



**SEAHAWKS
FALL SHORT
IN SEASON
FINALE:
RENDLEMAN
PLAYS FINAL
GAME. 1C**

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**REDISTRICTING
TALKS ARE ON
HORIZON FOR
NEW HANOVER
COUNTY SCHOOLS.**

Story, 1B

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INRIX

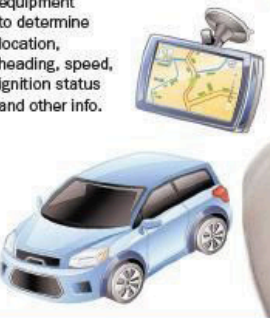
6. Inrix reverse geocodes each speed vector, analyzes and fuses with other data, and conducts additional processing



4. Speed vector processed at data center; batch data reports sent to Inrix every one to two minutes via T1 connections



3. Vehicle/device sends speed vector data report, with location, heading, speed, time via cellular data channel or satellite



2. Probe vehicle/device uses GPS satellite info and on-board equipment to determine location, heading, speed, ignition status and other info.



1. GPS satellites identify and transmit location information to device.

IF YOU USE GPS ON YOUR PHONE OR IN YOUR CAR, YOU ARE **IN THE LOOP**

BY ADAM WAGNER
Adam.Wagner@StarNewsOnline.com

Evelyn Thomas despises her daily commute from her house just off Village Road in Leland to Wrightsville Avenue by Empie Park. "People get up in the morning dreading going to work because of their job," said Thomas, an account manager at George Chadwick Insurance. "I love the job. I dread the traffic. What would take 10 to 15 minutes on a good traffic day normally takes 30 to 45 minutes." Thomas is one of thousands of commuters in the Cape Fear region whose daily routine is frustrated when they get hemmed in on the Eagles Island causeway or stuck at College Road and Oleander Drive for a few light cycles. Modern technology is giving motorists a chance to duck traffic, though.

Heading for the Cape Fear Memorial Bridge? Call up an app on your smartphone to see a map with up-to-the-minute color coding showing you where traffic is at a standstill. Or pick the quickest route based on the images of about 30 N.C. Department of Transportation cameras in the area. These tools have been evolving quietly, often so quietly that potential users don't know they can access them. "I don't think people are aware that these technologies are available, that they don't have to be slaves to the traffic light. These technologies are available and can save them time, fuel and frustration every day," said Jim Bak, a spokesman

See TRAFFIC | 4A



TRAFFIC

Continued from 1A

for Inrix, a Seattle-based firm that grades congestion on highways and arterial roads throughout North Carolina.

You're sending info too

Figuring out how smoothly traffic is moving no longer takes a bank of sensors at strategic locations throughout the state. Instead, all it requires is the iPhone or Droid that's probably in your pocket or on the table next to you right now.

And while you might use an app to plot the best route from Point A to Point B, public and private transportation organizations are using it to gather data about transportation throughout the county – and yours is just one of thousands of data points in a vast network of mobile devices.

Inrix is one of the industry leaders in traffic forecasting, collecting data from about 100 million vehicles, including UPS trucks, 44 states' transportation department fleets and the navigation systems in any vehicle equipped with Ford Sync, including the popular Fusion and Escape models. The company also has a partnership with Clear Channel Radio, receiving up-to-the-minute accident information in exchange for traffic speed data.

"When that data comes off the phone or the car, we're getting latitude/longitude, heading (direction) and speed," Bak said. "It's a small data packet, but we get lots of them, and we analyze them in real time, and we bring the traffic info down to the DOT and we update it every minute on the device."

Motorists can view Inrix's color-coded map of North Carolina highways and arterials for free on the DOT's website or access it via an app on their smartphone.

North Carolina is paying Inrix \$1.65 million per year through 2016 for access to the service on 15,000 miles of roads crisscrossing the state.

You might be concerned about a GPS device in your phone or car automatically making reports about your location and destination.

Inrix tries to ease that worry by stripping any information other than location, direction and speed from the data packet, including the vehicle identification number and identity of the car's owner.

"We assign it a random hash (number) and then follow it throughout the course of a trip, and every once in a while we'll rescrumble the hash," Bak said, adding that the phone app doesn't record data unless it's been switched on.

To gauge congestion, Inrix establishes a reference speed on each road and constantly measures against it.

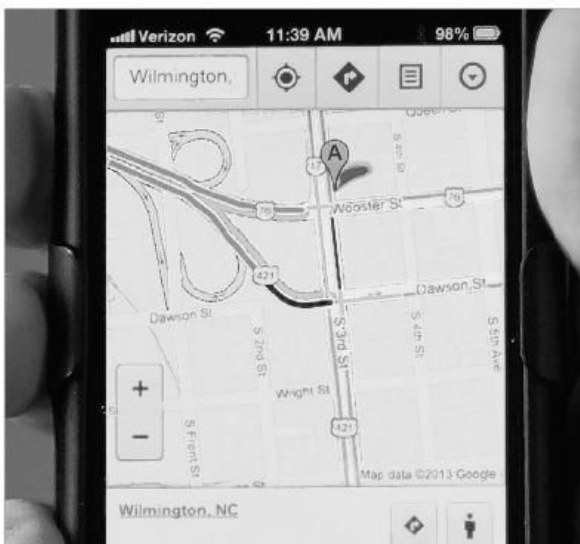
Traffic engineers from the University of Maryland audit Inrix's data every month using Bluetooth sensors, called "pucks" because they resemble the rubber disc that hockey is played with, to take their own measurements on select roads. These tests have determined Inrix's real-time information to be within 3 mph of traffic's actual speed.

If Inrix fails to meet performance metrics during a given month, it is not paid for that period.

The state also uses microwave sensors – which count the number



Commuter Evelyn Thomas uses a traffic cam app on her phone to monitor the traffic in Wilmington as she prepares to leave her Leland home for work Thursday. Photos by Mike Spencer



TRAFFIC APPS

Inrix: Maps, \$1.99
View2Road: Traffic cameras, free
Inrix: Maps, free
USA Traffic & Weather: Maps, 99 cents
Beat the Traffic Plus+: Maps and cameras, \$3.99
Waze: Maps, free
Signalert: Maps and cameras, free
Traffic View: Cameras, 99 cents
Glob: Traffic and radar, free

cameras and those that help motorists know if there's congestion in their paths – traffic cameras have taken a step backward.

Until early November, a company called TrafficLand provided the servers and cables to give drivers access to streaming photos of key roads updated every two seconds.

After operating at a loss for four years, though, the camera service pulled out of Wilmington, leaving motorists dependent on images from the DOT cameras in the area that update every two minutes – which doesn't provide as clear a picture of the traffic situation.

"It broke my heart because I like Wilmington and I like to go down there," said Lawrence Nelson, TrafficLand's CEO. "If I could continue to do it at a loss, I would. But if we operate at a loss we won't operate for very long."

The camera service is available in Raleigh, for instance, where a mixture of advertising revenues and payments from TV stations help TrafficLand turn a profit. When those revenue streams prove barren, though, as they did in Wilmington, the company turns to the public sector for help.

TrafficLand asked Wilmington for \$12,000 annually to help keep the service in the Port City, but the city declined those overtures because the money hadn't been accounted for in its annual budget.

As a result, the company sold the city much of its back-end technology – which originally cost about \$25,000 to install – for about \$3,800.

Wilmington traffic engineers are working to create and implement an updated streaming system, but there is no timeline or cost estimate for the project to come online.

"It's not something we've done in the past, so we're trying to figure out what level of streaming we're looking at and what we need to do to make it available on our site," said Don Bennett, Wilmington's traffic engineering manager, adding that purchasing the necessary bandwidth is standing in the way of the system's creation.

City employees have access to live, closed-circuit feeds from all of the cameras.

The city is also in charge of installing and maintaining the DOT's cameras.

"You have a camera with X amount of zoom, and you decide what you need to see. ... Then we look at trees, overhangs, power lines, road alignments that obscure that view, and we try to put that camera where we minimize the obstructions," Bennett said.

Bennett added that the turnable cameras are often left in the position they were last used in, but that turning the whole thing for rush hour every day could damage the unit.

"They have the ability to move every day, but if we don't have an incident going on, we don't want to wear that pan-and-tilt unit out," he said.

The tech ahead

Traffic cam apps and color-coded maps might be the easiest tools you have to skirt traffic right now, but more advanced technology could be available soon.

Inrix, for instance, is working with BMW to collect data about tire traction just as it tracks location information. The goal is to help drivers find the clearest path possible in the event of a heavy storm, flooding or, in different climates, snow and ice.

"We're exploring, when a major weather event occurs, not only providing the fastest route, but can we provide them the safest route?" Bak said.

Streaming tire traction data might not be something you care about on a daily basis, but one addition that could become commonplace sooner is simple navigation tools that help drivers reach the gas stations, hotels and restaurants they prefer rather than those that are just off the next exit ramp.

"Navigation today is web 1.0," Bak said. "We need to move navigation to web 2.0, which is the ability to do filtering, to understand that it needs to be personal and relevant to that consumer, and make it easily accessible while they're in the car."

The ever-extending reach of 4g mobile technology could lead to car consoles becoming the display device of choice for streaming traffic cams, accident information and traffic speed data, in lieu of a smartphone screen.

"Over the next couple of years, that console's going to get real complicated real quick," said Nelson, TrafficLand's CEO. "It's going to be a data center, and it's not only going to tell you about your car, but it's going to tell you about what's around your car ... delivering info in a way that's not any more invasive than the gauges on your car right now."

Adam Wagner: 343-2096
 On Twitter: @adamwagner1990

and type of cars that pass them – in some high-density markets, such as Raleigh. According to a 2010 I-95 Corridor Coalition white paper, installing the microwave sensors costs North Carolina about \$48,600 per mile, while Inrix's data costs about a quarter of that.

"We would never be able to afford to put sensors around the state (that would give us) the amount of information we're getting with the vehicle probe," said Jennifer Portanova, the DOT's state traffic operations engineer.

Beyond the installation costs, the permanent sensors are susceptible to the elements, since they are outside all the time. In a colder climate, for instance, they can ice over or be covered in snow, making it difficult to accurately measure the speed of traffic.

Inrix's technology was on display during a 2012 New Jersey incident when workers in a traffic center noticed a rapid traffic buildup in an area where there were no 911 calls and no incident reports. Curious, they sent someone to investigate and found a dump truck on its side, blocking traffic entirely in one direction.

"How do accidents get reported today? In most cases, it involves someone calling 911, and that info has to work its way out to the po-

lice, the EMTs and eventually the DOT," Bak said. "There is a time process that happens there. ... With our flows being updated every minute, we're getting to a point where we can differentiate incidents from traffic flow."

View from above

When you're stuck in traffic, you already know that there's congestion. What you want to know is how to get out of it. That's where having access to the 31 cameras the DOT has mounted in the area comes in handy, and that's become a little more difficult in recent months.

"If I get stopped in traffic and there's no information on the radio stations, I have a traffic cam app on my phone," Thomas said, adding that she uses an app called Traffic View that is available for 99 cents in the iTunes store to pick out her path.

The app comes in particularly handy around Dawson and Wooster streets because the concentration of cameras is high there. It hasn't yet been useful on the Eagles Island causeway, but the DOT plans to install six cameras on the road before its widening project starts next year.

Despite the strides taken by apps – both those allowing access to