Ethical evaluation of technology in the classroom – three methods that are practice-oriented and proven in practice

Session U1: TA and Ethics for Value-driven Technologies: Educational Aspects

4th European Technology Assessment Conference, Bratislava, November 4-6, 2019.

Prof. Dr. phil. habil. Karsten Weber
Institute for Social Research and Technology Assessment (IST)
Regensburg Center of Health Sciences and Technology
Ostbayerische Technische Hochschule (OTH) Regensburg
Karsten.Weber@oth-regensburg.de
Ethical evaluation of technology in the classroom

- Cost reduction in health care system.
- Remedy for labor shortages.
- Relief for employees in health care as well as for informal caregivers.
- Ensuring health care in remote areas.
- Enabling people to live a self-determined life within their own home.
- New markets for new products “made in Germany”.

+ AAL=?
Ethical evaluation of technology in the classroom
AAL & Ethics – Ethical aspects of age appropriate assisting systems

- Prof. Dr. med. Heiner Fangerau
- PD Dr. theol. habil. Arne Manzeschke
- Prof. Dr. phil. habil. Karsten Weber

Duration: 01/01/2012 – 31/10/2012
Budget: 100,000 Euro

Results of the study

»Ethical questions in the area of age appropriate assisting systems«

A. Manzeschke, K. Weber, E. Rother, H. Fangerau

https://www.researchgate.net/publication/304743219_Ethical_questions_in_the_area_of_age_appropriate_assisting_systems
MEESTAR: Model for the ethical evaluation of socio-technical arrangements

- Involvement of as many stakeholders as possible.
- Identification of ethically relevant aspects of AAL systems.
- Ethical evaluation.
- Development of potential solutions.
- (Ethical “verification” of implementation).

Figure 1:
MEESTAR: x-axis: dimensions of ethical evaluation; y-axis: stages of ethical evaluation; z-axis: levels of ethical evaluation.
Basic evaluation procedure

Moral values of designers and engineers ≠ Moral values of stakeholders

Design of computer systems:
- Concept
- Prototype
- Pre-production model
- Production model

Application of MEESTAR (or other evaluation tools)

Moral values of engineers and stakeholders fit together?

Yes → Successful development
No → Can design be adapted?

Yes → Abort development
No → Can design be adapted?

Ethical evaluation of technology in the classroom
Benefits beyond ethical evaluation

Using MEESTAR (or other similar methods) can help to reveal that different stakeholder groups have different ideas about

- definitions,
- conditions,
- moral values,
- etc.

The iterative process of MEESTAR can help to find a common conceptual basis.

(STS: Trading Zone)
Important points of criticism:

- The number, selection and content of the normative dimensions were/are only weakly justified.
- There is no prioritization of the dimensions.

Desideratum:
- Applicability not only for AAL, but also for other technology.

Figure 1:
MEESTAR: x-axis: dimensions of ethical evaluation; y-axis: stages of ethical evaluation; z-axis: levels of ethical evaluation.
Deduction of normative dimensions from the medical ethics approach of Beauchamp and Childress’ Principlism:

- Autonomy / Self-determination → Self-determination
- Beneficence → Privacy
- Nonmaleficence → Social participation / inclusion
- Justice → Safety and security
- (?) → Self-conception / self-image
Deduction of normative dimensions from the medical ethics approach of Beauchamp and Childress’ Principlism:

Technical environment

MEESTAR dimensions as normative principles of medium range:

- Deduction of other dimensions e.g.:
  - from health care practice,
  - from the refinement of the four principles in Beauchamp & Childress or
  - using Action Sheets, Ethics Canvas or other methods.

General ethical theories and principles
### Action Sheets

<table>
<thead>
<tr>
<th>Comments</th>
<th>Possible problems, dangers, challenges, difficulties</th>
<th>Alternative approaches and suggestions</th>
<th>Other remarks and notes</th>
</tr>
</thead>
</table>

### Operating conditions

**Where should the app be used?**

**How should the app be operated?**

**...**
Extended evaluation procedure

- Definition of moral dimensions
- Hierarchy of moral dimensions

Actions Sheets

Ethics CANVAS

Moral values of designers and engineers

Design of computer systems:
- Concept
- Prototype
- Pre-production model
- Production model

Moral values of stakeholders

Application of MEESTAR (or other evaluation tools)

Moral values of engineers and stakeholders fit together?

Can design be adapted?

Successful development

Abort development
Ethical evaluation of technology in the classroom

- The use of the methods just presented should be embedded in an introduction to applied ethics.
- At best, students will come from both engineering and nursing study programs.
- Each step of the extended evaluation procedure should be performed by students.
- Use cases are either specified by students or by lecturers.
- Students can thus develop an understanding of the importance of theoretical assumptions, the meaning of norms and values, and the interplay of these factors and real conditions.
Ethical evaluation of technology in the classroom – three methods that are practice-oriented and proven in practice

Session U1: TA and Ethics for Value-driven Technologies: Educational Aspects

4th European Technology Assessment Conference, Bratislava, November 4-6, 2019.

Prof. Dr. phil. habil. Karsten Weber
Institute for Social Research and Technology Assessment (IST)
Regensburg Center of Health Sciences and Technology
Ostbayerische Technische Hochschule (OTH) Regensburg
Karsten.Weber@oth-regensburg.de