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EDITORIAL

Editorial for the third D-A-CH conference on energy informatics

Thorsten Staake · Hans-Jürgen Appelrath

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Thorsten Staake

Hans-Jürgen Appelrath

The geopolitical dependency on oil and gas, looming threats of climate change, social and environmental costs of mining, or the prospect to address business opportunities in a large and growing market—there are many reasons to redress our fossil-based energy systems. In fact, energy topics have become a top priority of our society, and decision makers around the world have committed themselves to ambitious development targets towards a sustainable energy supply and use. To attain this goal, two dominant, complementary paths are treaded: the expansion of renewable energy sources and improvements in energy efficiency across all sectors. Both

T. Staake (✉)
Universität Bamberg, Bamberg, Germany
e-mail: thorsten.staake@uni-bamberg.de

H.-J. Appelrath
Universität Oldenburg, Oldenburg, Germany
e-mail: appelrath@informatik.uni-oldenburg.de

paths include a plethora of different application domains that all have one thing in common: they heavily rely on information and communication technology (ICT) or, more precisely, on work that can be subsumed under the umbrella term of "Energy Informatics".

The multi-facetted dependency of sustainable energy systems on ICT has been recognized early on, as has the importance of research in this field. Prominent research domains include the management of energy generation and distribution and the use of ICT within energy-intense sectors such as mobility and buildings. Cross-sectional applications comprise the protection of critical energy infrastructure and consumer privacy, an enhancement of the interoperability of energy systems, information systems that motivate or support sustainable consumer behavior, simulations of energy systems, and business process innovation, among many others. Electricity grids are of special interest due to the challenges that emerge from decentralized generation and the stochastic nature of wind and photovoltaic sources. Yet, the research is by no means limited to electricity. It also addresses other forms of energy and the interwoven co-existence of different energy carriers.

We are glad that this journal issue reflects the large variety of topics that is characteristic for the Energy Informatics field. Contributions cover the entire value chain from energy supply (Domigall; Meinerzhagen et al.) over distribution (Brettschneider et al.; Klemenjak et al.; Medici et al.) to demand-side aspects (Hölker et al.; Malinao et al.; Borsche et al.) and touch e-mobility (Baum et al.; Del Razo et al.; Rivera et al.; Salah et al.), buildings (von Bomhard et al.; Fenz et al.; Hass et al.; Ladenhauf et al.), and industry applications (Ihle et al.). Many disciplines contribute to these research endeavors, including work rooted in simulation studies (Monacchi et al.; Schmidthaler et al.), machine learning (Hopf et al.), grid security (Neureiter et al.), and behavioral sciences (Lossin et al.)—all with a clear reference to ICT-enabled energy applications.

What makes the field of Energy Informatics especially interesting and challenging, however, is the aspiration to deliver viable solutions for pressing, practical problems. This requires cross-discipline cooperation among different stakeholders—academia, industry, user groups, and policy makers alike. In essence, it warrants openness for a plurality of methods while pursuing a quest for scientific rigor and relevance. We believe that the D-A-CH initiative "Energieinformatik", supported by the responsible Ministries of Germany, Austria, and Switzerland and organized in close cooperation with the scientific community in these countries, provides an ideal platform for this open exchange. Following the successful conferences in Oldenburg and Vienna in 2012 and 2013, respectively, 54 manuscripts have been submitted in 2014. Twenty-seven submissions have been accepted for presentation, and 22 revised versions have been included in this issue. We hope that the reader finds the selection insightful and inspiring, and we are glad to announce that the forth D-A-CH conference will take place in Karlsruhe on November 12–13, 2015.

We want to thank the authors for sharing their insights and the program committee members and reviewers for selecting and helping to further improve the content for this journal. Moreover, we would like to thank the more than 140 conference attendees who made the event a vibrant place for the exchange of ideas. Last but not least, we wish to express our gratitude to the Swiss Federal Office of Energy (SFOE) for funding the D-A-CH conference held at ETH Zurich in 2014.