

Coming to a device near you: A safer, faster Internet

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Like an aging bridge, the Internet is groaning under the weight of traffic that is growing by leaps and bounds and changing form under constant innovation.

With an eye toward safer, smoother and more flexible navigation of tomorrow's worldwide networks, [computer scientists](#) at the University of Wisconsin-Madison are redesigning the underpinnings of the Internet itself.

"Today's Internet is under enormous pressure," says Aditya Akella, a UW-Madison computer science professor. "There is a growing diversity of uses, an urgent need for trustworthiness and a growing set of stakeholders who must coordinate to provide Internet services. The long-term viability of the Internet is under serious threat."

The National Science Foundation, as part of its Future Internet Architecture program, tapped Akella and researchers at two other universities as part of a \$7.1 million program to conceive of ways to subvert those threats.

"Our aim is to design and implement a new architecture, called the eXpressive Internet Architecture, that addresses these challenges in a comprehensive, ground-up fashion," Akella says.

As things stand, the onerous task of sorting friend from foe — that is, separating legitimate documents and Web sites from those waiting to

inhale the personal information of unsuspecting users or spring viruses on computers — is left to a patchwork of independent systems that are themselves open to attack and exploitation. XIA, as the next-generation design is known, builds gate-keeping security features into the function of the Internet.

The XIA team aims to better apportion Internet resources by speeding the hunt for information. If a user is searching for information that is available in more than one location, XIA will steer them to the version that can be accessed fastest.

By freeing users from a network model centered around a series of servers working as intermediaries, XIA would also streamline traffic and leave the door open for Internet activities and applications not yet even conceived.

"In stark contrast with today's host-based Internet, where users' messages are directed to specific Internet hosts such as wisc.edu, XIA will accommodate communication with arbitrary entities, be they host, other users, content or even services we have yet to imagine," Akella says. "This will make it a lot easier to introduce new communication models and novel applications into the network."

Carnegie Mellon University will serve as the lead site for XIA. Boston University and UW-Madison fill out the XIA team, which is one of four Future Internet Architecture projects funded by NSF.

Provided by University of Wisconsin-Madison

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