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Design Ethics in socio-technical systems: 
Addressing the ethics of connected appliances

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Ethical challenges of the Internet of Things in the household environment

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Relating Systems Thinking and Design (RSD5) Symposium
Ethics

- applied to systemic design
Ethics

- applied to systemic design

- deontology (obligation and duty)
- teleology (maximizes the utility)
- virtue ethics (role of character and virtue)

business
computer
engineering
design
Methodology

Social Ethics → Socio-technical systems
considers the social arrangements for making decision
in an iterative design process.
Richard Devon

Value-sensitive design approach (VSD)
bridges the gap between technical design considerations
and ethical concerns expressed through human values.
Mary L. Cumming
Decision making

- supply chain
- suppliers
- feedback
- market research
- design research team
- UX designer
- UI designer
- eodesigner
- policy maker
- policy definition
- period of use and end-of-life
- manufacturer
- recyclers
- retailers and spare parts supplier
- user
- maintenance technician
- IT programmer and developer
- biologist
- chemist
- ecologist
- ecodesigner
- wide network of stakeholders
- development of connected devices
- EXPLICIT DECISIONS
Decision making

IMPLICIT DECISIONS should be structured with different decision support methods and tools.
Value-sensitive-design

shape contexts, define a better world

expresses his needs and values

provides solutions - forecasts future scenarios
Case study

- connected devices (e.g. appliances)
Global network infrastructure of Internet-connected devices or gadgets [1] able to collect, store, process and communicate information about themselves and their physical environment [2]

Concerns

- What?
- When?
- Who?
- How long?
- Why?

Concerns = challenges for a designer

need for transparency
The learning machine

- automation in design

A machine that is not able to recognise shifts in context, that cannot evolve or self-improve, should be considered unethical.

Nicholas Negroponte
The learning machine

- learning and understanding contexts by interacting with them

smart vs connected
The gap of missing information

- missing information (unavailable, undeterminable)

research in the preliminary design stages

user specific related to experience
The gap of missing information

expresses his needs and values

improves modifies

informs and shares elaborated data

gives information
gives information

provides solutions - forecasts future scenarios

designer

product

user
Type of information

- switching from internet of

(user-generated) (self-generated data) to (thing-generated) (technically generated data)

- IoT brings new quantity and quality of data, unprecedented opportunities but also challenges and problems.
Privacy & security concerns

expresses his needs and values

improves modifies informs and shares elaborated data

gives information
gives information

gives information

legitimate third parties

product

user

improve efficiency towards consumers
Privacy & security concerns

**Direct stakeholders**
- Expresses his needs and values
- Improves modifies
- Informs and shares elaborated data

**Indirect stakeholders**
- Give information
- Improve efficiency towards consumers
- Other third parties
- Other unaware users

**Legitimate third parties**
- Data trading
- Data breach

**User**

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**Product**

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Frame a design

- understand the context
- define the socio-technical system
- explore future possibilities
Frame a design

lack of legislation and policies
improper uses
user profiling
affecting user freedom
Frame a design

lack of legislation and policies
improper uses
user profiling
affecting user freedom

these issues should be included in the design process
Designer

- Forecasts future issues
- Involves the user in the design process
- Changes existing situation into preferred one
- Is responsible for the production of material environments
Designer

- The behavior of the agents within the system is generally unpredictable, there may be no single vantage point from which complex systems can be designed and controlled [3]

- Designing in an ethically responsible manner is an evolutionary process

QUESTIONS?

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