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Nokia Research Center Puts Mobile Millennium in Gear to Help Reduce Traffic Congestion

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PALO ALTO and BERKELEY, California, November 10 /PRNewswire-FirstCall/ -- Nokia (NYSE: NOK) today launched Mobile Millennium, a public pilot that will collect and study traffic data received from GPS-enabled mobile devices, such as the Nokia N96, Nokia N95 and Nokia E71. As part of its open innovation model, Nokia Research Center is collaborating with UC Berkeley's California Center for Innovative Transportation (CCIT), the California Department of Transportation (Caltrans) and NAVTEQ to design, execute and analyze the traffic system.

Based in part on the results of an earlier experiment, Nokia believes that a community of users with GPS-equipped mobile devices can help reduce traffic and the amount of time spent on the road. Providing real-time information about traffic congestion helps drivers make more informed decisions - such as whether to take alternative routes, public transport or reschedule their journey.

"The global proliferation of GPS-enabled mobile devices has driven tremendous growth in location-based experiences" said Henry Tirri, Vice President and Head of Nokia Research Center. "Mobile Millennium, with its unique collaboration of private and public stakeholders, is designed to demonstrate that everyone can help address problems such as traffic congestion. Nokia is proud to be part of this research."

Traditional traffic monitoring systems include pavement-embedded sensors, roadside radar or cameras to provide data for changeable message signs or traffic reports. But such systems are

costly to install and maintain and so they only cover limited stretches of today's roads and highways. Using GPS-enabled mobile devices can provide a richer, complementary source of traffic data without the need to invest in expensive new infrastructure. Traffic flow data can be expanded to include city side streets, rural roads or any roadway where a cell phone can get a signal. The Mobile Millennium traffic data is based in part on the backbone technology of NAVTEQ Traffic, which provides nation-wide aggregated traffic data in the US from a variety of sources, now including real-time data from GPS-enabled mobile phones in vehicles traveling on the highways.

Participation in Mobile Millennium is open to anyone with a GPS-enabled mobile phone from a range of manufacturers, an unlimited data plan and the ability to install and run Java applications. The Java application enables participants to receive real-time traffic data and incident reports for main thoroughfares throughout much of the United States. In the Northern California area, a number of arterials and highways that are not currently equipped with sensors will begin to show traffic data as more users join the network. While the user-generated content is completely anonymous, each data point contributes a piece to the traffic picture which can benefit the entire user community. The pilot will operate over four to six months and up to 10 000 members of the public community can participate.

Protection of personal privacy was built into the very core of the reporting technology used in Mobile Millennium. From inception, researchers built safeguards into the system, such as stripping individual device identifiers from the transmitted traffic data, using banking-grade encryption techniques to protect the transmission of data, and drawing data only from targeted roadways where traffic information is needed. This Privacy By Design(TM) system continuously filters information to remove data that can be tied to a particular phone, minimizing the

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amount of sensitive information ever created, transmitted or stored.

"Berkeley is contributing our expertise in traffic modeling and systems engineering to help make this complex system come to life," said Alexandre Bayen, professor of civil and environmental engineering at UC Berkeley. "As part of a public university, we are thrilled to be working on a project with such enormous potential for public benefit," Bayen said.

Mobile Millennium is being funded in part by a grant award from the US Department of Transportation under the SafeTrip-21 initiative. Locally, Caltrans, who is also assisting in the logistics of trial and enabling comparison with the data collected by the existing sensor networks, aims to find a lower-cost and more reliable solution than that which is available today. "Real-time traffic information collected through this community-based technology is of great interest to transportation agencies," noted Randell Iwasaki, Chief Deputy Director of Caltrans. "Our goal is to increase information flow to and from travelers in a cost-efficient, effective manner. We are excited about the potential benefits of a system such as Mobile Millennium," Iwasaki added.

Information about Mobile Millennium, supported devices and the software download can be found at <http://traffic.berkeley.edu>.

About Nokia Research Center

Nokia Research Center (NRC) looks beyond Nokia's existing business and product development to challenge current strategies and to stimulate renewal in the company's direction. Working closely with all Nokia business units, NRC's research explores new frontiers in digital services, physical-digital connections, human interaction, data and content technologies, device architecture, and access and connectivity. NRC promotes open innovation by working on research projects in collaboration with universities and research institutes around the world. For more information, see our website: <http://research.nokia.com>

About Nokia

Nokia is the world leader in mobility, driving the transformation and growth of the converging Internet and communications industries. We make a wide range of mobile devices with services and software that enable people to experience music, navigation, video, television, imaging, games, business mobility and more. Developing and growing our offering of consumer Internet services, as well as our enterprise solutions and software, is a key area of focus. We also provide equipment, solutions and services for communications networks through Nokia Siemens Networks.

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