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Assistive systems to support social activities in people with dementia

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Overview of presentation

Ethical considerations need to be part of the design of assistive technology. In this paper that focus is on moral values.

1. Large, long term project
2. Work-in-progress
3. Stakeholder values

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Large, long term project

The German Center for Neurodegenerative Diseases and the University of Rostock have a long term and ongoing research programme aimed at developing assistive technology for people with early stage dementia.

- Early work caught the attention of Grey Innovation

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Large, long term project

Aim to commercialise the research

- Horizon 2020 application in 2015
- Trial the product in Germany, before taking it to the wider European market, and beyond
- First major step is understanding the life space requirements that the assistive technology has to navigate effectively.

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Work-in-progress

Grant from the German Federal Ministry of Education and Research (BMBF)

Requirements engineering

- Understand technical requirements
- Understand stakeholders requirements.
  - Includes the values of clients, carers and clinicians

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Value sensitive design (VSD)

VSD is about ***social*** informatics, that is, about taking ***both*** the social and technical aspects of design seriously.

It supplements traditional software engineering design. It does not replace it.

A value is something of importance to an individual or a group. The focus is on moral and social, not economic or usability values.

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Moral and social values

VSD is an ***interactional*** theory meaning that values are not embedded in the technology, nor simply transmitted as social forces, but arise contextually in the interaction between the technology and the social forces.

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3 investigative stages

1. Conceptual investigation
   - How are stakeholders socially impacted by the design?
     - Consider whom the design will affect, in what way they will be affected and what values it should support.
   - Direct stakeholders
     - People who are affected by the system.
   - Indirect stakeholders
     - People who are going to use the system.

3 investigative stages

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2. Empirical investigation

- Focus on the people affected by the technology.
- Adds contextual interpretation of stakeholders, through surveys, interviews, observation, etc.
- Capture value trade-offs/weightings to prioritise design choices, for example:

  Clinician value of ***surveillance***
  against
  the dementia patient value of ***privacy***

- Contextual understanding enables designers to decide in which situations one value is more important than another.

3 investigative stages

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3. Technical investigation

- Focus on the technology.
- Engineer the values into the technology.
  - Focus on the key values.
    Decide which, of all the moral and social values discovered, are the important ones for design.
- Iteratively test the product to ensure that value design goals are achieved.

VSD in dementia care

(Schikhof, Mulder, and Choenni, 2010)

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Used VSD to develop a system for remote monitoring at night in dementia care.

Developed scenarios around falling, panicking and wandering.

Direct stakeholders

- The residents with dementia and their family representatives.

Indirect stakeholders

- The staff members and the management of the health care organisation.

VSD in dementia care

(Schikhof, Mulder, and Choenni, 2010, p 415)

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Table 1
Identified values by the different stakeholders.

Residents and family members	*Staff members*	*Management*
Privacy	Privacy	Privacy
Consent	Consent	Consent
Respect	Respect	Quality of care
Individuality	Autonomy	Feasibility
Dignity		
Warmth		
Safety		
Well-being		

Later work added ‘better surveillance’ as a value of family members, and ‘trust’ as a user value.

DZNE project

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Life space assistive device supporting orientation and autonomous mobility.

- Mobility is a primary means of maintaining social interaction, a major factor in quality of life and overall health for seniors.
- Participation in social activities lowers the risk of progression from mild to severe cognitive impairment.

VSD in DZNE project

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Next steps

- Scenario development.
- Survey and interview stakeholders.

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Conclusion

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Design matters

- Considering the values of stakeholders should be an integral part of design.
- Ethical considerations should be involved from the inception of the project, through to its conclusion.

The assistive technology we engineer shape interaction and that in turn shapes human experience.