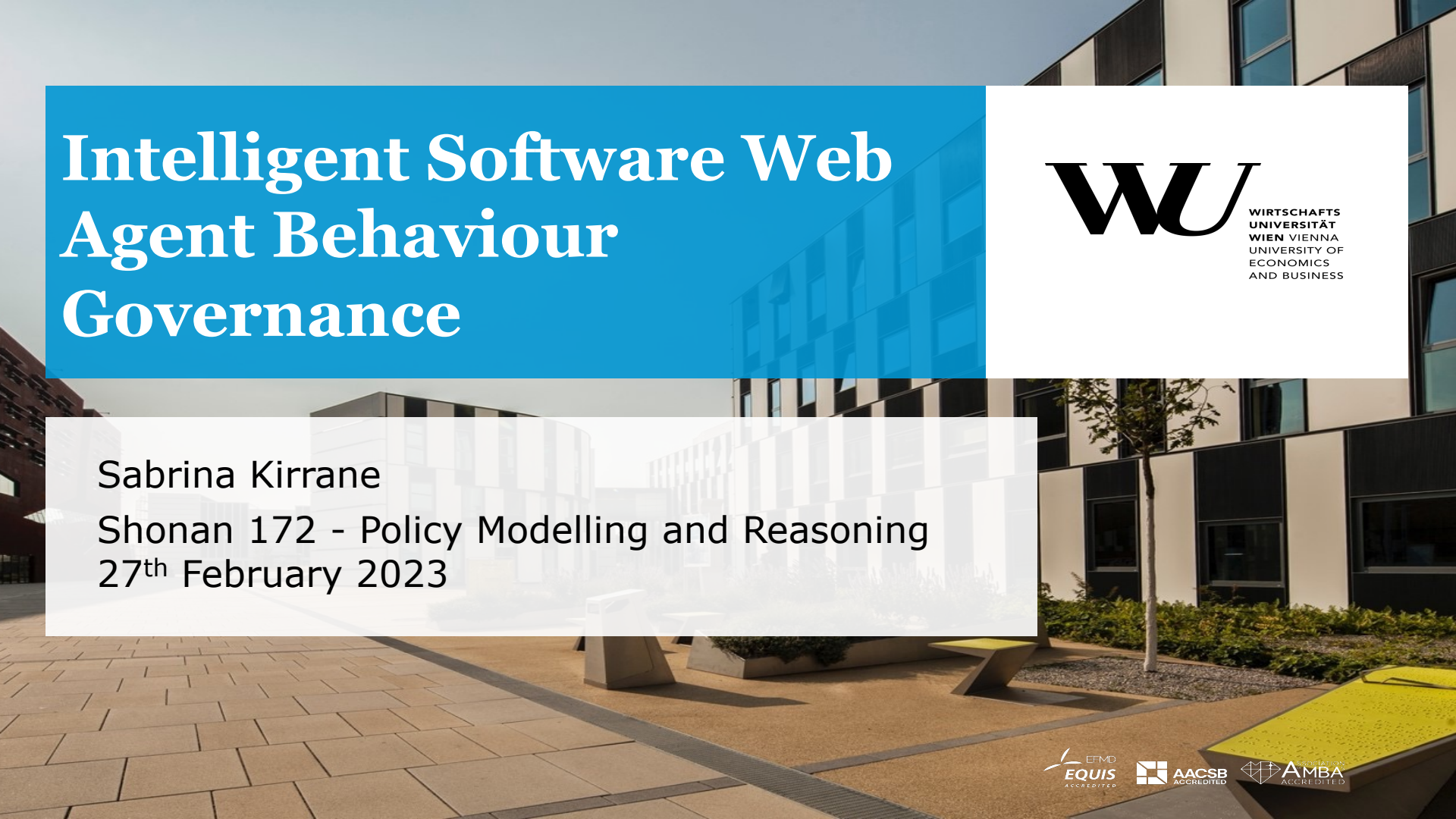
Intelligent Software Web Agent Behaviour Governance

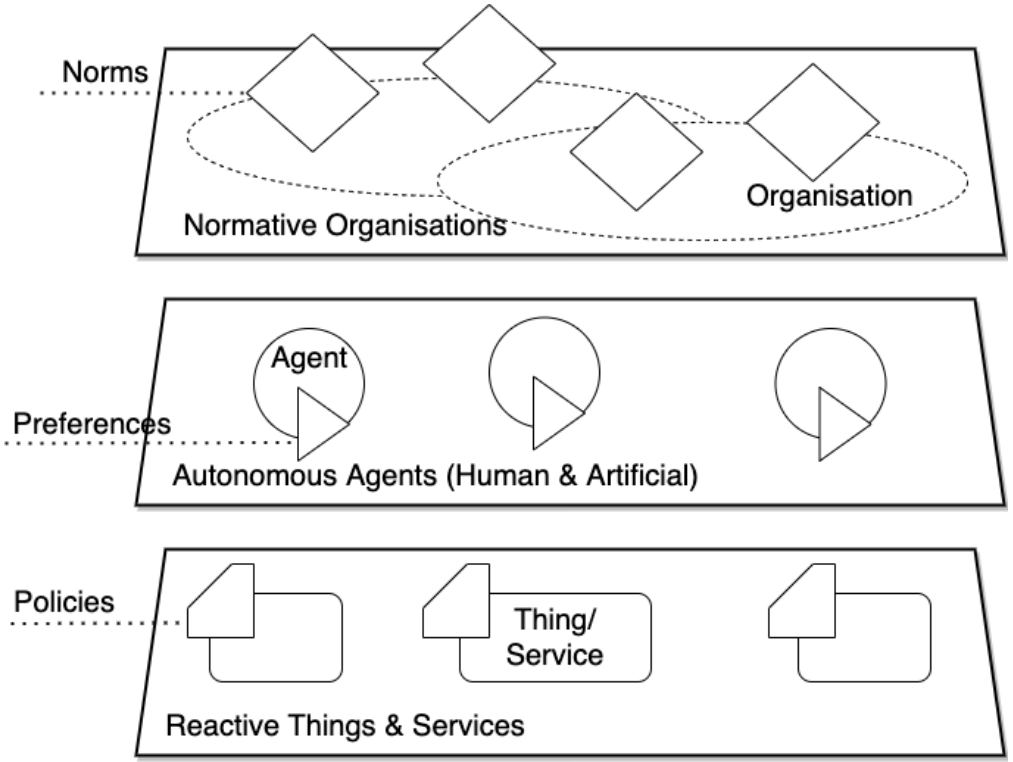


Sabrina Kirrane

Shonan 172 - Policy Modelling and Reasoning
27th February 2023

From Policies to Norms: Governance

Policies, Preferences & Norms

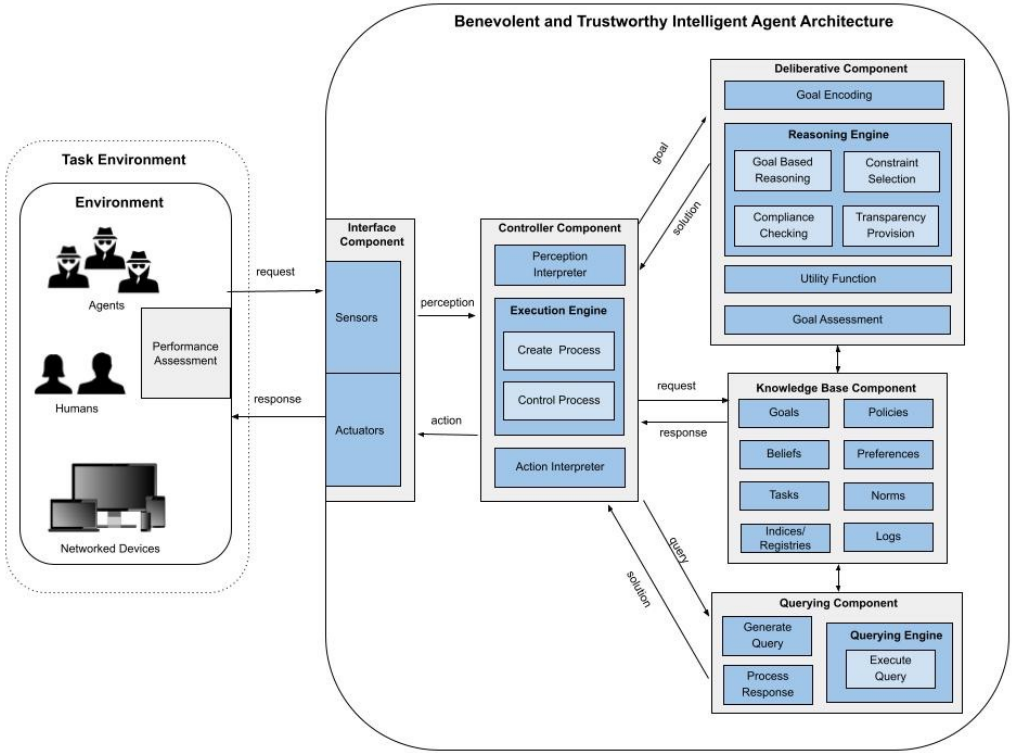


- A blueprint for the governance of agent based systems
- Can be instantiated in a variety of ways, using a variety of concrete software components

Governance of Autonomous Agents on the Web: Challenges and Opportunities. Timotheus Kampik, Adnane Mansour, Olivier Boissier, Sabrina Kirrane, Julian Padget, Terry R. Payne, Munindar P. Singh, Valentina Tamma, Antoine Zimmermann. ACM Transactions on Internet Technology Journal, 2022

From Policies to Norms: Governance

Benevolent and Trustworthy agents

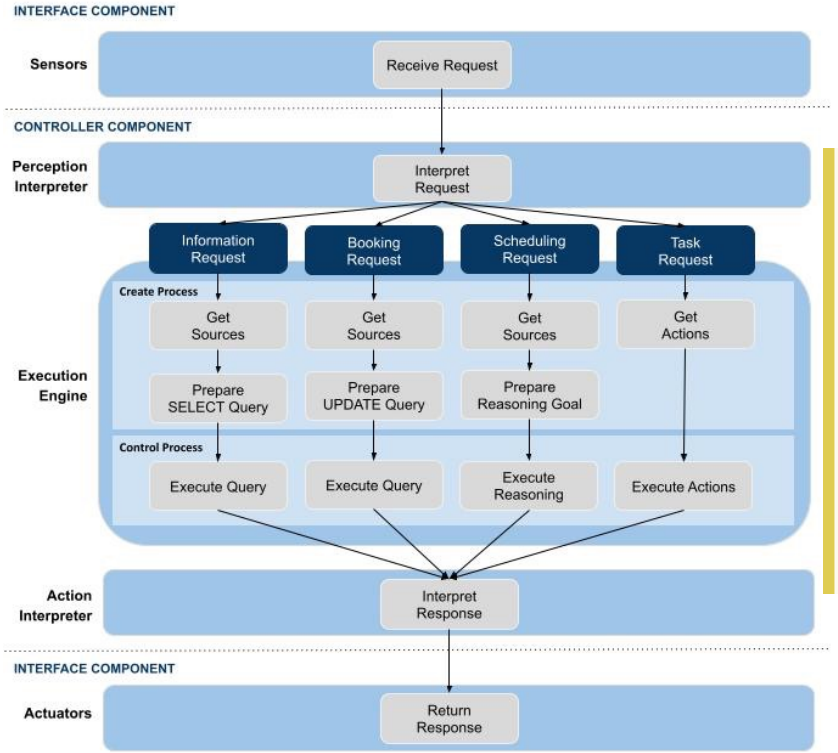


- A Benevolent and Trustworthy Agent (BTA) Architecture minus the reactive and learning components

A Benevolent and Trustworthy Agent Architecture. Sabrina Kirrane. Working Paper

From Policies to Norms: Governance

Benevolent and Trustworthy agents



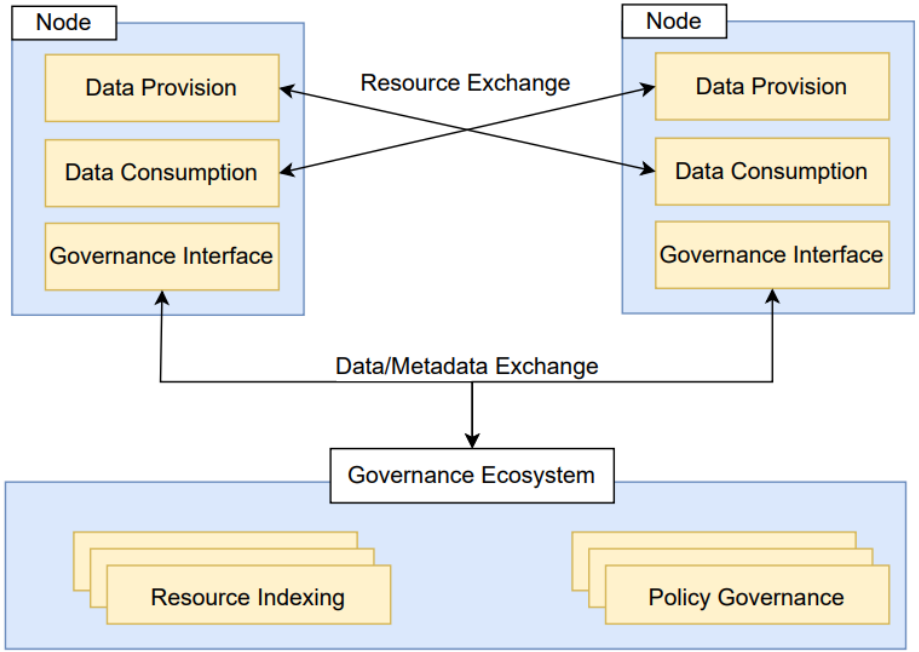
- Information, Booking, Scheduling, and Task Requests

EXAMPLE 1: Information Request

```
amv:DoctorsReferralInfo am:hasRequestType am:InfoRequest;
  am:hasSource amv:LucysAgent;
  am:hasDestination amv:AlicesDoctorsAgent;
  am:hasType amv:LucysDoctorsReferral;
  am:hasProvider amv:AlicesDoctor;
  am:hasConstraint [amv:lastVsit "2022-03-14"^^xsd:dateTimeStamp],
    [amv:requiredTreatment amv:Physiotherapy];
  am:hasCredential amv:LucysAgentCredential,
    amv:AlicesDelegatedDoctorCredential;
```

A Benevolent and Trustworthy Agent Architecture. Sabrina Kirrane. Working Paper

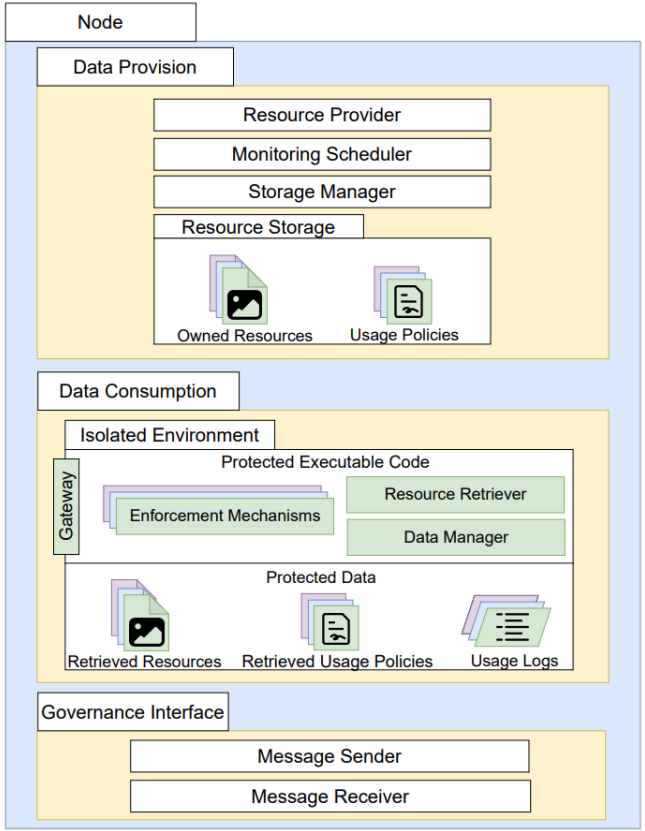
Blockchain based Resource Governance for Decentralized Web Environments



- High-level overview of the proposed conceptual resource governance (ReGov) framework.

Blockchain based Resource Governance for Decentralized Web Environments. Davide Basile, Claudio Di Ciccio, Valerio Goretti, and Sabrina Kirrane, Submitted to Frontiers in Blockchain. https://arxiv.org/pdf/2301.06919.pdf

Blockchain based Resource Governance for Decentralized Web Environments

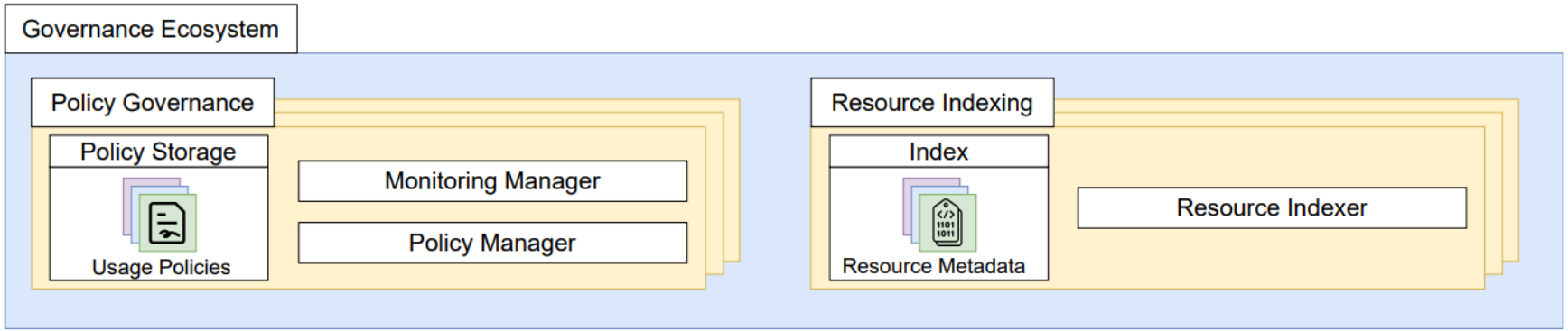


- Content of the data provision, data consumption and governance interface components

Blockchain based Resource Governance for Decentralized Web Environments. Davide Basile, Claudio Di Ciccio, Valerio Goretti, and Sabrina Kirrane, Submitted to Frontiers in Blockchain. https://arxiv.org/pdf/2301.06919.pdf

From Policies to Norms: Governance

Blockchain based Resource Governance for Decentralized Web Environments



- Content of policy governance and resource indexing components inside the governance ecosystem

Blockchain based Resource Governance for Decentralized Web Environments. Davide Basile, Claudio Di Ciccio, Valerio Goretti, and Sabrina Kirrane, Submitted to Frontiers in Blockchain. https://arxiv.org/pdf/2301.06919.pdf

Open Challenges and Opportunities

- The **encoding of policies and norms** such that they are actionable by machines is particularly difficult as policies and norms are often vague and ambiguous.
- In order to **monitor how agents adapt and learn** there is a need for governance strategies that are suitable for symbolic and sub-symbolic learning.
- There is a need for **abstractions that can be used to guide the development** of a variety of different agent types (information, scheduling, booking, etc....)
- We need **codes of conduct** for different types of agents and agent organisations based on legal, regulatory, and social norms
- We are severely lacking in terms of intelligent agent **verification, validation & benchmarking methods and tools**
- **.....**

Contact Details

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