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Group of University Researchers to Make Web Science a Field of Study

By STEVE LOHR

The Web has become such a force in commerce and culture that a group of leading university researchers now deems it worthy of its own field of study.

The Massachusetts Institute of Technology and the University of Southampton in Britain plan to announce today that they are starting a joint research program in Web science.

Tim Berners-Lee, who invented the Web's basic software, is leading the program. An Oxford-educated Englishman, Mr. Berners-Lee is a senior researcher at M.I.T., a professor at the University of Southampton and the director of the World Wide Web Consortium, an Internet standards-setting organization.

Web science, the researchers say, has social and engineering dimensions. It extends well beyond traditional computer science, they say, to include the emerging research in social networks and the social sciences that is being used to study how people behave on the Web. And Web science, they add, shifts the center of gravity in engineering research from how a single computer works to how huge decentralized Web systems work.

"The Web isn't about what you can do with computers," Mr. Berners-Lee said. "It's people and, yes, they are connected by computers. But computer science, as the study of what happens in a computer, doesn't tell you about what happens on the Web."

The Web science program is an academic effort, but corporate technology executives and computer scientists said the research could greatly influence Web-based businesses. They pointed in particular to research by Mr. Berners-Lee and others to build more "intelligence" into the Web -- moving toward what is known as the Semantic Web -- as an area of study that could yield a big payoff.

Web science represents "a pretty big next step in the evolution of information," said Eric E. Schmidt, the chief executive of Google, who is a computer scientist. This kind of research, Mr. Schmidt added, is "likely to have a lot of influence on the next generation of researchers, scientists and, most importantly, the next generation of entrepreneurs who will build new companies from this."

Web science is related to another emerging interdisciplinary field called services science. This is the study of how to use computing, collaborative networks and knowledge in disciplines ranging from economics to anthropology to lift productivity and develop new products in the services sector, which represents about three-fourths of the United States economy. Services science research is being supported by technology companies like I.B.M., Accenture and Hewlett-Packard, and by the National Science Foundation.

Web science research, said Irving Wladawsky-Berger, a technology strategist at I.B.M. and visiting professor at M.I.T., is "a prerequisite to designing and building the kinds of complex, human-oriented systems that we are after in services science."

Mr. Berners-Lee and his colleagues at the M.I.T. Computer Science and Artificial Intelligence Lab and in Britain have had preliminary discussions with government agencies in the United States and Europe that finance scientific research, as well as with leading technology companies. But Mr. Berners-Lee said his group had decided to publicly circulate their ideas about Web science before trying to attract government, foundation and corporate funding.

With initial support from M.I.T. and the University of Southampton, the program will hold workshops on Web science and sponsor research fellowships. "But we also want to educate and train people who can understand and analyze how these huge, complex systems on the Web work," said Wendy Hall, a professor at the University of Southampton. "That means eventually having undergraduate and graduate programs in Web science."

The M.I.T.-Southampton partnership, the researchers emphasized, is intended as a catalyst for Web science research at universities worldwide.

Privacy, for example, will be one area of research in Web science. The traditional approach to protecting privacy has been to restrict access to databases containing personal information. But so much personal information is already available on the Web, often given voluntarily on sites like MySpace and Facebook, that the old approach will not work, said Daniel J. Weitzner, technology and society director at the Web consortium.

On the Web, Mr. Weitzner said, a better way to try to guard privacy may be to develop rules, backed by accountability and sanctions, for how personal information is used by businesses, government agencies and individuals.

Ben Shneiderman, a professor at the University of Maryland, said Web science was a promising idea. "Computer science is at a turning point, and it has to go beyond algorithms and understand the social dynamics of issues like trust, responsibility, empathy and privacy in this vast networked space," Professor Shneiderman said. "The technologists and companies that understand those issues will be far more likely to succeed in expanding their markets and enlarging their audiences."