs assessment as the project progresses?

We won't ask teams to complete the needs assessment again, but we know that team needs will change as their project progresses and teams should discuss this directly with their mentorship manager.

Do all team members need to be present for all the mentorship meetings?

We understand it's not always possible to have the whole team present. All meetings will be recorded and circulated to team members afterwards.

When do we meet the Subject Matter Experts?

Mentorship managers will review the teams' needs analysis and reach out to the teams on an individual basis. The Mentor Managers will then arrange meetings with the Subject Matter Experts.

How can teams get in touch with their Mentor Managers and their chosen subject matter experts?

This is for the teams to agree directly with their Mentor Managers in their initial one-one meeting. Subject Matter Experts should only be reached through your Mentor Manager.

What happens if a team needs expertise that is outside the expertise area of the Subject Matter Experts?

Teams should discuss their needs with their Mentor Manager and they will do their best to reach experts within the Challenge network who can support your project.

2.   Questions on the prototype showcase

What approach will be used for the Prototype Showcase in August?

Details for the Prototype Showcase in August are still being finalised but it is likely to be a hybrid model. Part of the day will be run with all 10 teams present and part on an individual basis. The Showcase is an opportunity to bring all teams together to network and learn from each other. The judges will provide feedback on the prototypes on an individual basis.

What level of development does our module need to have reached by the Showcase?

We expect teams to be at different stages of development at the prototype showcase, depending on a multitude of factors including grant dispersal rate, complexity of solution and timely access to expertise. You should aim to follow your approved development plan as closely as possible. The Showcase is designed to support your development and increase your likelihood of success at the November application stage, it is not part of the Challenge assessment process.

What support to help teams use the GSTC Platform will be given?

Each team will be given a point of contact from MIT Solve for support in using Appropedia.

3.   Questions on the training modules

Are there any requirements for simulation modules to have accounts and/or log on capabilities?

There are no requirements that simulation modules have accounts, or log on capabilities – especially if these imply gatekeeping of the content, as it would go against the open access goals of the programme.

Are teams required to undertake a validation study in a clinical setting to demonstrate the effectiveness of the training module and self-assessment framework in the Discovery Award phase?

The application packet for Phase 2 (the Finalist Awards) includes submitting a protocol for conducting a validation study in a clinical setting. It is not expected that you will have done this by August of Phase 1 (The Showcase), but by the time you are submitting applications for Phase 2, you need to know how you would conduct this study.

In Phase 2 there will be parallel validation studies, one done by the teams, and a second done by a chosen independent clinical program that will use only the publicly available materials provided to them by the team from Phase 1.

What is the aim of the requirement to test the prototype with the target users and demonstrate lessons learnt?

The goal of the interim testing evaluation is to make sure that teams are iteratively testing their theories about what works well and what doesn't. The Phase 2 clinical validation study will then test this much more rigorously, but without having done a few iterative cycles early on, the clinical validation study is likely to fail on some key misunderstandings of the content by the users that could have been caught earlier had it been tested under the final intended conditions.

What do you mean by 'anti-skills'?

Anti-skills are clinically irrelevant skills that the simulator teaches that need to be unlearned when the clinician attempts to transfer what they have learned over to a real clinical scenario. For example, when attempting to teach suturing in VR environments, it is extremely difficult to teach or evaluate proper instrument handling techniques.

At its most fundamental level, anti-skills means incorrect or irrelevant technique, approach and methodology developed or reinforced as a result of using simulation.

How can a prototype address the risks of teaching anti-skills?

We don't believe that it is possible to eliminate all anti-skills, but they should be mitigated by thoughtful design. By definition, any simulator that is not the actual tissue or instruments will produce some skills that need to be modified when shifting to the actual clinical environment. An acceptable simulator will give the student practice, a truly great one will prepare them for the differences between what they are practicing and what they will do clinically.

What measures can be taken to prevent the risks of 'gaming' simulation results?

Simulators that are subject to 'gaming' enable a very high 'score' on the assessment without this translating into excellence in a clinical environment. Building a simulator that is not subject to gaming speaks to the robustness of a construct for self-assessment, which could require some self-reflection element, pre-task goal setting, asking a colleague to observe you with a checklist, or physical evaluation of post-task results.

What do you mean by addressing potential risks of simulation after effects?

This is aimed at addressing issues with headsets and other types of interfaces. Teams that are not using any VR training won't have any issues with simulation after-effects.

Key information

Information resources

- **Challenge Website**
- **Innovator Handbook**
- **Judging Panel**

Inquiries

- All inquiries should be directed **globalsurgicaltraining@challenges.org** or to your assigned Mentor Manager.

GSTC partners

- **Intuitive Foundation** (Challenge Funder)

  The Intuitive Foundation is dedicated to reducing the global burden of disease and suffering through philanthropy, research and education aimed at better outcomes for patients everywhere.

- **Nesta Challenges** (Challenge Management)

  Nesta Challenges designs and runs challenge prizes that help solve pressing problems that lack solutions. We shine a spotlight where it matters and incentivise people to solve these issues.

- **Solve** (Challenge Management)

  Solve is an initiative of the Massachusetts Institute of Technology (MIT) with a mission to solve world challenges. Solve is a marketplace for social impact innovation.

- **Appropedia** (Challenge Platform)

  Appropedia is the site for collaborative solutions in sustainability, poverty reduction and international development through the use of sound principles and appropriate technology and the sharing of wisdom and project information.

- **Royal College of Surgeons in Ireland** (Mentor Programme)

  The Royal College of Surgeons in Ireland (RCSI) is an innovative, world-leading international health sciences university and research institution offering education and training.

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