

# BISE – Call for Papers Issue 1/2012

## Internet of Energy/Smart Grids

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### 1 Special Focus

There are two major factors gaining increasing impact on the IT landscape of businesses in the energy industry:

- The implementation of requirements from the evolving legal and regulatory frameworks that are fostering the lib-

eralization and re-regulation of energy markets (German Energiewirtschaftsgesetz 2005, US Energy Policy Act of 2005, EU Directive 2003/54/EG).

- The transformation of the structure of energy production and distribution, which is caused by the emergence of alternative technologies for generation, such as wind, biomass, solar energy, or fuel cells. This goes along with new requirements for the communications infrastructure as well as the business processes for planning, controlling, and optimizing the energy networks.

With the liberalization of energy markets (particularly in the electricity market) within the European Union, utilities have to face many new challenges. A central component of market liberalization is guaranteeing discrimination-free grid access, which results in structural changes in the energy industry. In order to prevent preferential treatment of network operators which are also electricity suppliers and/or electricity providers, the divisions for generation, transmission, and distribution have to be separated (unbundling), even though full independence is achieved only by separated ownership. Minimum requirement is the separation of accounting. For energy suppliers, procurement optimization for cost reduction does no longer only comprise the procurement of primary energy, which is converted into electricity in (own) power plants, but also the procurement of electricity itself. For consumers, new possibilities emerge for covering demand beyond mid- and long-term tariff-based contracts. The operation of own small-scale plants for combined heat and power generation at the location of use and short-term trading on power markets is becoming increasingly efficient. The possibility of trading power leads to a variety of new products and potential trading partners. All of these issues lead to an increasingly complex electricity market.

Before the advent of alternative energy sources and unbundling, the communication structures and processes in the distribution of electrical energy by high, medium, and low voltage networks had been relatively orderly and clear. Now, there is an increasing need for information and communication technology interfaces as well as planning and control strategies due to the rising number of generators on the low- and mid-voltage levels. These new processes must be implemented and supported by distributed, loosely-coupled energy management systems.

Contributions from research and business practice on the following (and related) topics are invited:

- Architectures and technologies (particularly in the “Smart Grid” context)
  - Innovative IT architectures and technologies for the “Smart Grid” of the future
  - Concepts and architectures for new market platforms in the energy industry
  - Methods, concepts, and technologies for intelligent data management
  - Information security in the energy industry
- Approaches to modeling and analysis
  - Standards and data models in the energy industry
  - Reference models for the energy industry, particularly for the (information-oriented) unbundling
  - Planning models for the mitigation of price and volume risk in the energy industry
  - Analytic models for market behavior in the light of interactions with primary markets, consumer behavior, and emission rights
- Planning and Management in the energy industry
  - Capacity and energy planning, power plant operations, and real-time optimization, futures markets for primary energy and electricity spot markets, markets for balancing power

- Integration and control of storage, electric vehicles, building automation, and smart meters
- Integration and scheduling of decentralized energy producers and consumers (e.g., for matching supply and demand, demand side management)
- Models and methods for the optimization of demand and supply comprising all available technologies and considering all forms of energy simultaneously
- Multi-agent systems for planning and control in the energy industry

## 2 Submission

Please submit papers for the sections BISE – Research Paper and BISE – State of the Art by 2011-03-01 at the latest via the journal's online submission system (<http://www.editorialmanager.com/buis/>).

Please observe the instructions regarding the format and size of contributions to Business & Information Systems Engineering (BISE)/WIRTSCHAFTSINFORMATIK. Papers should not exceed 10 pages; this amounts to 50,000 characters including spaces, minus 5,000 characters per page for illustrations. Detailed authors' guidelines can be downloaded from <http://www.bise-journal.org>.

All papers will be reviewed anonymously (double-blind process) by several referees with regard to relevance, originality, and research quality. In addition to the editors of the journal, including those of this special focus, distinguished national and international professionals with scientific and practical backgrounds will be involved in the review process.

Complementary articles covering topics of this special focus are also more than welcome.

Accepted papers will appear identically in English and German. The English-

language version will appear in Business & Information Systems Engineering (BISE), the German-language version will appear in WIRTSCHAFTSINFORMATIK. Accepted papers will be translated in close cooperation with the authors and a professional team of translators.

## 3 Schedule

Submission deadline: 2011-03-01

Author notification: 2011-04-26

Completion of first revision: 2011-06-28

Author notification: 2011-08-16

Completion of a second revision (if needed, monolingual): 2011-09-20

Completion of a second revision (if needed, bilingual): 2011-10-18

Planned publication date of Issue 1/2012: February 2012

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