

Decentralized Governance Design Toolkit Modeling Document V1.0

Fadime Kaya, Yulu Wang, Jaap Heringa and Jaap Gordijn

*Department of Computer Science
Vrije Universiteit Amsterdam, The Netherlands*

September 1, 2023

1 Introduction

We propose that finding a sound governance solution for various ecosystems with decentralized features is a design problem. As the idea of decentralization is gradually introduced into different application domains and contexts, there is an increasing need to develop a model based approach that is suitable for designing decentralized governance models. From the model development perspective, different ecosystems and governance cases face different contexts and the required components/system components will be different. To avoid serious problems such as system centralization, inefficiencies or missing important information that may arise from improper design, we developed a model-based approach to design decentralized governance, positioned as DECENT. In this document we explain how to model DECENT governance models using the ADOxx platform.

2 Instructions

2.1 Requirements

First please meet all the software and hardware requirements¹ and follow the installation steps in ADOxx official website².

2.2 Getting started in ADOxx modeling toolkit

To get started for using DECENT modeling toolkit library that allows to model your own governance models in ADOxx, please consider the following basic steps to start and login to the tool. The process is also presented as a video on this webpage.

For the following steps, we do assume that installation of ADOxx was concluded successfully and the settings have been completed in the development toolkit.

- Start the Modeling Toolkit platform with your hardware.
- Log in with the UserName and password you created in the development toolkit when you add and apply your own User to the DECENT library. The database name is the same as you selected in ADOxx development toolkit. Then, you can see the modeling environment.
- Select Import/Export button and import the DECENT Library ADL file saved from ADOxx development toolkit, see Fig. 1.
- You can find the model group assigned in the development toolkit from the left navigation bar. Click it and create a new modeling canvas for the DECENT governance model type you want, see Fig. 2.

¹<https://www.adoxx.org/live/hardware-software-requirements-15>

²<https://www.adoxx.org/live/download-15>

- Select model components from the modeling toolbar between the canvas and the left navigation bar and start to model your own governance model in DECENT modeling language. We give the DECENT decentralized governance model structure/paradigm (High-Level governance model and four decomposed governance models) below, see Fig 3, Fig. 4, Fig. 5, Fig. 6, Fig. 7. We also show an example for modeling process with a video on this webpage.
- For emphasizing and explaining the mechanism of accessing different decomposed governance models from High-Level governance model, we show some screenshots here to clarify the whole process, see Fig. 8. We take the Goal-Objective as an example. You need to select the Goal-Objective component in High-Level governance model in canvas, and click the plus sign above the HighLevel reference selection box. You can add the target Goal-Objective governance model you want to point to and connect to. After setting successfully, every time you want to see details of decentralized governance decision-making structure of Goal-Objective from the High-Level governance model, you can click the Goal-Objective component, and use the follow sign to achieve the modeling canvas of the Goal-Objective governance model, see Fig. 9.

3 Acknowledgement

Alexander Völz and Dr. Wilfrid Utz from OmiLab³ provided constructive and valuable guidance on the development process in the ADOxx platform. We are grateful thank you.

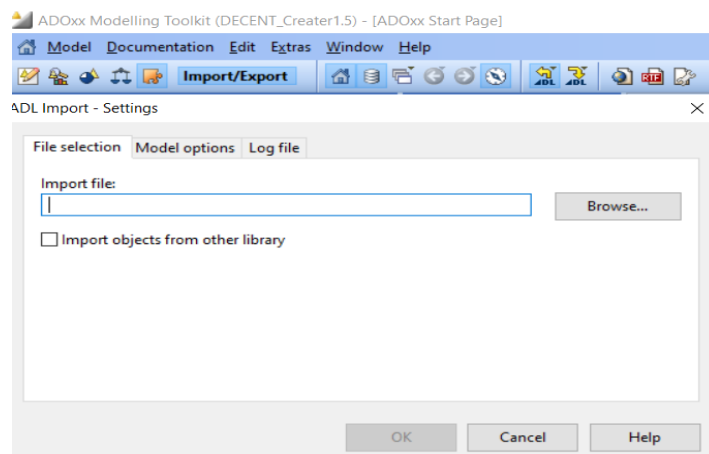


Figure 1: Import ADL in modeling toolkit

³<https://www.omilab.org/>

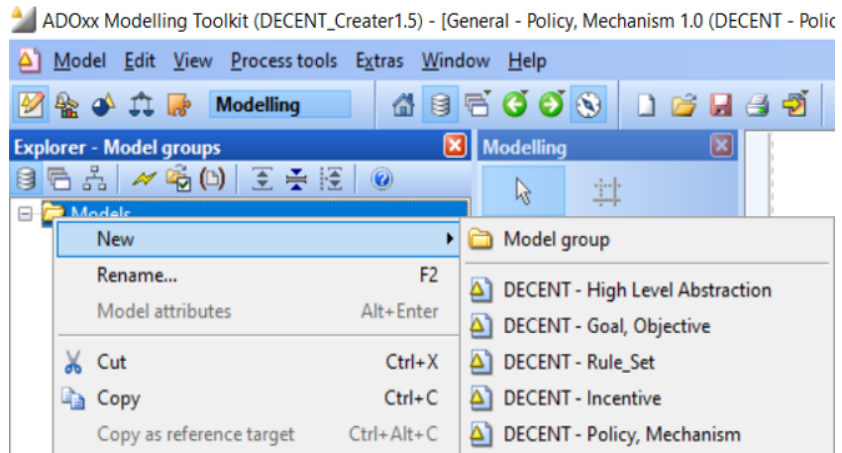


Figure 2: DECENT model selection in ADOxx

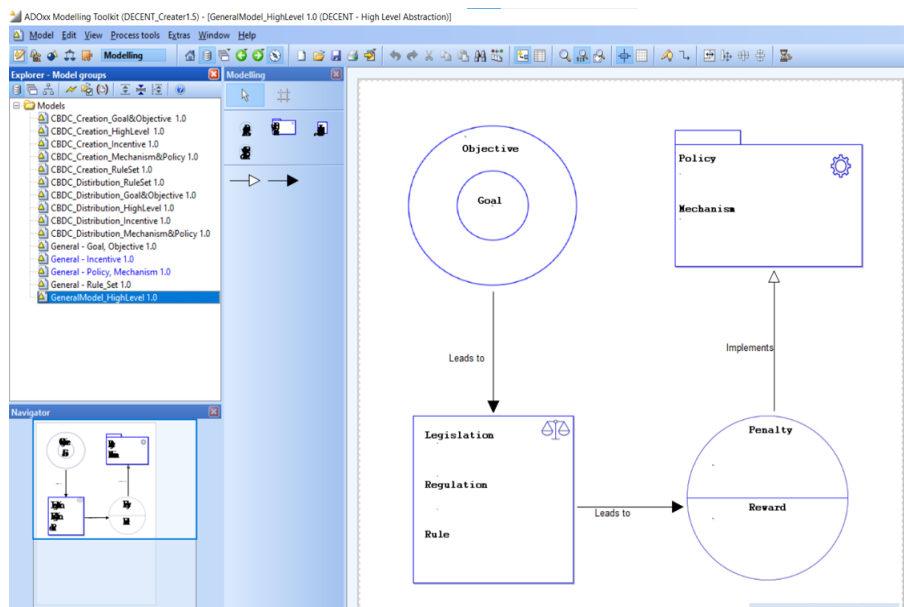


Figure 3: DECENT in ADOxx: High Level Modeling Example

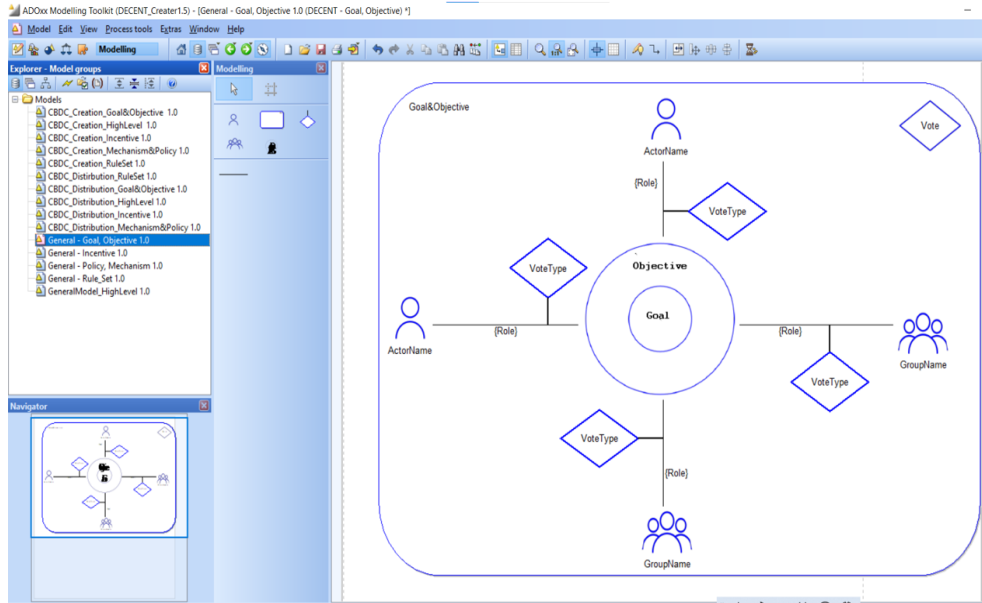


Figure 4: DECENT in ADOxx: Goal-Objective Modeling Example

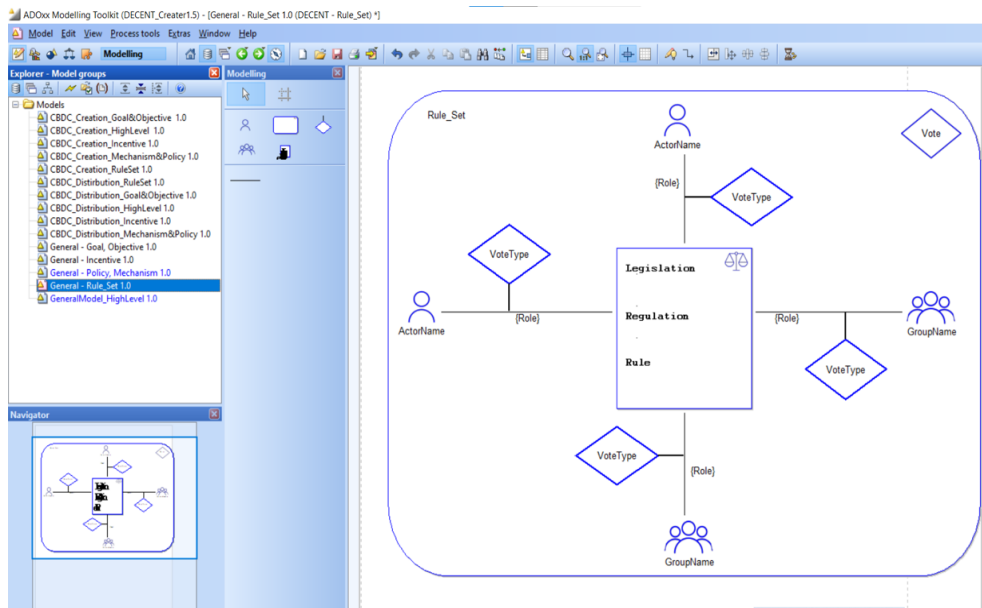


Figure 5: DECENT in ADOxx: Rule-Set Modeling Example

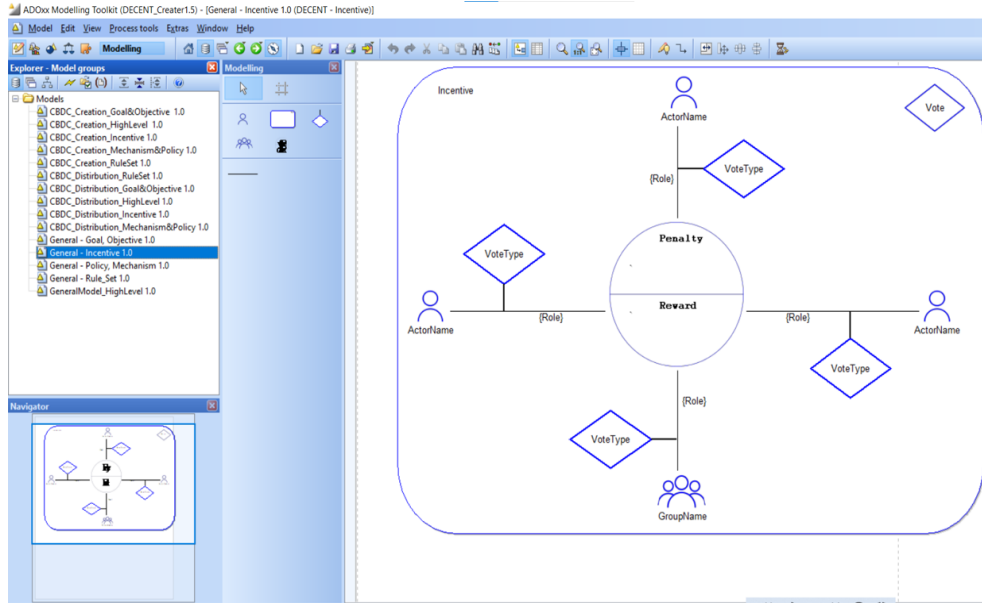


Figure 6: DECENT in ADOxx: Incentive Modeling Example

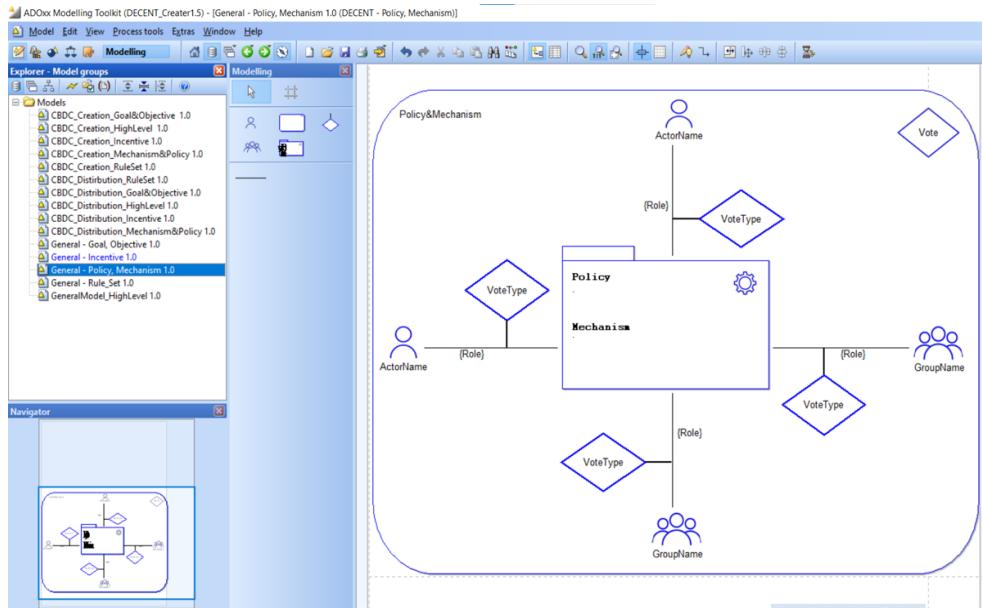


Figure 7: DECENT in ADOxx: Policy-Mechanism Modeling Example

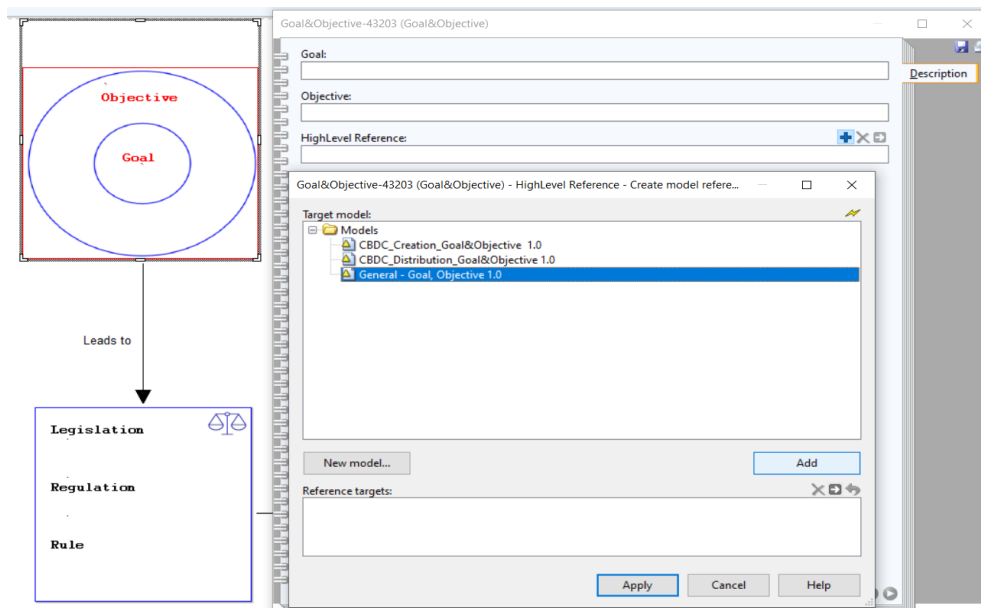


Figure 8: HighLevel reference: model pointer and access

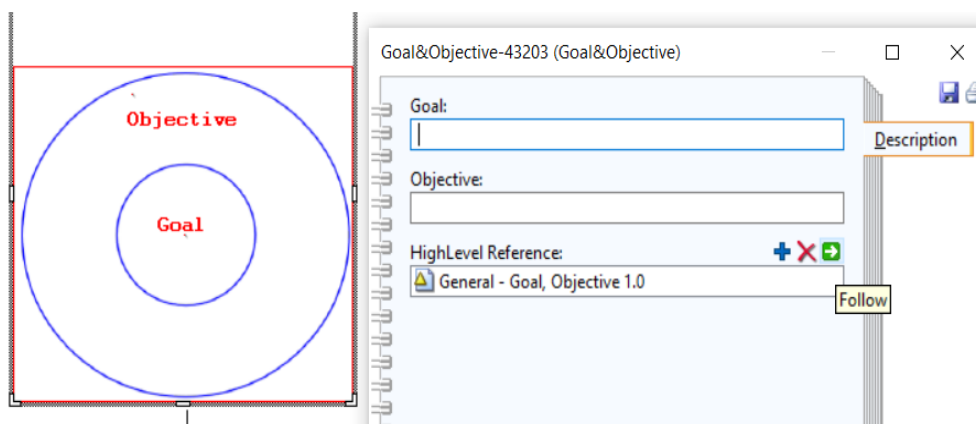


Figure 9: Access Goal-Objective from High-Level Model

End of document.