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**Session 1a: Biodiversity and Ecosystem Informatics**

- Monday, 10 a.m.

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**Moderator:** Judith Cushing, The Evergreen State College

**Panelists:**

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- Kate Beard-Tisdale, University of Maine
- Barbara Eckman (IBM)
- Eric Landis, Natural Resources Information Management
- John Schnase, NASA
- Rob Stevenson, University of Mass., Boston

Ecosystem and biodiversity information, aggregated to support policy decisions and resource management, is critical - though absent - at many levels of local, state and federal government. In addition, field data collection is extremely expensive, usually paid for by government funds, yet rarely adequately documented and archived for long term use.

On February 11 of this year, Principal Investigators of Biodiversity and Ecosystem Informatics (BDEI-CISE-EIA) planning and incubation grants, came together with agency representatives (NSF, USGS and NASA) and other interested parties, to report research results and craft a BDEI research agenda. The workshop aimed to outline fundamental CS/IT research directions needed to solve major BDEI research questions and to identify areas where focused applied CS/IT research would yield considerable immediate benefit in BDEI. See <http://canopy.evergreen.edu/bdeipi>. BDEI research projects (and ensuing research areas) were categorized into four topic areas:

- Semantic Data Integration
- Spatio-Temporal Data / Remote Sensing
- Modeling and Forecasting
- Putting it into Practice: Domain Research Practices, Community, Workflow

The DGO panel will report the major research results of the BDEI planning and incubation grants, and present the preliminary report of the workshop. In particular, we will address overlap with the recent NSF blue ribbon panel on cyberstructure [http://www.communitytechnology.org/nsf\\_ci\\_report/report.pdf](http://www.communitytechnology.org/nsf_ci_report/report.pdf) and the National Library of Medicine (NLM) sponsored Workshop on Data Management for Molecular and Cell Biology <http://www.lbl.gov/~olken/wdmbio>.

The panel is comprised of BDEI principle investigators, workshop organizers, representatives of the Molecular and Cell Biology Workshop and (possibly) the cyberstructure reports. The primary submission to the final DGO proceedings will be the executive summary of the research agenda.

**Session 1b: Case Studies**

- Monday, 10 a.m.

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**Moderator:** Valerie Gregg, Program Manager, NSF Digital Government Research Program

**Knowledge Networking in the Public Sector**

*Presented by: Sharon S. Dawes, Ph.D.*

*Director, Center for Technology in Government  
University at Albany/SUNY*

In 1999, the Center for Technology in Government (CTG) began a three-year study, sponsored by NSF, that could not have been attempted without the existence of mutually beneficial working relationships with government agencies. The purpose of the study was to examine the formation and operation of knowledge networks in the public sector. The study was designed to describe, evaluate, and compare several empirical cases involving groups of agencies in New York State engaged in programmatic or administrative innovations that depended on the sharing of knowledge and information across multiple organizations. The research focused on identifying the dimensions of success and on understanding how organizational, technological, and political factors influence results. These cases emerged from long-standing problem solving relationships between CTG and the involved agencies. These problem-focused collaborations with government agencies built a foundation of familiarity and trust that allowed the researchers to have exceptionally intimate long-term access to these organizations. As a

result, the study generated new theoretical knowledge about these networks—and returned ongoing benefits to the agencies in terms of organizational learning and reflection about their knowledge sharing practices and needs.

### **Transnational Digital Government Research: Building Regional Partnerships**

*Presented by:*

*José A. B. Fortes*

*University of Florida*

[Advanced Computing and Information Systems Laboratory](#)

Governments increasingly find it essential to collaborate with each other in efforts to identify, monitor and solve regional and global problems. At the same time, this transnational government cooperation faces unique challenges that either are absent, or are not acute, in national government activities. Individual countries differ in their languages, laws, regulations, cultures, administrative structures, resources, geopolitical characteristics and stages of technological development - all of which impact interactions among government agencies. Information technology (IT) has an important role to play in fostering international collaboration through transnational digital government (TDG) by overcoming these differences and facilitating the collection, provision and exchange of information.

To understand the unique IT research challenges of TDG, it is essential for academics to engage with agencies of different countries in the characterization, analysis and resolution of problems faced by concrete transnational government processes. The formation of sound government-academia partnerships is the first challenge of any research project on transnational digital government. This case-study presentation illustrates such a partnership in the context of a unique project whose goal is to conduct research on IT technology to facilitate transnational efforts to monitor illicit drug activities across the Americas.

The project pursues research on technology and tools for the collection, processing, exchange and integration of information needed by transnational digital government. Research challenges fall in the following areas:

- Spoken dialogue systems for data collection, training and learning;
- Data management and security techniques for rule-based data sharing and filtering;
- Machine translation technology for sharing documents across different languages and countries;
- Middleware for transnational (heterogeneous) information grids that enable private, secure and dependable automation of collaboration processes and policies, and the delivery of computing services through Internet portals; and
- Network behavior modeling and optimization for delivery of acceptable quality of service.

The context of the research is the ongoing process of transnational counter-narcotics cooperation among all Western Hemisphere governments whose goal is to reduce illicit drug production, traffic and consumption. The process is coordinated by CICAD— the Inter-American Drug Abuse Control Commission – which is a technical body of the Organization of American States (OAS), and composed of 34 member states. A key component of this cooperative process is the Multilateral Evaluation Mechanism (MEM). Through the MEM process, OAS member states mutually evaluate their progress in dealing with all aspects of the drug problem. The MEM requires that countries collect, share and analyze extensive amounts of information in accordance with agreed-upon standard indicators presented in the form of a questionnaire. The expectation is that the evaluation process in and of itself will serve to spur countries to improve all aspects of their counter-drug performance either by their own means, or by technical assistance provided by OAS/CICAD. A complete response to this questionnaire on the part of OAS countries, and the success of the analysis of this data at the regional level, require data that is objective, up-to-date, comparable and exchangeable. National collection of some MEM-related data is assisted by CICAD-developed uniform data collection systems which include transnational instruments that facilitate the conduct of national epidemiological surveys and the gathering of traffic-related data and documentary materials. Currently, however, much data is not readily accessible because it is processed manually. One of the objectives of this project is to pilot-test in Belize and the Dominican Republic innovative information technology approaches to the deployment and use of these and other instruments and systems for data collection, retrieval, and analysis that could be applied throughout the hemisphere.

As a result of several consultative meetings in Belize, the Dominican Republic and the US, it was agreed that the pilot project would focus first on a specific MEM indicator that deals with identifying new global trends in the illicit movement of people, controlled substances, firearms and drugs across borders of Belize and the Dominican Republic. The project will focus on Information Technology research to facilitate the collection, dissemination, analysis and exchange of related information. Consideration is being given to the differences in language, infrastructure, and government bureaucracies, among others.

The government-academia international partnership involved in the project consists of a team of researchers from five universities (Carnegie Mellon U., North Carolina State U., U. of Belize, U. of Colorado, U. of Florida, U. of Massachusetts and Pontificia Universidad Católica Madre y Maestra (PUCMM)) and experts from agencies in three different countries (US, Belize and the Dominican Republic). Under the umbrella of the OAS, several ministries and agencies in the three countries are involved. These include two OAS departments in Washington, D.C. (the Department of Technology and Facility Services and CICAD's Inter-American Observatory on Drugs); the National Drug Abuse Control Council of Belize's Ministry of Health; and the National Drug Council of the Dominican Republic. The university researchers include experts on speech-based interfaces, machine translation, databases, information retrieval, Internet-computing and networking.

The presentation will describe the research motivations of this project, the steps taken to identify and constitute the government partnership, challenges faced by the project, and strategies used to succeed in a collaborative effort that involves eight university countries and several government agencies. Acknowledgements: Research reported in this paper is funded in part by NSF award 0107686 and EIA-0131886. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

### **Developing and Applying UrbanSim, a System for Simulating Urban Land Use, Transportation, and Environmental Impacts**

*Presented by:*

*Paul Waddell  
Director, Center for Urban Simulation and Policy Analysis  
Evans School of Public Affairs  
University of Washington*

*Alan Borning  
Co-Director, Center for Urban Simulation and Policy Analysis  
Department of Computer Science & Engineering  
University of Washington*

provide a brief overview of the UrbanSim project and its history, and then suggest some reasons that we believe the project has been successful so far.

UrbanSim is a tool for use by urban planners and others to help predict future patterns of urban development under different possible input scenarios, over periods of twenty or more years. It should support deliberation and debate on such issues as building new transit systems or freeways, or changing zoning or economic incentives, as well as on broader issues such as sustainable, livable cities, economic vitality, social equity, and environmental preservation. We want stakeholders to be able to consider different scenarios - packages of possible policies and investments - and then, based on these alternatives, to predict the resulting patterns of urban growth and redevelopment, of transportation usage, and of resource consumption and other environmental impacts.

The first prototype version was developed in 1996 to provide a land use model to aid in planning activities in Honolulu. It was then applied, again in prototype form, to Eugene/Springfield, Oregon in 1998. Version 1 of the software was released in 2000, and subsequently applied to Salt Lake City, Utah. Application to Houston, Texas began in 2001. Starting in summer 2001 we rewrote the software from the ground up, with the release of Version 2.0 later that year. Also in 2002, we set up a partnership with the Puget Sound Regional Council (the Metropolitan Planning Organization for the region that includes Seattle) to develop UrbanSim and apply it locally, with the intent of making it the operational land use model for the region. Finally, the University of Washington approved the formation of a new Center, the Center for Urban Simulation and Policy Analysis, to provide a formal organizational home for the interdisciplinary effort. The project has received funding under the Digital Government program (as well as the NSF ITR program) beginning in September 2001. We also received matching funding from the Federal Highway Administration, which are being used to support a case study of applying UrbanSim in the Salt Lake City region, including an evaluation by an expert External Review Panel.

Regarding the success of the project, we should first note that the project has been successful so far (in setting up partnerships with local and regional government agencies, in producing an operational urban model that is considerably more advanced than others in routine use, and in setting up a highly interdisciplinary collaboration in the university). However, the long-term success of the project should be judged on whether we produce a software system that is in routine, day-to-day planning use by Metropolitan Planning Organizations and others, and that - ultimately - changes for the better the way urban planning is done. Here the jury is still out. In outline form, here are some reasons that we believe the project has been successful so far:

- Most importantly, we identified real, unmet needs of local and regional governments and are developing a system to meet these needs. The land use models that most agencies currently use are quite inadequate to meet the demands and expectations of them. Drawing on the work of various researchers, we identified public policies of interest. We then developed models to examine the potential effects of these policies, using a behavioral framework that accounts for the interactions of policies and markets. This approach has led to models that are more detailed than prior models, which has added computational requirements, but has yielded a more understandable and relevant system.
- We set up and are running an interdisciplinary project that has participation from a wide range of University of Washington departments, including the Evans School of Public Affairs, Computer Science and Engineering, Urban Design and Planning, Civil Engineering, the Information School, Psychology, Statistics, and others. Both the Evans School and Urban Design and Planning have many years of experience in setting up successful collaborations with local and state government. The project has requirements for expertise that any single one of the participating departments would be unable to meet on its own. Through collaboration, it has been important to find space that allows project faculty, staff, and students from the different departments to be co-located, and to have frequent meetings and informal discussions among project members from multiple disciplines. We also had a series of interdisciplinary seminars, and are currently co-teaching a graduate course in urban simulation, with faculty from a range of departments.
- We have found ways of balancing the research agendas of the respective academic partners with the more applied research of governmental partners, by framing the research agenda in problem-centered terms, and tackling problems that are difficult enough to provide motivating research challenges within each of the contributing disciplines.
- We use an agile software development methodology, which allows us to adapt rapidly to changing requirements [3].
- To increase confidence in the reliability of the system, we use an extensive testing methodology. For the same reason, we strive to write the code clearly enough that the technical modelers, as well as the software developers, can read and critique code that implements the core of the component models of UrbanSim.
- To ensure that the system will continue to be available and maintainable, and to allow different users to build on each other's work, we use an open source license for our software, the GNU Public License. Anyone can download the system from our website (including source code, documentation, and tutorials). For example, groups in Paris, France and Taipei, Taiwan are working on integrating UrbanSim into their own systems.

applying UrbanSim in those regions. By placing the software under the GPL, rather than simply putting it in the public domain, we help put in place a structure that allows users to build on each other's work. (In contrast, in other cases, land use or transportation modeling software was initially funded by federal or other government agencies and placed in the public domain. It was then modified by a consultancy and made proprietary.) There is still ample opportunity for consultancies to use the software in a service-oriented business model.

- We were able to hire two professional software engineers, with extensive industrial experience, to manage and form the backbone of our programming effort. These engineers also coordinate the work of undergraduate and graduate students who write parts of the software system. The graduate students work on programming projects that form part of their own research efforts as well as contributing to the overall project objectives. A set of undergraduate research assistants, majoring in computer science or computer engineering, make important contributions to the project, as well as gaining valuable experience working with skilled professional engineers on a complex software system. This structure has proven useful in achieving the software quality, reliability, and maintainability that we require.
- The domain of urban development and environmental impacts is value-laden, with different stakeholders often bringing a range of strongly-held and sometimes incompatible values to the table. To handle the design questions raised by this diverse set of values and value conflicts, we use Value Sensitive Design [4], a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process.
- Our research questions are driven first by the requirements of the domain and of delivering a useful, reliable system. (References [2] and [6] are examples of domain research of this kind.) In addition, we have had success doing research that involves studying the methodologies and processes that we use, e.g. [3] on our software development methodology, [1] on a group coordination technique that evolved from the software developers and spread to the rest of the group as well, and [4] on the Value Sensitive Design methodology - we are both applying this methodology to UrbanSim, and also extending it based on the novel aspects of the domain.

### Session 1c: Data & Statistics

- Monday, 10 a.m.

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**Moderator:** Carol Hert, Syracuse University

1. **Toward a Statistical Knowledge Network**  
Marchionini, Gary; Haas, Stephanie; Plaisant, Catherine; Shneiderman, Ben; Hert, Carol
2. **Finding Outliers in Models of Spatial Data**  
Scott, David W.; Christian, J. Blair
3. **Social welfare program administration, program evaluation, and policy analysis using knowledge discovery and data mining (KDD) technology on administrative data**  
Kum, Hye-Chung (Monica); Duncan, Dean; Flair, Kimberly; Wang, Wei
4. **Crime Data Mining: An Overview and Case Studies**  
Chen, Hsinchun; Chung, Wingyan; Qin, Yi; Chau, Michael; Xu, Jennifer Jie; Wang, Gang; Zheng, Rong; Atabakhsh, Homa

### Luncheon Address: Dr. Gregory Andrews - CISE/EIA

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#### The NSF Cyberinfrastructure Initiative

A "cyberinfrastructure" is an integrated collection of computational facilities, communications networks, software systems, and data archives---together with the people that make it work---that provides a powerful new foundation for revolutionizing science and engineering. The US National Science Foundation (NSF) is developing a new, potentially very large program in this area. This talk will briefly describe why the topic is exciting, why it is important, and what it might mean to the Digital Government research program.

#### Biography: Gregory R. Andrews

Gregory R. Andrews became Division Director for the Experimental and Integrative Activities (EIA) Division of the National Science Foundation's Directorate for Computer and Information Science and Engineering (CISE) in January 2003. Dr. Andrews currently is an IPA from The University of Arizona where he has been since 1979. He served as chair of the university's Computer Science Department from 1986-1993 and was the recipient of a distinguished teaching award in 1986 as well as a career distinguished teaching award in 2002. From 1974-1979 he was an Assistant Professor at Cornell University.

Dr. Andrews received his Ph.D. in Computer Science from the University of Washington in 1974 and earned a B.S. in Mathematics from Stanford University in 1969. His research interests include all aspects of parallel and distributed programming: languages, applications, 'systems' issues, and performance. He is a fellow of the Association for Computing Machinery (ACM) and was heavily involved in the Computing Research Association (CRA) where he served on the Board of Directors. Prior to his current role as Division Director for Experimental and Integrative Activities, Dr. Andrews served on two NSF advisory committees from 1988-1992.

**Session 2a: Panel - International e-Government****- Monday, 1:30 p.m.**[BACK to Pro](#)**Challenges and Opportunities in International Digital Government Research****Moderators:**

- Noshir Contractor, University of Illinois at Urbana-Champaign;
- Anthony Stefanidis, University of Maine

The challenges and opportunities for digital government have an increasing global relevance. This panel provides a critical evaluation of the contexts and processes for transnational efforts in Digital Government research. Panelists consider various relevant contexts that are particularly appropriate to transnational investigations, such as the use of Information Technology and Virtual Reality modeling. The panel also considers the funding structures and mechanisms that enable and constrain such transnational research collaborations.

More specifically, the panel discusses efforts by NSF, the European Union, and other countries, to support such efforts. Example topics of discussion include challenges and strategies for conducting international public management research, and transnational efforts for the design and study of socio-technical emergency response systems.

**Session 2b: Data Sharing and Integration (I)****- Monday, 1:30 p.m.**[BACK to Pro](#)**Moderator:** Kate Beard, University of Maine

1. **Enabling Transnational Collection, Notification, and Sharing of Information**  
Cavalli-Sforza, V.; Anton, A.I.; Brooks, O.; Carbonell, J.; Cole, R.; Connolly, R.; Fortes, J.; Herrera, M.; Krsul, I.; McSweeney, C. Ortega, C.; Su, S.; Towsley, D.; Ventura, J.; Ward, W.
2. **Scientist, Politician, and Bureaucrat Subcultures as Barriers to Information-Sharing in Government Agencies**  
Drake, David B.; Koch, Marianne J.; Steckler, Nicole A.
3. **The Effects of Internet Use on Political Participation: Evidence From an Agency Experiment with a Web-based Forum**  
Stanley, J. Woody; Weare, Christopher
4. **Integration of Multi-Source Spatial Information for Coastal Management and Decision Making**  
Li, Ron; Bedford, Keith W.; Shum, C.K.; Ramirez, J. Raul; Zhang, Aidong; Elaksher, Ahmed

**Session 2c: Policy Issues****- Monday, 1:30 p.m.**[BACK to Pro](#)**Moderator:** Jane Fountain, Harvard University, Kennedy School of Government

1. **Better Public Policy Through Natural Language Information Access**  
Katz, Boris; Hurwitz, Roger; Lin, Jimmy J.; Uzuner, Ozlem
2. **Implementing the Electronic Disbursement of Child Support Payments**  
Johnson, Craig L.; Pirog, Maureen A.
3. **Electronic Negotiation of Government Contacts Through Transducers**  
Paliwal, Aabhas V.; Adam, Nabil; Atluri, Vijayalakshmi; Yesha, Yelena
4. **Digital Citizenship: Parameters of the Digital Divide**  
Shulman, Stuart W.; Shelley, Mack C.; Thrane, Lisa

**Birds of a Feather Sessions****- Monday, 4 p.m.**[BACK to Pro](#)

The Birds of a Feather sessions enable conference participants to network with colleagues and address issues that extend beyond a particular digital government project. In these sessions, attendees can identify issues that the community as a whole should address and suggest strategies to move forward. An additional goal is to foster involvement from related communities to extend the impact of the program. Each group will be asked to provide a summary of their discussion to be included in the final report of the conference proceedings.

**Biodiversity and Ecosystem Informatics (BDEI) and Bioinformatics (Molecular Biology)**

*Moderator: Judith B. Cushing, Evergreen State College* Considerable interest in the BDEI application domain has materialized since NSF's June 2000 workshop ([www.evergreen.edu/bdei/2001](http://www.evergreen.edu/bdei/2001)). Research areas were outlined in that workshop's report, and (in fall 2001) 15 NSF planning grant and research initiation awards were made. Research results from those awards are beginning to emerge and were presented by principal investigators at a workshop (sponsored by NSF, USGS and NASA) on February 11, 2003 <http://canopy.evergreen.edu/bdei03>. A workshop report will be published this summer that defines key terms and research issues, and relates this field to other more established research domains.

This session will seek input from other interested parties about additional specific research issues and how current

research would transfer to this domain. We also seek to better understand the relationship of BDEI to Bioinformatics (aka Molecular Biology Informatics) and other scientific database research (in particular those using GIS), and its relationship to digital government initiatives.

At an earlier DGO panel, awardees of the 2001 NSF BDEI initiative, and others, will outline BDEI research. This BOF session will use those research areas as a starting point: remote sensing and wireless networks; event and process tagging; spatio-temporal data and models; visualization of patterns and processes; data heterogeneity; and taxonomic information, nomenclature and semantics. In the BOF and panel sessions, we also aim to consider: relevant off the shelf applications or products; needed organizational infrastructure change; technology training for ecologists; increased funding for ecologists.

#### **Developing an Integration Infrastructure for The Statistical Knowledge Network: Metadata and Standards**

*Moderator: Carol A. Hert, Syracuse University*

A number of the digital government projects are addressing issues related to the integration of statistical information from multiple sources. Mechanisms for storing, retrieving, transmitting, and integrating that information are highly dependent on metadata that describes, explains, and provides context for the statistical information. These metadata include ontologies, terminological systems of all kinds, technical documentation about methods, etc. There are a variety of standards in play relevant to these efforts: DDI (Data Documentation Initiative), ISO11179 for metadata registries, RDF, terminological system standards, etc. The BOF would look at which metadata aspects and standards various projects are working with, discuss issues of coordination of these efforts, and begin to strategize on how to draw on expertise in the statistical agencies to inform ongoing decisions in this area.

#### **e-Government and Public Policy**

*Moderator: Stuart Shulman, Drake University*

This "Birds of a Feather" session will explore the multidimensional impact of IT on the public policy process. With recent legislative and administrative eGov initiatives moving ever more citizen-government interaction online, the wide range of emerging data collection possibilities is staggering. New metrics, access and transparency will foster the next generation of theoretical and empirical public policy research. At stake are the tools that will explain and transform the process, as well as the rules that will govern the collection of data generated by various public policy processes. While some research domains, such as eRulemaking, are now well established and growing rapidly, others have yet to form. The "eGov and Public Policy" session will seek to prioritize new areas for innovative dg.o research that can contribute to better and more durable public policies, as well as a deeper understanding of the transformation ushered in by eGov activities.

#### **Geographic Information Systems**

*Moderator: Peggy Agouris, University of Maine*

This BoF session intends to address a variety of issues related to research in Geographic Information Science and its significance to Digital Government. Participants will have the opportunity to discuss on-going research efforts as well as new challenges and applications related to geospatial information. The topics to be discussed range from innovative automated data acquisition algorithms to spatiotemporal databases and uncertainty issues. The outcome of the session will be a summary identifying emerging research directions and collaboration opportunities, and providing recommendations for future interdisciplinary activities.

#### **HCI and Usability**

*Moderator: Gary Marchionini, University of North Carolina*

Government websites and other digital services are crucially dependent on good user interfaces (UIs) to provide easy and universal access to entire populations. Designing and implementing such UIs demands an ongoing process of user needs assessment, mapping data to interaction models, prototyping designs, and conducting usability tests. This process is ongoing because the installed base of technical platforms and user expertise and expectations continues to evolve. This birds of a feather session will discuss how government agencies can UI design as an ongoing part of their information technology work. Participants will be invited to share best practices and suggest key problems that academic partners might help agencies solve.

#### **International Digital Government Research**

*Moderators: Anthony Stefanidis, University of Maine; Noshir Contractor, University of Illinois at Urbana-Champaign*

This BoF session intends to examine the challenges that transnational efforts in Digital Government research typically encounter. It complements the panel on International Digital Government research and its scope is to foster the exchange of opinions and experiences in multinational collaborations from conference attendees representing diverse disciplines. Participants will also address relevant research issues as well as available funding mechanisms and potential obstacles that can hinder international collaborations.

#### **IT Research and Collaboration Tools: Geoinformatic Surveillance: Hotspot Detection and Prioritization Across Geographic Regions and Networks for Digital Government In The 21st Century**

*Moderator: G.P. Patil, Penn State University*

Geoinformatic surveillance for spatial and temporal hotspot detection and prioritization is a critical need for the 21st century Digital Government. A hotspot can mean an unusual phenomenon, anomaly, aberration, outbreak, elevated cluster, or critical area. The declared need may be for monitoring, etiology, management, or early

warning. The responsible factors may be natural, accidental or intentional, with relevance to both infrastructure and homeland security.

This proposal describes a multi-disciplinary research program based on novel methods and tools for hotspot detection and prioritization, driven by a wide variety of case studies of direct interest to several government agencies. These case studies deal with critical societal issues, such as carbon budgets, water resources, ecosystem health, public health, drinking water distribution system, persistent poverty, environmental justice, crop pathogens, invasive species, biosecurity, biosurveillance, remote sensor networks, early warning and homeland security. The geosurveillance provides an excellent opportunity, challenge, and vehicle for synergistic collaboration of computational, technical, and social scientists.

Our methodology involves an innovation of the popular circle-based spatial scan statistic methodology. In particular, it employs the notion of an upper level set and is accordingly called the upper level set scan statistic, pointing to the next generation of a sophisticated analytical and computational system, effective for the detection of arbitrarily shaped hotspots along spatio-temporal dimensions. We also propose a novel prioritization scheme based on multiple indicator and stakeholder criteria without having to integrate indicators into an index, using revealing Hasse diagrams and partially ordered sets.

Responding to the Government's role and need, we propose a cross-disciplinary collaboration among federal agencies and academic researchers to design and build the prototype system for surveillance infrastructure of hotspot detection and prioritization. The methodological toolbox and the software toolkit developed will support and leverage core missions of federal agencies as well as their interactive counterparts in the society. The research advances in the allied sciences and technologies necessary to make such a system work are the thrust of this proposal.

The presentation will have a dual disciplinary and cross-disciplinary thrust. Post presentation dialogues and discussions will be particularly welcome, leading potentially to well considered synergistic case studies. The collaborative case studies are expected to be conceptual, structural, methodological, computational, applicational, developmental, refinemental, validational, and/or visualizational in their individual thrust.

Keywords: hotspot detection and prioritization, surveillance system, digital government, GIS, information technology, upper level set scan statistic, Hasse diagrams, partially ordered sets, hotspot rating, carbon budgets, water resources, ecosystem health, public health, drinking water distribution system, persistent poverty, environmental justice, crop pathogens, invasive species, biosurveillance, remote mobile sensor network, early warning system, cyber security, homeland security.

For additional information, see the webpages:

1. <http://www.stat.psu.edu/~gpp/PDFfiles/Prospectus%2016.pdf>
2. <http://www.stat.psu.edu/~gpp/PDFfiles/Prospectus%2016%20overview.pdf>
3. <http://www.stat.psu.edu/~gpp/PDFfiles/Prospectus-15-Case%20Studies.pdf>

#### **Public-Private Partnerships for Internet Development**

*Moderators: Sharon Gillett and William Lehr, MIT CTPID; Jane Fountain, Harvard KSG*

This session will discuss research questions and methods to address community-wide learning about public-private partnerships for stimulating local and regional Internet development. Numerous and diverse partnerships aimed at fostering Internet availability (e.g. demand aggregation projects) and adoption (e.g. community technology centers) have been undertaken in many locales, with more variants emerging along with each new wave of communications technology (e.g. WiFi). Conference attendees are invited to participate in an interactive discussion of questions such as:

- What types of disciplinary and interdisciplinary methods are needed to assess the results of this natural experiment?
- What kind of insights would practitioners find most useful regarding the effectiveness of different approaches, given particular goals or circumstances?
- How might research on this topic inform theoretical perspectives on the interactions between technological advances in communications capabilities and e-government performance, both in terms of internal government processes and electronic service delivery to citizens?

#### **State of the Semantic Web in Digital Government**

*Moderators: Isabel Cruz and Joel Sachs*

Many DG grantees are either directly or peripherally engaged in semantic web research. This BoF will offer a "State of the Semantic Web in Digital Government". All researchers are invited to speak for a few minutes, with or without slides, about their semantic web activities. Participants are also welcome to ask questions about semantic web technology or activities, which will be addressed by the expertise present at the BoF. Our hope is that the BoF

will 1) foster a semantic web community of practice within DG, and 2) serve as an informal DG metadata standards meeting.

We encourage participants to take a broad view of what constitutes the semantic web, and to briefly share their work in Open GIS standards, web services, RDF, semantic mediation, and other related technologies.

**System Demonstrations (I)**

- Monday, 7 p.m.

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- **A Framework for Facilitating E-Rulemaking**  
Katz, Boris; Lin, Jimmy J.; Uzuner, Ozlem
- **A Prototype Automated Dental Identification System (ADIS)**  
Nassar, Diaa Eldin M.; Ammar, Hany H.
- **An Integrated Fire, Smoke, and Air Quality Network**  
Falke, Stefan; Husar, Rudolf
- **COPLINK: Visualization for Crime Analysis**  
Chen, Hsinchun; Atabakhsh, Homa; Petersen, Tim; Shroeder, Jenny; Buetow, Ty; Chaboya, Luis; O'Toole, Chris; Chau, Michael; Cushman, Tom; Casey, Dan; Huang, Zan
- **H2O: Building Communities Around Ideas**  
Palfrey, John; Zittrain, Jonathan; Armstrong, Juliet; Marinus, Julian; Roberts, Hal
- **Helping Users Get Started with Visual Interfaces: Multi-Layered Interfaces, Integrated Initial Guidance and Video Demonstrations**  
Kang, Hyunmo; Plaisant, Catherine; Shneiderman, Ben
- **Management Assistance for Work First via a Dynamic Website**  
Kum, Hye-Chung (Monica); Duncan, Dean; Flair, Kimberly
- **Accessing Diverse Geo-Referenced Data Sources with the SAND Spatial DBMS**  
Sankaranarayanan, Jagan; Tanin, Egemen; Samet, Hanan
- **Computer-assisted Probability Sampling and Statistical Inference in the Field**  
Mukhopadhyay, Pushpal; Nusser, Sarah
- **Data Exploration with Paired Hierarchical Visualizations: Initial Designs of PairTrees**  
Kules, Bill; Shneiderman, Ben; Plaisant, Catherine
- **Testbed for High-Speed End-to-End Communications in Support of Comprehensive Emergency Management**  
Gallagher, Tim; Miniuk, Mary
- **Enabling Email Confidentiality Through the Use of Opportunistic Encryption**  
Garfinkel, Simson L.
- **Extending Metadata Definitions by Automatically Extracting and Organizing Glossary Definitions**  
Hovy, Eduard; Philpot, Andrew; Klavans, Judith; Germann, Ulrich; Davis, Peter T.

**Session 3a: Panel - New IT Research for Environmental Issues - Tuesday, 8 a.m.**

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**New IT Research Possibilities to Advance Environmental Research, Policy and Management**

**Moderator:**

Sue Stendebach, Program Manager, Digital Government Research Program, National Science Foundation

**Panelists:**

- Terry Keating - Special Assistant to EPA's Deputy Assistant Administrator for the Office of Air and Radiation
- Eduard Hovy - Information Sciences Institute, University of Southern California
- Alan MacEachren - Director of the GeoVISTA Center and Professor of Geography at Pennsylvania State University
- Stefan Falke - Washington University at St. Louis

Environmental management relies on sound policy, which must be based on sound scientific research. The implementation and management of environmental policy necessitate continually improved information technology tools to collect, analyze, store, and disseminate information, all of which are vital to the workings of an effective environmental protection entity. With increasing information, increasing demands, and decreasing resources, innovative IT is critical. Without the appropriate IT tools, the advancement of the scientific research necessary for policy formation and management is seriously hampered.

This panel is situated at the nexus among computer science/information technology, environmental science, environmental policy, and environmental management.

The necessity of continually evolving innovative IT tools, with which environmental scientists and policy makers can maintain the scientific edge demanded by environmental protection decisions, has become increasingly, albeit slowly, acknowledged. Government agencies typically operate on a shoestring budget, meaning management and staff time are dramatically over committed. Public officials often find themselves responding to the crisis of the day, while trying to ensure that they have the latest (translated current) scientific justification for making environmental decisions. Therefore, although looking to long-term

IT research to enable advancement of scientific research capabilities is perceived as ideal, staff do not believe their time and resources afford them the latitude to even coordinate with an outside researcher, much less partner with him or her. Short-term answers, via contractors using COTS, are sought instead.

The time has come for environmental policy makers to embrace IT as a foundational tool with which to catalyze environmental science growth, as well as bleeding edge environmental management. Short-term answers, of course, are still needed. Yet, so are long-term research conclusions, if science and policy are to evolve at the edge, as it continues to push further out. Both short and long-term IT research can be conducted on parallel tracks. In no way should short-term answers preclude the need for long-term research.

Numerous Digital Government PIs are working on CS/IT research that has the potential to advance the scientific study needed to make risk-based policy decisions; monitor compliance of environmental regulation; collect and manage databases; share data with states, localities, and other countries; and enable collective analyses of these entities' data, just to name a few. The potential applications of successful research are limitless, including the integration of distributed databases containing heterogeneous data, deep web mining for agency analytical research, natural language query capability to assist citizens in finding an immediate precise response, tools by which to preserve and archive records in the long-term, and sensors to identify chemical and/or biological agents introduced into air and water.

Your participation in this panel discussion can help further realization of many of these innovative applications.

**Session 3b: Digital Libraries and Archives**

- Tuesday, 8 a.m.

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**Moderator:** Hsinchun Chen, University of Arizona

1. **Improving Access to Large Volumes of Online Data**  
Tanin, Egemen; Samet, Hanan
2. **Generating Original Structure In Regulatory Documents**  
Kimbrough, Steven O.; Lee, Thomas Y.; Padmanabhan, Balaji; Yang, Yinghui
3. **Preserving State Government Web Publications – First-Year Experiences**  
Jackson, Larry S.

**Session 3c: Student Papers**

- Tuesday, 8 a.m.

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**Moderator:** Kristin Eickhorst, University of Maine

1. **A Geographic Visual Query Composer (GVQC) for Accessing Federal Databases**  
Guo, Diansheng
2. **eGovernment & Internet Security: Some Technical and Policy Considerations**  
Luna-Reyes, Luis F.; Gil-Garcia, J. Ramon
3. **Conception and Implementation of Digital Government Projects: The Role of Knowledge Transfer**  
Scharf, Maria Christina
4. **Examining the Motivations for E-Government from an Institutional Theory Perspective: Evidence from Turkey**  
Yildiz, Mete
5. **A Study on Automatic Ontology Mapping of Categorical Information**  
Zhou, Naijun

**Session 4a: Panel - E-Rulemaking**

- Tuesday, 10 a.m.

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**E-Rulemaking: New Directions for Information Technology and Government Regulation**

**Moderator:**

Cary Coglianese, Harvard University - John F. Kennedy School of Government

**Panelists:**

- Eduard Hovy, Information Sciences Institute, University of Southern California
- Kincho Law, Civil and Environmental Engineering, Stanford University
- Elizabeth Liddy, Center for Natural Language Processing, Syracuse University
- Beth Noveck, Associate Professor of Law, New York Law School
- Peter Shane, Institute for the Study of Information Technology and Society, Carnegie Mellon University
- Sue Stendebach, Program Manager, Digital Government Research Program, National Science Foundation

Crafting federal regulations imposes significant information demands on government agencies. Agencies such as the U.S. Department of Agriculture, Environmental Protection Agency, Federal Aviation Administration, and Nuclear Regulatory Commission collectively promulgate more than 4,000 new regulations each year. Before adopting a new regulation,

agencies are required to publish a notice of proposed rulemaking in the Federal Register and allow an opportunity for the public to comment on the proposed rule. They also need to complete scientific, engineering, and economic analyses, as well as sort through and respond to the public comments they receive. It is not uncommon for the federal rulemaking process to require three or more years before an agency issues a new regulation. The demands of analysis and information processing can strain limited agency staffs, as well as limit the public's capacity to review and comment upon major regulations as they are developed.

Electronic rulemaking, or e-rulemaking, offers the potential to expand and enhance the public's involvement in the rulemaking process as well as make the rulemaking process more transparent and manageable for federal agencies. E-rulemaking harnesses the power of advanced digital technologies and represents an emerging approach to rulemaking. In recent years many agencies have constructed websites containing agency documents related to the rulemaking, allowed citizens to submit comments electronically, and offered systems for interactive deliberation (such as chat rooms and listserves) over pending rulemakings. Prominent examples include the Nuclear Regulatory Commission's RuleNet project, which relied on Internet technology in all facets of the agency's rulemaking process; the Bureau of Land Management's use of scanning and network systems to process more than 30,000 public comments on a proposed rangelands rule; and the Federal Aviation Administration's on-line rulemaking for small-scale rockets. The General Accounting Office has optimistically predicted that the use of information technology in rulemaking will both improve the transparency of the regulatory process and reduce the burden of rulemaking to agencies.

Public officials appear to be embracing e-rulemaking. Electronic government is one of the five major elements in President George W. Bush's Management and Performance Plan. In October, the Office of Management and Budget (OMB) released an e-government plan that included, among 23 initiatives, a plan to increase e-rulemaking by federal agencies. In addition, OMB is incorporating e-rulemaking into its own regulatory review process, committing funds to create a computerized tracking system which will include the capacity for members of the public to submit comments on regulations electronically ([www.regulations.gov](http://www.regulations.gov)). Last December, Congress enacted the E-Government Act of 2002 which calls for numerous federal initiatives to promote the use of information technology by federal agencies, including on-line publication of agency adjudicatory and rulemaking proceedings.

In order to ensure that the growing interest in e-rulemaking leads to effective and meaningful innovations, it will be necessary to ensure that new computer technologies are appropriately integrated into the institutional design of the federal regulatory process. New technologies will need to take into account the legal and political dimensions of the rulemaking process. In addition, the existing structure of the rulemaking process may itself potentially need to be modified to take full advantage of new e-rulemaking technologies. Expanded reliance on information technology in the rulemaking process also raises important issues of privacy and security.

To develop and advance a research agenda on the technological and institutional issues related to e-rulemaking, the Kennedy School of Government has convened two workshops in the past year: one in Washington, D.C. in March 2002, the other at Harvard University in January 2003. Sponsored by the National Science Foundation's Digital Government Research Program, these workshops brought together academic experts from computer sciences, law, and public management, along with key public officials involved in managing federal regulation, to forge a forward-looking research agenda needed to accomplish improved e-rulemaking efforts in the future.

The proposed panel will present the key findings from the Harvard workshops and share with the larger digital government research community the major themes that will appear in the forthcoming workshop report. Panel members include the leading researchers who participated in the January workshop.

Digital technologies hold the potential for improving linkages between experts, building a broader public dialogue, and improving the analytical quality of government regulations. This panel's dialogue will highlight areas for future research on information technologies and on the management of the rulemaking process in ways that can incorporate advances in information technology.

#### Session 4b: Metadata

- Tuesday, 10 a.m.

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**Moderator:** Vijay Atluri, Rutgers University

1. **Designing a Metadata-Driven Visual Information Browser for Federal Statistics**  
Kules, Bill; Shneiderman, Ben
2. **Free-Link Topology Navigation on Statistical Table Objects: Metadata Schema and User Interface**  
Mu, Xiangming; Marchionini, Gary
3. **Supporting End-Users of Statistical Information: The Role of Statistical Metadata in the Statistical Knowledge Network**  
Hert, Carol A.; Haas, Stephanie W.
4. **Ontology-Based Workflow Change Management for Flexible eGovernment Service Delivery**  
Chun, Soon Ae; Atluri, Vijayalakshmi

#### Session 4c: HCI and Usability

- Tuesday, 10 a.m.

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**Moderator:** Isabel Cruz, University of Illinois at Chicago

1. **Assessing the usefulness and usability of online learning activities: MapStats for Kids**  
Fuhrmann, Sven; Bosley, John; Li, Bonan; Crawford, Stephen; MacEachren, Alan; Downs, Roger; Gahegan, Mark
2. **New Approaches to Help Users Get Started with Visual Interfaces: Multi-Layered Interfaces and Integrated Initial Guida**  
Kang, Hyunmo; Plaisant, Catherine; Shneiderman, Ben
3. **Improving Accessibility and Usability of Geo-referenced Statistical Data**  
Zhao, Haixia; Schneiderman, Ben; Plaisant, Catherine
4. **Technology Implementation Management in Law Enforcement: COPLINK System Usability and User Acceptance Evaluations**  
Lin, Chienting; Hu, Paul J.; Chen, Hsinchun; Schroeder, Jennifer

**Session 5a: Open-Source Code in Digital Government Research - Tuesday, 1:30 p.m.**

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L. Jean Camp, Harvard University, John F. Kennedy School of Government

**Panelists:**

- Carlos Osorio, a MIT researcher - examines and models the dynamics of open and closed software markets .
- Tom Rabon, RedHat - Vice President of the leading distributor of open source products
- T. Temin Sr VP Post Newsweek Tech Media
- Mr. Patrick McCormick, Chief Information Officer, City of Somerville, MA on the potential of open source at the local level.
- Terry Bollinger: While Mr. Bolliger is at MITRE he was the primary author of "Use of Free and Open Source Software in the Department of Defense", the most comprehensive report of the use, promise and problems of free and open source in the Fede Government.

Open code has long been a force for networking and system integration. Yet in the last 18months with the completion of multi office productivity suites and investments from IBM, Dell, and Sun, open code is ready for the desktop. However it is not a me bullet. This panel will address:

- What are the risks and potential for open code?
- How can an organization determine which elements of its systems should use open code?
- What are the management and policy questions?
- How can an organization move seamlessly to open code?

**Session 5b: Citizens & Privacy**

**- Tuesday, 1:30 p.m.**

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**Moderator:** Sharon Dawes, SUNY University at Albany, Center for Technology in Government

1. **Citizen's Attitudes about Privacy While Accessing Government Websites: Results of an Online Study**  
Stolfo, Salvatore J.; Johnson, Eric; Pavlicic, Tomislav; Jan, Stephen
2. **Towards a Living GIS: Enhancing Digital Democracy through Sustained Citizen Participation**  
Michaud, Nathan; Brehme, Chris; Snyder, Robert
3. **E-Government in the Arabian Gulf: A Vision Toward Reality**  
Kostopoulos, George K.
4. **Enabling Email Confidentiality Through the Use of Opportunistic Encryption**  
Garfinkel, Simson L.

**Session 5c: Information Management**

**- Tuesday, 1:30 p.m.**

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**Moderator:** Judith Klavans, Columbia University, Digital Government Research Center

1. **Managing Heterogeneous Models and Schemas in the Waterway Information Network**  
Malyankar, R.M.; Shea, K.M.; Spalding, J.W.; Lewandowski, M.J.; Baddam, A.R.
2. **Regulatory Information Management and Compliance Assistance**  
Kerrigan, Shawn; Heenan, Charles; Wang, Haoyi; Law, Kincho H.; Wiederhold, Gio
3. **Distributed Information Retrieval With Skewed Database Size Distributions**  
Si, Luo; Lu, Jie; Callan, Jamie
4. **Extending Metadata Definitions by Automatically Extracting and Organizing Glossary Definitions**  
Hovy, Eduard; Philpot, Andrew; Klavans, Judith; Germann, Ulrich; Davis, Peter T.; Popper, Samuel D.

**System Demonstrations (II)**

**- Tuesday, 4 p.m.**

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- **MapStats for Kids: Developing and Assessing Web-Based Tools to Foster Geographic and Statistical Literacy in Child**  
Crawford, Stephen; Fuhrmann, Sven; Li, Bonan; MacEachren, Alan; Gahegan, Mark; Downs, Roger
- **Preserving State Government Web Publications – First-Year Experiences**  
Jackson, Larry S.
- **Quality Graphics in Web-Based Applications for Summarizing Government Agency Data**  
Dai, Xiping; Hardisty, Frank; MacEachren, Alan

- **Regulatory Information Management and Compliance Assistance**  
Kerrigan, Shawn; Heenan, Charles; Wang, Haoyi; Law, Kincho H.; Wiederhold, Gio
- **The State Cancer Profiles Web Site and Extensions of Linked Micromap Plots and Conditioned Choropleth Map Plots**  
Carr, Daniel B.; Bell, Sue; Pickle, Linda; Zhang, Yuguang; Li, Yaru
- **Usability Enforcer and Dottie Software Tools: Promoting E-Government Accessibility for Older Adults**  
Becker, Shirley A.; Nowak, Luke L.
- **A Spatio-Temporal Decision Making System for Coastal Change Monitoring and Coastal Management**  
Ma, Ruijin; Ali, Tarig; Niu, Xutong; Velissariou, Vasilgia; Chang, Kai-chien (Kevin); Kuo, Chung-Yen; Xu, Xian; Elaksher, Ahmed; Ron; Bedford, Keith W.; Shum, C.K.; Ramirez, J. Raul; Zhang, Aidong
- **Geospatial Data and Mobile Computing for Field Data Collection Systems**  
Miller, Les
- **Improving Accessibility and Usability of Geo-referenced Statistical Data**  
Zhao, Haixia; Plaisant, Catherine; Schneiderman, Ben
- **Resolving Schema and Value Heterogeneities for XML Web Querying**  
Wiegand, Nancy; Zhou, Naijun; Cruz, Isabel F.; Sunna, William
- **Searching with Continuous Query Exploration**  
Adali, Sibel; Chatterjee, Mousumi; Clegg, Carrie; Arsenault, Frank; Dalwadi, Manish; Zappen, Jim; Harrison, Teresa
- **The GovStat Statistical Interactive Glossary (SIG)**  
Brown, Ron T.; Wilbur, Jesse; Haas, Stephanie W.; Pattuelli, Maria Cristina
- **XML Schemas from Computational Ontologies**  
Malyankar, R.M.
- **"OpenG" A scalable participatory democracy and group discussion/decision making open source software and project**  
Daniel J. Greenwood

Poster Session

- Tuesday, 4 p.m.

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- **A Framework for the Representation of Geospatial Image Processing Operations**  
Venkataraman, Vijay; Agouris, Peggy
- **Accessing Diverse Geo-Referenced Data Sources with the SAND Spatial DBMS**  
Sankaranarayanan, Jagan; Tanin, Egemen; Samet, Hanan; Brabec, Frantisek
- **Automated Support for Older Adult Accessibility of E-Government Web Sites**  
Becker, Shirley A.; Nowak, Luke L.
- **Coastal Mapping and Change Detection Using High-Resolution IKONOS Satellite Imagery**  
Di, Kaichang; Ma, Ruijin; Wang, Jue; Li, Ron
- **Finding our Future: A Research Agenda for the Research Enterprise**  
Pardo, Theresa A.; Dawes, Sharon S.; Cresswell, Anthony M. ; Thompson, Fiona; Tayi, Giri K.
- **Methodology and Preliminary Findings towards the Characterization and Evaluation of Non-Line-of-Sight (NLOS) Paths Fixed Broadband Wireless Communications for Emergency and Disaster Response**  
Gallagher, Tim; Miniuk, Mary
- **Optimized Querying of eGovernment Services**  
Ouzzani, Mourad; Bouguettaya, Athman; Medjahed, Brahim
- **Reducing Storage Costs for Federated Search of Text Databases**  
Lu, Jie; Callan, Jamie
- **Simulation-Based Operations Planning for Regional Transportation Systems**  
Fitzgibbons, Brad; Fujimoto, Richard; Guensler, Randy; Leonard, John
- **Table Extraction Using Conditional Random Fields**  
Pinto, David; McCallum, Andrew; Wei, Xing; Croft, W. Bruce
- **The Forest Portal: A Multidisciplinary Project**  
Koch, Marianne; Delcambre, Lois; Toccalino, Patricia; Landis, Eric; Phillips, Fred; Tolle, Tim; Shapiro, Len; Steckler, Nicole; Ma David; Weaver, Matthew; Bowers, Shawn; Banga, Balbinder; Brewster, Jason; Gutema, Afrem; Murthy, Sudarshan; Howe, Bill; Tummala, Rupa; Norman, Julia; Zillman, Kirsten; Drake, David; Palmer, Craig; Burt, Ashley
- **The GovStat Ontology**  
Pattuelli, Maria Cristina; Haas, Stephanie W. ; Brown, Ron T.; Wilbur, Jesse
- **The Relationship among GIS-Oriented Spatiotemporal Databases**  
Li, Lixin; Revesz, Peter
- **The role of a search agent for disenfranchised users**  
Chatterjee, Mousumi; Adali, Sibel
- **Time-Series Data Mining in a Geospatial Decision Support System**  
Li, Dan; Harms, Sherri ; Goddard, Steve; Waltman, William; Deogun; Jitender
- **Trust Resource Management in Digital Government Through Process Modeling**  
Osterweil, Lee; Sondheimer, Norman ; Butterfield, Anthony; Clarke, Lori; Marx, Robert; Billmers, Matthew; Sieh, Joel; Southard, Bruce, Su, David
- **Technical Problems of Deploying Standard Initiative of National City True Orthophoto Mapping**  
Zhou, Guoqing; Qin, Zhihao; Benjamin, Susan; Rand, J.; and Schickler, W.

Session 6a: The Citizen & Government

- Wednesday, 8 a.m.

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**Moderator:** Stuart Shulman, Drake University

1. **Electronic Government at the American Grassroots - 2002**  
Norris, Donald F.; Moon, M. Jae
2. **The Effects of E-Government on Trust and Confidence in Government**  
Tolbert, Caroline; Mossberger, Karen
3. **Turning to Digital Government in a Crisis**  
Dawes, Sharon S.; Cahan, Bruce B.; Cresswell, Anthony M.

**Session 6b: Data Sharing and Integration (II)**

- Wednesday, 8 a.m.

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**Moderator:** Jose Fortes, University of Florida

1. **Building a Terminological Database from Heterogeneous Definitional Sources**  
Muresan, Smaranda; Popper, Samuel D.; Davis, Peter T.; Klavans, Judith L.
2. **Multi-source Coastal Data Analysis**  
Niu, Xutong; Kuo, Chung-yen; Velissariou, Vasilias; Li, Ron; Bedford, Keith W.; Shum, C.K.
3. **The Challenging Interface of Technology and Policy: A Case Study of Communications Interoperability**  
Mayer-Schonberger, Viktor

**Session 6c: Internet / Web Applications (I)**

- Wednesday, 8 a.m.

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**Moderator:** Eduard Hovy, University of Southern California Information Sciences Institute, Digital Government Research Center

1. **Semantic Web Enabled E-Government Services**  
Medjahed, Brahim; Bouguettaya, Athman; Ouzzani, Mourad
2. **DGPort: A Web Portal for Digital Government**  
Yin, Chun Q.; Nickels, L. Dwayne; Chen, Charles Zhi-kai; Ng, T. Gavin; Chen, Hsinchun
3. **Data Swapping: A Risk-Utility Framework and Web Service Implementation**  
Gomatam, Shanti; Karr, Alan F.; Liu, Chunhua (Charlie); Sanil, Ashish P.

**Session 7a: Panel - Modeling Urban Data**

- Wednesday, 10 a.m.

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**Experience in Applying UrbanSim, an Integrated System for Modeling Land Use, Transportation, and Environmental Impacts**

**Moderator:**

Alan Borning, Department of Computer Science & Engineering, University of Washington

- Paul Waddell, Evans School of Public Affairs, University of Washington
- John Britting, Wasatch Front Regional Council
- Christopher V. Forinash, U.S. EPA: Office of Policy, Economics and Innovation

UrbanSim is a large software system for simulating urban land use, transportation, and environmental impacts. Our purpose is to provide tools for stakeholders such as urban planners, government staff, and citizens' groups to help predict future patterns of urban development under different possible input scenarios over periods of twenty or more years. These tools should support deliberation and debate on such issues as building new transit systems or freeways, or changing zoning or economic incentives, as well as on broader issues such as sustainable, livable cities, economic vitality, social equity, and environmental preservation. We want urban planners and stakeholders to be able to consider different scenarios - packages of possible policies and investments - and then, based on these alternatives, model the resulting patterns of urban growth and redevelopment, of transportation usage, and of resource consumption and other environmental impacts.

Our work on UrbanSim has been supported by the NSF Digital Government Program (Grant No. EIA-0090832), as well as the ITR Program (Grant No. EIA-0121326), matching funds from the Federal Highway Administration, and local funding from Puget Sound Regional Council and other metropolitan planning organizations.

During the period we have been supported under the Digital Government program (since September 2001), we have re-engineered and completely reimplemented the system, developed better data preparation tools, a set of tools to produce indicators, and begun applying the new system in several metropolitan regions. In the panel, we will concentrate on two different deployments: in Puget Sound (the metropolitan area including Seattle and other nearby cities), and the Salt Lake City region.

The Puget Sound Regional Council (PSRC) is the Metropolitan Planning Organization for our region. Like many other MPOs around the country, they have been using a land use modeling system for years, but this system has not been able to keep up with evolving challenges. PSRC commissioned a consultant study to recommend the desired characteristics of the next

generation of land use modeling software, and based on that study, set up a partnership with the University of Washington and the UrbanSim project. We are now in the process of preparing the data for Puget Sound, and evolving the software as needed to meet the requirements of PSRC.

The Salt Lake City region has also experienced rapid growth, and accompanying transportation problems. We have also partnered with the Wasatch Front Regional Council, the MPO for Salt Lake City and the surrounding area, to evaluate the effectiveness of using UrbanSim for planning in that region. A matching grant from the Federal Highway Administration is funding a case study of this deployment, which includes evaluation by an expert External Review Panel.

On the one hand, the UrbanSim project has been doing strong interdisciplinary research in the university context, on issues such as agile development and software engineering, human computer interaction, economic modeling, and other topics. On the other, the system is being deployed in high-visibility government activities, to meet needs that would be otherwise unmet. Further, these government partnerships are integral to our research program, rather than simply being interesting tests of the technology.

Our panelists will describe the UrbanSim project itself, the local government contexts, the Federal interests in this area, the needs for new technology, and the advantages and disadvantages of university/government partnerships in this area.

For more information on the project, please see [www.urbansim.org](http://www.urbansim.org)

### Session 7b: Accessibility and Visualization

- Wednesday, 10 a.m.

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**Moderator:** Catherine Plaisant, University of Maryland

1. **A Framework for Regulation Comparison with Application to Accessibility Codes**  
Lau, Gloria T.; Law, Kincho H.; Wiederhold, Gio
2. **Data Exploration with Paired Hierarchical Visualizations: Initial Designs of PairTrees**  
Kules, Bill; Shneiderman, Ben; Plaisant, Catherine
3. **COPLINK: Visualization for Crime Analysis**  
Chen, Hsinchun; Atabakhsh, Homa; Petersen, Tim; Shroeder, Jenny; Buetow, Ty; Chaboya, Luis; O'Toole, Chris; Chau, Michael; Cushna, Tom; Casey, Dan; Huang, Zan

### Session 7c: Internet / Web Applications (II)

- Wednesday, 10 a.m.

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**Moderator:** Alan Karr, National Institute of Statistical Sciences

1. **The State Cancer Profiles Web Site and Extensions of Linked Micromap Plots and Conditioned Choropleth Map Plots**  
Carr, Daniel B.; Bell, Sue; Pickle, Linda; Zhang, Yuguang; Li, Yaru
2. **Implementation of a Coastal Decision Making System Using Internet and Wireless Technologies**  
Niu, Xutong; Ali, Tarig; Ma, Ruijin; Elaksher, Ahmed; Li, Ron
3. **Extending XML Web Querying to Heterogeneous Geospatial Information**  
Wiegand, Nancy; Zhou, Naijun; Ventura, Stephen; Cruz, Isabel F.

### Field Trips

- Wednesday, 1:30 p.m.

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#### MIT Media Laboratory

The outline of the [MIT Media Laboratory](#) was formed in 1980 by Professor Nicholas Negroponte and former MIT President Jerome Wiesner, growing out of the work of MIT's Architecture Machine Group, and building on the seminal work of faculty members in a range of other disciplines, from cognition and learning to electronic music and holography. The Media Laboratory opened its doors in the Wiesner Building, designed by I.M. Pei, in 1985. In its first decade, much of the Laboratory's activity centered around abstracting electronic content from its traditional physical representations, helping to create now-familiar areas such as digital video and multimedia. The success of this agenda is now leading to a growing focus on how electronic information overlaps with the everyday physical world. The Laboratory pioneered collaboration between academia and industry, and provides a unique environment to explore basic research and applications, without regard to traditional divisions among disciplines.

#### National Center for Digital Government

The [National Center for Digital Government](#) is based at Harvard University's [Kennedy School of Government](#), the largest professional school of public policy in the world. The National Center is designed to strengthen the network of researchers and practitioners engaged in building and using technology and government, to build global research capacity, and to advance practice. This field trip will give visitors a sense of the vitality of the National Center as well as a host of related research centers and cutting-edge projects in several policy domains such as domestic preparedness, innovations in government and international development sure to be of interest to digital government researchers and practitioners.

**John A. Volpe National Transportation Systems Center** The [Volpe Center](#) in Cambridge, Massachusetts, is an internationally recognized center of transportation and logistics expertise. Through research and development, engineering, and analysis, the Volpe Center helps decision-makers define problems and pursue solutions to lead transportation into the 21st century. In essence, the Volpe Center is a catalyst for innovation -a source of critical insight necessary to realize transportation's promising future

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