

Q & A from National STIC Meeting – April 19, 2018

Questions answered by North Dakota DOT presenter, Ethan Akerly

Have you had a snow plow pass over since installation? Was the plow down?

Yes, many snowplows have passed over this installation since 2016 with the plow down. ND DOT has also verified some of them going across on the temporary camera. The fiber is permanently buried 24 inches underground so plows cannot damage the system. As for monitoring plows, there are currently no plans to track plows with this system although that may be technically possible.

Do you need signal decomposing process for signals? NJDOT would be interested in any info about that signal decomposing.

ND DOT consulted with OptaSense (the supplier) on this question - From a high-level perspective, the Interrogator Unit digitizes the data and passes the time domain information for all of the channels over to the Processing Server. The Processing Server then conducts all of the data processing and runs the classification algorithms.

If anyone would like to have a further discussion on this, you can contact Ethan Akerly directly or contact OptaSense (contact information below)

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How does system work during extreme weather events?

The System still picks up vehicles traveling whether it is snowing or raining. The fiber is buried to minimize noise and the cabinet is specifically designed to withstand the extreme weather and climate of Fargo, ND.

How wide will the fiber monitor? For example, if you have a bifurcated interstate would it pick up both sides.

The fiber is supposed to be as close to the road as possible to have as strong of a signal as possible. It is not recommend using a single fiber on one side of an interstate to monitor both directions. As for a single fiber like the NDDOT deployment that goes along the

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shoulder of one side of the Interstate then turns around to cover the other side, that will work. In the early stages of this project, it was considered to run a single fiber in the median of I-29 for a portion of the project area. That wasn't pursued because of OptaSense's strong recommendation against doing so.

How do rumble strips and mowers impact the vehicle classifications?

Since spring has just started in ND, at this time it is simply too early to tell. As for rumble strips, there are none on this portion of I-29.

Will the system still work if the roadway is congested? Vehicles moving at much slower speeds?

The system is designed for more congestion than what I-29 in Fargo normally sees. In snow events or during an incident, speeds change within seconds. NDDOT caught a plowing operation on camera while checking the Web Interface with the speed earlier this year in a snow event, speeds recovered within seconds. As for slower speeds, they have seen speeds down to 15-20 mph. ND DOT does not know the implications congestion and/or slow speeds will have on traffic class counting. That said they don't expect any greater challenges in regards to slow versus high speeds.

Does the fiber have to be dedicated or can you use existing fiber?

ND DOT used dedicated fiber since this was a test project. Existing fiber can be used according to OptaSense as long as a dark fiber strand is available in the bundle.

What is the biggest barrier you have identified in getting this to classify vehicles?

ND DOT is still in initial stages of development and testing for classification. The biggest barrier, so far, has been matching the timing of the vehicle signatures accurately with the collocated axle-based ATR and camera.

What was the cost of the acoustic sensor project both in installation and in the processing equipment?

The whole system so far has been around \$500,000. That includes the fiber, all of the electronics including building the temp camera, all software and all of the installation costs to continuously monitor 2 centerline miles of I-29. We currently are counting 9 locations within those 2 centerline miles. This compares to approximately \$170,000 for a point-based ATR to monitor all Interstate lanes.

How does the Optasense technology revolutionize traffic counting?

This tech can revolutionize traffic counting because it is a continuous traffic counting system. One can design any number of traffic count locations into a single installation. A current permanent site can only do just one point on a highway as an axle-based ATR is point based.

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Another thing to consider is how versatile this system is. Since it does speed and can be used to monitor congestion, it provides an opportunity to merge the interests of ITS, traffic management and traffic incident monitoring with the interests of traffic data, planning and asset management. This technology was developed in military site security applications. The same installation in theory can both monitor traffic and provide security for critical infrastructure such as dams, bridges, etc. Other applications for this technology have included landslide and rock fall detection. The potential added cooperation between the divisions of an agency or even between agencies can provide for better service and more efficient use of taxpayer funds.

Questions answered by FHWA Center for Accelerating Innovation

When will we see the EDC - 5 innovations?

FHWA received over 200 new ideas or comments from our call for EDC-5 ideas. We are planning to select around 8 or so innovations to promote through EDC-5 in 2019 and 2020. This will allow us to focus our efforts into key innovation areas. We are meeting with stakeholder groups at the end of April and plan to announce the selected EDC-5 innovations in May/June 2018. This will allow us to gear up our Innovation Deployment Teams over the summer and to hold the EDC-5 Summits this fall.

When is AMR funding opportunity being released?

Right now, we have no definite date for when the AMR funding opportunity (Broad Agency Announcement) will be issued; we estimate it will occur later this summer. The Announcement will be posted and advertised through Federal Business Opportunities (www.fbo.gov) and grants.gov. FHWA will also provide timely updates on its [Center for Accelerating Innovation website](#)

Did you say we are out of money for AID Demo? We were looking to submit an application soon.

AID Demonstration has a total of \$10,000,000 designated for FY 2018. All of you have been busy promoting the AID Demonstration to your partners. CAI appreciates your continued support of our programs. As a direct result of your effort, your partners have submitted a considerable amount of applications for FY 2018 funding to Grants.gov. Given the number of applications received thus far and the availability of funding, we have reached the maximum number of applications that we can consider with the current level of program funding available. Please encourage those interested in AID Demonstration to be prepared to submit their application when funding becomes available in FY 2019 (October 1, 2018).