Using Process Tracing to Improve Household IoT Users' Privacy Decisions

Challenge:

How can users manage the privacy settings of an interconnected set of household IoT applications?

Solution:

Uncover users' processes to better understand how, why and when users' privacy decisions are suboptimal *Methods:* Eye tracking, process tracing, utility mapping, machine learning

Create and test a simple, central interface that integrates privacy settings across all devices within a household *Methods:* UI design, default profiles, implementation, in-home evaluation

Table 1: Research activities at TUE and Clemson. Co-PI Kobsa (UCI) serves as an advisor on all of the proposed activities.								
		@ TUE:	@ Clemson:	Cooperation				
		3Y funding	Knijnenburg. 2Y funding					
Y	1	 Process tracing study (lab, NL) 	 Part worth utility mapping 	- M1: Kick-off meeting @ TUE				
		- Determine optimal process metrics for						
			- Analyze prominence of privacy					
		 Find optimal presentation structure for 						
		_ , , ,						
		Funded by NN	/ <u>@№Netherlan</u> /	ls and NSE				
Y	2	- Privacy setting interfaces study	- implement interfaces in a fear	A M 18. All-Mands meeting @				
		- Find optimal privacy-seting interfaces	$N_0 \cdot SFS1610$	664				
		- Analyze differences US-NL	100 JEJ1040	-M24. pund-up meeting @ Irvine				
Y	3	- In-home evaluation of privacy-setting		Postdoc will visit Clemson for				
		interfaces (lab, US+NL)		running US-based test (3 months)				



The camera of X shares	The camera of X	your presence	Which room you are	How active you are
data about (see more ⇒)	shares data about		in	
☑ With your other devices	With Device Y	✓ stored locally	☑ stored locally	☑ stored locally
(see more ₽)		☑ stored in the cloud	☑ stored in the cloud	☑ stored in the cloud
	With Device Z			
☑ With your	With manufacturer A			
(see more ↓)	With manufacturer B			
☑ With other parties	With third party P			
(see more ∜)	With third party Q			

Bart P. Knijnenburg Clemson University, <u>bartk@clemson.edu</u>

Martijn C. Willemsen TU Eindhoven, <u>m.c.willemsen@tue.nl</u>

Alfred Kobsa University of California, Irvine, <u>kobsa@uci.edu</u>

Scientific Impact:

For privacy: first study to attempt to improve the privacy decision process itself

For decision sciences: develop support of decisions where outcomes are vague, uncertain, and emotionally laden

Broader Impact:

Develop a technique to study the "decidability" of privacy setting interfaces

Centralize and simplify the privacy setting interfaces of existing IoT devices

Account for cultural and regulatory differences