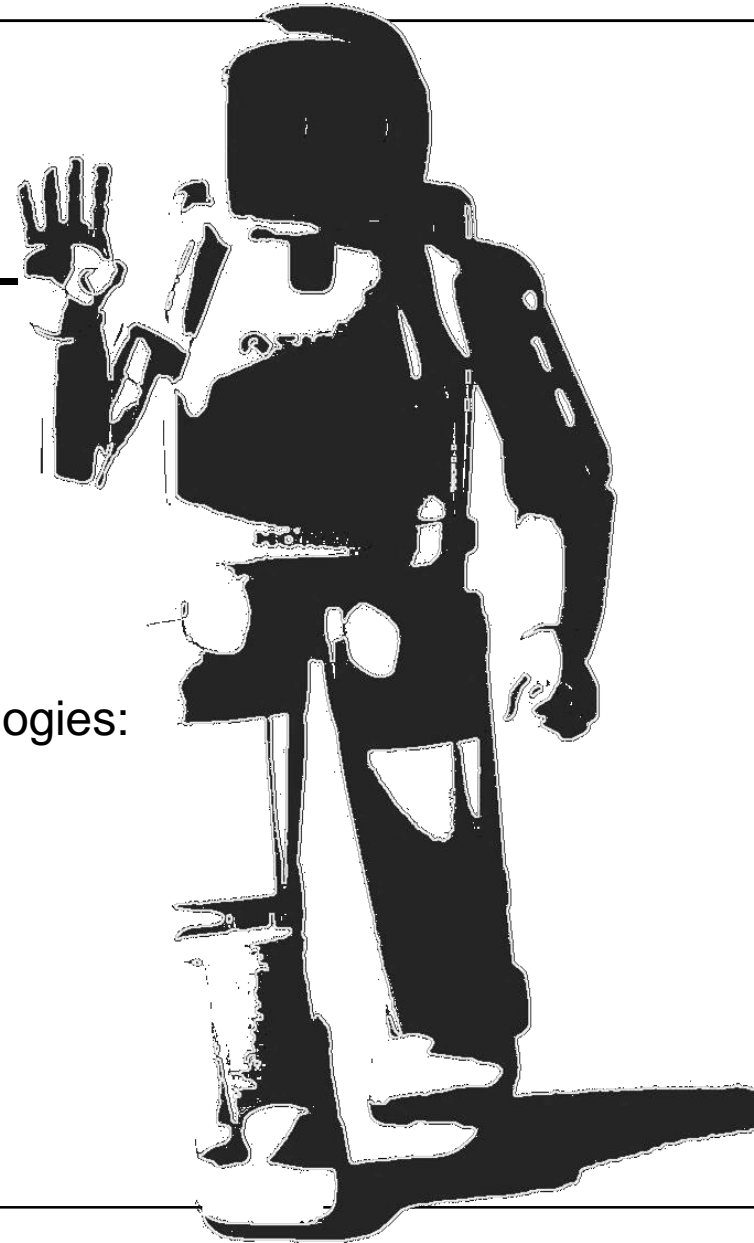


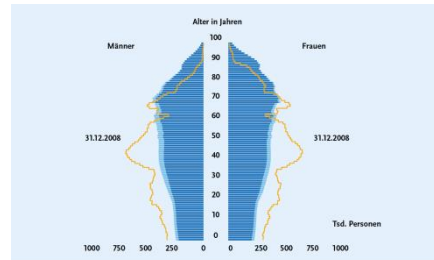
Ethical evaluation of technology in the classroom – three methods that are practice-oriented and proven in practice

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

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

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Altersaufbau der Bevölkerung in Deutschland am 31.12.2008 und am 31.12.2060
Quelle: Statistisches Bundesamt 2009

Alter in Jahren

Männer Frauen

31.12.2008 31.12.2060

Tsd. Personen

1000 750 500 250 0 0 250 500 750 1000

■ Untergrenze der „mittleren“ Bevölkerung
■ Obergrenze der „mittleren“ Bevölkerung

Altersaufbau im Wandel
Anlage 2011

baua:
Bundesinstitut für Arbeitsmarktforschung
und Arbeitsmarktdaten

+ AAL = ?

- 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 & 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

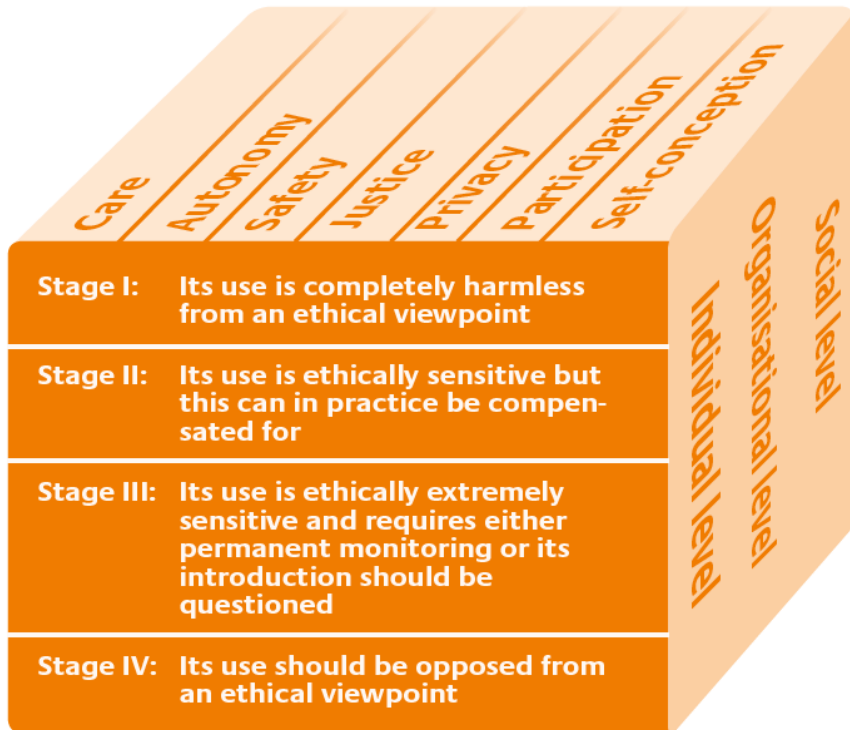


Results of the study

»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

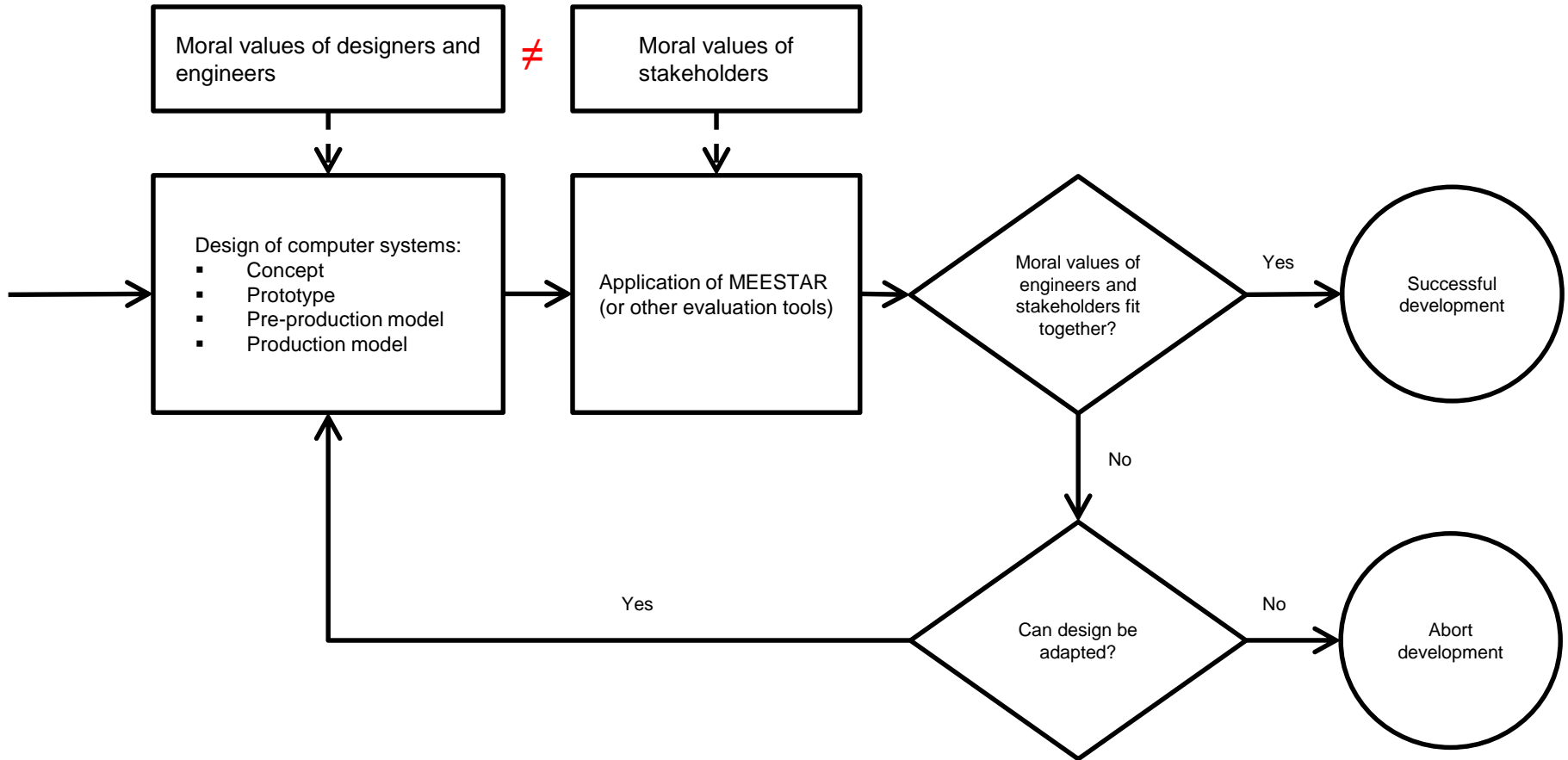


MEESTAR: Model for the ethical evaluation of socio-technical arrangements

- 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



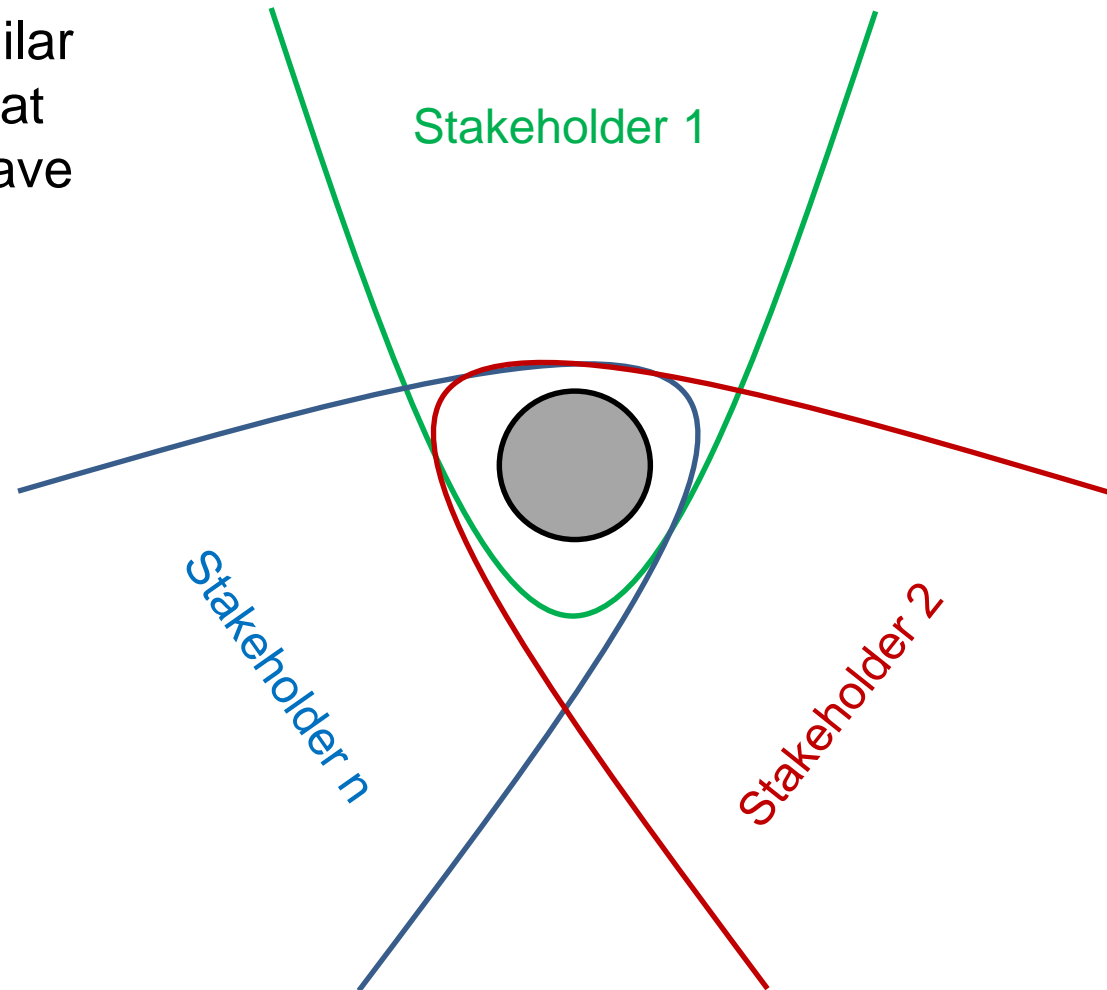
Benefits beyond ethical evaluation

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)



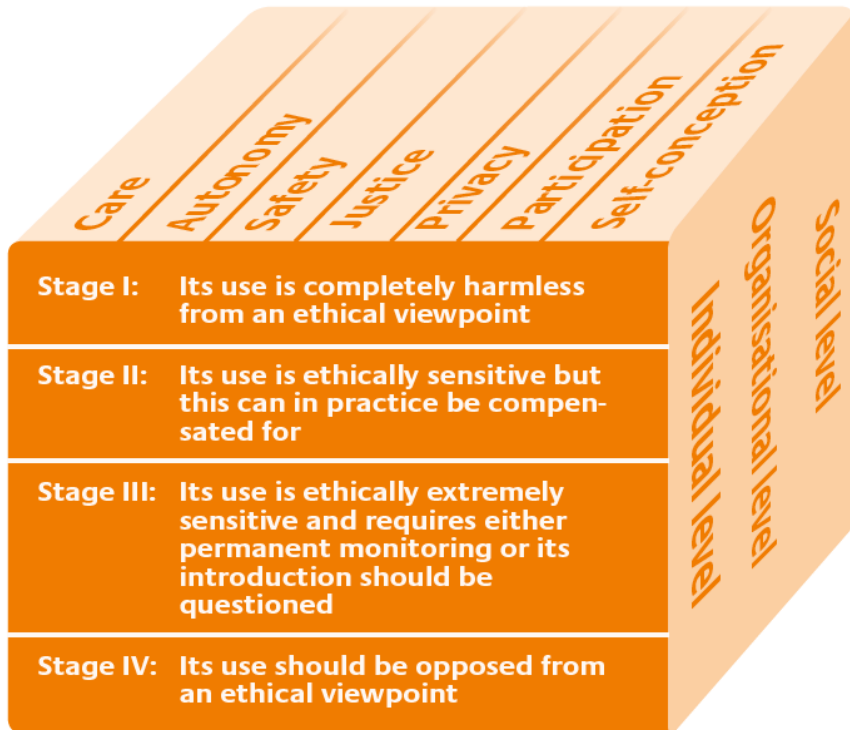


Figure 1:
MEESTAR: x-axis: dimensions of ethical evaluation; y-axis: stages of ethical evaluation; z-axis: levels of ethical evaluation.

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.

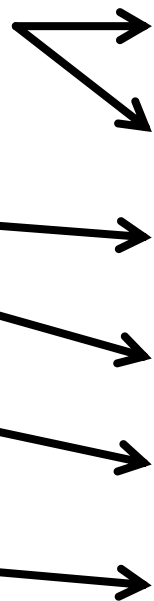
Deduction of normative dimensions from the medical ethics approach of Beauchamp and Childress' Principlism:

Principlism

- Autonomy / Self-determination
- Beneficence
- Nonmaleficence
- Justice
- (?)

MEESTAR

- Self-determination
- Privacy
- Care
- Social participation / inclusion
- Safety and security
- Justice
- 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

	Comments	Possible problems, dangers, challenges, difficulties	Alternative approaches and suggestions	Other remarks and notes
Operating conditions				
Where should the app be used?				
How should the app be operated?				
...				

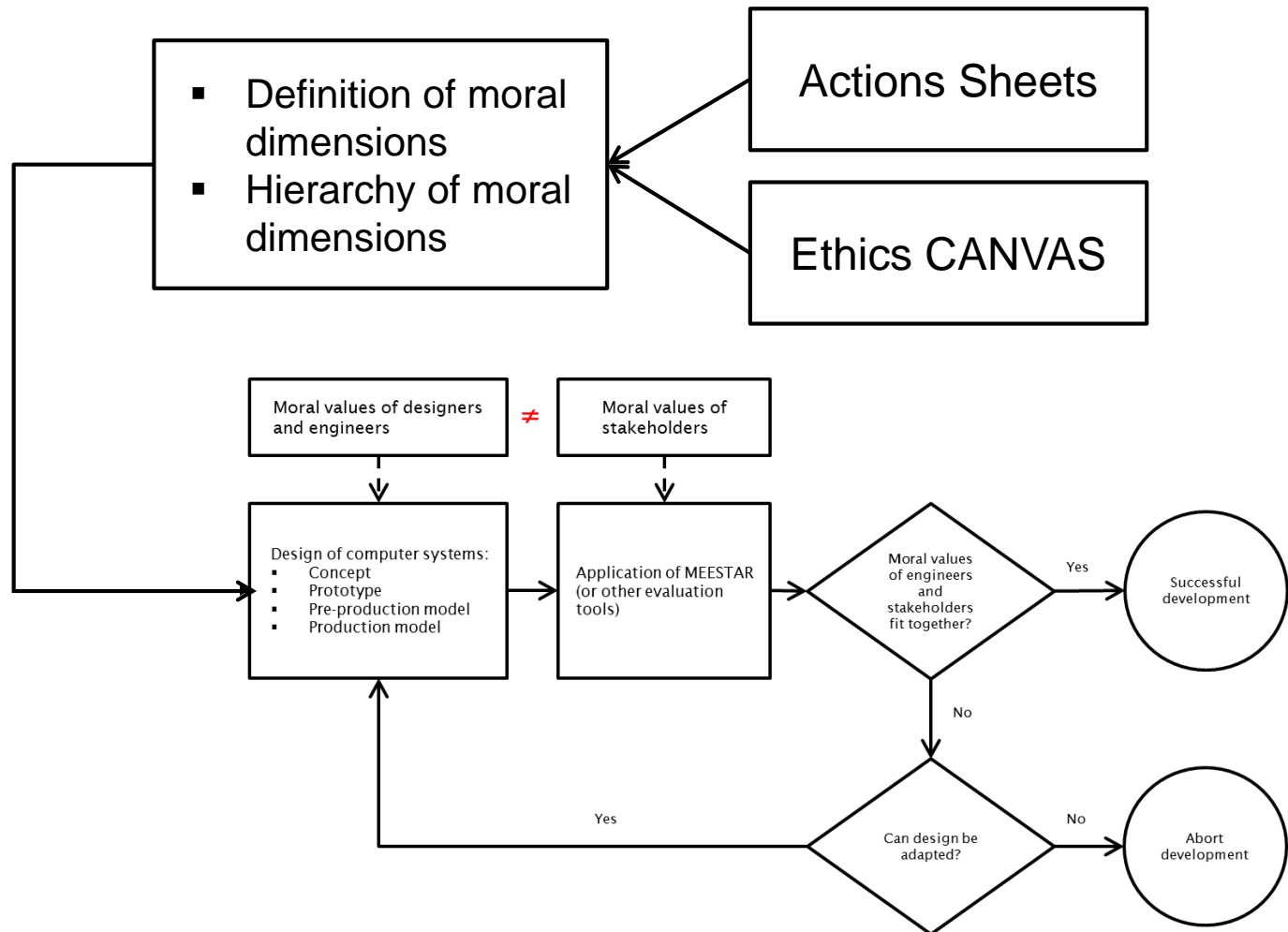
Ethics Canvas

The Ethics Canvas tool interface consists of several colored panels for adding ideas:

- Individuals Affected** (Purple, 1): Add an idea
- Behaviour** (Blue, 3): Add an idea
- Relations** (Green, 4): Add an idea
- What can we do?** (Blue, 9): Add an idea
- Worldviews** (Teal, 5): Add an idea
- Group Conflicts** (Teal, 6): Add an idea
- Groups Affected** (Purple, 2): Add an idea
- Product or Service Failure** (Blue, 7): Add an idea
- Problematic Use of Resources** (Green, 8): Add an idea
- Uncategorised Ideas** (Purple, ?): Add an idea

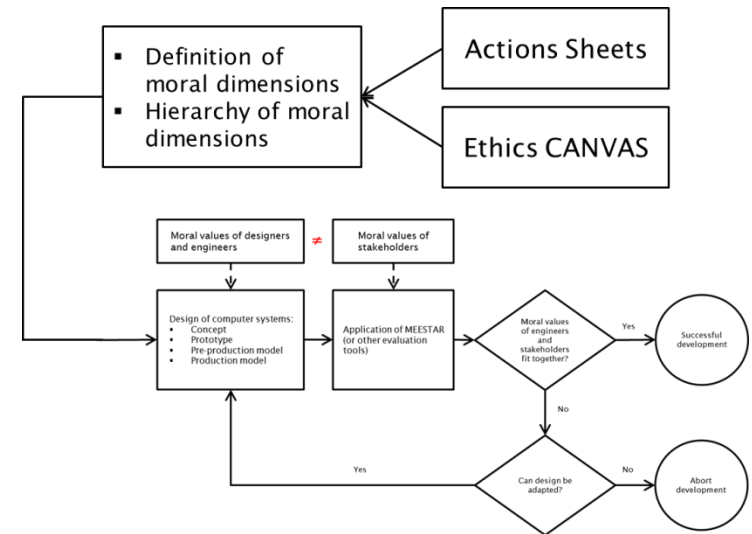
<https://www.ethicscanvas.org/canvas/index.php>

Extended evaluation procedure



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.



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