

การจัดการ AI อย่างยั่งยืนมีจริยธรรมและความโปร่งใสด้วย ISO/IEC 42001:2023

AI management systems

Public Webinar

บรรยายโดย

อาจารย์กิตติพงษ์ เกียรตินิยมรุ่ง

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Content

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จริยธรรม (Ethics) และความโปร่งใส (Transparency) สำหรับ AI

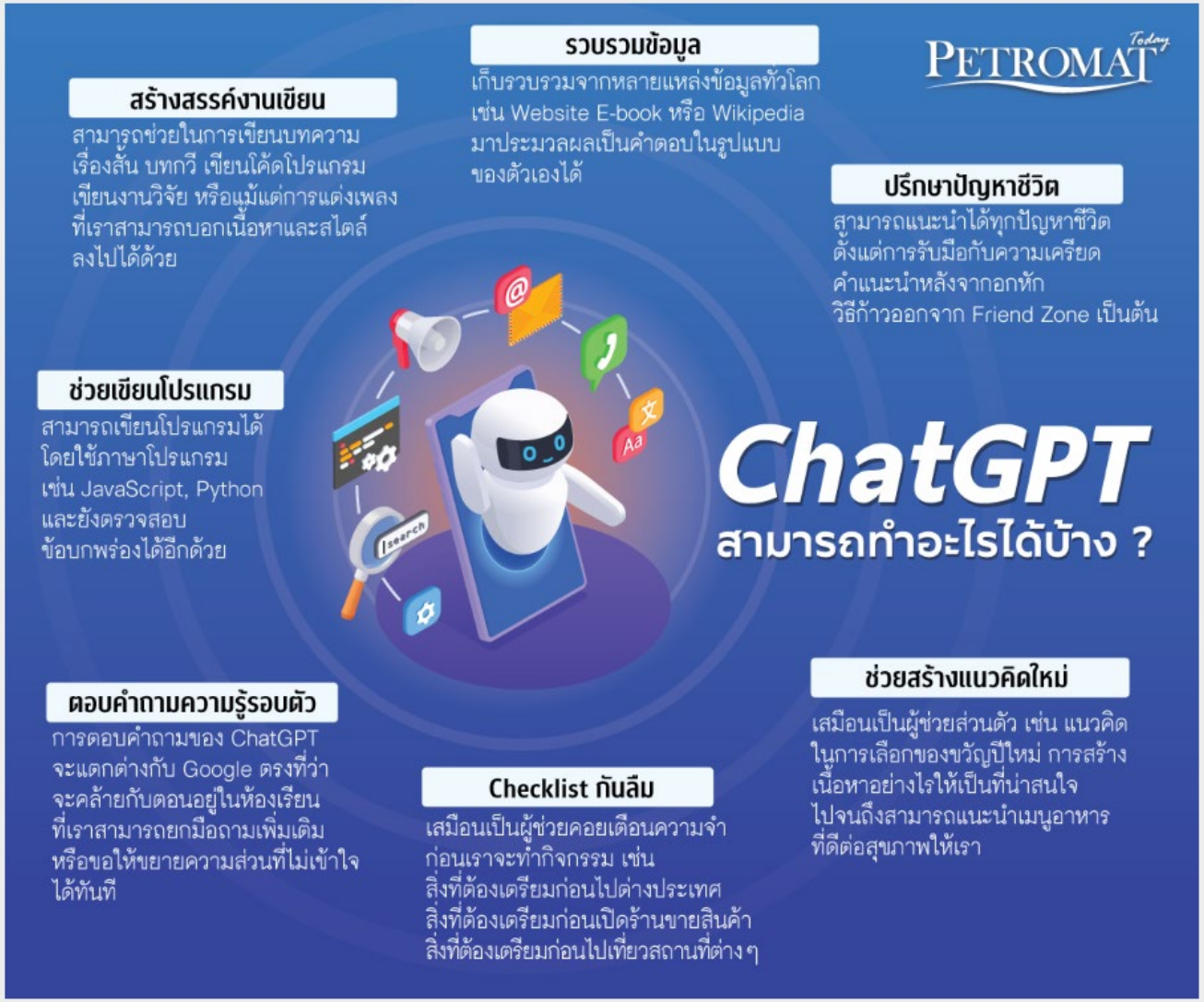




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รถยนต์ไร้คนขับ อนาคตอัน...ใกล้ หรือ...อีกไกล?

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“ข้อดี-ข้อเสีย”
ซื้อขายหุ้นด้วยระบบ Robot หรือ A.I.

Bizbug.co

ข้อดี

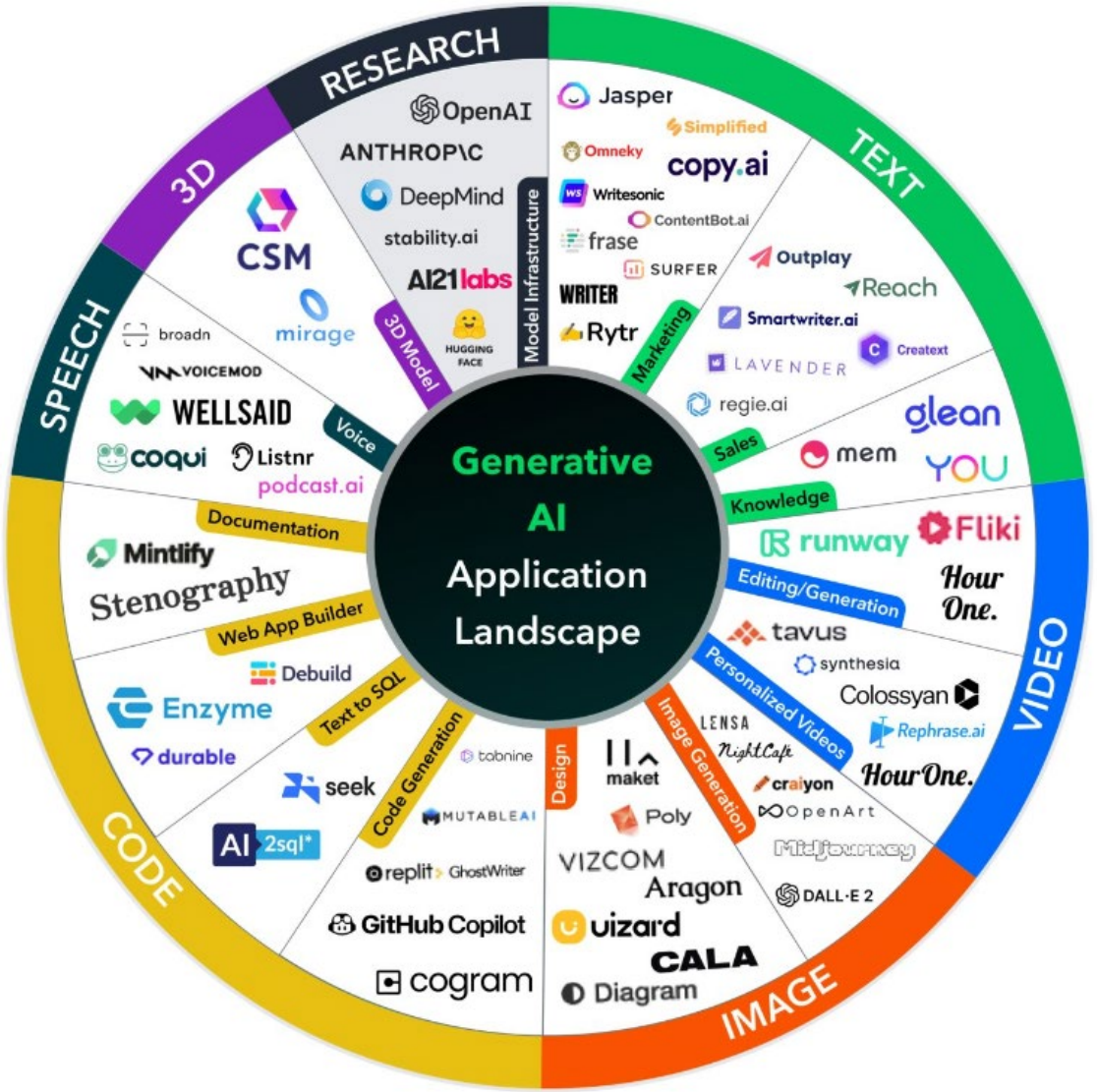
1. Robot หรือ A.I. ไร้อารมณ์ จึงมีความคงที่ในการตัดสินใจ
2. Robot ไม่ขี้เกียจ ทำตามคำสั่งกลยุทธ์ลงทุนอย่างมีวินัย
3. ตรวจสอบข้อมูลย้อนหลังได้
4. ทำงานได้อย่างรวดเร็วและมีประสิทธิภาพ
5. เพิ่มความเร็วในการซื้อขายได้ดีกว่า
6. กระจายความเสี่ยงได้ดี เลือกลงทุนได้หลายกลยุทธ์

ข้อเสีย

1. ระบบคอมพิวเตอร์อาจล้มเหลว ต้องตรวจสอบดูแลตลอดเวลา
2. ทำงานตามคำสั่งเป๊ะมากเกินไป
3. ความปลอดภัยและข้อมูลที่อาจรั่วไหล



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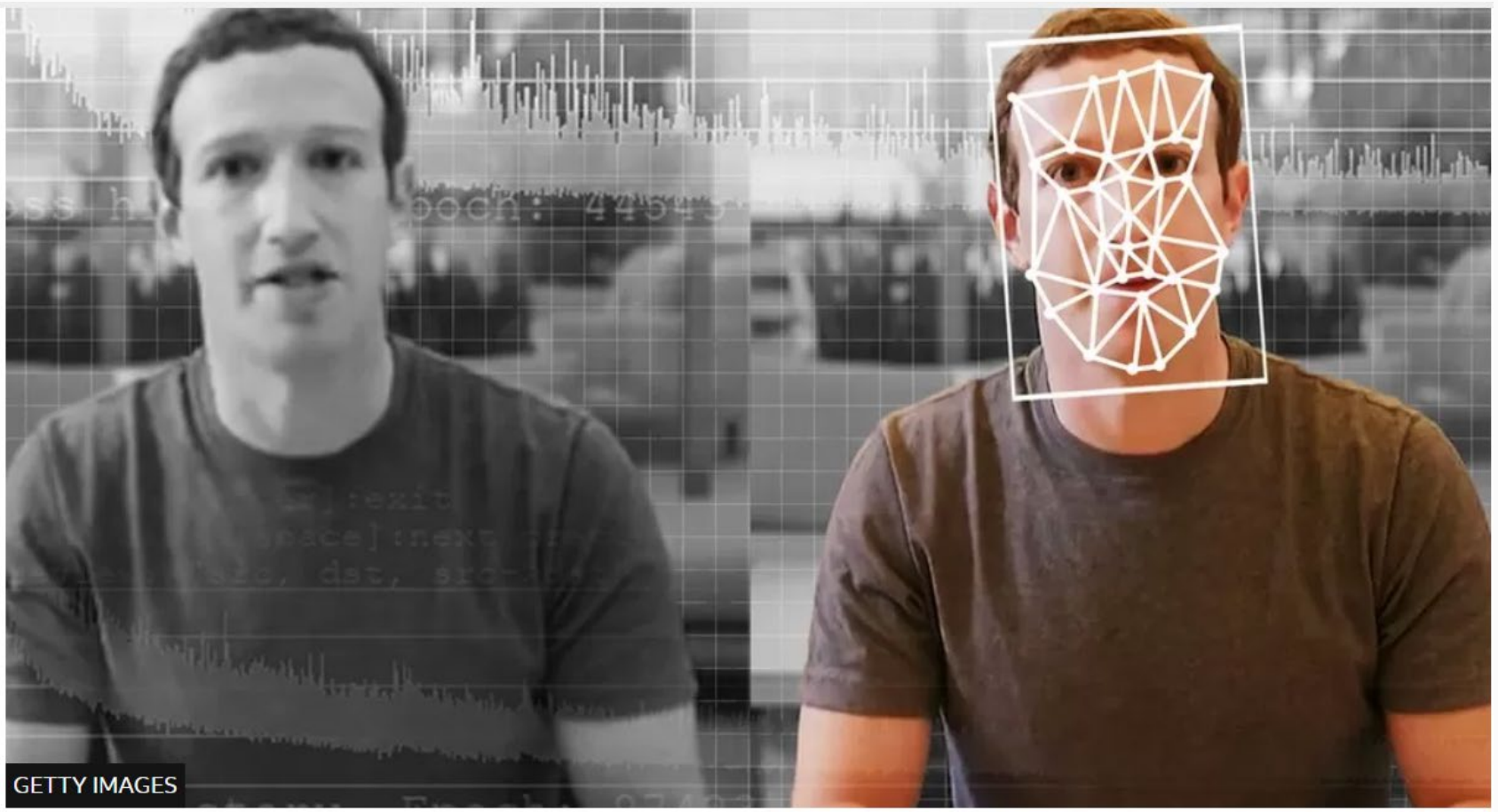


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A comparison of an original and deepfake video of Facebook CEO Mark Zuckerberg

https://www.bbc.com/news/technology-51018758

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Let's take a moment to think about these two questions:

Why is Artificial Intelligence Management System (AIMS) important to your organization?

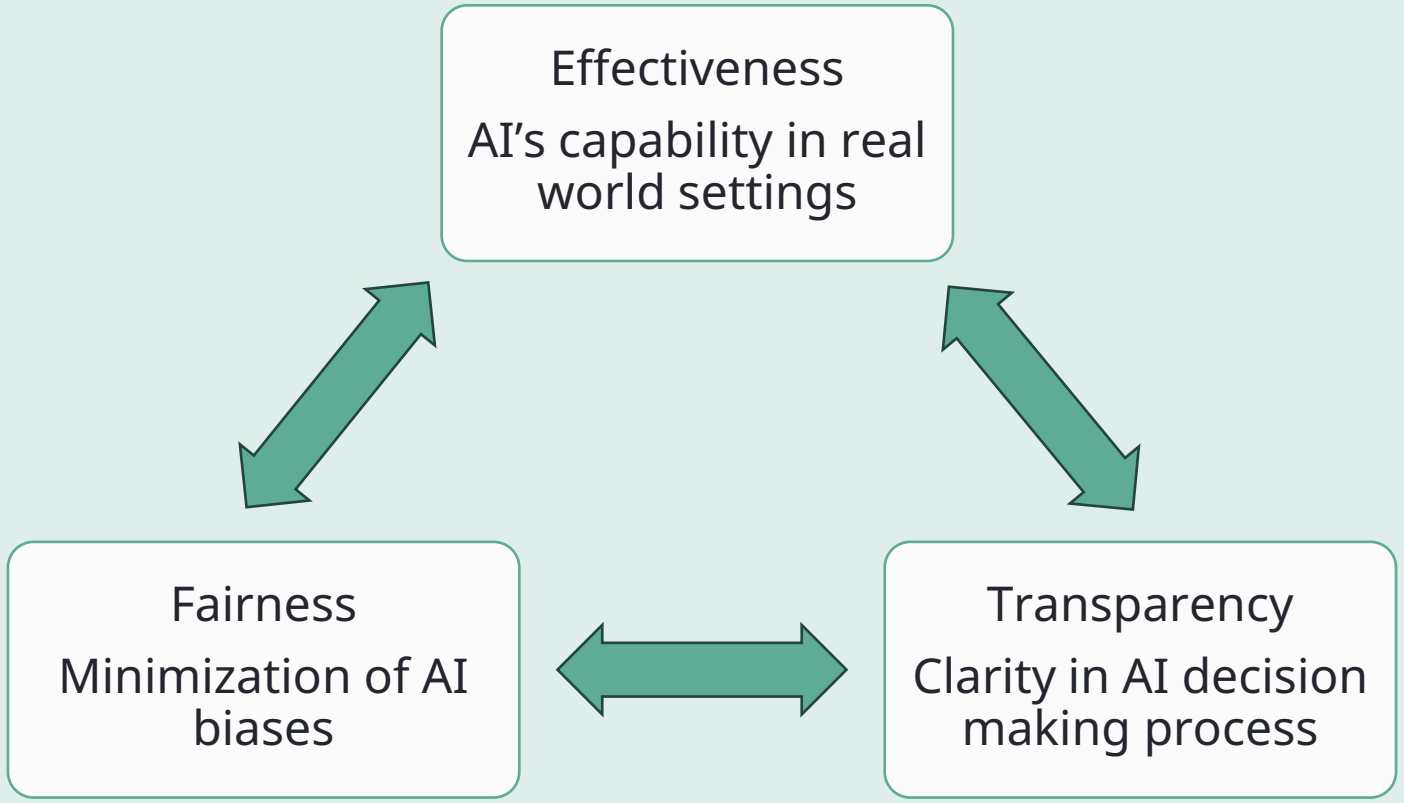
Why should your organization manage processes around AI lifecycle model?

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ประโยชน์ของการดำเนินการตาม ISO/IEC 42001:2023 - AI management systems



What are the benefits of implementing an AIMS?



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What do we mean by key benefits of an AIMS?



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The benefits of effective, transparent and fair AIMS

- Brand strength
- Cost efficiency
- Customer loyalty
- Revenue and profit growth
- Attracting new customers
- Employee morale

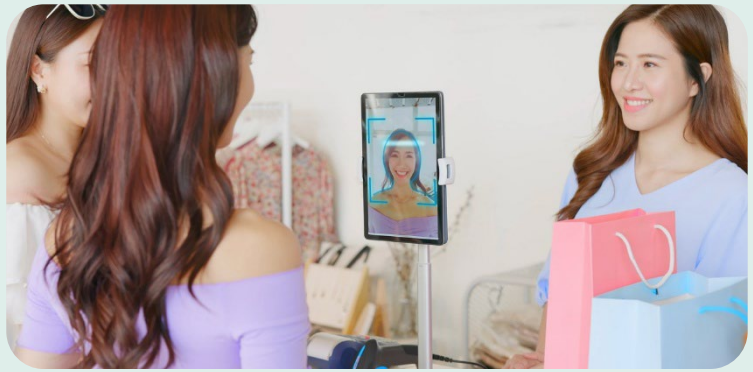
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Artificial Intelligence failure example

AI Failure: **Apple Card Gender Bias (2019)**



- Discrepancy in lending limits based on gender



- Noted even when women had higher credit scores



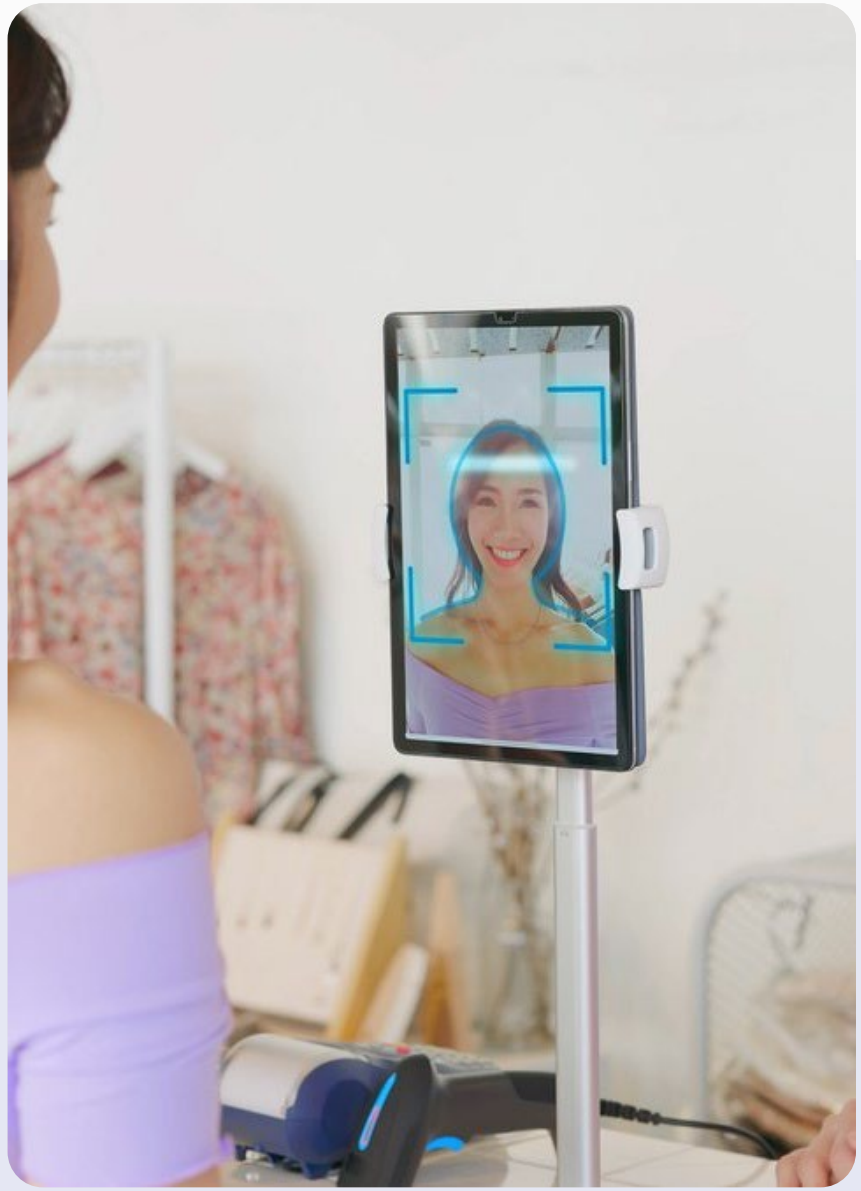
- Concerns over AI bias in financial decisions

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Artificial Intelligence failure example

AI Failure: **Image Recognition Bias**

- In 2018, MIT researchers discovered that a popular commercial facial recognition system was biased in gender classification
- The system performed accurately for lighter-skinned individuals but had an error rate of up to 34.7% for darker-skinned females
- This highlighted the risks of training AI systems on non-representative datasets



Artificial Intelligence failure example

AI failure: **Chatbot Tay's Short Lifespan (2016)**

Released by Microsoft on Twitter

Mimicked user responses, learned from interactions

Quickly derailed to post offensive content

Taken offline within 24 hours

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AI failures in numbers

AI project failure rate

60-80% failure rate according to experts and sources

Safety challenges

58% of surveyed AI researchers believe AI system safety isn't adequately addressed

Ethical concerns

28% of the public believes current AI regulations are insufficient

Algorithmic fairness concerns

45% rise in publications since 2019

Trust in AI

Only 36**%** trust AI's decision-making in professional settings



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Why managing AI is important?

Efficiency and automation

Rapid task completion with fewer errors

Data analysis

Unearth hidden patterns and insights from vast data

Personalization

Tailored experiences for users and customers

Innovation

Drive new products, services, and business models

Monitoring of post market surveillance data and performance

Enabling quicker response to field issues

Global challenges

Addressing health, climate change, and more

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What is an AIMS?

Compliance and regulation:
Ensures adherence to AI-related legal requirements

Structured framework:
A set methodology to design, deploy, and monitor AI solutions

Strategic alignment:
Ensures AI initiatives resonate with organizational objectives

Ethical adherence:
Prioritizes fair, transparent, and ethical AI operations

Risk management: Assesses and mitigates potential AI-related challenges

Continuous improvement:
Iterative approach to

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EU AI Act journey

2019

Ethics Guidelines for Trustworthy AI" (HLEG, 2019)

2020

White paper on AI; "A European Approach to Excellence and Trust" (EC, 2020)

2021

The European Commission released the draft AI Act (AIA)

2021

AIA Slovenian Presidency compromise proposal

2022

AIA French Presidency consolidated compromise proposal

2022

2 X AIA Czech Presidency compromise proposal

2022

Council's proposal General approach

2023

European Parliament negotiations with the Council on the final form of the Act

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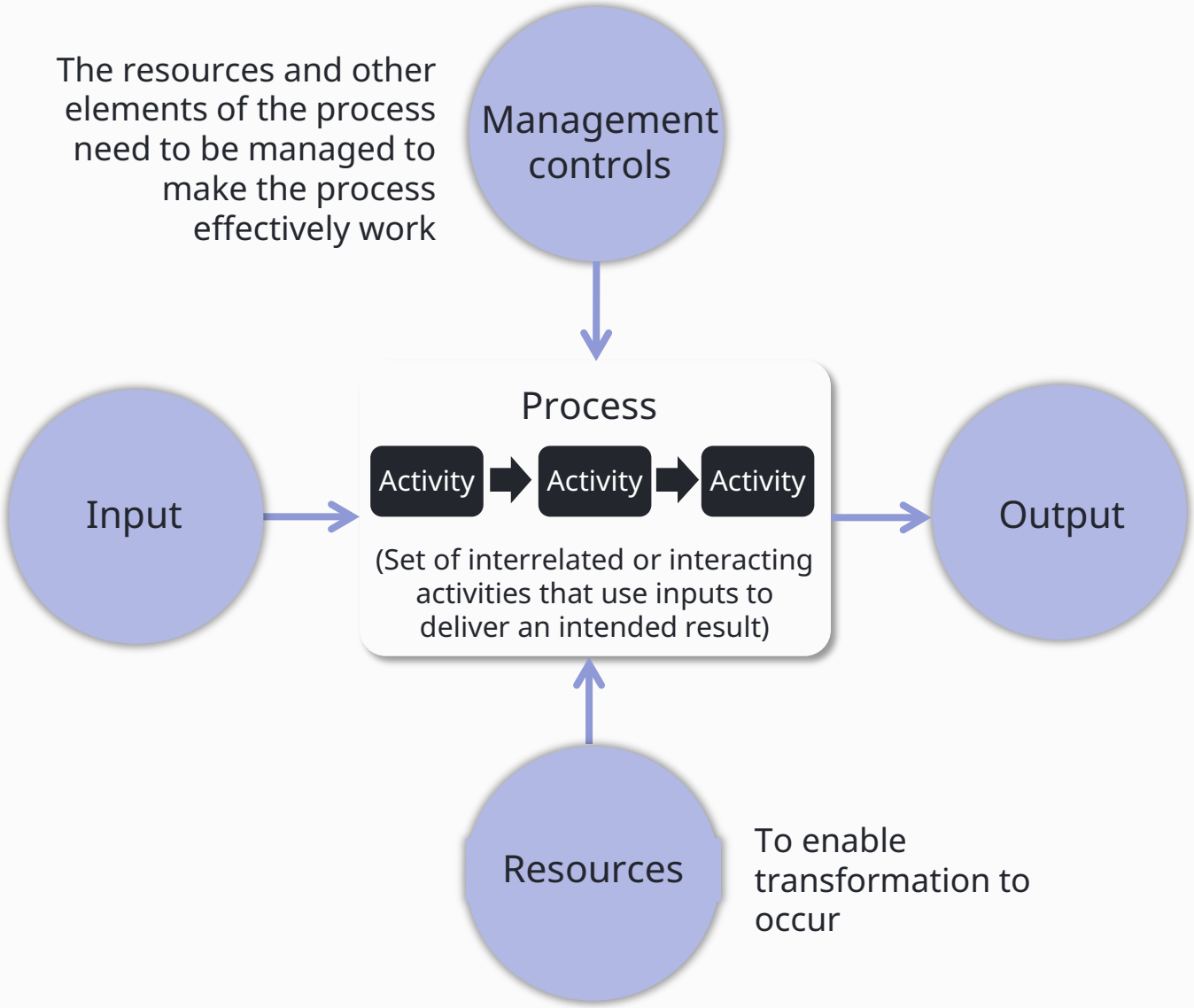
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ISO/IEC 42001:2023
AI management systems



Risk-based approach means considering risk qualitatively (and, depending on the organization's context, quantitatively) when defining the rigor and degree of formality needed

Key concepts (1): Risk-based approach

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Key concepts (2): Process

MARIO Model:
A process approach

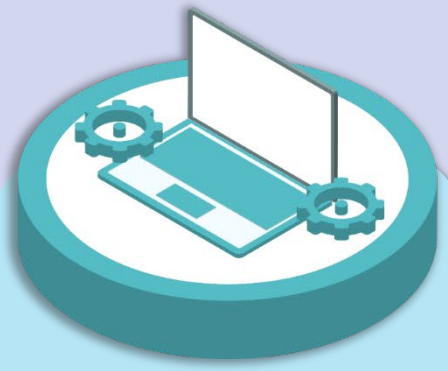
- **M** for Management
- **A** for Activity
- **R** for Resources
- **I** for Inputs and
- **O** for Outputs

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Key concepts (3): PDCA and AIMS



Establish
(PLAN)



Implement and
operate
(DO)



Monitor and
review
(CHECK)



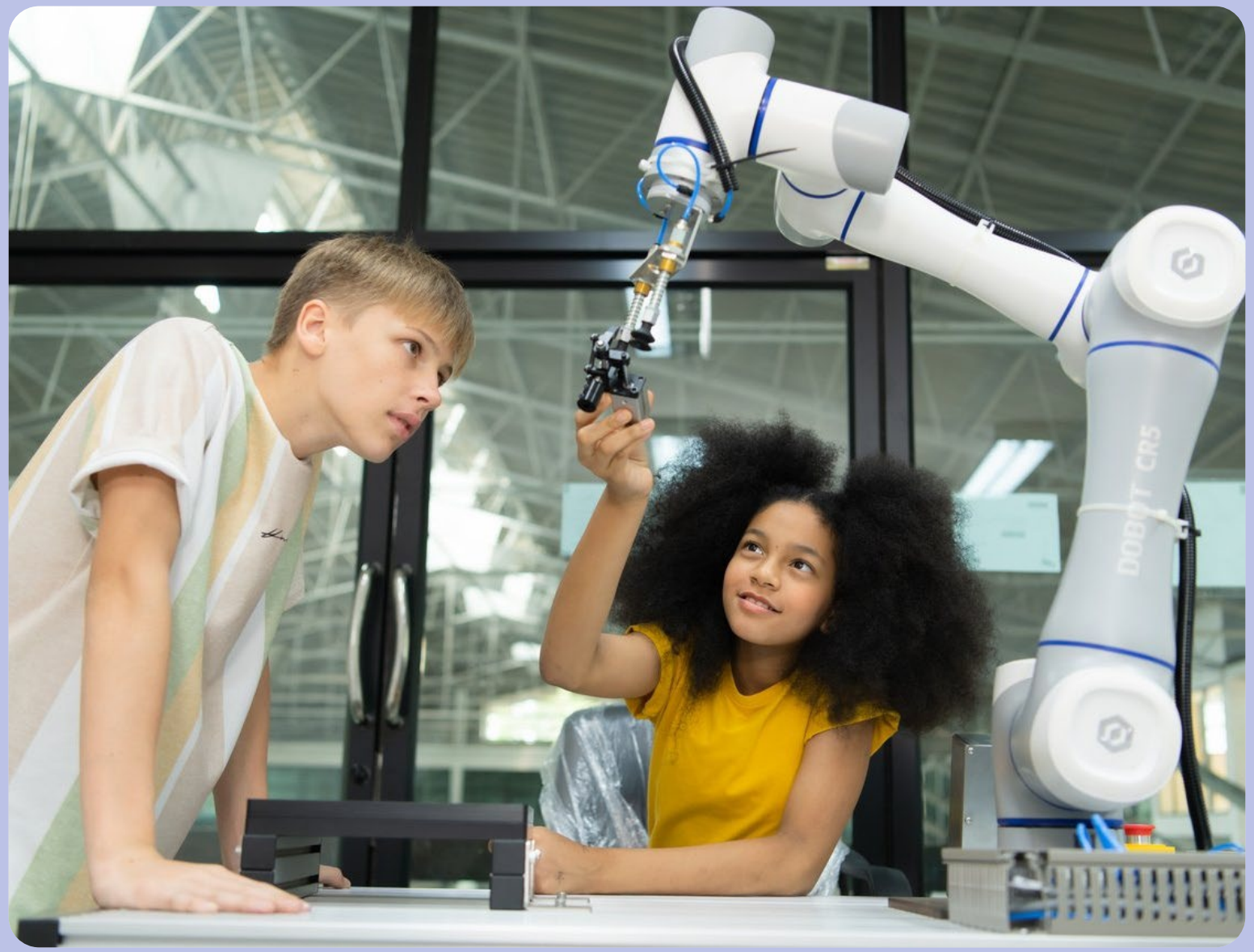
Maintain and
improve
(ACT)

Key concepts (4): Harmonized approach

Enhance consistency

Make standards more generic

More applicable to service industries



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The harmonized approach with AIMS additions



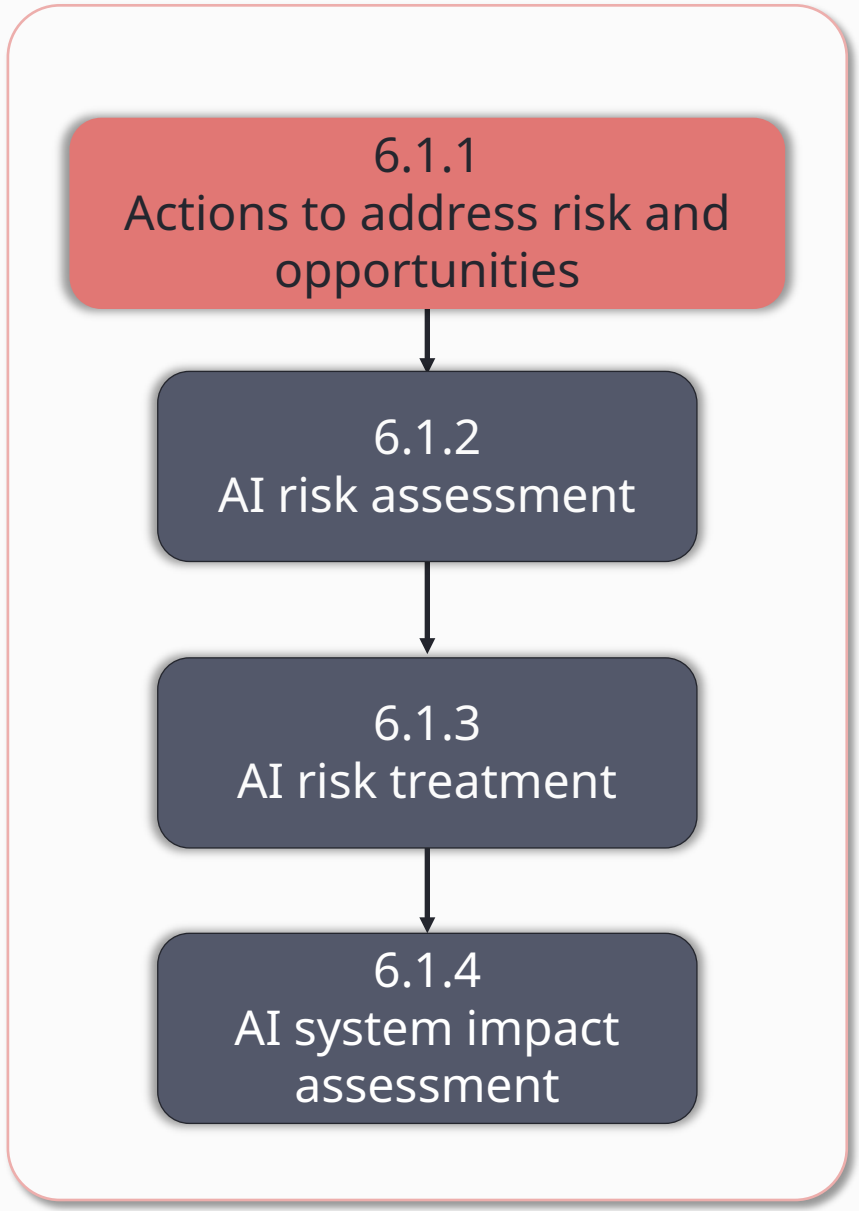
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The harmonized approach with AIMS additions Clause 6.1

6.1.1
Actions to address risk and opportunities

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The harmonized approach with AIMS additions Clause 6.1



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The harmonized approach with AIMS additions Clause 8



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ข้อกำหนด

ISO/IEC 42001:2023 AI management systems



Introduction to ISO/IEC 42001
Clause 1-3

1. Scope

Establish, implement, maintain and continually improve an AIMS, Intended to help the organization develop, provide or use AI systems responsibly in pursuing its objectives and meet applicable requirements, obligations related to interested parties and expectations from them

2. Normative references

Normative references cites ISO/IEC 22989 as indispensable for its application

3. Terms and definitions

Terms, definitions and concepts from ISO/IEC 22989 are used in ISO/IEC 42001

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4.1 Understanding the organization and its context

‘Combination of internal and external issues that can have an effect on an organization’s approach to developing and achieving its objectives’

Understand the context

Analyse the context

Ensure the AIMS is adapted

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4.2 Understanding the needs and expectations of interested parties

Citizens

Customers

Distributors

Shareholders

Investors

Owners

Insurers

Government

Regulators

Recovery service suppliers

The organization

Management

- Top management
- Those accountable for artificial intelligence policy and implementation

Those who implement and maintain the AIMS

- Those who maintain AIMS and risk procedures

Other staff

Contractors

Competitors

Media

Commentators

Trade groups

Neighbors

Pressure groups

Emergency services

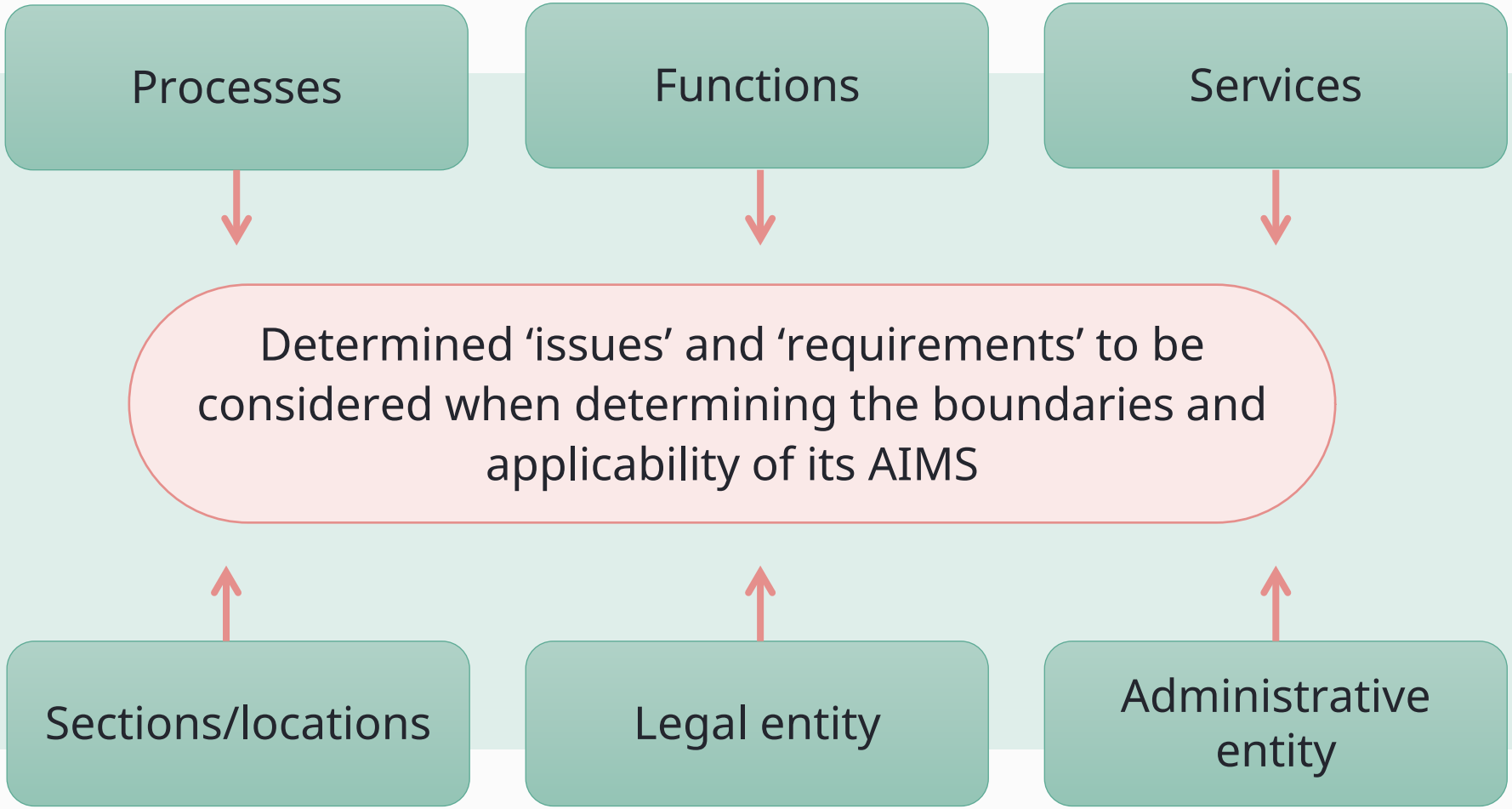
Other response agencies

Transport services

Staff dependents

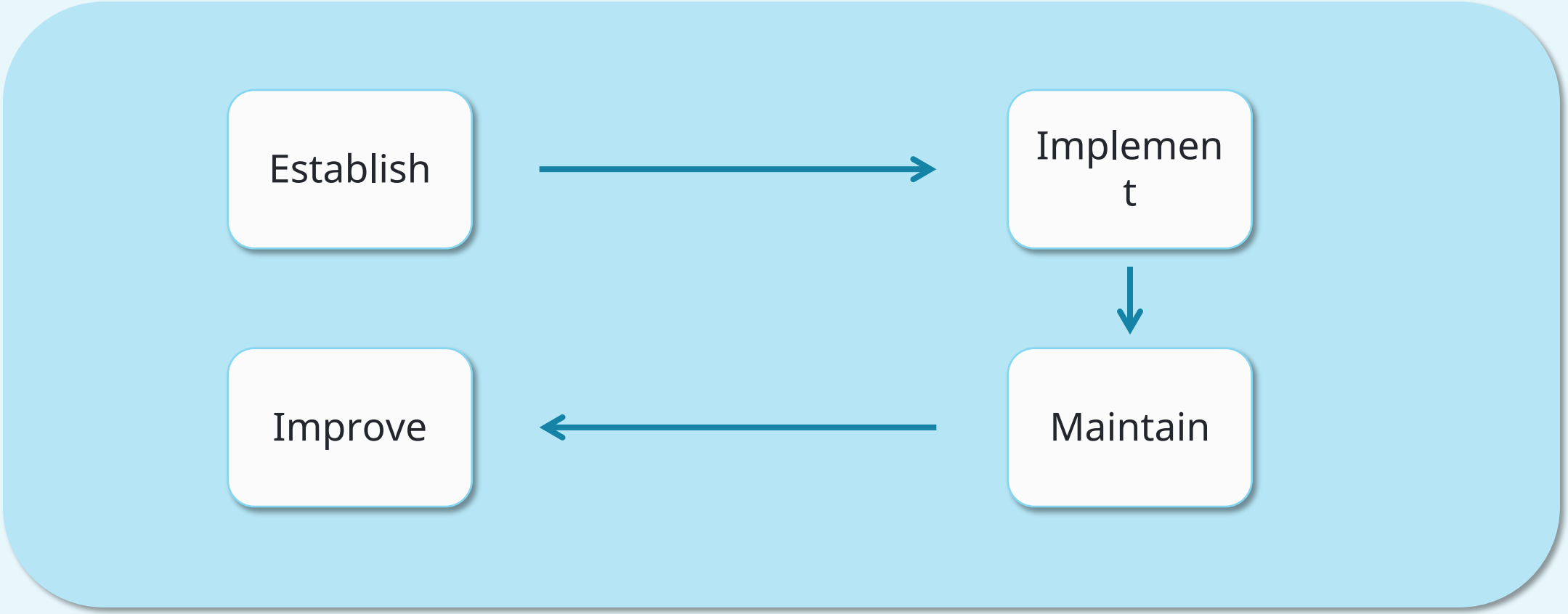
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4.3 Determining the scope of the AI management system



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4.4 AI management system



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Clause 5: Leadership

Policy and objectives are compatible with the strategic direction and context of the organization

Demonstrate commitment

Integrate requirements of the MS into the organization's business processes

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Clause 6: Planning

Clause 6 mandates that in planning for the AI management system, organizations must give due consideration to the issues outlined in 4.1 and the requirements from 4.2

Help ascertain the risks and opportunities that must be addressed

- Guarantee the AIMS meets its intended objectives
- Mitigate or curb undesired impacts
- Foster ongoing improvement

Manage AI risk effectively

- Distinguish between risks
- Conduct comprehensive AI risk assessments
- Undertake AI risk treatment measures
- Evaluate the ramifications

Determine the quantum and nature of risks

- Domain and context of the application
- Specific business requirements
- Internal and external contexts

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Clause 6: Planning

Artificial Intelligence risk assessment:
Probability X Severity

Likelihood	**Almost certain (4)**	M	H	H	H
	Likely (3)	M	M	H	H
	Possible (2)	L	M	M	H
	Rare (1)	L	L	M	H
		Minor (1)	**Moderate (2)**	**Major (3)**	**Extreme (4)**
		Consequence			

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Clause 6: Planning

Artificial intelligence risk treatment options:

Risk avoidance

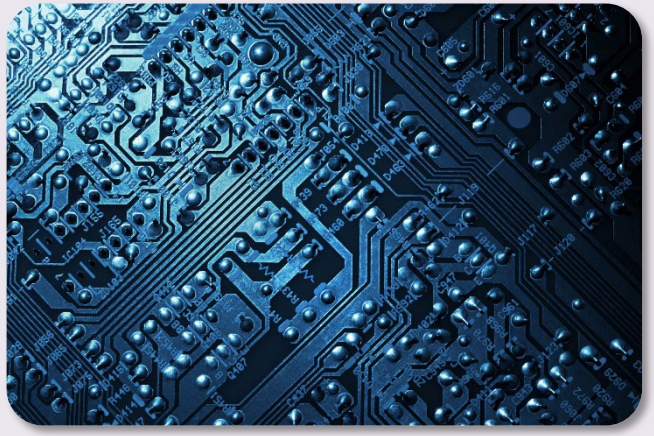
Risk acceptance

Risk reduction or mitigation

Risk transfer

Risk increase or risk taking





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Clause 6: Planning

Artificial intelligence risk treatment options:

Risk sharing or pooling

Risk informed decision making

Implementing redundancies

Regular monitoring and review

Contingency planning





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Clause 6: Planning

Artificial intelligence risk treatment

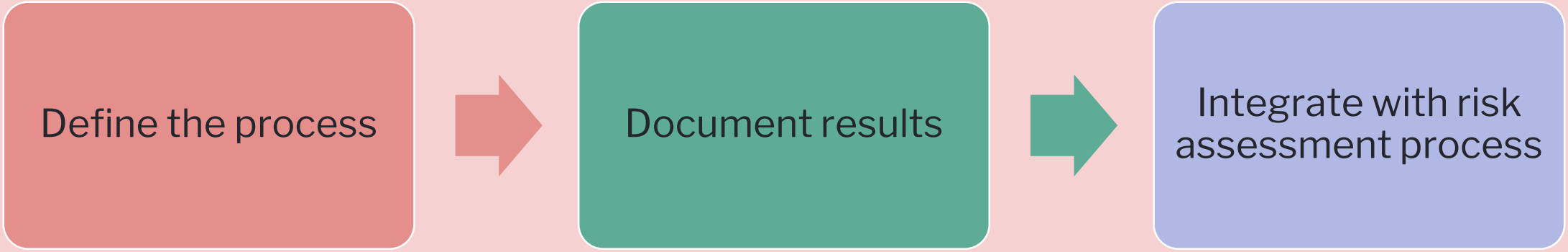
ISO/IEC 42001 Annex A

Statement of Applicability (SoA)

ISO/IEC 42001:2023 Controls			Current Controls	Remarks (Justification for exclusion)	Selected controls and reasons for selection						
					DIE	TAA	HIP	RMA	PDD	ETE	CRM
Controls	Sec	Control									
Policies related to AI	A.2.2	AI policy	Y		X	X	X			X	
	A.2.3	Alignment with other organizational policies	Y		X		X				
	A.2.4	Review of the AI policy	Y		X		X				
Internal organization	A.3.2	AI roles and responsibilities	Y		X	X	X				X
	A.3.3	Reporting of concerns	Y			X	X				X
Resources for AI systems	A.4.2	Resource documentation	Y		X			X			X
	A.4.3	Data resources	Y		X	X			X		X
	A.4.4	Tooling resources	Y					X			X
	A.4.5	System and computing resources	Y		X			X			X
	A.4.6	Human resources	Y				X			X	X

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Clause 6.1.4: AI system impact assessment



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Clause 6: Planning

Clause 6.2:
Setting out artificial intelligence objectives

1. Quantitative metrics and boundaries
2. Performance metrics for AI
3. Effectiveness metrics for AIMS

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Clause 6: Planning

4 ISO/IEC 42001 compliance

5 AIMS procedure adherence

6 Completion of action plans

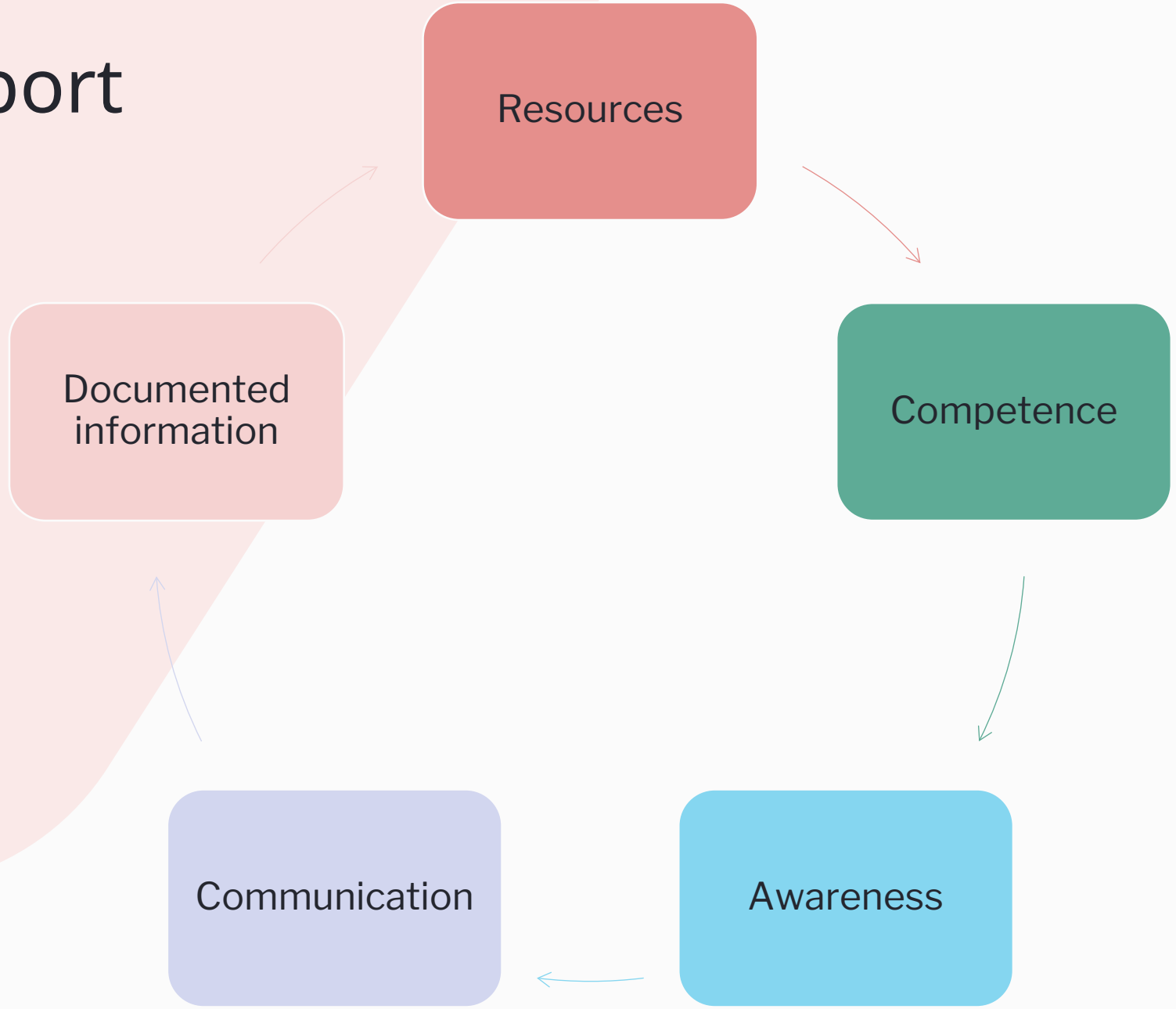
7 Risk criteria alignment

Clause 6.2:
Setting out artificial intelligence objectives

Clause 6.3:
Planning of change

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Clause 7: Support



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Clause 7.5: Documented information

The requirements for documented information are spread throughout the standard

- 4.3 Scope of the AIMS
- 5.2 AI policy
- 6.1.1 General
- 6.2 AI objectives
- 7.2 Evidence of competence
- 8.2 Results of AI risk assessment
- 9.1 Evidence of results
- 10.2 Nonconformities

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Clause 8: Operation

AIMS processes

Determine outsourced processes

Processes for implementation of the AI risk treatment plan

Control outsourced processes



Clause 8.1

Implementation of the actions determined in Clause 6

Planning, implementation and control of the processes needed to meet AI requirements and achieve AI objectives

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Clause 8: Operation

Clause 8.3 – AI Risk treatment

During operation of the AIMS, whenever the risk assessment is updated according to Clause 8.2, the organization then **applies the risk treatment** according to Clause 6.1.3 **and updates the risk treatment plan**

The results of the artificial intelligence risk treatment **are retained** in documented information as evidence that the process in Clause 6.1.3 has been performed as defined

The progress of implementation of the artificial intelligence risk treatment plan should be driven and monitored by this activity



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Annex A – Control objectives and controls

The standard has nine different AI control clauses, namely:

- Clause B.2 Policies related to AI (3)
- Clause B.3 Internal organization (2)
- Clause B.4 Resources for AI systems (5)
- Clause B.5 Assessing impacts of AI systems (4)
- Clause B.6 AI system life cycle (9)
- Clause B.7 Data for AI systems (5)
- Clause B.8 Information for interested parties of AI systems (4)
- Clause B.9 Use of AI systems (3)
- Clause B.10 Third party relationships (3)

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Clause 8.4 AI system impact assessment

Because AI systems potentially generate significant impacts on individuals, groups of individuals, and societies, the organization that provides and uses such systems should consider the intended purpose and use of these systems and the impacts of these systems on these groups



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Clause 9: Performance evaluation

Methodological guidelines ensuring the results' validity and alignment with the AIMS objectives

Analysis and evaluation divided into two distinct dimensions

- Evaluation of AI’s operational performance
- Evaluation of the overarching effectiveness of the AIMS

Additional beneficial facets organizations might consider integrating:

- Monitoring and measurement
- Analysis and evaluation

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Clause 9.2: Internal audit

Required at planned intervals

Provides conformance information

Assess the effective implementation and maintenance of the AIMS

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Continuing suitability

Adequacy

Effectiveness

Alignment with the strategic direction of the organization

Clause 9.3: Management review

Clause 10: Improvement

Clause 10.1 (Continual improvement)

A **systematic approach** using continual improvement will lead to a more effective AIMS, which will improve the organization's artificial intelligence.
Artificial intelligence management leads the organization's operational activities in order to avoid being too reactive, i.e. that most of the resources are used for finding problems and addressing these problems.

The AIMS is working systematically through continual improvement so that the organization can have a more proactive approach. Top management can set objectives for continual improvement, e.g. through measurements of effectiveness, cost, or process maturity



Clause 10: Improvement

Clause 10.2: (Nonconformity and corrective action)



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Next step:

BSI Training Academy
for AIMS training course



“Q&A

ทบทวนและถามคำถาม

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