Public Sector Tech Watch

Webinar Series: "Innovating the EU public sector in Europe"

1st Webinar

Competencies and Governance Practices for AI in the Public Sector

23 April 2024

interoperable europe

Programme

Competencies and Governance Practices for AI in the Public Sector

01 **Welcome and Introduction**

02 **Presentation of findings**
10:20-10:50

03 **Expert panel**
11:00-11:55

04 **Conclusion remarks**
11:55-12:00

RONY MEDAGLIA

COPENHAGEN BUSINESS SCHOOL

PATRICK MIKALEF

NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Competencies & Governance Practices for AI in the Public Sector

An empirical study

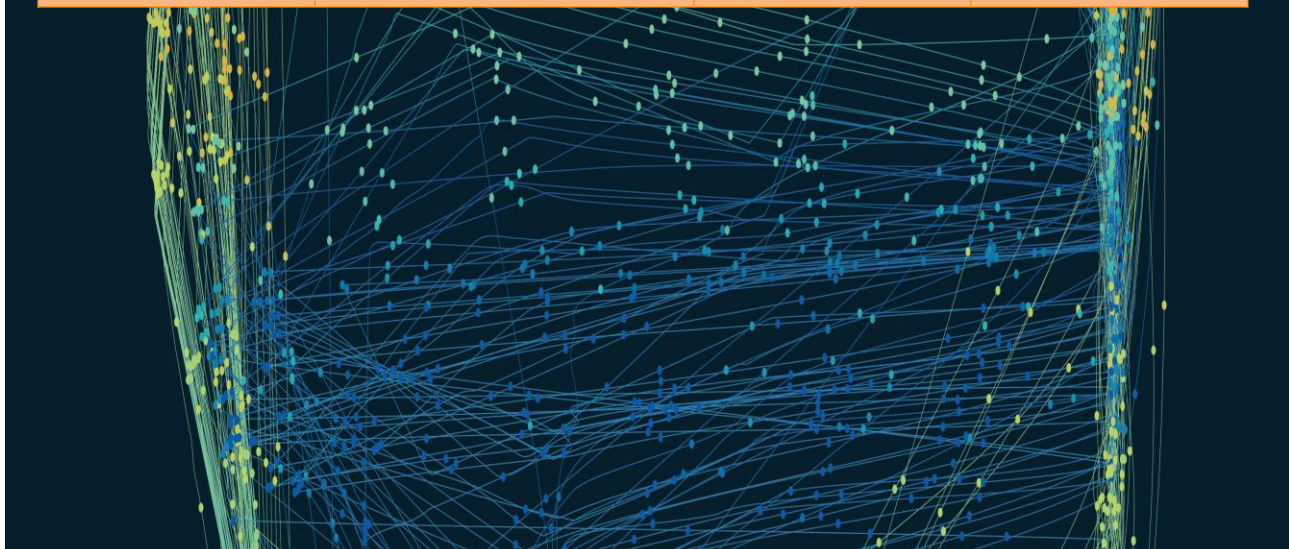
Methodology

1/3

Literature review

- As of December 2023
- Academic literature (keyword search)
- Policy / grey literature (snowball approach)

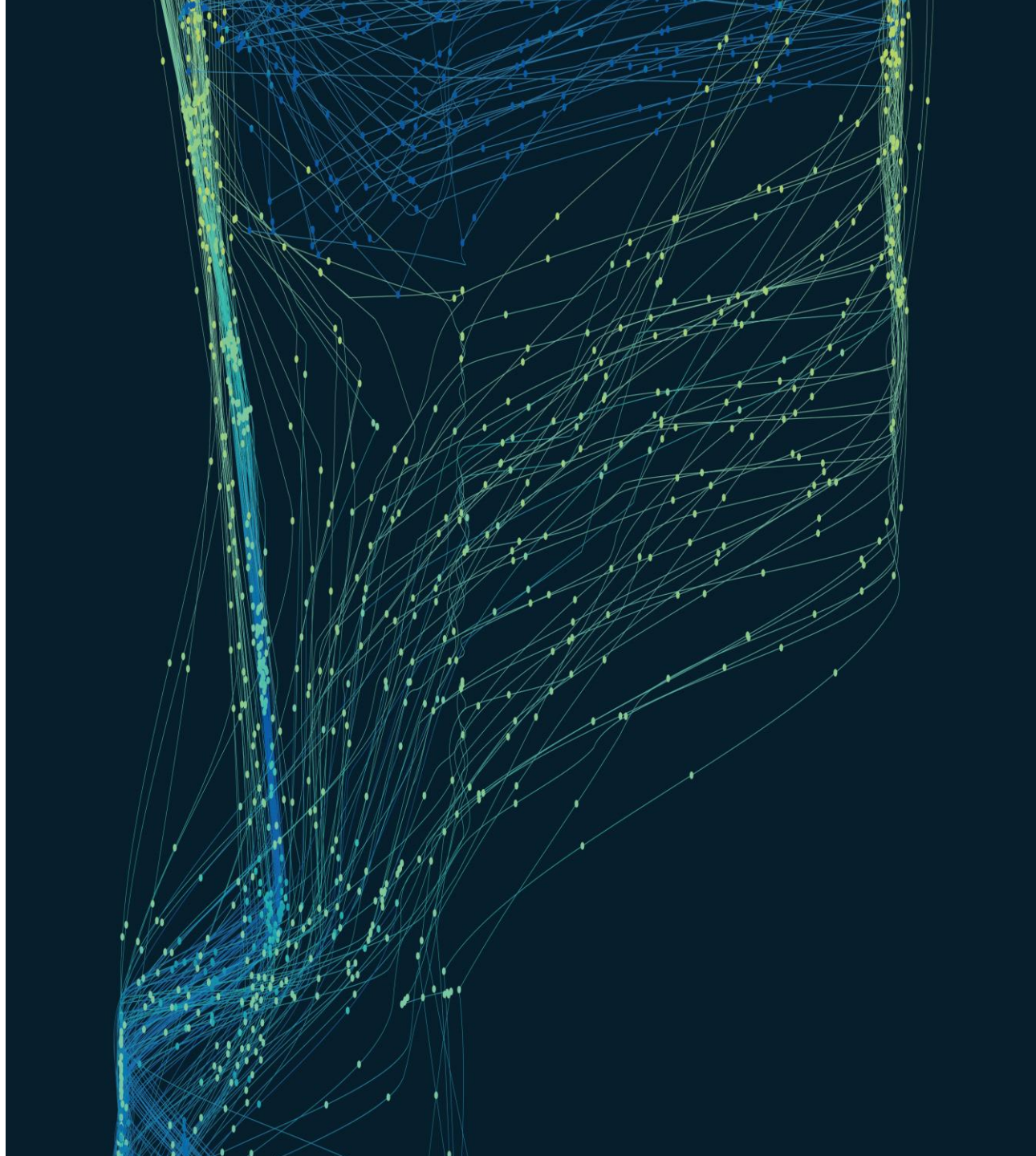
	Competencies	Governance	Total unique
Academic	18	15	30
Policy	14	5	18
Total	32	20	48



2/3

Expert workshop

- 25 October 2023
- 40 expert participants
- 4 breakout sessions



3/3

Case studies

- 7 countries
- May-November 2023
- 19 semi-structured interviews
- 11h 36m recordings

Country	Organization
Czechia	Ministry of Interior
Denmark	Municipality of Gladsaxe
Germany	District of Lüneburg
Greece	Ministry of Digital Governance
Italy	National Institute for Social Security
Norway	Municipality of Trondheim
The Netherlands	City of Amsterdam

AI competencies in the public sector

Motivation

Public managers often have **limited expertise**, and lack **competent figures** to harness the benefits of AI technologies (Ahn & Chen, 2022; Neumann et al., 2022)

Definition

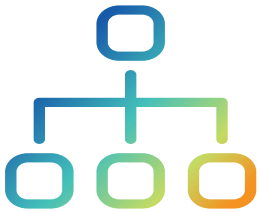
Knowledge, **skills** and **behaviors** that are visible in an individual; and individual underlying attributes such as **traits**, **motives**, **attitudes**, **values** and **self-image** that tend to be deeper (Salman et al., 2020)

Findings

Three competency areas

Technology

25 competencies



Managerial

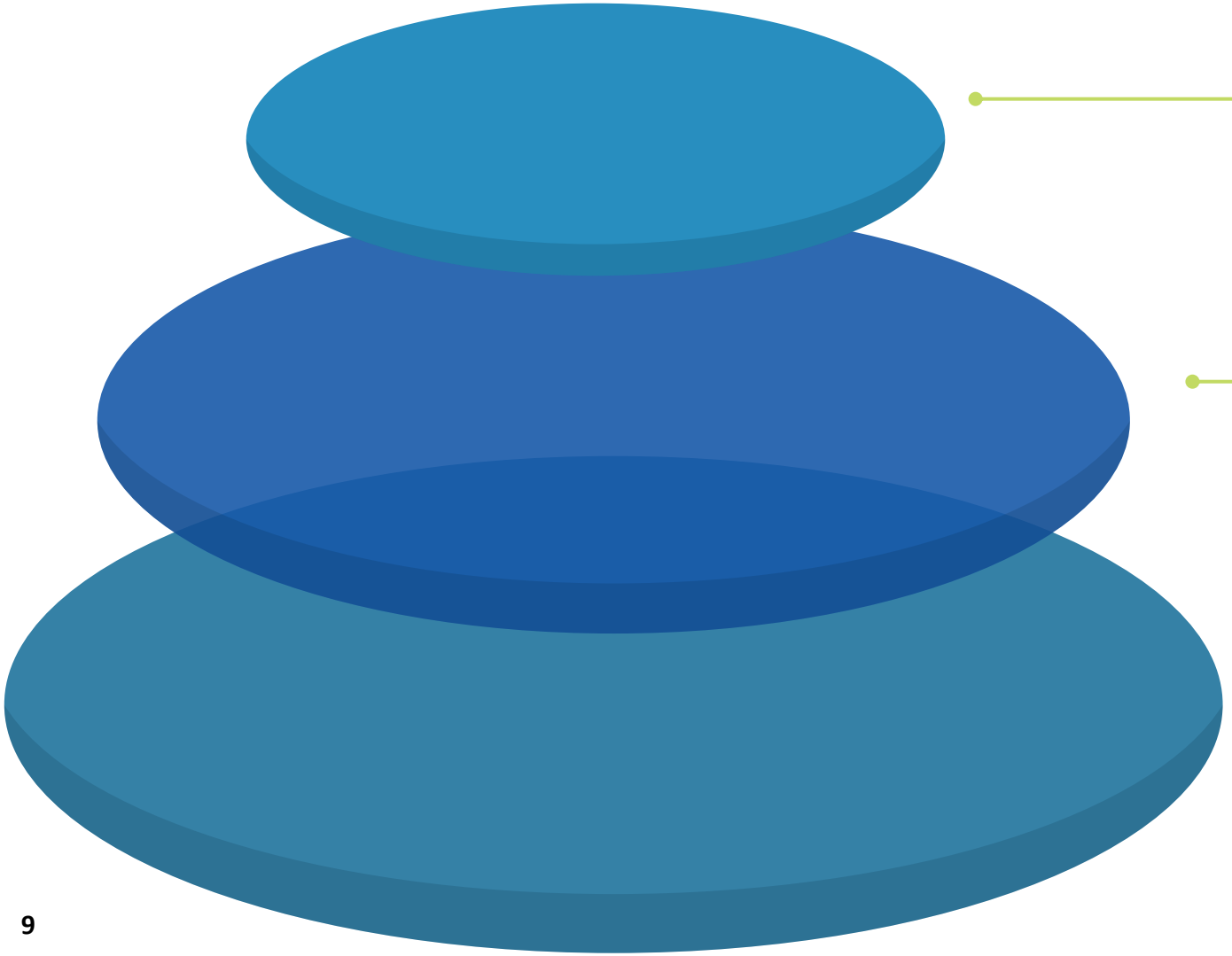
16 competencies

Policy / legal / ethical

15 competencies

Findings

Three competency dimensions



Attitudinal competencies

”Know-why”

Operational competencies

”Know-how”

Literacy competencies

”Know-what”

Technology

Attitudinal competencies (*know-why*)	• Technology inquisitiveness • Positive attitude towards AI • Technical design thinking • Data-oriented culture
Operational competencies (*know-how*)	• Database management • Data governance • Data collection • Data modelling • Data quality assessment • Data analysis • Data visualization • Data sharing • Choice of AI architecture • Choice of ML techniques • AI-related software programming • Algorithm training • Compliance with AI technical standards • Prompt engineering
Literacy competencies (*know-what*)	• Basic data literacy • Understanding of causal analysis and decision theory • Understanding the fundamentals of ML • Understanding of AI computer vision • Understanding of Natural Language Processing • Understanding of applied maths • Understanding of AI software development cycles

Technology

Attitudinal competencies (*know-why*)

Operational competencies (*know-how*)

- Database mana
- Data governance
- Data collection
- Data modelling
- Data quality assessmen

Literacy competencies (*know-what*)

- Basic data literacy
- Understanding of causal analysis and de theory
- Understanding the fundamentals of NLP
- Understanding of AI computer vision

You need to understand how and why it* [a Large Language model] *is answering wrong.

Otherwise, you would be afraid of it and say it can take over the world.

No: it's just the predicting of the next word. It hasn't got a mind.

Attitudinal competencies (*know-why*)	• Leadership • Foresight • Risk-proclivity • AI benefits understanding	• User-centricity • Multidisciplinarity • Project ownership
Operational competencies (*know-how*)	• Risk anticipation and mitigation • Choice to delegate to AI • Knowledge brokering • Cross-team collaboration • Data-supported decision-making	• Coordination • Inter-group translation • Partnership development • Change management
Literacy competencies (*know-what*)		

Managerial

Attitudinal competencies (*know-why*)	• Leadership • Foresight • Risk-proclivity • AI benefits und
Operational competencies (*know-how*)	• Risk anticipation and • Choice to delegate to A • Knowledge brokering • Cross-team collaboration • Data-supported decision-mak
Literacy competencies (*know-what*)	

We need some people that can understand the organization's problems and wants.

The technicians are not very good at that.

They need to go into a dialogue with the departments.

Policy
Legal
Ethical

Attitudinal competencies (*know-why*)	• Empathy • Critical technology assessment • Awareness of sustainability implications • Policy design thinking	
Operational competencies (*know-how*)	• AI-compatible policy formulation • Auditing • Dissemination	• Collaboration with domain experts • Collaboration with AI ethicists
Literacy competencies (*know-what*)	• AI procurement literacy • Understanding of legal and ethical frameworks • Understanding of public policy making and theory	• Specialised legal expertise • Privacy and security literacy • Awareness of ethical implications

Policy
Legal
Ethical

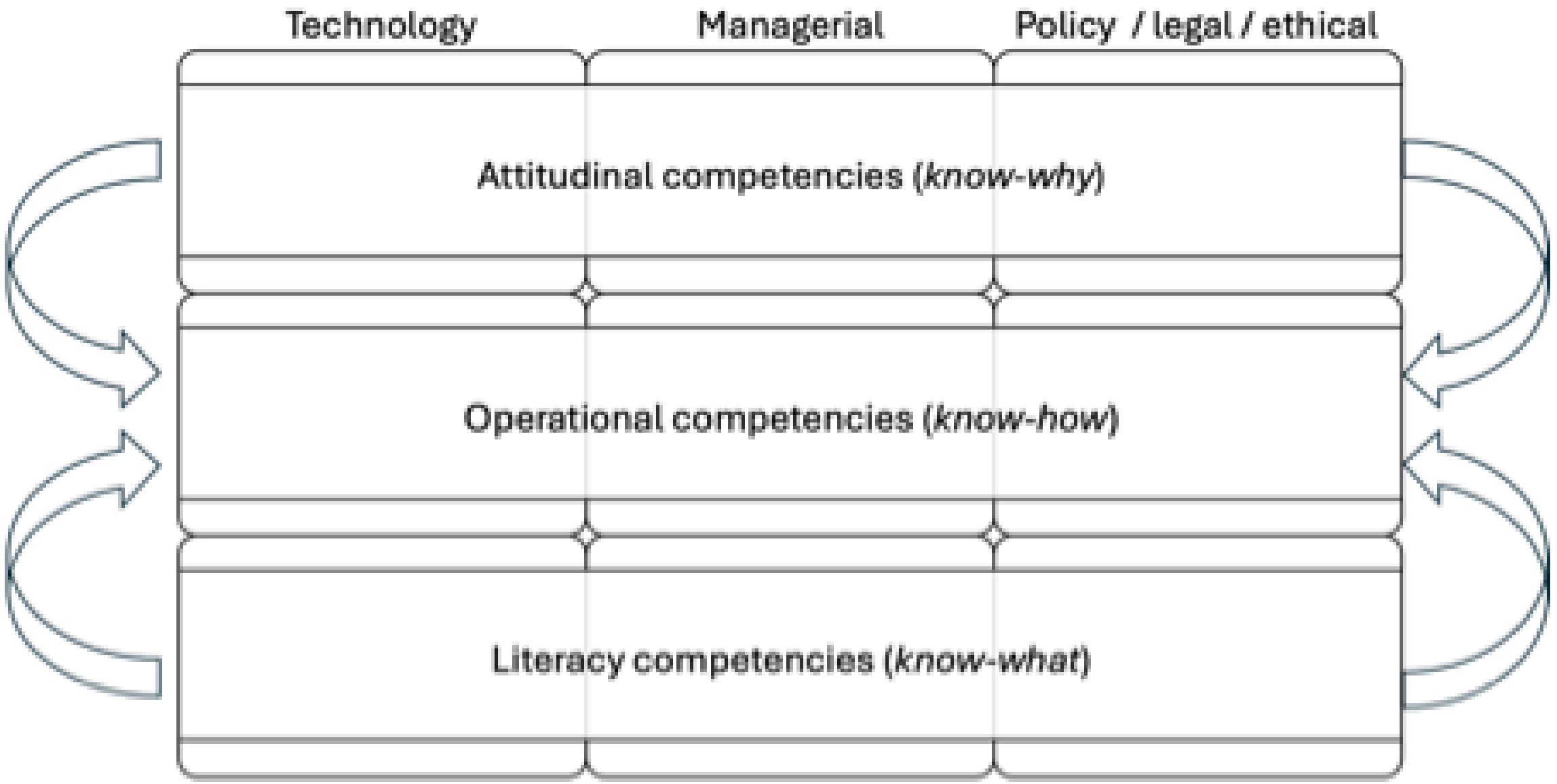
Attitudinal competencies (*know-why*)	
Operational competencies (*know-how*)	• AI-compati • Auditing • Dissemination
Literacy competencies (*know-what*)	• AI procurement literacy • Understanding of legal and ethical • Understanding of public policy making a theory

Being critical towards these* [IT vendor] *companies,

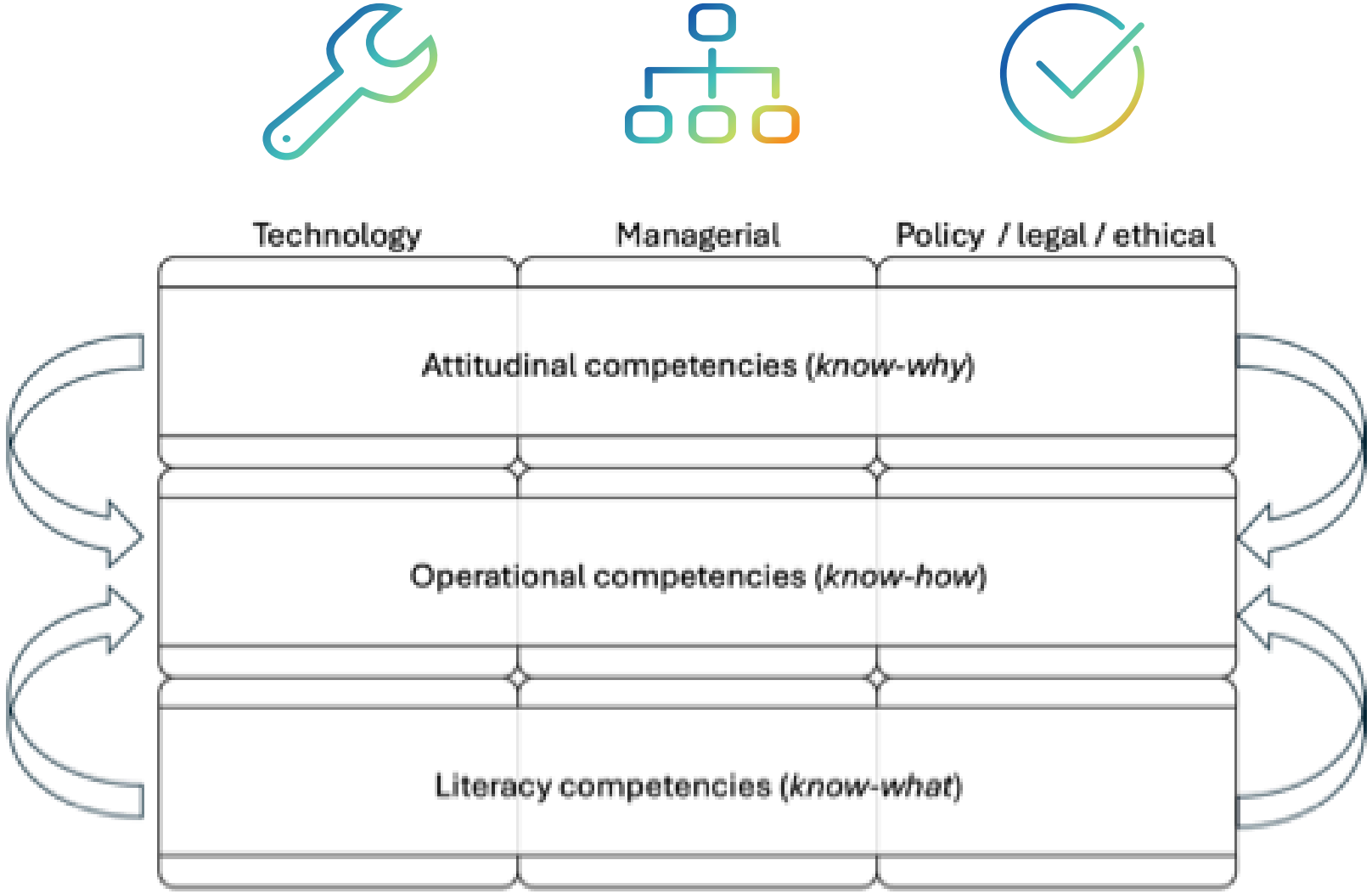
understanding what their interests are,

being able to actually technically compare what they're offering to someone else.

Competencies for AI in the public sector: a comprehensive framework



Recommendations



1

DEVELOP FOCUSED AI TRAINING PROGRAMMES

2

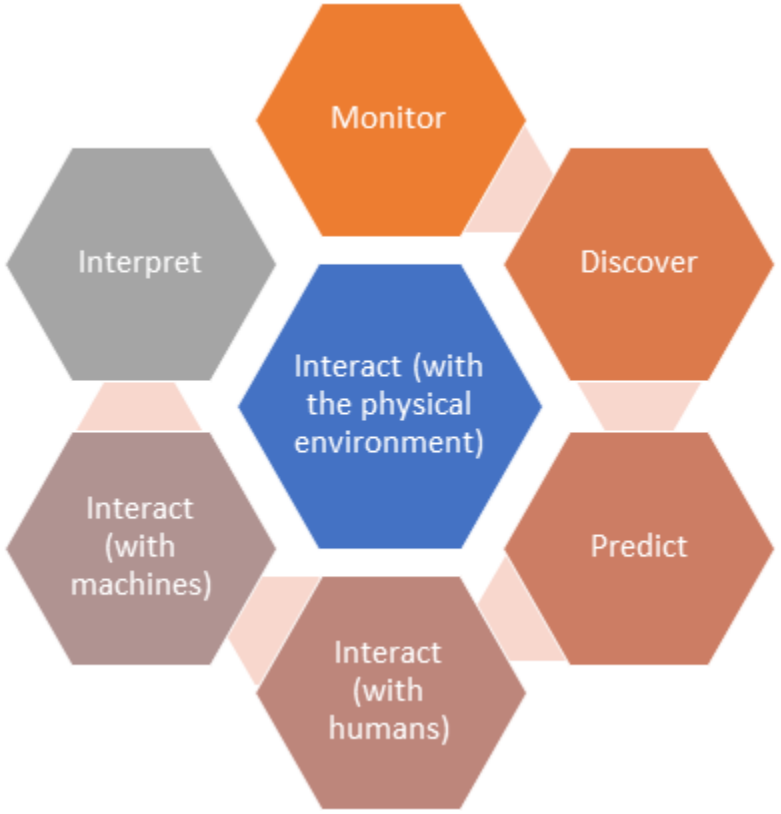
PROMOTE INTERDISCIPLINARY RESEARCH ON AI COMPETENCIES

3

ESTABLISH DEDICATED HIRING PROCESSES and DEVOTE ADDITIONAL RESOURCES TO ATTRACT SPECIALISTS WITH AI COMPETENCIES

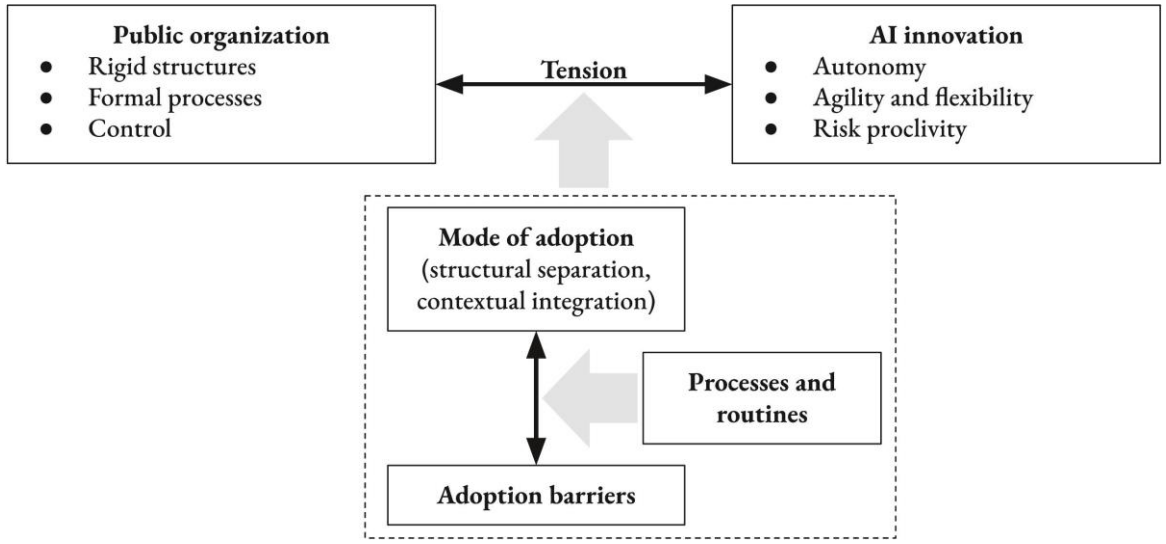
The need for AI Governance

AI governance is a subset discipline of corporate governance, focused on AI and its performance and ethical risk management



AI adoption and use barriers

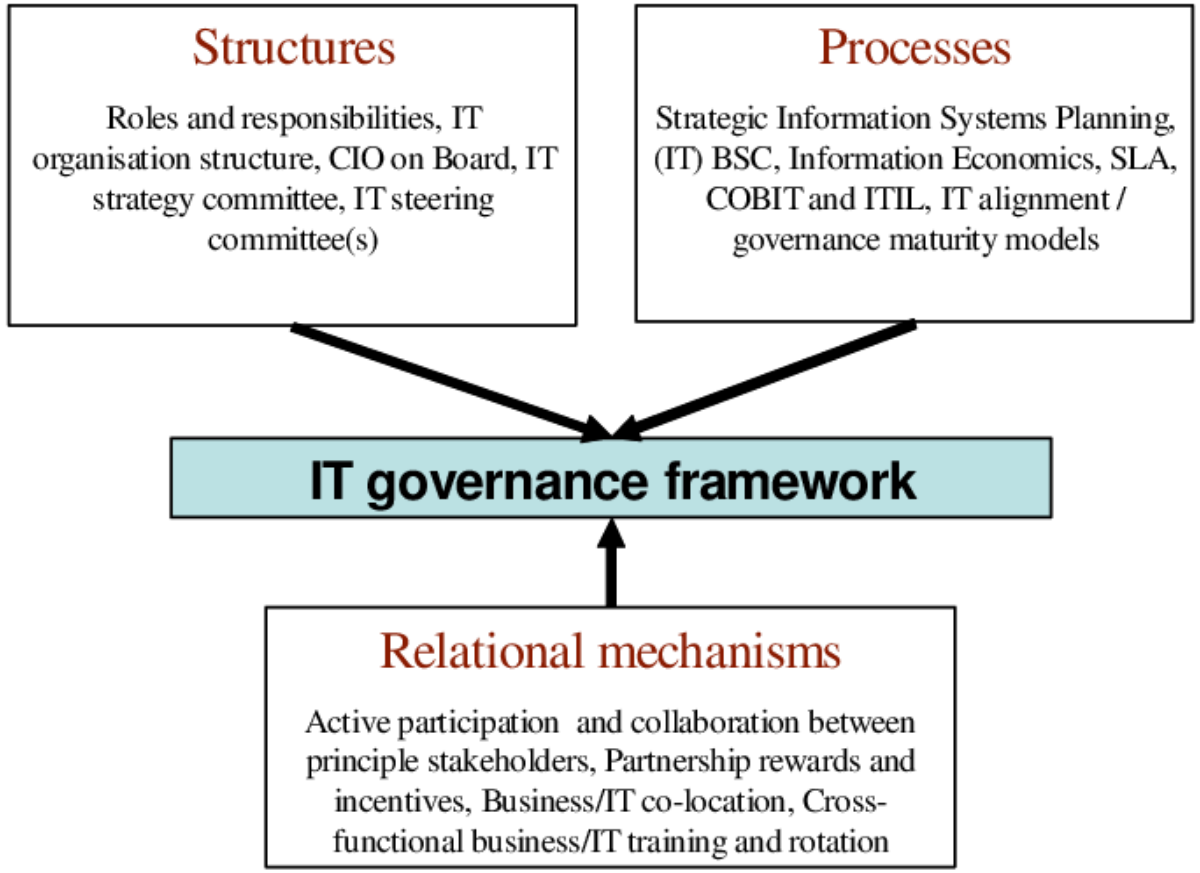
The deployment of AI in the public sector requires that several levels are aligned and coordinated, and necessitates several changes at various levels in organizations



Selten, F., & Klievink, B. (2024). Organizing public sector AI adoption: Navigating between separation and integration. Government Information Quarterly, 41(1), 101885.

Key pillars of governance

AI governance can be considered as a sub-set of IT governance, and can be mapped based on the three main pillars

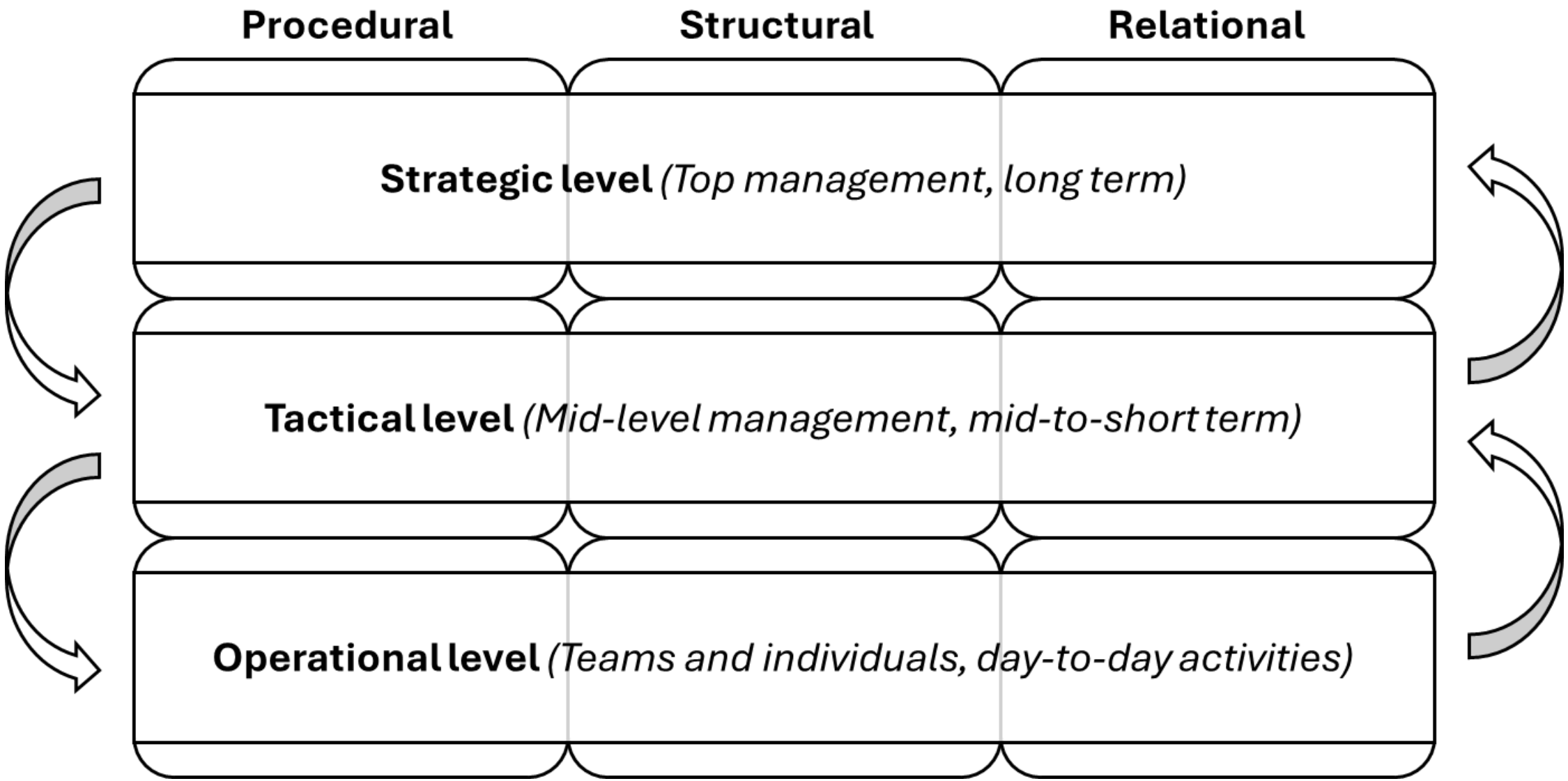


De Haes, S., & Van Grembergen, W. (2006, January). Information technology governance best practices in Belgian organisations. In Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS'06) (Vol. 8, pp. 195b-195b). IEEE.

Levels of decision-making

Decision-making around AI takes places at different levels within public organizations, and is typically a responsibility of different actors, with different time-frames associated to each.

Source: https://www.futurecioclub.com/blog/organizational-planning-and-execution-in-three-levels-strategic-tactical-operational


Procedural
Structural
Relational
Strategic level (Top management, long term)
Tactical level (Mid-level management, mid-to-short term)
Operational level (Teams and individuals, day-to-day activities)

	Procedural	Structural	Relational
Strategic level	• Developing ethical AI guidelines • Compliance protocols • Establishing accountability procedures	• Defining data stewards • Establishing independent ethics committees • Developing an ethical code of conduct • Establishing cybersecurity department	• Establishing communities of practice • Stakeholder education and training • Experimentation and idea generation • Fostering knowledge transfer
Tactical level	• Minimizing authorization to access data • Developing explainability frameworks • Monitoring AI usage • Developing AI protocols for standardization • Ensuring security of algorithmic operation • AI lifecycle management processes	• Safety barriers to prevent misuse • Establishing algorithmic registries • Defining project ownership • Developing steering group • Elimination of algorithmic censorship	• Negotiating and contracting with vendors • Promoting society-in-the-loop activities
Operational level	• Data management • Establishing system/and data integration • Developing processes for elimination of bias • Establishing algorithmic transparency • Model reusability	• Process-based interactions between people and AI • End-user participation in AI development and evaluation • Ensuring human monitoring and supervision of AI decision-making	• Promoting collaborative efforts between stakeholders • Educating users to develop trust towards AI

Key recommendations

01

Communities of practice

Sharing knowledge and best practices can significantly reduce barriers and uncertainty

02

Provide guidelines

Educational material, seminars, expert consultations, best practices examples

03

Stakeholders-in-the-loop

Communication channels are necessary to effectively connect with key stakeholders

BREAK SECTION

Programme

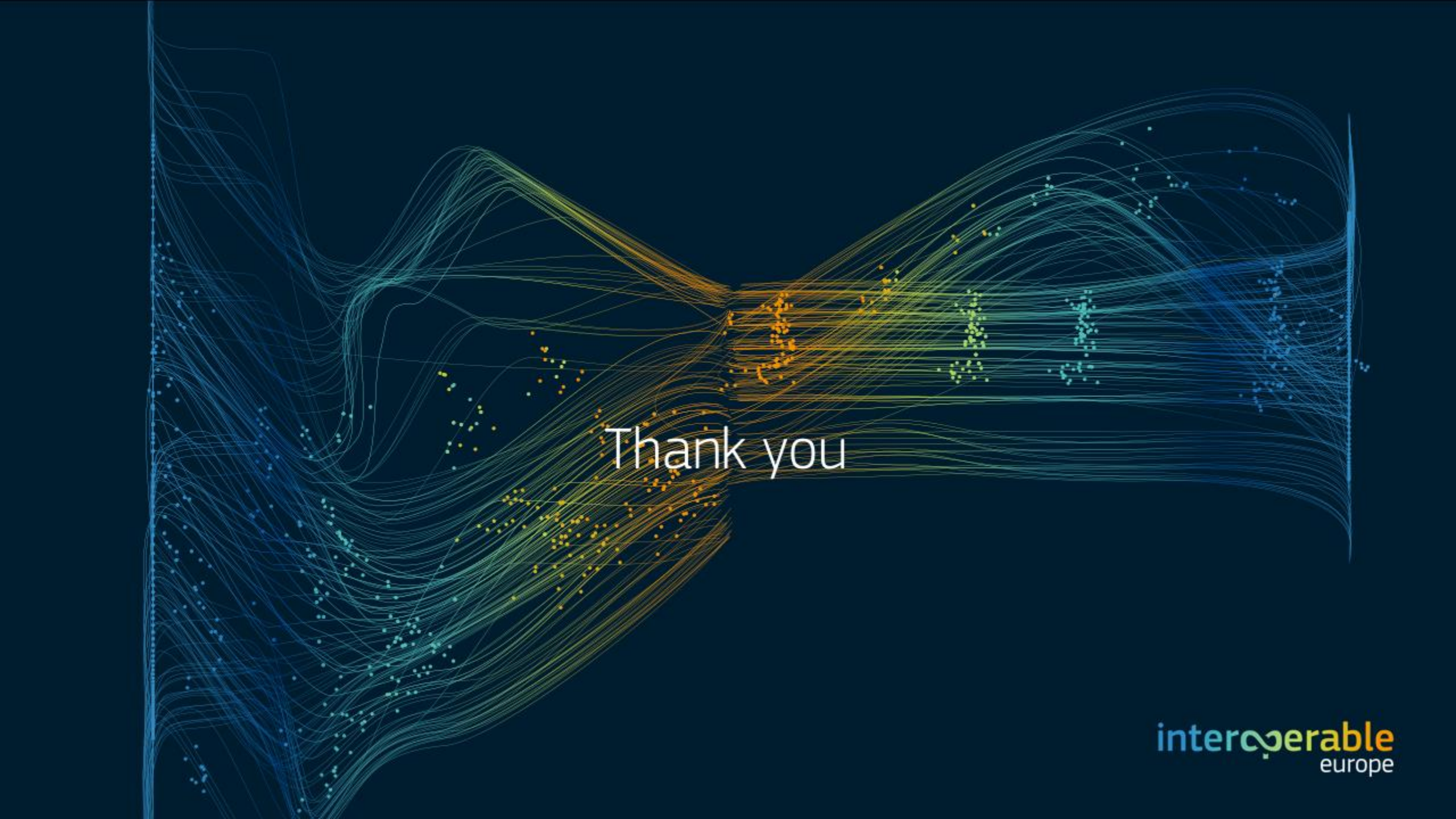
Competencies and Governance Practices for AI in the Public Sector

01 **Welcome and Introduction**

02 **Presentation of findings**
10:20-10:50

03 **Expert panel**
11:00-11:55

04 **Conclusion remarks**
11:55-12:00



interoperable europe