Coordinating research efforts towards

LOW ENERGY ICT

The goal of the ICT-Energy project is to create a coordination activity among researchers working on energy reduction in ICT from Nanoscale Devices to Exascale Computing. By bringing together the **Toward Zero-Power ICT** community with the **MINECC** community this project enables a concerted effort to lower the energy consumption across the ICT sector.

The aim is to assess the impact of existing research efforts and propose measures to increase the visibility of ICT-Energy related initiatives to the scientific community, targeted industries and to the public at large through the exchange of information, dedicated networking events, education and media campaigns.

University of **BRISTOL**

www.ict-energy.eu

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University of Glasgow

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exactly how much work can a device do with the energy it can harvest?

The **SENSATION project** seeks to balance the energy obtained through energy harvesting with the energy consumption of the device. A self energy-supporting system can adapt its behaviour depending on available energy, continuing to operate in a changing environment.

http://www.sensation-project.eu/

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ICTenergy

can we operate a computer without using any energy at all?

At **NiPS Laboratory, University of Perugia**, we believe that the answer is yes. We are building micro scale computer device that can function with an amount of energy that is million times smaller than the present computers: towards zero-power ICT.

http://www.landauer-project.eu/

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can software engineering be energy-aware?

At **Roskilde University** we are working on bridging the large conceptual gap from hardware, where energy is consumed, to high-level programming languages and abstractions that are essential for modern software engineering.

http://entraproject.eu/

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how do we tackle the power wall in high performance computing?

The research on Energy-Aware Numerics in the **Exa2Green project** embraces all stages of numerical simulations from tools to analyse the power consumption, to elementary algebraic kernels and numerical building blocks on the application level. We developed a new type of power meter to measure the energy consumption of computers, designed energy-efficient numerical algorithms, and optimized the power consumption of a weather forecast model with aerosol chemistry. All of these efforts aim to reduce the energy consumption of numerical simulations in view of the next generation of exascale supercomputers.

http://exa2green-project.eu/

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how low can the energy consumption of a wearable medical sensor be?

Research on Ultra-Low Power Computing Architectures at the **EPFL** targets to reach a minimal energy consumption for multi-modal biomedical sensor nodes. This enables the development of smart wearable sensors that can operate as long as 7-8 weeks with current standard Li-battery. The final goal is to reach eternal operation for wearable sensors using only energy scavenging mechanisms.

http://www.phidiasproject.eu/

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