



# Towards a Systematic Understanding on the Challenges of Procuring Artificial Intelligence in the Public Sector

Dr. Keegan McBride

Presentation at: EU webinar on the public procurement of AI



# Presentation agenda

- Short introduction
- Background for the study
- Goals of the research
- Methodology
- Findings
- Final thoughts

'Most of GovTech is about procurement...

getting procurement rules right is one
of the most important parts of driving
improvements in technology.... [and]
that [it] is a huge part of driving digital as a
whole, including the take-up of AI' – UK
Minister of State for Digital



# **Background**

- Use of AI in the public sector is increasing
- There are numerous benefits, but also many potential consequences when AI is used
- Most AI systems in the public sector are currently procured, rather than built in house
- To minimize the risks associated with the use of AI in the public sector, and maximize the gains, smart, targeted, and well developed procurement methods strategies and guidelines are needed.
- Many governments have experience with procurement, but procurement of AI systems is not necessarily the same



# What does the literature tell us on why procurements fail?

#### **Procurement (general)**

- Contract management capacity
- Formulation and understanding of technical requirements
- Market knowledge
- Timing
- Technical competence
- Broader organizational competencies

#### **Procurement (AI)**

- Data ownership
- Data usage in algorithms (GDPR, right to be forgotten?)
- Data sovereignty
- Bias and discrimination
- Responsibility
- Trade secrecy and intellectual property rights



### Goals of this research

- 1. Explore the challenges encountered during the procurement of AI in the public sector
- 2. Understand potential proposed solutions and approaches for overcoming or preventing these challenges

"In a recent study by Robert Brauneis and Ellen Goodman involving open records requests seeking information about six algorithmic programs used by forty-two different agencies in twenty-three states, only one jurisdiction provided the algorithm and details about its development. In most instances, by contrast, agency documents revealed that they did not have access to the algorithm, the model's design, or the processes through which the algorithm was generated or adjusted. Indeed, most government bodies did not even have a 'record of what problems the models were supposed to address, and what the metrics of success were"

Mulligan, D. K., & Bamberger, K. A. (2019). Procurement as policy: Administrative process for machine learning. *Berkeley Tech. LJ*, *34*, 773.



# Methodology

| Country         | Interviews | AI Strategies    | Guidelines        | Other Sources   |
|-----------------|------------|------------------|-------------------|-----------------|
| Estonia         | EE.PS1     | Estonian AI      | AI Guidelines,    | Training and    |
|                 | EE.PS2     | <u>Strategy</u>  | templates, and    | YouTube video   |
|                 | EE.PS3     |                  | training          | <u>series</u>   |
|                 |            |                  | <u>materials</u>  |                 |
| The Netherlands | NL.PS1     | Netherlands AI   | <u>Standard</u>   | <u>Dutch AI</u> |
|                 |            | <u>Strategy</u>  | <u>Clauses</u>    | <u>Magazine</u> |
| Serbia          | RS.PS1     | <u>Serbia AI</u> | Included inside   |                 |
|                 | RS.PS2     | <u>Strategy</u>  | Serbia AI         |                 |
|                 | RS.PS3     |                  | strategy          |                 |
|                 | RS.PS4     |                  |                   |                 |
| The United      | UK.PS1     | AI Sector Deal   | <u>Guidelines</u> | Procurement in  |
| Kingdom         |            |                  |                   | <u>a Box</u>    |
|                 |            |                  |                   | House of Lords  |
|                 |            |                  |                   | <u>Report</u>   |
|                 |            |                  |                   |                 |



Estonia's national artificial intelligence strategy 2019-2021



### Strategisch Actieplan voor Artificiële Intelligentie

**HOUSE OF LORDS** 

Juhendmaterialid

| Kontroll küsimustik Ekseles-juhende esmirk on adata etmateksi kus mentirippe projettiga vidar edat lihada, ming kas erimente benderga on arventand: Alabord madaksi musta kusikusta oli kusikusta oli kusikusta juhende madaksi oli kusikusta juhende | Juhendmaterjal kratiide hankimiseks 12aokee jahad amab dieutei sepakudumin jahad amab dieutei sepakudumin jahadatei, miki võik ankuteide jahid jahad ankuteide jahid jahad jahada oli Missaadav gilik | Juhendmaterjal<br>andmete<br>annoteerimiseks<br>Johndeemirk on sikta<br>jab vit viskridiske onsalek<br>son sikta<br>jab vit viskridiske sintemiske<br>translation sintemiske.<br>Juhend on kättesaudev<br>silt. | Andmekaitse- alane mõjuhinnang Mõjuhinnase poral teem Liikundes võõidile laiki lähandes lähandes lääki finallaiki lääki läynete ja valeelutie sen et ut haadi oa kootaad kastandeste Jahand on lääteesades sälli. |
|---|---|---|---|
| Krati valdkonna<br>ülevaade<br>projektijuhtidele  | Krati testprojekti<br>hankedokumendi<br>ülesehitus  | Projekti lõuend   | DCAT<br>rakendusprofiil<br>2.0.1  |
| Kāesoleva dokument annab<br>ülevaste sagedasematest<br>mõistetest, masinõppest,<br>suurandmetest ja<br>projektijuhtimisest.<br>Dokument on kättesaadav  | Käesolev dokument annab übe<br>võimaliku näite, andmeteaduse<br>testprojekti hankedokumendi<br>"Tehniline kirjeldus" ülesehituse<br>kohta.<br>Dokument on kättesaadav<br>siit.                        | Projekti lönendi eesmärk on<br>aidata läbi mõelda kavandatavat<br>projekti.<br>Dokument on kättesaadav<br>siit.   | Tegu on Euroopa<br>andmeportaalide<br>rakendusprofiili eestikeelse<br>tehnilise osa tõlkega.<br>Dokument on kättesaadav<br><u>siit.</u>   |

Select Committee on Artificial Intelligence

Report of Session 2017–19

AI in the UK: ready, willing and able?

Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period 2020-2025



# **Findings**

| Challenge |                  | Solution   |
|-----------|------------------|--|
| 1.        | Market knowledge | <b>1.</b> Engage in market research to understand the state-of-the-art and whether or not a specific project is feasible.  |
| 2.        | Trade secrecy    | <ul><li>2.a. Include specific regulations within the procurement on trade secrecy and intellectual property rights.</li><li>2.b. Ensure that proper documentation is provided and mandated in procurement documents.</li></ul> |
| 3.        | Service needs    | 3. Engage in a pre-procurement process to check whether or not AI is the best solution for a specific problem  |
| 4.        | Structure        | 4. Create standard procurement templates to ensure consistency and validity of AI  |

procurements.

#### **Hertie School**

# **Findings**

#### Challenges

- 1. Data availability
- 2. Data ownership

3. Data governance

4. Data infrastructure

#### **Solutions**

- 1.a. Conducting a data availability assessment prior to the procurement process
- **1.b.** Ensuring data access, storage and consent before the procurement
- **2.** Ensure that the procurement has specific language that data provided by the public administration, or collected in the context of procurement, remains with the administration.
- 3. Ensure that contractor has followed regulation and standards during the collection of their data as well as storage.
- **4.** Systematically analyse the current infrastructural capabilities of your organization and make it clear within the procurement.



# **Findings**

#### **Challenges** Solutions

- 1. Al system quality 1.a. Apply risk management strategy to identify and mitigate risks
  - 1.b. Ensure maintenance (over a period of time) is contractually obligatory
- 2. Al transparency 2.a. Including technical, procedural and explainability as mandatory requirements
  - 2.b. Explainability and interpretability of algorithms as a design criteria
  - **2.c.** Require clear documentation about the functionality of the AI-system, the data used, and how it works (at a minimum)
- 3. Al bias 3.a. Conducting a data assessment to identify and address data bias
  - **3.b.** Measures have to be taken by contractor to ensure bias is limited. Iterative Al impact assessments at crucial decisions points should be conducted.
  - **3.c.** Obligatory documentation on compliance to non-discrimination, equal treatment and proportionality



# **Findings**

#### **Challenges** Solutions

- Technical capacity
   1.a. Encourage participation in and arrange educational courses on AI.
  - **1.b.** Consult with governmental experts in other organizations to develop an initial understanding on AI.
- 2. Organizational capacity 2.a. Develop clear guidelines that specify the key challenges and risks with public procurement of AI-based systems.
  - **2.b.** Provide guidance and best practices for AI procurement, for example by providing templates or sample procurements
- 3. Individual capacities 3. Encourage participation in and arrange educational courses on AI.



# **Final thoughts**

- Procurement of AI systems in the public sector does appear to have uniquely associated challenges when compared to e.g. traditional technological procurement
- Research identified 14 commonly occurring or identified challenges within four categories: procurement process, data, AI-model, and organizational capacity challenges.
- 22 potential strategies to overcome these challenges have been identified and proposed.
- This is important not only for the public sector, but clearer procurement guidelines and better procurements also bring benefits to private sector
- Future research is still needed: what is / is not AI? Are these guidelines actually useful in overcoming challenges? How does context influence the procurement of AI? How can we develop the necessary organizational capacities to better procure AI?

It is certain that AI is here to stay in the public sector and that procurement will play an increasingly important role in the adoption of AI amongst public sector organizations.

This raises both the prominence and the need for scholars and experts to conduct research on this emerging area of inquiry.



# THANKYOU!

Hertie School
Friedrichstraße 180
10117 Berlin, Germany
T +49 (0)30 259219-0
F +49 (0)30 259219-11
info@hertie-school.org
www.hertie-school.org