

Use of Bluetooth Technology in Traffic Data Collection and Management in a Rural Setting: Case Studies in Portage & Tomah

Primary Author: Justin Effinger

Bluetooth technology is an upcoming and innovative method for data collection of travel times for work zones. Bluetooth technology can be used as part of a multi-source data collection system, or an addition to an Intelligent Transportation System (ITS), like the addition of travel time estimation for fixed changeable message signs.

The majority of consumer electronics today, like digital cameras and cell phones, come equipped with wireless Bluetooth capability to communicate with other devices in close proximity. Currently, however, Bluetooth technology is an expensive method for collecting travel times, so a methodology for determining the minimum number of Bluetooth devices, along with other data collection techniques is needed for villages, towns and state DOTs.

This paper presents a case study on using Bluetooth technology for a study on route choice and diversion patterns of work zones near Portage and Tomah in Wisconsin, based on effective integration and fusion of multi-source data collected with existing traffic ITS technology along the target study region which include Volume, Speed, and Occupancy Application Suite (V-SPOC) detectors and the TRAFFIC DATABASE System (TRADAS), which stores Automatic Traffic Recorder (ATR) station data. Extensive analysis on the obtained comprehensive dataset has offered a look at the impacts of using Bluetooth technology in a rural setting. From this research, state DOT engineers will have a better understanding on how to create a set of rules, assumptions and guidelines for implementing Bluetooth technology that will be focused specifically to their regions.