Green Information Systems: Directives for the IS Discipline

Panel

Jan vom Brocke
University of Liechtenstein
Fürst-Franz-Josef-Strasse
9490 Vaduz
Liechtenstein
jan.vom.brocke@uni.li

Richard T. Watson
University of Georgia
Department of MIS
Athens GA 30602-6273
USA
rwatson@terry.uga.edu

Cathy Dwyer
Pace University
Seidenberg School of Computer Science & Information Systems
163 William Street
New York, NY 10038
USA
cdwyer@pace.edu

Steve Elliot
University of Sydney
Business Information Systems
Sydney NSW 2006
Australia
steve.elliot@sydney.edu.au

Nigel Melville
University of Michigan
Stephen M. Ross School of Business
701 Tappan St.
Ann Arbor, MI 48109-1234
USA
npmelv@umich.edu

Abstract

Environmental degradation is a global problem that requires the active and committed attention of many scholars. Green IS has emerged as the channel for IS scholars to contribute to resolving this problem. Five of the scholars who have done some early work in Green IS present their perspectives on the future directions of Green IS scholarship.

Keywords: Green IS, sustainability, IS research
Introduction

Industrialization over the last three centuries has changed the chemical composition of the earth’s air, land, and waters. This period, extremely short by geological periods, has so transformed the environment that it is seen as a distinct epoch, the Anthropocene. Some human societies have overstressed their local environment and collapsed (Diamond, 2005). Now, there is the considerable risk that we may soon exceed the boundaries for sustainable life for global human civilization (Rockström et al., 2009).

Green IS has emerged as a new area of scholarship in the last few years to address issues created by the Anthropocene period. It offers the promise for IS scholars to make a significant contribution to reducing green house gas emissions and mitigating the effects of global climate change and other environmental problems. While information technology creates an environmental load because of the electricity required for its operation and the problem of disposing obsolete hardware, innovative information systems can reduce environmental problems.

This panel gives five of the pioneers in the area the opportunity to present their views on what directions the IS discipline should pursue to ensure it makes a significant practical contribution to solving global climate change and how it might also simultaneously contribute to the theoretical advancement of the field. The panelists have all played a pioneering role in developing and publicizing Green IS as an IS research area. As leaders in this emerging domain of IS research, they have been thinking about its directions and contributions for some years.

Controversial Issues and Panelists' Positions

While significant achievements have been made in shaping Green IS as a subfield in the IS discipline, the uptake of Green IS is still by far too slow given the magnitude of the problem. This is alarming, mainly for two reasons: first, the IS discipline may fail to contribute to one of the most important problems of our modern society; second, the IS discipline may lose a historic chance to prove relevance and thus strengthen its position as an academic discipline. This panel, therefore, intends to discuss future directives for the IS discipline in order to support Green IS.

The panelists are carefully selected to cover different perspectives such as research, teaching, transfer, and community building. Each panelist will be asked to specifically argue “what the IS discipline needs to do” in order to fully leverage the potential of Green IS. While we do not expect much controversy among the panelists, we do, however, expect the statements of the panelists to provoke and stimulate a discussion with and among the audience. We expect this discussion to raise attention within the IS community and therewith also to substantially help to further the uptake of Green IS in the IS discipline.

The positions of the panelists are outlined below:

Cathy Dwyer: I will argue that IS researchers have a moral imperative to use their skills to develop green information systems that lessen the impact of human activities on the environment. The SIGGreen community has voted to endorse a pledge that IS researchers must apply their critical socio-technical analysis skills to generate advances in sustainability. As an example, I will discuss how the IS community, and the AIS SIGs and local chapters in particular, should serve as advocates for change. For example, SIGGreen embraces the use of social media and virtual collaboration. The structure of SIGGreen supports ongoing interaction among globally distributed members, while lowering the carbon intensity of our activities.

Steve Elliot: To assure its future, the IS discipline needs to revise its focus from an inward-looking preoccupation with challenges confronting the discipline to an outward-looking determination to address global challenges. One global challenge is to reduce and reverse the rapid degradation of the natural environment. Manifestations of environmental degradation include: climate change, with increasing droughts, floods and extreme weather conditions; rising sea levels; and declining food and water resources. The leading scientists in this domain attribute environmental degradation on a global scale to human behavior. More than 190 countries accept their scientific evidence and have formally committed to take action.

The challenge to be addressed is of global proportions: changing current polluting practices by business, government and society. IS/IT is acknowledged as a major source of solutions so efforts by the IS
discipline have the potential for high impact. However, until very recently, efforts by IS researchers have been minimal. This panel will show IS scholars how and where they can make significant contributions in this domain. My focus will be on how business can develop and implement IS-enabled solutions to environmental challenges and how universities can make critical contributions in empirical research, professional education and adoption of more sustainable practices.

Nigel Melville: My research focuses on mitigation, or how firms are adopting innovative information systems to lower their environmental risk, reduce costs, and develop new lines of business. However, there is another view that we ought to be focused on adaptation, or the design and effective use of information systems for a resource constrained world characterized by scarcity. While both perspectives are valid, I argue for the former. The global environmental footprint of business is enormous, the mitigation potential is substantial, and in the digital age, digital transformation will prove to be a vital mechanism by which firms green their operations. In sum, I will argue that IS-enabled business transformation towards environmental sustainability, which I call “Environmental Sustainability 2.0,” will become a hallmark of successful organizations in the coming decades.

Richard Watson: The IS academic publication culture can be characterized as conservative incrementalism — advance slightly what we already know and make certain you cite everything that is possibly tangential to the main idea. We don’t embrace innovation in both the knowledge we publish and the way we publish it. My viewpoint is that we need to innovate our way to sustainability, but unless we establish a new mechanism for encouraging and nurturing timely and innovative field research the IS discipline is likely to play a minimal role in this endeavor. The panelist will present his ideas for creating a mechanism for publishing solution-oriented Green IS research in a timely manner.

The panelist will also common on his research on innovation sustainability. He will present examples of two such projects in which he is involved: Sweden’s Arlanda airport and piloting an information market to support demand response systems. The core driver of innovation in these ecosystems, he will argue, will be the creation of open digital data streams that describe the environment and its participants in real time. He will propose that IS researchers need to focus on enabling and creating digital data stream fed innovation ecosystems.

The panel will be moderated by Jan vom Brocke. He will, as appropriate, ask each panelist to comment on potentially controversial issues in the Green IS domain. He will also show how the various ideas presented by the panelists aggregate into a bigger picture (considering different dimensions such as research, teaching, community building).

Panel structure and Audience Participation

The panel will start off with a brief introduction into the topic by the moderator, followed by the panelists’ positions and the audience’s participation in an equally long time frame. Finally, a summary and closing remarks will round up the panel. The structure, therefore, is as follows:

1. Introduction (5 minutes)
2. Panelists’ Positions (40 minutes)
3. Audience’s Participation (40 minutes)
4. Conclusion (5 minutes)

Special emphasis is put on the active participation of the audience in order to foster a fruitful discussion in the panel. For this purpose cards will be handed out to the audience prior to the panelists’ statements, so that each participant can write down comments and questions to be presented to the panelists. An assistant will collect the cards and identify major discussion points, which will then be handed over to the panel for discussion. Depending on the technology available this process might also be organized using tweets.

Biographies

Cathy Dwyer is chair of SIGGreen, a special interest group of the AIS focused on the application of information systems to environmental sustainability. Together with founding SIGGreen chair Helen
Hasan, she has created several Green IS research programs that blend virtual collaboration with face-to-face meetings. Her most recent work has been to examine the environmental footprint of academic research, using the activities of SIGGreen as a case study.

Steve Elliot seeks to assist organizations respond strategically to the transformative forces of environmental sustainability. His work acknowledges the key contribution of business in addressing sustainability challenges by examining pioneering companies and proposing a trans-disciplinary framework to support business transformation. Recognizing the necessity for universities to make a critical contribution to resolving the challenges of sustainability, his current work also examines how and where IS applications and IS scholars could assist universities to realize their potential.

Nigel Melville examines how innovative applications of information systems can shift environmental beliefs, enable new courses of action, and impact sustainability performance in organizations. He authors a popular scholarly blog entitled “Information Systems for Environmental Sustainability” (over 25,000 views), wrote the IS chapter for the recently published “Oxford Handbook of Business and the Natural Environment,” which reviews the state of the field across all management disciplines, and has authored several published and working papers at the nexus of IS and environmental sustainability. He is currently focusing on enterprise information systems for managing energy and carbon emissions in organizations.

Jan vom Brocke is Hilti Chair of Business Process Management and Director of the Institute of Information Systems at the University of Liechtenstein. Together with his colleagues Stefan Seidel and Jan Recker, he investigates on how organizations can establish sustainability practices in their operations. Jan is co-editor of the book “Green Business Process Management. Towards the Sustainable Enterprise” and serves on the advisory board of SIGGreen and as academic counselor to swisscleanstart, a trade association for sustainable economy. In addition, he is an advisor on GreenIS to the Liechtenstein Government and a delegate on ICT research to the European Commission. Since 2012 he is Vice-President for Research at his University and co-leader of a university-wide sustainability project, called UniGO! (University Green Organisation!).

Richard Watson, with his colleague Marie-Claude Boudreau, has been working on Green IS since early 2007. He co-authored the first academic paper, case study, and book on Energy Informatics. He actively cooperates with IS and engineering scholars in developing Energy Informatics as a solution science that will reduce energy consumption. Dr. Watson will discuss the Energy Informatics research program at the University of Georgia and the work with Engineering faculty to establish a cross-reality lab for research and instruction.

References


