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PRAXIS

The connected commute

BY DAVID DOWNS

Mobile phones could provide all the traffic data you'll ever need.

-- After 1990 --

-- Before 90s --

Berkeley assistant professor Alex Bayen was floating mobile phones down the Sacramento River one day in 2007 when he received a call that would change his life. Nokia, the world's biggest maker of mobile phones, was on the other end. They wanted to know if Bayen, a researcher in Berkeley's Department of Civil and Environmental Engineering, could do the same thing with traffic that he was doing with rivers; namely, use cell phones to reconstruct flow patterns. Bayen said he could, and the \$6 million Mobile Millennium project was born.



Courtesy of the California Center for Innovative Transportation

Since then, Bayen, Nokia, and a team of about 50 have hatched a plan to turn every cell phone into a potential traffic sensor and usher in a new era of real-time traffic information. Here's how it works: A program downloadable from the Mobile Millennium website uses a cell phone's GPS device to collect data on speed, location, and direction. The data is anonymized and sent to the project's servers. Bayen's program combines that information with data from other users and from road sensors, and beams back to the phone a constantly updated map of traffic.

Most urbanites can already get live traffic data from services such as Navteq, Sigalert.com, and 511.org. However, the current network of public and private road sensors isn't particularly sensitive, fast, or comprehensive. Rural roads aren't adequately covered, and arterials and side streets aren't covered at all. Upgrading that network would cost billions.

Mobile Millennium doesn't face that problem, though, because the only infrastructure it relies upon is existing cell towers. Thanks in large part to the ubiquity of cell phones and the reach of cell networks, the detail, speed, and coverage of Mobile Millennium is unmatched. A map on your phone's screen can tell you instantly which lanes on the freeway are backed up, which side streets are open, and when that next wave of traffic threatens to stop you in your tracks.

The network is currently limited to Northern California, and so far only about 4,000 users have signed up. However, the project plans to expand to Southern California within the next two years, followed by major metropolitan areas around the world. That may sound wildly ambitious but Bayen is undaunted. "We have completely overbuilt the system so that we would be robust to growth, and we are completely ready for it."