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AI-powered Digital Twins and Open Data

Building Europe's Next-Generation Governance Infrastructure

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Building Europe's Next-Generation Governance Infrastructure

The Political Challenge

Political systems generate vast data

Yet remain "black boxes" resistant to prediction

High-stakes failures in international diplomacy

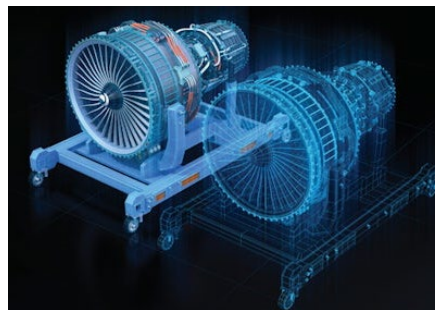What if we could simulate before negotiating?
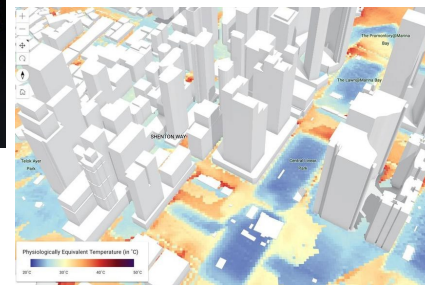
(BBC)

Digital Twins Evolution

From physical systems to governance processes

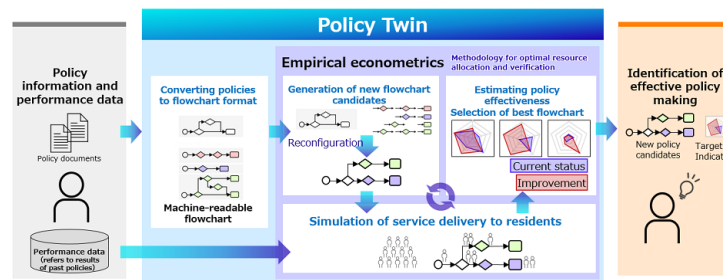Virtual replicas simulating institutional behaviour

Modelling both formal structures and informal practices

(Siemens)

(The Straight Times)

(Fujitsu)

Why Now?

LLMs as Political Agents
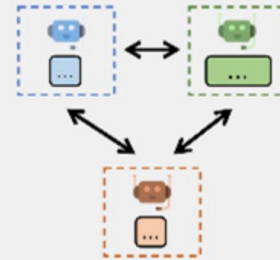
Large language models as foundation

Trained on institutional documents and transcripts

Capturing both formal rules and tacit knowledge

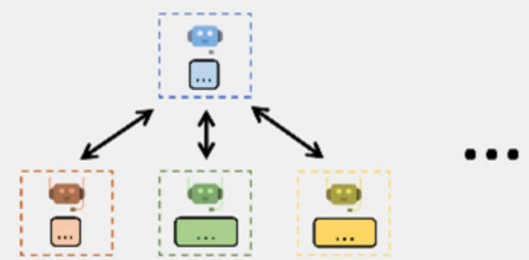Multi-agent systems modelling negotiation dynamics

Multi-Agent Conversations

Joint chat

Hierarchical chat

(Microsoft AutoGen)

Open Data for Political Twins

What digital twins need vs. what we have:

- Complete, modal data

- Standardised data across EU institutions

- Regular updates (most data refreshed yearly, not weekly)

- Connections between related documents and processes

(Wiki)

EU Institutions Digital Twin

Modular architecture for EU governance simulation

Data collection (Prof James Cross, UCD)

Early insights on cross-institutional dynamics

Evaluation system (Prof Arnold, Dr Sheldon @Bham)

(Council of the European Union)

The Zelenskyy-Trump Case

(BBC)

(US Army)

(The Guardian)

EU OPEN DATA DAYS AI-powered Digital Twins and Open Data

Beyond Text

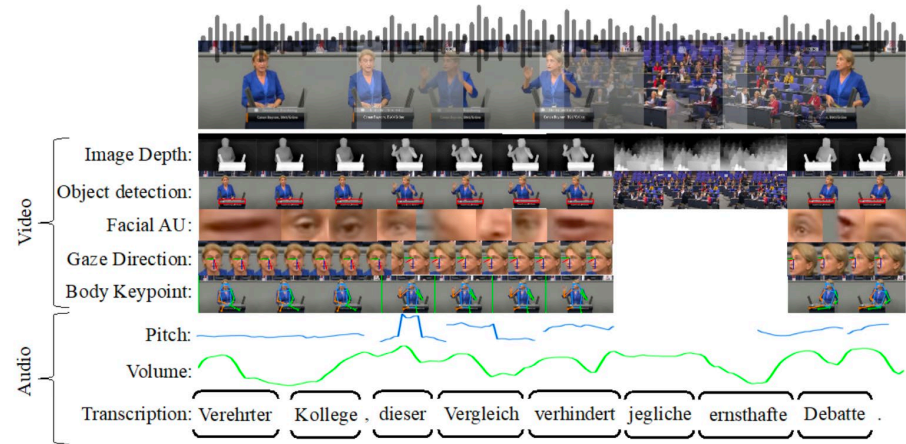Politics is inherently multimodal

Incorporating:

      Non-verbal cues

      Tone and emphasis

      Environmental factors

      Group dynamics

(Prof Chris Arnold)

Ethics of Political Digital Twins

- Democratic oversight is essential

- Transparent, explainable models

- Fair representation of diverse perspectives

- Participatory design with stakeholders

- "Political digital twins must themselves be governed democratically"

Immersive Applications

UN Security Council immersive briefings (Prof Waehlisch)

Journalist interview preparation (Al Jazeera)

Negotiation support for SIDS delegates at COP30

From observation to participation

(Prof Martin Waehlisch)

Research Agenda

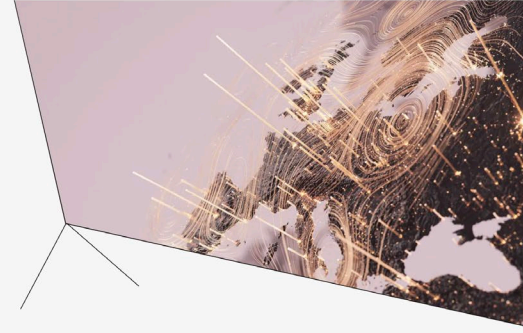Expanding institutional modelling

Multimodal integration

Comprehensive political system twins
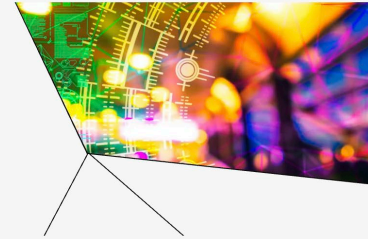
Join us in building this future!

The Centre for Artificial Intelligence in Government (CAIG)

Connecting social sciences and artificial intelligence

The Institute for Data and AI

The Institute for Data and AI is a nexus for collaborative research and education at the University of Birmingham.

EU OPEN DATA DAYS
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