Iowa State University: The ETALYC Case
ABOUT ETALYC

In 2014, Iowa State University established the Office of Economic Development and Industry Relations (EDIR), bringing together six campus units that work directly with companies offering business and technical assistance, facilitation of industry-university research contracts, support of on-campus and external entrepreneurs, and a comprehensive support system for the commercialization of university innovations. EDIR’s centers and programs utilize university developed knowledge, best practices, and innovations to provide services that generate significant economic benefits to companies in all 99 Iowa counties.

New initiatives, such as Iowa State’s National Science Foundation-funded Innovation Corps (I-Corps) Site program (a joint venture between EDIR and the Office of the Vice President for Research) and the Startup Factory are helping to develop a new generation of scientists and engineers whose focus extends beyond the laboratory and into translating their problem-solving innovations to the marketplace and for the benefit of society.

ETALYC’S EMERGING TECHNOLOGY

Dr. Anuj Sharma, an Iowa State associate professor of civil, construction and environmental engineering, and a research scientist at the Institute for Transportation (InTrans), leveraged the university’s innovation and entrepreneurship ecosystem to help him establish a company that could commercialize his research-based idea of using technology to help improve traffic flow and safety.

In 2016, Sharma and co-founder Vishal Mahulkar established ETALYC, (the name comes from “emerging-trend analytics”), which evolved from a novel traffic incident management (TIM) system, called TIMELI (Traffic Incident Management Enabled by Large-data Innovations) the researchers developed at InTrans. The team located...
their startup in EDIR’s ISU Research Park (ISURP), a growing technology community and incubator for new and expanding businesses that provides innovators a place to prosper.

Looking to hone their entrepreneurial skills and ensure the company’s success, Sharma and his team enrolled in the I-Corps Site program. Participation led to completing the year-long Startup Factory, a 52-week pioneering “super accelerator” program designed to help launch successful startups with lessons in business models, funding, and executive leadership and access to mentors, advisors, investors and customers.

Next the ETALYC team won a $50,000 National I-Corps Teams grant and the opportunity to meet more potential customers. Through the rigorous program, the team performed 100’s of customer discoveries to validate the initial hypotheses of the business model and product.

Additionally, ETALYC has completed the Techstars Arcadis competitive accelerator program based in Amsterdam, which led to the company’s first investment.

**PROBLEM-SOLVING SMART SYSTEM**

ETALYC is on a mission to transform how traffic is managed in cities and municipalities and improve travel quality through the use of technology. Using the latest machine learning and data analytics, ETALYC’s software platform provides traffic operations managers cutting-edge solutions to make daily commutes quicker, safer, less costly and better for the environment.

The broader research impact is to help solve problems related to traffic congestion: the Federal Highway Administration estimates that a quarter of the congestion on U.S. roads is due to traffic incidents, such as crashes, stalled vehicles or overturned trucks. Traffic congestion comes with huge costs – estimated at $9.2 billion annually for the trucking industry. Additionally, congestion due to traffic incidents has been shown to increase the risk of secondary crashes by 2.8% for every minute of congestion.

TIMELI can help address these safety and economic concerns by sorting through real-time traffic data to quickly find problems and alert the staff in traffic management centers. The software harnesses data streams – such as cameras mounted on traffic signals, signal timing plans, weather information, traffic logs and even drivers’ cell phone data – to provide the vital information.
In 2016, the NSF Partnerships for Innovation (PFI) Building Innovation Capacity (BIC) program awarded a three-year $1 million grant to advance, adapt, and integrate the technology into a specified, human-centered smart service system. The smart decision-assist system enables decision-makers to monitor traffic conditions in real time, proactively control risk using advisory control, quickly detect traffic incidents, identify the location and potential cause of these incidents, suggest traffic control alternatives, and minimize cognitive bottlenecks for TIM operators.

The system will also enable state Department of Transportations (DOTs) to reduce the duration and impacts of incidents and improve the safety of motorists, crash victims, and emergency responders, and reduce TIM technician fatigue and high turnover rates.

INTERDISCIPLINARY COLLABORATION

ETALYC has adopted a collaborative, multi-disciplinary approach, engaging students and industry in its research project. A team of Iowa State undergraduate and graduate researchers in civil, electrical and computer, mechanical and human factors engineering are gaining valuable industry experiences and a more comprehensive education through their participation. Industry partners include TransCore, a Des Moines, Iowa-based commercial provider of intelligent transportation systems, and the Iowa DOT. The project’s test bed is located at the Center for Transportation Research and Education’s fully functional traffic operations lab that is connected to the Iowa DOT’s data streams.

ADVANCING TO THE MARKETPLACE

Through programmatic lessons-learned, ETALYC has narrowed its focus. The company began zeroing in on traffic signals, and in 2019, received $225,000 in Phase I SBIR funding from NSF to develop and demonstrate the feasibility of a fully adaptive traffic signal re-timing solution to help manage traffic flow.

Despite the fact that agencies spend approximately $2 billion every year on signal operation, maintenance, and capital improvements, the most recent National Traffic Signal Report Card gave a failing grade of D+ to traffic signal operations in the U.S.
ETALYC’s proposed solution to poor traffic management has the potential to reduce traffic delays by 15-40%, save travel times by up to 25% while decreasing stops by 10-40%. Moreover, there is the potential to reduce fuel consumption by 10%, leading to a nation-wide savings of 170 billion gallons of motor fuels per year and a decrease in harmful emissions of 22%. Adopting such a re-timing strategy will enable cities to see a reduction in implementation time and capital and maintenance expenditures.

Leveraging EDIR’s comprehensive support system has helped ETALYC further advance its technology towards commercialization. ETALYC currently has a paying customer and is poised to raise additional capital for large scale deployment of its technology.
LINKS TO FURTHER INFORMATION

**Articles:**
- Innovation Corps at Iowa State: Helping researchers turn ideas into companies
- ETALYC is using technology to improve traffic flow, was accepted into Aracdis accelerator

**Partnering Organizations:**
- Office of Economic Development and Industry Relations
- Innovation Corps
- Startup Factory
- ISU Research Park
- National Science Foundation
  - SBIR Phase 1
ABOUT APLU

The Association of Public and Land-grant Universities (APLU) is North America’s oldest higher education association. APLU is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities in the U.S., Canada, and Mexico. The association's membership consists of public research universities, land-grant institutions, state university systems, and affiliated organizations.

APLU’s mission is to: expand access and improve student success to deliver the innovative workforce of tomorrow; advance and promote research and discovery to improve society, foster economic growth, and address global challenges; and build healthy, prosperous, equitable, and vibrant communities locally and globally.

Based in Washington, DC, the association’s work is furthered by an active and effective advocacy arm that works with Congress and the administration as well as the media to advance federal policies that strengthen public universities and benefit the students they serve.

ABOUT THE IEP UNIVERSITIES PROGRAM

APLU and its Commission on Economic and Community Engagement (CECE) established the Innovation and Economic Prosperity (IEP) Universities Program to help higher education institutions codify, elevate, and advance their campus enterprise supporting economic and community development.

The IEP designation program recognizes institutions that have demonstrated a meaningful, ongoing and substantial commitment to economic and community development, growth, and economic opportunity.

The IEP awards program recognize exemplary and innovative projects in university-based economic and community engagement:

- **Talent** and workforce development
- **Innovation**, entrepreneurship, and tech-based economic development
- **Place** development through public service, outreach, and community engagement

Learn more at: [www.APLU.org/IEP](http://www.APLU.org/IEP)