An increased awareness of the harmful effects of greenhouse gas (GHG) emissions, new stringent environmental legislation, concerns about electronic waste disposal practices, and corporate image concerns are pushing businesses and individuals to go green. IT has fundamentally altered our work and life and improved our productivity, economy, and social well-being. Going forward, IT now has a new role to play—helping to create a greener, more sustainable environment while offering economic benefits.

Green IT is the study and practice of designing, manufacturing, and using computers, servers, monitors, printers, storage devices, and networking and communications systems efficiently and effectively with minimal impact on the environment. It includes environmental sustainability, the economics of energy efficiency, and the total cost of ownership, which incorporates the cost of disposal and recycling. Green IT is also about the application of IT to create energy-efficient, environmentally sustainable business processes and practices. IT can support, assist, and leverage other environmental initiatives and help in creating green awareness.

IT contributes to only about 2 to 3 percent of GHG emissions; the vast majority of emissions come from non-IT sources. So, broader applications of IT in other areas of the economy could bring significant energy savings and improve overall environmental sustainability.

Green IT: Burden or Opportunity?
Green IT will be a top priority for several years to come, as it’s both an economic and environmental imperative. Several case studies on greening efforts reveal that businesses that reduce their environmental (carbon) footprint can also reduce costs and improve their public image. IT professionals, CIOs, and IT support staff are thus being called upon to deliver environmentally sustainable IT solutions. Even simple steps that one individual or organization take can make a huge difference when leveraged across the vast number of individuals and organizations across the world.

However, there’s a disparity in the level of green IT understanding across companies, IT professionals, students, and IT users. Many don’t know how or where to begin or are unwilling to implement green IT. Although green initiatives are catching the attention of the corporate world, some IT professionals, executives, and IT departments feel excessively burdened with the green philosophy. However, upon closer examination, they’ll find that going green is a sound strategy.
Green initiatives let us revisit and examine our IT systems and their operations in terms of energy efficiency and resource utilization and thus can reduce energy bills. Until recently, very little attention was given to IT’s energy consumption, effective use of resources, operational costs, and negative impact on the environment during manufacturing, use, and disposal. Now, however, a spotlight has been turned on IT, and there’s a pressing need to address these overlooked aspects, which are important in safeguarding the environment for future generations.

Businesses also need to look at green requirements from another viewpoint—that is, the implications of not going green in the context of stricter environmental regulations, stakeholder demands, competitiveness, branding and corporate image, and social responsibility. Smart companies will adopt an environmental strategy to innovate, create value, and build a competitive advantage. They’ll benefit by viewing these challenges as strategic opportunities.

The greening of IT and greening by IT will soon be necessities—not options. To help create a more sustainable environment, IT professionals must understand green IT and its potential. Publications that describe new advances, outline current trends, and present solid case studies demonstrating green IT’s benefits will help provide this understanding and the motivation to “green” IT. This special issue offers a starting point and hopefully will help the IT sector and users develop a positive attitude toward addressing environmental concerns and adopt forward-looking, green-friendly policies and practices.

In this Issue
We’re now marching toward the second wave of green IT. The first wave, Green IT 1.0, was internally focused on reengineering IT products and processes to improving energy efficiency and meet compliance requirements. Green IT 2.0 is externally focused on business transformation, sustainability-based IT innovations, and enterprise-wide sustainability. In the opening article, “The Next Wave of Sustainable IT,” Robert R. Harmon and Haluk Demirkan present a systematic framework for conceptualizing the implementation of sustainable IT services. They also review the approaches of six organizations recognized as having world-class corporate sustainability programs and green IT strategies.

The next article considers how to assess green IT initiatives in terms of organizational benefits and performance. Assessments are important in promoting environmental sustainability, but the popular balanced scorecard approach is insufficient when assessing environmental benefits. In “Assessing Green IT Initiatives Using the Balanced Scorecard,” Radhika P. Jain, Raquel Benbunan-Fich, and Kannan Mohan present an extended balanced scorecard approach that incorporates a new dimension for environmental and social sustainability perspectives. Using this new sustainable balanced scorecard, they determine the organizational performance of recent green IT initiatives announced via press releases. Based on their analysis, they offer recommendations for top management and IT professionals on harnessing green initiatives.

Another key to leveraging enterprise-wide sustainability benefits is aligning information and communication technology (ICT) processes and practices with the three core principles of sustainability—reduce, reuse, and recycle—and innovatively using ICT in business processes. In “A Capability Maturity Framework for Sustainable Information and Communication Technology,” Brian Donnellan, Charles Sheridan, and Edward Curry discuss the management challenges of sustainable ICT and present a SICT-Capability Maturity Framework to assess how SICT capabilities are contributing to organizations’ overall sustainability goals.

The next article explores what role RFID might play in environment sustainability. RFID is poised to be widely used in supply-chain management, asset tracking, and manufacturing, offering economic value to organizations. In “The Green Potential of RFID Projects: A Case-Based
Analysis,” Indranil Bose and Shipeng Yan evaluate RFID’s contribution to green objectives by reviewing 13 case studies. They analyze the motivation for embracing the RFID projects and review the projects’ execution, challenges, and impacts. Their study reveals that RFID’s use in green projects can enhance environmental sustainability while reducing costs and creating new commercial opportunities.

The next article considers Web browsing, which has been increasing dramatically due to continued growth in the use of Web-based applications, including email, social networking, blogging, streaming videos, and photo editing and sharing. We need to make Web browsing greener by reducing its power consumption. As a starting point, “Greening the Internet: Measuring Web Power Consumption,” by Aruna Prem Bianzino, Anand Kishore Raju, and Dario Rossi, evaluates the power consumption of end-user PCs browsing the Web, looking at different combinations of websites, browsers, and operating systems. The authors identify a specific area—tabbed browsing—for minimizing overall power consumption.

To help us learn how companies perceive and adopt green IT, in the final article, “Three Strategies for Green IT,” Jonas Hedman and Stefan Henningsson analyze how 14 companies in Denmark have implemented green IT and identify three fundamentally different strategies—storefront, tuning, and redesign. They advocate the pursuit of these three strategies in combination to leverage of both short- and long-term opportunities.

Albert Einstein once said, “The significant problems we have cannot be solved at the same level of thinking with which we created them.” The green IT agenda represents a major shift in priorities for the IT industry, and we must be prepared to adjust our “level of thinking.”

The green IT agenda represents a major shift in priorities for the IT industry … and we must be prepared to adjust our “level of thinking.”

References

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