

IU News Room

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\$1.2 million NIH project will help track and predict epidemics

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BLOOMINGTON, Ind. -- The National Institutes of Health has given \$1.2 million to Indiana University researchers to build the ultimate international epidemic research tool.



Photo by: Vittoria Colizza

A poster showing the impact of air travel on the global spread of infectious diseases

Principle investigators Katy Börner, Steven J. Sherman and Alessandro Vespignani will oversee the project, EpiC, which they hope will make the sharing and re-using of epidemics datasets and algorithms as easy as sharing videos via YouTube. The three researchers come from three distinct areas of the campus -- the School of Library and Information Science, the Department of Psychological and Brain Sciences in the College of Arts and Sciences, and the School of Informatics, respectively. Additional members of the evolving team are IU researchers Duygu Balcan, Weixia Huang and Bruce W. Herr.

"This project brings together a team of epidemics and computer science researchers to create an infrastructure that will allow researchers to 'plug and play' their datasets and software," said Börner, Victor H. Yngve associate professor of information science. "Ultimately we want to improve and facilitate data

analysis."

EpiC, short for Epidemics Cyberinfrastructure, will at least initially be maintained at the Cyberinfrastructure for Network Science Center at IU Bloomington. A Web portal will allow scientists anywhere in the world not only to upload their epidemiological data for colleagues to see, but also have their numbers "crunched" through models of their choosing. EpiC isn't merely a data repository but will also provide services to researchers who may not have easy access to sophisticated analysis and visualization tools.

The system will be designed to handle all sorts of epidemics, from the pathogen-based SARS to human behavioral epidemics.

"The study of epidemics is crucial for the understanding, prediction and prevention of many phenomena affecting public health, such as infectious diseases, alcohol use and smoking habits," said Vespignani. "EpiC will provide improvement and facilitation of the multi-scale analysis of social data and their integration in systems dynamic modeling, agent-based modeling, and other simulation techniques for epidemic processes."

Börner, Vespignani, and their teams have worked together before. In 2005, they received a \$1.1 million grant from the National Science Foundation to build a similar tool for network scientists called "Network Workbench," online at <http://nwb.slis.indiana.edu/> (<http://nwb.slis.indiana.edu/>). EpiC will build on this effort but will provide services specifically tailored to epidemiology.

In addition to facilitating research, collaborative projects that use EpiC could help identify epidemiological "hot spots" so that policymakers and public health agencies can act in timely fashion.

"Once we can better understand and predict the spread of these kinds of behaviors, the next step is to develop programs and interventions that can lead to desirable health and mental health outcomes," Sherman said. "We believe that our project has important public health implications."

Börner is also director of the Cyberinfrastructure for Network Science Center at the School of Library and Information Science. Vespignani is a professor of informatics and of cognitive science at IU Bloomington, and Sherman is Chancellor's Professor of Psychological and Brain Sciences at IU Bloomington.

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