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NIST puts money where the risk is

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Computer security, intelligent data searching and a personal wireless service are among 16 projects funded recently by the National Institute of Standards and Technology's Advanced Technology Program.

The program funds commercial development of products with potentially significant technical or economic impact that are too risky to attract private investment.

The latest round of funding would provide \$22.28 million if all projects carry through to completion. Those approved ranged from blade technology for efficient energy generation to virus-resistant tissue for skin grafts, but three focused on pushing the limits of IT.

The Automated Knowledge Discovery System, being developed by InRAD LLC of Knoxville, Tenn., would automate searching and organizing of Internet content. Also participating in AKDS are Knowledge Based Systems Inc. of College Station, Texas, and Sarnoff Corp. of Princeton, N.J.

"Intelligent search is a stretch," InRAD chairman Richard Neal said, because identifying and labeling data is notoriously difficult at detailed levels.

AKDS would require users to have an ontology, or deep semantic understanding, of the research subjects as well as a technology road map breaking down their organization's goals and requirements.

Intelligent agents would search using the ontology, and a kernel containing the technology roadmap would organize the returned data based on labels attached by the agents. The result should be a complete set of information about selected subjects.

This research aid wouldn't be cheap, however. "Every application will probably require a \$200,000 to \$300,000 investment" from customers, Neal said.

InRAD wants to systematize development of intelligent agents so that customers can create their own ontologies and roadmaps.

The Wireless Intelligent Personal Server, being developed by Rosetta-Wireless Corp. of West Chicago, Ill., would give mobile workers access to large files and complex data.

WIPS would be a wallet-sized server carried by the user to connect automatically at 1.5 Mbps to an office network for e-mail and other files. Personal digital assistants, notebook computers or other devices could then access the data on the WIPS server.

"You don't have to wait for the file to download because it is already positioned," Rosetta-Wireless vice president Keith Campbell said.

The WIPS server would have a range of 30 feet to 50 feet, and it would encrypt and password-protect data during transmission and storage on the server.

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Maintaining the correct file version when several people are simultaneously using it is difficult, and wireless transfer needs improvement by an order of magnitude to make WIPS a reality, NIST said.

"We've got the system pretty well-defined, and we've got a working demo," Campbell said. Automatic fault recovery and encryption must be added, but "at the end of two years we expect to have a fully functioning device."

Bit 9 Inc. of Somerville, Mass., is working on a Computer Immune System to shield computers and networks from previously unknown attacks.

It's easier to describe what CIS is not than what it is, Bit 9 president Todd Brennan said. For example, CIS does not recognize patterns as antivirus programs do with known threats. Nor does it monitor code behavior heuristically.

CIS "does not look for what's wrong but instead focuses on a new definition of what's right," NIST said. As for how it does that, "We have to wait until we get the patents to go into it," Brennan said.

He did say that enterprise-wide policy enforcement is involved. Technical barriers include ensuring that the program is stable, does not overburden its host, scales up to thousands of systems and is software-upgradeable.

Each program has been approved for about \$2 million in funding for two years. Continuation in the second year is in doubt, however, because the administration's fiscal 2004 budget request did not fund the Advanced Technology Program.

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