

Map reading for dummies

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A huge European project into car and road safety has developed a system that will read satellite navigation maps and warn the driver of upcoming hazards – sharp bends, dips and accident black spots – which may be invisible to the driver. Even better, the system can update the geographic database. Suddenly, all drivers can become mapmakers.

You are driving along an unfamiliar road, using your satellite navigation to find your way. But clever technology in your car is also tracking the route, looking at the terrain, and upcoming bends and intersections. It has information on accident blind spots, dips in the road, and more. Linking into other in-car wireless communication systems, it can even communicate with other vehicles in the vicinity.

This is the future of in-car maps, going way beyond directions and entering the zone of active hazard detection. It is one of the key strands

of the PReVENT project.

PReVENT is the largest road safety research initiative ever launched in Europe, with a budget of over €50 million and 56 partners. It has a broad, but highly complementary programme of research. A dozen projects focus on specific road safety issues, but all projects support and feed into each other in some way. It means the impact is greater than the sum of its parts and partners.

MAPS&ADAS is a great example, working on development, testing and validation of safety-enhanced digital maps, and the creation of a standard interface for an ADAS (Advanced Driver Assistance System) to enable preventive safety applications.

It sounds a mouthful, but it is really a very elegant example of using existing resources in new ways to increase functionality at low costs. Essentially, the onboard computer scans the maps for the ‘speed profile’ of the road ahead, the right of way and other data.

“The analysis of many situations can be dramatically improved by an awareness of the location,” says Matthias Schulze, coordinator of the EU-funded PReVENT project and Senior Manager for ITS & Services at Daimler AG. A lot of the sub-projects took advantage of each other’s work, he tells ICT Results. For example, SAFELANE and LATERALSAFE, could benefit from information coming from the MAPS&ADAS system.

LATERALSAFE uses sensors to scan the blind spot lane and your current lane, while SAFELANE ensures that drivers stay in the correct lane. INTERSAFE, another sub-project that helps drivers negotiate intersections, also benefited enormously from the MAPS&ADAS research, as did many others.

Because data transmission between car components varies enormously between manufacturers, MAPS&ADAS did not develop a full prototype, but it did develop a standalone system that focuses on so-called ‘Dynamic Pass Prediction’ for overtaking and a driver-warning system for upcoming hazards. Manufacturers can now quickly adapt it to their own models.

“We should see the system appearing in new models in the short term,” says Schulze.

Mapmaking on the go

But MAPS&ADAS went beyond extracting precious data from a current map. Researchers also studied systems to analyse information from the map and compare it to the environment a car actually encounters.

So a new traffic light, installed with a wireless alert system developed by PREVENT sub-project INTERSAFE, could warn oncoming cars that it is there and about to turn red. MAPS&ADAS developed a protocol whereby the car can compare that information to the data supplied on the map. If the new traffic light is not marked on the map, the car can update the map database.

Ultimately, it would mean that cars are updating existing maps all the time. It is an elegant application with enhanced functionality and it shows just how far simple (existing) technology can squeeze the maximum out of the installed base.

But it could be a long time before that sort of mapmaking functionality becomes available. It requires transmitters installed in the streetscapes across Europe, warning cars of upcoming hazards. “We did not fully develop this technology, but we developed the protocols and systems required to set it up, so that when the infrastructure is in place, it can be

quickly integrated into new systems."

It all means that map reading for dummies technology could be transformed into very, very smart safety systems, too.

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