

Safely on the move

July 14 2009

How can rescue units be better protected during disaster operations or avalanche victims be found quicker? A new localization system connects satellite-based positioning systems with terrestrial locating aids and situation-dependent sensory systems.

Firemen are exposed to various dangers during their missions: poisonous, harmful gases, blocked escape routes and the threat of buildings collapsing. The head of the operation needs to know where the men are currently located. Experts rely on global [navigation satellite](#) systems (GNSS) - which, in addition to [GPS](#), include Europe's Galileo and the Russian GLONASS - to help them locate rescue units and all the necessary rescue equipment and devices. Fraunhofer scientists have set up a Galileo Lab in which new GNSS-based localization technologies are being developed.

The researchers use the satellite navigation system Galileo, which, in contrast to GPS, is not controlled by the military. This way it is possible to implement special services for civil applications, for example in rescue missions. In the Fraunhofer Galileo Lab, researchers from nine Fraunhofer Institutes, together with the Fraunhofer Traffic and Transportation Alliance, are working on locating people and goods in industry, commerce, transportation and mobility.

"When analyzing various target groups such as logistics, travel assistance or security services, it quickly becomes clear that the tasks of the system architecture are similar. Similar structures and contents are always required on similar terminals - for instance, data on where a person is

located, sensors which indicate specific values such as the concentration of harmful gas, or terminals which act as clients. It is our goal to offer a universal software architecture which allows application profiles to be configured like in a modular construction system," states project manager Werner Schönewolf from the Fraunhofer Institute for Production Systems and Design Technology IPK. Take for example travel assistance. A person traveling by train in the future could be directed to the right connecting train at a railway station via cell phone or PDA without having to explicitly operate the device. "This is possible through context recognition in the mobile device. We connect the travel plan details with the positioning system, allowing people to navigate to the correct train through even the most complex train stations," Schönewolf explains. "In the event of an emergency, we link the location with harmful-gas sensors and can detect dangers at an early stage."

The experts not only use the Galileo data, but are also testing combined receivers for various satellite systems because the most precise navigation and, above all, the highest positioning accuracy in cities and canyons, etc., can be achieved by using the collective data of all the satellites in the sky.

Source: Fraunhofer-Gesellschaft ([news](#) : [web](#))

Citation: Safely on the move (2009, July 14) retrieved 23 April 2024 from <https://phys.org/news/2009-07-safely.html>

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