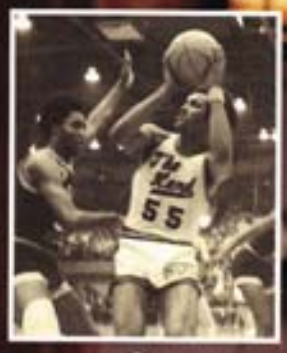
The Greatest Marshall Basketball Team Ever?

Marshall magazine



Marshall supporters
Pam & Joe Gillette

A Lifetime of Good Decisions

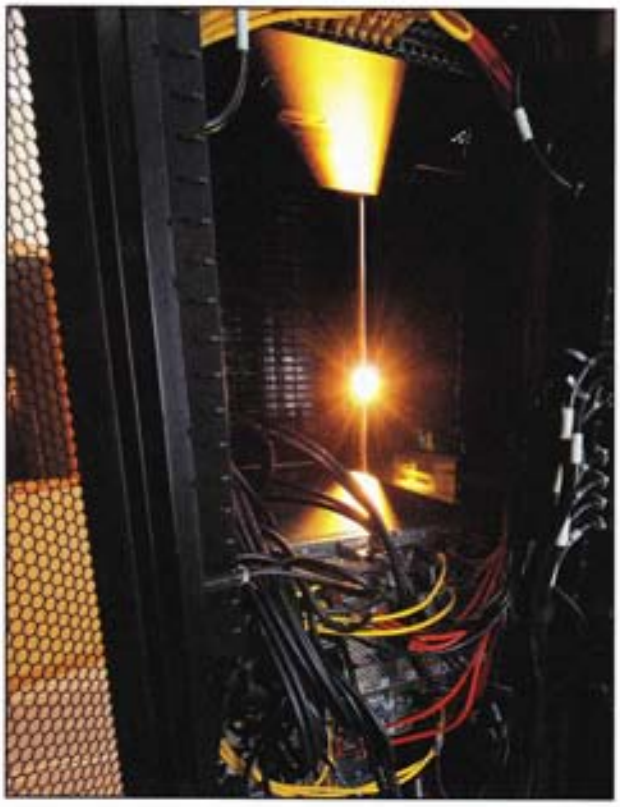
Pam & Joe Gillette of Atlanta are two of the university's most passionate supporters and generous donors.

See page 42 for ALUMNI NEWS and more

HIGH TECHNOLOGY

By Dawn Nolan
Photos by Rick Lee

Marshall University is at the forefront of advanced technology and research capabilities.



Utilizing the high-performance computers housed in Drinko Library, which can be accessed remotely, researchers at Marshall University and across the nation now have access to a significant amount of resources and data.

In today's world, technology is a constant progression. Researchers are using sets of data that are larger and more complex than ever before, and to continue these advancements they must have access to equipment that can handle this information. Marshall University is an institution that understands the importance of advanced technology, and thanks to two recent grants awarded from the National Science Foundation, the university is able to stay on the cutting edge of research and technology developments.

In 2009, Marshall was awarded more than $1 million for use over a three-year period to upgrade computing networks and further develop visualization capabilities.

"The driver of this project, which has several components, is the CI-TRAIN," said Dr. Tony Szwilski, professor of engineering and director of the Marshall University Center for Environmental, Geotechnical and Applied Sciences (CEGAS). The CI-TRAIN (Cyberinfrastructure for Transformational Scientific Discovery in West Virginia and Arkansas) is an alliance among eight higher education institutions in West Virginia and Arkansas. The alliance, created for the purpose of sharing resources that will enhance technological capabilities at each member institution, began in 2009 and will continue to September 2012. CI-TRAIN team members at Marshall include Edward Aractingi, Dr. Jan Fox, Dr. Venkat Gudivada, Dr. Arnold Miller,

CI-TRAIN team members at Marshall include (from left) Assistant Director of IT Infrastructure Edward Aractingi, CEGAS Research Associate Justin Chapman, CEGAS Director Dr. Tony Szwilski and Senior Vice President for Information Technology Dr. Jan Fox.

Edward Aractingi and Justin Chapman analyze data, which can then be shared with thousands of institutions worldwide. Marshall's new technological capabilities and research opportunities have brought recognition to West Virginia as a whole.

Dr. Jack Smith, Szwilski and several other faculty members.

At the forefront of the CI-TRAIN project is the High-Performance Computing (HPC) cluster. The HPC cluster, nicknamed "BigGreen," gives the university access to a significant amount of resources and data that were formerly available only to the nation's most highly esteemed research facilities.

"With the new HPC cluster, our students and faculty now have access to computing power, data and information we could only imagine just a few years ago," Fox, who is senior vice president of information technology and chief information officer at Marshall, said.

> **"We are now able to share what we create at Marshall with institutions all over the world, including other universities, K-12 schools and museums. This makes us stronger as a state."**
>
> **– Dr. Jan Fox**
> CI-TRAIN Team Member

BigGreen is made up of 23 high-end computer systems and is housed in Drinko Library on Marshall's Huntington campus. Off-campus access is available to any individual who creates an account with the system, including Marshall's CI-TRAIN partners.

"Our main goal is to avoid unnecessary duplication, and with this software, we can do that," Szwilski said. "Researchers in Arkansas can use our equipment and vice versa."

A second high-tech project at Marshall, Internet2, was funded by another National Science Foundation grant called West Virginia's Experimental Program to Stimulate Competitive Research (EPSCoR). The goal of this initiative is to enhance cyberinfrastructure throughout the state.

"Internet2 is a network design for education endeavors," Fox explained. "It doesn't have all the clutter of commercial networks, and it provides an unbelievable sense of closeness."

Marshall partnered with the West Virginia Higher Education Policy Commission to sponsor West Virginia's educational system as the newest Internet2 Sponsored Education Group Participant (SEGP). West Virginia is the 40th state to offer this type of network connection.

"This was a strategic move," Fox said. "Not only does Internet2 expand research capabilities at Marshall and throughout West Virginia, but Marshall's move to becoming an SEGP went along well with what the state was doing in terms of the broadband."

An additional benefit of Marshall's participation in Internet2 is the access to about 70,000 research and education institutions in the U.S and 80 international networks; access to these networks is available to students, faculty and staff.

"We are able to share what we create at Marshall with institutions all over the world, including other universities, K-12 schools and museums," Fox said. "This makes us stronger as a state."

Internet2's network capabilities among Marshall's research facilities, partnering institutions and hospitals have enabled notable research in the medical field, specifically in biotechnology, gene mapping and cancer therapy.

"We have seen the successes, the synergy and the enthusiasm brought on thus far by all of these projects," said Edward Aractingi, assistant director of IT infrastructure systems. "The resources are ever expanding."

Several professional development opportunities have been offered recently to heighten the public's knowledge about these advancements.

"One major component of the project is to increase awareness about what we can accomplish through this technology," Szwilski said. "We want to give individuals the opportunity to learn how to use the tools that are available to them."

One event, Cyberinfrastructure (CI) Day, took place on April 7, 2011. The conference consisted of a number of presentations that highlighted the computer technologies available to researchers at Marshall and the surrounding region and a keynote address by F. Selby Wellman, Marshall alumnus and former senior vice president of Cisco Systems Inc. Another event, the Next Generation Sequencing and Bioinformatics Forum, was held on Oct. 27, 2011, and featured three sessions showcasing

Jason Carter, systems programmer lead for IT Infrastructure at Marshall University, installed the hardware utilized by the BigGreen computer system. He works closely with Edward Aractingi and other university researchers to ensure that on-campus technology works as efficiently as possible. The enthusiasm and collaboration of the faculty, staff and students involved in improving the university's technology have brought Marshall to the forefront of research, scientific visualization and data analysis.

Marshall's latest research developments in the fields of genomics and bioinformatics as well as discussions of future plans for these areas. Session speakers were Dr. Jim Denvir, assistant professor of bioinformatics and biostatistics, Dr. Philippe Georgel, professor of biological sciences and director of the CDDC, and Dr. Venkat Gudivada, professor of computer science. In addition, Marshall faculty members involved in improving the university's technology have conducted workshops for high school, undergraduate and graduate students to help them understand computational science and visualization skills.

"We think it is important to teach students these concepts so that a high-tech work force can be developed," Szwilski said, adding that new outreach activities are in the works to further this effort.

With such highly advanced technologies available, Marshall will be a draw to both current and prospective researchers in all academic areas.

"All research fields benefit from these programs," said Dr. Arnold Miller, assistant vice president of Marshall University's Information Technology, "especially those with large amounts of data or who would need to use expensive equipment."

Szwilski said the technology currently in place at Marshall combined with the potential for the future will attract both research opportunities and business development. An increase in research and technology will keep the university competitive for future funding and, in turn, positively impact West Virginia's economic development.

"Future researchers will be able to see the resources that Marshall has available," Szwilski said. □

Dawn Nolan is a freelance writer living in Huntington. She received bachelor's degrees in English and psychology from Marshall and is currently working on her M.A.J.