Vehicular Networks in Smart Cities
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Research Direction

The U.S. Department of Transportation may soon mandate that cars be equipped with a wireless technology known as Dedicated Short Range Communications (DSRC) as a means of enhancing safety on the roads, but automobile safety is just the beginning. Once those devices have been deployed, they can also be used to construct inexpensive wireless mesh networks that serve many purposes. My lab at Carnegie Mellon University is both advancing the technology of vehicular networks and producing research that addresses the public policy decisions and business implications. In our research, we are using extensive data from an actual vehicular network that has been deployed citywide. This network has hundreds of DSRC-equipped vehicles that have transferred Terabytes of data to and from its end users. We view the vehicular network not just as a means of connecting cars, but as a new form of wireless infrastructure, and one that may be more cost-effective and useful than current wireless systems for many purposes. These purposes range from collecting data from various types of sensors scattered throughout a city to providing inexpensive Internet access for city residents. Indeed, our early results indicate that vehicular networks could be more cost-effective than current approach for Internet access in the largest U.S. cities within a few years after the Department of Transportation acts, and would gradually become cost-effective in less densely populated regions over time.

About the Researcher

Jon Peha is a Professor at Carnegie Mellon University. He has served in the Federal Communications Commission (FCC) as Chief Technologist, in industry as Chief Technical Officer of three high-tech companies, and in the White House as Assistant Director of the Office of Science & Technology Policy (OSTP). While at the White House OSTP, he started WSRD, the US Government's interagency steering group on Wireless Spectrum Research and Development, and U.S. IGNITE, a public-private partnership catalyzing novel applications for communities with next-generation broadband networks. At Carnegie Mellon, he is a Professor in the Dept. of Engineering & Public Policy and the Dept. of Electrical & Computer Engineering, and former Associate Director of the university's Center for Wireless & Broadband Networking. Dr. Peha is an *IEEE Fellow* and an *AAAS Fellow*, and was selected by AAAS as one of 40 "Featured AAAS Science and Technology Policy Fellows" of the last 40 years ("40@40"). He has received the

FCC's "Excellence in Engineering Award," the IEEE Communications Society TCCN Publication Award for career research contributions, and the Brown Engineering Medal.