

# Targeted consultation on artificial intelligence in the financial sector

Fields marked with \* are mandatory.

## Introduction

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In financial services and beyond, there is a broad technology-driven trend towards greater use of AI. The Commission highlighted the need for a targeted consultation on the use of AI in financial services. The goal is to identify the main use cases and the benefits, barriers and risks related to the development of AI applications in the financial sector.

In general, the development and use of AI in the EU will be regulated by the [AI Act](#), the world's first comprehensive AI law. The AI Act which was voted by the European Parliament on 13 March and expected to enter into force in July, aims to guarantee the safety and fundamental rights of people and businesses, while strengthening AI uptake, investment and innovation across the EU. To support further these objectives, an [AI innovation package](#) has been adopted by the Commission on 24 January 2024. It contains a series of measures to support European startups and SMEs in the development of trustworthy AI that respects EU values and rules. This follows the political agreement reached in December 2023 on the AI Act.

The AI Act is designed to complement the already existing financial services *acquis*, that, while not explicitly targeted at regulating AI, is an important framework to manage the related risks in specific applications and includes several relevant requirements for financial entities when providing financial services. It does so by pursuing objectives to ensure healthy financial markets, such as transparency, market integrity, investor protection and financial stability. For example, when providing investment services, including through reliance on AI such as trading algorithms, investment firms must comply with the [MIFID/R framework](#) and the [market abuse rulebook](#).

The aim of this consultation is not to lead to policy work that would generate new duplicative requirements in relation to the use of AI by the financial sector, or to new requirements that have the potential to stifle AI innovation.

## Objective of the consultation

The present targeted consultation will inform the Commission services on the concrete application and impact of AI in financial services, considering the developments in the different financial services use cases.

The views from stakeholders will support the Commission services in their assessment of market developments and risks related to AI and in the implementation of the AI Act and existing financial services legislation in the financial sector. The consultation is focused on the objectives of the financial sector *acquis* and the AI Act and is not intended to focus on other policy objectives such as competition policy. It is intended to improve the effective implementation of these legal frameworks.

This targeted consultation will include questions with multiple choice and open answers. The questionnaire contains three parts:

1. a first part with general questions on the development of AI
2. a second part with questions related to specific use cases in finance
3. and a third part on the AI Act related to the financial sector

For the purpose of this targeted consultation, the concept of AI corresponds to the definition of an AI system established in the AI Act, which covers “*any machine-based system designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments*”.

## Target group

The targeted consultation will gather input from all financial services stakeholders including companies and consumer associations. Views are particularly welcome from financial firms that provide or deploy/use AI systems. This consultation is designed for respondents developing or planning to develop or use AI applications in financial services.

## Responding to the consultation

Respondents are invited to complete the questionnaire by 13 September 2024. They are invited to elaborate by providing input and additional insights to their answers.

## Outcome

Depending on the progress made, the Commission will publish a report on the findings and an analysis of the main trends and issues arising with the use of AI applications in financial services.

Please note that the information collected will not be shared with third parties and if used, it will be anonymised, in such a manner that it does not relate to any identified or identifiable financial institution.

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**Please note:** In order to ensure a fair and transparent consultation process **only responses received through our online questionnaire will be taken into account** and included in the report summarising the responses. Should you have a problem completing this questionnaire or if you require particular assistance, please contact [eu-digital-finance-platform@ec.europa.eu](mailto:eu-digital-finance-platform@ec.europa.eu).

More information on

- [this consultation](#)
- [the consultation document](#)
- [digital finance](#)
- [the digital finance platform](#)

- [the protection of personal data regime for this consultation](#)

## About you

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\* Language of my contribution

- Bulgarian
- Croatian
- Czech
- Danish
- Dutch
- English
- Estonian
- Finnish
- French
- German
- Greek
- Hungarian
- Irish
- Italian
- Latvian
- Lithuanian
- Maltese
- Polish
- Portuguese
- Romanian
- Slovak
- Slovenian
- Spanish
- Swedish

\* I am giving my contribution as

- Academic/research institution
- Business association
- Company/business

- Consumer organisation
- EU citizen
- Environmental organisation
- Non-EU citizen
- Non-governmental organisation (NGO)
- Public authority
- Trade union
- Other

\* First name

Stephanos

\* Surname

Hadjistyllis

\* Email (this won't be published)

stephanos@shsactuarial.com

\* Organisation name

*255 character(s) maximum*

Actuarial Association of Europe (AAE).

The AAE is an umbrella association representing actuarial associations in 37 European countries, thereby representing circa 30,000 actuaries across Europe who make use of AI models and are active in the field.

\* Organisation size

- Micro (1 to 9 employees)
- Small (10 to 49 employees)
- Medium (50 to 249 employees)
- Large (250 or more)

Transparency register number

*255 character(s) maximum*

Check if your organisation is on the [transparency register](#). It's a voluntary database for organisations seeking to influence EU decision-making.

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## \* Country of origin

Please add your country of origin, or that of your organisation.

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- Bhutan
- Bolivia
- Bonaire Saint Eustatius and Saba
- Bosnia and Herzegovina
- Botswana
- Bouvet Island
- Brazil
- British Indian Ocean Territory
- British Virgin Islands
- Brunei
- Bulgaria
- Burkina Faso
- Burundi
- Cambodia
- Cameroon
- Canada
- Cape Verde
- Cayman Islands
- Central African Republic
- Chad
- Chile
- China
- Christmas Island
- Greenland
- Grenada
- Guadeloupe
- Guam
- Guatemala
- Guernsey
- Guinea
- Guinea-Bissau
- Guyana
- Haiti
- Heard Island and McDonald Islands
- Honduras
- Hong Kong
- Hungary
- Iceland
- India
- Indonesia
- Iran
- Iraq
- Ireland
- Isle of Man
- Israel
- Italy
- Myanmar/Burma
- Namibia
- Nauru
- Nepal
- Netherlands
- New Caledonia
- New Zealand
- Nicaragua
- Niger
- Nigeria
- Niue
- Norfolk Island
- Northern Mariana Islands
- North Korea
- North Macedonia
- Norway
- Oman
- Pakistan
- Palau
- Palestine
- Panama
- Papua New Guinea
- Paraguay
- Svalbard and Jan Mayen
- Sweden
- Switzerland
- Syria
- Taiwan
- Tajikistan
- Tanzania
- Thailand
- The Gambia
- Timor-Leste
- Togo
- Tokelau
- Tonga
- Trinidad and Tobago
- Tunisia
- Turkey
- Turkmenistan
- Turks and Caicos Islands
- Tuvalu
- Uganda
- Ukraine
- United Arab Emirates
- United Kingdom

- Clipperton
- Cocos (Keeling) Islands
- Colombia
- Comoros
- Congo
- Cook Islands
- Costa Rica
- Côte d'Ivoire
- Croatia
- Cuba
- Curaçao
- Cyprus
- Czechia
- Democratic Republic of the Congo
- Denmark
- Jamaica
- Japan
- Jersey
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- Kosovo
- Kuwait
- Kyrgyzstan
- Laos
- Latvia
- Lebanon
- Lesotho
- Liberia
- Peru
- Philippines
- Pitcairn Islands
- Poland
- Portugal
- Puerto Rico
- Qatar
- Réunion
- Romania
- Russia
- Rwanda
- Saint Barthélemy
- Saint Helena  
Ascension and  
Tristan da Cunha
- Saint Kitts and  
Nevis
- Saint Lucia
- United States
- United States  
Minor Outlying  
Islands
- Uruguay
- US Virgin Islands
- Uzbekistan
- Vanuatu
- Vatican City
- Venezuela
- Vietnam
- Wallis and  
Futuna
- Western Sahara
- Yemen
- Zambia
- Zimbabwe

\* Field of activity or sector (if applicable)

- Accounting
- Auditing
- Banking
- Credit rating agencies
- Insurance
- Pension provision
- Investment management (e.g. hedge funds, private equity funds, venture capital funds, money market funds, securities)
- Market infrastructure operation (e.g. CCPs, CSDs, Stock exchanges)
- Social entrepreneurship
- Other

Not applicable

\* Please specify your activity field(s) or sector(s)

Actuarial, Insurance, Risk Management, Pensions

The Commission will publish all contributions to this public consultation. You can choose whether you would prefer to have your details published or to remain anonymous when your contribution is published. **For the purpose of transparency, the type of respondent (for example, 'business association, 'consumer association', 'EU citizen') country of origin, organisation name and size, and its transparency register number, are always published. Your e-mail address will never be published.** Opt in to select the privacy option that best suits you. Privacy options default based on the type of respondent selected

\* **Contribution publication privacy settings**

The Commission will publish the responses to this public consultation. You can choose whether you would like your details to be made public or to remain anonymous.

**Anonymous**

Only organisation details are published: The type of respondent that you responded to this consultation as, the name of the organisation on whose behalf you reply as well as its transparency number, its size, its country of origin and your contribution will be published as received. Your name will not be published. Please do not include any personal data in the contribution itself if you want to remain anonymous.

**Public**

Organisation details and respondent details are published: The type of respondent that you responded to this consultation as, the name of the organisation on whose behalf you reply as well as its transparency number, its size, its country of origin and your contribution will be published. Your name will also be published.

I agree with the [personal data protection provisions](#)

## Part 1: General questions on AI applications in financial services

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**Question 1. Are you using or planning to use AI systems?**

- Yes, we are already using AI systems
- Not yet, but we plan to use AI systems within the next 2 years



- No, we are not using it and we don't plan to use AI systems within the next 2 years
- Don't know / no opinion / not applicable

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## Question 2. What are the **positive** things you encounter when using AI?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

AI technology is revolutionising the insurance sector, offering numerous benefits as outlined below:

1. **Enhanced Risk Assessment and Pricing:** AI enables more sophisticated analysis of complex datasets, leading to more accurate risk assessments and pricing of insurance products. This results in better risk selection, more precise pricing, and improved loss reserving, ultimately improving financial stability for insurers and affordability for policyholders. Additionally, the ability of AI to process large volumes of data and produce forecasts and risk scenarios can improve insurers' ability to manage long-term risks and make informed decisions, leading to better financial outcomes and risk management.
2. **Improved Fraud Detection and Security:** AI algorithms can analyse vast amounts of data to identify patterns and anomalies indicative of fraudulent activity. This proactive detection can help reduce financial losses and maintain lower premiums for more policyholders by preventing and mitigating fraudulent claims. AI may enhance security measures by identifying potential threats, detecting unusual patterns, and providing real-time alerts to prevent security breaches. Therefore, it could prove a useful defence against cyber threats.
3. **Personalised Products and Services:** By analysing customer data, AI allows insurers to tailor products and recommendations to individual needs and risk profiles. This personalization can enhance customer satisfaction, help individuals make better financial decisions, and may help address the insurance protection gap in the market.
4. **Efficiency Gains and Automation of Routine Tasks:** AI automates repetitive tasks such as data entry, transaction processing, and document verification. This automation saves time and enables employees to focus on more complex and strategic activities, enhancing overall productivity. This may help reduce overall costs for financial institutions. These savings could result in more competitive pricing for insurance products and better financial performance for insurers. Moreover, AI can help streamline other processes, such as loan underwriting, account opening, and claims processing, leading to faster and more efficient customer service.
5. **Enhanced Investment, Credit Risk and Operational Decision-Making:** AI systems can process extensive data and might be able to provide insights that support better investment decisions, credit risk assessments, and operational optimisation. These insights could enable insurers to make better decisions.
6. **Regulatory Compliance and Support:** AI can help companies in staying compliant with regulations by analysing and interpreting complex regulatory requirements. This capability can help insurers remain compliant by responding promptly to regulatory changes.

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## Question 3. What are the **negative** things you encounter when using AI?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Some AI systems can be hard to thoroughly understand and lead to a broad range of challenges (see below). Members of the actuarial profession are bound by the actuarial code of conduct etc. to take full responsibility for the models they are using. This uniquely positions actuaries as experts that – by training and by code of conduct – can take a central role in ensuring professional use of AI, tackling all the challenges below. Actuaries use tools like XAI (Explainable Artificial Intelligence) to make sure that the models used are transparent and explainable to the users and they do not contain, e.g., hidden biases.

Challenges include the following:

- Occurrence of 'hallucinations': AI providing factually wrong but plausible answers.
- Lack of transparency and accountability ('black box').
- Potential implicit bias and social discriminations.
- Data Quality and Privacy: Ensuring data quality and confidentiality is a significant challenge.
- Regulatory Compliance: Navigating evolving guidelines is complex and resource intensive.
- Operational Risks: Integration of AI introduces model risks, cybersecurity threats, and the potential for technical failures.
- Economic and Environmental Costs: High costs for development and maintenance, significant environmental footprint. Potentially energy-intensive with resource consumption impacting nature and climate.
- Ethical Considerations: Ethical issues like informed consent, preventing inappropriate unequal treatment, and maintaining accountability and transparency. Difficulty in interpreting AI decisions may impact regulatory compliance and customer trust. Additionally, AI models can lead to untransparent solutions where the users are not able to understand and explain the results.
- AI systems can be quite complex, and therefore explaining how they work can be very challenging.

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#### **Question 4. Will you be deploying AI for new or additional processes within your organisation?**

- Yes
- No
- Don't know / no opinion / not applicable

#### **Question 4.1 Please explain for which new or additional processes you will be deploying AI within your organisation:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Although our members develop AI models in the companies/organisations where they operate, the AAE is NOT a market participant as such and does NOT deploy AI models. However, we are responsible for facilitating the dialogue and collaboration with actuarial associations across Europe, by promoting the continuous evolution of our profession, developing a sound Code of Conduct and European Standards for Actuarial Practice. We are currently examining our standards and education syllabus, together with the International Actuarial Association to make sure they are appropriate and relevant to actuaries that create and use AI models.

## Question 5. Are you developing or planning to develop in-house

### AI applications?

- Yes
- No
- Don't know / no opinion / not applicable

### Please explain your answer to question 5:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

It is important to note that while the AAE itself is not a market participant (or a developer of AI applications), its member actuaries are deeply involved in the development of AI applications. Their expertise is instrumental in driving the responsible and effective implementation of AI technologies within the insurance industry.

Many insurers are actively developing in-house AI applications. One primary reason for this trend is the need for tailored solutions that cater specifically to individual market portfolios and organisational operations. Such applications are often considered too sensitive or strategic to be outsourced. For instance, pricing algorithms are a key area where internal development is preferred due to the strategic value and the necessity for tight governance and control. High-impact applications require stringent oversight to ensure alignment with organizational goals and regulatory requirements.

The decision to develop AI applications in-house is often based on a thorough assessment of the technical needs and the potential benefits specific to the organisation. In-house development allows insurers to leverage AI to enhance operational efficiency, improve customer service, and maintain a competitive edge. Additionally, managing the associated risks effectively is crucial, and having direct control over the development process facilitates better risk management.

While in-house development would generally be preferred for some high-impact and strategic applications, there are areas where vendor solutions are more commonly adopted. For example, applications related to anti-money laundering and cybersecurity are often outsourced due to their specialised nature and the benefits of using established vendor solutions in these domains.

It is also important to emphasise that, according to financial security regulation, using vendor solutions or outsourcing does not in any way lessen the responsibility of an undertaking towards its customers.

Additionally, legislation heavily regulates the manner in which financial undertakings engage in outsourcing. Furthermore, ESAP1 (European Standard of Actuarial Practice 1) provides guidance on how an actuary can rely on the work of others, ensuring that even in the context of outsourced or vendor-driven solutions, actuarial standards and responsibilities are upheld.

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## Question 6. Which tools are you using to develop your AI applications?

**Examples: machine learning, neural networks, natural language processing, large language models, etc.**

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The tools used to develop AI applications vary depending on the specific use case and the requirements of the task at hand. Insurers and actuaries employ a range of methods and technologies to address different aspects of their operations and enhance their analytical capabilities.

A significant number of AI applications in the actuarial profession involve machine learning techniques. These include both supervised and unsupervised learning methods. Actuaries integrate current actuarial methods into machine learning algorithms to improve accuracy and efficiency in tasks such as insurance pricing and underwriting.

However, it is important to distinguish between traditional complex models, such as Generalized Linear Models (GLMs), and AI-driven models. Traditional models, even when complex, are well understood by actuaries, who are able to explain their workings, limitations, and results thoroughly. These models do not typically possess autonomy and therefore do not fall under the 'black box' category that requires new governance approaches as stipulated by the AI Act.

In contrast, the real AI dimension in actuarial work emerges where models exhibit a degree of autonomy, continuously modifying themselves based on new data inputs. This aspect introduces a 'black box' nature, necessitating more stringent oversight and governance to ensure safe and effective use. It's worth noting that not all machine learning applications equate to AI. If machine learning results in a static algorithm, it may not fully meet the criteria for AI. However, when machine learning is used in a way that allows the model to autonomously adapt and evolve, it can be considered true AI and subject to the specific governance requirements outlined in the AI Act.

Neural networks, including convolutional neural networks (CNNs) and recurrent neural networks (RNNs), are frequently used in the development of AI applications. These tools are particularly effective in recognising patterns and making predictions based on large datasets. They are crucial in areas such as risk assessment and claims management.

Natural language processing is another essential tool for insurers. It is used for analysing text data, extracting meaningful information, and improving customer interactions. NLP applications help in processing claims, customer service automation, and regulatory compliance. Network analysis techniques are employed to understand and manage complex relationships within data. These tools are particularly useful in identifying fraud and improving the robustness of risk models.

While large language models (LLMs) have not been as widely adopted in the insurance industry compared to other sectors, they are increasingly being recognised for their potential. LLMs are used for data extraction and generating programming code, which can streamline processes and enhance the capabilities of AI applications.

The AAE has published recent materials that explain some of these methods and tools in detail:

<https://actuary.eu/paper/aae-discussion-paper-what-should-an-actuary-know-about-artificial-intelligence/>

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## Benefits of using AI applications in financial services

**Question 7. Please score the following benefits from most significant (10) to least significant (1):**

	1 -	2	3	4	5	6	7	8	9	10 +	Don't know - No opinion - Not applicable
Fraud detection: AI algorithms can analyse large amounts of data to detect patterns and anomalies that may indicate fraudulent activity, helping to reduce financial losses for businesses and customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk management: AI can analyse and predict market trends, assess credit risks, and identify potential investment opportunities, helping financial institutions make more informed decisions and manage risks more effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Automation of routine tasks: AI can automate repetitive tasks such as data entry, transaction processing, and document verification, freeing up time for employees to focus on more complex and strategic activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost savings: by automating processes and improving efficiency, AI can help financial institutions reduce operational costs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personalised financial advice: AI can analyse customer data to provide personalised financial advice and recommendations, helping customers make better financial decisions and improve their financial well-being.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>Compliance and regulatory support: AI can help financial institutions stay compliant with regulations by analysing and interpreting complex regulatory requirements and monitoring transactions for suspicious activities.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Enhanced decision-making: AI can analyse large amounts of data and provide insights that can help financial institutions make better investment decisions, assess credit risks, and optimise their operations.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<p>Improved security: AI can enhance security measures by identifying potential security threats, detecting unusual patterns of behaviour, and providing real-time alerts to prevent security breaches.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Streamlined processes: AI can streamline various financial processes, such as loan underwriting, account opening, and claims processing, leading to faster and more efficient services for customers.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Improved customer service: AI can be used to provide personalised and efficient customer service, such as chatbots that can answer customer queries and provide assistance 24/7.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 8. What are the main benefits/advantages you see in the development of your AI applications?**

**Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

AI applications significantly enhance actuaries' ability to create sophisticated risk management solutions. Traditionally, data availability and the tools for data manipulation have been limited and costly. AI holds considerable promise in making data usage more efficient, extending beyond customer interfaces to encompass comprehensive data analysis. This broader application of AI can help develop better models that may reduce protection gaps in society, providing more robust and inclusive financial solutions.

One of the primary advantages of developing AI applications is the enhanced control over the development and deployment process. This approach ensures a better fit for specific operational needs and intended uses. Greater control allows for the implementation of appropriate governance measures, data quality monitoring and effective handling of biases.

Furthermore, the process of developing AI applications can provide valuable insights from data, which can be leveraged across various business functions. This capability not only improves accuracy in risk assessment and pricing but also supports smarter automation, making insurance processes more affordable and personalised to individual preferences and risk profiles. In essence, AI enables insurers to perform tasks that were previously unfeasible and to enhance existing practices significantly.

**Question 9. Please score the following challenges from most significant (10) to least significant (1):**

	1	2	3	4	5	6	7	8	9	10	
	-									+	
Lack of access to the required data, in general.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Lack of access to the data in an appropriate digital format.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

<p>Lack of access to appropriate data processing technology, e. g. cloud computing.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Data privacy: it is crucial to ensure that sensitive financial information remains confidential.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Lack of trust in relation to performance levels/ security aspects/ certified solutions/ reliability of the technology.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Regulatory compliance with financial regulation: financial services are heavily regulated and not all types of AI applications are in line with requirements under these regulations.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	



<p>Innovation: the ability to leverage on combining AI with other technologies to enhance its potential and generate new services?</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Transparency and explainability: AI algorithms can be complex and opaque. It can be difficult for humans to understand how AI arrives at certain conclusions, which can create issues of trust and accountability.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
<p>Bias and discrimination: AI models are trained using data, and if the data is biased, the AI model can also be biased, leading to unfair outcomes.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Reputational risk from undesirable AI behavior or output.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

<p>Liability risks: legal uncertainty on who bears the liability in case of damages generated by the malfunctioning of the AI applications.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Skills gap: the development of AI requires specific tech skills, and there is a shortage of such skills.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Dependability: as financial institutions rely more and more on AI; the dependability of these systems becomes paramount. Any malfunction or error (e.g. in risk management) can lead to significant financial losses.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>Job displacement: the use of AI can potentially automate certain roles in the financial sector leading to job displacement.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Cybersecurity: AI systems could be targeted by cybercriminals, leading to potential data breaches or manipulation of AI systems.</p>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Integration challenges: integrating AI technologies with existing systems and processes can be complex and expensive.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<p>Additional cost: the deployment and use of AI requires up-front investment and ongoing resources (acquiring or developing applications, keeping them up to date, training/skills).</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

## Question 10. What are the main difficulties/obstacles you are facing in the development of your AI applications?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

One of the primary challenges in developing AI applications is the complexity of ensuring transparency and explainability. It is crucial to have models that are not only accurate but also understandable to stakeholders, including regulators and clients. The current approaches to transparency and explainability are often insufficient, which hinders the responsible use of AI. Our profession is actively working on creating better tools to address this issue.

Actuaries are fully responsible for the models they use, including AI models. As such, the actuarial profession is actively developing Explainable AI (XAI) tools to ensure that AI can be responsibly integrated into actuarial models. This is particularly important as AI systems gain more autonomy, making it essential for actuaries to understand and explain how these models operate and the decisions they produce, in line with the standards set by ESAP1 (European Standard of Actuarial Practice 1).

Regulatory compliance is another significant obstacle. The evolving regulatory landscape, particularly with the upcoming AI Act, introduces uncertainties about what constitutes AI and how actuarial techniques are to be classified. Ensuring compliance with data protection laws and maintaining data security add layers of complexity and require ongoing updates to AI systems.

Data privacy and security are paramount, especially given the sensitive nature of the data involved. Insurers must comply with stringent data protection laws, ensuring that all data is handled with utmost confidentiality and security. The availability of relevant and high-quality data for model training is also a challenge, particularly for mid to small-sized companies that may not have access to comprehensive datasets.

Integration challenges also pose a significant barrier. Organisations need to have the necessary infrastructure and expertise to support AI integration. This includes overcoming the inertia often associated with the adoption of new technologies and ensuring that employees are adequately trained and familiarised with AI systems.

The skills gap is a notable issue. There is a need for continuous education and interdisciplinary collaboration to bridge this gap. Ensuring that the workforce has the necessary expertise to develop and maintain AI systems is crucial for their successful implementation.

Bias and discrimination in AI-driven decisions require continuous monitoring and validation to mitigate these risks. Developing AI models that are fair and unbiased is essential, and this process demands rigorous testing and validation to prevent discriminatory practices.

Cost considerations must also be weighed carefully. The development and deployment of AI systems involve significant investments in terms of time, money, and resources. Organisations must evaluate the benefits of AI against these costs to determine their feasibility.

Ethical and professional standards need to be managed effectively. The ethical implications of using AI in actuarial work must be considered, ensuring that AI applications adhere to high professional standards and ethical guidelines. Please read our relevant AI publication on the ethical and professional considerations that actuaries can add to the area of AI: <https://actuary.eu/paper/aae-note-on-how-actuaries-can-provide-an-ethical-and-professional-dimension-to-ai/>

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## Question 11. Please rank the potential negative impact that widespread use of AI can have on the following risks, 8 being the highest risk:

	1	2	3	4	5	6	7	8
Operational risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Market risks	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquidity risks	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial stability risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Market integrity risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investor protection risk	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumer protection risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Reputational risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please explain your answer to question 11 and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The ranking is somehow challenging, as some of the 8 risks are affecting single undertakings and others affect societies. With that caveat:

**Operational Risks (8):** AI systems introduce new complexities and dependencies, including potential technical failures, cybersecurity threats, and significant operational disruptions. These risks necessitate robust risk management practices, where actuaries play a pivotal role in ensuring AI systems are resilient. Effective controls and contingency plans are essential to mitigate these risks. For instance, an AI-driven underwriting system might fail due to a software bug, leading to incorrect premium calculations. Such failures can disrupt operations and require immediate resolution.

**Consumer Protection Risks (7):** AI decisions can inadvertently lead to biased outcomes, unfair treatment, and privacy concerns, directly affecting consumers. It is critical for the EU to safeguard consumer rights and ensure ethical AI usage. Actuaries are crucial in designing fair and transparent AI models that comply with consumer protection regulations and ethical standards. An example is an AI system used for loan approvals that might unintentionally favour certain demographic groups over others, leading to discriminatory practices.

**Financial Stability Risks:** AI's systemic impact on financial markets can contribute to financial instability if not properly managed. This includes risks from automated trading, systemic biases, and unintended market behaviours. Actuaries must assess and manage these systemic risks to ensure business models are resilient under various scenarios. For example, AI-driven trading algorithms could exacerbate market volatility during periods of economic uncertainty.

**Reputational Risks (5):** Failures or unethical uses of AI can damage the reputation of financial institutions, leading to a loss of trust among consumers and stakeholders. Ensuring that AI models are used ethically and transparently is vital to maintaining public trust. An instance of reputational risk could involve an AI system that erroneously rejects valid insurance claims, causing public outcry and damaging the insurer's reputation.

**Market Integrity Risks (4):** AI can be used to manipulate markets, engage in unfair trading practices, or lead to herd behaviour, undermining market integrity. Actuaries are well-positioned to ensure AI models adhere to regulations and do not facilitate market abuse. For example, an AI algorithm might be exploited for front-running trades, which can destabilise market fairness.

**Investor Protection Risks (3):** AI-driven investment decisions can sometimes lead to suboptimal outcomes for investors, particularly if models are biased or lack transparency. Actuaries can ensure AI models are transparent, fair, and aligned with investors' best interests. For instance, an AI model that underestimates risk might encourage overinvestment in volatile assets, harming investors.

**Liquidity Risks (2):** While AI can impact liquidity, this risk is generally lower compared to operational and consumer protection risks. However, AI systems that manage liquidity need to be carefully monitored to prevent adverse effects on financial stability.

**Market Risks (1):** AI's impact on market risks, such as price volatility, is less significant compared to other risks. Market risks are inherent in financial markets, and AI adds a marginal incremental risk. However, the influence of AI on market trends and behaviours must be continuously evaluated to mitigate any potential negative impacts.

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**Question 12. AI may affect the type and degree of dependencies in financial markets in certain circumstances, especially where a high number of financial entities rely on a relatively small number of third-party providers of AI systems.**

**Do you see a risk of market concentration and/or herding behavior in AI used for financial services?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain in which areas of AI you see a risk of concentration:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, there is a notable risk of market concentration and herding behaviour in the use of AI for financial services. The market dominance of major non-European corporations in the cloud and AI sectors presents a significant concern. These companies wield disproportionate bargaining power compared to European providers, which can lead to dependencies that are difficult to manage.

The widespread use of General-Purpose AI systems (GPAIs) also needs to be considered, as their extensive adoption could generate herding and systemic risks, particularly if these systems malfunction or experience disruptions. For instance, GPAIs might 'hallucinate,' or critical disturbances might sever their operations, amplifying risks across the market.

Additionally, dependence on large technology companies for cloud and AI infrastructure introduces further vulnerabilities. Issues such as geographical concentration of servers, energy supply disruptions, and overall performance of underlying infrastructure could have far-reaching consequences. For example, the CrowdStrike incident in July underscores the potential problems associated with heavy reliance on a few technology providers. Such dependencies make the financial market susceptible to single points of failure and large-scale disruptions.

Initially, AI systems may exhibit biases and concentration due to limited data and algorithmic diversity. Over time, as more data becomes available and new algorithms and companies emerge, these issues might be mitigated. However, the initial phase poses significant risks that need careful monitoring and management. Insurers relying on a small number of specialised AI vendors face significant concentration risks. Should these vendors go out of business or experience operational disruptions, insurers would be severely impacted. Furthermore, widespread use of the same AI systems by many market participants could lead to herding behaviour, particularly in pricing strategies.

The use of synthetic data for training AI systems is another area of concern. The providers of synthetic data are likely to be few and highly specialised, posing similar concentration risks. If multiple insurance companies use the same datasets for training their AI systems, their results could become homogenised. This uniformity may increase systemic risk.

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## AI and compliance burden

### Question 13. Can AI help to reduce the reporting burden?

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain in which areas you see AI reducing reporting burden:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, AI can significantly help reduce the reporting burden for actuaries and financial institutions. The potential for AI to streamline and enhance reporting processes is substantial and multifaceted, considering the already high degree of reporting and compliance requirements. To successfully and safely reduce the reporting burden using AI, a deep understanding of regulation, accounting, business modelling, technology, and data is required. Actuaries are uniquely positioned and professionally trained in all these disciplines and should play a key role in this respect.

AI can automate the collection and initial processing of data from various sources, including internal databases, external data providers, and unstructured data sources like emails or documents. This automation can dramatically reduce the time actuaries spend on data preparation. Enhanced data quality checks are another benefit, with machine learning algorithms identifying anomalies, inconsistencies, and potential errors, thereby improving overall report quality and reducing the need for manual checks. Intelligent report generation through Natural Language Generation (NLG) technologies can automatically create narrative reports based on analysed data. This capability includes generating first drafts of regulatory filings, management reports, or client communications, significantly reducing the time actuaries spend on report writing. Additionally, AI-powered dashboards can provide real-time insights and automatically updated reports, reducing the need for frequent manual report generation and enabling more timely decision-making. Predictive analytics can offer more accurate and timely forecasts, potentially reducing the frequency of re-forecasting and associated reporting. AI systems trained on regulatory requirements can automatically flag potential compliance issues in reports, reducing the risk of non-compliance and the associated reporting burden. AI can also automate the reconciliation of data across different systems and reports, a traditionally time-consuming task for actuaries.

Intelligent document management systems powered by AI can automatically categorize, tag, and retrieve relevant documents for reporting purposes, saving time in locating and organising supporting documentation. Voice-to-text and natural language processing technologies can transcribe and analyse meetings or dictated notes, streamlining the capture of qualitative information for reports. Furthermore, AI can rapidly generate and analyse multiple scenarios, reducing the time actuaries spend on manual scenario modelling for risk reporting.

However, it is important to note that while AI has the capacity to reduce the reporting burden, more human supervision will be needed to ensure accuracy and reliability. The output from AI systems will require double-checking to ensure it is correct. Additionally, the processes must be completely transparent and explainable so that key stakeholders can place full trust in the system and reliably explain any queries that might arise. AI can significantly help reduce the reporting burden across various areas, enhance productivity, and ensure more accurate and timely reporting, provided that a critical eye is maintained, and human oversight remains an integral part of the overall process.

However, in the short term, incorporating AI into insurance operations might actually increase the reporting burden quantitatively. This is due to new regulatory requirements surrounding AI usage, data privacy concerns, and the need for transparency in AI decision-making processes. Companies may need to report on their AI systems' functionality, data sources, and potential biases. In the medium to long term, as regulatory frameworks mature and companies adapt, AI should ultimately reduce the reporting burden.



**Question 14. Do you think AI can facilitate compliance with multiple regulatory standards across the EU and thus facilitate market integration or regulatory compliance?**

**For example, would you consider it feasible to use AI for converting accounting and financial statements developed under one standard (e.g. local GAAP) to another standard (e.g. IFRS)?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain and elaborate on your answer to question 14 and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, AI has significant potential to facilitate compliance with multiple regulatory standards across the EU and enhance market integration and regulatory compliance. While this potential is backed by concrete use cases (see below), Actuaries and other skilled experts are needed to ensure professional use and outcome of such AI systems.

This potential extends to tasks such as converting financial statements between different accounting standards. AI systems can be trained on various EU regulatory frameworks including Solvency II, IFRS 17, GDPR, and MiFID II. These systems can then automatically flag potential compliance issues across multiple regulations, provide real-time updates on regulatory changes and their implications, and assist in generating compliant reports for different regulatory bodies.

For insurers operating across multiple EU countries, AI can analyse and interpret local regulations in different languages, identify commonalities and differences in regulatory requirements across jurisdictions, and suggest efficient compliance strategies that satisfy multiple regulatory regimes simultaneously. AI can help standardise reporting across different EU countries by automating the translation of reports into multiple languages, ensuring consistency in terminology and metrics across different reports, and flagging inconsistencies or anomalies in cross-border reporting.

AI could provide support in converting financial statements between different accounting standards such as local GAAP and IFRS. For example, an Italian insurer needs to report its financial statements in both Italian GAAP (for local regulatory purposes) and IFRS (for group reporting to its EU parent company). The AI system would be trained on the rules and principles of both Italian GAAP and IFRS, including specific insurance accounting standards like IFRS 17. The insurer inputs its Italian GAAP financial statements into the AI system, which then analyses the statements, identifying key areas of difference between Italian GAAP and IFRS. The AI system can make proposals for the necessary adjustments to convert the statements to IFRS, including recalculating goodwill figures, adjusting property valuations, and recalculating pension liabilities. The system can provide support in producing IFRS-compliant financial statements along with a detailed reconciliation showing all adjustments made and provide explanations for each adjustment, referencing relevant IFRS standards and guidelines.

While AI may be a useful tool in facilitating compliance and market integration, it should be used complementary to robust regulatory frameworks and human expertise. Continuous collaboration between regulatory bodies, AI developers, and industry stakeholders is important to ensure that AI solutions effectively support regulatory compliance and foster market integration across the EU.

However, there are also certain reservations about the feasibility of AI significantly helping in this regard. The process of elaborating financial statements involves considerable nuance and requires decisions to be made and agreed upon by stakeholders. Sometimes, a full recalculation of figures is necessary under different assumptions. For an AI system to support this, it would need to be very sophisticated, which could pose a challenge for the necessary transparency and explainability required.

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## Data access

**Question 15. In order to develop AI applications, do you need access to external datasets that you currently don't have access to?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain your answer to question 15:**

5000 character(s) maximum

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, access to external datasets is crucial for developing effective AI applications. To improve AI applications across the EU, there should be easier access to datasets across borders, similar to the data access facilitated by the PSD2 directive in the financial sector. Examples of valuable datasets include those issued by various European agencies and structured in a uniform manner, such as climate data, satellite data, meteorological data, and other ground data that might correlate with insurance products. These datasets could provide significant insights and enhance the accuracy of AI models used in insurance and financial services.

External data sources are often key to developing successful AI applications. Generally, access to these datasets can be obtained by seeking permission or through efforts to capture the data. However, datasets that are protected for good reasons should probably not be used. There are instances where the effort required to gather the necessary external data is too great for the potential and uncertain gain, leading developers to abandon efforts.

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## **Question 16. Which datasets would you need to develop meaningful AI applications and for which purpose/use case?**

### **Please explain and give examples when possible:**

5000 character(s) maximum

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Better access to data across the EU can create numerous opportunities for developing advanced AI applications, providing a competitive edge for the entire region. Access to datasets should be facilitated without compromising the rightful protection of personal data, emphasising the need for anonymisation. Anonymised data can help build better services across various domains.

Pricing and claims-related data are critical for new market entrants and third-party developers. Anonymised datasets concerning pricing, claims, and fraud can be very useful in reducing barriers to entry and enabling experimentation with AI systems that could improve insurers' pricing, reserving, and fraud detection capabilities. Additionally, insurers often need to develop their own credit rating assessments without fully relying on rating agencies. Access to relevant datasets can help insurers create more sophisticated models for credit rating assessments.

In the mobility sector, access to vehicle data is crucial. Currently, car manufacturers are moving towards monopolising data from connected vehicles. Access to this data, with user consent, by the entire aftermarket chain would enhance competition and innovation, benefiting drivers, passengers, and society as a whole. Such data could improve road safety, infrastructure optimisation, ecological transition, and vehicle electrification. It would also facilitate the sharing of public spaces among all mobility players.

In the health sector, aligning the processing of data by health insurers with that of compulsory health insurance could enhance service delivery. This alignment would allow health insurers to process benefits more efficiently and contribute to better health outcomes for individuals.

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## **Question 17. Do you face hurdles in getting access to the data you need to develop AI applications in financial services?**

Yes

- No
- Don't know / no opinion / not applicable

**Please explain which type of data you would need to have access to:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, there are notable hurdles in accessing the data required to develop AI applications in financial services. One major challenge is the dominance of large technology companies in the market, with significant control over valuable datasets and little interest to share the data with the societies from which they obtained them. Better access to data could benefit society by increasing competition and fostering innovation. There are also specific issues related to the use of generative AI in the insurance sector. Developing foundation models for generative AI requires large datasets, but current regulations can prevent the storage of such training data, such as customer telephone call recordings. Furthermore, many companies in the market do not have the critical mass of data needed to develop effective AI models. This lack of data leads some insurers to rely on solutions from major technology companies, which are not specifically tailored to the insurance industry but are generic enough to add value. To address these challenges, it would be beneficial to have regulations that respect data privacy principles while providing a technical framework that enables data sharing and pooling. This approach could support the development of marketplace models specific to the insurance sector. For example, initiatives for telematics data could serve as a model for how data pooling can be effectively managed and utilised.

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**Question 18. Are you familiar with the [EU Data Hub](#), a data sharing tool for supervisors and financial companies?**

- Yes
- No
- Don't know / no opinion / not applicable

**Question 18.2 Are you aware of other data sharing initiatives that you find useful?**

- Yes
- No
- Don't know / no opinion / not applicable

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**Question 19. Should public policy measures (e.g. legislative or non-legislative) encourage the exchange of data between market participants, which can be used to train AI systems for use cases in finance?**

- Yes
- No
- Don't know / no opinion / not applicable

## Please explain which type of measures you would propose:

5000 character(s) maximum

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, public policy measures that encourage the exchange of data between market participants are not just a strategic imperative for advancing AI in finance but are also important for creating a more inclusive, innovative, and competitive financial ecosystem in the EU.

One of the challenges is that fragmented data may result in several issues when this data is incorporated into models. As such, data exchanged should be as extensive as possible to allow the development of higher quality and consistent models.

Additionally, it is important to differentiate between the exchange of personal data and anonymised data.

The exchange of anonymised data does not compromise the protection of individuals. While anonymised data could be shared easily, sharing personal data, especially in the insurance sector, presents significant risks. For example, in health insurance, making personal data open could lead to adverse selection, where competitors target healthier individuals, leaving insurers with a higher-risk pool. Therefore, careful consideration is needed before making personal data accessible.

However, while public policy measures can encourage data exchange, it is important to consider potential risks. One of the main challenges when sharing data between market participants is the risk of market collusion, adverse selection (e.g. in insurance), information asymmetry, or participants being accused of uncompetitive practices. Public policy that clarifies these aspects, together with strong incentives to share data, could be very useful. Incumbents are often reluctant to share their data if it can help new competitors enter the market.

On the contrary, some argue that regulators can facilitate innovation by providing clear guidelines and frameworks that support safe and ethical AI development without mandating data sharing. Under this approach, market participants collaborate voluntarily under well-defined rules, supporting innovation and the protection of sensitive financial data.

Potential considerations for improving the exchange of data could include the following:

- **Legislative Support:** Enacting laws that facilitate secure and privacy-compliant data sharing, ensuring that data exchange adheres to strict regulatory standards.
- **Data Hubs:** Establishing centralised data hubs where financial entities can share anonymised data, promoting collaboration and innovation.
- **Standardisation:** Creating standards for data formats and interoperability, enabling seamless data integration and usage.
- **Collaboration Platforms:** Promoting platforms for collaborative AI model development and training, ensuring that AI systems are robust and diverse.
- **Pilot Projects:** Supporting pilot projects that test new data-sharing models and AI applications in finance, providing insights and learnings that can be scaled across the industry.

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## Business model

### Question 20. Has AI changed your business model?

- Yes
- No
- Don't know / no opinion / not applicable

### Please explain how AI changed your business model:

5000 character(s) maximum

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, AI has significantly contributed to actuarial knowledge and practice, although it has not fundamentally altered the business model of the AAE, which is not a market participant. The AAE, through its Artificial Intelligence & Data Science Working Group, develops ethical and professional guidance for its members to ensure the responsible use of AI. This work supports actuaries in adopting AI in a manner that enhances their professional practice while maintaining ethical standards.

For many insurance companies, AI has not significantly changed the core business model. The fundamental principles of mutualisation and risk management remain intact. AI serves as a powerful tool that enhances existing processes and improves efficiency. For example, AI can optimise underwriting, claims processing, and customer service operations, making these functions more efficient and data-driven. However, these enhancements do not alter the fundamental nature of how insurance operates. This stability is crucial for maintaining the human element, which is essential for trust and ethical standards in the insurance industry. While the core business model remains unchanged, AI has transformed certain aspects of how the insurance business operates. AI enables capabilities that were previously unattainable, allowing for more sophisticated data analysis, predictive modelling, and automation of routine tasks. These advancements improve operational efficiency and decision-making processes, thereby enhancing the overall value proposition of the business without altering its foundational principles.

In conclusion, AI has brought about significant enhancements and efficiencies within the financial services including insurance. It has not fundamentally changed the core business models but has provided powerful tools that support and improve existing processes. The integration of AI continues to evolve, offering new opportunities for optimisation and innovation.

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## **Question 21. Which parts of the value chain are being improved with AI?**

**Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

AI is being utilised across several parts of the value chain in the insurance and financial services sectors:

1. **Insurance Pricing:** AI has been rapidly adopted in insurance pricing. AI algorithms enable more sophisticated analysis of complex datasets, allowing for more accurate risk assessment and pricing of insurance products.
2. **Customer Engagement and Service:** AI significantly enhances customer engagement by enabling more efficient and responsive interactions through technologies like chatbots and virtual assistants. These AI-powered tools provide 24/7 support, answer customer queries, and assist in personalised financial advice, thereby improving overall customer satisfaction and service delivery.
3. **Claims Processing and Loss Assessment:** AI improves various aspects of claims processing, including claims assessment and loss estimation. AI tools can streamline the claims process, reducing the time and effort required to process claims.
4. **Fraud Detection:** AI plays a crucial role in detecting and preventing fraudulent activities. AI algorithms can analyse large volumes of data to identify patterns and anomalies indicative of fraud, thereby reducing financial losses and maintaining lower premiums for genuine policyholders.
5. **Underwriting and Mortality Modelling:** AI is used extensively in underwriting, where it helps in data analysis and risk assessment, improving the accuracy and efficiency of underwriting decisions. AI is also applied in mortality modelling, enhancing the precision of mortality predictions and actuarial calculations.
6. **Claims Reserving:** While there are numerous academic papers exploring the use of AI in claims reserving, its adoption has been slower compared to other areas. AI can potentially provide more accurate reserving estimates, though its implementation is still evolving.
7. **Risk Management:** AI facilitates better risk management by considering market trends, assessing credit risks, and identifying opportunities. This enables financial institutions to make more informed decisions and manage risks more effectively.

For a more comprehensive discussion, please refer to our recent discussion paper: <https://actuary.eu/paper/aae-discussion-paper-what-should-an-actuary-know-about-artificial-intelligence/>

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**Question 22. Are there functions that cannot/would not be improved by AI?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain your answer to question 22 and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

While AI significantly enhances various functions within the insurance industry, there are areas where its impact may (yet) be limited due to the necessity of human judgment, ethical considerations, and the complexity of certain tasks. Below are some examples of functions where AI might have limited effectiveness, today.

1. **Negotiation and Human Interaction:** In the claims settlement process, particularly during negotiations and settlement agreements, significant human interaction and judgment are required. AI can provide valuable context and background information but cannot replace the understanding and empathy essential for successful negotiations.

2. **Ethical Judgment and Decision Making:** AI can assist in data analysis and risk assessment for underwriting decisions. However, the final decision-making process, which involves ethical considerations and balancing risk with fairness, often requires human judgment. AI's probabilistic nature cannot fully substitute the decision-making skills of experienced underwriters.

3. **Strategic Planning and Innovation:** Developing long-term strategies and innovative solutions involves creative thinking, market understanding, and the ability to foresee and adapt to future trends. AI can offer data-driven insights, but strategic planning often requires human intuition and creativity.

4. **Handling Sensitive and Confidential Information:** The use of AI in processes involving highly sensitive or confidential information is limited due to privacy concerns and the potential for data breaches. Human discretion is critical in these scenarios to maintain confidentiality and trust.

Highly complex areas requiring sophisticated AI systems with high explainability are less likely to benefit from AI advancements. Despite ongoing research in AI explainability, the current state may not meet the necessary standards in some cases, indicating the need for human oversight and intervention.

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## General purpose AI

For the purpose of this targeted consultation, respondents should consider general purpose AI as defined in [the AI Act](#) (article 3(63)), i.e. meaning any “AI model, including where such an AI model is trained with a large amount of data using self-supervision at scale, that displays significant generality and is capable of competently performing a wide range of distinct tasks regardless of the way the model is placed on the market and that can be integrated into a variety of downstream systems or applications, except AI models that are used for research, development or prototyping activities before they placed on the market”.

### Question 23. Do you use general purpose AI models, including generative AI, and their respective reference architectures?

- Yes
- Not yet, but we plan to use general purpose AI models within the next 2 years
- No
- Don't know / no opinion / not applicable

### Please explain why you want to opt for these AI models in your organisation:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.



Although as AAE we do not use such models, the organisations where actuaries work utilise general purpose AI models, including generative AI, across various tasks. These models are applied in several areas, enhancing operational efficiency, improving customer experiences, and maintaining a competitive edge.

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**Question 24. How do you plan to operationalise and adopt general purpose AI at scale?**

**Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

N/A

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**Question 25. How does the increasing availability of general purpose AI models, including generative AI applications, impact the need to access new datasets?**

**Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The increasing availability of general-purpose AI models, including generative AI applications, could significantly impact the need to access new datasets.

First, it is essential to recognise that these advanced AI models have greatly simplified the process of dealing with unstructured and complex datasets. Traditionally, such datasets were often ignored due to the difficulty in extracting meaningful insights from them. However, with the capabilities of modern AI, developers can now effectively utilise these previously overlooked datasets to gain valuable insights.

Moreover, there is a notable emphasis on optimising the use of existing data before seeking new datasets. Techniques such as data augmentation, transfer learning, data integration, and feature engineering play crucial roles in maximising the value derived from current data resources. These strategies ensure that the available data is utilised to its fullest potential, reducing the immediate need for new datasets.

Another critical consideration is the inherent bias in the datasets used to train these AI models. The presence of biased information in training datasets raises concerns about the fairness and accuracy of AI outcomes. Consequently, it is imperative to re-examine and potentially revise the datasets employed in training these models to mitigate bias and enhance the reliability of AI-generated results.

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**Question 26. Compared to traditional AI systems such as supervised machine learning systems, what additional opportunities and risks are brought by general purpose AI models?**

**Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The increasing availability of general-purpose AI models, including generative AI applications, presents both significant opportunities and notable challenges. As actuaries, we acknowledge the transformative potential of these technologies in various domains, but we must also be vigilant about the associated risks and ethical considerations.

#### Opportunities and Advantages

**Versatility and Adaptability:** General-purpose AI models can be applied across diverse tasks without extensive retraining, enhancing innovation in actuarial work by quickly adapting to new domains or tasks with minimal fine-tuning.

**Natural Language Processing:** These models excel at understanding and generating human-like text, enabling sophisticated analysis of unstructured data such as policy documents and customer communications. They can assist in drafting reports, summarising complex documents, and generating explanations for model outputs.

**Multimodal Capabilities:** General-purpose AI models can process various data types (text, images, numerical) simultaneously, offering comprehensive insights for risk assessment and underwriting.

**Knowledge Integration:** The ability to integrate vast amounts of knowledge from diverse sources provides actuaries with a broader context for decision-making.

**Creative Problem-Solving:** These models can generate novel solutions to complex problems, leading to innovative actuarial methodologies or product designs.

**Enhanced Customer Interaction:** Improved customer service through sophisticated chatbots and virtual assistants can potentially assist in personalised financial advice.

**Code Generation and Analysis:** These models can aid in writing and reviewing code, accelerating the development of actuarial software and tools.

#### Risks and Challenges

**Lack of Transparency and Potential for Bias:** General-purpose AI models pose a higher risk of implicit biases and discrimination compared to supervised machine learning systems. Ensuring representative and unbiased calibration data is crucial to mitigate these risks.

**Hallucinations and Fabrications:** These models can generate plausible-sounding but factually incorrect information, posing significant risks in financial and actuarial contexts where accuracy is crucial.

**Overestimating Capabilities:** While these models handle unstructured data efficiently, they may overestimate their ability to provide specialised knowledge, potentially lowering the quality of expert insights.

**Sustainability Concerns:** The substantial energy requirements of generative AI systems pose challenges for a sustainable society, necessitating careful consideration of their applications.

**Cybersecurity and Data Privacy:** The use of unsanctioned applications and the potential exposure of confidential information raise significant cybersecurity concerns. Additionally, the broad knowledge base of these models prompts questions about data privacy.

**Intellectual Capital and Deskilling:** Overreliance on general-purpose AI may diminish individuals' ability to produce intellectual or creative work, leading to a decline in critical thinking and expert knowledge.

**Ethical and Legal Issues:** Questions about the ethics of using copyrighted and publicly available data without consent, along with the perpetuation of biases, highlight the need for ethical AI practices and robust governance.

**Explainability and Compliance:** The complex nature of these models challenges the explainability of their decision-making processes, which may conflict with regulatory requirements for transparency. Ensuring compliance with existing regulations is imperative.

**Operational Reliability:** Continuous monitoring and robust governance are essential to harness the benefits of these technologies while mitigating operational risks.

**Question 27. In which areas of the financial services value chain do you think general purpose AI could have a greater potential in the short, medium and long term?**

**Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

General Purpose AI (GPAI) models, including large language models (LLMs), hold significant potential across the financial services value chain. While these technologies are still evolving, their impact is expected to be profound across various time horizons.

In the short term, GPAI is primarily revolutionising customer service and sales. AI-driven chatbots and virtual assistants are enhancing customer engagement by automating routine tasks and providing personalised recommendations. These technologies enable financial institutions to improve customer satisfaction and operational efficiency while reducing costs.

Additionally, GPAI is being utilised in claims processing, where it automates routine tasks and accelerates resolution times, thereby improving the overall customer experience. The integration of AI in these areas offers immediate benefits, including increased efficiency, enhanced security, and higher revenue potential.

In the medium term, financial institutions will increasingly leverage GPAI to enhance risk management and fraud detection through advanced analytics and predictive modelling. The ability of GPAI to process large volumes of unstructured data will become invaluable in making operations more efficient. For instance, AI can assist in analysing thousands of PDF fund prospectuses to identify those that meet specific investor criteria or help supervisors quickly review documentation provided by insurance companies.

Moreover, as companies scale their AI efforts, third-party AI solutions will become more prevalent across the value chain. The ongoing implementation of AI governance strategies, spurred by regulatory frameworks such as the AI Act, will further facilitate the professional management of AI technologies in risk management and other areas.

Looking ahead to the long term, GPAI is expected to drive strategic decision-making and be embedded across the entire financial services value chain. Financial institutions will increasingly use AI for personalised financial planning, innovative product development, and proactive financial solutions, thereby enhancing customer experiences and operational efficiencies.

AI's ability to assist with programming, summarise large volumes of text, and translate code bases for non-technical audiences will continue to evolve. In the long term, AI will also process customer complaints data, parse open-ended questionnaires, provide bespoke financial advice, assist in drafting reports, and help identify emerging risks.

While the potential benefits of GPAI are significant, it is crucial to acknowledge and address the associated risks. These include challenges related to transparency, bias, data privacy, and cybersecurity. Ensuring robust governance, continuous monitoring, and adherence to ethical AI practices will be essential to mitigate these risks.

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**AI Governance in relation to non-high risk use cases, and which are not subject to specific requirements under the AI Act**

**Question 28. Have you developed, or are you planning to develop an AI strategy or other relevant guidelines within your organisation for the use of AI systems?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain which AI strategy or other relevant guidelines you have developed, or are planning to develop:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes. As a professional organisation we are regularly revisiting and developing our code of professional conduct and European Standards of Actuarial Practice to be up to date and to remain relevant in the task of guiding actuaries when using AI.  
Please read our relevant AI publication on the ethical and professional considerations that actuaries can add to the area of AI: <https://actuary.eu/paper/aae-note-on-how-actuaries-can-provide-an-ethical-and-professional-dimension-to-ai/>

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**Question 29. Have you put in place or are you planning to put in place governance and risk management measures to ensure a responsible and trustworthy use of AI within your organisation?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain which governance and risk management measures you have put in place or you are planning to put in place:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

refer to Q28

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## Forecasts

## Question 30. What are the main evolutions to be expected in AI in finance?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Below, we consolidate the various areas where key developments are expected in AI within the finance sector, with a focus on insurance, as noted in previous questions.

**Enhanced Personalization and Customer Support:** AI will enable financial institutions to offer more tailored financial products and services. By analysing individual customer data, AI systems can provide personalised recommendations and product offerings that meet specific customer needs and risk profiles. In the insurance sector, AI can predict customer preferences and streamline claims handling, hence improving customer support and efficiency of service.

**Improved Risk Management and Fraud Detection:** AI is expected to significantly enhance risk assessment and fraud detection capabilities. By leveraging advanced analytics and real-time data processing, AI can produce more robust forecasts and risk scenarios, improving accuracy and reducing potential losses. The ability to identify patterns in historical claims data will enable insurers to better manage risks.

**Streamlined Finance Operations:** Automation of complex tasks is another critical evolution. AI will streamline various actuarial processes such as data preparation, model validation, and financial reporting. This automation reduces manual effort, improves accuracy, and ensures compliance with regulatory standards.

Enhanced data quality controls can further support reliable financial reporting.

**Strategic Decision-Making and Innovation:** AI-driven insights will support strategic decision-making and foster innovation within financial firms. By analysing market trends and customer behaviour, AI can help anticipate future needs and opportunities. Scenario analysis and sensitivity assessments provided by AI will be essential for strategic planning and resource allocation. This will enable firms to remain competitive in the market.

**Specialised Processes and Financial Stability:** AI can revolutionise specialised finance functions, including insurance reserving, financial hedging, and investor relations. For example, Generative AI can enhance the accuracy of loss-reserve estimates and optimise hedging strategies by providing advanced predictive analytics.

**Enhanced Regulatory Compliance:** The integration of AI can support compliance with multiple regulatory standards across different jurisdictions.

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## Question 31. Which financial services do you expect to be the most impacted by AI?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The integration of AI is anticipated to significantly transform several areas within the financial services sector. We expect AI to have a profound impact on industries such as insurance, banking, investment management, financial planning and advisory services, and reinsurance. These sectors are likely to experience substantial enhancements in efficiency, accuracy, customer experience, and risk management due to AI technologies.

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## Question 32. Do you have any additional information to share?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

It should be noted that the AAE itself is an association representing actuarial associations across Europe, and as such, does not deploy AI models itself. However, we represent circa 30,000 actuaries across Europe, who work in companies where they deploy AI models. The responses to this consultation are based on our knowledge and expertise as a profession working within the financial services sector.

## Part 2: Questions related to specific use cases in financial services

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### Question 34. In which sector(s) are you using AI?

Please select as many answers as you like

- Banking and payments
- Market infrastructure
- Securities markets
- Insurance and pensions
- Asset management
- Other

## Questions per sector

### Insurance and pensions

In insurance, possible AI use cases range from insurance pricing and underwriting to advice, compliance, fraud detection/AML and customer service. Depending on the specific use cases, relevant legislation would include:

- the [AI Act](#) (for the identified high risk use-cases such as life and health insurance risk assessment and pricing in relation to natural persons)
- the [Insurance Intermediation Directive \(IDD\)](#) (for example robo-advice)
- [Solvency II](#) and [institutions for occupational retirement provisions \(IORPs\)](#) (for example provisions on risk management in relation to insurance risk assessment)
- and the [Anti-Money Laundering Directive \(AMLD\)](#) (for example AML use cases)

### Question INSURANCE 1. For which use case(s) are you using/considering using AI?

**Examples: risk management, insurance pricing and underwriting, setting capital requirements/technical provisions, robo-advice, regulatory compliance, sustainable finance, fraud detection, AML, customer service, sales and distribution, claims management, etc.**

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Actuaries working in the insurance industry and wider financial sector, or their employers, may consider the use of AI in the following areas:

1. Automating claims handling
2. Chatbots and customer interaction
3. Fraud detection
4. Insurance pricing and underwriting
5. Risk management and technical provisions
6. Customer communication and personalised services
7. Data management and reporting
8. Sustainable finance and regulatory compliance
9. New product offerings
10. Process automation and migration support

For more details please refer to our answer to Question 2 (main part).



## Question INSURANCE 2. What are the opportunities that AI brings to your use case?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

As discussed previously for Question 2 in Part 1 in this Section, there are many use cases and opportunities which we have discussed in our answers to the aforementioned. questions. A brief overview, to avoid overlap, is provided below:

#### More Accurate Forecasting and Risk Assessment

- Dynamic risk assessment using data from various sources
- Real-time analysis of driving behaviour for car insurance premiums
- Improved lapse forecasting for better model projections

#### Enhanced Claims Processing

- Automation and acceleration of claims settlement
- Image recognition for vehicle damage assessment

#### Improved Fraud Detection and Regulatory Compliance

- Detection of patterns and anomalies for fraud and money laundering
- Real-time analysis of transaction patterns and customer behaviour
- Assistance in monitoring and ensuring regulatory compliance

#### Optimised Pricing and Product Offerings

- More accurate pricing and better risk selection
- Tailored products and efficient customer interactions
- Enhanced stochastic approaches for provisions setting and premium determination

#### Operational Efficiency and Customer Experience

- Automation of customer service and claims handling
- Personalised customer interactions through AI-driven chatbots
- Streamlined processes for improved efficiency

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## Question INSURANCE 3. What are the main challenges and risks that AI brings to your use case (e.g discrimination, opacity of the AI application developed, difficult to control/supervise it, etc.)?

### Please explain and give examples when possible:

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The integration of AI in the insurance sector brings several challenges and risks that need to be carefully managed to ensure ethical and effective use. The main challenges identified by our members include issues related to transparency, bias, control, and regulatory compliance.

**Lack of Transparency and Explainability:** AI models, especially those based on machine learning, are often referred to as "black box" models, making it difficult to explain individual results to stakeholders. This lack of transparency can be problematic when justifying premium increases or exclusions from coverage. From an actuarial standpoint, simpler models that can be fully explained are sometimes preferable, even if they are less precise than more complex AI models.

**Potential Discrimination and Bias:** A significant risk of using AI in insurance is the potential for discrimination and bias. AI systems may perpetuate or amplify existing biases present in the training data, leading to unfair outcomes. This is particularly concerning in insurance, where discrimination based on gender, ethnicity, or preexisting medical conditions is unacceptable. Additionally, the tendency to develop a hyper-granular and individualised view of risks may undermine the very principle of mutualisation which is at the heart of insurance.

**Control and Monitoring:** Managing and supervising AI systems can be challenging, particularly with self-learning models that may exhibit unexpected behaviours. Ensuring that AI models operate within the intended boundaries and continue to produce valid outcomes requires robust control environments and continuous monitoring. The risk of nested AI models increasing uncertainty in downstream dependent models also necessitates careful coordination and recalibration.

**Data Privacy and Security** Protecting sensitive customer data and complying with data protection regulations are critical concerns when using AI. There are inherent risks related to data privacy and security, particularly when relying on external AI solution providers. Loss of intellectual property, such as company data and prompts used to train models, is another risk that needs to be addressed.

**Regulatory Compliance** Adhering to existing and evolving regulatory requirements regarding AI deployment can be complex. Ensuring that AI systems comply with all relevant regulations and standards is essential to avoid potential penalties and maintain trust with stakeholders. The development and implementation of AI strategies must consider the balance between algorithm accuracy and fairness, which can vary based on the business case.

**Resource and Infrastructure Requirements** The computational requirements for AI systems can be significant, posing challenges related to infrastructure and resource allocation. Training personnel and hiring new employees with the necessary skills to manage and leverage AI technologies effectively are also important considerations.

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**Question INSURANCE 4. What is the main barrier to developing AI in your use case (e.g. lack of skills and resources, readiness of the technology, high regulatory costs for compliance with the relevant frameworks, etc.)?**

**Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The development and deployment of AI in the insurance sector faces some important barriers, which need to be addressed to harness AI's full potential effectively. Based on the responses of our members, the main barriers include:

**Lack of Skills and Resources:** A primary challenge is the scarcity of suitable experts with the necessary expertise in technology, methods, regulatory compliance, and domain-specific business knowledge. This lack of interdisciplinary skills can hinder the successful implementation of AI projects. Additionally, mid to small-sized companies often struggle with the availability of relevant data for model training, further complicating AI development.

**Regulatory Costs and Compliance Complexity:** The insurance industry is highly regulated, and introducing AI technologies adds layers of regulatory complexity. Compliance with frameworks such as GDPR and specific insurance regulations governing AI use in underwriting and claims processing can be costly and resource intensive. Ensuring that AI models do not result in discriminatory practices requires rigorous testing and validation, significantly increasing development costs. Moreover, the scarcity of skilled personnel who understand both the technical aspects of AI and the regulatory environment may exacerbate this challenge. The lack of resources and the prioritisation of business-as-usual activities and regulatory deliverables over AI development is a substantial barrier. Staff and senior leaders often have limited time to devote to AI system development, and may cause these projects to be postponed or progressed only when there is spare time.

**Readiness of the Technology:** The readiness of AI technology varies, and integrating these technologies into existing systems can be challenging. Organisations need to see the immediate added value of AI to justify the investment, but technological readiness and the complexity of integration often pose significant barriers.

**Absence of Appropriate Sandboxes:** The lack of appropriate sandboxes within some organisations, to experiment and validate AI models, can hinder AI innovation. Sandboxes provide a controlled environment to test AI applications without the risk of regulatory breaches or operational disruptions. Their absence makes it difficult to trial and refine AI technologies before full-scale deployment.

Please also consider the responses to our answers in Section 1.3.

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### **Question INSURANCE 5. Does AI reduce or rather increase bias and discrimination in your use case?**

- Yes
- No
- Don't know / no opinion / not applicable

### **Please explain your answer to question INSURANCE 5 and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The impact of AI on bias and discrimination within the insurance sector is a complex issue, with potential for both positive and negative outcomes. Our consolidated response, incorporating insights from various members, highlights the nuanced effects of AI on bias and discrimination.

**Potential to Increase Bias:** AI systems can potentially increase bias and discrimination if not carefully managed. These systems often reflect existing societal biases embedded in their training data. If left unchecked, AI may perpetuate or even exacerbate these biases, leading to unfair treatment of vulnerable populations such as the poor, women, and foreigners. For instance, AI can utilise direct and indirect information to identify customers perceived as high-risk, which may result in discriminatory underwriting or pricing decisions. Because many AI systems are automated, significant harm might occur before biases are detected and addressed.

**Potential for Reducing Bias:** Conversely, AI also holds the potential to reduce bias by standardising processes and decisions, thereby eliminating human subjectivity and inconsistency. AI can help distinguish relationships between protected and unprotected characteristics, which traditional actuarial tools might miss. By using diverse training datasets, continuous monitoring, human oversight, and implementing fairness constraints in AI models, insurers can mitigate the risks of bias and discrimination.

**Balanced View:** While AI can make underwriting or pricing decisions more accurate from a risk perspective, it may also lead to outcomes that are perceived as less fair from a social equity standpoint. This tension highlights the need for a balanced approach, incorporating both technical and ethical considerations in AI development and deployment.

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## **Question INSURANCE 6. How can insurers ensure that the outcomes of AI systems are not biased?**

### **Please explain and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The insurance sector must take proactive steps to ensure that AI systems do not produce biased outcomes. This involves a combination of pre-deployment testing, ongoing monitoring, diverse datasets, and comprehensive analysis. Below is a consolidated response incorporating insights from our members:

**Ex Ante Measures:** To mitigate bias before AI systems are deployed, insurers should extensively test these systems and apply Explainable AI (XAI) techniques. XAI helps in understanding how AI decisions are made, ensuring transparency and accountability. A thorough analysis of the initial training data is crucial to identify any inherent biases and address them proactively.

**Ex Post Measures:** Post-deployment, insurers should devote sufficient resources to investigating reports of potential biases and correcting them. Continuous monitoring of AI outcomes is essential to detect and rectify any biases that may arise during operation. Appropriate systems should be established to facilitate iterative improvement of AI models.

Post-deployment analysis is vital to identify biases that may not have been apparent during testing. Regularly investigating the outputs for evidence of bias and collecting feedback can highlight issues that need addressing. This includes looking for unexpected patterns or disparities, such as disproportionate outcomes based on age, gender, or other protected characteristics.

**Diverse and Representative Datasets:** Using diverse and representative datasets with adequate size is fundamental to reducing bias in AI systems. These datasets should reflect the varied demographics and characteristics of the insured population to avoid skewed outcomes. Regular audits of these datasets can help ensure ongoing representativeness and fairness. The relative size of datasets could lead to unwanted discrimination.

**Bias Mitigation Techniques:** Implementing bias mitigation techniques during the development and deployment of AI systems can further enhance fairness. This includes incorporating fairness constraints into algorithms and employing tools designed to detect and correct bias.

**Human Oversight and Ethical Guidelines:** Human oversight remains a critical component in ensuring the fairness of AI systems. Transparency and explainability should be prioritised, alongside the development of ethical guidelines for the use of AI. Involving inclusive development teams with diverse perspectives can also help in identifying and mitigating potential biases.

**Regulatory Frameworks and Third-Party Reviews** Establishing regulatory frameworks to define proper data usage and ensuring compliance with these standards can help mitigate bias. Additionally, seeking third-party reviews and certifications of AI systems can provide an extra layer of assurance regarding their fairness and ethical integrity.

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**Question INSURANCE 7. Has general purpose AI opened new possibilities or risks in your use case?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain your answer to question INSURANCE 7 and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

General purpose AI has indeed opened new possibilities and introduced new risks in the insurance sector. The integration of AI into actuarial work and broader insurance operations offers significant potential benefits, but also poses considerable challenges.

General purpose AI enables the extraction and summarisation of knowledge across millions of documents with minimal manual effort. This capability can significantly improve the efficiency of information processing and decision-making. AI applications can enhance the realisation of diverse tasks within insurance companies by providing deeper and more accurate data analysis. This can support better decision-making and more precise risk assessments, leading to improved actuarial practices and business outcomes. Additionally, AI opens the door to the development of completely new services for customers. These could include personalised insurance products, more efficient claims processing, and enhanced customer support through AI-driven chatbots and virtual assistants.

While AI can enhance decision-making, there are challenges related to the accuracy of AI-generated insights. Ensuring that AI systems produce reliable and valid results is critical, particularly in areas such as risk assessment and pricing. The use of AI in insurance involves processing vast amounts of personal and sensitive data, raising significant data privacy concerns. Strict compliance with regulations such as GDPR is required to protect customer information. AI applications in insurance must navigate complex ethical issues, including fairness, transparency, and accountability. Ensuring that AI systems do not perpetuate biases or lead to discriminatory practices is essential to maintain trust and integrity in the sector. Furthermore, the deployment of AI technologies introduces new layers of regulatory complexity. Compliance with existing and evolving regulatory frameworks is resource-intensive and necessitates ongoing vigilance to ensure adherence to legal standards.

Please also refer to our answers to Question 2 and 3 in Part 1 as well as the Insurance Section.

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### **Question INSURANCE 8. On whom do you rely for the development of your AI solutions?**

- External providers
- In-house applications
- Partial collaboration with external providers
- Don't know / no opinion / not applicable

### **Please explain your answer to question INSURANCE 8 and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The development approach for AI solutions in the insurance field depends on the specific use case, technical requirements, risk assessment and may vary between companies who may select any of the above options.

As note previously, the AAE is not a market participant. Our response is provided in the scope of the organisations where our members work.

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## **Part 3: AI Act**

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In December 2023 the European Parliament and the Council reached a provisional political agreement on the [first comprehensive AI framework, put forward by the Commission on 21 April 2021](#). The regulation was adopted by the European Parliament on 13 March 2024 and will enter into force later this spring once it has been published in the Official Journal of the EU. This horizontal *acquis* is applicable across all economic sectors.

The [AI Act](#) defines an AI system as “a machine-based system designed to operate with varying levels of autonomy, that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments”. Recital 11 further sets out the reasons for this definition, notably setting out that it is based on key characteristics that distinguish it from simpler traditional software systems of programming approaches.

The AI Act will establish two high risk use cases for the financial sector:

1. AI systems intended to be used to evaluate the creditworthiness of natural persons or establish their credit score, with the exception of those AI systems used for the purpose of detecting financial fraud
2. AI systems intended to be used for risk assessment and pricing in relation to natural persons in the case of life and health insurance.

The aim of this section is to identify which are your specific needs in order for the Commission to be able to adequately assist you with appropriate guidance for the implementation of the upcoming AI framework in your specific market areas, especially in particular to the high-risk use cases identified.

## Scope and AI definition

**Question 33. Which of the following use cases that could fall into the categorisation of high-risk are potentially relevant to your activity?**

- AI systems intended to be used to evaluate the creditworthiness of natural persons or establish their credit score
- AI systems intended to be used for risk assessment and pricing in relation to natural persons in the case of life and health insurance
- Both
- None
- Don't know / no opinion / not applicable

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**Question 35. Please explain the overall business and/or risk management process in which the high-risk use case would be integrated and what function exactly the AI would carry out:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The specific implementation of high-risk AI systems, particularly for risk assessment and pricing in life and health insurance, is unique to each insurance company. Each organisation must account for its distinct business processes, risk management strategies, and regulatory environment. As such, the precise integration and functionality of these AI systems will differ across companies.

We acknowledge that the existing compliance requirements within the financial services sector already cover many aspects needed for high-risk AI use cases. It is crucial that the integration of these AI systems aligns with current regulatory frameworks to prevent conflicting requirements.

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**Question 36. Are there any related functions AI would carry out which you would suggest distinguishing from the intended purpose of the high-risk AI systems in particular to the use cases identified in question 34?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain your answer to question 36 and give examples when possible:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

We believe there is a distinction between pricing models that exhibit autonomous features which would be classified as high-risk systems, and traditional generalised linear models used for pricing in insurance. The rationale is provided in our response to question 37.

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**Question 37. Please explain why these functions would/should in your view not be covered by the high-risk use cases set out in the AI act either because they would not be covered by the definition of the use case or by relying on one of the conditions under article 6(3) of the AI Act and explaining your assessment accordingly that the AI system would not pose a significant risk of harm if:**

**a) the AI system is intended to perform a narrow procedural task:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.



**b) the AI system is intended to improve the result of a previously completed human activity:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

**c) the AI system is intended to detect decision-making patterns or deviations from prior decision-making patterns and is not meant to replace or influence the previously completed human assessment, without proper human review:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Insurers certainly use AI in risk assessment and pricing, particularly in the context of actuarial work. For the purposes of this response, we are focusing on actuarial risk assessment and pricing, which forms the foundation of the commercial risk assessment and pricing process that insurers use in underwriting. However, this actuarial component is just one part of the broader commercial decision-making process, which includes other factors such as behavioural analysis and may involve different applications of AI. While actuaries primarily focus on actuarial risk assessment and pricing, they can also contribute to the wider scope of commercial risk assessment and pricing.

Although AI systems could potentially be used in actuarial risk assessment and pricing in life and health insurance, we believe that the use of true AI systems, as defined in Article 3 of the AI Act, is currently rare among actuaries. In particular, the notion of an actuarial pricing model with autonomous features is, at least today, very difficult to imagine. Actuarial pricing models, such as Generalised Linear Models (GLMs), may be complex, but they are fully controlled by the actuary who designed them. This means the actuary must be able to thoroughly explain how the model works and provide clear guidelines for its appropriate use, including specific limitations related to input parameters.

Looking ahead, it is possible that AI could play a greater role in risk assessment and pricing in life and health insurance. Should such models develop, they should be classified as high-risk AI systems only if they do not meet one or more of the criteria outlined in points a) through d) of the Act.

Additionally, we believe that there is room to distinguish between various categories of models and in particular, actuarial pricing models based on GLM techniques where human control is systematically applied after the model's use (i.e., the system is not autonomous and includes a systematic human review before being implemented).

Based on the explanation above, it is possible that such systems do not fall strictly within the definition of AI as long as human control is applied, or if they fall under the exception mention in recital 58 ("prudential purposes") or may benefit from the derogation in article 6.3. b) or c).

**d) the AI system is intended to perform a preparatory task to an assessment relevant for the purpose of the use cases listed in Annex III of the [AI Act](#):**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

**Question 38. At this stage, do you have examples of specific AI applications /use cases you believe may fall under any of the conditions from article 6(3) listed above?**

**Please describe the use case(s) in cause and the conditions you believe they may fall under:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

This question can only be answered by the companies that have high risk systems in use and does not fall under the remit of the AAE. However, as far as today's actuarial risk assessment and pricing models are concerned we think that they even AI systems in the sense the AI Act addresses AI systems.

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**Question 39. Based on the definition of the AI system, as explained above (and in article 3(1) and accompanying recitals), do you find it clear if your system would fall within the scope of the AI Act?**

- Yes
- No, it is not clear/ easy to understand if it falls within the scope of the AI Act
- Don't know / no opinion / not applicable

**Please specify in relation to what aspects and/or which algorithmic /mathematical models you do not find it it clear/easy to understand if they fall within the scope of the AI Act:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

No, it is not clear whether certain cases fall within the scope of the AI Act, particularly regarding traditional statistical methods used by actuaries in insurance pricing. The current definition of an AI system under the AI Act could benefit from further clarification, in the context of insurance, to distinguish between true AI systems and conventional models like Generalized Linear Models (GLMs).

For example, it is unclear whether a generalized linear model (GLM) used in actuarial calculations to calculate a premium qualifies as an "AI system." Additionally, if a GLM model is replaced with an Extreme Gradient Boosting (XGB) model, it raises the question of whether this new model falls under the AI system definition and, if so, why this change necessitates a different classification. The ability of a system to function autonomously and influence its environment independently can be considered as the key criteria for the classification of an AI system.

As such, there could be a defined threshold below which a system is not considered an AI system and is thus treated differently within the scope of the AI Act. This threshold would help differentiate between AI systems and simpler traditional statistical methods or software or programming approaches. This clarification would help define a threshold for applying the AI Act to truly new and disruptive AI systems, ensuring that only systems with significant inference capabilities and autonomy are included within scope.

The automation of operational processes, where AI does not modify the logic but optimises it, should generally be distinguished and separated. Systems based on symbolic logic (ontologies and rules), statistical methods (Bayesian algorithms), and simple linear regression, which do not exhibit significant autonomy or adaptive capabilities, should not be considered under the same definition of "AI systems" under the AI Act. These systems primarily automate processes without influencing environments autonomously.

In conclusion, we think the key to understanding whether a model is an AI system or not is to look at whether it contains autonomous features in the sense of Article 3 of the AI Act. We think today's actuarial risk assessment and pricing models are rarely considered to be AI systems (if at all) in the meaning of the AI Act. We are however open to developments in the future. Should truly autonomous actuarial risk assessment and pricing models emerge there might be open questions to which extent they can be considered high-risk applications.

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## AI Act requirements

**Question 40. Bearing in mind there will be harmonised standards for the requirements for high-risk AI ([Mandates sent to CEN-CENELEC can be monitored here](#)), would you consider helpful further guidance tailored to the financial services sector on specific AI Act requirements, in particular regarding the two high-risk AI use cases?**

- Yes
- No
- Don't know / no opinion / not applicable

**Please explain on which specific provisions or requirements and on what aspects concretely you would consider helpful further guidance tailored to the financial services sector:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

The integration of AI within financial services, particularly for high-risk use cases, requires consideration of unique sector challenges and regulations. Although horizontal guidance may not be appropriate for each individual country, we would encourage guidance from EC/EIOPA on how the requirements apply to insurance.

We strongly support the development of guidance tailored to the financial services sector regarding the specific high-risk AI use cases identified in the AI Act.

It is essential that harmonized guidelines ensure consistency between regulatory requirements, avoiding overlap or conflicting obligations, and that the various competent authorities adopt clear and convergent doctrines for the insurance sector, particularly for essential definitions. The definition of an AIS must not call into question the statistical/ actuarial methods traditionally employed by insurers in a context of risk pooling.

**Sector-Specific Interpretation:** The financial sector has distinct characteristics and regulatory requirements. Tailored guidance could help interpret the AI Act's provisions along financial regulations like Solvency II, MiFID II, and GDPR. This would ensure coherent integration of AI requirements with existing frameworks.

**Practical Implementation:** Guidance should provide practical examples and best practices for implementing the AI Act's requirements within financial institutions' existing risk management and governance frameworks. This would facilitate smoother transitions and operational efficiency.

**Addressing Unique Challenges:** The financial sector faces specific challenges such as data privacy, model risk management, and fairness in decisions. Tailored guidance could address these issues comprehensively, mitigating sector-specific risks.

Several key guidelines and principles could be considered:

#### Actuarial Standards:

- The Actuaries' Code (Institute and Faculty of Actuaries): Emphasizes integrity, competence and care, impartiality, compliance with relevant laws, speaking up about concerns, and effective communication.
- Technical Actuarial Standard 100 (Financial Reporting Council): Provides principles for technical actuarial work, including judgement, data, models, and communication.

#### Financial Regulatory Guidelines:

- EIOPA Guidelines on ICT Security and Governance: Offers guidance on managing technology risks in insurance.
- European Banking Authority Guidelines on ICT and Security Risk Management: Provides relevant principles for managing AI risks in banking.

#### AI Ethics Frameworks:

- OECD AI Principles: Focus on inclusive growth, sustainable development, human-centred values, fairness, transparency, robustness, security, safety, and accountability.
- IEEE Ethically Aligned Design: Provides principles for ethical AI, including human rights, well-being, data agency, effectiveness, transparency, accountability, awareness of misuse, and competence.

#### Data Protection Principles:

- GDPR Principles: Emphasize data minimization, purpose limitation, storage limitation, integrity and confidentiality, lawfulness, fairness and transparency, and accountability.

#### Model Risk Management:

- SR 11-7 (Federal Reserve): Although U.S.-based, these guidelines on model risk management are

widely respected and could inform EU approaches.

#### AI-Specific Governance Frameworks:

- The Alan Turing Institute's "Understanding artificial intelligence ethics and safety": Provides a framework for responsible AI development and deployment.

#### Key Principles to Address in Tailored Guidance

- Explainability and Interpretability: Ensuring AI models used in credit scoring and insurance pricing are explainable to meet regulatory requirements and protect consumer rights.
- Fairness and Non-Discrimination: Assessing and ensuring fairness in AI models to prevent discriminatory practices.
- Data Quality and Governance: Establishing robust data management practices for handling sensitive data.
- Model Validation and Testing: Implementing sector-specific validation techniques, including stress testing and scenario analysis.
- Ongoing Monitoring and Maintenance: Continuous monitoring of AI systems to detect and address model drift.
- Human Oversight: Defining the appropriate level of human oversight required for high-risk AI applications to mitigate automation bias.
- Documentation and Auditability: Comprehensive documentation to facilitate regulatory compliance and audits.
- Consumer Rights and Transparency: Implementing measures to ensure transparency and uphold consumer rights.
- Cybersecurity/Resilience: Ensuring the security and operational resilience of AI systems in financial services.
- Ethical Use of Data: Addressing considerations specific to the use of personal financial data in AI models.

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## Financial legislation requirements

**Question 41. Future AI high-risk use cases would also need to comply with existing requirements from the financial legislation.**

**Would you consider helpful further guidance meant to clarify the supervisory expectations for these use cases?**

- Yes
- No, the supervisory expectations are clear
- Don't know / no opinion / not applicable

**Please explain why you would consider helpful further guidance and indicate if it should be high-level and principles based or tailored to specific use cases:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, we consider it beneficial to have further guidance to clarify supervisory expectations for AI high-risk use cases, especially within the financial services sector. The integration of AI in financial services necessitates a clear understanding of how these new technologies should comply with existing financial legislation. We believe that a combination of both principles-based and tailored guidance would be most effective. Principles-based guidance provides a broad framework that can be applied across various use cases, ensuring that fundamental regulatory and ethical standards are maintained. This type of guidance is versatile and can adapt to different applications beyond those explicitly mentioned in the AI Act. Although horizontal guidance could perhaps not be deemed appropriate or suitable to each individual market, we would encourage guidance from EC and EIOPA on how the particular requirements apply to the insurance sector. It is important to understand the applicability of high-risk use cases such as pricing for life and health insurance, as referenced in the AI Act. As such, detailed, use-case-specific guidance could help to address the unique challenges and requirements of particular applications and/or markets. By providing concrete examples and best practices, tailored guidance can facilitate the practical implementation of AI in compliance with regulatory expectations.

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**Question 42. There are other use cases in relation to the use of AI by the financial services sector which are not considered of high-risk by the AI Act, but which need to comply with the existing requirements from the financial legislation.**

**Would you consider helpful further guidance meant to clarify the supervisory expectations for these use cases?**

- Yes
- No, the supervisory expectations are clear
- Don't know / no opinion / not applicable

**Please explain why you would consider helpful further guidance and indicate if it should be high-level and principles based or tailored to specific use cases:**

*5000 character(s) maximum*

including spaces and line breaks, i.e. stricter than the MS Word characters counting method.

Yes, we believe that further guidance would be very helpful for AI use cases in the financial services sector that are not classified as high-risk by the AI Act but still need to comply with existing financial legislation. The AI Act's requirements for limited-risk AI systems (AIS) are currently not specific enough to provide clear direction. Financial services operate under complex and stringent regulatory frameworks, and a lack of specific guidance can lead to uncertainty and inconsistent implementation of AI technologies across the sector. Clear, detailed guidelines would help ensure that financial institutions understand and meet regulatory expectations.

Financial services are subject to various sector-specific regulations where it is common/standard/natural to use AI systems. These regulations, particularly those related to anti-money laundering (AML), combating the financing of terrorism (CFT), and fraud prevention, necessitate precise do's and don'ts for the implementation and operation of AI systems. Sector-specific guidance can provide practical recommendations on how to integrate AI within these regulatory frameworks while achieving compliance. In the context of the insurance sector, it is crucial that the guidelines provide recommendations tailored to the unique aspects of insurance operations.

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**Question 43. Are you aware of any provisions from the financial *acquis* that could impede the development of AI applications (e.g. provisions that prohibit the use of risk management models which are not fully explainable or the use of fully automated services for the interaction with consumers)?**

- Yes
- No, I am not aware of any provision(s) of this kind
- Don't know / no opinion / not applicable

## Additional information

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Should you wish to provide additional information (e.g. a position paper, report) or raise specific points not covered by the questionnaire, you can upload your additional document(s) below. **Please make sure you do not include any personal data in the file you upload if you want to remain anonymous.**

The maximum file size is 1 MB.

You can upload several files.

Only files of the type pdf,txt,doc,docx,odt,rtf are allowed



## Useful links

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