Decentralized Governance Design
A Conceptual Modeling Perspective

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Research Motivation

Why do we need Decentralized Governance Design?
- Societies need for democracy, individual freedom, greater inclusiveness and more sustainable forms of decision-making
- A response to the limitations of centralization and the need for a more flexible and adaptable ecosystem
- Emerging research domain decentralized governance design

Design flaws in Blockchain Networks (DAO's)
- Incomplete decentralization
- Potential legal risks
- Difficulty in finding a balance between decentralization and decision-making efficiency
- Lack of structured decentralized governance knowledge

Why is conceptual modeling relevant for decentralized governance design?
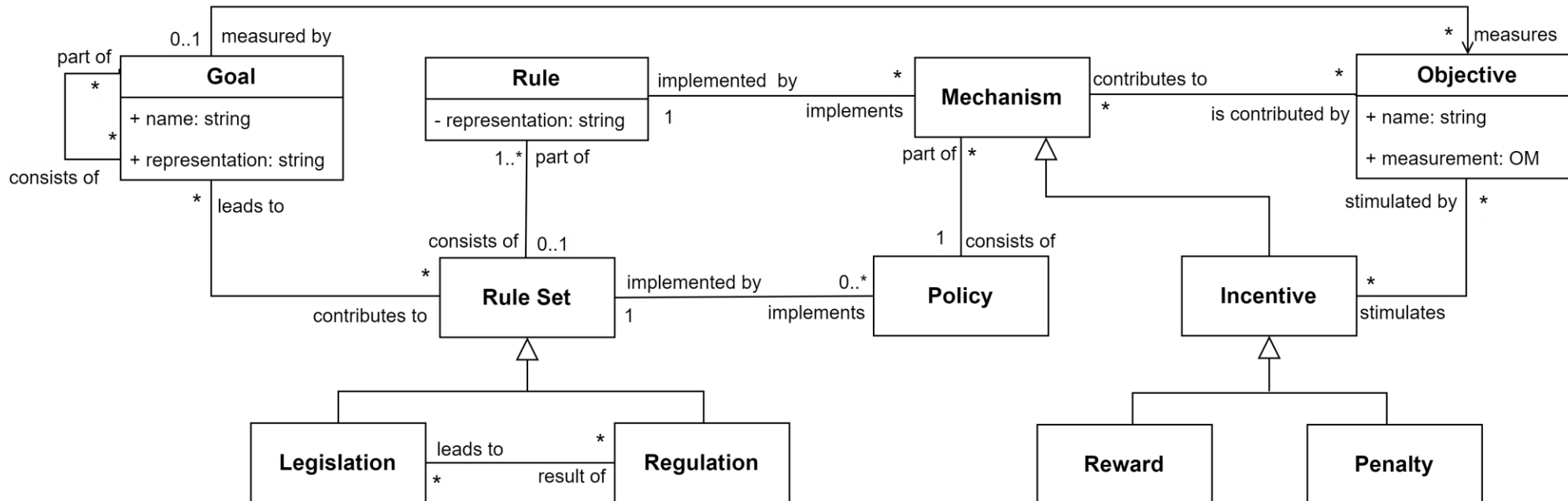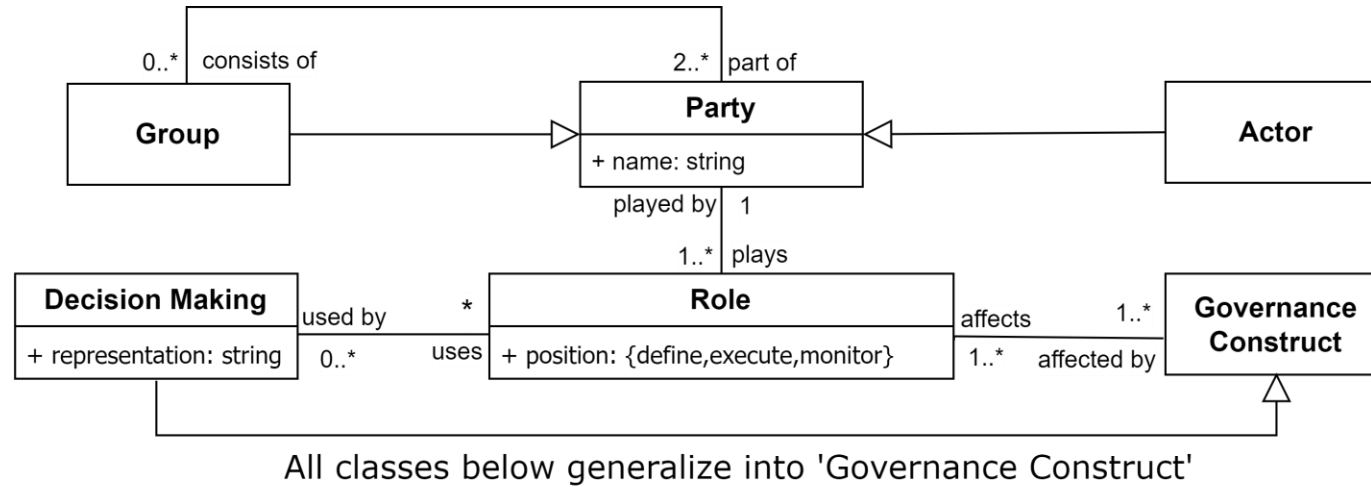
Conceptual Modeling: Design Approach

- To design and represent complex, decentralized systems for blockchain networks that are easy to understand and analyse
- Different application fields and environments of ecosystems
  - → different contexts
  - → different required system components
  - → use of **conceptual modeling** to represent the governance structure and design decisions
- Governance structure conceptualized: be understood by **every actor** → help to **identify** potential problems, determine how to **improve** them
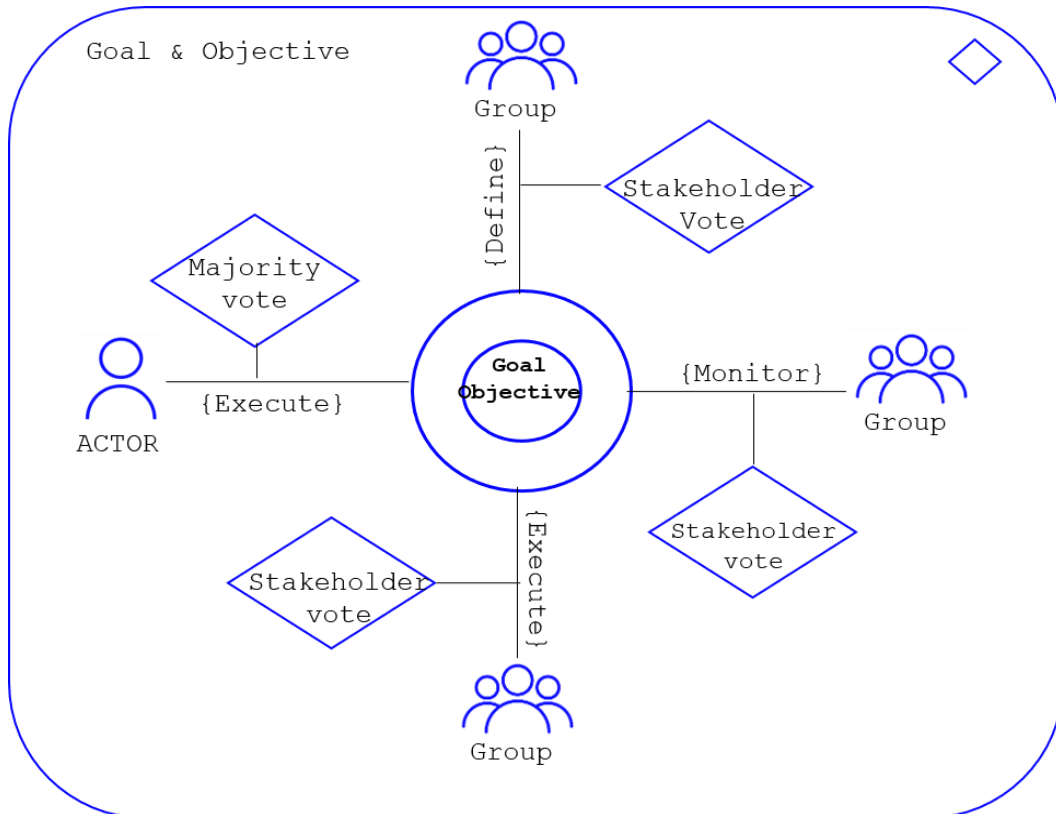

Why do we propose *D*ECENT?
- A novel approach that conceptualized decentralized governance design
- Already be applied in the domains of peer-to-peer energy trading and digital currency. Digital Euro Case with *D*ECENT modeling language is work in progress

Decentralized Governance Design: *DECENT* Meta Model

DECENT Advantages

- *D*ECENT meta model: the foundation and starting point of DECENT modeling work.
- The *D*ECENT meta model provides a clear and structured way to define governance structures and relationships.
- Feature of Decentralization: multiple participants; each Actor/Group has a specific role to {define, execute, monitor}.
- Actors & Groups complete the entire process of decentralized governance and decision-making together under the influence of other governance constructs.

DECENT conceptual model example:
- Decision-making process of Goal& Objective.
- Related DECENT meta model artifacts:
  {Actor, Group, Party, Role, Goal, Objective, Decision Making, Governance Construct(part)}.
- Graphical notations.

Conclusion

- **Contribution.**

- Summary of design flaws in current decentralized governance networks/frameworks → provides a computer science perspective for thinking about the development direction and quantitative criteria of future blockchain governance frameworks.

- Combine conceptual modeling approach with decentralized governance design → a novel approach for designing decentralized structure in modeling decentralized blockchain eco-systems.

- **Future work.**

- Use conceptual modeling approach to develop DECENT conceptual modeling language in graphical notation.

- Use Digital Euro project as an experimental case to verify the effectiveness and usability of DECENT

Thank you & Questions