Customer Stories: University of Missouri

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U of Missouri students and faculty earn high degrees of success innovating with AT&T 5G

- Business needs The university needed state-of-the-art infrastructure to support innovative, cross-department learning and research.
- Networking solution AT&T 5G technology gives students and start-up companies the next-generation tools they need to explore complex problems.
- Business value Outstanding learning
 opportunities, innovation, and private
 sector economic benefits
- Industry focus Higher education
- Size 30,000+ students

About the University of Missouri

When it opened in 1839, The University of Missouri (Mizzou) was the first public university west of the Mississippi River. The flagship land-grant institution is one of only 65 universities across the U.S. and Canada to be a member of the prestigious Association of American Universities.

The situation

Research is a vital part of a University of Missouri education. Mizzou is among the nation's top 10 universities for undergraduate research. It consistently seeks new ways to integrate technology into its teaching and scholarship. Faculty and administrators were looking for a way to help students and entrepreneurs explore the impact of leading-edge technology on college campuses and beyond.



Solution

AT&T Business worked with the university to bring 5G using millimeter wave spectrum to a campus innovation lab. They also made it part of a multidisciplinary course, Connectivity and 5G. The course explores the impact of advanced wireless technology on a university campus. An ongoing relationship with AT&T Business will help accelerate innovation for university researchers and start-up companies.



Driving innovation and the economy

The University of Missouri has more than 30,000 students from all 50 states and more than 100 countries. It offers more than 300 degree programs, including 97 undergraduate majors, 96 master's degrees, 69 doctoral degrees, and more than 70 certificates. The university wants to make outstanding education affordable. During one recent academic year, Mizzou spent \$138 million on financial aid. As a result, nearly half the university's students graduate with no debt.

Research is a vital part of the university and not just in graduate school. Undergraduates also have opportunities to study and make a difference in science, arts, and humanities with a goal of driving innovation and the economy.

Last year the University of Missouri wanted to create a unique opportunity for its students to explore the impact of wireless technology. It would be a way to inspire innovation and creative problem-solving on college campuses and beyond. It needed a powerful platform and a team of technology mentors to support the project, which officials believed could lead to improved outcomes in a variety of industries.

Tackling grand challenges

AT&T Business worked with Mizzou to create an interdisciplinary course. It brought together students and faculty from the schools of business, journalism, engineering, and architecture.

Ajay Vinzé, dean of the university's Robert J. Trulaske, Sr. College of Business, says the evolution of higher education makes interdisciplinary approaches more important than ever. A siloed approach is no longer viable.

"It is critical that institutions of higher learning actively partner with the private sector to address the needs of the workplace of the future," Vinzé said. "Technology will be the key catalyst and contributor in this process.





We are thrilled to partner with AT&T Business to explore how this can be done effectively."

In spring 2020, students and faculty at Mizzou used the AT&T 5G platform—the fifth generation of mobile wireless technology. They were able to research complex problems. Associate Professor of Strategic Communication Jim Flink in the School of Journalism, together with a team of faculty from across campus, taught the innovative Connectivity and 5G course. Reflecting on experiences from this course, Flink said, "It's an understatement to call the real-world experience that AT&T and the university provided to students 'invaluable."

Students were divided into four teams to develop solutions that could benefit health care, sports, higher education, and campus safety. Each team worked with Mizzou faculty advisors and mentors from AT&T Business to harness the potential of 5G technology to make life better.

Collaboration addresses real-world problems

Bimal Balakrishnan, Ph.D., is an Associate Professor, Chair of the Department of Architectural Studies, and Director of Graduate Studies. He said the university's collaborative approach to scholarship paved the way for the 5G project. "One of the interesting things about our university is the interdisciplinarity and how we collaborate with each other," he said. "We are not siloed, and the partnership with AT&T boosted that significantly."

After a semester of exploring how 5G could drive progress, students presented their ideas to AT&T Business stakeholders and university executives in a video call that included 75 participants. "It was a special moment that encapsulated all that is right about the relationship between the private sector and a university like the University of Missouri," Flink said. "We can really leverage the strengths of both to identify opportunities in what is a very dynamic and changing world."



Balakrishnan said students like exploring real-world problems. "Each one brought their domain knowledge and expertise to the project," he said. And he believes faculty participants learned as much as the students.

Flink added: "Students really had to understand the challenges for emergency room physicians or personnel, and what it was like to be a life flight helicopter nurse traveling to remote areas of Missouri. And find opportunities for 5G that could literally save lives. Those minutes that can be saved with improved connectivity really can spell the difference between life and death."

Balakrishnan noted, "We would like to believe that the AT&T Business team got more insight into some of the things that we are doing and how that might help in future endeavors."

Enhancing the ecosystem for cutting-edge research

Those future endeavors Balakrishnan refers to will be supported by AT&T 5G+ in an innovation laboratory the university and AT&T are building in Mizzou's Trulaske College of Business.

"We are thrilled to host a lab in Cornell Hall," Vinzé said. "This lab will represent a strong partnership with AT&T Business, embody the collaboration that we seek here, and put sophisticated technology within everyday reach of our students. The creation of this lab has also resonated with startup organizations and industry-leading companies. These groups are exploring how to support and partner with higher education. None of this would be possible without AT&T and its 5G technology." Flink said 5G also offers endless possibilities for the university's Institute for Experiential Education, Innovation and Entrepreneurship. "Folks at the institute are very interested in 5G," he said. "It involves everything from the future of journalism to remote surgeries to the implementation of meditation as an alternative to drug therapy."

Balakrishnan believes 5G is ideal for the complex work that universities regularly undertake. "5G stands to transform how we tackle problems in any number of disciplines," he said. "By putting together interdisciplinary teams we can also approach a problem from different angles. This is another thing that was exciting about 5G."

"We are literally creating the future in the present at an almost real-time pace, thanks to 5G and AT&T Business."

Jim Flink Associate Professor, University of Missouri

Continued innovation with 5G

The professors said 5G technology will continue to help the university tackle complex research problems. "We have a number of federally funded interdisciplinary projects and 5G opens up incredible new approaches," Balakrishnan said. Several current projects involve training simulations for medical, educational, and highway construction scenarios.

"Having the capability of 5G will allow us to test how these trainings can be delivered in the future," Balakrishnan continued. "Earlier we could only



transfer so much data because of bandwidth and latency limitations. Now we could gather a lot more data about what is happening at the trainees' end and push it back for analysis at this end."

He sees great opportunities for the university. "With high bandwidth connectivity we can have more interesting and complex simulations," he said. "The possibilities are endless; it's like being a kid in a candy store. We are most excited about the ability to realize our ideas, experiment, test, iterate and build better. For that you need the actual infrastructure, and technology, and we are excited that we are one of the universities where this infrastructure is available."

He is confident 5G will significantly accelerate university research. "And we feel like it will also help our funding opportunities," he added.

Creating the future

Flink says the university is grateful for the support and expertise of AT&T Business. "AT&T has been terrific through this process. We have had as many as 30 different people from AT&T Business involved. And whenever we needed resources to leverage the capabilities of 5G, they were able to offer different people from across their corporate infrastructure to help us delve into the issue. We hope there will be more 5G nodes so we can enhance the ecosystem to do even more cutting-edge research."

The university's innovation lab where AT&T 5G+ will reside has become a valuable asset. "As word of that has spread,

private enterprise has flocked to use 5G and an innovative lab where they can set up shop and test their wares and work with university researchers," Flink said.

"Our partnership with AT&T Business has been amazing," Vinzé said. "Professionals from across AT&T have lent advice and given their time to further this relationship. Much of what we are uncovering is new. We are literally creating the future in the present at an almost real-time pace, thanks to 5G and AT&T Business."



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Bimal Balakrishnan, Ph.D.

Associate Professor, Department Chair and Director of Graduate Studies, University of Missouri

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