



Statement of Intent (SOI) for IAA Activities on Artificial Intelligence (AI)

Approved by Council on [Date]

Executive Summary

1. What are we proposing?

The IAA is proposing to launch an initiative to establish and promote responsible use of Artificial Intelligence (AI) within the profession and support the work of other stakeholders such as governments and regulators in the responsible use of AI, thus contributing to the well-being of society.

2. Why are we proposing this?

AI is an important global topic that is getting increased public attention, including from key Supranational organizations. Actuaries, with their unique expertise and skill set, have a role to play in identifying and managing the risks involved. As the worldwide organization of actuarial associations, the IAA has a role to play in assuring that actuaries are included in the AI conversations at a global level.

3. What is the objective?

- Prepare the IAA, as the voice of the global actuarial profession, to proactively engage with Supranational organizations on AI-related risks and provide actuarial perspectives in their own related initiatives.
- Advance the competency of the profession with respect to AI by creating awareness, facilitating knowledge sharing, and educating actuaries.
- Promote the role of the actuary in emerging wider fields and raise its profile.

4. How will we reach this objective?

- Establish the AI Task Force (AITF) to consider the following.
 - Engage with Member Associations (MAs) on this topic.
 - Scan the AI environment relevant to actuaries, create awareness, and support the education of actuaries in this field.
 - Address professionalism aspects of AI as it impacts actuaries.
 - Identify threats and opportunities for the profession.

5. When and how long?

- AITF will be established within 3 months of the SOI's approval by Council.
- Initial set-up of working groups as listed by the project work in this SOI under Section 4 Activities and Timeline is expected to be completed by the end of 2024.
- Any follow-on work proposed by the AITF will be considered and commissioned thereafter.

6. How much will it cost?

It is estimated the cost of this project will be \$15,000/year. (TBC)

1. Background

The AI landscape is changing continually and rapidly and in multiple new directions.

The vision of the International Actuarial Association (IAA) is that the actuarial profession is globally recognised as leading experts in risk and financial security, contributing to the well-being of society. AI represents both a threat to our position as leading experts but also an opportunity to develop that expertise in traditional and new areas to the benefit of society.

The mission of the IAA includes providing actuarial expertise on issues of global relevance to supranational institutions and advancing the competency of the profession. Governments and regulators are increasingly concerned about the impact of AI and how it is used responsibly. The actuarial profession, with its expertise in data analytics and modelling, as well as its strong ethical and professional standards, has a role to play in advancing the responsible use of AI in the best interests of society, governments, and regulators.

An Artificial intelligence system (AI system) is defined by the OECD as a machine-based system that is designed to operate with varying levels of autonomy and that can, for explicit or implicit objectives, generate output such as predictions, recommendations, or decisions influencing physical or virtual environments. In this SOI the term AI is used in this broad context and includes, among other terms, Machine Learning, Large Language Models, Generative AI and Predictive AI.

2. Objectives of the Proposed IAA Activities

The objectives of the proposed activities are:

- a. Proactively prepare the profession for the challenges related to AI and advance the competency of the profession by creating awareness, facilitating knowledge sharing, and support the education of actuaries.
- b. Promote the role of the actuary in emerging fields and enhance the image and profile of the actuary.
- c. Proactively engage with Supranational stakeholders on topics relating to AI and provide actuarial perspectives and advice on topics of global relevance.

3. Scope and Content

The IAA will engage in activities to create awareness amongst FMAs and the actuarial profession more broadly on AI to stimulate actions at global, regional, and country level as appropriate.

The IAA will co-ordinate engagement with Supranational stakeholders, including governments and regulators, providing actuarial contributions with particular focus on banking, insurance, pensions, and investment/asset management, but not limited to these areas.

Some proposed activities in this SOI will have an internal focus, while others will be externally focussed.

A number of different work streams will be established to address important relevant areas for the profession such as:

- a) Scan the AI environment relevant to actuaries to identify aspects such as:
 - i. Definitions of terms used in the AI environment.
 - ii. Accountability considerations in relation to the adoption of Artificial Intelligence (AI)
 - iii. Guiding principles relating to design and maintenance of an AI DevOps Environment
- b) Evaluate professionalism aspects of AI as it impacts actuaries.

- c) Determine potential impacts of AI on the education and training of actuaries (both initial and continuing education).
- d) Consider possible societal changes due to AI, and how these might provide opportunities (and threats) for actuaries.

In developing the above, the IAA should be mindful to:

- Ensure that the IAA's deliverables are relevant to both our FMAs and Supranational stakeholders;
- Consider what the FMAs have been and are expecting to deliver; IAA output should add value to the FMA deliveries in this area;
- Avoid simply re-disseminating information produced by others without adding value. Our messages and advice should be based on actuarial approaches; and
- Avoid stretching the limited IAA resources too thin by taking on too many AI projects simultaneously.

4. Activities and Timeline

This SOI proposes the following list of potential IAA activities relating to AI:

A. Activities with internal focus

The initial focus will be more internal in terms of developing awareness within the profession and sharing experience and expertise on AI.

- i. Gather information on what the FMAs have been doing or are expecting to deliver on AI.
- ii. Identify specific topic deliverables (based on FMA interest) that can be considered via the Advance Committee and the Forums and propose a workplan.
- iii. Create awareness on the implications of AI and issues/opportunities/threats associated with AI, including around professionalism and ethics and the education of actuaries.

B. Activities with external focus:

- i. Scan the environment for potential engagements with Supranational stakeholders including Governments and regulators.
- ii. Create awareness amongst Supranational stakeholders on the role of the actuary, and how actuaries are using and developing AI (including the use of standards for the responsible use of AI).
- iii. Create awareness of how AI is changing the role and work of actuaries in banking, insurance, pensions, and investment/asset management, including how AI is enabling actuaries to develop new solutions to societal problems.

C. Based on items A & B above, set the high-level direction for IAA activities within the scope:

- i. Identify and agree on the most relevant AI areas to work on and identify relevant IAA entities that could potentially contribute to these IAA activities.
- ii. Develop recommended actions/next steps related to AI including discussion papers, roundtable events on focussed topics, etc.

These activities should be undertaken with a time-limited Task Force of delegates of interested FMAs and include Section representation.

The work streams will aim to complete their initial project work by the end of 2024 and propose the scope of any follow-on work.

The AI Task Force will define multiple work streams, with the objective of initiating their initial projects by the end of 2024, proposing the scope and any follow-on work.

5. Resources Needed

The actual work is expected to be conducted through an appropriate combination of IAA groups and FMAs working in collaboration, in particular looking to leverage AI expertise within FMAs. Joint projects with supranational stakeholders will be considered when appropriate.

It is anticipated that most of the work, if not all, will be done by using resources from the existing IAA entities, or by creating smaller teams of 3 to 4 people, leveraging on work done or intended to be done by FMAs. In addition, effort will be made to reach out to AI experts outside of the traditional actuarial (and IAA) community. Except as noted below, most work will be through e-mail exchanges and conference calls.

It will be important to coordinate the work within the different work streams and ensure that they learn from each other.

It is proposed that an expert in-person round table event will take place in Singapore – April 4th-6th, 2024 to ensure that the work streams are joined up and that AI experts from different FMAs can share expertise and experience and establish a network of experts.

Coordination and secretarial support will be required from the IAA Secretariat, but assuming the outputs can be staggered, this should not create a significant demand on the Secretariat staff.

6. Next Steps

To perform the activities described above, the AI Task Force established by the EC (as appropriate) will oversee the different work streams and accomplishment of the proposed activities in accordance with this SOI.

Appendix

Definitions

Artificial intelligence system (AI system) is a machine-based system that is designed to operate with varying levels of autonomy and that can, for explicit or implicit objectives, generate output such as predictions, recommendations, or decisions influencing physical or virtual environments (OECD).

Deep learning refers to training neural networks with at least three hidden layers to produce outputs based on training data. Deep learning is a subset of ML.

Generative AI refers to deep learning models that can generate high-quality text, images, and other content based on the data on which they are trained. They have been used successfully to develop sophisticated chatbots, some examples are OpenAI's ChatGPT and Google's Bard.

Large Language Models (LLMs) are a class of AI models trained on large amounts of text data to 'learn' a topic and its language structure to mimic human text. They are usually transformer models comprising billions of parameters, making them a black box, and are often built on an existing, foundational model. They are a class of generative models, meaning they can produce entirely new output based on input.

Machine Learning (ML): The process of passing data through an algorithm that seeks to minimise the difference between its output and a target in order to learn (also referred to as supervised learning). The algorithm in question typically has a randomised form initially, but as it sees more and more data, the training algorithm learns parameters that enable the model to perform increasingly better. ML also includes unsupervised learning, where an algorithm seeks to cluster the data, and reinforcement learning, where an algorithm seeks to optimise a specific future goal over time based on user environment feedback. Algorithms such as support vector machines, decision trees, ensemble models such as random forests, and boosting algorithms such as gradient boosting machines are included but not limited under this definition of ML.

Predictive AI refers to the use of machine learning algorithms to identify patterns in past events and make predictions about future events. Many actuaries work currently with predictive AI algorithms.

Quantum Computing harnesses the laws of quantum mechanics to solve problems too complex for classical computers. This will be a key enabler to AI as it enables greater processing/computing power (e.g., solving more complex problems, much quicker).

Statistical learning involves using statistical methods to perform ML. It typically covers regression tasks rather than the more comprehensive field of ML, which may include areas such as computer vision. Whilst statistical learning also encompasses linear models under this definition, they could potentially be placed in a lower risk class based on their transparency, and many of the traditional risk management strategies can be applied.