Hackathon ISoP Medication Errors Prevention Project

Terms of Reference

Project number: ISoP Special Project 003 - ISoP Medication Errors Prevention Project

Duration: 2 weeks (November 3rd to 15th)

1. **Background:** The damage related to medication errors is very well known, it is a global problem which causes near 100.000 deaths per year and cost 4.2 billion dollars (WHO, 2017). The impact of it is probably worse in low and middle-income countries, considering it is not common to focus attention on quality, nor improving medication management.

   The ISoP Medication errors Preventing Project started because the necessity of solutions in real life for save human lives that right now are lost caused by Medication Errors, it is focus on Low and Midle Income countries conditions as, not enough or low quality of medical assistance, falsified medicines, low implementation in best practices of medication management. The Main goal of the project is**:** To reduce ME harm, applying low cost strategies based in IA tools considering HHFF, implemented in hospitals and other stakeholders, impacting patients of low and middle-income countries.

2. **Objective:** The objective of the Hackathon will be to encourage innovation including digital solutions relevant for preventing medication errors, focus on LMIC problems, build prototypes that could be used for free in medication management stakeholders related with the use of Artificial Intelligence/ Machine learning and other tools, engage startups and IT professionals in solving real-life challenges faced by ISoP stakeholders, and create a source of scalable digital solutions that ISoP stakeholders can adopt.

3. **Scope of Work:** The Hackathon will focus on developing an innovative solution for ISoP stakeholders using Artificial Intelligence/Machine Learning or any other tools. The Hackathon will focus on solving real-life challenges in medication management and use faced by ISoP Stakeholders such as hospitals, community pharmacies, pharma industry, regulatory agencies, healthcare professionals or patients.

The solution should aim to:

a) Define tools for better management of medications in processes such as prescription, dispensing, administration, pharmacovigilance, and patient engagement.
b) Define tools for measuring medication error problems and provide real-time data for making decisions. Define tools for better analysis of medication error cases, particularly focused on Human Factors and Ergonomics analysis.

4. **Problem statement**
   The International Society of Pharmacovigilance ISoP is an international non-profit scientific organization, which aims to foster Pharmacovigilance both scientifically and educationally, and enhance all aspects of the safe and proper use of medicines, in all countries.

ISoP has some Special Interest Groups (SIGs) which work in different topics, one of them is the Medication Errors Group, and other is Artificial Intelligence in Pharmacovigilance. Ensuring the safe and effective use of healthcare products is a key objective for those who work in pharmacovigilance, as well as all other stakeholders, including patients and caregivers. One key element of that is working to reduce and mitigate medication errors and other irrational use of drugs.

Medication errors are a multicausal problem, some of the causes are:

- The medication systems are not well designed: Unsafe relations among people, tasks, technology (including the drugs itself), internal environment and external environment.
- Processes are not reviewed and mistakes keep inside of the systems.
- Low culture in medication safety
- Lack of knowledge about medication use
- Inadequate communication among stakeholders, inside institutions or related with HCP and patients.
- Substandard quality of the drugs
- Low use of IT tools for management
- Unsafe environments for HCPs and patients
- Cognitive biases and challenging tasks or processes
- Lack of real-time data for decision-making

This causes could generate mistakes which are shown as:

- Wrong prescription, dispensing and administration of the drug.
- Misuse, sub or overdoses.
- Inappropriate delivery or storage
- Not enough following of the effects positive or negative (Pharmacovigilance)

Consequences of ME include:

- Loss of human lives and financial resources.
- Irreversible physical damage in patients
- Emotional damage in patients and carers.

5. Expected Outcomes and deliverables:

a. Technological tools which helps to have a better use of medicines in the different stakeholders of ISoP.
b. Other tools not necessarily related to technology but innovative, specially considering Human Factors and Ergonomics (Cognitive processes) which help to minimize ME.
c. IT tools for quantifying and analyzing ME in different stakeholders

All deliverables will be shared in a public repository (GitHub), if it is not based in technology a support document in a Drive provided on November 3rd. Any other suggestions or questions could

be send to president@isopoline.org; administration@isoponline.org and medicationerrorsig@gmail.com

6. Participants:

Participants will include IT companies, pharmaceutical companies, Universities, NRA, NGOs, other companies related to the safe use of medicines, or individual.

The participants will be organized by teams and they will decide a leader of the team.

7. Duration & Timeline:

October 26th: Formal announcement ISoP Annual Meeting Cairo 2025.

November 1st: Final day for registration

November 2nd: Instructions of the event for people registered

November 3rd: Meeting for starting: Conceptual presentation and definition of teams

November 5th: Meeting with organizers for following up and feedback

November 7th: Final meeting for feedback

November 14th: Delivery of solutions by GitHub or Drive

November 15th: Evaluation and selection of the three best solutions: The team has to present in front of the judge for evaluation

December 5th: Final presentation of the 3 best solutions in the Intelligent Automation 2025 Boston seminar, and recognition award.

8. Tools for interaction:

a. Zoom: We will have 3 meetings inside of the Hackathon, These are the link of zoom for interaction.

Meeting 1: November 3rd

ISoP is inviting you to a scheduled Zoom meeting. Topic: Hackathon Medication Errors Prevention
Meeting Time: Nov 3, 2025 12:00 London Join Zoom Meeting
https://us02web.zoom.us/j/82168697488?pwd=FQ1MI4tupvoidJd5br3AaPBUWpx1Z5.1

Meeting ID: 821 6869 7488 Passcode: 11541219

Meeting 2: November 5th

ISoP is inviting you to a scheduled Zoom meeting. Topic: Hackathon Medication Errors Prevention
Meeting Time: Nov 5, 2025 12:00 Universal Time UTC Join Zoom Meeting
https://us02web.zoom.us/j/87948865655?pwd=7n7EXh8CbuwsCgBhSwJtG4NteGH6bW.1

Meeting ID: 879 4886 5655 Passcode: 11541219

Meeting 3: November 7th

ISoP is inviting you to a scheduled Zoom meeting. Topic: Hackathon Medication Errors Prevention
Meeting Time: Nov 7, 2025 12:00 Universal Time UTC Join Zoom Meeting
https://us02web.zoom.us/j/88247933717?pwd=6LdPO7lGHbIzmNrW9ZDaZHYyakrCQq.1

Meeting ID: 882 4793 3717 Passcode: 11541219

b. Discord: Please download Discord and create a profile for interacting with the team and organizers in the week

9. Teams of work

a. Please vote for your topic of interest in this form until November 2nd at midnight UTC time. https://docs.google.com/forms/d/e/1FAIpQLSeW9MUf3B24hbBS68QuC4NjYmjE8OO21X6s3khARVyMjBHjTg/viewform?usp=preview
b. Considering the answers, we will define participants for each team, we will inform the team results in meeting 1 on November 3rd. If you feel comfortable working with a different team, you could express it inside the meeting.

10. Methodology:

a. We expect every team to have some steps for creating solutions:
   i. Definition of the problem: Define a scope for your solution and describe the most important elements of the problem, considering the topic of interest assigned.
   ii. Empathy with the stakeholders involved: Describe the problem considering the point of view of each stakeholder
   iii. Ideation: the team will define one idea (title) of their project within the topic of interest related to their team
   iv. Stakeholders interaction: Consider how the idea solves the problem, considering stakeholders.
   v. Test the idea / Define a prototype: Create the solution and describe the resources needed for the application
   vi. Define the applicability of the prototype and show how it answer the evaluation criteria: Relation benefit/cost; Applicability in LMIC; Innovation; Affordability; Massive impact.
   vii. Present other benefits of your idea.

The final presentation must have at least one slide for every stage

b. The interaction inside the Hackathon by Discord will include interaction of the Leader with her/his team, organizers and among teams if needed. The most important interaction is for creating the solution, but additionally every team could interact for solving doubts and receive feedback.

11. Final presentation:

a. On November 14th 13:00 UTC, every team must include the final presentation and all the resources related to the solution in a Drive defined for that, and include solutions in Git Hub
b. Every team will present a public presentation to the judges, showing the solutions on November 15th
c. The judges will evaluate considering all the resources and final presentation.

12. **Criteria of evaluation:** Every criteria will be measured from 1 to 5 (5 best score)

Relation benefit/cost; Applicability in LMIC; Innovation; Affordability; Massive impact.

Team will have extra points for Proved of concept (like an app)

13. **Confidentiality and Non-Disclosure:** Information provided by ISoP must be confidential.

14. **Intellectual Property Rights (IPR)**

Every team will provide all the information of the solution in public and open code, publishing it in GitHub, with a MIT license. If is not a tech solution it will be public share with ISoP.

15. **Termination Clause:** ISoP leaders could finish the participation in the hackathon, of any participant if they consider an inappropriate behaviour.

16. **Prizes:**

The three best solutions will receive:

- ✓ Public presentation at the ISoP IA Boston seminar in December 2025 for attendees' feedback. (Team leader must be registered for the event)
- ✓ Public recognition in one ISoP open event: 1 webinar about the results of the Hackathon
- ✓ Option of publication of the solution in Drug Safety as an ISoP Editorial
- ✓ Free membership of ISoP for one year (not including Drug Safety access)

Additionally, considering the final decision in AI Boston Seminar 2025, the prices will be:

First prize:

- ✓ Free membership of ISoP for one year (not including Drug Safety access) for every member of the Team
- ✓ 70% of discount for ISoP AI Boston 2026 registration for Leader Team and 50% of discount for the team.
- ✓ 30% of discount for ISoP Costa Rica 2026 registration for Leader Team and 20% of discount for the team.

Second Prize:

- ✓ 50% of discount for ISoP AI Boston 2026 registration for Leader Team and 30% of discount for the team
- ✓ 20% of discount for ISoP Costa Rica 2026 registration for Leader Team and 10% of discount for the team.

Third Prize:

- ✓ 30% of discount for ISoP AI Boston 2026 registration for Leader Team and 20% of discount for the team
- ✓ 10% of discount for ISoP Costa Rica 2026 registration for Leader Team and 5% of discount for the team.