

Faculty of Design

2016

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

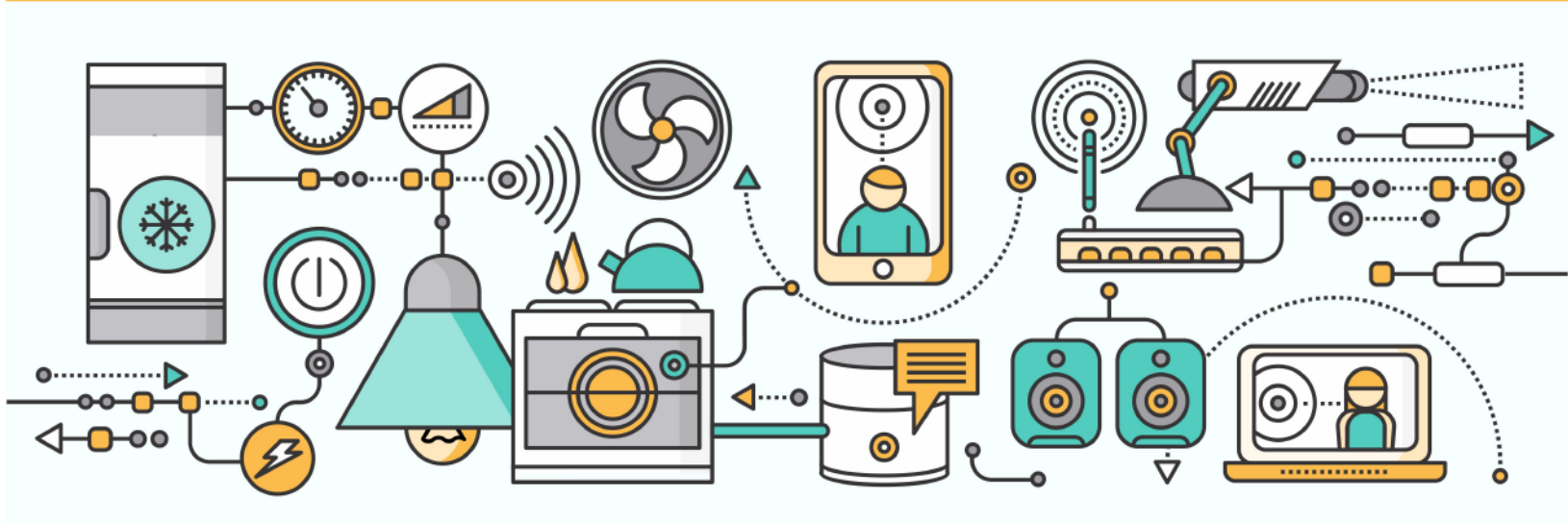
Fiore, Eleonora

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Internet of Things. Copyright Fotolia

Ethical challenges of the Internet of Things in the household environment



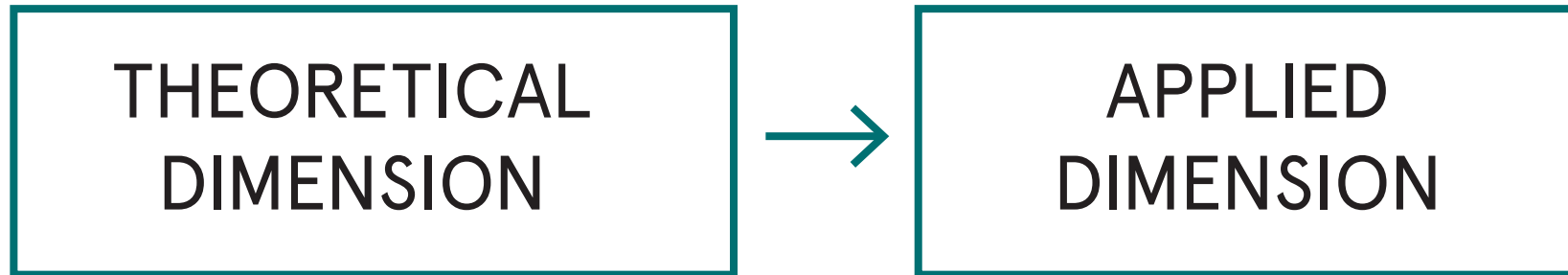
**POLITECNICO
DI TORINO**

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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.

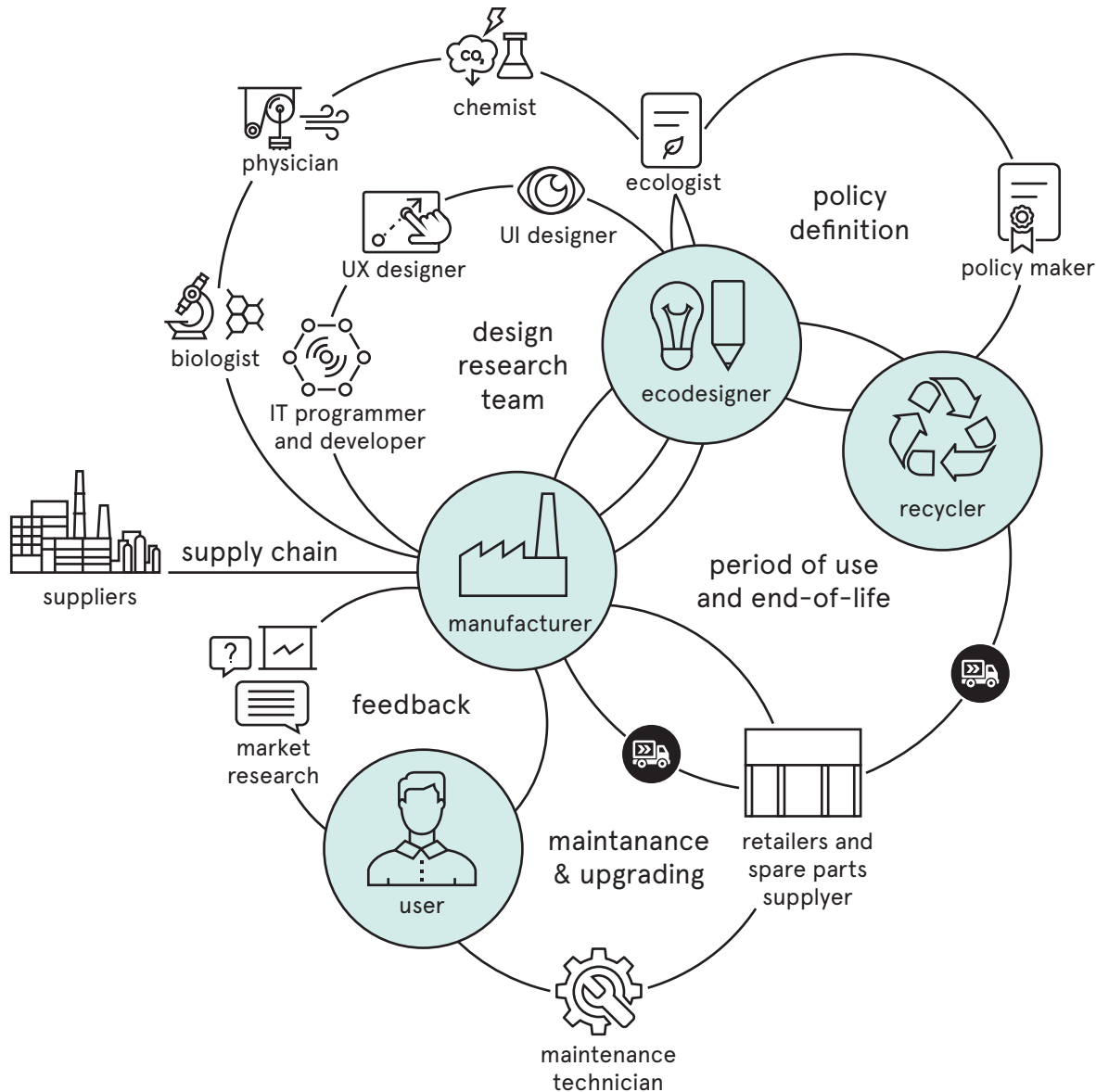
Richard Devon

Value-sensitive design approach (VSD)

bridges the gap between technical design considerations and ethical concerns expressed through human values.

Mary L. Cumming

Decision making



development
of connected
devices

EXPLICIT
DECISIONS

wide network
of stakeholders

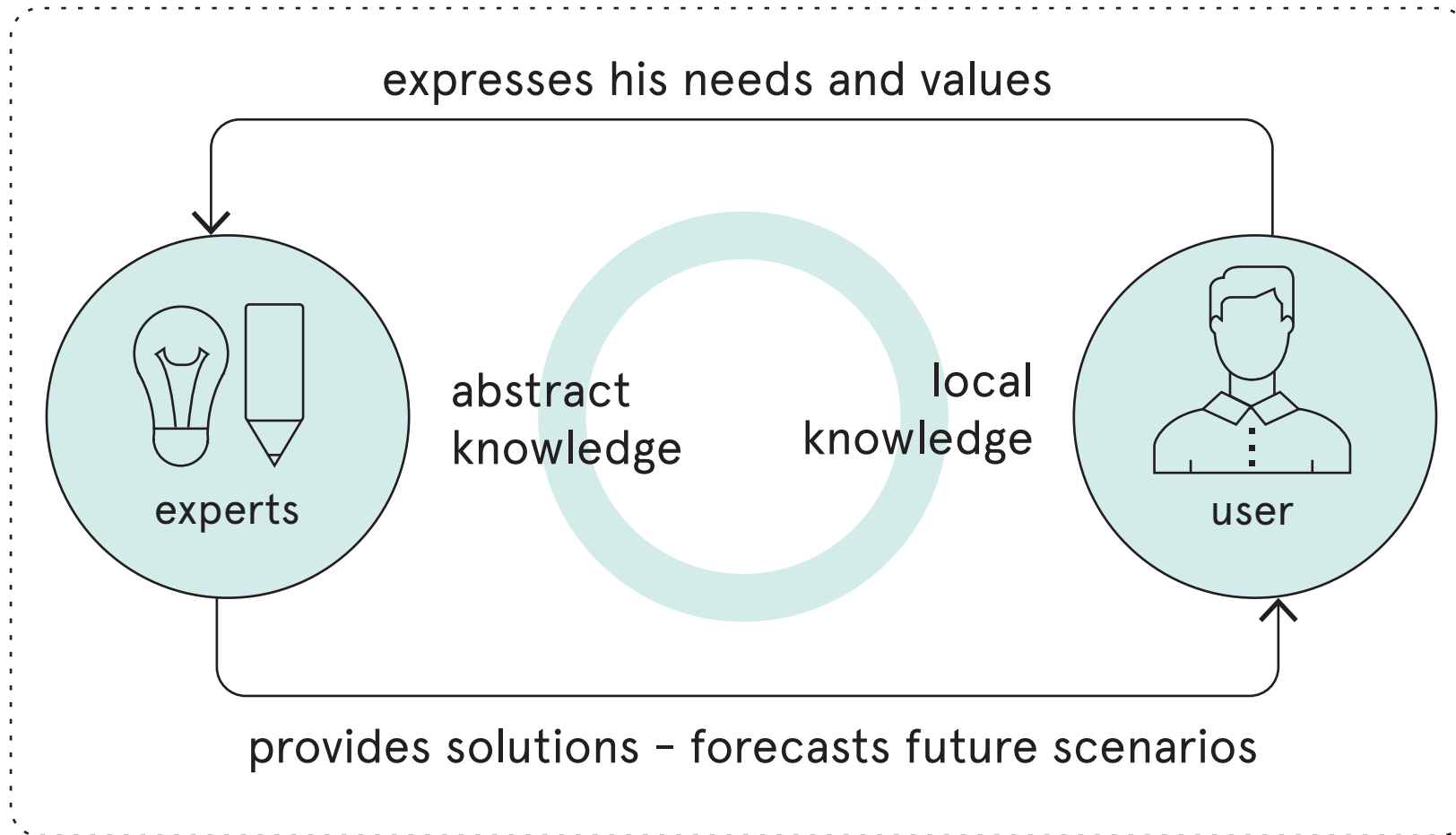
Decision making

IMPLICIT DECISIONS

should be structured with
different decision support
methods and tools

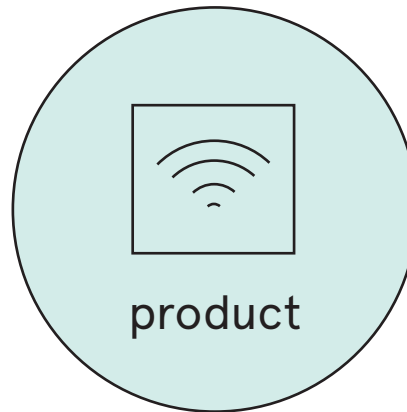
Value-sensitive-design

shape contexts, define a better world



Case study

- connected devices (e.g. appliances)



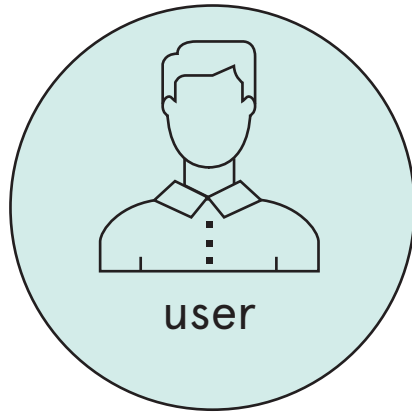
Internet of Things

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]

[1] Wasser, L. A., Hill, R., Koczerginski, M. (2016) Cybersecurity and the Internet of Things. McMillan LLP - Cybersecurity Bulletin. Retrieved from: <http://www.mcmillan.ca/>

[2] Ziegeldorf, J.E., Garcia Morchon, O., Wehrle, K., (2014) Privacy in the Internet of Things: Threats and Challenges. Security and Communication Networks 7.12: 2728-2742

Concerns



What?
When?
Who?
How long?
Why?

need for
transparency

Concerns = challenges for a designer

The learning machine

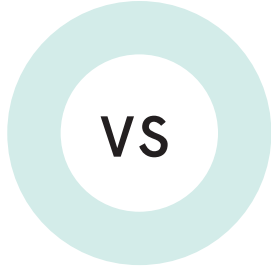
- automation in design

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  connected

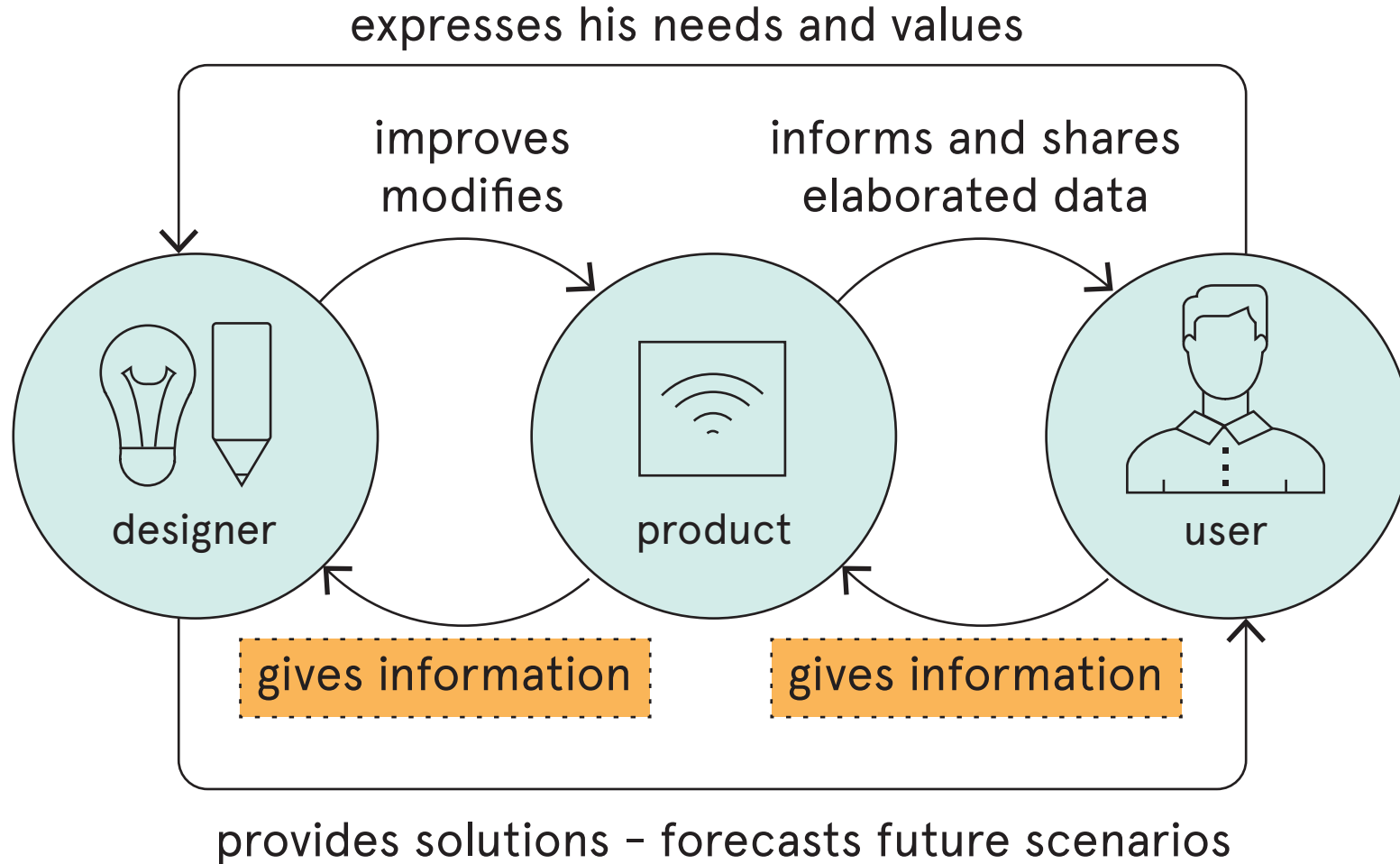
The gap of missing information

- missing information (unavailable, undeterminable)

research in the
preliminary design
stages

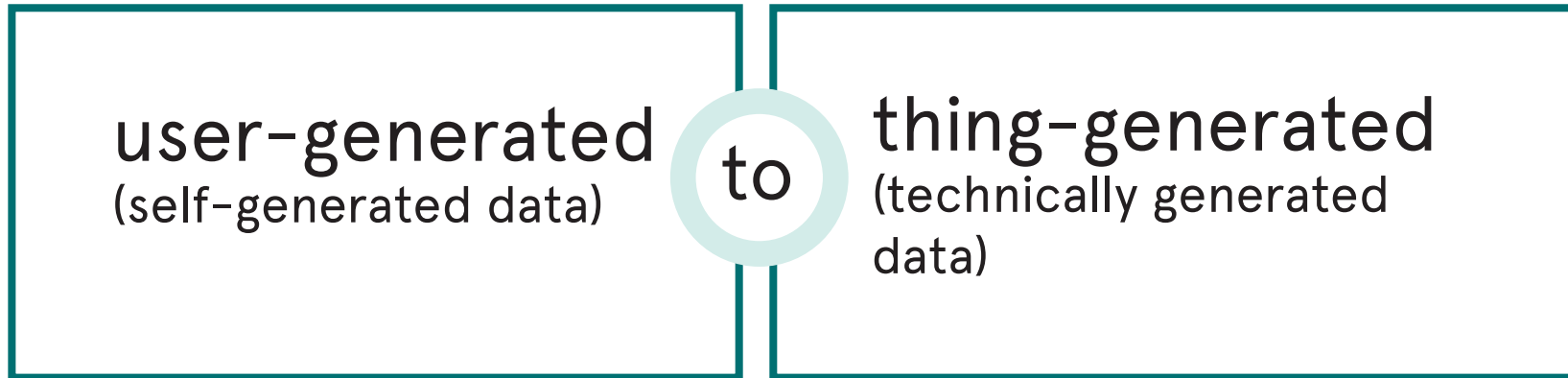
user specific
related to
experience

The gap of missing information



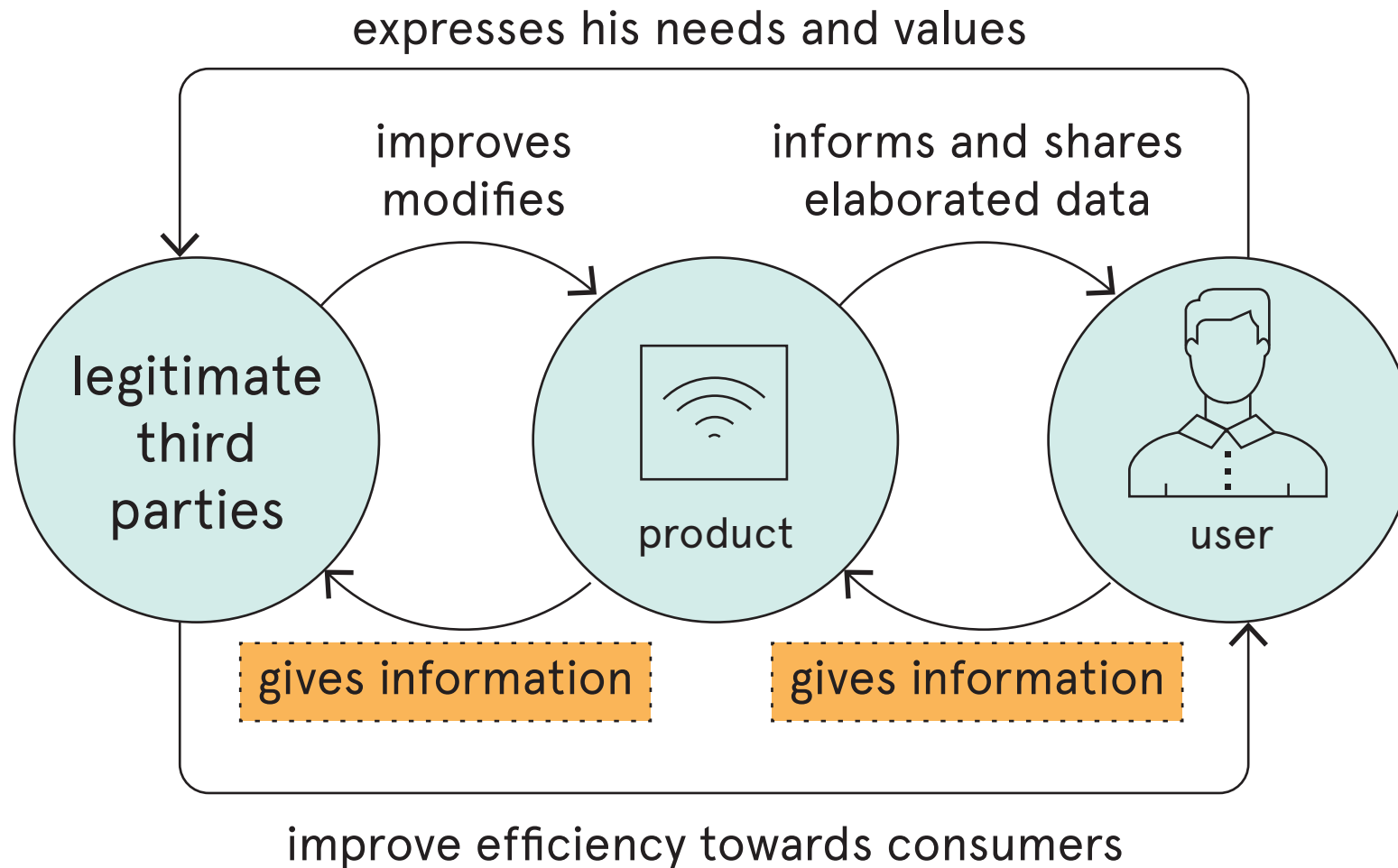
Type of information

- switching from internet of

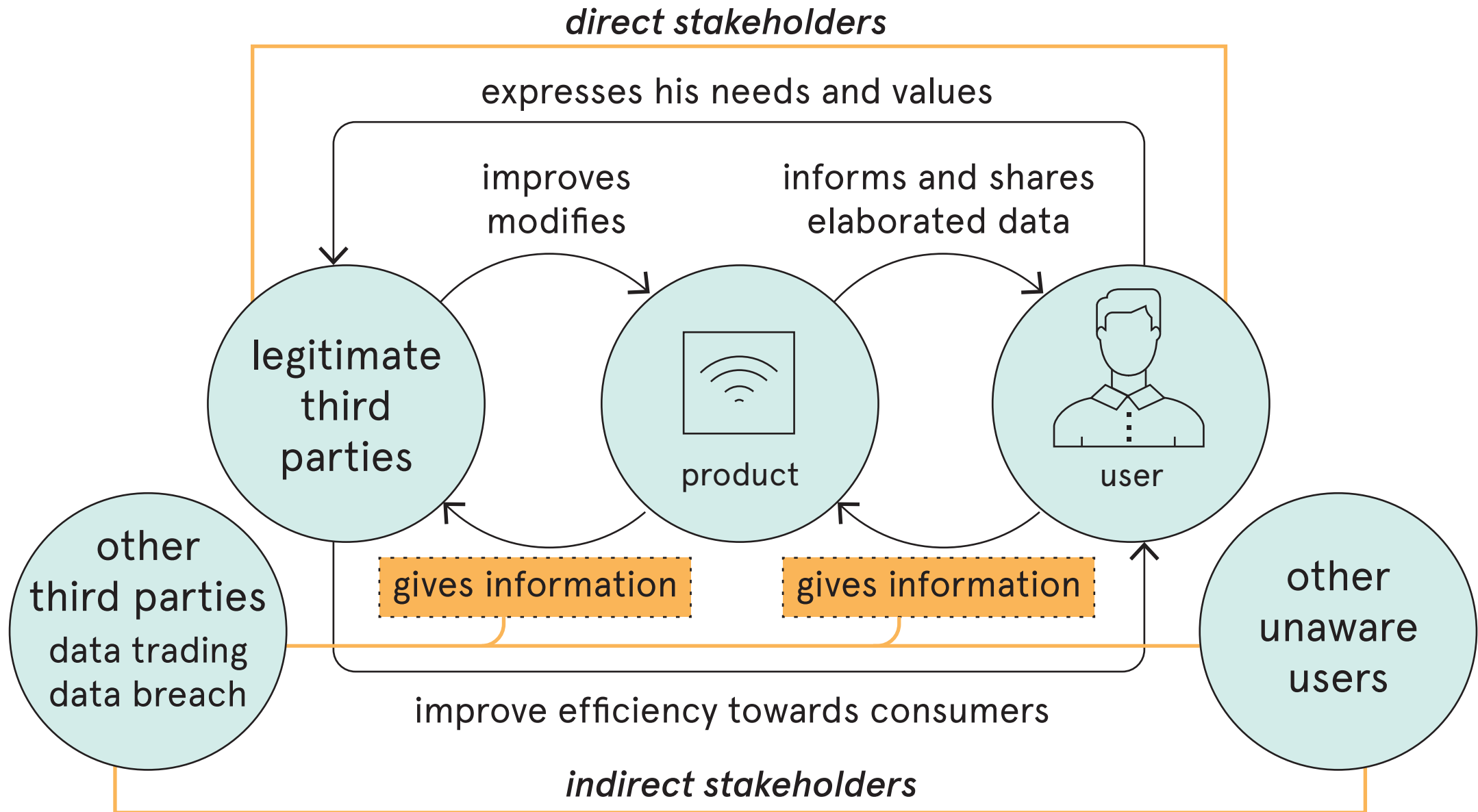


- IoT brings new quantity and quality of data, unprecedented opportunities but also challenges and problems.

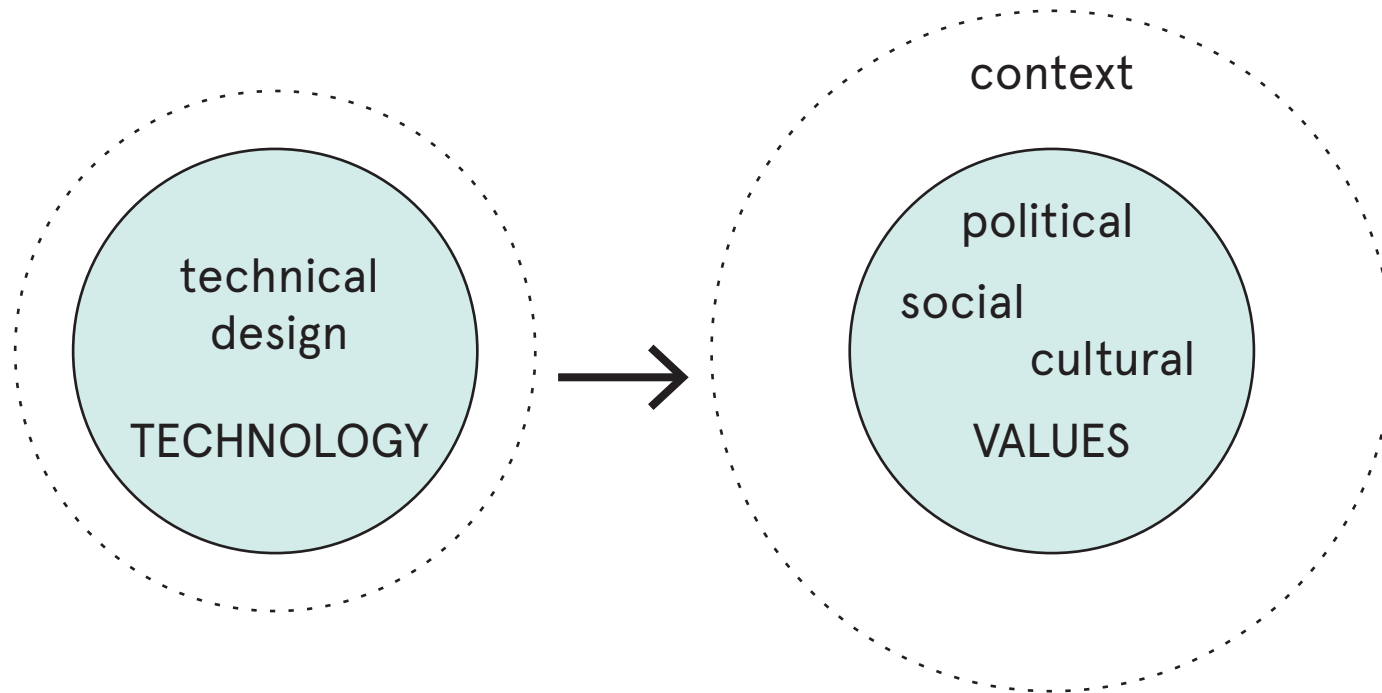
Privacy&security concerns



Privacy&security concerns

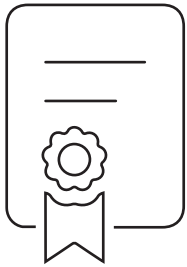


Frame a design

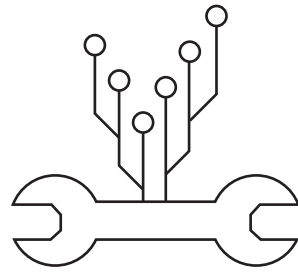


- understand the context
- define the socio-technical system
- explore future possibilities

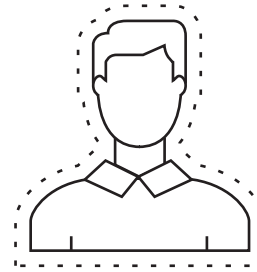
Frame a design



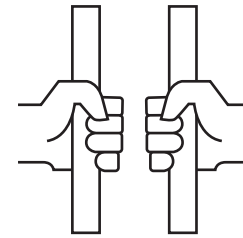
lack of
lagislation
and policies



improper
uses

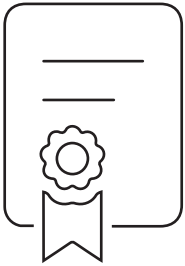


user
profiling

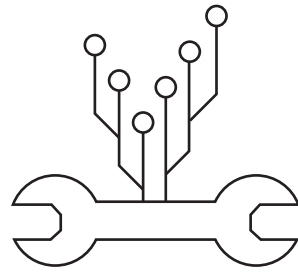


affecting
user
freedom

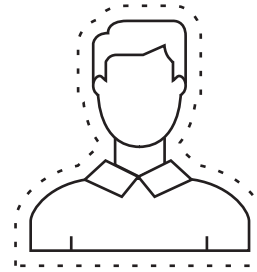
Frame a design



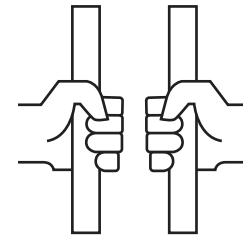
lack of
lagislation
and policies



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

[3] Kroes, P., Light, A., Moore, S. A., and Vermaas, P. E. (2008), Design in engineering and architecture: towards an integrated philosophical understanding

QUESTIONS?



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Relating Systems Thinking and Design (RSD5) Symposium