Karlsruhe Institute of Technology

Institute for Technology Assessment and Systems Analysis

Robotics/AI in society – a socio-technical approach from a TA and RRI perspective

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Topic 4: Knowledge in Action Workshop

ITAS
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Agenda

01 **Short introduction**

02 **Robotics/AI in society**

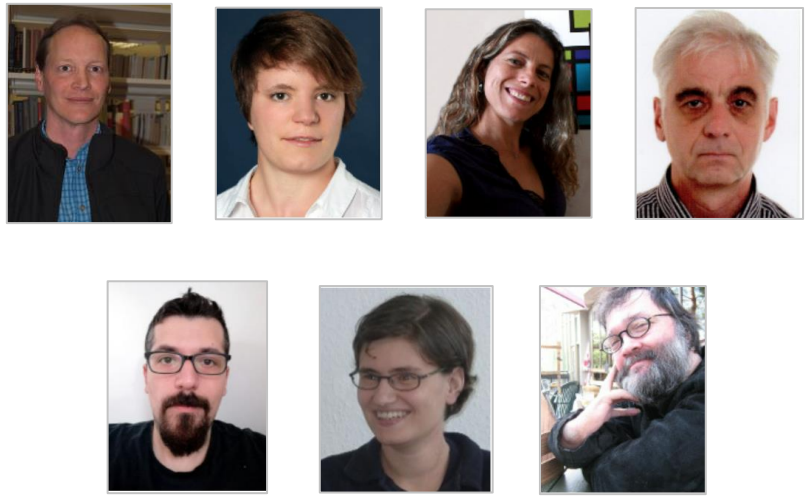
- Research in Action
- Perspectives from TA and RRI
- JuBoT meets RWL “Robotic AI“

03 **Transformation goals**

Short introduction

Research group “Life, Innovation, Health, and Technology” (light)

- Multidisciplinary group of researchers



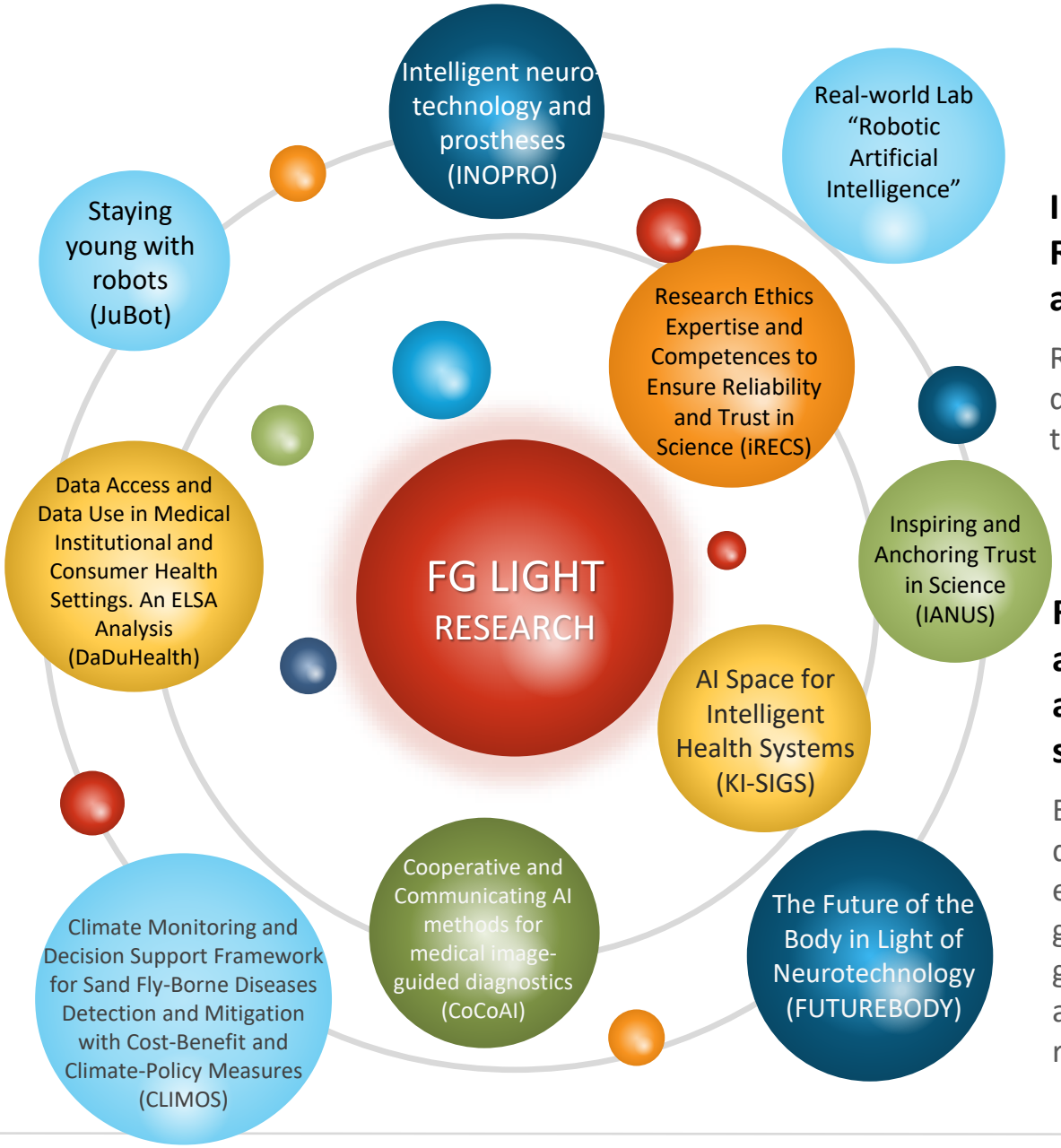
- Participation in several research projects, funded for example by:
  - Federal Ministry of Education and Research (BMBF)
  - European Commission
  - European Parliament (STOA)

Expertise for an anticipatory governance approach in the context of technology development

Strategic foresigh perspective for exploring plausible future situations (scenario building, vision assessment, etc.)

Inter- and transdisciplinary approach to technology development (technology assessment)

Analysis of the ethical, legal and social aspects (ELSA) associated with the innovation and development of the technology.



Incorporating a Responsible Research and Innovation (RRI) approach

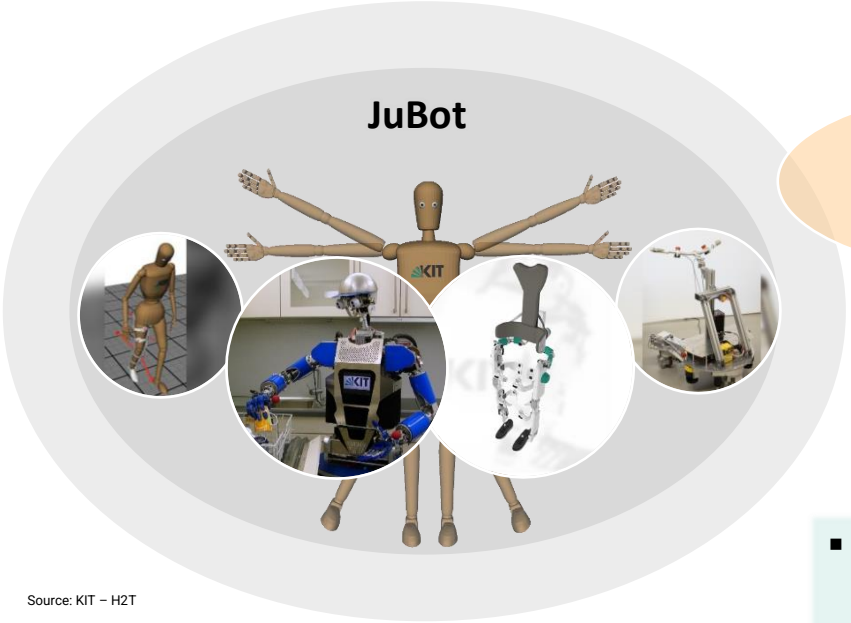
Responsibility-by-design and User-centred design approach, before and during the technology development.

Research on technology acceptance as well as needs and expectations analyses involving citizens and stakeholders

Expertise in citizen participation (citizen dialogue, citizen science, real lab, etc.), early involvement of different population groups (different social backgrounds, age groups) and people with multimorbidities and vulnerabilities as well as other relevant stakeholders at an early stage.

Robotics/AI in Society – Research in action

JuBot: Staying young with robots– Versatile assistance robotics for coping with everyday life



Source: KIT – H2T

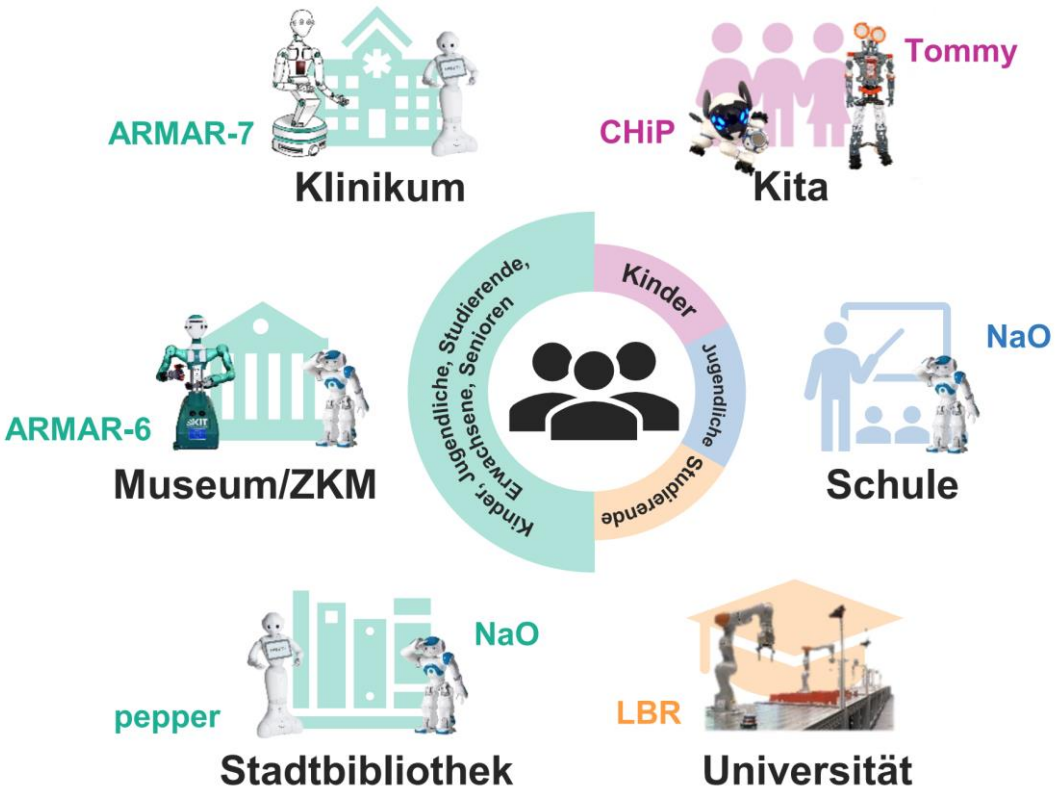
Future life with assistive robots

- **Validation in the real word**
- **Human-Robot apartments**
- **ELSI and RI**
- **Design of future living spaces with robots**

- What are the **real needs and expectations** regarding the use of humanoid robots – ARMAR, in a care facility?
  - elderly living in a care facility
  - health professionals working in a care facility
  - citizens, as potential users of the technology
- What **impacts** the introduction of robots have:
  - On the competences of those working in care facilities
  - On future planning of buildings

Robotics/AI in Society – Research in action

Real-World Lab “Robotic Artificial Intelligence”



Source: KIT – H2T

- What does society-science co-research look like for the development of future robotic AI systems?
- How can the transformation processes be captured and analysed by robotic AI systems?

Robotics/AI in Society – Perspective from TA and RRI

- **Demand pull** vs technology push
  - **Anticipation** ➔ gain knowledge about possible, plausible ethical, legal, social impacts (ELSI) around science technology and society
    ➔ considers the time dimension by looking into the future: e.g., foresight (scenario building, vision assessment)
  - Enhancing **reflexivity** ➔ on the process, norms and values that shape and drive research and innovation (consequences to be considered, perspectives to be included, etc)
  - **Inclusion** of different perspectives ➔ increase the social legitimacy of the outcomes (User-/Human oriented design (design value) / Participatory Design)
    - Participatory TA (pTA) / Constructive TA (CTA): approach which involves diverse social actors from academia, business, law, education, etc. It calls first and foremost for the engagement and involvement of users and social actors (citizens) in all phases of the technology development.

Real-World Labs

Robotics/AI in Society – Perspective from TA and RRI

Real-World Labs (Parodi and Beecroft, 2021)

- Research objective:

  → Analysis of human-robot interaction & feedback into the development process

- Educational goal:

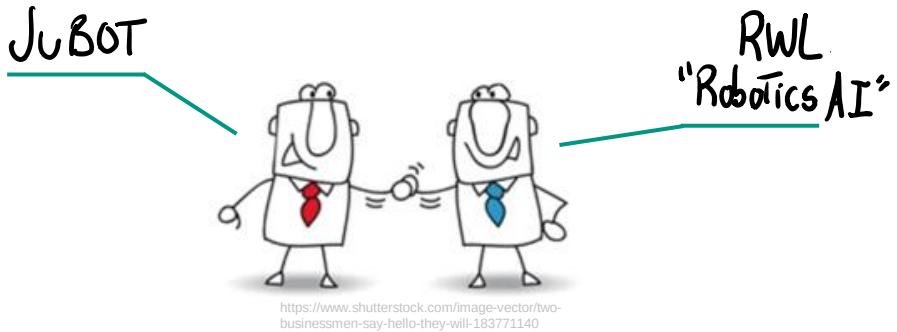
  → Learning for, with and about robots in different contexts

- Transformation goal:

  → Sharing life with robots

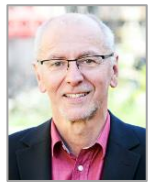
Parodi, O.; Beecroft, R. Reallabore als Möglichkeitsraum und Rahmen für Technikfolgenabschätzung (2021). Technikfolgenabschätzung. Hrsg.: S. Böschen; A. Grunwald; B.-J. Krings; C. Rösch, 374–388, Nomos Verlagsgesellschaft. doi:10.5771/9783748901990-374

Robotics/AI in society – JuBot meets RWL “Robotics AI”



Multi-disciplinary team

Expertise in TA and RRI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(Project Leader)


Maria Maia
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Nora Weinberger


Linda Nierling
(Project Leader)

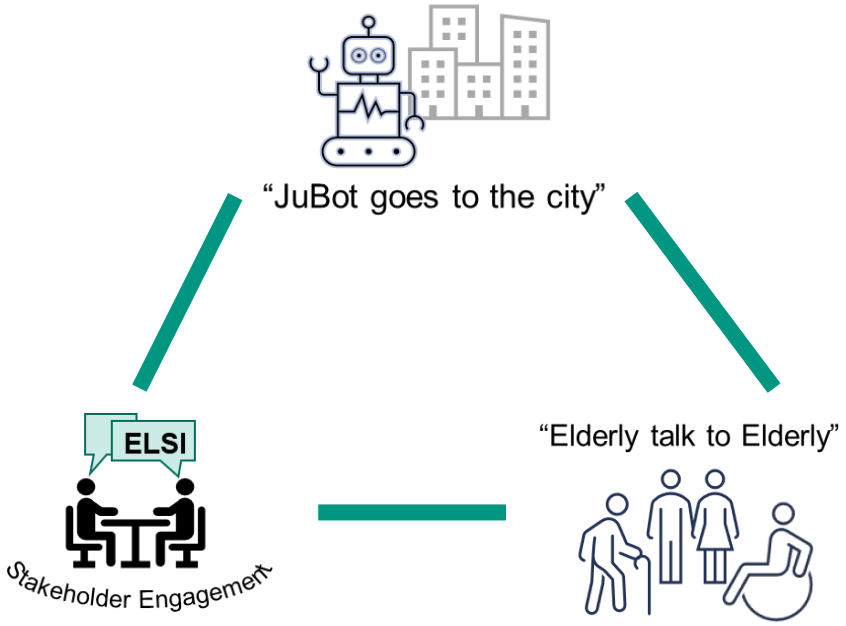

Leonie Seng


Pascal Vetter


Nora Weinberger


Maria Maia

Robotics/AI in society – JuBot meets RWL “Robotics AI”

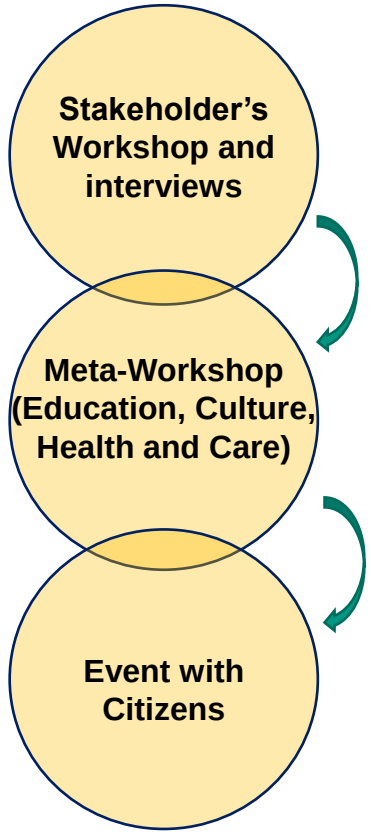


Real-World Labs
Health & Care

Increase sensitization and heighten public empowerment for participation in assistive robotics research

Co-Creation → Mutual learning

Joint activities



Transformation goals (ITAS)

Joint transformation goals:

- Step 1: Stakeholder integration in robotic AI development and deployment
  - Focus groups and workshops within the framework of the ITAS research strategy

- Step 2: Organisation & conception of discussion event(s) with citizens:
  - "How do we want to live together with robots in the city?"
    - What are the wishes and needs of Karlsruhe citizens for this vision?
    - What does this mean in the context of current challenges in the cultural, educational and health systems?
    - How does this connect to visions of robotic AI?

Thank you!

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