Green Computing – A Late Start

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• Advise ERCIM Exec and BoD
• Evaluate WG performance
• Provide opinion on Cor Baayen Award
• Critique publications, Newsletters…
• Miscellaneous BoD Inquiries
Green Computing - Motivation

Energy Consumption: WW doubled b/w 2000-06;
• US: will likely double again b/w 2006-11 (~110BKWh/year);
• EU: ~104BKWh in 2020

➔ Carbon Emission: >quadruple in 2020 (~340MMT)

Source: AMD; Financial Times; Gartner; Stanford University; Uptime Institute; McKinsey Analysis
Green Computing Pillars

- Energy-Efficient Equipment
- Minimize resources executing workload with SLA
- Benchmarks + quantifiable metrics (standards)
- Holistic thermal/energy models

- Innovations in new Materials; lower voltages; etc
- Increased Integration: SoC
- Virtualization
- Autonomic Power Computing

- Advanced Cooling Technologies
- Best Practices
- Hold IT Accountable for Cost
- Productivity = f(Consumption)
- Reduce internal/external heat

- Energy caps
- Resources consolidation
- Incentives to promote energy conservation (e.g., Certificates)

- Operations
- New Technology
- Energy Efficiency
- Conservation

20 Years of ERCIM - 20 Years of Cooperating for Excellence in Research
Green Computing – There is Hope

You do not have to take BOLD actions; any little efficiency improvements help

Green Computing – It Will Happen

Figure 1. Hype Cycle for Emerging Technologies, 2008

Source: Gartner (July 2008)
 ERCIM & Green Computing

• Take leadership steps to promote green computing
• Encourage establishing green computing WG
• Draft green computing research vision
• Encourage green computing initiatives
• Work with European Standard Bodies
• Work with EU to expand on the Code of Conduct…