

# FOCAL POINTS

The future hub of information technology engineering activity at the University of Virginia, Rice Hall will serve collaborative researchers throughout the School of Engineering and Applied Science and across Grounds. Rice Hall will help make possible the information technology research that will advance myriad fields of great importance to our society: energy and the environment, health care, public safety and transportation among them.

## Energy and the Environment

Information technology is increasingly playing a pivotal role in moving society toward energy independence. As Rice Hall will accommodate research in such areas as power grid management, emission monitoring and crop yield assessment, the state-of-the-art facility will enable the University to establish itself as a leader in energy and environmental engineering. Currently, U.Va. researchers are developing genetic algorithms to create groundwater remediation solutions and finding cleaner, more energy-efficient ways to produce materials such as petroleum and plastics in the chemical industry.

## Health Care

In the field of health care, opportunities for advancement through information technology innovations abound. Even now, information technology research at U.Va. is resulting in higher quality, faster, smaller and less expensive health care solutions. With the creation of Rice Hall, information technology-intensive programs like those in human-automation interaction and bio-informatics will continue to thrive. Through this type of technology, U.Va. researchers are working to protect medical data through systems that would allow multiple types of users (i.e., pharmacists, physicians, schools) to access the same data but with differing appropriate permissions. Collaborators throughout the University are also developing imaging software that is revolutionizing drug delivery and assessment by automating the tracking of white blood cells, a task that has traditionally been completed manually and thus imperfectly.

## Public Safety

Information technology researchers are positively impacting public safety by helping secure the Internet, consumer identities and our nation. Researchers in the Engineering School are developing software that makes possible the sharing of data across jurisdictional boundaries; creating networks of miniature wireless sensors that can monitor individuals' health and homes around the clock; investigating the potential integrated impacts of cyber attacks on our society and economy; and more.

## Transportation

In the area of transportation, information technology developments are affecting the ways in which we plan for and manage traffic and keep drivers and pedestrians safe.

U.Va. transportation researchers are working to develop "smart cars," which will ultimately be able to communicate to each other, resulting in increased safety on the roads. In addition, researchers throughout the University are developing transportation intelligence systems to promote traffic efficiency, for example through optimally timed traffic lights, the intelligent design of roads and the optimization of roadway systems through mathematical algorithms.

Focusing on vehicle as well as roadway maintenance, U.Va. transportation research also includes speed management on high-speed roads, optimization of the timing and physical configurations of work zones and even large truck safety.

*"Information and communications technologies are revolutionizing every field of science and engineering. In the future, adeptness with these technologies will be standards defining world-class scientists and engineers."*

*—Kathie L. Olsen, COO,  
National Science Fdn.,  
March 2006*