Purdue Research Foundation



5G discovery advances through the Indiana 5G Zone, a learning hub with future-ready ATAT MULTICAL ACCESS EDGE network architecture

- Business needs Scientists needed a highly secure, reliable, and fast platform on which to test and launch advanced research projects.
- Networking solution AT&T Multi-Access Edge Computing enables Purdue Research Foundation researchers to harness the power of emerging network technologies with high levels of intelligence, control, security, and speed.
- Business value Enhanced ability to assess commercially viable use cases for new technologies that have the potential to create jobs and facilitate tech sector growth.
- Industry focus University research and advancement
- Size \$1 billion in net assets

About the Purdue Research Foundation

Purdue Research Foundation (PRF) helps advance Purdue University's quest for discovery, learning, and engagement. The foundation encourages the university's mission by managing and licensing Purdue's intellectual property, accepting gifts, administering trusts, acquiring property, and negotiating research contracts. Its efforts are attracting national attention. The Wall Street Journal rated universities whose licensed technologies spawned business startups. They ranked Purdue third in the U.S. and sixth in the world.

The situation

PRF, through its partnership with the Indiana Economic Development Corporation (IEDC), launched a hub, the Indiana 5G Zone. Here, researchers can test and develop 5G-enabled technologies. This initiative requires a highly secure, low latency, fast-processing, mobile network architecture to spur cutting-edge research and development.





Solution

PRF chose AT&T Multi-Access Edge Computing (MEC) to improve the productivity of its research staff. AT&T MEC brings cloud computing capability to the customer premises. The solution creates better response times and transfer rates. It also provides content caching, service delivery, storage, and Internet of Things (IoT) management with faster speeds, lower data latency, and increased reliability.

A partnership to commercialize academic discoveries

A state that's best known for its rich agricultural heritage—and basketball—is making a name for itself in high-tech areas. They've pioneered research, development, and commercial advances in connected communities, national security, industry, health, and sports technology—as well as agricultural technology.

Indiana's Purdue University is a top public research institution focused on faculty-student interaction and creative use of technology. The university has streamlined pathways for both its faculty and student innovators. These innovators have a vision for moving the world forward through scientific discoveries and engineering solutions.

The Indiana 5G Zone (IN5GZ) offers varying levels of membership to industry stakeholders and advisors, academia, government, and startup enterprises, according to Sean Hendrix, IN5GZ Managing Director and CTO of NineTwelve Institute. With the participation of these members, the IN5GZ performs applicationdriven research and product development to bridge scientific discoveries to commercialization.



Agriculture advances and connected communities

Farming will remain a pillar of Indiana's economy, so developing advanced applications related to agriculture is a natural fit. The state's robust automotive manufacturing economy—second in the U.S. only to Michigan—is another area of interest for PRF. "We have a history of collaboration with the Indiana government that makes for a favorable environment for agriculture and manufacturing," Hendrix said. "However, there are also other things happening in the state that are truly revolutionary."



"In a real-life situation, the MEC is critical to helping us figure out how to approach and perform the use cases."

Sean Hendrix Managing Director of IN5GZ and CTO of NineTwelve Institute Among these notable revolutions is the Discovery Park District, a fascinating initiative for connected communities. Businesses can tap into a pipeline of world-class talent, advanced research and development facilities, and a business-minded university to solve pressing challenges. Upon completion, this 400-acre site, adjacent to the Purdue University campus, will house a connected community in which 50,000 to 75,000 people can live and work in a fully converged technology infrastructure.

IN5GZ's research efforts also extend to national security, mobility, connected healthcare, and sports technology. Hendrix, who engineered connected vehicle solutions in private industry for years before returning to his alma mater, is well positioned to tackle these and other research opportunities.

An infrastructure to support innovation

Indiana's tech sector has grown rapidly in the last 10 to 15 years. Its 5G partnership is only the most recent in a string of emerging technology projects launched by the state. "An IoT initiative had been started here a couple of years ago," Hendrix said, "so there was a growing recognition that this ecosystem of devices was going to need a high-performance network behind it."

"If you're putting IoT devices in a manufacturing environment to run an Artificial Intelligence engine to help make time-sensitive, critical quality and financial decisions about your factory, you don't just buy devices to set up Wi-Fi access points around the office," Hendrix said. "I'm being a little facetious, but the point is you need a real infrastructure with high reliability, low latency, and engineering at a technical level."



The project seeks to attract business, foster innovation, and propel research and development in 5G-enabled advanced technologies. To do so, it requires a highly sophisticated platform on which academic and industry collaborators can test and launch innovations.

A speedy, secure, mission-critical data highway

Hendrix and his colleagues recognize that continued economic development requires a stable, missioncritical information highway. 5G emerged as the critical path forward. The advanced connectivity enables faster transmission with lower latency. "As it matured it became apparent that 5G would be the highway or a major portion of it, so it was something that we want to participate in," Hendrix said.

PRF chose AT&T MEC, which harnesses the power of 5G network technology to improve the productivity of its staff and other stakeholders. AT&T MEC gives PRF a cost-effective way to enhance its existing private network through intelligent allocation of data assets. Rather than sending its data to a remote cloud for external processing, the foundation can process it locally on-premises. This accomplishes several things. First and perhaps foremost, it significantly increases data privacy and security. In addition, it boosts speed, enabling data processing in near-real time.

"With this capability, I've got the highway, and now we can develop end-to-end use cases," Hendrix noted. "It's really helping us vet out what is commercially viable and technically feasible. From my perspective, there is a ton of work to be done in this space. The lab, with the MEC at its core, gives us the ability to do that." Hendrix continued: "Without the MEC, we can't complete the circuit. We can't go into a development environment and do the work that I'm describing. In a real-life situation, the MEC is critical to helping us figure out how to approach and perform the use cases."



Leadership and presence

PRF benefits from its relationship with AT&T Business. "AT&T has been very active and has asserted leadership and presence in this effort," Hendrix said. His team is excited that the President-Indiana at AT&T, Bill Soards, participates in regular calls with the IN5GZ, PRF, and IEDC staff. "We're happy to have that kind of engagement from one of our key stakeholders," Hendrix added.

Researchers benefit from everything AT&T Business brings to the table. "AT&T is the spectrum, the network, the equipment, and the solution," he said. "It's that whole system solution that makes AT&T Business very attractive and desirable as a stakeholder in our organization."



PRF receives multiple tiers of support from AT&T Business, including external affairs policy assistance to help the foundation engage with other scientists. "There's also the innovation, sales, and business development components," Hendrix said. "The project team provides strong support that's helping to deploy the MEC."



"AT&T Business has been an innovation partner. From a leadership level, they have bought into our vision for the work we want to do."

Sean Hendrix

Managing Director of IN5GZ and CTO of NineTwelve Institute

A partnership for the future

PRF's association with AT&T Business also the helps the foundation recruit members from other universities, industry, and the government, which helps to bring in funding and important opportunities for collaboration. "AT&T is a big name," Hendrix said. "Saying that AT&T is a part of the IN5GZ and that we have AT&T MEC technology in our lab is huge."

Beyond the prestige of the AT&T Business brand, the practical assistance the company provides through the collaboration has been invaluable in helping the IN5GZ secure state-of-the-art equipment. "From a leadership level, they have bought into our vision for the work we want to do," he said. "This equipment is difficult to get and takes a long time to procure."

PRF initially learned that it was one of only two academic sites in the U.S. that have access to Multi-Access Edge Computing. "That's a huge deal," Hendrix said. "AT&T Business is a big part of that."

Hendrix expects the assistance and influence from AT&T Business to continue as the Discovery Park District and other research foundation initiatives develop. "I've found AT&T to be right there in our discussions about what's next, and so that helps us to get to the result," he said. "I'm very optimistic that AT&T is going to be a continuing part of the projects that we're working on to help build the ecosystem network that we need."

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