# Initial discussions on the Strategic Plan, as of 2024, of the Artificial Intelligence and Data Science Working Group

# Introduction

The AAE had its annual meeting in Cologne early October. This was the first AAE meeting where the Artificial Intelligence Working Group was reporting to the Professionalism Committee of the AAE.

The Professionalism Committee decided that Esko Kivisaari was given the pass to continue as the chair of this Working Group. The ProfC also nominated two vice chairs for this WG, and these are Claudio Senatore from Italy and Bogdan Tautan of the Netherlands. In addition to these two, based on the activity of Jonas Hirz of Austria, he will continue in the core group of this WG. This means that we four will for the time being try to get us forward.

It can also be informed that our paper on ‘What should an actuary know of AI’ is in its final stages. While the final draft (attached) is exposed to the members of the ProfC for a review it will soon proceed to the AAE Board review, after which it will soon be published as an AAE paper.

In the Cologne meeting it was also noted that there are quite a few member associations, relevant to the topic, not currently active in this WG. The WG needs to do whatever is possible to have these associations integrated into our work. One possibility will be to have separate meetings with a handful of associations. We could also check the possibility of the whole WG meeting face-to-face in connection to the AAE spring meetings.

This being said, it is time to think what our WG should do in the future. Our leadership team has collected the following ideas to be discussed in our next meeting. The discussion should not be limited to these ideas and the formulated scope. Rather the idea is to initiate the discussion – and the core is to identify initial areas where we can add value to the actuarial profession. Subsequently, the WG will start working on these areas, provided we have active members to work on one or the other topic.

Therefore, the leadership team would like to highlight the scope of the working group – Section 1, as well as identifying some interesting first topics to work on – Section 2.

## Scope

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|  | Scope of the working group | Work to be done |
| 1. | Provide guidance for actuaries on relevant AI and Data driven topics, that are widely being discussed by member associations and European institutions. | Continuously monitor and work on supporting material (i.e. discussion papers, actuarial standards etc.) that includes the latest developments within the environment of AI. See *Section 2* for a more detailed approach.  Facilitate webinars and interactive discussions. |
| 2. | Ensure alignment with the guidelines and work done at an international level. | Engage with International Actuarial Association and associations outside Europe, providing there will be alignment when discussing the topic of AI. |
| 3. | Integrate and support the AI work done by other committees of the AAE, including the Professionalism Committee. | Initiate discussions with other AAE committees and monitor if there is need and/or if there is work being done on the topic of AI outside of the group. Address the implications of AI on the actuarial profession, role of the actuary in emerging fields, education, and other relevant work. See *Section 2* for a more detailed approach. |
| 4. | Form and coordinate sub-groups that will work on the topic of AI. | The work done by other committees or active members of the AAE can be initiated and coordinated by this working group. |
| 5. | Engage with supranational institutions (together with the IAA) on the risks and opportunities related to AI and Data, especially on the topics of guidance and regulatory initiatives. | Monitor, and if necessary, provide feedback to European stakeholders that are actively providing guidance and regulatory frameworks on the topics of AI and Data. Areas could be Artificial Intelligence Act, Data Governance Act, Data Act, Digital Services Act, Digital Operational Resilience Act etc. |

Prerequisites:

* Engage member association – especially the ones working on this topic should delegate volunteers supporting the working group
* Plan in person working-group meetings, as part of the agenda of the AAE’s biannual meetings

## A list of topics to address

## Guidance on relevant AI and data driven topics

* Create actuarial content to Explainable Artificial Intelligence (XAI) framework (referring to discussions with EIOPA, there is demand for thoughts in this area, especially on how to add explainability to what is required by the forthcoming European Artificial Intelligence Act). Some content on this is already included in our ‘What Should an Actuary Know of AI’ paper but we need to dig deeper on the topic to add value to the discussion. After all, who is better placed in developing the concept than us actuaries?
* While XAI is certainly one area that connects to the AI Act we should look at AI Act more broadly, i.e., how this horizontal piece of regulation gets more bones around the flesh (sic!) in the financial/insurance/pensions sector
* Research the feasibility of the **G**enerative **P**re-Trained **T**ransformers (GPTs), such as a concept of an ActuarialGPT framework, or implementations alike. This can be seen as a Large Language Model (LLM) involving actuarial work. LLM world seems to be proceeding from general purpose LLMs to sectorial targeted models (as the way of doing models a.k.a google financed by advertisers seems to be hitting the limits with exorbitant exponentially increasing costs of creating new generations of LLM’s)
* Research the current state of how synthetic data is being used or applied within the sector, and how actuaries should deal with it, what are the implications on product propositions, risk estimation and reporting.
* Continue to work on **“overarching topics”** that better shape the role of the actuary under AI and DS. E.g., go deeper on selected topics from our current paper such as how AI/GenAI is
  + changing the risks that need to be managed by risk taking institutions
  + leading to new emerging risks, and
  + changing how actuaries act and adopt AI
* Address the topic of quantum computing as one of the next revolutionary concepts. Decide whether this belongs into the scope of our group. Should actuaries be better in anticipating what becomes possible with quantum computing, as one can say actuaries were not ready for AI? At least most of today’s cryptography will become obsolete with quantum computing. But what are the actuarial challenges that have been impossible until now but and what will become possible with quantum computing?
* David Hilbert presented early last century his list of mathematical problems to be solved. While the Riemann hypothesis remains without proof most of Hilbert’s problems have been solved, and they have created a lot of excellent mathematical research. How about creating a Hilbert list of actuarial problems that are not yet solved, but could be solved with AI or quantum computing? How about proposing a topic to the next ECA for presenters to come up with problems to this list? A concern here is that we are using AI/DS to do quite mundane things (doing things faster/cheaper, but still things that have nothing fundamentally new), while we should use novel tools to do something revolutionary (like what has been done with AI in proteins where the folding was opened, or how AI has been used in medicine where a new antibiotic has apparently been found)

## Integrate and support the AI work done by other member committees of the AAE

* Keeping other committees of the AAE duly informed and integrated. Contribute on initiatives that involve professionalism, the education of an actuary, or other topics.
* Initiate a discussion on whether cyber risk belongs to us, or who would be responsible within AAE. Specifically address here the topic of use of data and data security within the working group. (see also recent paper by GA: [Cyber Risk Accumulation: Fully tackling the insurability challenge | The Geneva Association](https://www.genevaassociation.org/publication/cyber/cyber-risk-accumulation-fully-tackling-insurability-challenge))
* Start the discussion on which would be the first webinars to be included in our program throughout the year.
* Engage with the Education committee and discuss the current status of the core syllabus. Young actuaries might be literate with AI-DS, what about the older generations, together with implications of AI within the CPD programmes?
* Have a first view of how AI is being considered within the actuarial standards documents, codes of conduct or supportive material – does this lack the inclusion of AI, or is it already being considered?