Contestable Camera Cars: A Speculative **Design Exploration of** Public Al That Is Open and Responsive to Dispute

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CHI 2023 Hamburg, Germany www.contestable.ai

TUDelft Design





Camera cars



Credit: AMS Institute

Public Al

The use of feedback-adjusted data analysis and processing to augment, support or automate policy execution in the public Sector. (adapted from Suchman, 2018)



Contestable Al Al that is open and responsive to dispute, throughout the system lifecycle, establishing a dialectical relationship between decision subjects and system operators. (Alfrink et al., 2022)

Minds and Machines https://doi.org/10.1007/s11023-022-09611-z



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Received: 21 August 2021 / Accepted: 4 August 2022 © The Author(s) 2022

Abstract

As the use of AI systems continues to increase, so do concerns over their lack of fairness, legitimacy and accountability. Such harmful automated decision-making can be guarded against by ensuring AI systems are contestable by design: responsive to human intervention throughout the system lifecycle. Contestable AI by design is a small but growing field of research. However, most available knowledge requires a significant amount of translation to be applicable in practice. A proven way of conveying intermediate-level, generative design knowledge is in the form of frameworks. In this article we use qualitative-interpretative methods and visual mapping techniques to contestable AI, and synthesize these into a design framework.

Keywords Artificial intelligence \cdot Automated decision-making \cdot Contestability \cdot Design \cdot Human-computer interaction \cdot Machine learning \cdot Sociotechnical systems

1 Introduction

Artificial Intelligence (AI) systems are increasingly used to make automated decisions that impact people to a significant extent. As the use of AI for automated decision-making increases, so do concerns over its harmful social consequences,

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Published online: 13 August 2022

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- Humans challenging machine predictions (Hirsch et al., 2017) - Deep system property (Vaccaro et al., 2019) - Human intervention, contestability by design (Almada, 2019) - Procedural relationship (Sarra, 2020) - Justifications (Henin & Le Métayer, 2021)



RESEARCH QUESTIONS



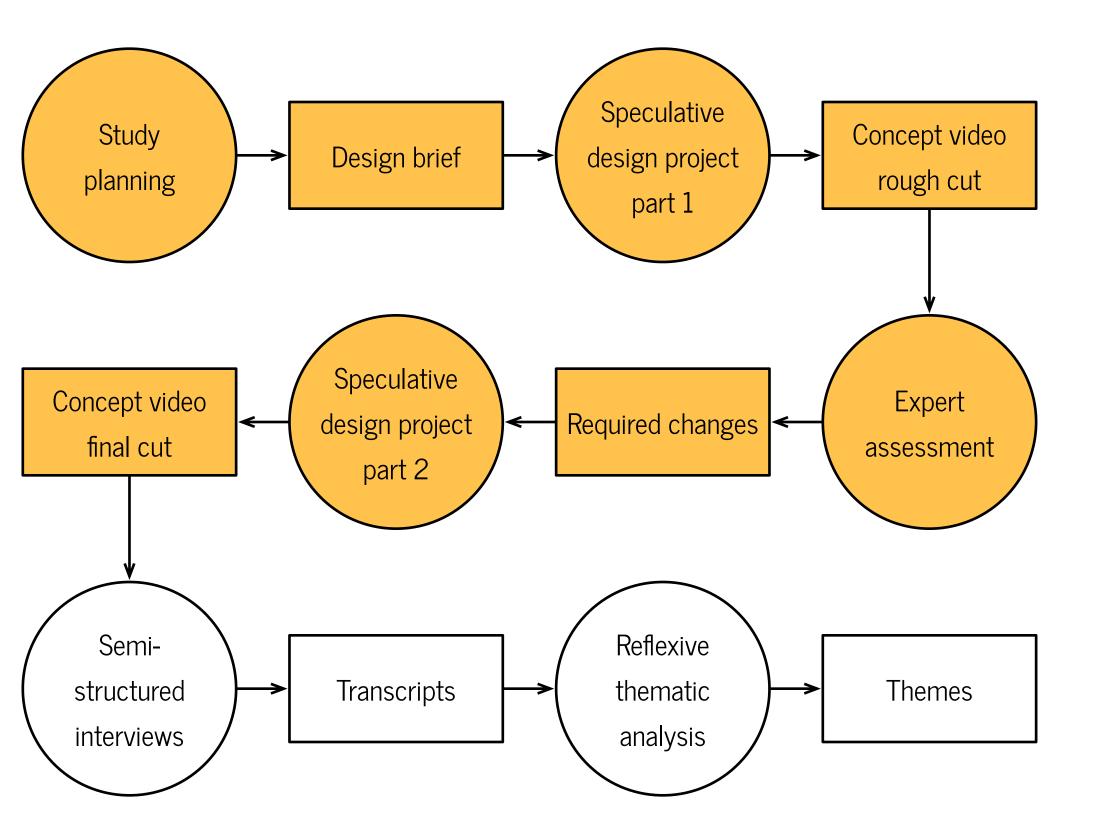
RESEARCH QUESTIONS RQ1: What are the characteristics of a contestable public AI system?



RESEARCH QUESTIONS RQ1: What are the characteristics of a contestable public Al system? **RQ2: What are the challenges** facing the implementation of contestability in public AI?

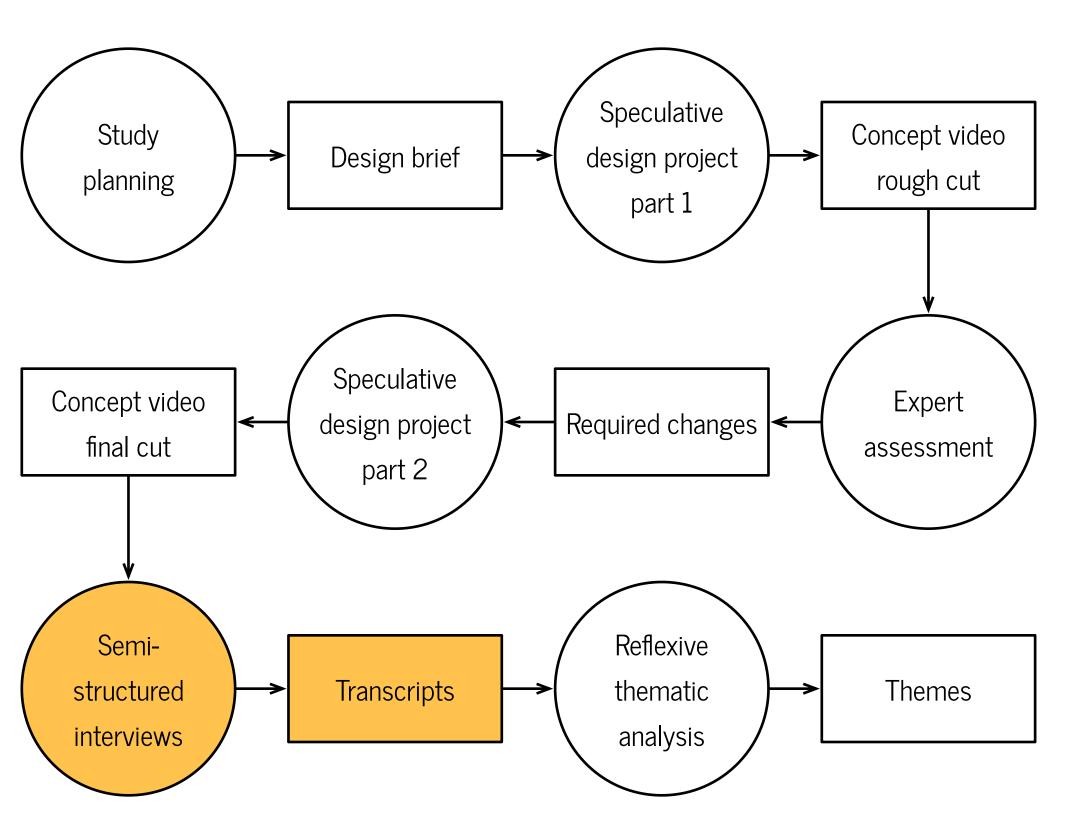


Approach





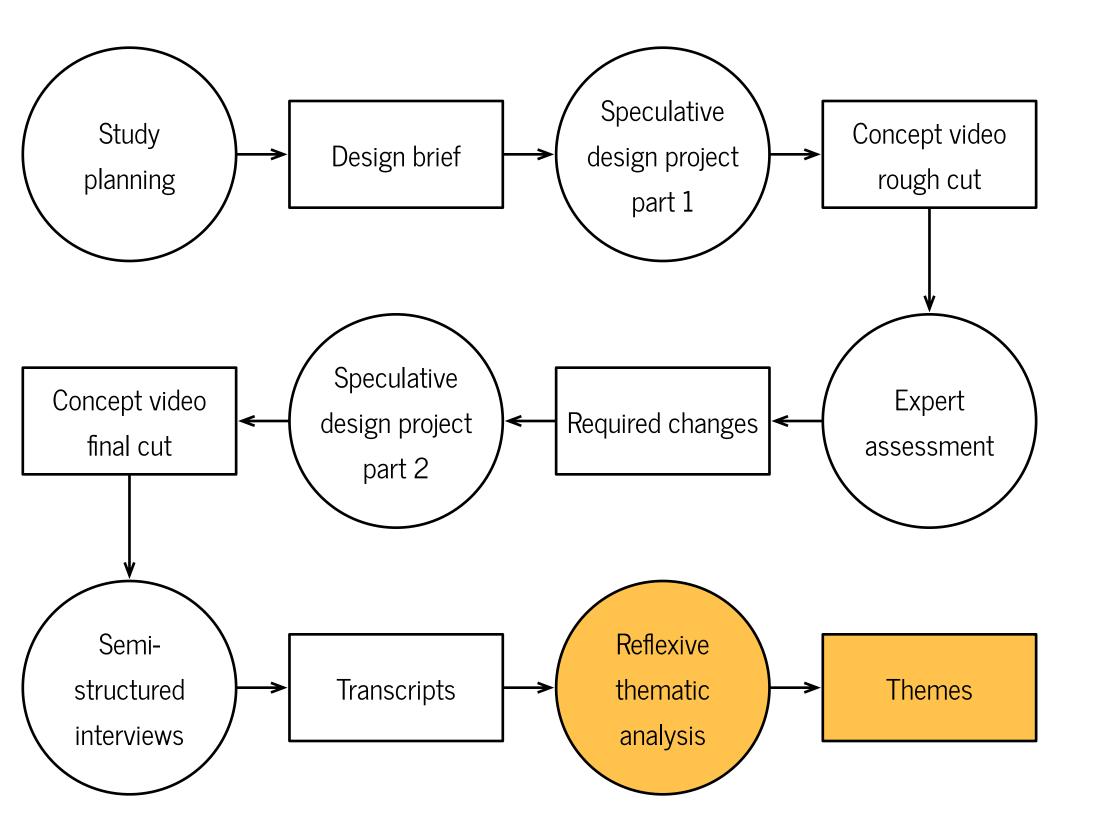
Approach





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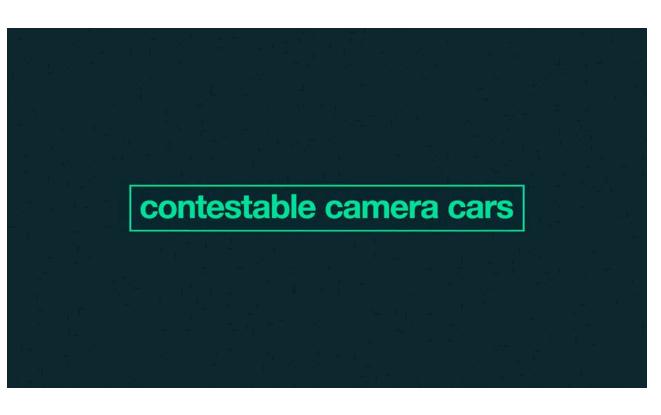
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Results

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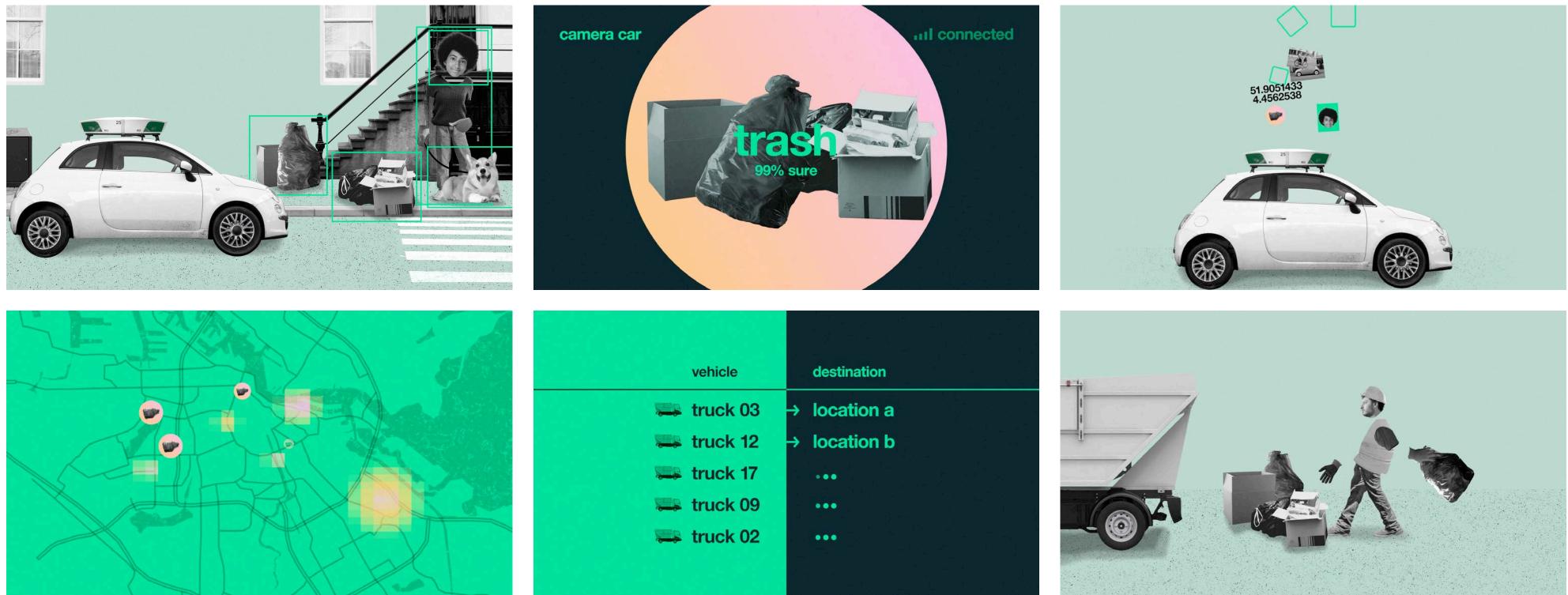




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cle	destination
ck 03	\rightarrow location a
ck 12	→ location b
ck 17	
ck 09	
ck 02	

















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Civil servant interview themes: Challenges facing implementation of contestability mechanisms

- **1.** Enabling civic participation
- 2. Ensuring democratic embedding
- **3.** Building capacity for responsibility



citizen capacities





citizen capacities communication channels





citizen capacities **communication channels** feedback to development





citizen capacities **communication channels** feedback to development reporting inequality





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citizen capacities **communication channels** feedback to development reporting inequality participation limitations

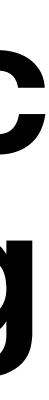




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2. Ensuring democratic embedding

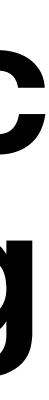
democratic control





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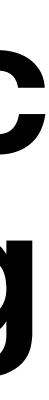
democratic control external oversight





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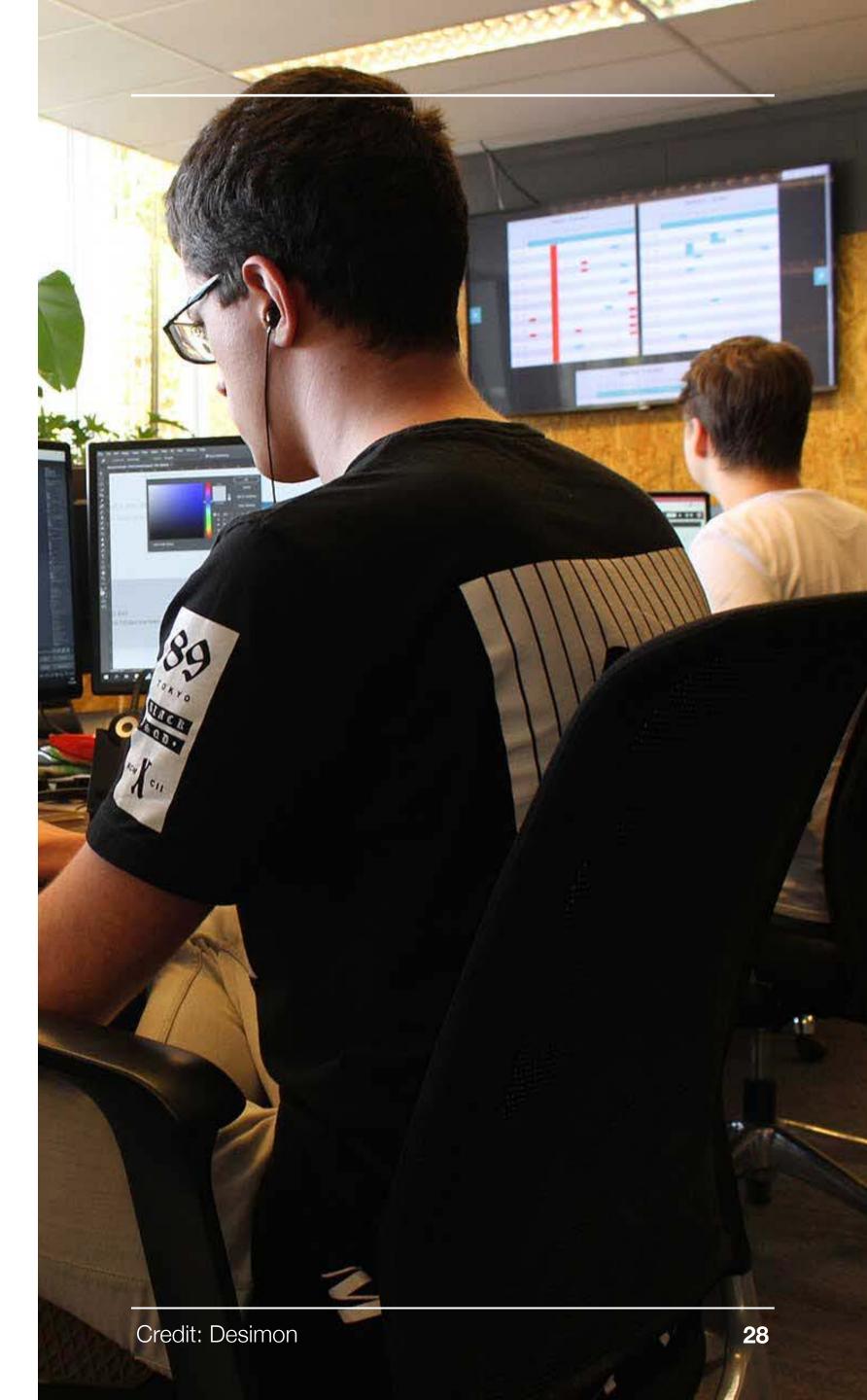
democratic control external oversight dispute resolution



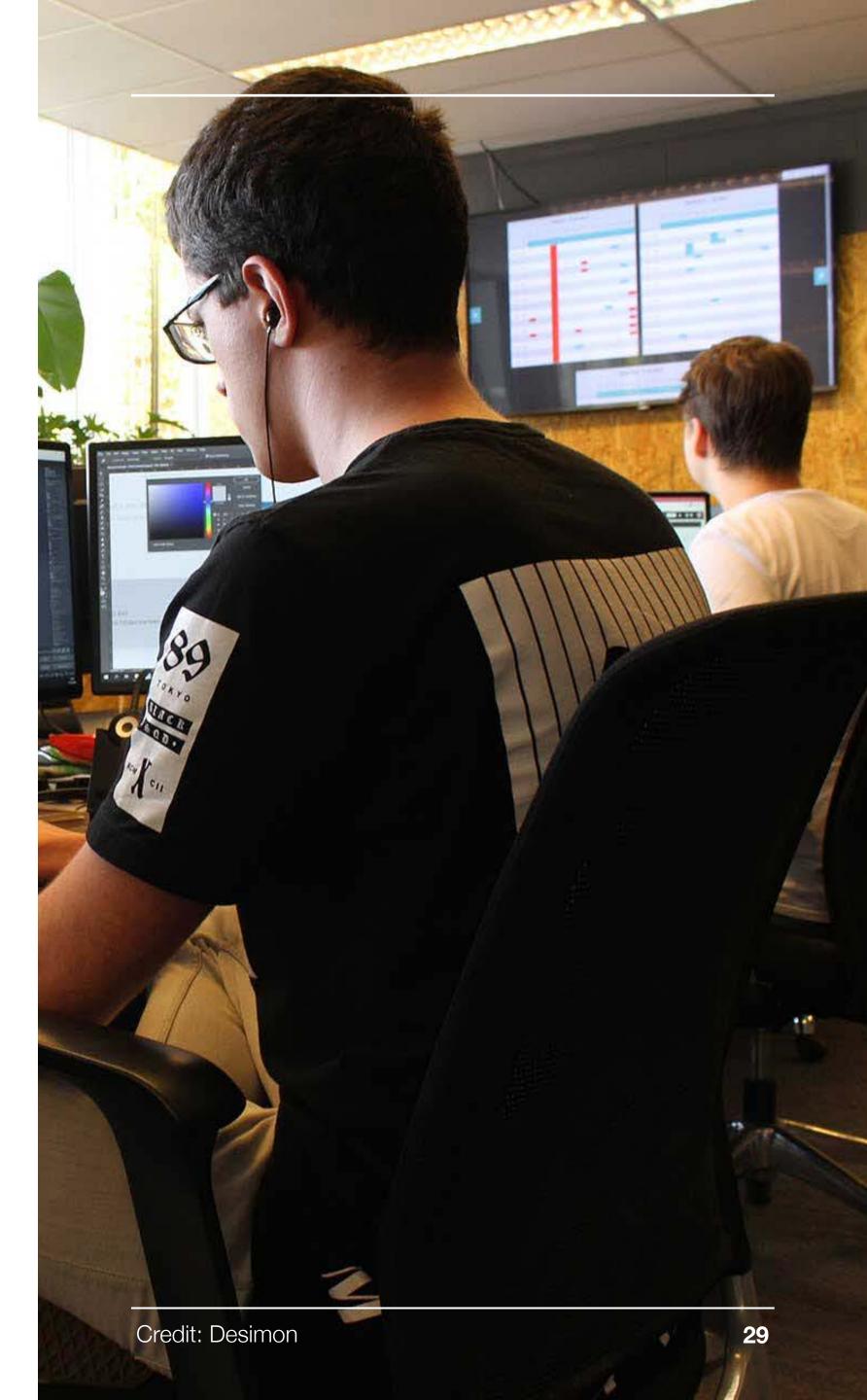


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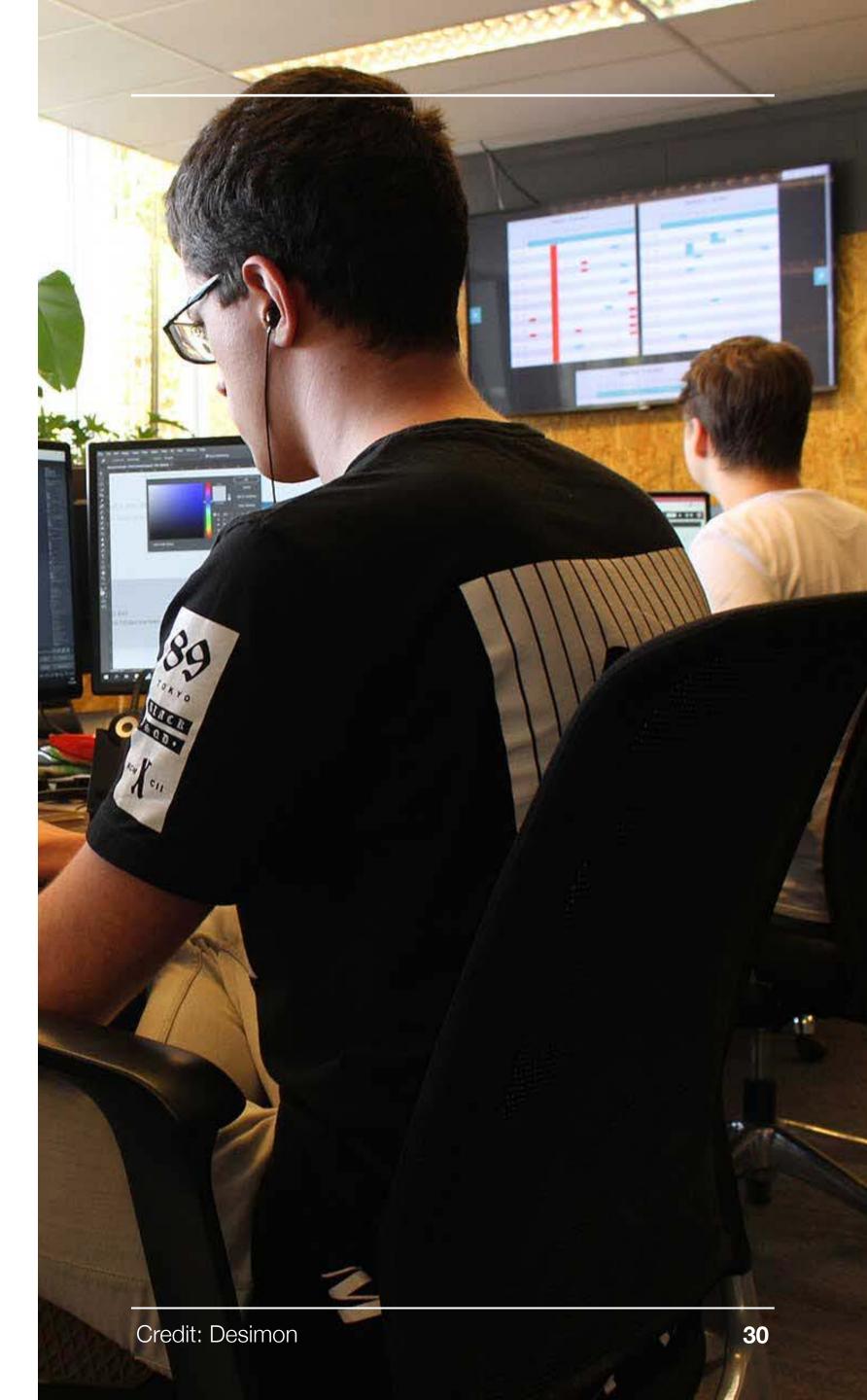
organizational limits



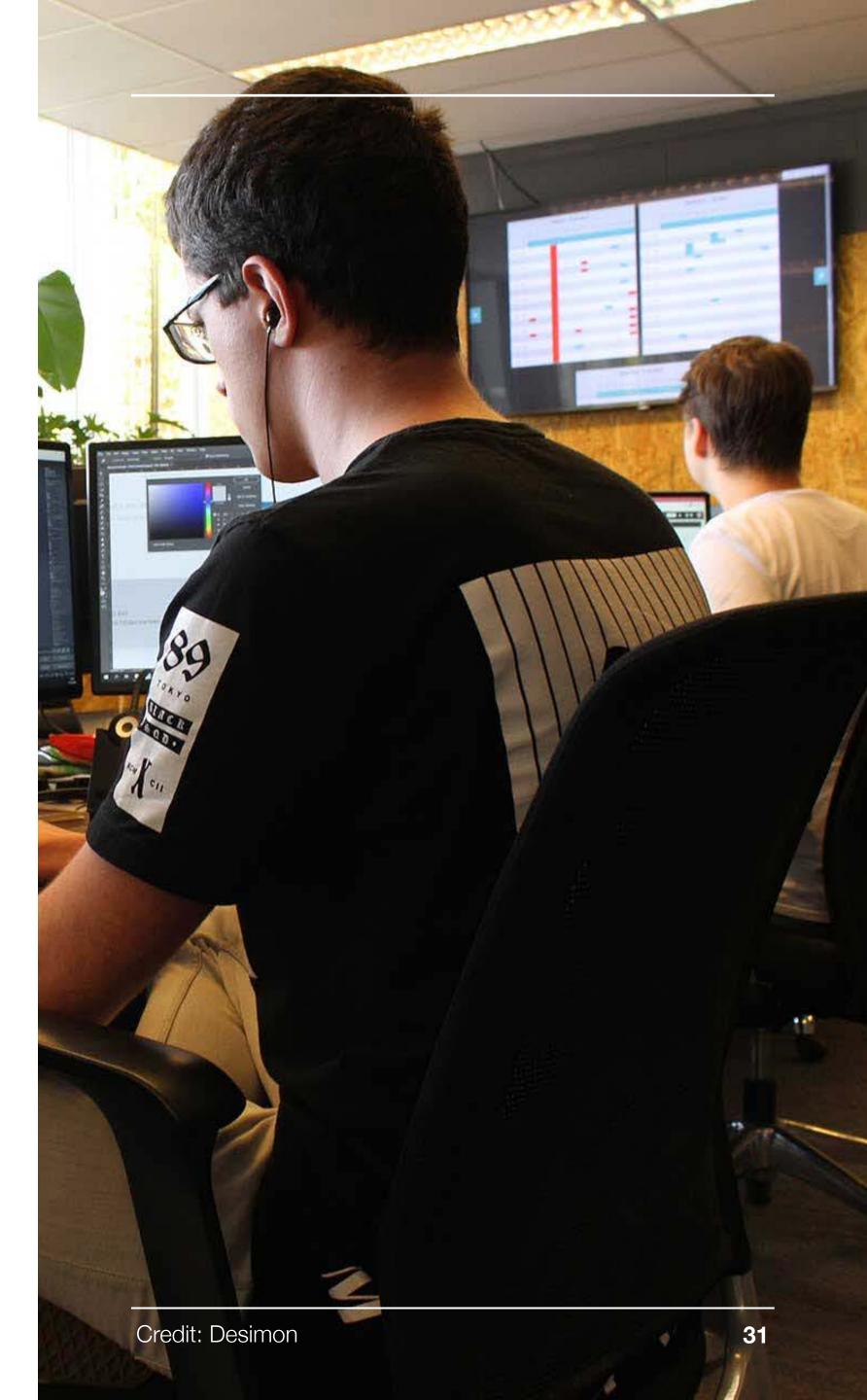
organizational limits accountability infrastructure



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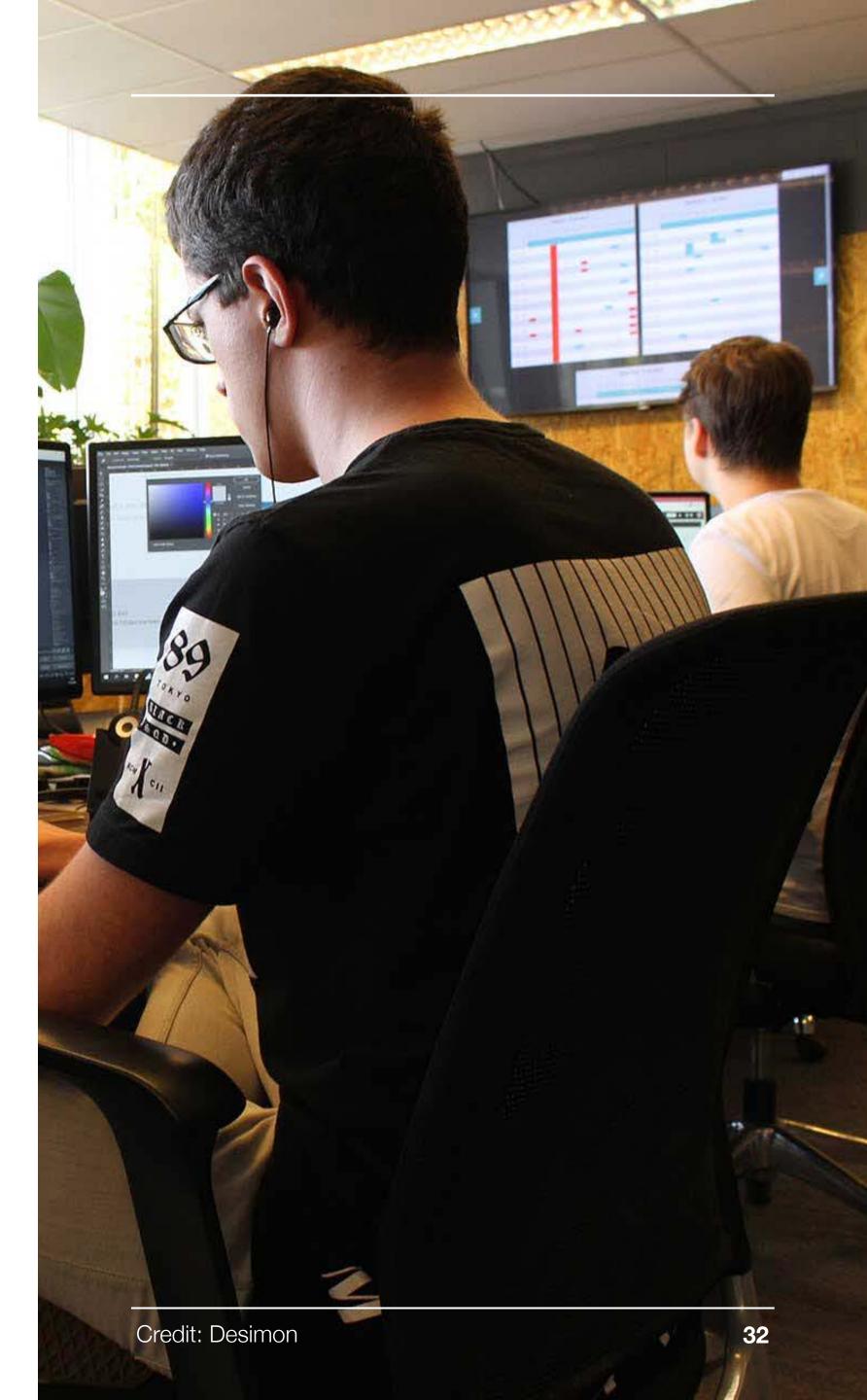


organizational limits accountability infrastructure civil servant capacities commissioning structures



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organizational limits accountability infrastructure civil servant capacities commissioning structures resource constraints



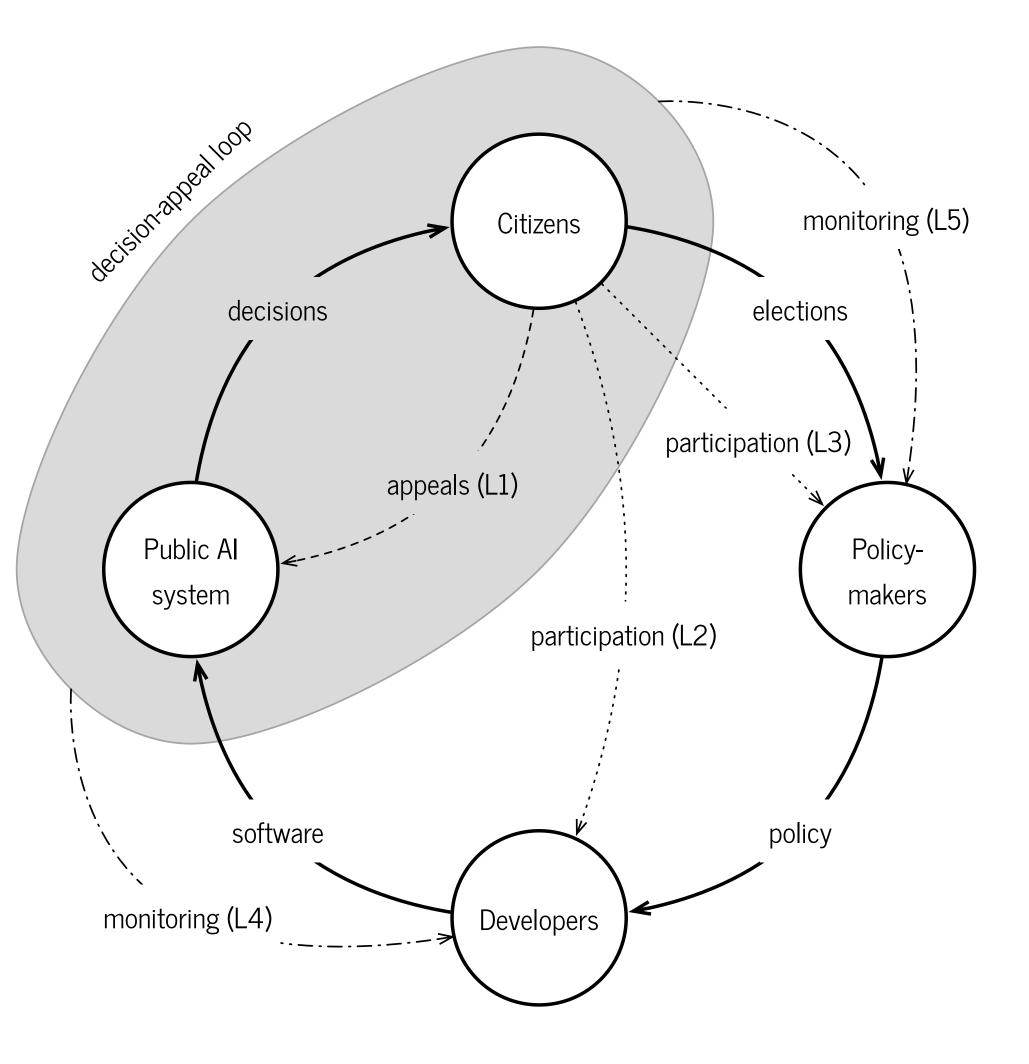
DISCUSSION



basic flow of policy through software into decisions (solid arrows)

direct appeals of individual decisions by citizens (L1, dashed arrow)

direct participation by citizens in systems development and policy making (L2-3, dotted arrows)

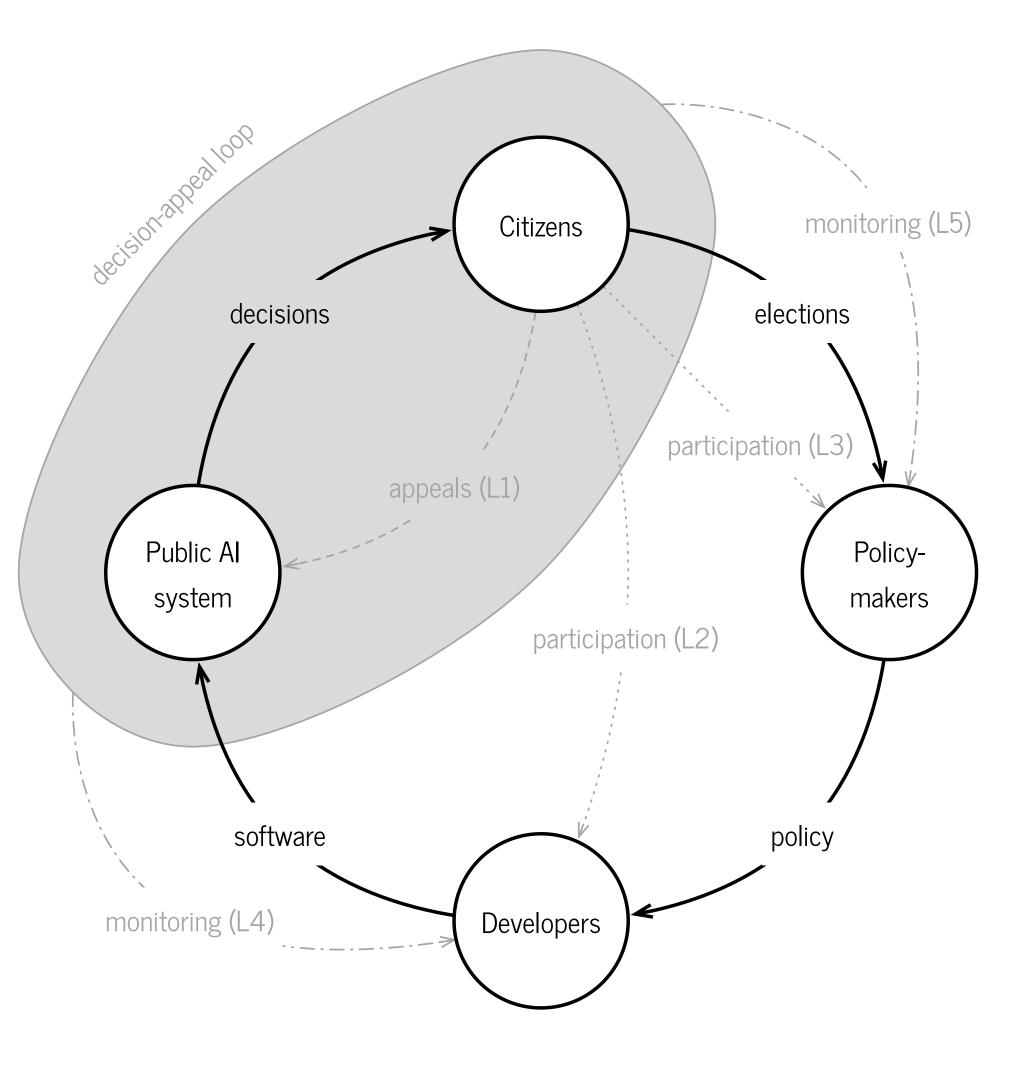


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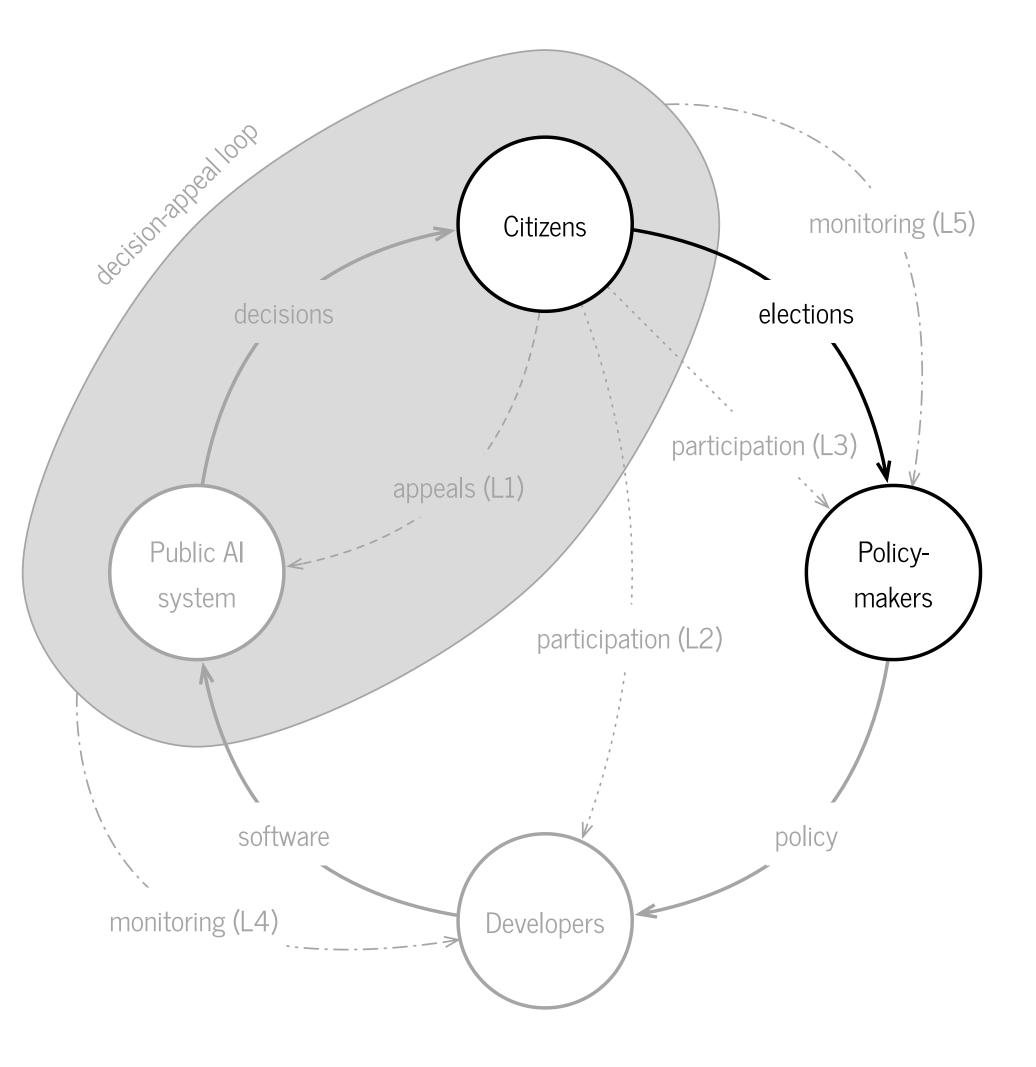




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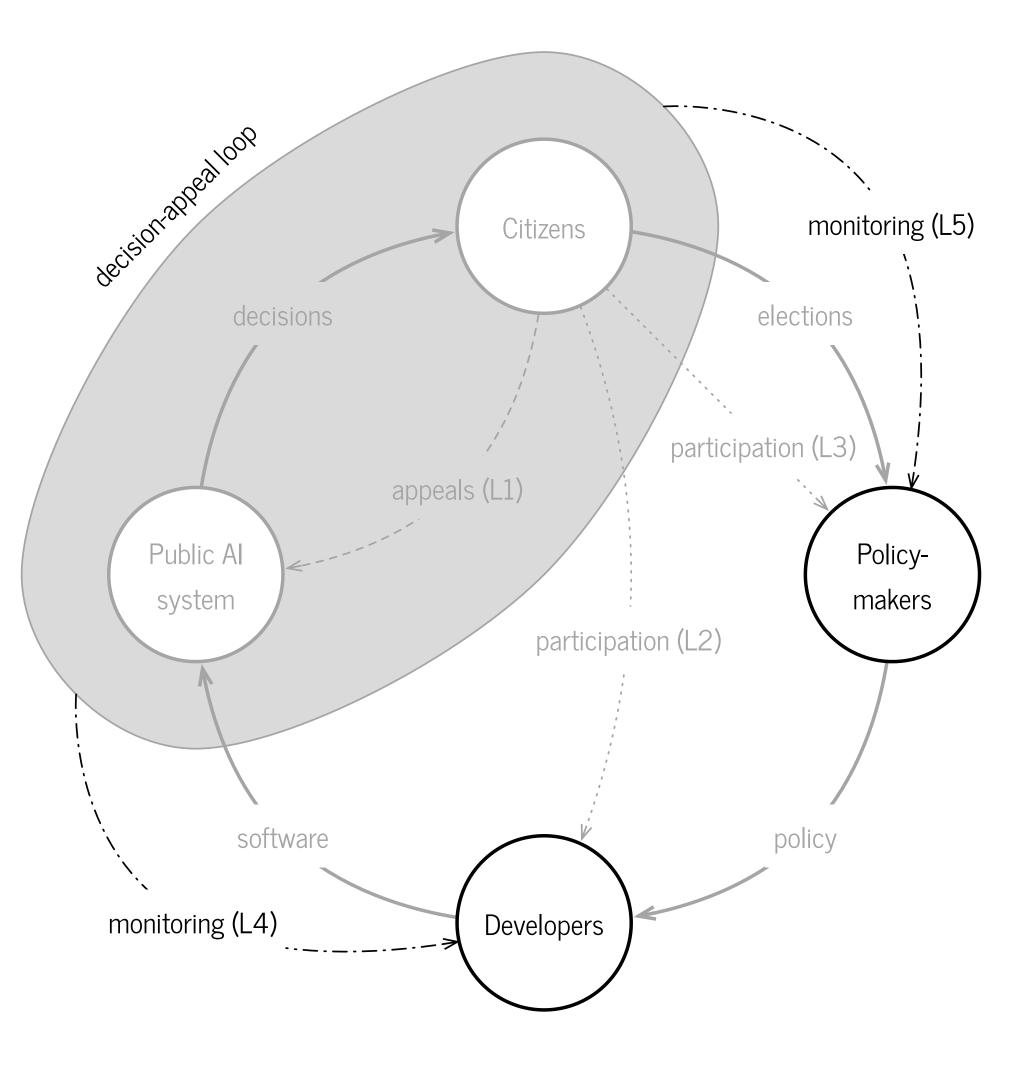




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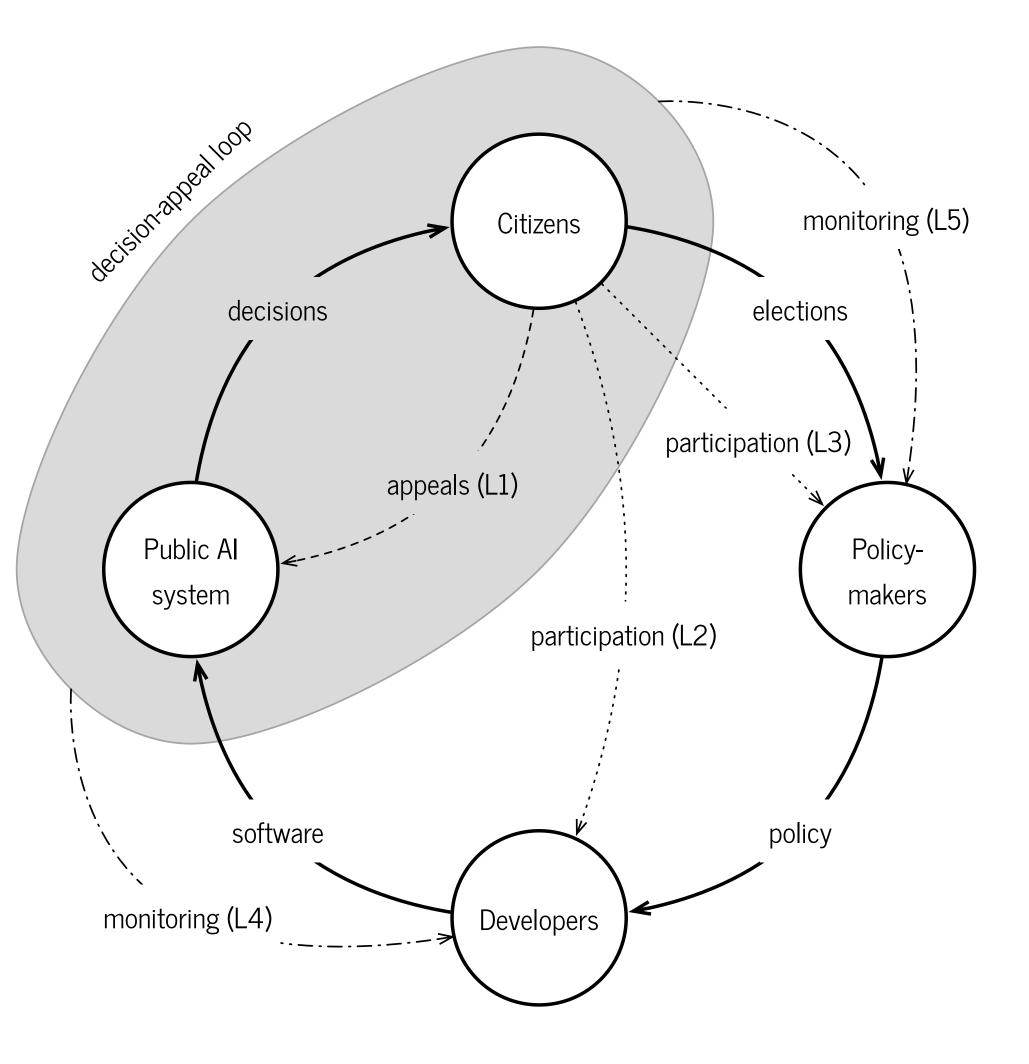




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FUTURE WORK



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CONCLUSION Shift to Al-enabled policy execution undermines 'traditional' forms of democratic control and oversight.

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Shift to Al-enabled policy execution undermines 'traditional' forms of democratic control and oversight.

Contestability in context of public AI means more than direct individual participation in systems' algorithms, models and datasets. Contestable public AI requires

Contestable public AI requires interventions in executive power's enactment of policy through technology.

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