

MEGSUS'15 WORKSHOP PROGRAM

Rotterdam, The Netherlands

Monday, October 6, 2014	
13.45-14.10	Welcome and Introduction: <i>Nelly Condori Fernandez, Nour Ali and Giuseppe Procaccianti</i>
14.10 – 15.00	GREEN SOFTWARE <i>Session chair: Nour Ali</i> Keynote 1: Measuring Energy-efficiency of Software <i>Prof. Dr. Ir. Joost Visser</i>
15.00-15.30	Energy related Goals and Questions for Cloud Services <i>Jean-Christophe Deprez and Christophe Ponsard</i>
GREEN TEA BREAK (15:30 -16:00)	
16.00-16.40	SOFTWARE SUSTAINABILITY <i>Session chair: Nelly Condori Fernandez</i> Keynote 2: Green and Sustainable Software Architectures: Review and Search for Economics-Driven Method and Metrics <i>Dr. Rami Bahsoon</i>
16.40-17.30	Software Sustainability: a Broader Perspective <i>Luigi Buglione, Fabrizio Fabbrini, Giuseppe Lami</i> Measuring software sustainability <i>Coral Calero</i>
17.30-18.00	Sum-up and workshop closing (Nelly Condori Fernandez and Nour Ali)



Prof. Dr. Ir. Joost Visser is Head of Research at the Software Improvement Group, professor of Large-Scale Software Systems at Radboud University Nijmegen and chairman of the Knowledge Network Green Software.

Measuring Energy-efficiency of Software

Abstract

Hardware consumes energy because software tells it to. But developers create software without paying attention to energy usage. Users surf and click and save and send, without a notion of the energetic consequences. Owners of IT systems or services do not mention energy in their requirements. Wouldn't it be great if users, owners, and developers alike would have insight into the energy consumption of their software systems and could purposefully optimize for energy use?

Insight and optimization require measurement. But measurement of energy-consumption from the application layer point of view is easier said than done. Modern software systems are typically composed of multiple layers of components, frameworks, and virtual machines that run on a myriad of hardware devices shared with other systems. How can we attribute energy used by hardware to functions performed by software?

We will discuss the measurement challenge and some recent initiatives that attempt to meet this challenge.



Rami Bahsoon is a Senior lecturer in Software Engineering and leads the Software Engineering for/in the Cloud and the Grasshoppers Green Software Engineering Interest groups at the University of Birmingham. He was the lead editor of a special issue on the Future of Software Engineering for/In the Cloud with the Journal of Systems and Software. Bahsoon has co-edited a book on Software Architecture and Software Quality and another book on Economics-Driven Software Architecture (published by Elsevier). He holds a PhD in Software Engineering from University College London for his research on evaluating software architecture stability using real options.

Green and Sustainable Software Architectures: Review and Search for Economics-Driven Method and Metrics

Abstract

We report on the activities and research challenges, their rationales, and the work in progress on Green and Sustainable Software Architectures. We review research effort on managing the trade-offs between non-functional requirements and energy consumption in ultra-large scale software architecture, where scale, heterogeneity, uncertainty and dynamism are the norm. We argue that linkage between non-functional requirements and energy should be explicit in such architectures. We motivate the need for utility-based metrics and economics-inspired approach for managing such trade-offs. We give examples from cloud-based architectures and dynamic data-driven architectures.