



## Solve Your Enterprise Learning Challenges

10TH INNOVPLUS CHALLENGE



### CHALLENGE STATEMENT #06

#### 1. Challenge Owner Index and Pseudonym

##### #06 – Academic Medical Centre

#### 2. Challenge Statement

We are a tertiary academic medical centre seeking an adaptive learning solution to teach multi-professional teams best practices for safe guarding against and minimising medication errors, which may happen at any of the many touchpoints in patient treatment throughout the hospital. The solution must allow real-time and personalised assessment and feedback to multi-professional collaborative teams.

#### 3. About the Challenge Owner Organisation

We are a tertiary academic medical centre providing comprehensive multidisciplinary care. Our organization has more than 10,000 strong multi-generation diversified workforce, serving over 1 million patients every year. As an academic medical centre, we play a key role in nurturing doctors, nurses, pharmacists and allied health professionals. Our organization aim is to achieve academic medical excellence with safety as our priority.

#### 4. Define the Challenge

Medication errors may occur due to weak medication safety systems and human factors failures such as fatigue, manpower shortages, inexperienced staff and insufficient training. (Ref: [https://www.who.int/features/factfiles/patient\\_safety/en/](https://www.who.int/features/factfiles/patient_safety/en/)).

Healthcare professionals and leaders acknowledge the importance of education and training in patient safety. (Ref: Leotsakos at el).

In 2011, WHO launched the WHO Patient Safety Curriculum: Multiprofessional Guide, which presented the general requirements necessary for incorporating patient safety in education and the inherent skills such as teamwork and communication, human factors and safety, and engagement of patients in their care.

Today, conducting assessments and providing real-time feedback to multi-professional healthcare teams can be difficult. Healthcare professionals face major challenges in assessing and teaching patient safety — inadequate trainers, heavy workload, over-packed curricula, etc. — that deter integration of patient safety education into existing curricula.

Experiential and team based learning methods have proven to be effective for teaching multi-professional teams. Simulations, as one of the experiential learning interventions in healthcare, allow learners to learn in a risk-free environment by creating experiences closest to real life



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representation. Learners can understand the importance of team work and being an effective team player, the impact of everyone's role on the patient and team.

The current process of assessment is manual and subject to human biases and assessor fatigue. An assessor may not be able to perform a comprehensive observation of the performance of multiple learners (4-6 learners) in one setting. This process also puts severe strain on time and resources required.

We seek to overcome these challenges with use of an artificial intelligence (AI) powered assessment and learning system, to allow for team-based activities focusing on critical patient safety priorities. We envisage that the virtual educational solution will provide real-time analysis and feedback specific to the learner's approach to situations, tempered to dynamic responses given by learners. The solution will provide explanations to address gaps and track progress of learners. Responses gathered from learners will be fed back to the system to allow for machine learning.

The learning solution should be deployable to and utilised by a wide variety of healthcare professionals and trainees from medical/nursing/allied health, students from academic institutions.

### 5. Requirements

The requirements for the solution are outlined as follows:

- Enable automated virtual teaching and assessment, hence, reducing the need for human trainers.
- Create an experience closest to real-life representation on a virtual platform.
- Allows for multi-players to work together to identify potential patient safety issues, focusing on unsafe medication practices and errors, and select preventive strategies to reduce medication errors.
- Create dialogue management capabilities using natural language processing software to allow healthcare professionals to communicate in natural language.
- Create automated grading and review process of learner's role-play, in an unbiased and comprehensive way. The system will be designed with the ability to record action taken and how tasks are executed. The system will give real-time analysis and provide feedback specific to the learner's approach to simulated situations.
- Create a user analytics based interface for administrators, with interactive dashboard based on user data. Allow administrators to keep track of both user and system performance.
- Solution can be further expanded to allow educators to create intelligent and smarter positioned content that is adaptive, intuitive and responsive to learners' needs.

### 6. Targeted Learners / Users

All healthcare professionals providing patient care in acute and community settings, estimated at 1,000 per year.



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## 7. Measures of Success

- Development of a personalised learning solution for learners with feedback for improvement.
- Repeatable learning (practice) for learners.
- Access for more learners to train with no constraints of time and space.
- Reduction in training cost in the long run, with more learners able to go through the training on their own with reduction in trainer time.
- Establish framework for performance-based assessments using a conversation-based approach amongst learners.
- Proven effective training strategy using Kirkpatrick's 4 levels of evaluation.

## 8. Deliverables

A multiplayer platform and assessment solution for realistic training based on real-world case studies.

## 9. Vision

Teaching and learning in a virtual interactive environment will be fun and rewarding, through use of intelligent and adaptive educational tools which effectively facilitates group training and assessments.