Satellite-Based System Charges Tolls Based on Time of Day

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In the state of Washington, Siemens has started operating a satellite-based toll system that charges variable fees. A total of 500 drivers will be taking part in the pilot phase in the Seattle area. As is the case with the German Toll Collect system, the vehicles are equipped with on-board units (OBUs) and their position is tracked by the Global Positioning System (GPS). GSM technology is used to maintain contact between the OBUs and a control center. As soon as the motorists drive onto a toll road, the system sends them a visual signal. Unlike the German system, this solution doesn't require any control bridges.

GPS enables the toll system to immediately determine the exact location of the vehicles. This information is then compared with the digital road network data for the greater Seattle area and appropriately classified, which makes it possible to charge tolls on the basis of the distance traveled as well as on the time of day. And by checking out their OBUs, drivers can keep tabs on how much they owe at any given time.

The heart of the toll system is the management center's software, which was programmed by Siemens Industrial Solutions and Services (I&S). This is where the system is monitored and controlled. The software can precisely determine when a vehicle has driven through certain fee zones. In order to gain an accurate impression of the motorists' driving patterns, the road network has been divided into 8,000 fee zones. The resulting data allows the operator to determine how high traffic volume is on various stretches of road, which then serves as the basis for calculating the amount of the toll. By charging different prices depending on the

time of day, the authorities hope to reduce the amount of traffic on frequently used roads while at the same time making alternative routes more attractive for motorists in terms of costs or inducing drivers to use other modes of transportation.

The toll system is operated by the Puget Sound Regional Council (PSRC), which is responsible for planning, designing and financing traffic projects in the greater Seattle area. The PSRC stores the vehicles' position data, manages the user accounts and creates monthly overviews documenting road use. Siemens processes the data — which is subject to the usual data protection regulations — in line with its customer's needs. In addition to developing the software, Siemens I&S was responsible for coordinating the project and for integrating all systems and components. The OBUs were supplied by VDO Automotive.

Source: Siemens

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