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## **Energy of computing: How to optimise your program for something you cannot measure**

In our increasingly digital world, energy of computing is quickly becoming a global issue. Currently, ICT devices and systems use 10% of global electricity, which is deemed to reach 50% by 2030. The mainstream approach to addressing this technological challenge is to optimise the execution environment rather applications running in this environment. The main technique is to switch off or reduce the power level of the components of the system that are not used in the execution of application(s) (or just to reduce the power level of the underused component). This approach has been thoroughly studied and resulted in solutions and tools used in ICT, from large data and supercomputing centres to mobile devices. Another approach, which is to optimize applications rather than the executing environment, has not attracted a similar attention. In this talk, we outline recent advances in optimisation of applications for energy. We will also discuss major challenges in this area, including the issue of accurate measurement of energy consumption by components of the application.