

## Envisioning a Community Use-Case for Sustainability in and by ICT

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Sustainable Software Systems Engineering



# Agenda

- Sustainable Software Systems Engineering (S3E)
- A use-case for S3E
- A community use-case?
- Technical considerations
- Discussion

# SUSTAINABLE SOFTWARE SYSTEMS ENGINEERING

## Stefanie Betz

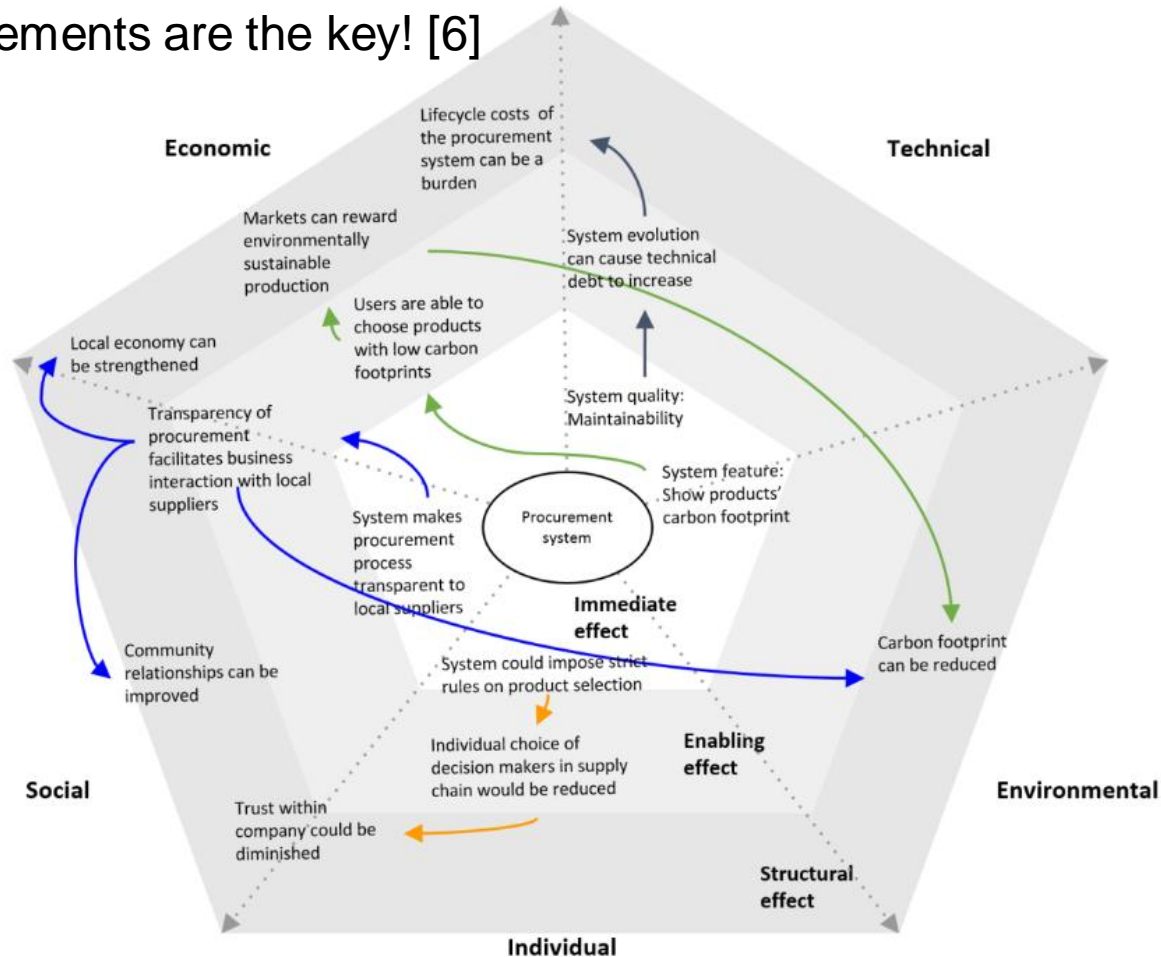
- Sustainability in Business Processes
- Sustainable Software

## Andreas Fritsch

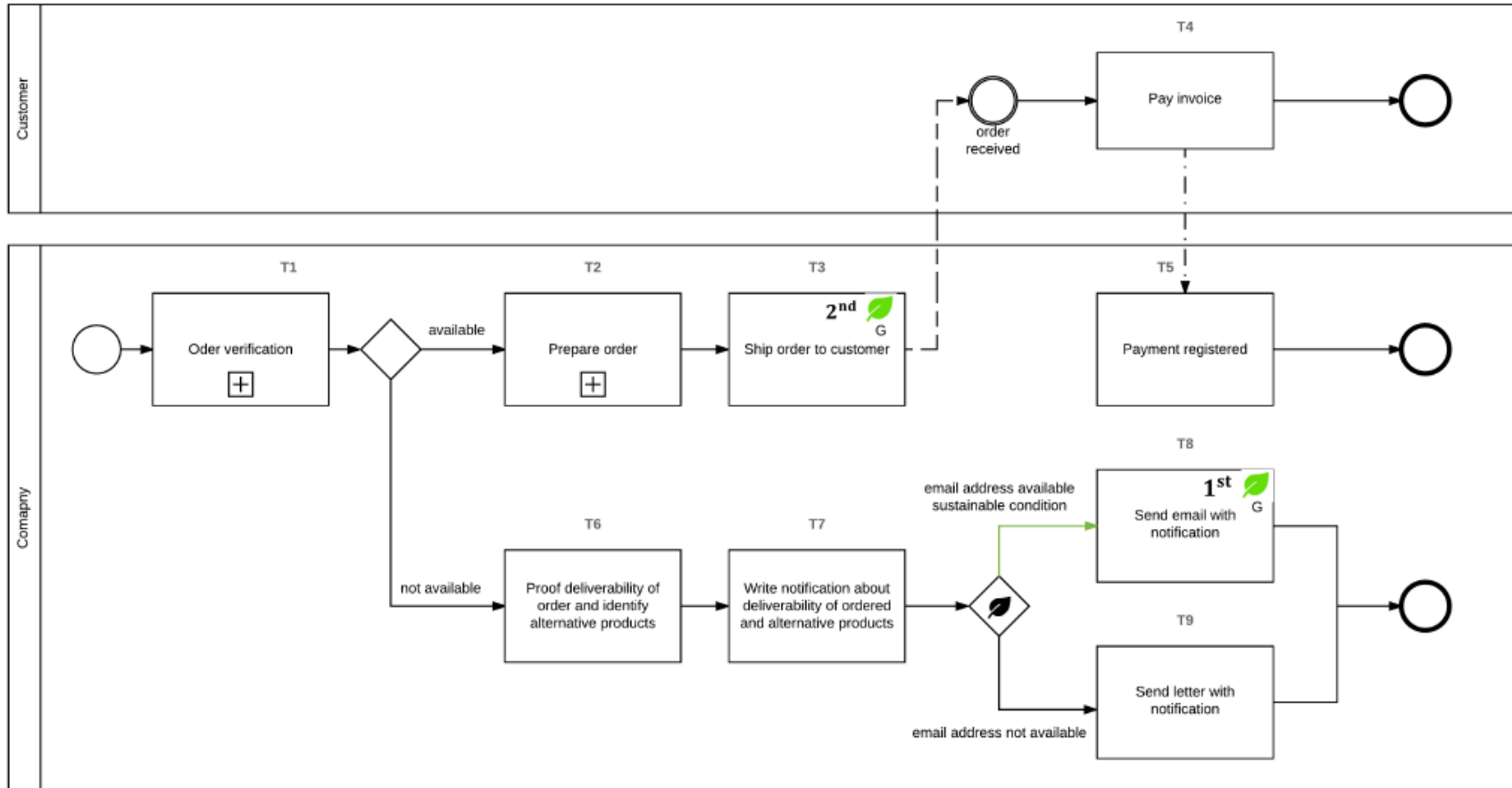
- Modelling of Product Sustainability
- Software for S-LCA

# Requirements Engineering (RE)

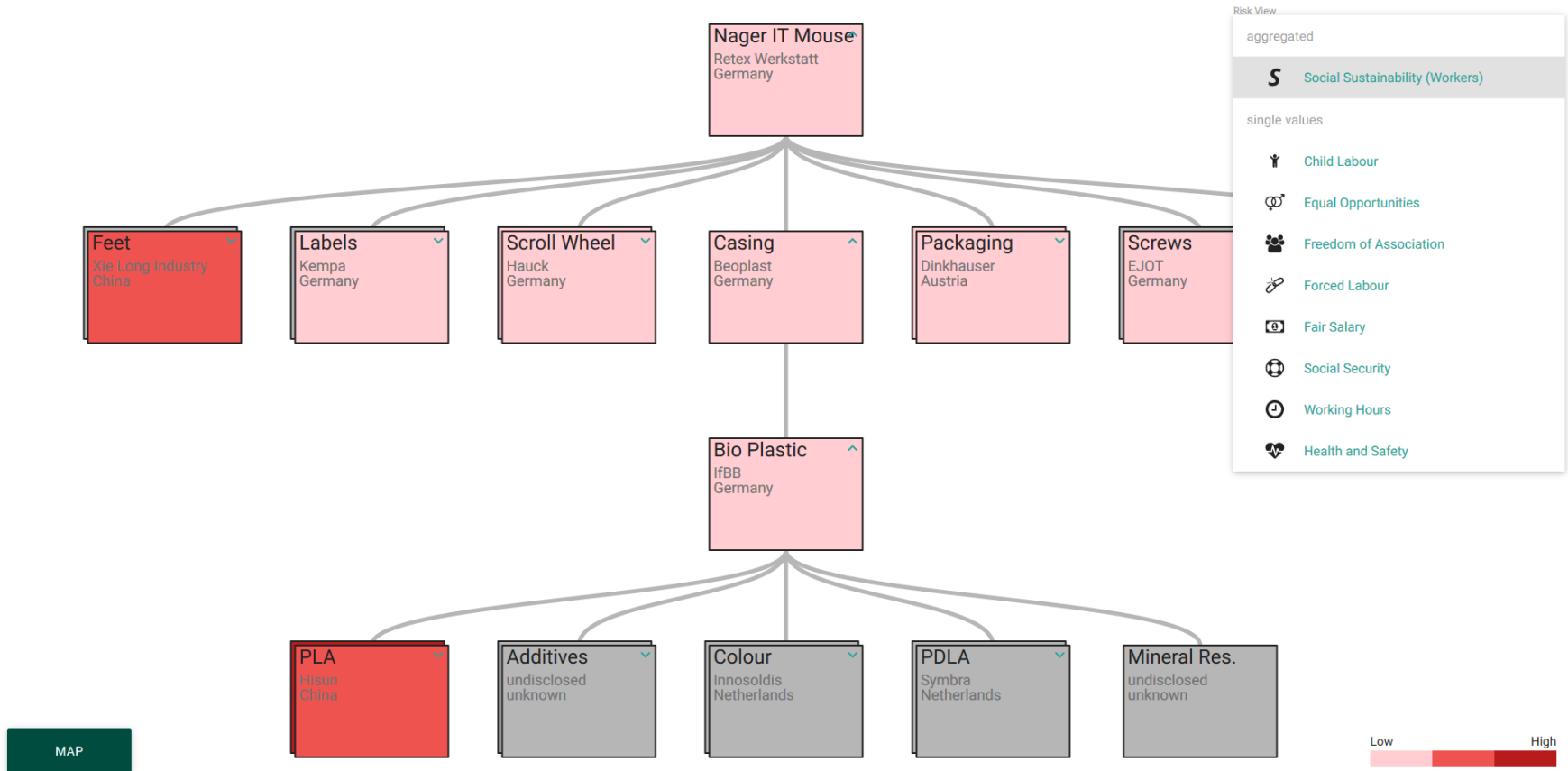
- How to integrate Sustainability into Software Development Processes?
  - Requirements are the key! [6]




# BPM: Sustainability-Extension BPMN (S-BPMN)



# S-LCA: Modelling Language for Product Social Sustainability (Tracy)



# Idea/Vision: Goal Modelling and Capabilities Approach (CA)



**Öko-Institut e.V.**  
Institut für angewandte Ökologie  
 Institute for Applied Ecology

Social impacts of artisanal cobalt mining in Katanga, Democratic Republic of Congo

Freiburg, November, 2011

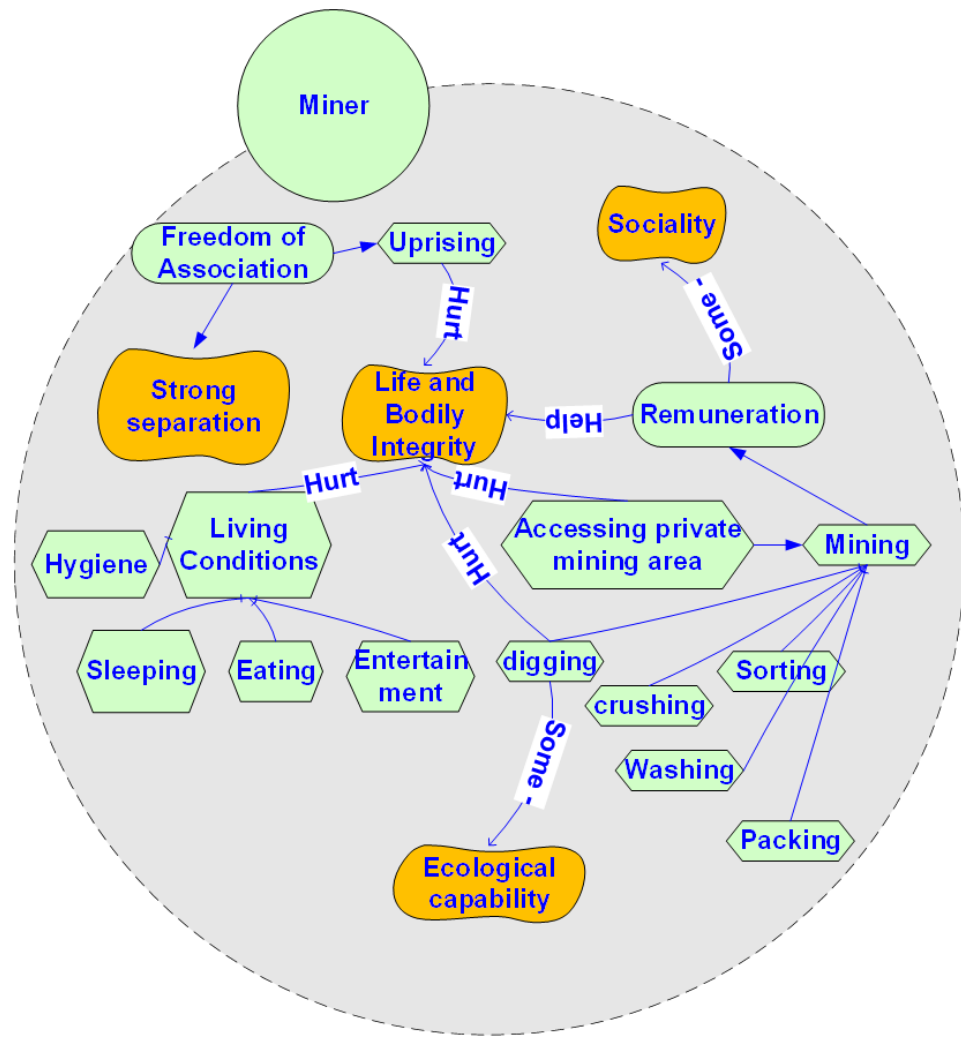
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## Sustainability for Software Systems

## Sustainability by Software Systems

Requirements Engineering

Sustainability Debt

IT-Alignment

Business Process Management

S-LCA

Privacy

Goal Modelling

Elicitation Techniques

Leverage Points

Decision Making

From Goals to Architecture

Modelling

Analyse

Modelling

Visualising

Souverignty

# USE-CASE FOR S3E

# EcoFair Computer Mouse

S-BPMN

Tracy



Fair and ecologically sourced

\$12.99



Basic Example Variant

\$12.99

AVAILABLE OPTIONS

Red

Green

1

Add to cart

RE



RUNNING ON REACTION SOFTWARE

MIT BEZIEHEN ÖKOSTROM VON GREENPEACE ENERGY.

# GoSusy

- An online-shop selling ICT-Hardware products
- Implementing sustainable best practices
- A common ground for discussion and reasoning
  - Concrete examples for students' works
- Exemplifying usefulness of existing methods and new ideas
- A repertoire of methods and ideas to apply to other use cases

# COMMUNITY USE-CASE (?)

# EcoFair Computer Mouse

S-BPMN

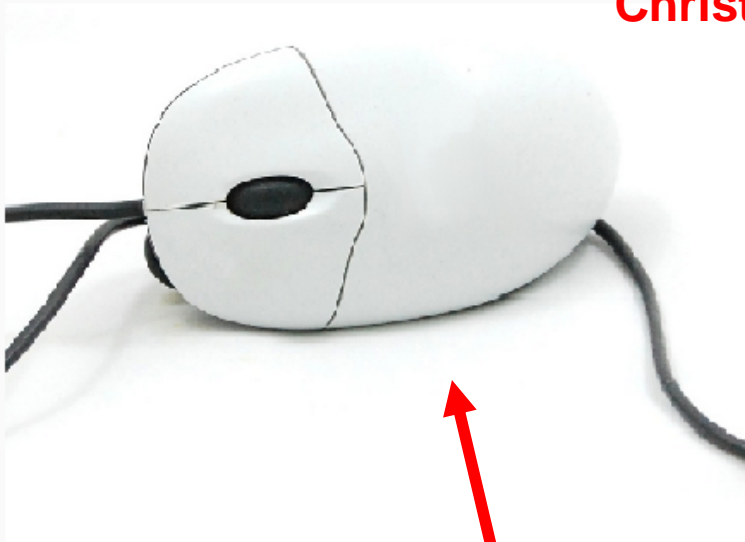
Tracy

Fair and ecologically sourced

Guido

Christian

\$12.99



Basic Example Variant

\$12.99

### AVAILABLE OPTIONS

Red

Green

1

Add to cart

Anne

Sandro

RE

Eva



RUNNING ON REACTION SOFTWARE

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# Potential for GoSusy as Community Use-Case

- Platform to help identify potential conflicts or synergies of different approaches within Enviroinfo/ICT4S Community
- A tool to communicate ideas among practitioners and researchers
- Collection of ICT/Sustainability-related tools and methods
- Source of inspiration for analyzing other use-cases in theory and praxis

# Technical Considerations

- Community website: [www.gosusy.org](http://www.gosusy.org)
- Extensive description of use case
  - Supplemented by scenarios and enterprise models
- Infrastructure: Wiki, Forum, Github
  - To share ideas, tools, source code



**THANK YOU!**

# References

- [1] The Oxford Dictionary of English. Oxford University Press, 2010, Sustainability
- [2] C. Becker, R. Chitchyan, L. Duboc, S. Easterbrook, M. Mahaux, B. Penzenstadler, G. Rodríguez-Navas, C. Salinesi, N. Seyff, C. C. Venters, C. Calero, S. A. Koc, ak, and S. Betz, “The Karlskrona manifesto for sustainability design,” CoRR, vol. abs/
- [3] Hilty, Lorenz M and Aebischer, Bernard, „Ict for sustainability: An emerging research field” in ICT Innovations for Sustainability, Springer, 2015
- [4] J. vom Brocke, S. Seidel, and J. Recker, "Green business process management: towards the sustainable enterprise," Springer, 2012.
- [5] B. Penzenstadler, "Towards a Definition of Sustainability in and for Software Engineering," in Proceedings of the 28th Annual ACM Symposium on Applied Computing, 2013.

# References

- [6] Christoph Becker, Stefanie Betz, Ruzanna Chitchyan, Leticia Duboc, Steve M. Easterbrook, Birgit Penzenstadler, Norbert Seyff, and Colin C. Venters “Requirements: The key to Sustainability”