GRL for Representing the Sustainability Reference Model
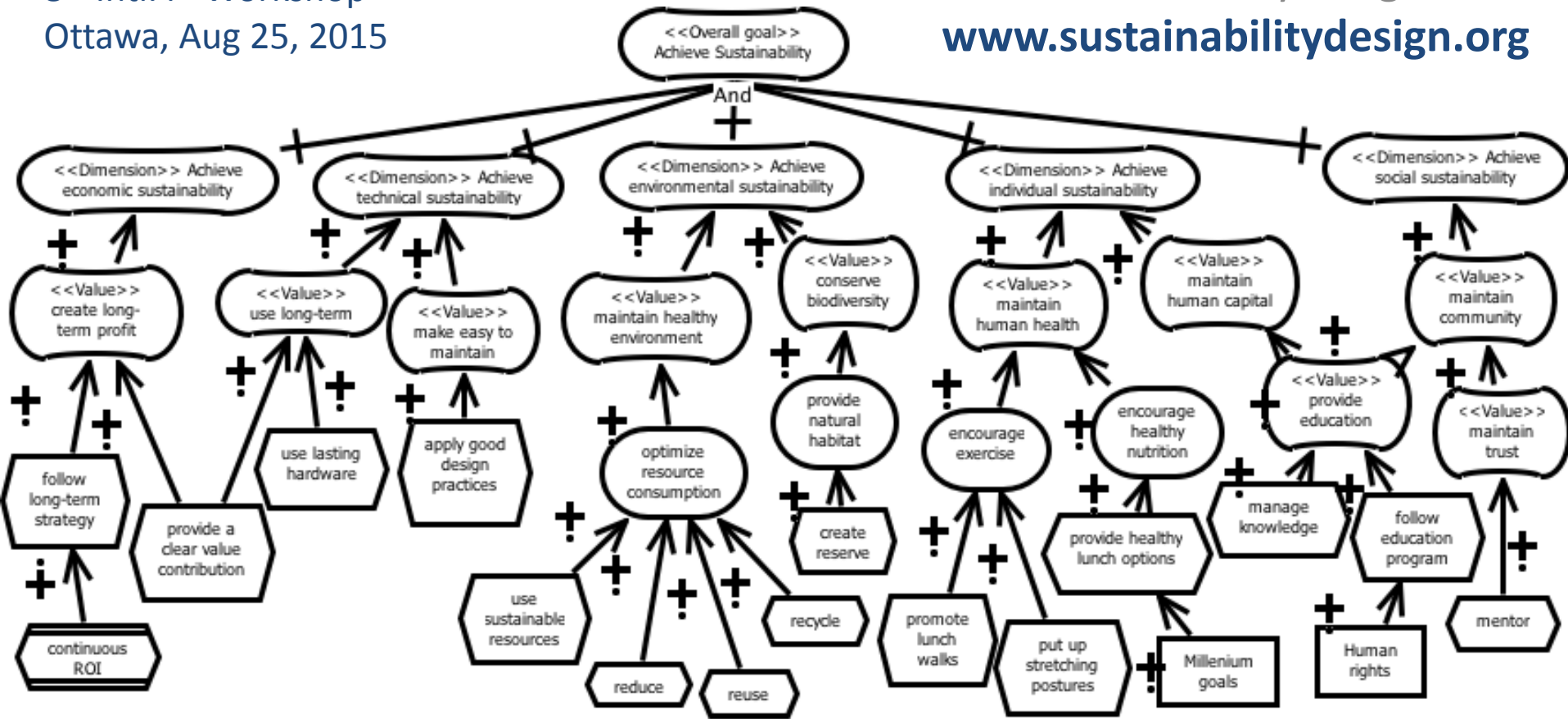
Birgit Penzenstadler
birgit@penzenstadler.de
Twitter @twinkleflip
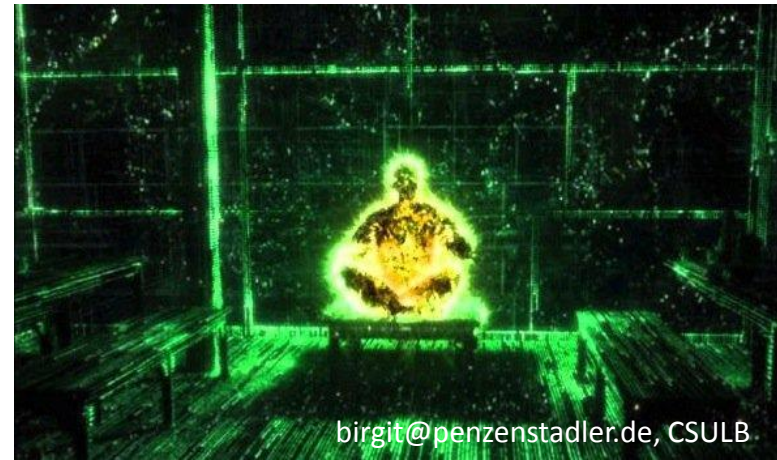California State University Long Beach
www.sustainabilitydesign.org

8th Intl. i* Workshop
Ottawa, Aug 25, 2015

In a nutshell:

- [Context]
  - Sustainability: often fuzzy arguments
  - Previous work: reference model for sustainability
- [Problem] Reference goal model not standardized notation
- [Contribution] Use GRL to represent
- [Impact]
  - Broader understanding of how to decompose and handle
  - Formalized basis for reasoning
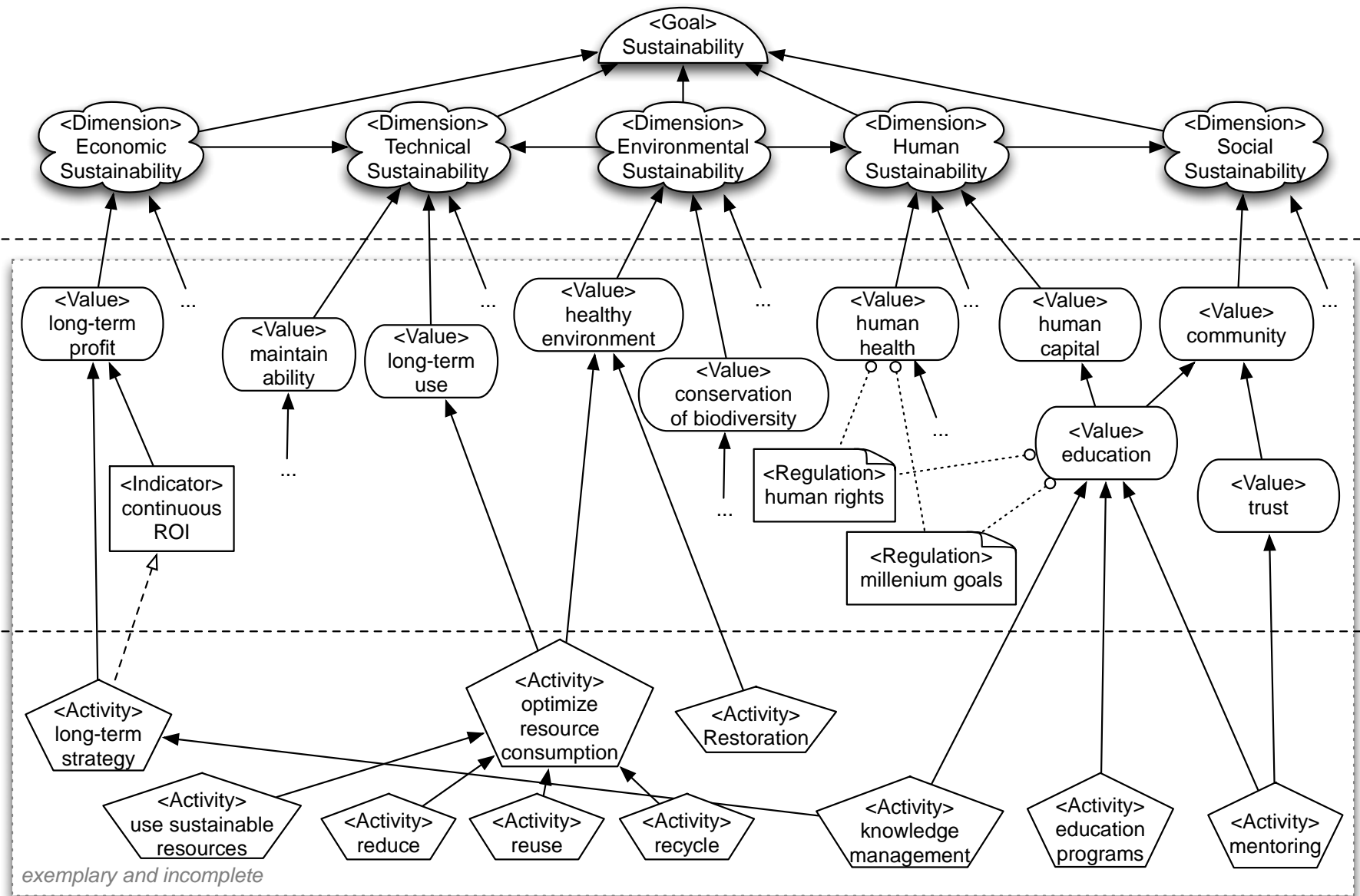 - We hope to engage in community discussion
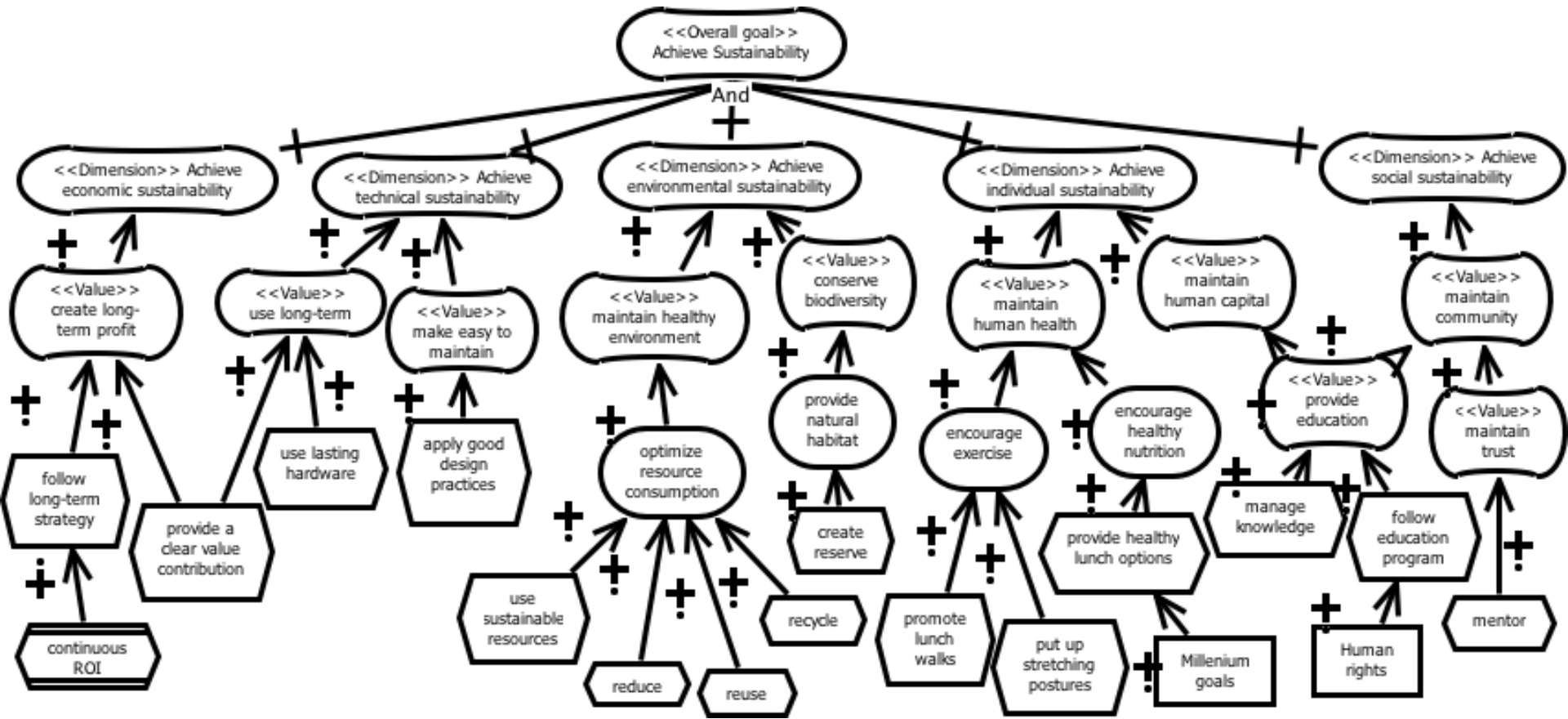
Software Engineering for Sustainability

- Sustainability: All forms of life flourish forever. [Ehrenfeld], includes different dimensions – environmental, but also social.

- For software systems
  - Domain-dependent sustainability
  - Domain-independent sustainability

- Software Engineering for Sustainability (SE4S): Translation and refinement from domain- dependent sustainability requirements to domain-independent requirements and then further development.
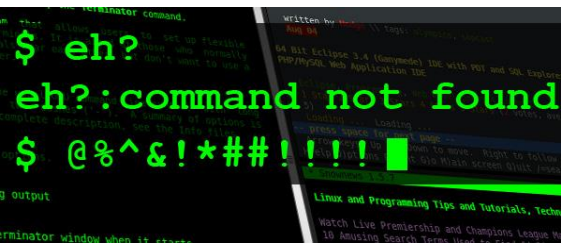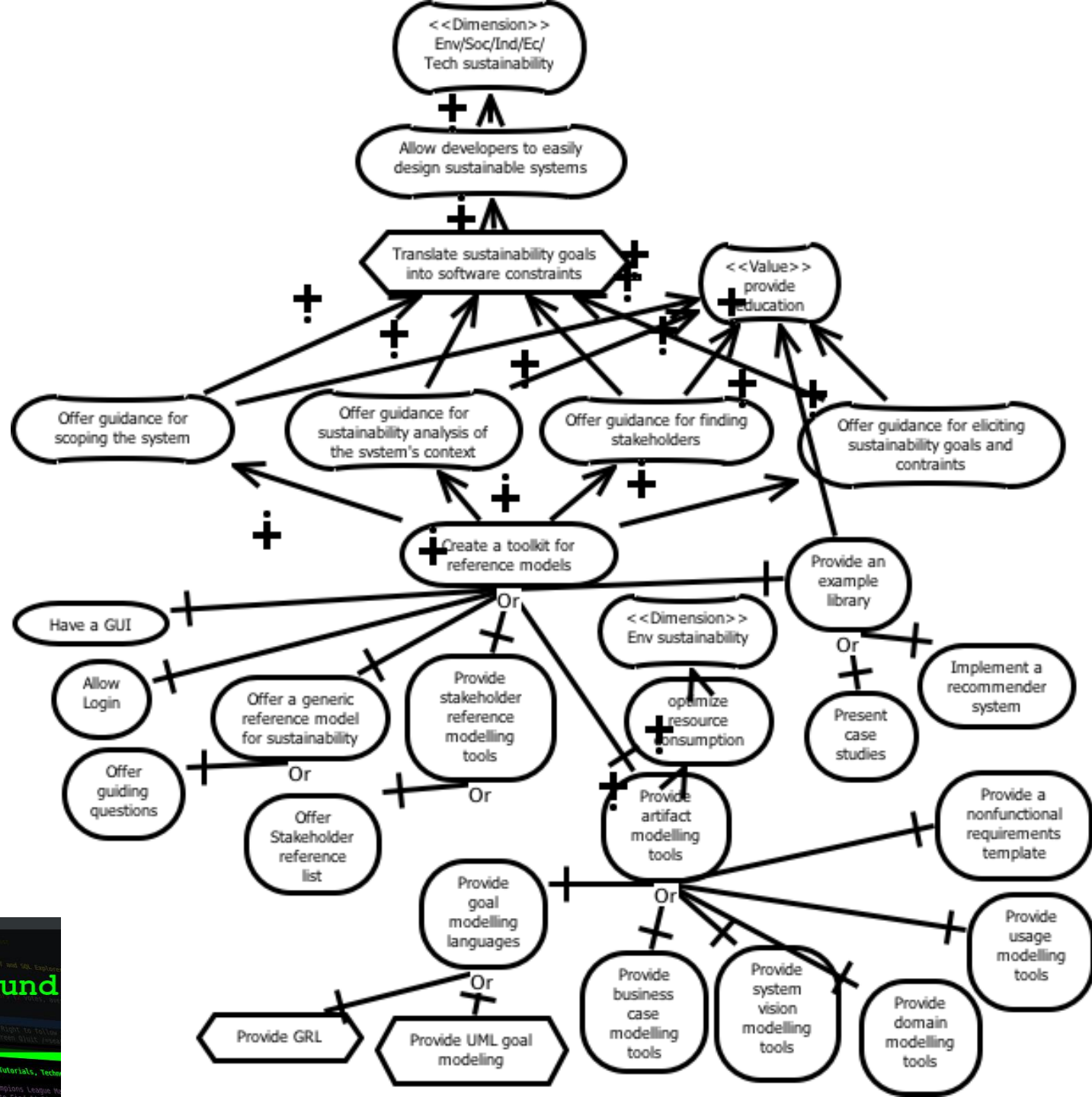
Old sustainability reference model

exemplary and incomplete
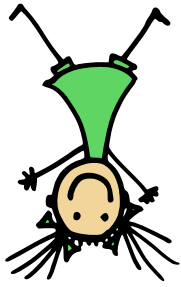
New sustainability reference model

Tool support goal model

Discussion

- Choice of GRL Notation: GRL because of direct support for indicators

- Expressiveness of New Model: Initial loss of information resolved by using metadata.

- Analysis and Reasoning: Qualitative and quantitative, weighting of goals, assessments.

- Future Work: Actors and Tooling.

Conclusion and Future Work

- Take-away Message.
    - Sustainability goal reference model in GRL allows for reasoning with qualitative and quantitative data.
    - Intended to serve as guidance and checklist for software engineers who want to include the goal of sustainability into their development.
- Future work includes:
    - Adding actors
    - Online tool support inspired by jUCMNav
- Special thanks to: Jennifer Horkoff, Gunter Mussbacher, Daniel Méndez, Leticia Duboc, and *Reviewer 1*

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