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Shaping the future green internet

Interdisciplinary research at the universities of Leeds and Cambridge to reduce the carbon footprint of information and communications networks (ICT) has received a major boost with a £5.9 million, five-year Programme Grant award from the Engineering and Physical Sciences Research Council.

The award will draw together leading research activities into optical networks at the University, led by Professor Jaafar Elmirghani (School of Engineering), with those at Cambridge University into optimising Internet and Web protocols and services, led by Professor Jon Crowcroft in the Computer Laboratory, and optical routing and datacommunications, led by Professors Penty and White in the Engineering Department.



In less than 20 years, the internet has grown from almost nothing to something of enormous economic and social value, but it has also consumed an exponentially increasing percentage of the global electricity supply. With internet growth predicted to rise by 10% over the next five years, the INTeLLigent Energy awaRe NETworks (INTERNET) project aims to achieve a corresponding reduction in non-renewable energy consumption.

Professor Elmirghani, the project's principal investigator said: "The funding for the INTERNET project offers us the stability and flexibility needed to address the major challenges associated with energy utilisation in telecommunication networks.

"Energy efficient processes are increasingly priorities for ICT companies, with attention being paid to both

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ecological and economic drivers,” continued Professor Elmirghani.

“Although ICT can benefit the environment – for example, by reducing journeys and introducing more efficient business processes – there’s increasing awareness of the large growth in energy consumption by telecommunications companies. Moreover, the predicted growth of internet use isn’t practical if it produces a corresponding growth in energy consumption. Eventually, use may be regulated, particularly if governments move towards carbon neutrality.

“INTERNET is important because it seeks to establish the current limits on ICT performance and then develop new ICT techniques to provide enhanced performance. Substantial advances can be made through innovative use of renewable sources and the development of new architectures, protocols and algorithms operating on hardware which itself allows significant reductions in energy use.”

As well as bringing together academics from the Leeds and Cambridge, the project also has some major companies on board, showing the importance of energy reduction to the sector. The industrial partners – BT, Ericsson, Telecom New Zealand, Cisco, the BBC, Solarflare, Broadcom, Avago and Oclaro – include hardware producers, network providers and network users.

Page owner: reporter@leeds.ac.uk | Updated: 01/07/10 





















