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CITIES IN A CHANGING WORLD: QUESTIONS OF CULTURE, CLIMATE AND DESIGN

- **Paper / Proposal Title:**

Making Smart Meters Acceptable: An End-user Standpoint

- **Author(s) Name:**

BROSSOLET, Côme; SCHELINGS Clémentine; ELSEN Catherine

- **University or Company Affiliation:**

University of Liège, Faculty of Applied Sciences, Department Urban and Environmental Engineering

- **Abstract (300 words):**

This research studies one of the many energy-related issues of changing cities: the challenge of implementing smart meters at a household level, through the prism of users' perception. We look into the acceptability of both the devices themselves and the smart meters-related behaviors, believed to decrease the households' energy consumption. We model that acceptability thanks to a mix between Davis' *Technology Acceptance Model* and Ajzen's *Theory of Planned Behavior*.

Our research then splits in two complementary field studies. The first one, mainly qualitative and exploratory, is conducted via two participatory workshops, allowing us to analyze opinions from both naive and smart meters-aware samples. We then confirm our first hypotheses through a quantitative online survey, distributed amongst an « *early adopters* » population.

That sample takes a favorable stance towards the adoption of smart meters, but demonstrates a fairly low level of instruction about the smart meter-related issues. Moreover, being highly smart meter-aware is not correlated to good dispositions, and people seem to overlook smart meter's ability to decrease consumption and change behaviors.

Main factors fostering smart meters' acceptability (and related energy-sparing behaviors') seem to be perceived usefulness (both on an environmental and an economical level), perceived control over the behavior (along with high perceived privacy), perceived ease of use and perceived subjective norms.

Potential future paths to increase acceptability are then discussed, such as turning energy-reduction goals into concrete, everyday actions and consequences; gamification features and convergent, multi-sourced energy-related information.

• **Author(s) Biography (200 words each):**

Côme Brossolet is an Architecture and Building Engineer who completed his Master degree in 2020 at University of Liège (Belgium). Through his Master Thesis, he researched acceptability levels of smart meters and factors that could shape these levels. He is investigating a future where designers, architects, engineers and end-users could work hand in hand to make the society more sustainable, in particular in regard of energy consumption and energy-efficient behaviors.

Clémentine Schelings is a PhD student enrolled at University of Liège (Belgium) ; she holds a MS degree in Architecture and Building Engineering (2016) from the same university. Her research, titled "*Renewal of the participative approaches for the making of the Smart City*" looks into ways to go beyond participative methods' recurrent limits (e.g. inefficient post-assessment of already designed projects; tokenism; helpless non-expert end-users facing the complexity of the design process or unexpected end-users' behaviors in operating phase). Her research aims to equip urban designers, architects and engineers, side by side with the citizens, with theoretical models, work methods and tools dedicated to inclusive participatory and co-design approaches.

Catherine Elsen is an Associate Professor at University of Liège (Belgium). She received her PhD in Engineering Sciences in 2011 (ULiège), a Master in Social Sciences in 2009 (CNAM, Paris), and a MS degree in Architecture and Building Engineering in 2007 (ULiège). She conducted post-doctoral research at Massachusetts Institute of Technology (USA) and KULeuven (Belgium). Her research interests cover design processes (in architecture and industrial design), and more specifically the impact design tools and methods have on specific cognitive processes (integration of end-users' needs; creativity; cooperation between team members). She lately developed special interest in Experience Design, researching it with the intent to develop innovative methods and tools in order to streamline its process.

come.brossolet@student.uliege.be *

clementine.schelings@uliege.be **

catherine.elsen@uliege.be

* contact author; ** presenting author