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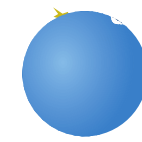
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Implications of the AI Act on the actuarial work and the Insurance Industry

Bogdan Tautan, Jonas Hirz

Agenda

1. Introduction
2. Key information on the EU AI Act
3. How to approach the EU AI Act
4. What it means for actuaries

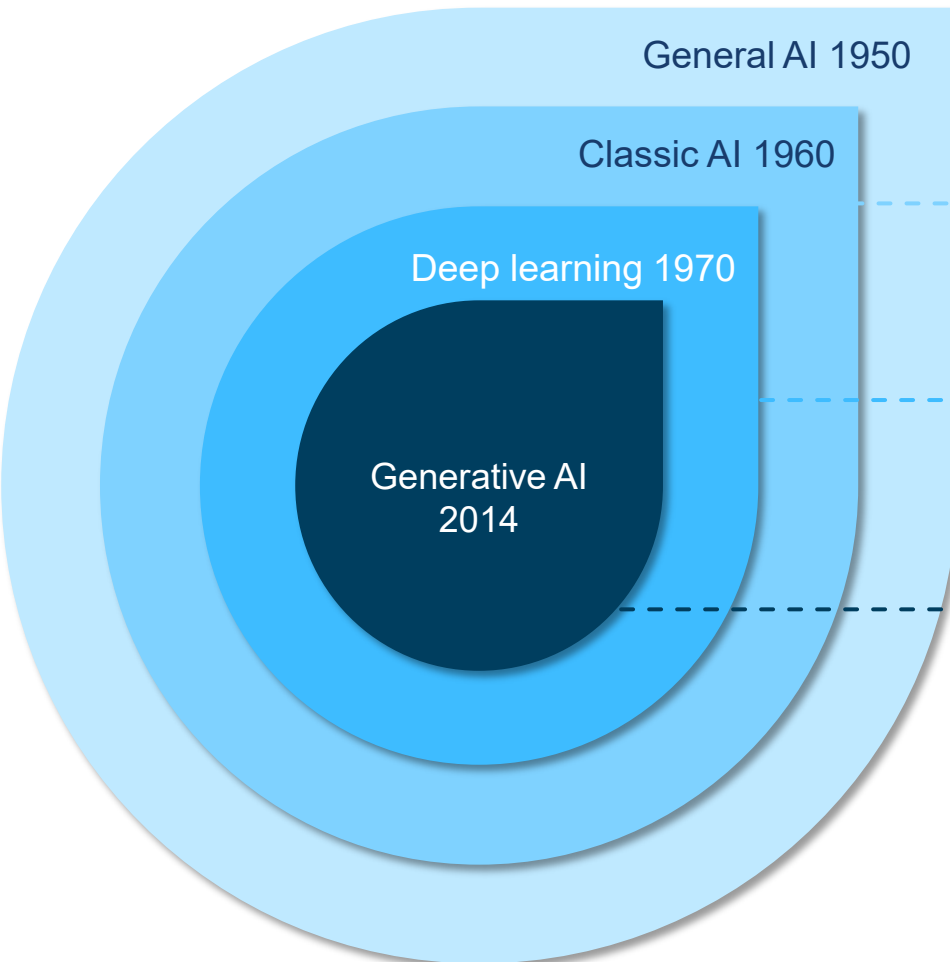


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1. Introduction

Evolution of AI



- Human mimicking actions and intelligence
- Machine Learning techniques, later on seen as supervised, unsupervised, etc.
- Used in risk assessment, predictive analytics
- Complex neural networks using semi-supervised and reinforced learning
- Natural language processing tasks, chatbots etc.
- Transformer based deep neural networks, seen as Large Language models
- Video, Image, Text and Speech recognition

Global landscape

■ Risks

Harm
Privacy
Bias
Hallucination
Environmental
Security

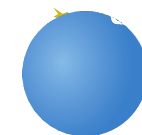
+ Principles

Fairness
Transparency
Accountability
Robustness
Human oversight



UNESCO's taxonomy of AI regulations





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2. Key information on the EU AI Act

EU AI Act

A Risk-based approach



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Final agreement on 13th of March 2024 agreement

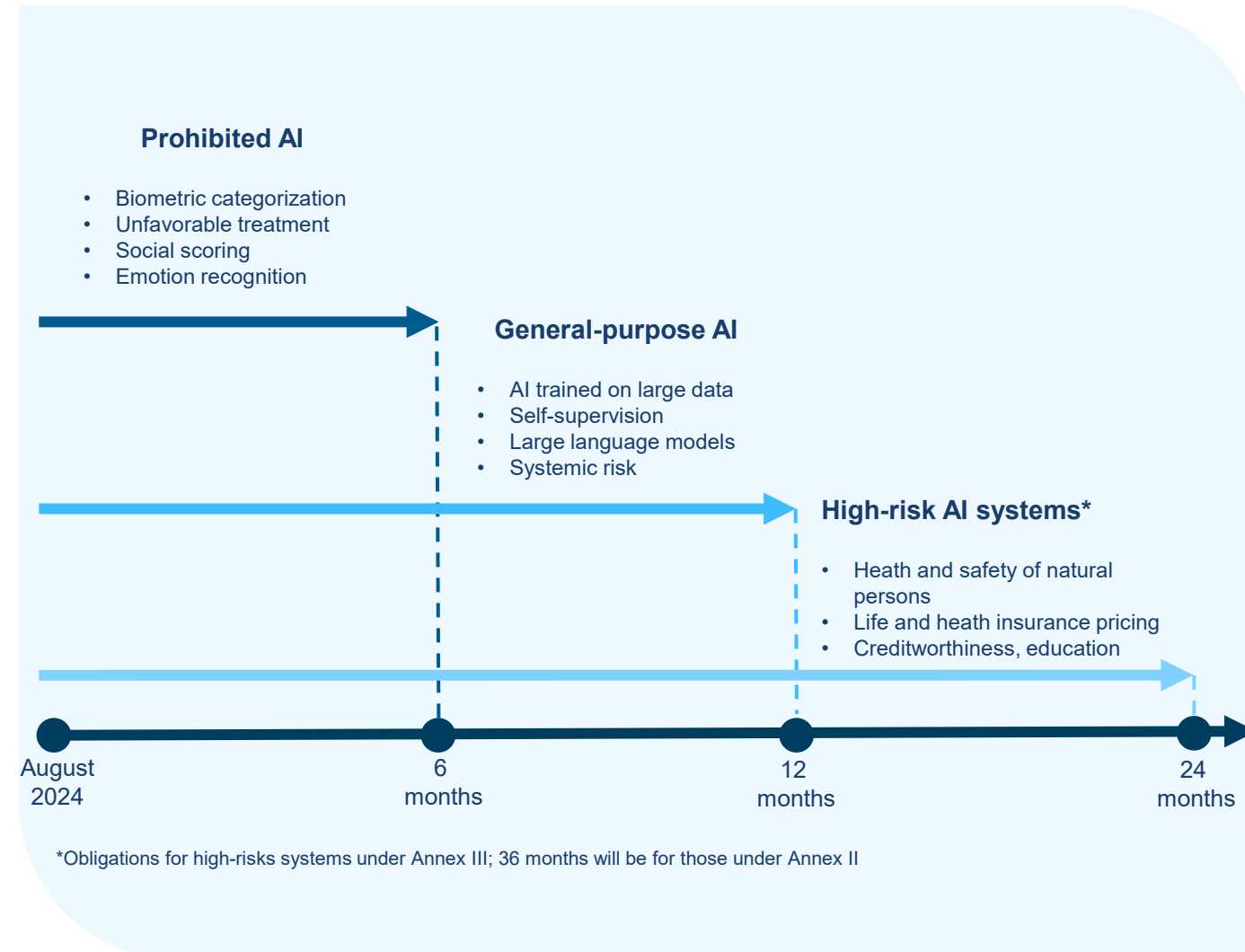
- Safeguards human oversight, introducing a fundamental rights assessment
- Overall technical documentation and an iterative risk-management process
- Risk classification of AI systems: detailed set of requirements for high-risk systems, recommendations for limited/minimal risk systems

European AI Office – the center of AI expertise across the Union:

- **AI Board:** formed by Member State representatives
- **Scientific Panel:** independent experts ensuring a strong link with the scientific community
- **Advisory Forum:** representing a balanced selection of stakeholders

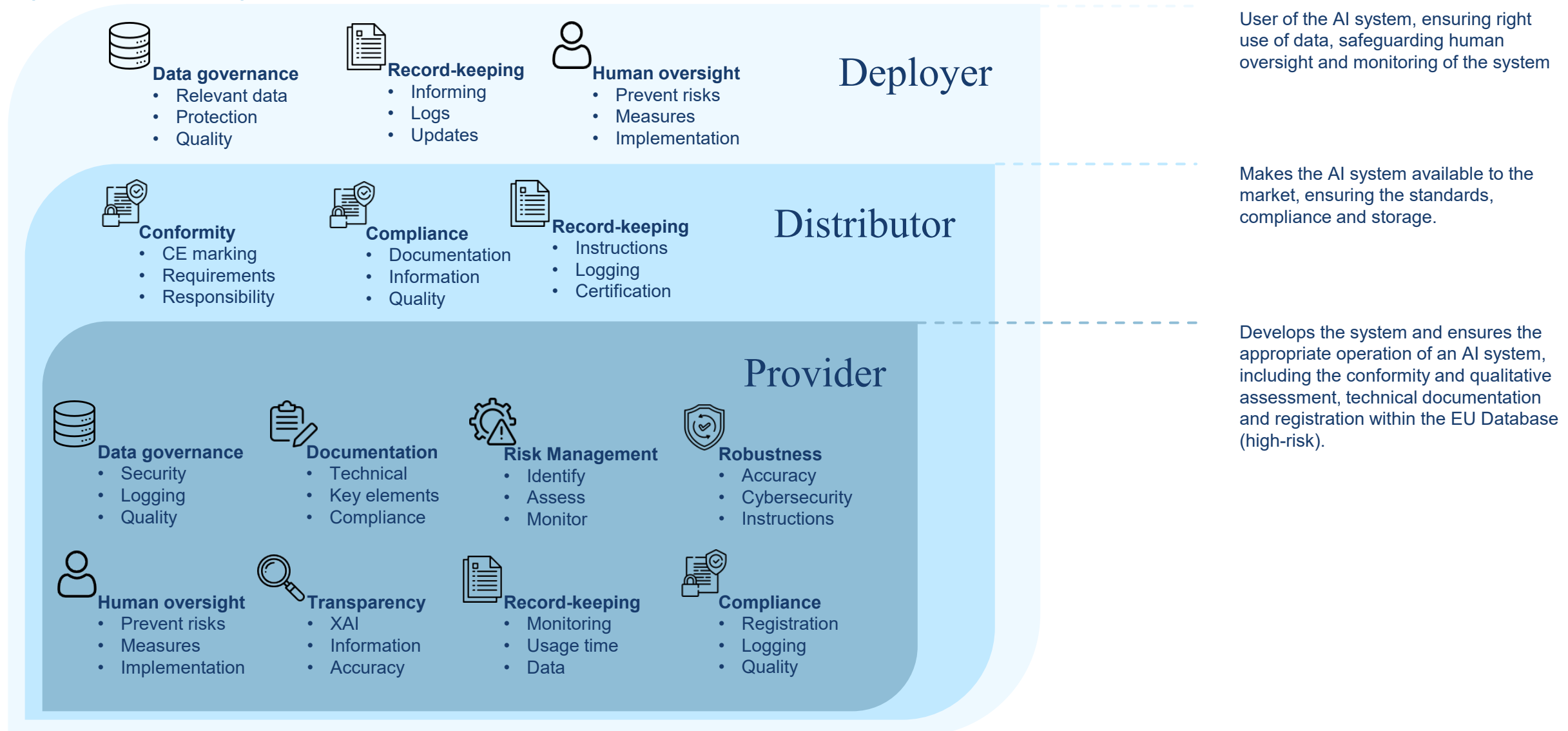
Penalties up to:

- **Non-compliance:** 7% of annual turnover or 35 mln. EUR
- **Violations:** 3% of annual turnover or 15 mln. EUR
- **Misleading information:** 1% of annual turnover or 7,5 mln. EUR



EU AI Act

Operators and requirements



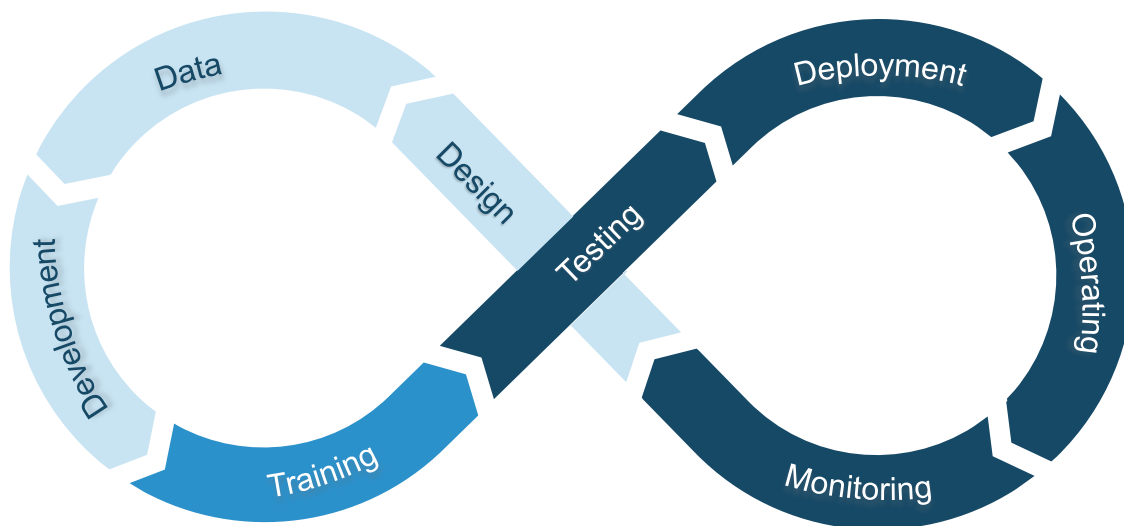


EU AI Act

Managing associated risks

- Management
- Quality
- Completeness
- Accuracy
- Security
- Synthetic assumptions

- Scalability
- Reporting
- Robustness and Security
- XAI and Transparency
- Business alignment



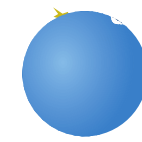
- Assumptions
- Parameters
- Bias and drift
- Model scorecards
- Fitting
- Test vs Training

Relying on existent frameworks

- GDPR already covers the entire lifecycle of the system;
- Data Act, DORA
- Insurance Distribution Directive, Consumer Protection Code
- NIST (US) and ISO provide good risk management practices
- Solvency II

New responsibilities for actuaries

- Understand current regulations
- Work interdisciplinary means developing new skills:
 - Ontology and prompt engineering
 - Understanding Python, R, SQL at least
 - DevOps and deployment infrastructures
- Act as a bridge among specialized teams
- Connect XAI to the business needs and the application



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3. How to approach the EU AI Act

Two key steps as a potential approach to the EU AI Act

1

AI inventory

Registration and AI-Act-ready documentation of all AI systems in an organization

- 1a Relevance analysis of AI Act articles
- 1b List of AI systems according to AI Act definition
- 1c Assessment of **risk level** of each AI system
- 1d Assessment of **value chain position** for each AI System

2

Risk mitigation measures

Identification, mitigation, and management of AI system risks in accordance with regulatory requirements and industry standards

- 2a Governance and responsibility
- 2b Process
- 2c Technical standards (e.g., for data/cyber security)
- 2d Tools and platforms
- 2e Trainings

Note: BCG does not provide legal advice
Source: BCG, EU AI Act

 Deep dive on next slides

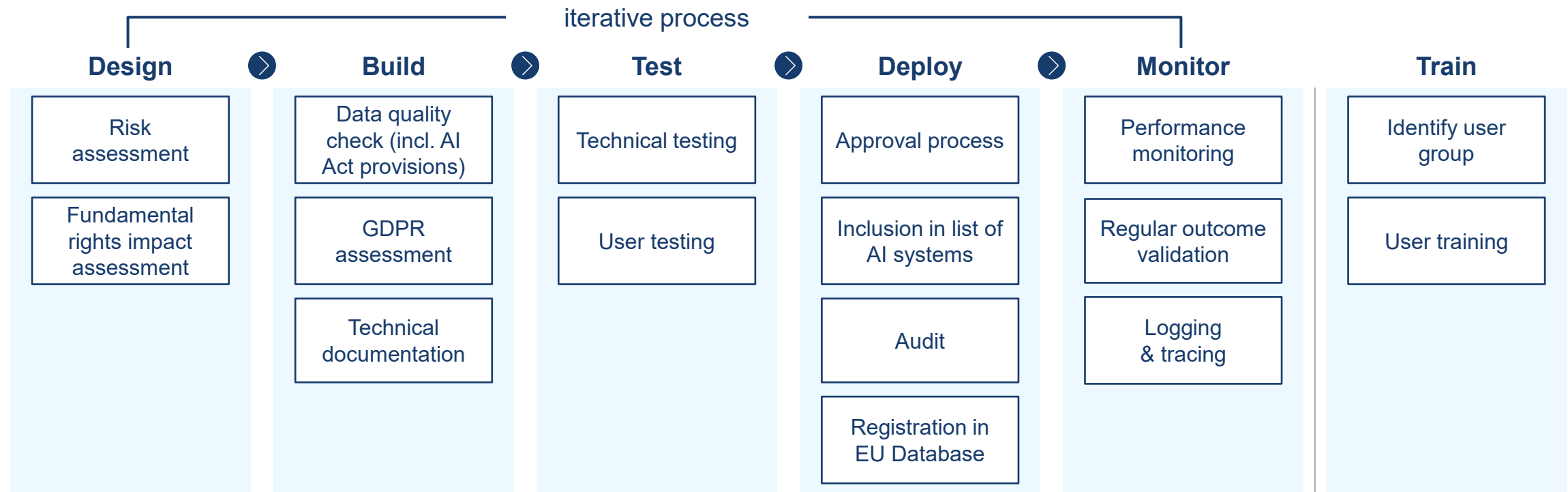
Deep dive – Step 1a | Start with understanding the relevance of the AI Act articles for your company

| List all EU AI Act Articles | | Derive relevance | | | Derive relevant risk categories | | | Derive link to other regulations |
|-----------------------------|--|------------------|-------------|-------------|---------------------------------|-----------|----------|--|
| Article | Name | Relevance | As provider | As deployer | Prohibited | High-risk | Low-risk | Link to other regulations and existing processes |
| 9 | Risk management system | Yes | X | - | - | X | - | E.g., Solvency II |
| 17 | Quality management system | Yes | X | - | - | X | - | E.g., Solvency II |
| 18 | Documentation-keeping | Yes | X | - | - | X | - | E.g., Solvency II |
| 19 | Automatically generated logs | Yes | X | - | - | X | - | E.g., Solvency II |
| 26 | Obligations of deployers of high-risk AI systems | Yes | - | X | - | X | - | E.g., Solvency II |

Note: This is no legal advice
Source: BCG analysis

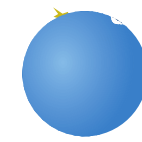
Deep dive – Step 2b | Risk mitigation measures for high-risk use cases needed along entire lifecycle – illustrative example

Illustrative



Potentially multiple roles engaged throughout the process
(e.g., business, actuaries, compliance, data scientists, data experts, software engineers)

Note: This is no legal advice
Source: BCG analysis



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4. What it means for actuaries

Key success factors to unlock value and minimise risk associated with AI



AI requires top-management attention

Failure of AI systems can cause serious operational, financial and reputational damage. It needs to be a management priority to minimize these risks and unlock value sustainably.



Professional and responsible use of AI are paramount for long-term success

Companies should invest in training of their employees and leverage expertise in the organization. In particular, actuaries can play a pivotal role due to their expertise (business, data, statistics, etc.) and code of conduct.



Responsible use of AI needs to be practical and economical

Cost and bureaucracy should be kept reasonable while leading to professionalization in the use of AI. Build on already existing governance and risk management frameworks.



Risk management needs to happen across AI use case's life-cycle

AI risk mitigation is as much design as it is a governance. Once assets are productive, regularly re-assess risks and invest in improvements

Note: This is no legal advice
Source: BCG analysis



Deep dive | AI requires top-management attention

Supervisory measures

1

Supervisors could be entitled to take measures appropriate to prevent or eliminate non-compliance, e.g., stress test, replace board member and even revoke licenses

Legal disputes

2

Depending on the damages caused, insurer might be confronted with legal action by policyholders or other stakeholders seeking compensation

Financial losses

3

E.G. The competent data protection authority is entitled to impose fines up to €35M or 7% of global turnover in case of prohibited AI practices

Reputational damage

4

Public knowledge of non-compliance could damage the company's reputation, leading to customer distrust and a decrease in business

>95%

of executives feel an urgent need to integrate AI in their operations

>60%

of workers report that their company has AI usage guidelines

15%

of workers strongly agree they have the necessary AI education

7%

of desk workers consider AI outputs completely trustworthy for work tasks

Note: This is no legal advice
Source: BCG; Forbes article "The Employees Secretly Using AI At Work" Sep. 2024

Conclusion – a unique opportunity for actuaries

AI is a **growing priority for executives**, with usage set to increase.

Applied responsibly, AI unlocks value, improves customer experience, drives innovation, and elevates decision-making.

The **AI Act accelerates** the professionalization of AI.

Companies can **leverage existing risk management frameworks** and build on robust actuarial workflows, making compliance easier and more effective.

The AI Act gives **actuaries a unique chance** to shape the future of AI, helping ensure its safe and ethical use across industries.



Thank you

