

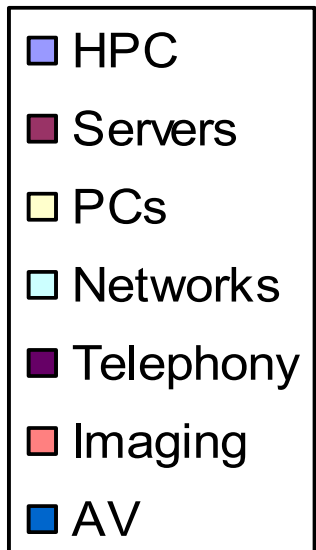
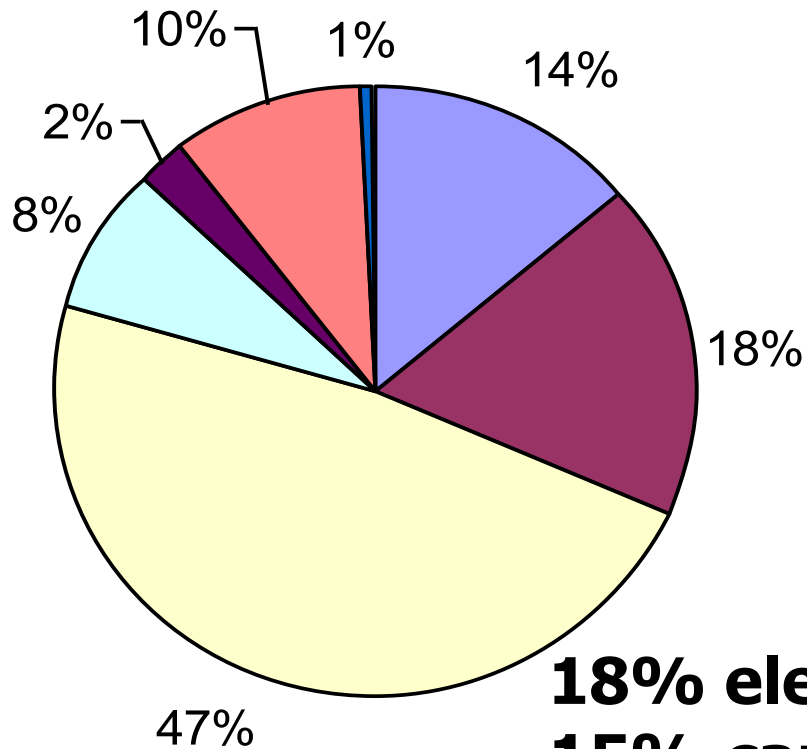
GREENING IT IN UNIVERSITIES

**Professor Peter James
University of Bradford
Higher Education Environmental
Performance Improvement Project**

www.goodcampus.org



SUSTEIT FINDINGS - UNIVERSITY OF SHEFFIELD



18% electricity
15% carbon
\$1.6 million pa

SUSTEIT FINDINGS

- 2% of global CO₂ emissions
- Sheffield
 - £1 million + electricity bill
 - 47% desktop related
- HE sector wide
 - 760,000 PCs
 - 215,000 servers
 - 147,000 networked printers
 - £60 million + energy bill
 - 275,000 tonnes of CO₂



JISC

FOOTPRINTING AIMS

- Identify total impacts
- Identify impact patterns
- Identify improvement opportunities
- Develop a baseline to track improvement



KEY ELEMENTS

- Inventory
- Power consumption, by mode
- Usage patterns
- Carbon conversion
- Financial conversion

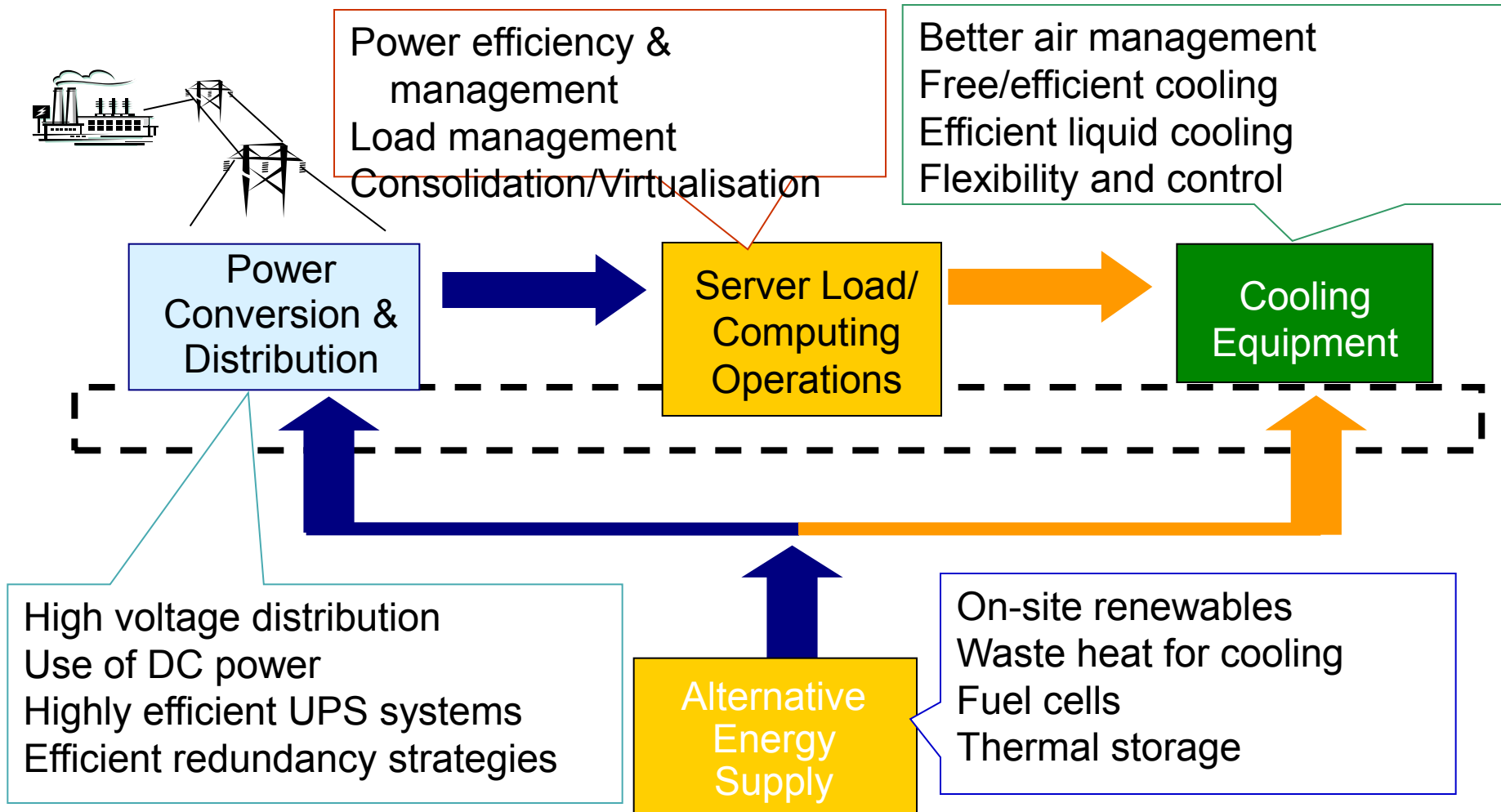
GREEN IT AGENDAS 2010

- Desktop energy efficiency
 - low power
 - power management
- Data centre energy efficiency
 - air management
 - free/controlled cooling
- Synergistic architectures
 - thin/thick/think client
 - virtualisation (& powerdown)



ICT Energy Opportunities

- Adapted from EPA Original



GREEN IT AGENDAS 2010

- Financial responsibility
- SMART 2020
 - ICT can cut global 2020 CO₂ emissions by 12% net
- Smart metering
- Intelligent buildings
- New ways of working



NET ZERO CARBON DATA CENTERS

- More efficient equipment
- Innovative cooling
 - water; CO₂
 - dielectric (Iceotope)
- Heat recovery?
- On-site renewables
- More power storage
- Integrated planning

