Energy Efficiency in Large Scale Distributed Systems

Collaborations with University of Coimbra and Budapest University of Technology and Economics

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STSM U Bern → U Coimbra

ECOST reference: COST-STSM-IC0804-8283
Researcher: Thomas Staub, U Bern
Visited Institute: U Coimbra
Dates: June 24-30, 2011
Topic: Energy Measurements of Wireless Network Devices
STSM Motivation and Results

> Motivation
  — U Bern with strong experience in energy consumption measurement and estimation techniques
  — U Coimbra with strong experience in heterogeneous network technologies (WiFi, WiMAX) as well as test-beds.

> Results
  — Development of an Energy Consumption Measurement Methodology for WiFi and WiMAX end system equipment
  — Measurements in WiFi and WiMax test-beds, e.g., for calibration of simulation models and development of energy-saving mechanisms
  — Publication at IEEE NCCA 2011
IEEE NCCA 2011


EE-LSDS, Vienna, April 22, 2013

EE-LSDS, Vienna, April 22, 2013
Other Issues about Collaboration with U Coimbra

> Additional visits of Vitor Bernardo (U Coimbra) at U Bern
  — February 21 – March 4, 2011
  — February 13 – March 30, 2012
  — August 24 – September 14, 2013

> Sabbatical of Prof. Marilia Curado (U Coimbra) at Bern and M.Sc. lecture on *Network Performance and Modelling*, Spring Semester 2013

> Co-supervision of Vitor Bernardo’s thesis by Proff. Curado and Braun, expected defence in 2014

> Vitor Bernardo attended training school in Palma de Mallorca in 2012

> Collaboration with COST Action IC 0906 *Wireless Networking for Moving Objects*

> 20th International Workshop on Quality-of-Service (IWQoS), 2012
  — General Co-Chairs: F. Boavida and M. Curado (U Coimbra),
  — Program Co-Chairs: T. Braun (U Bern) and E. Monteiro (U Coimbra)

> Common EU FP7 Integrated Project mobile-cloud-networking.eu
EU FP7 Integrated Project: mobile-cloud-networking.eu

Integration of
- Radio Access Network
- Mobile Core Network
- Data Centre (computing, storage, applications)
into (decentralized) cloud computing infrastructure (management!)

Advantages: elasticity, costs, performance, e.g., by exploitation of user location for service provisioning → Follow Me Cloud

EE-LSDS, Vienna, April 22, 2013
STSM BME → U Bern

> ECOST reference: COST-STSM-IC0804-11268
> Researcher: Prof. Tuan Anh Trinh, Budapest University of Technology and Economics (BME)
> Visited Institute: U Bern
> Dates: August 11 – September 30, 2012
> Topic: Energy Efficiency in Information-Centric Networking

EE-LSDS, Vienna, April 22, 2013
Information-Centric Networking

/unibe.ch/braun/lecture/os/20130219
STSM Motivation and Results

> Motivation
  — U Bern with strong experience in Information-Centric Networking (ICN)
  — BME with strong experience in energy efficiency of large scale distributed systems, energy efficient data center design, sustainability issues of the Future Internet, etc.

> Results and Activities
  — Theoretical analysis of ICN energy saving potential given that ICN can save network transmissions by caching
  — Identification of open research issues
  — Publication at EE-LSDS 2013
Other Issues about Collaboration with BME

> Talks and Visits by Tuan Anh Trinh
   — Université de Neuchâtel (Peter Kropf)
   — Talk on *Recent Advances in EE of Large-scale Networked*
     Systems at ETH Zürich (Karin Hummel)

> Planned Sabbatical and M.Sc. Lecture by Tuan Anh Trinh at
  U Bern in Autumn Semester 2013
Conclusions and Outlook

> STSMs have been stimulating research collaboration between U Bern and U Coimbra as well as BME, e.g.,
  — Joint Ph.D. student supervision
  — Joint publications
  — Exchange of researchers, e.g., sabbaticals, and teachers
  — EU collaboration projects

> COST funding has only covered a small part of collaboration costs.
Thanks for your Attention

> More information
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