Report: LOCO 2024 International Workshop on Low Carbon Computing

WLCG Environmental Sustainability Workshop

Wim Vanderbauwhede

University of Glasgow

School of Computing Science

LOCO context

- Initiative of Scottish Programming Languages Institute suppored by the Scottish Informatics and Computer Science Alliance
- Originally intended to be similar to the Programming for the Planet workshop
- School of Computing Science LOCOS group was tasked with the organisation
- Because of our focus on Low Carbon and Sustaimable Computing, we broadened the remit.

LOCO Aims

- Low-carbon
- Diverse
- Inclusive
- Accessible
- Critical

LOCO Themes

- Energy efficiency
- Carbon awareness
- Frugal computing
- Sustainable software engineering
- Computing for climate science, scientific computing, and energy informatics
- Measurements, testbeds, and simulation

Focus of workshop talks

- Carbon-aware computing
- Embodied carbon
- Energy efficiency
- Rebound effect

Highlights

- “AI’s Energy Challenge: Can Data Center Power Grid Coordination Offer a Path Towards Sustainbility” (Prof. Ayse Coskun, Boston University)
  - Data centre energy demand is rising steeply
  - More steeply than increase in renewable capacity
  - Need for demand management

Highlights

- “The belief in Moore’s Law is undermining ICT climate action” (Prof. Adrian Friday, University of Lancaster)
  - ICT impacts must be addressed as a system, rather than purely in terms of efficiency and energy use
  - ICT impacts are various and globally significant (supply chains, rare earths, end of life) and must be considered earlier.
  - Efficiency accelerates these impacts, we need to radically reshape our relationship with ICT.

Highlights

- “Energy-Efficient Computing Using Alternative Architectures (ARM and RISC-V).” Emanuele Simili. University of Glasgow, UK.
- “Simulating Carbon Opportunity Costs at DESY.” Dwayne Spiteri. DESY, Germany.
- “Grid site operational techniques to reduce carbon emissions.” Gordon Stewart, David Britton, Emanuele Simili, Sam Skipsey, and Bruno Borbely. University of Glasgow, UK.
- “Smart Procurements”. Dan Protopopescu, University of Glasgow, UK.

Thank you!

More information:

- Program and extended abstracts: https://www.sicsa.ac.uk/loco/loco2024/
- Slides (soon): https://www.gla.ac.uk/schools/computing/research/researchthemes/lowcarbon/
- Video recordings (soon): https://www.youtube.com/@SICSAScotland