

GPS systems that give traffic reports

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FROM THE PAGES OF **the geekweekly**

When Alexandre Bayen and other University of California, Berkeley researchers tested a fleet of 100 cars carrying GPS-enabled cell phones in February, he was trying to see how well they could monitor the flow of traffic without betraying the identity of the individual drivers.

He couldn't have anticipated the five-car pile-up on the San Francisco Bay Area freeway that was about to happen. But the satellite-linked, two-way connected phones told the story.

"We managed to instantly broadcast the congestion that emerged from this accident," says Bayen, who deemed the UC Berkeley/Nokia experiment enough of a success to expand it to a much greater scale later this year.

End of maps as we know them

Thanks to mobile navigation -- either on portable devices or via cell phones -- the days of mobile origami where you unfold and then try to refold a map as you hope the light doesn't turn green are coming to an end.

And if navigation is the buzz -- with many of us relying on GPS, or Global Positioning System, satellites to find our place in the world -- then real-time traffic is the killer app we all want.

With up-to-the-minute traffic info, you can avoid wrecks and other causes of congestion that slow your 24-7 pace. Traffic is what transforms a personal navigation device (PND) from your every-so-often, where's-that-new-restaurant device into an everyday tech tool you can't live without. Still, a key question lingers:

If your navi unit or cell phone knows where you are, won't everyone else?

Popularity of navigation

First, some background is in order. In 2007, about 13 million personal navigation devices were sold in the United States, about double the 2006 sales figure.

"The amazing growth is coming from innovations," says Scott Sedlik, vice president of marketing with Inrix, a Seattle-based Microsoft spin-off that provides traffic data to a wide variety of users, including TomTom and Mapquest. "Also, the prices have dropped dramatically."

ABI Research says manufacturers will ship 100 million two-way-connected navigation devices by 2012. That same year, the firm says, the number of cell phone users with GPS phones will have grown from 500,000 worldwide in 2007 to more than 70 million.

"Traffic is the hottest feature in making navigation devices have daily relevance," said Sedlik. "Normally, you don't need directions from home to work or where you go to lunch, but checking traffic makes the devices used every day."

Privacy concerns



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If your navi unit or cell phone knows where you are, won't everyone else?
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While you might think of traffic as what's-happening-now information, it involves more. Inrix delivers three varieties of info:

- **Historical traffic details** Past traffic patterns tell you that this road is always gridlocked at 5 p.m. on a weekday.
- **Traffic forecasts** Predictive data tells you that when the football stadium empties, then the traffic flow slows.
- **Real-time traffic reports** Data comes from road sensors installed by state transportation departments, emergency traffic reports, vehicle toll tags and from a fleet of 750,000 vehicles (from taxis to delivery vans) providing instantaneous reports on 800,000 miles of America's roads. Those commercial drivers know their vehicles are beaming traffic information back to Inrix, but it's unclear how regular Joes and Janes would react.

But are you willing to trade privacy for traffic info?

The company is considering using cell phone data to add to its traffic-information network, but Inrix knows privacy is a critical concern. "We can't trace an individual vehicle," Sedlik says. "We get a point of a vehicle at a point of time." From that, Inrix's algorithms calculate vehicle speed, heading and location.

Going forward, Sedlik says, you could be asked to opt-in to provide your traffic information in return for some returned value. You might score an extra accent on a PND -- an Australian female voice, perhaps -- or a cheapest-gas-price finder in return for allowing your unit to beam out traffic information.

A privacy experiment

Getting accurate, real-time traffic information without compromising the privacy rights of cell phone users was one of the key components of the Berkeley/Nokia test, Bayen says.

To deal with privacy concerns, the Berkeley/Nokia test took several steps:

- **Anonymity** Data couldn't be linked to a particular user.
- **Encryption** Researchers encrypted the data before sending it to the network. In essence, traffic data had the same level of security as a typical banking transaction, Bayen says.
- **Location** Data was only gathered at places where privacy experts predetermine that an individual's personal details couldn't be identified, such as freeway entrances.

"We don't know it's you," Bayen says.

Ultimately, Bayen expects the system, which will offer congestion information and estimated arrival times and alternate routes to Nokia customers, will move from a research product to something the company offers to its users.

A few lucky commuters already get real-time traffic info. Many of us will get it in the near future. Once it arrives to the masses filling America's crowded roads, experts think congestion might lessen. You'll be able to find out about specials at nearby stores through GPS systems that know you're nearby.

And your cell phone might help you do far more than chat about last night's "American Idol" rejects.

Matt Nauman writes about automobiles and green technology from Silicon Valley. He is a juror for the North American Car of the Year award.

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