Special Track ASDIE

Adaptive and Sustainable Digital Innovations for Fourth Industrial Revolution Ecosystems

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Chairs

Prof. Dr. Andreas Rausch

- **Research Interest:**
- Digitized Circular Economy
- Software Architecture
- Componentware
- Artificial Intelligence
- Software Engineering
- **CV:**
- 2001: PhD at Munich University of Technology
- 2003: Junior Prof. at University of Kaiserslautern
- 2007: Prof. for Software Systems Engineering at Clausthal University of Technology
- 2018: Managing Director of the Institute for Software and Systems Engineering (ISSE)

Dr. Christoph Knieke

- **Research Interest:**
- AI for Software Engineering
- Model-based Development
- Software Architecture
- Software Product Line Engineering
- **CV:**
- 2011: PhD at TU Braunschweig
- 2011-2019: Managing Director at Research Center IPSSE, TU Clausthal
- 2019: Habilitation at TU Clausthal
- Since 2019: Lecturer and Post-Doctoral Researcher at ISSE, TU Clausthal

Dominique Briechle, M.Sc.

- **Research Interest:**
- Digitized Circular Economy
- AI-Planning Systems for Automation Processes
- Digital Twin & Cyber-Physical Systems Design
- Software Engineering for Robotics
- **CV:**
- 2021: M.Sc. Petroleum Engineering
- 2021: Academic Researcher Center for Digital Technologies TU Clausthal & Ostfalia
- 2022: Academic Researcher Institute for Software and Systems Engineering

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Adaptability and Sustainability

- Current Technological Developments are already transforming society in similar ways like the industrial revolution

- This is especially the case regarding technologies like:

    - artificial intelligences

    - cloud- and edge computing

    - cyber-physical systems

    - and machine cognition

- At the same time global resources are limited and therefore scarcity is increasing

- Additionally, the environmental impact of nowadays societies is constantly increasing
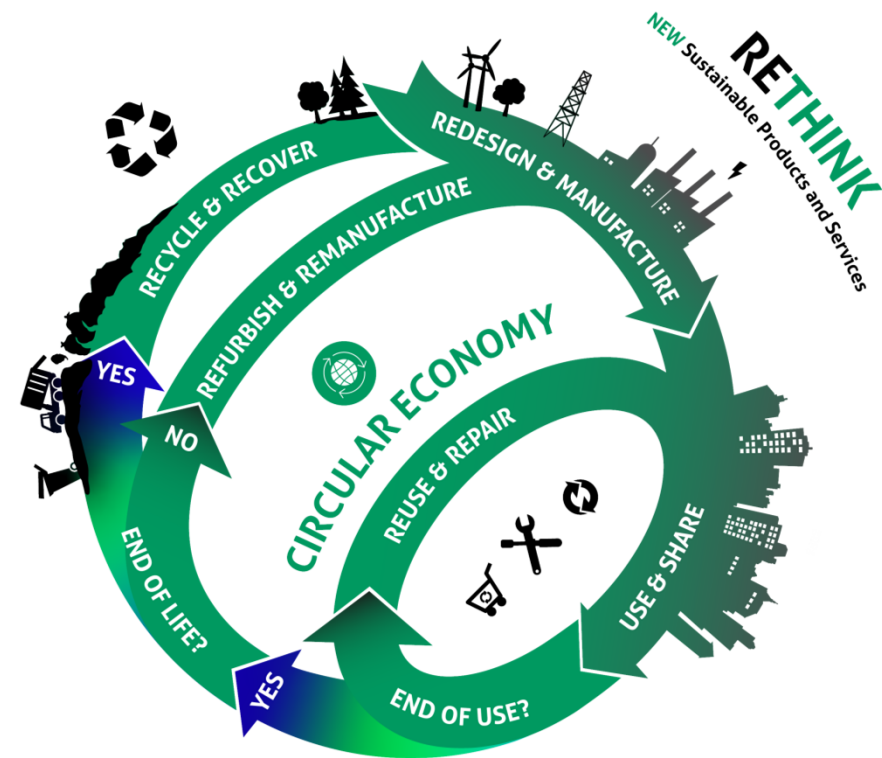
Fig.1: Circular Economy loop

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https://www.zdin.de/uploads/Grafik-Zukunftslabor-Circular-Economy_1280-pxl.jpg

Adaptability and Sustainability

- Technology must therefore take sustainability factors into consideration and can enable fruitful synergies
- Especially for nowadays products and services, a multitude of factors have to be considered during its design and lifetime
- We can thereby point out two major criteria's for the design:
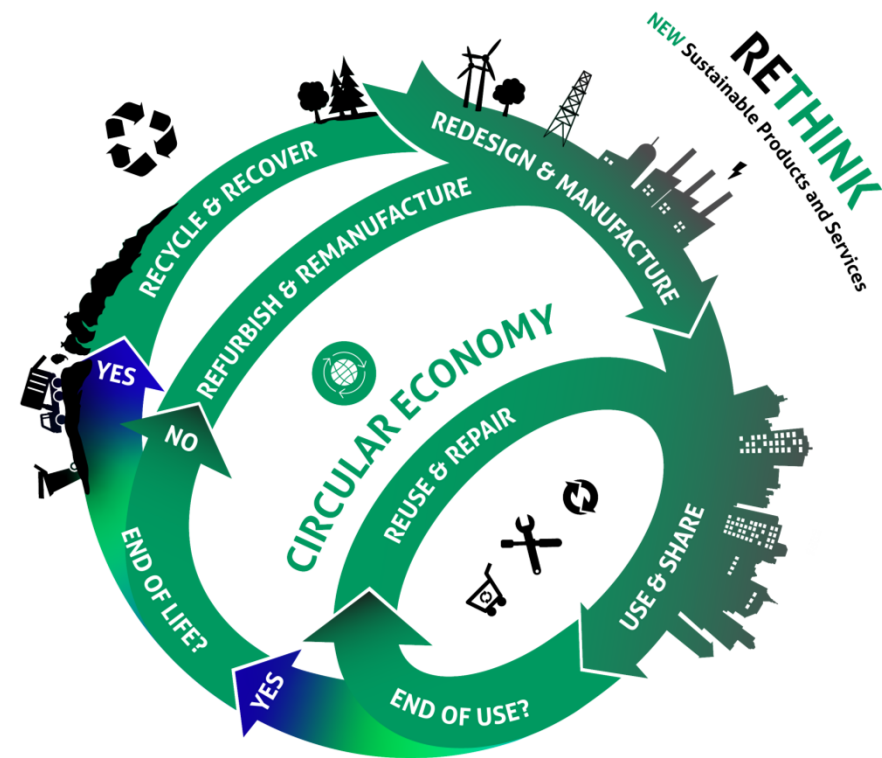
  - Adaptability

  - Sustainability

Fig.1: Circular Economy loop

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Outlook

- These factors need to be considered over multiple domains, including:

    - Production

    - Mobility & Logistics

    - Service Industry

- The track features examples of innovations in these domains, which are not only apply new innovations, but also feature sustainability and adaptiveness in their design
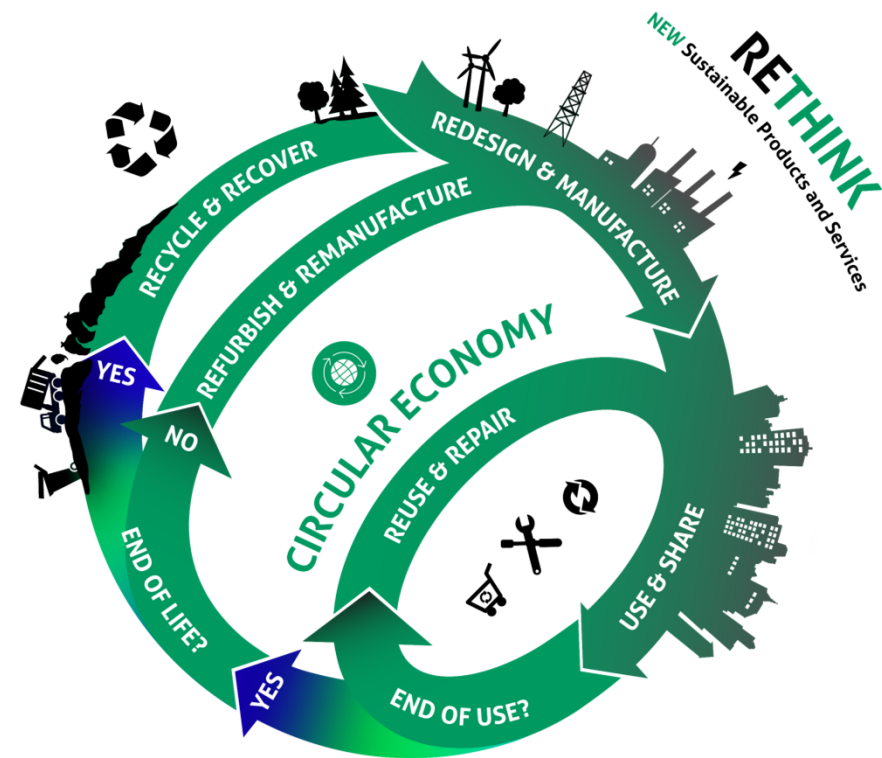

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- 28001 Application of a Maneuver-based Decision-making Approach for an Autonomous System Using a Learning Approach

    - *Xin Xing, Ostfalia - University of Applied Sciences, Germany*

- 28002 You´ve got a plan? A domain modelling approach for collaborative product disassembly planning with PDDL

    - *Dominique Briechle, Clausthal University of Technology, Germany*

- 28004 Automating Benchmarking Process for Multimodal Large Language Models (MLLMs) in the Context of Waste Disposal

    - *Sundus Hammoud, Clausthal University of Technology, Germany*

- 28006 Integrative development and evaluation of V2X communication architectures to support autonomous driving systems in 5G campus networks

    - *Florian Pramme, Ostfalia - University of Applied Sciences, Germany*

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