

# Session 7: The rise of AI, Big Data and data analytics: The digital infrastructure of the future

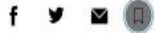
## The Nexus of Land, Policy and Legal, and Artificial Intelligence

Frank Tierolff and Joep Crompvoets

Mexico-City, 10 October 2024

## Can AI Be a Fair Judge in Court? Estonia Thinks So

Estonia plans to use an artificial intelligence program to decide some small-claims cases, part of a push to make government services smarter.



WORLD STAFF / GETTY IMAGES

### Gartner's Top 10 Strategic Predictions for 2017 and Beyond: Surviving the Storm Winds of Digital Disruption

By 2020, the average person will have more conversations with bots than with their spouse. With the rise of Artificial Intelligence (AI) and conversational user interfaces, we are increasingly likely to interact with a bot (and not know it) than ever before. The digital experience has become addictive by entering our lives through smartphones, tablets, virtual personal assistants (VPAs) or the entertainment systems in our homes and cars.

## Artificial Intelligence And The End Of Government



Daniel Araya  
Contributor  
AI Adviser and Policy Analyst

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TECHNOLOGY

## Tesla floats fully self-driving cars as soon as this year. Many are worried about what that will unleash.



By Faiz Siddiqui

July 17, 2019 at 10:16 p.m. EDT

HEALTH

## The Robot Will See You Now

IBM's Watson—the same machine that beat Ken Jennings at *Jeopardy!*—is now churning through case histories at Memorial Sloan-Kettering learning to make diagnoses and treatment recommendations. This is one in a series of developments suggesting that technology may be about to disrupt health care in the same way it has disrupted so many other industries. Are doctors necessary? Just how far might the automation of medicine go?



Science

This article is more than 8 years old

## Google a step closer to developing machines with human-like intelligence

Algorithms developed by Google designed to encode thoughts, could lead to computers with 'common sense' within a decade, says leading AI scientist

TECH

## More than half of Europeans want to replace lawmakers with AI, study says

PUBLISHED THU, MAY 27 2021 3:17 AM EDT

NEWS TECHNOLOGY

## AI learns the art of Diplomacy

Meta's algorithm tackles both language and strategy in a classic board game that involves negotiation

22 NOV 2022 · 10:00 AM · BY MATTHEW HUTSON



# REALITY



GOVTECH BIZ

## What Will It Take for Government AI to Really Take Off?

Artificial intelligence made few gains during the pandemic, Gartner finds, even as more agencies turn to chatbots. Confusion about the technology and anxiety among government workers are among the main hurdles.

October 06, 2021 • Thad Ruster



REFORM PROJECT

## Data protection authority overturns controversial AMS algorithm

The data protection authority is canceling the use of the algorithm for evaluating job market opportunities. It needs a legal basis

András Szigetvári August 20, 2020, 6:41 pm 366 posts

Shutterstock

## PROMOTING GOVERNMENT ADOPTION OF AI

Overall grade: Approaching expectations



Reason: Policy actions are not sufficiently focused on addressing structural issues that are stalling government adoption of AI including approach and culture; financing; metrics and incentives; procurement; and oversight and review.



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## POLITICO PRO



### Artificial intelligence was supposed to transform health care. It hasn't.

Machine learning could improve medicine by analyzing data to improve diagnoses and target cures, but technological, bureaucratic, and regulatory obstacles have slowed progress.

## SyRI legislation in breach of European Convention on Human Rights

Den Haag, 13 februari 2020

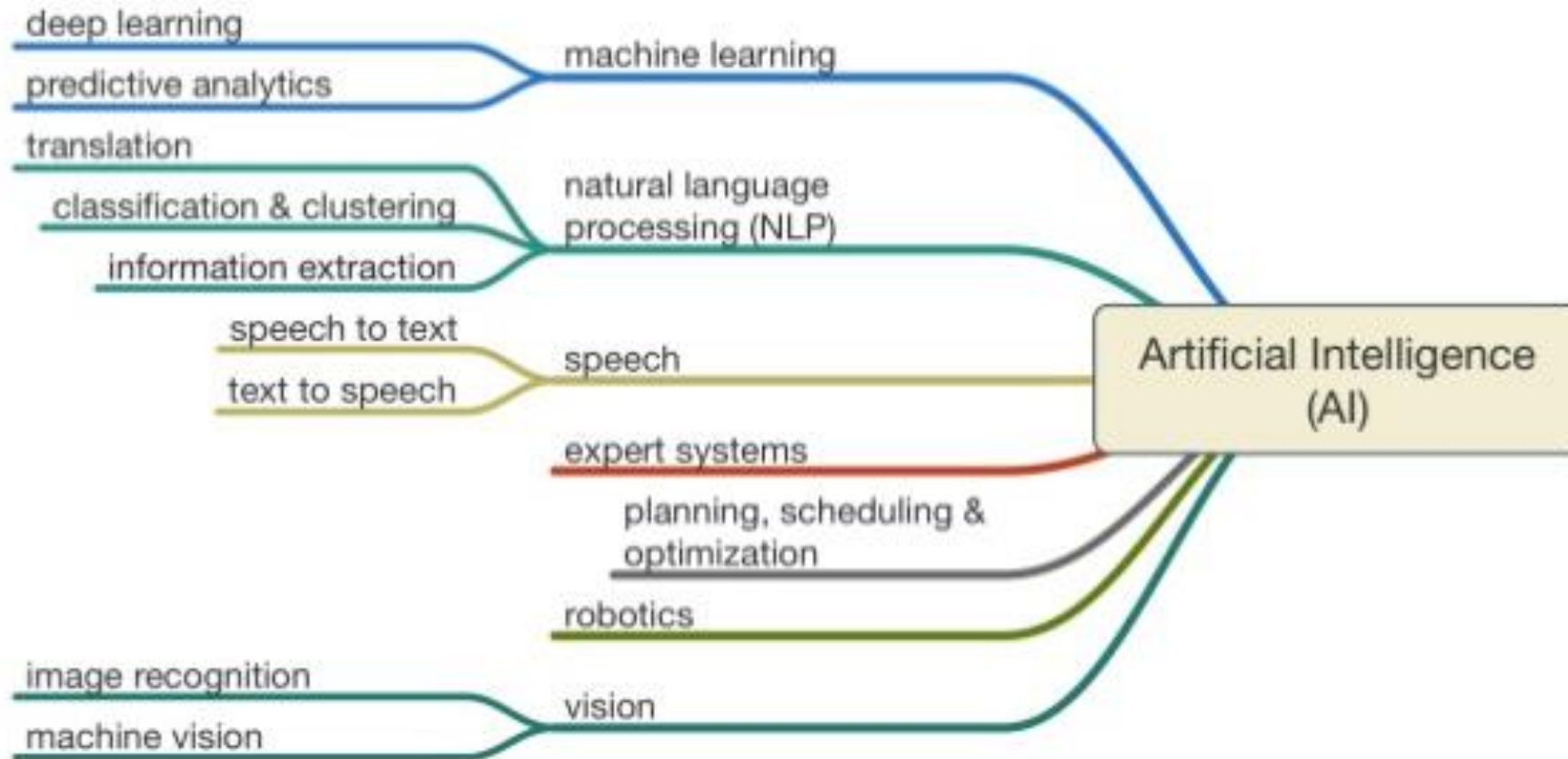
The Hague District Court has delivered a judgment today in a case about the *Systeem Risico Indicatie*, or SyRI. SyRI is a legal instrument used by the Dutch government to detect various forms of fraud, including social benefits, allowances, and taxes fraud. The court has ruled that the legislation regulating the use of SyRI violates higher law. The court has decided that this legislation does not comply with Article 8 of the European Convention on Human Rights (ECHR), which protects the right to respect for private and family life, home and correspondence.

## Audit of 9 government algorithms finds 6 do not meet basic requirements

News Item | 18-05-2022 | 10:45

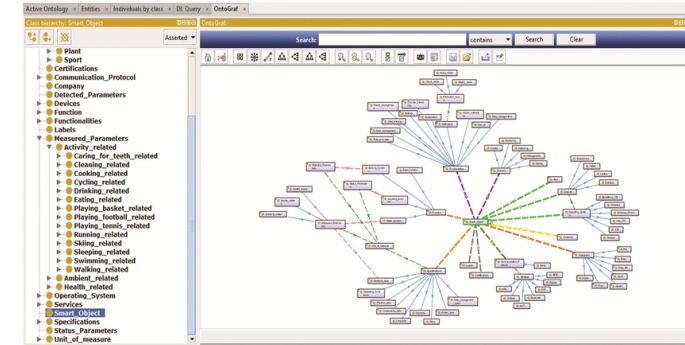
Responsible use of algorithms by government agencies is possible but not always the case in practice. The Netherlands Court of Audit found that 3 out of 9 algorithms it audited met all the basic requirements, the other 6 did not and exposed the government to various risks: from inadequate control over the algorithm's performance and impact to bias, data leaks and unauthorised access.

# Artificial Intelligence

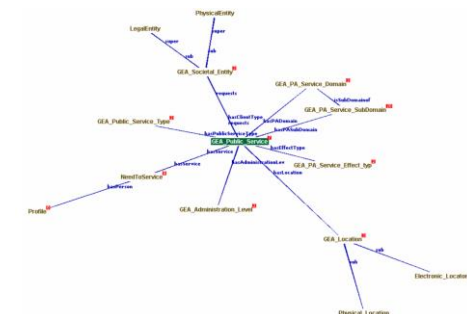


# Two schools

## Symbolic AI



- The “symbolists” have sought to build intelligent machines by **coding** in logical rules and representations of the world. Representation and manipulation of symbols is a necessary and sufficient condition for intelligence.
- Symbolic AI attempts to explicitly represent human knowledge in a **declarative** form (i.e. facts/objects and rules/axioms).
- Pros: **glass box, explainability, small data, determinism, human-controlled**
- Cons: **hard-coded, static, low scalability, hard to model the world, need for social agreements, maintenance/updates**
- Examples: Logic (DL, FOL), Ontologies, Semantic Web, Linked Data, Rule-based languages, Data Modelling

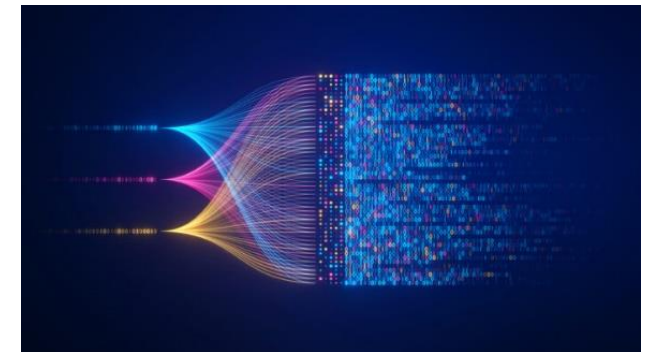
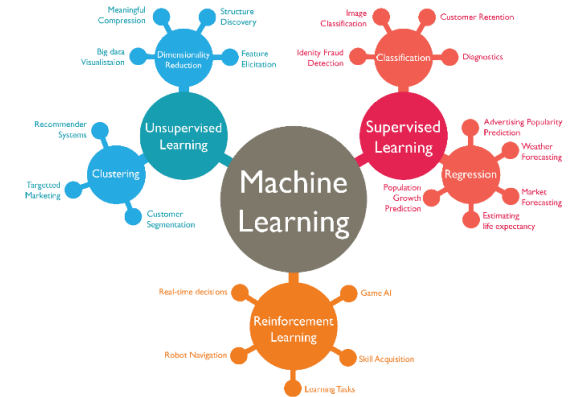
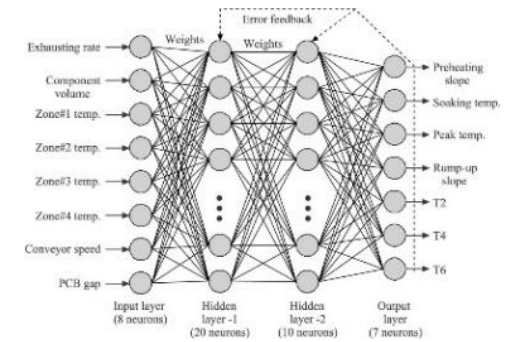


# Two schools

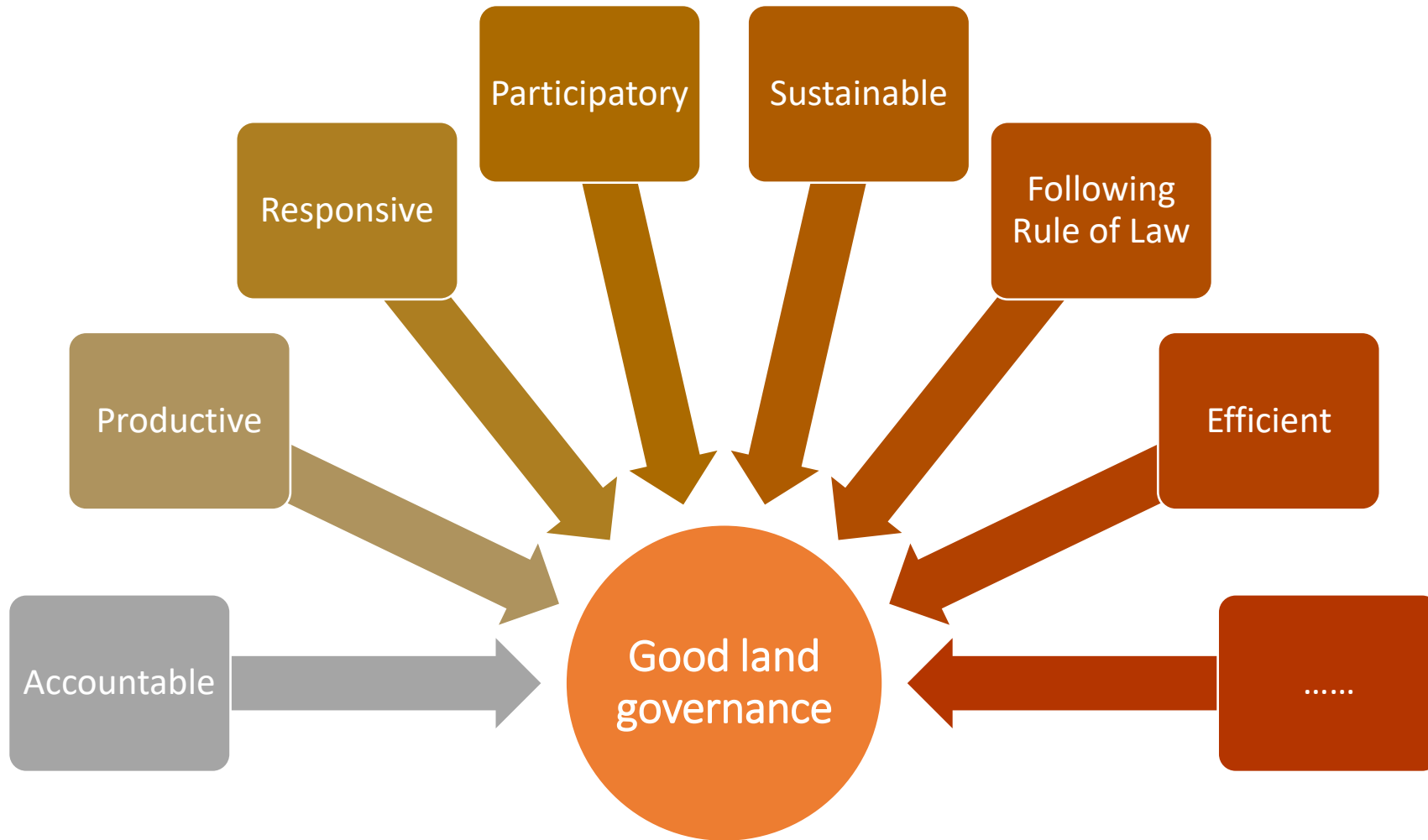
## Connectionist\* AI

- The “connectionists” sought to **learn of associations from data**. Knowledge emerges by processing data.
- Pros: **learning, scalability, flexibility, adaptability, deals with uncertainty, no human bias**
- Cons: **black box, big data, stochastic/non-deterministic, noisy, data biased**
- ML, information retrieval, pattern recognition, back propagation, genetic algorithms, neural networks and deep learning

\* Also known as: subsymbolic, non-symbolic, statistical

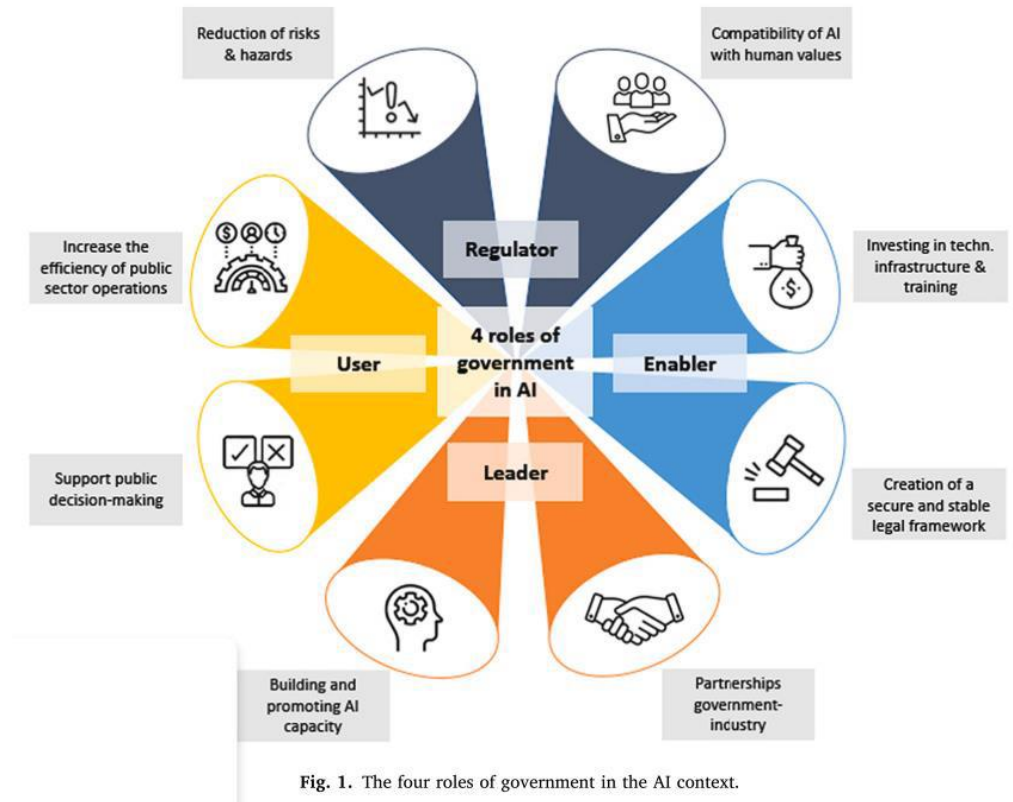


# Good land governance



# Governance as the Nexus

- Governments are a vital player in the AI - Land Society
- Roles of Regulators, Enablers, Leader and User
- Important difference
  - Governance of AI
  - Governance with AI



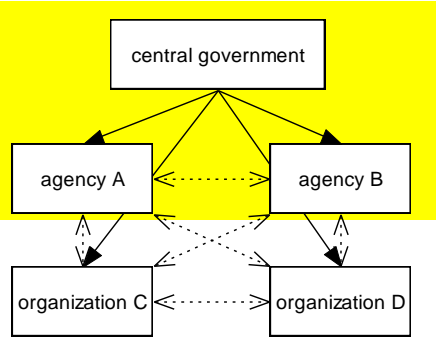


# Governance of AI

## 3 Mechanisms underpinning (land) governance:

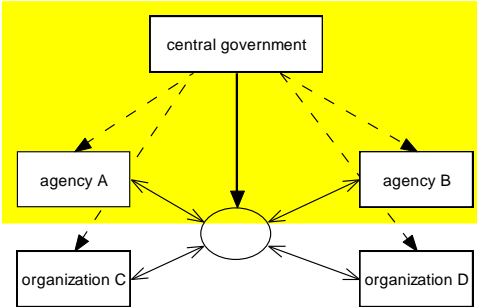
- **Hierarchies** (*Authority, Rules, Regulations, Policies*)
- **Markets** (*Competition, Pricing*)
- **Networks** (*Cooperation, trust, solidarity*)

**Hierarchy**



—> direct control (strict ex ante, structural and financial control)  
 <- - -> quasi-automatic coordination between agencies and organizations  
 ■ public sector

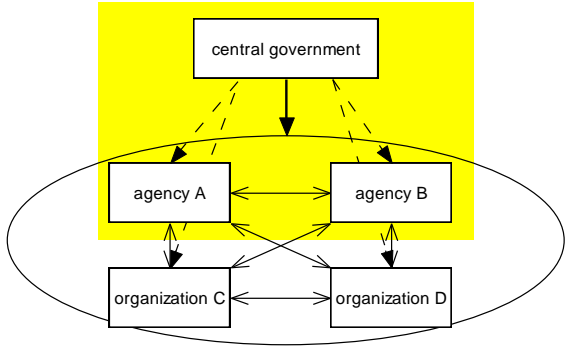
**Markets**



- -> indirect control (mainly ex post control)  
 <- - -> 'horizontal' 'spontaneous' coordination between agencies and organizations  
 —> market creation & regulation and by government  
 ○ market  
 ■ public sector

**Network**

Coordination = network management + indirect control (agency A - N) + self-coordination



- -> indirect control (mainly ex post control)  
 <- - -> 'horizontal' 'spontaneous' coordination between agencies and organizations  
 —> network management by government  
 ○ network  
 ■ public sector

# Artificial Intelligence Act (European Commission 2024)

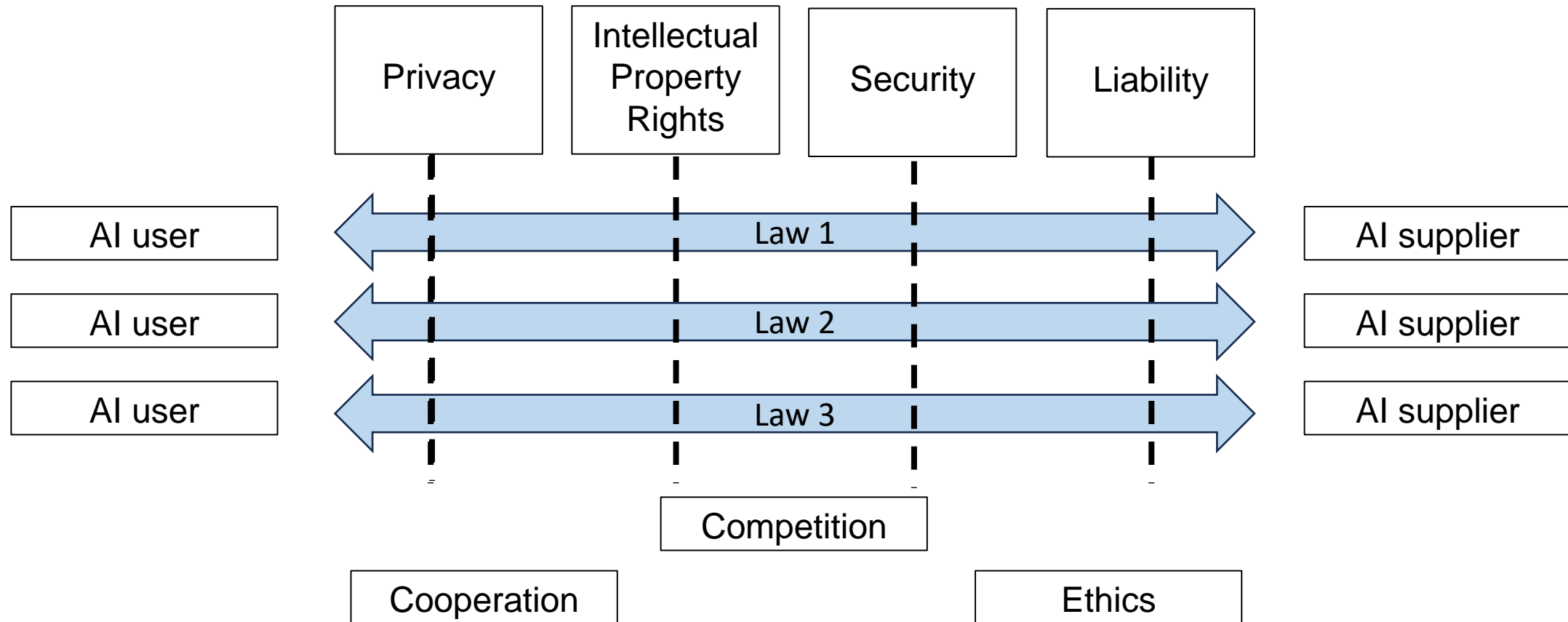
OJ L, 2024/1689, 12.7.2024

Came into force on 1 August 2024, with provisions coming into operation gradually over the following 6 to 36 months



# Governance of AI: Legal framework

- Regulations for promoting AI
- Regulations for limiting AI

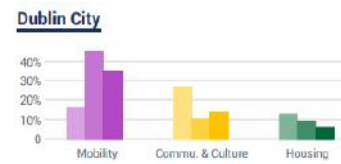


# Governance with AI: Improving policy making

AI to improve various stages of policy making (Policy cycle)

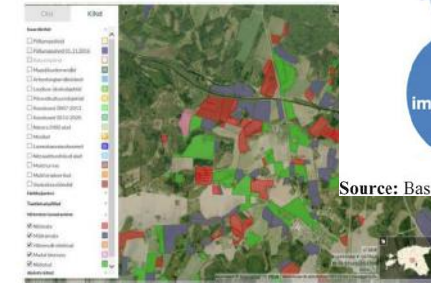
- Detecting social issues more quickly
- Estimate potential effects of policy options
- Improve and fasten decision making
- Monitor ongoing implementation of policy
- Evaluate existing policy
- Include citizens in policymaking

Make public policy more data-driven, and thus more effective, efficient and legitimate



Mobility dominated the civic conversation due to #VeloCity2019 and very proactive cyclists. The council's affordable Housing scheme stood out for Dubliners, as well as Community, which was higher in May due to the European elections.

The Dublin Beat analyses citizen tweets



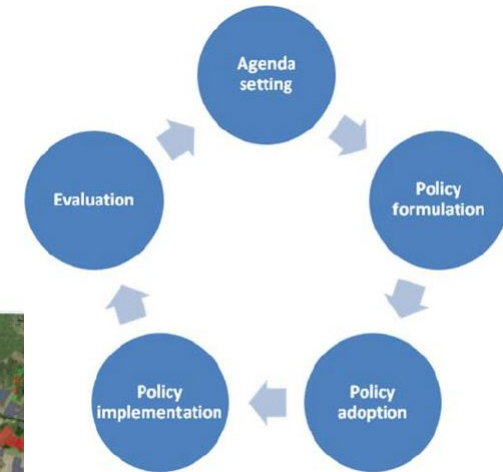
SATIKAS to detect mowed grass of farmers, Estonia



CitizenLab to analyse citizen input



Object Detection, Amsterdam



Source: Based on Figure 20.1 in Knill and Tolsun (2008)

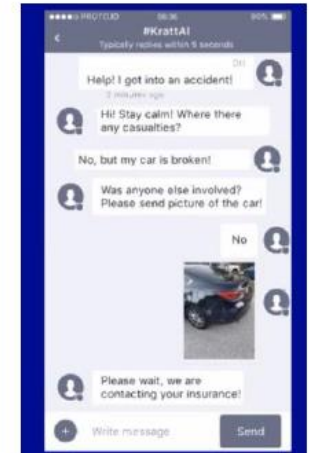
# Governance with AI: Improving public service delivery

AI could be used to deliver public services to businesses and citizens

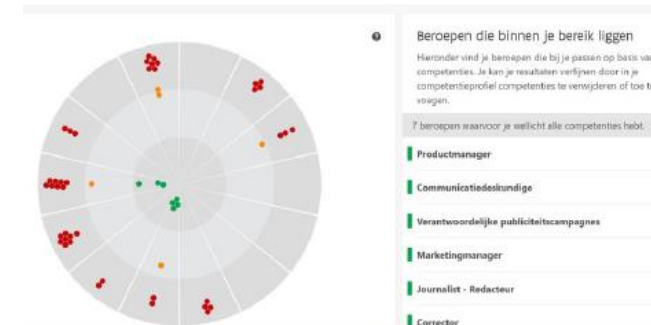
- Enhance information delivery about government services
- Improve public services to citizens and businesses, through personalization
- Automate redundant processes and reducing on-site meetings
- Develop completely new services through AI
- Reduce corruption and improve trust in public service delivery
- Empower civil servants through decision support tools



Misty II to assist the elderly in Barcelona



BüroKratz AI, Estonian Government



JobBereik to assist in reskilling, VDAB, Belgium

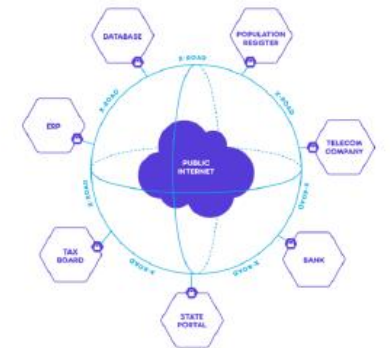
# Governance with AI: Improving internal management

AI to improve internal management operations

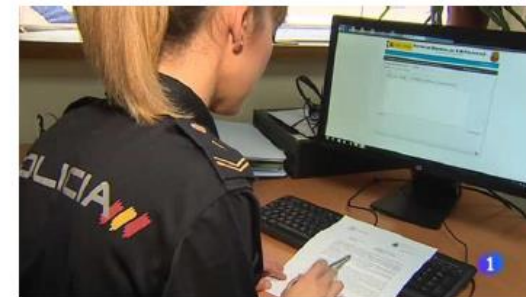
- Improve recruitment services
- More efficient allocation of human resources
- Improved financial management
- Strengthen cybersecurity
- Predictive maintenance
- Modernize public procurement processes
- Improve detection of fraud



Tengai interviewing job applicants, Sweden



AI to detect anomalies in X-Road, Estonia



VeriPol to detect false police reports, Spain

# Challenges of AI Adoption in government

- Still in a stage of infancy

The use of new innovations is not straightforward in government

- Technological implementation challenges
- Legal challenges
- Ethical Challenges
- Societal challenges
- Data-related challenges
- Public procurement
- Awareness challenges
- **Governance challenges**

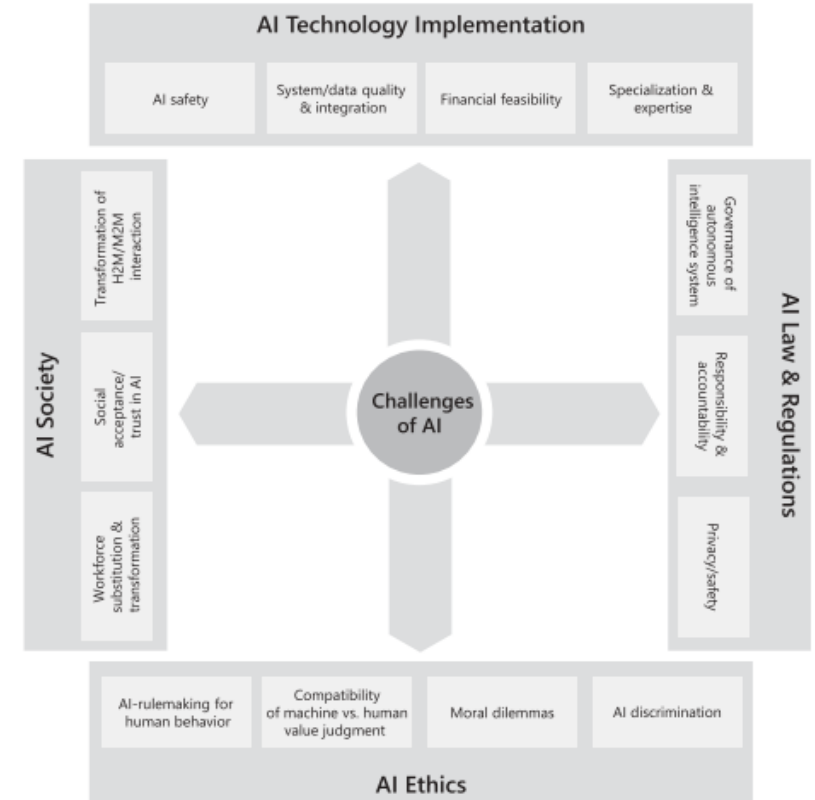


Figure 1. Four-AI-challenges model.

*Four-AI-challenges mode, in: Wirtz, B. W., Weyerer, J. C., & Geyer, C. (2019).*

# Concluding reflections

**Governance is the nexus of land, policy and legal, and Artificial Intelligence**

**A difference between (land) governance of AI and governance with AI**

**Need to think carefully about how you use AI (and to be aware that AI is NOT a silver bullet)**

**AI is a tool/technology for good (land) governance and should not be a goal on its own**

**If you 'torture' AI long enough they will confess to anything**