FutureStructure
(/fs)

INFRASTRUCTURE
(/fs/infrastructure)

Smart Pavement Startup Announces Contract with Colorado Department of Transportation

Integrated Roadways of Kansas City, Mo., is working on a technology to increase safety and boost connectivity for cars and future mobility services.

BY ROBERT A. CRONKLETON, THE KANSAS CITY STAR / MAY 22, 2018

SHUTTERSTOCK

(TNS) — Self-driving cars have captured the limelight when it comes to how you'll get around in the future, but one Kansas City technology startup is looking at the road itself.

Integrated Roadways (http://integratedroadways.com/) is developing "smart pavement" technology that would not only help increase roadway safety but could also serve as the platform for Wi-Fi for cars and other future mobility services.

"Smart pavement is a factory-produced pavement system that transforms the road into a sensor, data and connectivity network for next-generation vehicles," said Tim Sylvester, founder, chief executive and president of Integrated Roadways.

The road system uses high-resolution fiber-optic sensors and other technologies inside the pavement to detect vehicle position in real time, as well as roadway conditions. This technology would detect crashes as they occur, for instance, and automatically notify emergency responders to those crashes.

Integrated Roadway's smart pavement is about to be put to the test. The company announced this spring that the Colorado Department of Transportation has awarded a $2.75 million contract for a five-year smart pavement project on U.S. 285 near Fairplay, Colo., south of Breckenridge.

The company, along with partners Kiewit Infrastructure Co., Cisco Systems, WSP Global and Wichita Concrete Pipe, will build about a half-mile of smart pavement on the highway to collect data on run-off-the-road crashes, as well as automatically alert authorities of the crashes.

"It is such a beautiful location that people get caught up in the view and they miss the turn," Sylvester said. "So they go off the edge of the road in a rural area and somebody might not have seen them."

When Sylvester approached Colorado transportation officials about the concept of intelligent infrastructure and the myriad of things it could do, they were intrigued.

While it's never been deployed before and is still very conceptual, the state was interested in fostering the idea and seeing its value, said Peter Kozinski, director of the RoadX program Colorado Department of Transportation.

"The pavement would be able to act like the tracking pad on your mouse, knowing the speed and direction that a vehicle travels across it is going," he said. "If a vehicle leaves the pavement at a trajectory and speed that suggests they left unsafely, the pavement

would notify emergency responders that someone had ran off the road."

This way dispatchers could send someone to the scene to see if anyone needed help, instead of waiting for a passerby to recognize that someone had gone off the road.

"We believe that Integrated Roadways has an interesting concept that we want to see how well it works," Kozinski said.

In addition to alerting authorities to run-off-the-road crashes, intelligent infrastructure can help improve road safety by providing data from before and after a crash to highway officials so they can design changes to prevent similar crashes in the future.

Unlike most road construction where crews build the roadway on site, smart pavement is a collection of precast, factory-built concrete slabs that are shipped to the construction site on the back of trucks and then positioned into place, one by one.

"A comparison I hear all the time is that these are like carpet squares — gigantic concrete carpet squares — or Legos," Sylvester said.

Precast concrete pavement has been in use for more then 80 years, primarily in eastern Europe and northern Asia, and about 20 years in the United States. California is one of the largest adopters, followed by Illinois, Utah and New York, he said.

This method allows roads to be built faster, last longer and reduce maintenance and repairs. Because it is factory built, the technologies can be built inside the slabs, which would not be feasible on site, Sylvester said.

Integrated Roadways uses passive technologies inside the pavement that are operated by a fiber optic network and other technologies on the side of the road that can be serviced and upgraded separately.

And the pavement has expansion ports that allow for sensors and other elements to be plugged in or removed when they are not working properly or have become obsolete.

"The cable and wire that are in the road doesn't wear out or become obsolete in the same way that the plugs in your home don't become obsolete when you change the device that's plug into it," Sylvester said.

Eventually, Sylvester envisions the roads paying for themselves through revenue generated by selling access to data, connectivity and services, he said.

Initially though, the primary use of smart pavement will be the collection of real-time data about vehicles and traffic. The data will provide a statistical model about the aggregate behavior of all the drivers on the roadway. The data won't track where your car goes or how fast you're driving, Sylvester said.

The data, however, is able to determine the difference between a Buick Regal or Honda Civic on the road. Vehicles have fingerprints, Sylvester said, that come from the axle width, the axle length and the weight of the vehicle as well as the weight distribution of the vehicle.

"We aren't going to say this is John Smith's Lexus, but we can say that this is a Lexus," he said.

Future uses of smart pavement would be for connectivity purposes, including Wi-Fi access, dedicated short-range communications for connected vehicles and as a host for the next generation of high-speed cellular service.

Sylvester also sees an opportunity for smart pavement to help cars become autonomous, but in a safer way.

"It's not all about the equipment on the car working correctly. It becomes the question of the reliability of the data that's being provided to the car from the road network," he said.

And once cars do become autonomous, smart pavement unleashes the possibilities of what you can do in the car instead of driving. For some, that might be working, while for others, it might be gaming or streaming movies. It could essentially turn your car into a mobile living room.

"If your car is driving itself, you're not going to just sit there and stare out the window," Sylvester said. "You're going to want to do things."

©2018 The Kansas City Star (Kansas City, Mo.) Distributed by Tribune Content Agency, LLC.

RELATED

Roads that Pay for Themselves: Startup Nears Two Smart Pavement Pilot Project Contracts (http://www.govtech.com/biz/Roads-that-Pay-for-Themselves-Startup-Nears-Two-Smart-Pavement-Pilot-Project-Contracts.html)

Pennsylvania Turnpike Commission Eyes the Internet Business (http://www.govtech.com/network/Pennsylvania-Turnpike-Commission-Eyes-the-Internet-Business.html)

States Stumble on Internet Privacy (http://www.govtech.com/policy/States-Stumble-on-Internet-Privacy.html)

DISCUSS

MORE FROM INFRASTRUCTURE (HTTP://WWW.GOVTECH.COM/FS/INFRASTRUCTURE)

FEATURED RESOURCES

PRESENTED BY

Leading Practices in Infrastructure Investment
(http://www.governing.com/papers/Leading-practices-in-infrastructure-investment-
101649.html?promo_code=channel)

Public Infrastructure Prioritization: Three Strategies
(http://www.governing.com/papers/Public-infrastructure-prioritization-Three-
strategies-to-help-maximize-the-impact-of-government-spending-101651.html?
promo_code=channel)

Infrastructure: Closing the Gap
(https://www2.deloitte.com/insights/us/en/industry/public-sector/state-
leadership/improving-quality-of-life.html#closing-the-infrastructure-gap)

Leveraging Construction Analytics
(https://www2.deloitte.com/us/en/pages/advisory/solutions/construction-
analytics.html)

Get Smart About Financing Smart Cities
(https://www2.deloitte.com/us/en/pages/public-sector/articles/three-steps-for-
financing-smart-cities.html)

Tweets by @DeloitteGov

Deloitte Gov
@DeloitteGov

How can the analysis and presentation of #data help government organizations improve services and advance operations? Learn more in this upcoming #Dbriefs webcast. deloi.tt/2IFmXrD

Deloitte.

Government & Education
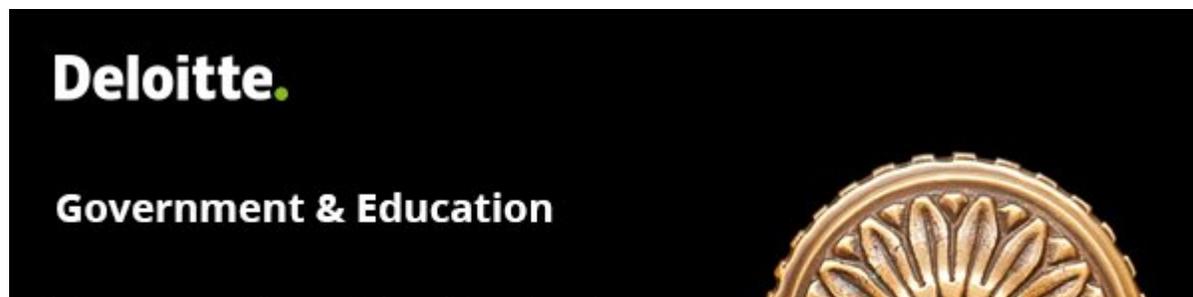
Embed   View on Twitter

NEWSLETTER

▶

Scan the day's headlines, as well as original and breaking technology news for state and local government readers.

Email Address

Subscribe

PAPER

▶

Cisco 2018 Annual Cybersecurity Report: Impacts on Government

Download
(http://cms.erepublic.com/common/dynamic_modules/pass_through/101503?
promo_code=gt_paper_web_article)
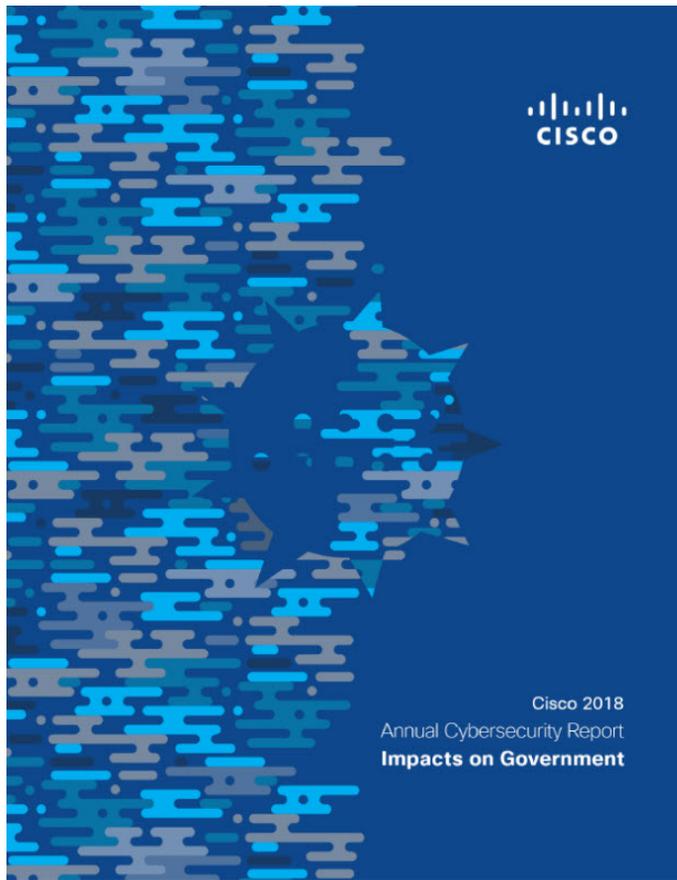
ABOUT / PRIVACY / CONTACT / ADVERTISE

(https://twitter.com/FutureStruck)