

2nd Workshop

Energy Aware Software-Engineering and Development (EASED@BUIIS)

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Utilization of mobile and embedded devices, and thus their induced energy consumption, is constantly increasing. Reducing the energy consumption of such devices will not only improve the carbon footprint of contemporary mobile information technology usage, but will also extend the device lifetime, improve user acceptance and reduce operational costs. Next to serious and ongoing efforts in hardware design and on operating system level, software engineering techniques will also contribute to optimize energy consumption by improving software design and software quality.

The *EASED@BUIIS workshop*, which follows up the *Workshop on Developing Energy Aware Software Systems (EEbS 2012)* provides a broad forum for researchers and practitioners to discuss ongoing works, latest results, and common topics of interest regarding the improvement of software induced energy consumption. We are very delighted, that BUIIS-Tage 2013 in Oldenburg offered the opportunity to have *EASED@BUIIS* as part of this established conference on environmental information systems. Next to providing all needed conference facilities, BUIIS also allowed for an introductory paper on the development and classification of energy aware software¹ to promote our subject within their proceedings.

All together, eight papers were accepted for presentation at *EASED@BUIIS*. The papers were selected according their ability to invoke encouraging and fruitful discussions during the workshop. All papers were

commented by 2–3 members of the program committee. Finally, the following papers were presented at *EASED@BUIIS* in two sessions followed by an intensive discussion session:

Energy Aware Programming and Optimization

- *Christian Bunse, Sebastian Stierner*: On the Energy Consumption of Design Patterns.
- *Timo Hönig, Christopher Eibel, Wolfgang Schröder-Preikschat, Björn Cassens, Rüdiger Kapitza*: Proactive Energy-Aware System Software Design with SEEP.
- *Sebastian Götz, René Schöne, Claas Wilke, Julian Mendez, Uwe Assmann*: Towards Predictive Self-optimization by Situation Recognition.

Measuring and Estimating Energy Consumption

- *Kay Grosskopf*: PUE for end users - Are you interested in more than bread toasting?
- *Mirco Josefiok, Marcel Schröder, Andreas Winter*: An Energy Abstraction Layer for Mobile Computing Devices.
- *Patrick Heinrich*: Towards Network-Wide Energy Estimation for Adaptive Embedded Systems.
- *Dmitriy Shorin, Armin Zimmermann*: Evaluation of Embedded System Energy Usage with Extended UML Models.
- *Stefan Naumann, Eva Kern, Markus Dick*: Classifying Green Software Engineering - The GREENSOFT Model.

¹Christian Bunse, Stefan Naumann and Andreas Winter: *Entwicklung und Klassifikation energiebewusster und energieeffizienter Software* in: Jorge Marx Gómez, Corinna V. Lang and Volker Wohlgemuth: *IT-gestütztes Ressourcen- und Energiemanagement, Konferenzband zu den 5. BUIIS-Tagen*, Springer:Heidelberg, 2013.

We like to express our deepest gratitude to all authors and participants, who contributed with their thoughts to *EASED@BUIS*. The workshop was attended by about 25 international participants. The final discussion session resulted in a broad number of additional topics which will be discussed in more depth during the following issues of *EASED* and/or in small working groups of the participants. These aspects include various research challenges on

- characterizing energy-aware Software architectures,
- referring to individual platforms,
- providing and validating comparable measurement techniques,
- providing reliable energy profiles,
- establishing best practices for energy-aware software design, and
- teaching lectures on energy-aware software design.

We also like to thank our reviewers and sub reviewers:

- Colin Atkinson (University Mannheim)
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- Sebastian Götz (TU Dresden)
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- Mirco Josefiok (OFFIS, Oldenburg)
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- Claas Wilke (TU Dresden).

Their timely comments gave reasonable help to improve the submissions.

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The third issue of *Energy Aware Software-Engineering and Development (EASED)* will take place on September 16, 2013 at GI-Jahrestagung 2013 in Koblenz. For more information, please refer to <http://www.se.uni-oldenburg.de/EASED3>. For participating in further discussions on Energy Aware Software-Engineering and Development there is also a mailing list available at <https://www.ibr.cs.tu-bs.de/mailman/listinfo/eased>.

Enjoy reading the *EASED@BUIS* proceedings.

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