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NorCal GPS Cell Phone Traffic Probe Project Gets Underway

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Beginning Monday, November 10, drivers in Northern California's Bay Area will have the chance participate in a project that will turn their GPS-enabled phones into traffic probes used to collect data on traffic flow and travel times.

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TECHNICAL ARTICLES

Researchers from the University of California at Berkeley and the Nokia Research Center in Palo Alto, California, will publicly release user software for the pilot project on Monday. Anyone that has a cellular device that can run Java software and operates on GSM networks, such as AT&T and T-Mobile, can download the software, install it, and participate; the project can accommodate an estimated 10,000 volunteers.

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The pilot project is part of [UC Berkeley's Mobile Millennium](#) project; researchers from UC Berkeley's College of Engineering, the Nokia Research Center, and UC Berkeley's California Center for Innovative Transportation are developing the software. The Millennium Project is in turn supported by the U.S. Department of Transportation (DOT) through the federal SafeTrip-21 initiative, which seeks technology to improve safety and reduce congestion on the roadways, as well as by the California Department of Transportation (Caltrans).

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[U.S. DOT and Caltrans first announced in June that they had set aside \\$12.4 million](#) for the project. The collaboration between UC Berkeley and the Nokia Research Center is also supported by a seed grant from UC Berkeley's Center for Information Technology Research in the Interest of Society (CITRIS).

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Interested participants can download the software from the Mobile Millennium project site; the site also maintains an updated list of specific Nokia and non-



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Nokia phone models compatible with the software. Because of the large amount of data transmitted by the system, researchers recommend that participants have an unlimited data plan.

As vehicles pass through the system's virtual trip lines — geographic markers defined by GPS coordinates — the phones will send anonymous speed and location readings to servers. The data will be integrated into traffic models that produce an estimate of traffic flow, then relayed back to the mobile phones and posted online at the UC Berkeley/Mobile Millennium website. The system uses digital mapping data from Nokia subsidiary Navteq.

Heading the research teams are Alexandre Bayen, UC Berkeley assistant professor of systems engineering in the Department of Civil and Environmental Engineering, and Quinn Jacobson, research leader at Nokia Research Center. "As we have entered the era of the mobile Internet, cellular devices are providing us with ubiquitous sensing capabilities that will rapidly revolutionize location-based services," said Bayen. "In particular, traffic information systems will be enriched by combining mobile sensor data with static sensor data. The Berkeley research focuses on developing the novel algorithms needed to integrate this data into traffic models and make the information meaningful to the public."

The researchers said the system could eventually spread to include any area with mobile Internet connections, including secondary side streets and rural roads not currently monitored by traffic sensors.

The release of the pilot software comes nine months after researchers put the new technology to its first major road test using Nokia's N95 GPS-enabled mobile devices placed in 100 cars, according to UC Berkeley. The pilot software to be publicly released Monday night is partially based upon the prototype version tested during that field experiment.

The software has built in privacy, according to the researchers; it reportedly strips the traffic data from individual device identifiers, uses banking-grade encryption techniques to protect the transmission of data, and draws data only from targeted roadways where traffic information is needed. Users can also turn off the system's ability to transmit traffic data at any time.

The first phase of the Mobile Millennium system launch will include traffic data for highways, which includes major commuter corridors within and between the San Francisco Bay Area and Sacramento. As more users come online, the researchers expect to have sufficient data to produce information on some arterial routes in the Bay Area and Sacramento.

During the first month of the pilot, software downloads will be limited to manage capacity. Additional information about supported GPS-enabled mobile phones will be posted. By April 2009, the researchers expect to reach the estimated pilot system capacity of 10,000 users.



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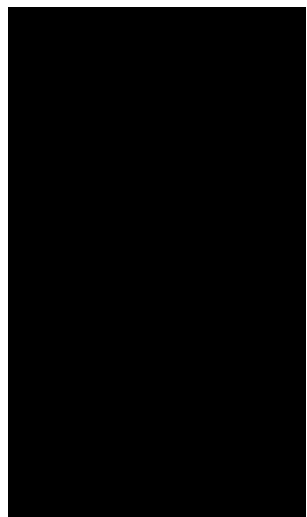


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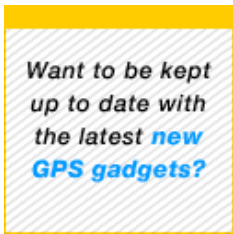
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