



Tempus



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GREEN COMPUTING & COMMUNICATIONS

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3rd International Workshop Green and Safe Computing and Communication (GreenSCom)

PROGRAMME

Russian Federation, Belgorod

November 22-23, 2013

**Belgorod State Technological University n.a. V.G. Shukhov,
Belgorod, Russian Federation
National Aerospace University KhAI, Kharkiv, Ukraine**



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Programme

In cooperation with
FP7 KhAI-ERA and TEMPUS-GreenCo projects partners



Background

Concept of Green Information Technology is becoming more and more attractive in the world. This IT part is developing as a human- and industry-oriented domain. Computer and communication-based technologies being a kernel of ITs, are, on the one side, a mean of control and instrumentation for energy (including, of course, renewable energy) generation systems and smart grids, power low management and safety ensuring. On the other side, hardware- and software-based systems and computer networks are weighty consumers of energy and other resources (about three percentages of global consumption). On the third side, such modern technologies create new deficits of safety and security.

Objective of the 3rd Workshop on Green and Safe Computing and Communication GreenSCom is to discuss the current green (energy, power and resource as whole) issues on the levels of components (hardware, FPGA, microcontroller and microprocessor) and embedded applications, distributed computer systems, networks and IT-Infrastructures for safety, business and energy critical domains.

It also addresses topics such as modern and future challenges concerning modeling, assessment, normative regulation and development of green and safe computer-based and communication systems, and green IT education and training activities as well.

Topics of the WS GreenSCom

- Foundations of green and safe computing and communication:
 - Paradigms, methodologies and principles;
 - Green and safety life cycles;
 - Standards, metrics.
- Methods and techniques for green chips (FPGA, microcontrollers, microprocessors):
 - Green logic and logical basis;
 - Off-The-Shelf techniques from manufacturers: optimization of application;
 - Mode (chip space, voltage, frequency)-based adaptation;
 - Power low-oriented methods of programmable automata synthesis;
 - Techniques and equipment for experimentation.
- Green embedded systems for robotics and autonomous applications.
- Wireless and mobile computing and communication for energy effective systems:
 - Quality of service and power consumption balancing;
 - Wireless adaptive systems, green mobile systems;
 - Tools for development.
- Green software:
 - Foundations of green software;
 - Energy software process and product metrics;
 - Techniques of development and maintenance.
- Cloud computing in green IT context:
 - Cloud IT-infrastructure as a dynamical energy system;
 - Optimization of performance and power consumption: techniques and tools.
- Green IT-based industry systems and infrastructures:
 - Methods for green-oriented analysis of industry systems;
 - Smart grid as a green and safe infrastructure;
 - Principles, techniques and tools for green-oriented analysis;
 - Techniques of power consumption decreasing.
- University and IT-industry cooperation in green computing and communication
 - Models for university and IT-industry of cooperation;
 - Education and training issues of green ITs.

Program and Organize Committee

- Vasiliy Rubanov, Belgorod State Technological University n.a. V.G. Shukhov, Russia - chair
- Sergey Glagolev, Rector of Belgorod State Technological University n.a. V.G. Shukhov, Russia - co-chair
- Vyacheslav Kharchenko, National Aerospace University KhAI, Kharkiv, Ukraine - co-chair
- Vladimir Polyakov, vice-rector of Belgorod State Technological University n.a. V.G. Shukhov, Russia - co-chair
- Alexander Bazhanov, Belgorod State Technological University n.a. V.G. Shukhov, Russia
- Olexander Chemeris, Pukhov Institute for Modeling in Energy Engineering, NASU, Kyiv, Ukraine
- Gert Jervan, Tallinn University of Technologies
- Oleg Illiashenko, National Aerospace University KhAI, Kharkiv, Ukraine
- Theodoros Koukoulis, University of Ioannina, Greece
- Chris Phillips, University of Newcastle-upon-Tyne, United Kingdom
- Vladimir Sklyar, RPC Radiy, Kirovograd, Ukraine
- Elena Zaitseva, University of Zilina, Slovakia
- Dmitriy Yudin, Belgorod State Technological University n.a. V.G. Shukhov, Russia

Participants

- Vasily Rubanov, DrSc, Professor (Belgorod State Technological University n.a. V.G. Shukhov, Belgorod, Russia)
- Valeriy Magergut, DrSc, Professor (Belgorod State Technological University n.a. V.G. Shukhov, Belgorod, Russia)
- Dmitriy Yudin, Researcher (Belgorod State Technological University n.a. V.G. Shukhov, Belgorod, Russia)
- Alexander Bazhanov, PhD, Lead programmer (Belgorod State Technological University n.a. V.G. Shukhov, Belgorod, Russia)
- Evgeniy Karikov, Engineer (Belgorod State Technological University n.a. V.G. Shukhov, Belgorod, Russia)
- Theodoros Koukoulis, Dr, Associated Professor (University of Ioannina, Greece)
- Eugen Brezhnev, Dr, Docent (National Aerospace University KhAI, Kharkiv, Ukraine)
- Eugen Bulba, Researcher (Research and Production Corporation Radiy, Poltava, Ukraine)
- Olexandr Drozd, DrSc, Professor (Odesa National Polytechnic University, Odesa, Ukraine)
- Sergei Hontovyi, Dr, Associated Professor (Donbas State Technical University, Alchevsk, Ukraine)
- Anatoliy Gorbenko, DrS, Professor (National Aerospace University KhAI, Kharkiv, Ukraine)
- Olexandr Gordieiev, Dr, Docent (Sevastopol Banking Institute of NBU, Ukraine)
- Olexandr Ivasyuk, Dr, Senior Researcher (Research and Production Corporation Radiy, Poltava, Ukraine)
- Vyacheslav Kharchenko, DrSc, Professor (National Aerospace University KhAI, Kharkiv, Ukraine)
- Dmytro Maevskiy, Docent, DrS (Odesa National Polytechnic University, Odesa, Ukraine)
- Victor Mishchenko, DrSc, Docent, Professor of Systems and Technologies Modeling Department (V. N. Karazin Kharkiv National University, , Kharkiv, Ukraine)
- Oleg Odarushchenko, Dr, Leading Researcher (Research and Production Corporation Radiy, Poltava, Ukraine)
- Volodymyr Sklyar, DrS, Docent (Research and Production Corporation Radiy, Kirovograd, Ukraine)
- Nikolay Styervoedov Dr, Docent (V. N. Karazin Kharkiv National University, Kharkiv, Ukraine)
- Sergey Tyurin, DrSc, Professor (Perm Research Technical University, Perm, Russia)

Day1, November 22, 2013

14.30 – 16.00. Session 1. General Green IT Issues

14.30-14.45. Welcome notes. Vasiliy Rubanov (Belgorod, Russia), Vyacheslav Kharchenko (Kharkiv, Ukraine)

14.45-15.00. Vyacheslav Kharchenko (Kharkiv, Ukraine). Green Computing and Communication: Roadmap in Context of the GreenCo and FP7 KhAI-ERA Projects

15.00-15.30. Volodymyr Sklyar (Kirovograd, Ukraine). Science to Business (S2B) Cooperation: Safe and Green ITs

15.30-16.00. Sergei Hontovyi (Alchevsk, Ukraine). Green Gap Analysis: Industrial Trends

16.00-16.30. Coffee-break

16.30-18.00. Session 2. Green Hardware

16.30-17.00. Olexandr Drozd (Odessa, Ukraine). Green Hardware: Some Theoretical and Experimental Tasks and Results

17.30-18.00. Anatoliy Gorbenko (Kharkiv, Ukraine). Power Consumption Measurement for Green Hardware and Software

18.00-18.30. Oleg Odarushchenko, Olexandr Ivasyuk, Eugen Bulba (Poltava, Ukraine). Verification and Validation of FPGA-Based Systems: Green Issues

19.00-20.30. Dinner

Day 2, November 23, 2013

8.30 – 10.00. Session 3. Green Software

8.30-9.00. Dmytro Maevskiy (Odessa, Ukraine). Foundations of Green Software Development

9.00-9.30. Olexandr Gordieiev (Sevastopol, Ukraine). Evolution of Software Quality Models: Green Issues in Context of the IEC 25010

9.30-10.00. Victor Mishchenko, Nikolay Styervoedov (Kharkiv, Ukraine). The Green Static Analysis and the System Analysis of Energy Consumption.

10.00-10.20. Coffee-break

10.20-12.00. Session 4. Green I&C Systems and Infrastructures

10.00-10.30. Eugen Brezhnev (Kharkiv, Ukraine). Critical Energy Infrastructure Safety Assessment: Methodological Issues

10.50-11.05. Evgeniy Karikov (Belgorod, Russia). Modeling of Grate Cooler Working for Synthesis of Energy-Efficient Control Systems

11.05-11.20. Alexander Bazhanov (Belgorod, Russia). Investigation of Green Control Systems for Technical and Technological Objects with Usage of Modern Software

11.20-12.00. Discussion. Co-chairs's closing remarks

12.00-13.20. Excursion to laboratories, classes and innovative infrastructure objects of Belgorod State Technological University n.a.V.G. Shukhov

13.20-14.00. Lunch

14.00-15.00. Excursion to museum "Diorama" (Belgorod)

15.00-19.00. Tour to the Kursk Bulge Museum (Prokhorovka)