

# To share or not to share?

## On responsibility in social software

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**COMMIT/**



People

Tech

Data

Information systems, devices, ...

data in a variety of systems

DATA SHARING

extract, load, transform, clean, anonymize, de-identify, ...

data used for analytics

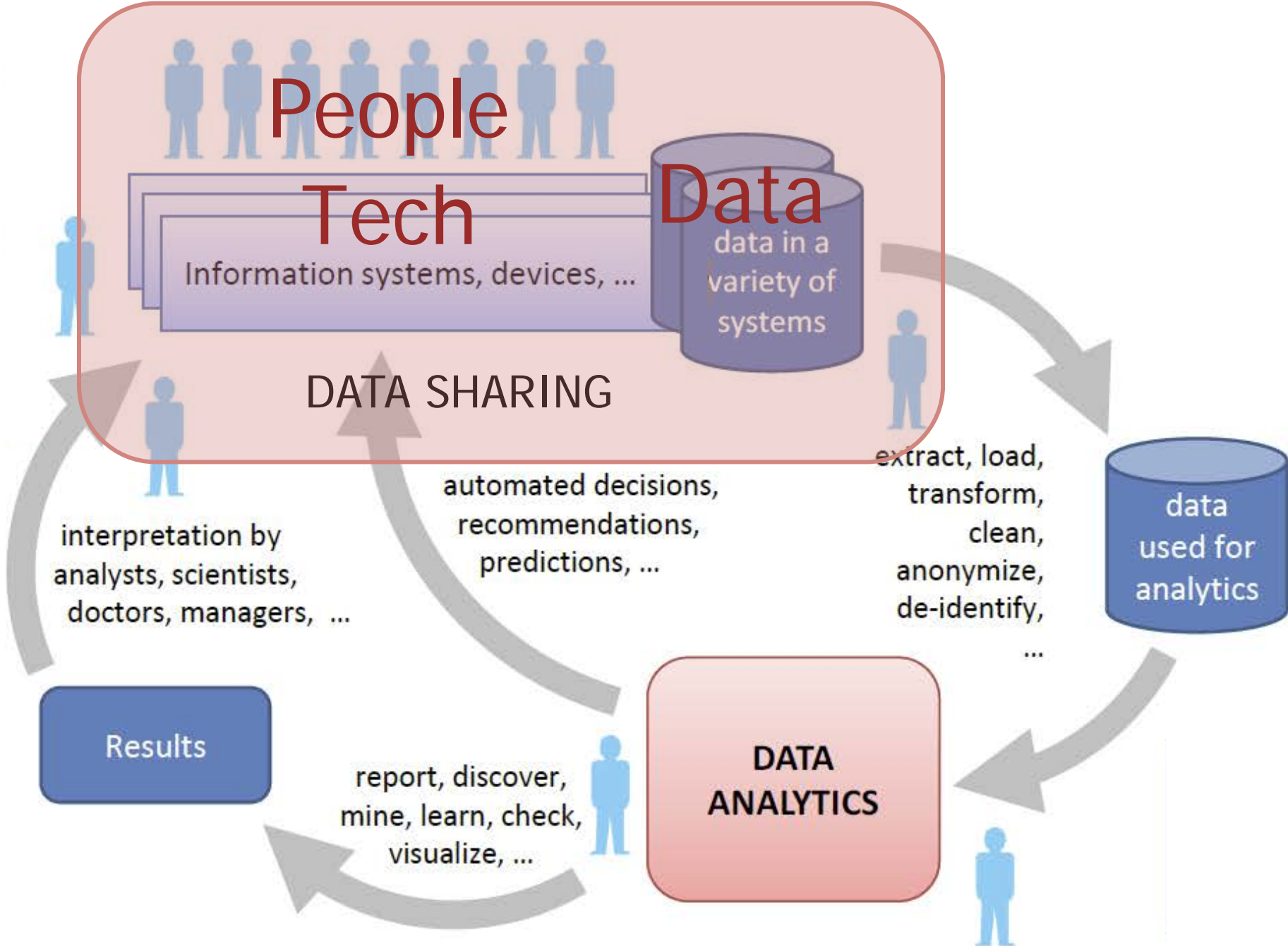
DATA ANALYTICS

report, discover, mine, learn, check, visualize, ...

Results

interpretation by analysts, scientists, doctors, managers, ...

automated decisions, recommendations, predictions, ...



# Location sharing in family life (1)



## Responsibility and Privacy — Ethical Aspects of Using GPS to Track Children

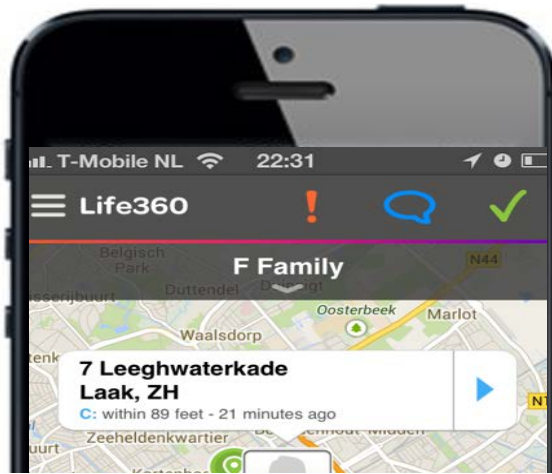
Jessica Nihlén Fahlquist

Philosophy Section, Delft University of Technology, Delft, The Netherlands



24/7 monitoring

# Location sharing in family life (2)



## Responsibility and P Aspects of Using GP

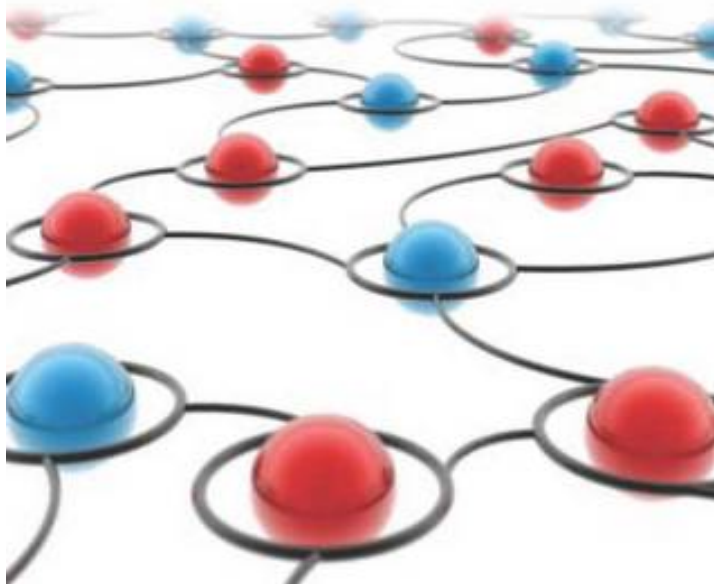
Jessica Nihlén Fahlquist  
Philosophy Section, Delft University of Techno

P.-P. Verbeek, 2014:  
The question is not whether we say “yes” or “no” to technology, but *how* we shape and use it.

24/7 monitoring

# Responsibility in social software: understanding social context

**PRIVACY**  
**IN CONTEXT**  
Technology, Policy, and the Integrity of Social Life  
HELEN NISSENBAUM

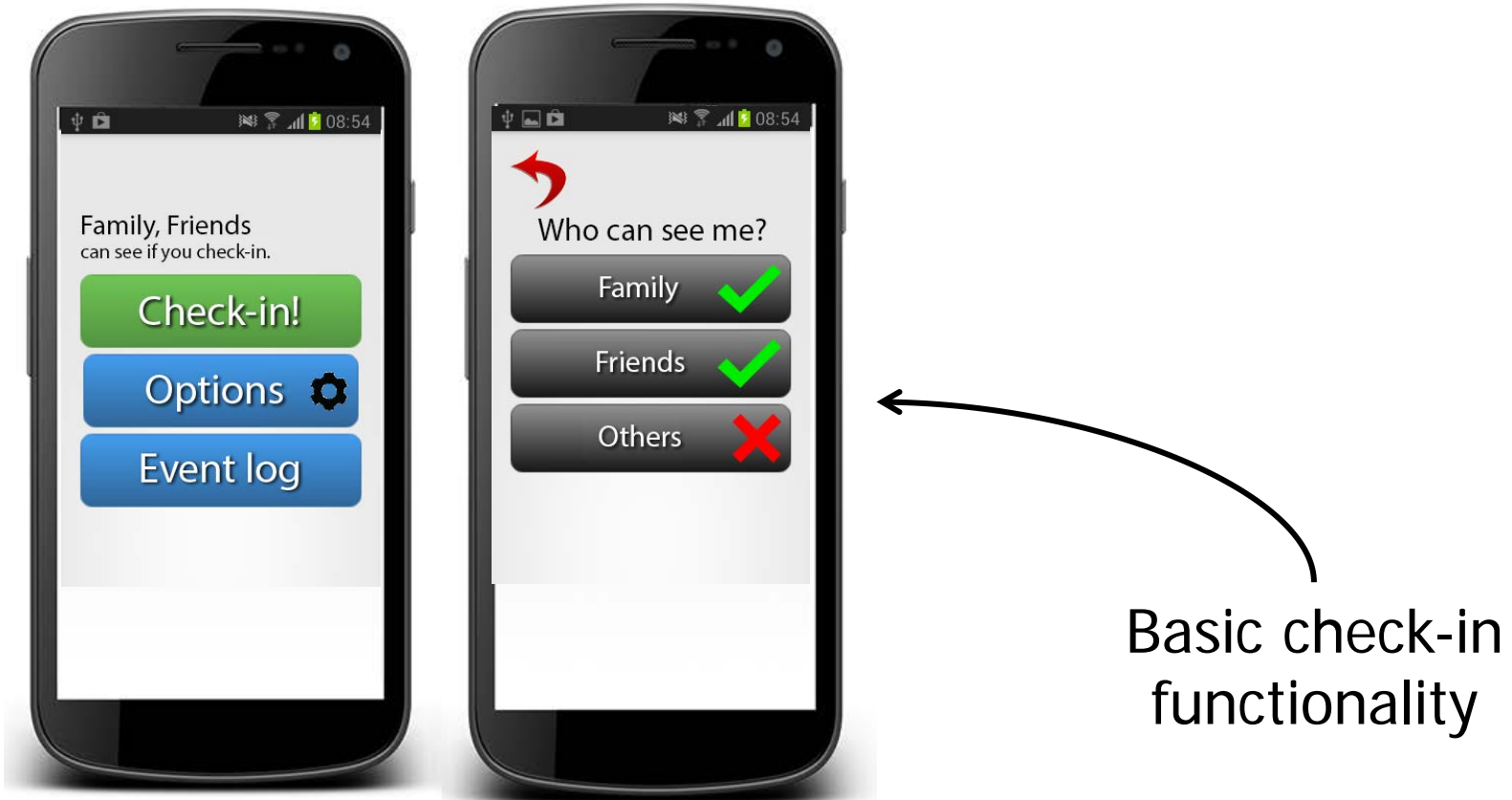


Contextual integrity:

- information ought to be distributed and protected according to **norms governing distinct social contexts**
- “the ideal is **flexibility** in how [systems] are adapted to particular [social] contexts so the flow of information may be tailored according to [...] norms”

# Commitments about location sharing (1)

Kayal, Brinkman, Neerincx, Van Riemsdijk

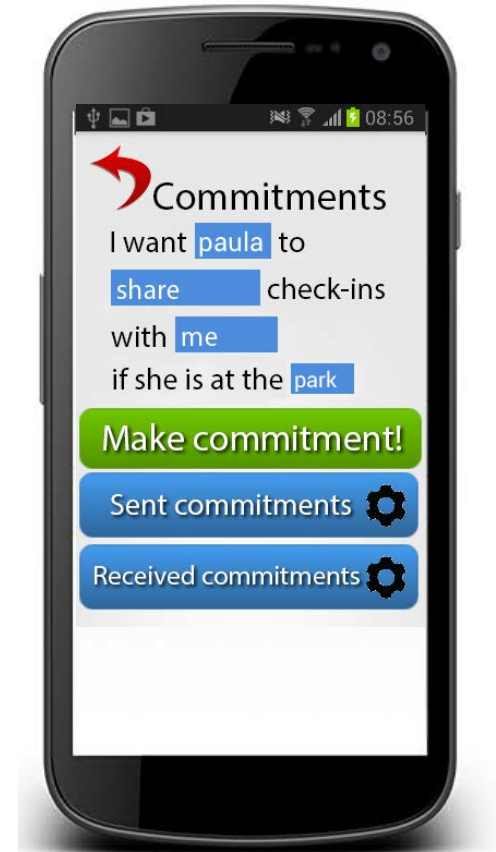
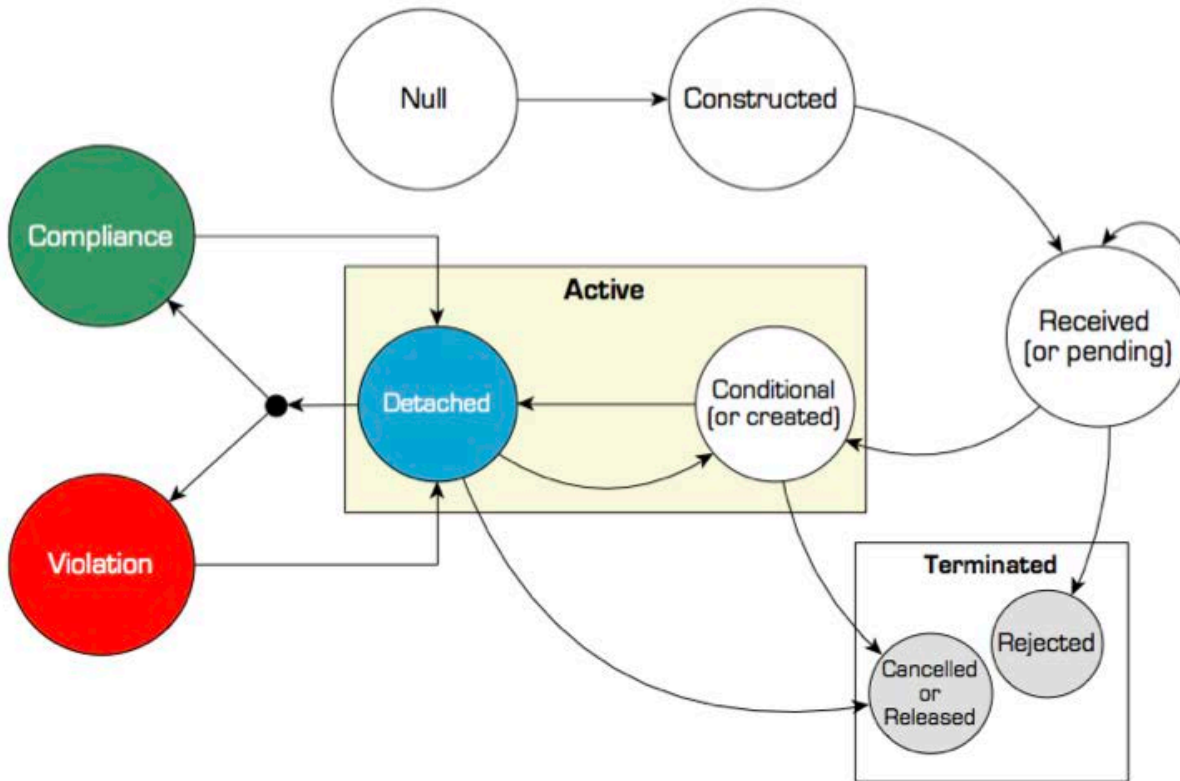


Basic check-in  
functionality

COMMIT/

# Commitments about location sharing (2)

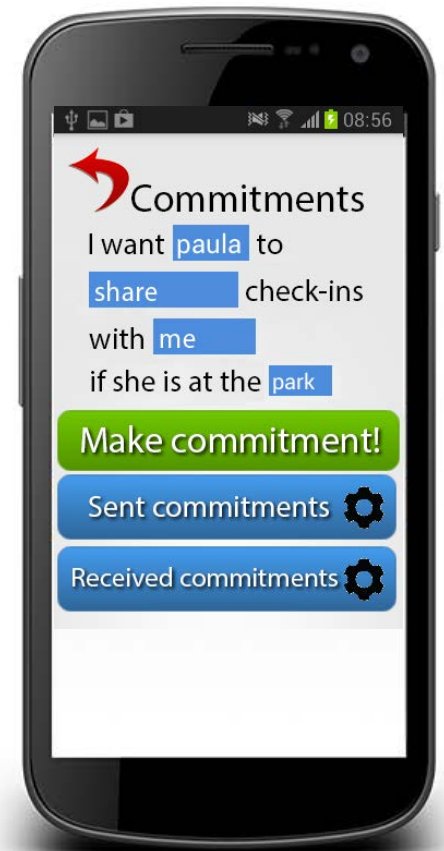
Kayal, Brinkman, Neerincx, Van Riemsdijk



# Improved support for user values with social commitments (SC) (n=34)

	<i>M(SD)</i>	
	<i>Without SC</i>	<i>With SC</i>
Friendship	6.8(1.7)	7.4(1.4)*
Independence	6.2(1.4)	6.6(1.5)*
Family security		
FamSec 1	6.0(2.6)	6.5(2.9)
FamSec 2	8.0(2.0)	7.5(2.6)

*Note: \*  $p < .05$ , \*\*  $p < .01$*





# Value-based automatic conflict resolution (n=396)

	<i>estM0</i>	<i>estM1</i>	<i>estM2.1</i>	<i>estM2.2</i>	<i>estM2.3</i>	<i>estM3.1</i>	<i>estM3.2</i>	<i>estM3.3</i>
Intercept	0.655**	0.526**	0.658**	0.653**	0.657**	0.541**	0.550**	0.556**
Norm type		0.247**				0.226**	0.201**	0.198**
Pred <sub>FP</sub>								
Frnd <sub>FP</sub>			0.001**		0.001**	0.001*		0.001*
Priv <sub>FP</sub>			0.000		0.000	-0.001		0.000
Saf <sub>FP</sub>			0.002**		0.001	0.001*		0.000
Ind <sub>FP</sub>			0.000		0.000	0.000		0.000
Res <sub>FP</sub>			0.001		0.000	0.000		0.000
Pred <sub>SP</sub>								
Frnd <sub>SP</sub>				0.001	0.000		0.001	0.000
Priv <sub>SP</sub>				0.000	0.000		-0.001	-0.001
Saf <sub>SP</sub>				0.004**	0.003**		0.002**	0.002*
Ind <sub>SP</sub>				0.001	0.001		0.000	0.000
Res <sub>SP</sub>				0.003*	0.003*		0.001	0.001
<i>%Prediction</i>	68.4	77.6	72.3	74.4	75.1	77.8	77.0	77.9

order

norm  
type

values

combination

# Formal analysis of norm compliance

Van Riemsdijk, Dennis, Fisher, Hindriks (AAMAS'13,'15)

DEFINITION 3. (*Norm-Constrained Decision Rule*)

$$\frac{(n \longrightarrow n') \downarrow \in Dec \quad n \longrightarrow n' \models N}{n \longrightarrow n'}$$

adaptation to norms

DEFINITION 4. (*Action Insertion Rule*) Let  $n = \langle s, aux, a \rangle$ ,  $T(a', s) = s'$ , and  $n'$  be of the form  $\langle s', aux', a' \rangle^4$ .

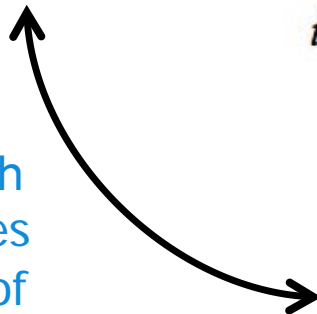
$$\frac{\begin{array}{c} n \longrightarrow n' \models N \\ \forall n''. ((n \longrightarrow n'') \downarrow \in Dec \Rightarrow n \longrightarrow n'' \not\models N) \end{array}}{n \longrightarrow n'}$$

normative conflict

DEFINITION 11. (*Normative State in Conflict*) Let  $N$  be a set of norms,  $T$  be a transition function, and  $n = \langle s, aux, a \rangle$  a normative state, and let  $pnf = \langle s', aux', A \rangle$  be a PNF of  $n$  wrt.  $N$ .

- We say that  $pnf$  is in practical conflict with  $T$  iff there is an action  $a$  such that  $done(a) \in A$  and there is no  $done(a) \in A : T(a, s) = s'$ .
- We say that  $pnf$  is in normative conflict iff  $\exists a, b : a \neq b$  and  $done(a), done(b) \in A$  (obligation conflict), or  $\exists a : done(a), \neg done(a) \in A$  (prohibition conflict).

Complying with norms coincides with absence of conflict



## Human experience

- What does it mean to feel safe with the technology?
- How does the software affect relations between people?

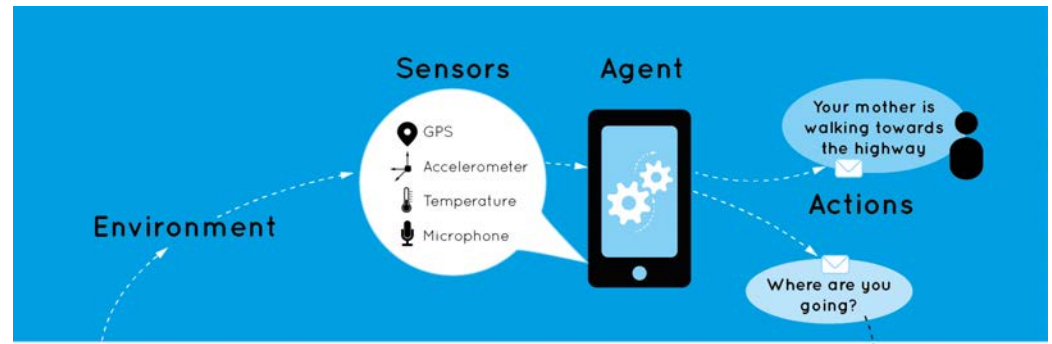
## Context awareness

- How to obtain norms from the social context at run-time? Cf. process mining
- Besides values, which other (social) contextual information can be used to resolve normative conflicts?

## Normative reasoning

- What if the software cannot comply with a norm, e.g., due to external circumstances?
- How to anticipate potential non-compliance and prevent it?
- How to determine at run-time to what extent norm-compliance can be guaranteed?
- How does scale come into play?

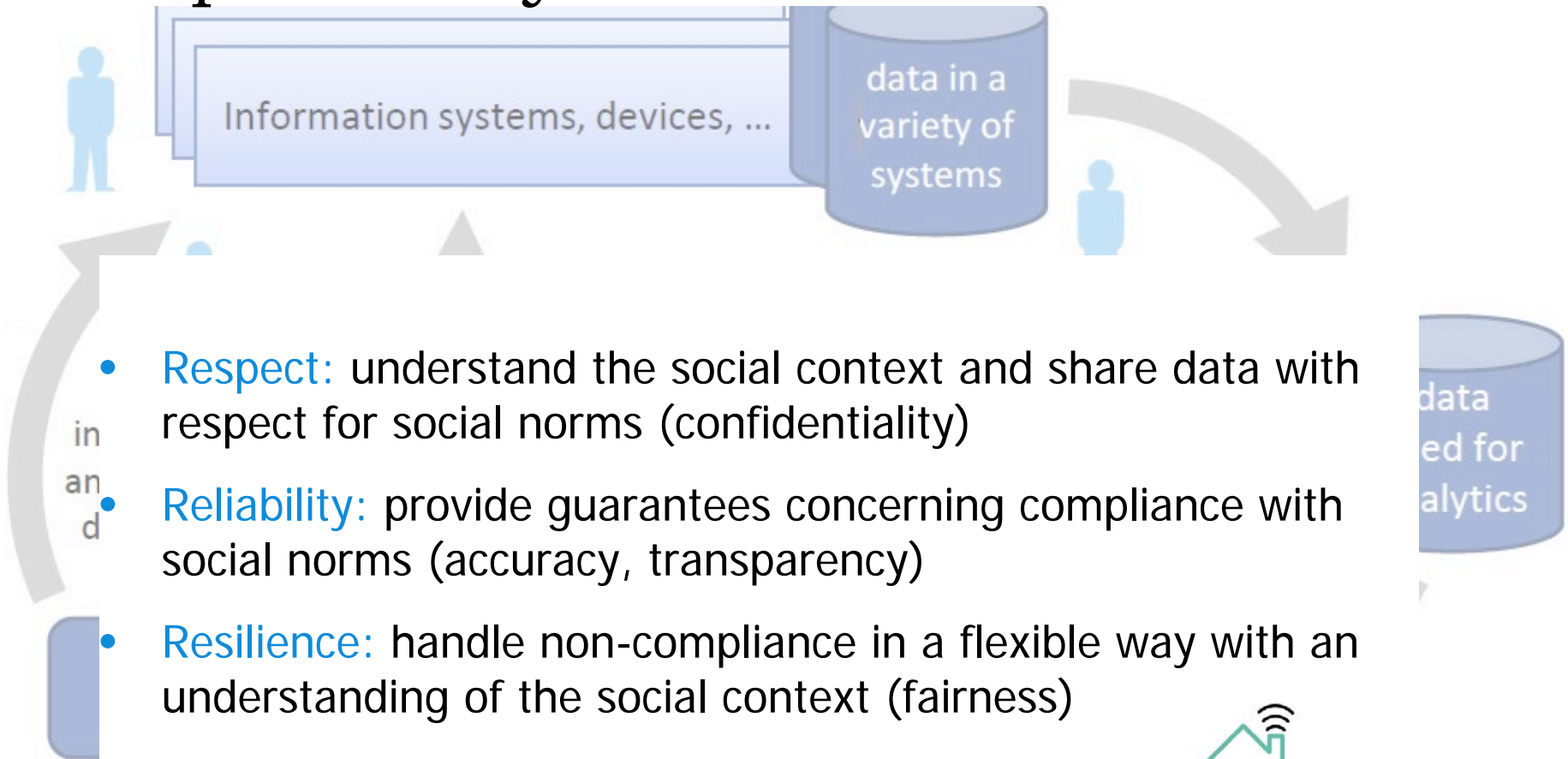
# Application Areas



supporting elderly



# Responsibility in social software



Socially Adaptive Software

