



ICT4S
ICT for Sustainability



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Call for Papers

Environmental Modelling & Software Thematic Issue on **Modelling and Evaluating the Sustainability of Smart Solutions**

Guest Editors:

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Our world is getting smarter: smart homes, smart cities, smart grids, smart vehicles and logistics, cloud computing, crowdsourcing. A *smart solution* to a problem is a solution that integrates computer support in a way that gives software more control over real-world technical processes, human decisions or human communication, than this is the case for conventional solutions.

Many smart solutions are today designed in a “Green IT” context and proposed with the intention to contribute to environmental or social sustainability. Such claims include, for example, saving energy and reducing greenhouse gas emissions by more intelligent process control, finding the most sustainable alternative in a decision situation, optimising a process with regard to sustainability criteria, or enabling participation and reducing poverty by new ICT applications. However, it is difficult to determine whether the potential net benefit of the smart or solution will materialize under real-world conditions, in particular when considering the dynamics of markets, possible rebound effects and other systemic effects.

This thematic issue of *Environmental Modelling and Software* focuses on the evaluation of smart solutions with regard to their potential or real contribution to sustainability. How can we know we are on the right track with smart solutions? We encourage contributions falling in on or more of the following categories:

- a) Models, methods and case studies involving the sustainability assessment of smart solutions (as defined above) in their intended application context. This includes potential or implemented smart solutions of any type.
- b) Metrics and models embedded in the software developed for smart solutions, used to evaluate the sustainability of alternatives at runtime or to optimise a system. This may include reflections about reliability and uncertainty.
- c) Assessments of the effort necessary to realize a smart solution, in particular in terms of energy and material resources for the ICT equipment used. Assessing the effort is necessary to calculate the net benefit of a solution.
- d) Reflections on the methods and models used or needed for the three tasks mentioned above, their requirements, adequacy, and accuracy.

The methodological approaches that may be used include (but are not limited to) Agent-Based Modelling (ABM), System Dynamics modelling, econometric modelling, Life Cycle Inventory (LCI) modelling, Life Cycle Impact Assessment (LCIA) and other aspects of Life Cycle Assessment (LCA), Sustainability Impact Assessment, multivariate statistics, other quantitative methods of data analysis, and qualitative methods.

The three step review process:

1. *Extended* abstracts will be reviewed by the Guest Editors and recommendations will be made regarding the scope of the full paper; extended abstracts should be about 1,000 words plus a strong bibliography that indicates the literature that the paper will build upon; please indicate if your submission is targeted to category a, b), c), or d).
2. Full papers will be sent out for external peer review following Environmental Modelling & Software policy that, among other things, requires at least 3 reviewers per paper plus valuable editorial comment
3. Revised manuscripts will be examined by the Guest Editors and, where necessary, the external reviewers.

If you are interested in participating, please email your contact details and intended contribution (title, authors, abstract) to Prof. Lorenz Hilty, University of Zurich, hilty@ifi.uzh.ch by March 15th, 2013. After an initial selection of responses, we will request full papers by May 20th, 2013.

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