Team players

The GINA consortium consists of 12 partners covering the different links in the value chain and the many competencies needed to carry it through. Their knowledge and expertise helps define the technical and commercial requirements to comply with GNSS-based road pricing and VAS schemes including local mobility information such as traffic and weather, driving assistance and accident data recording.

Dutch car leasing company ARVAL and Portuguese highway operator ASCENDI represent the end-users sector in the consortium. "By considering real end-users' needs and expectations, we hope GINA can create a product that suits all," notes Sara Gutiérrez-Lanza. "The system, known in the Netherlands as the ABvM scheme, was to be the first nationwide road pricing scheme based only on GNSS and was proposed to act as a reference model to the road charging demonstration definition. The Netherlands is hoping to roll out this distance-based charging scheme in full by 2018."

Buy in the sky

Saul Wordsworth receives an update on the GINA road pricing project from **Sara Gutiérrez-Lanza** and **Konstandinos Diamandouros**

Images courtesy of GMV and Martin Meissner/Press Association Images

In March 2009, while many European road institutions were caught up in a debate over the Eurovignette Directive concerning road tolling for heavy vehicles, a brand-new pilot project was launched that could still shape the way Europe's roads are priced.

GINA (GNSS for INnovative Road Applications) – a scheme commissioned and co-funded by the EC and 12 consortium members – is designed to test the effectiveness of European GNSS as a means of setting up a nationwide pay-as-you-drive road pricing scheme. The project – which is taking place across the highways and byways of the Netherlands – would enable users to be charged according to their vehicle type, the roads they use, and when and how often they use them. GINA is being run by Spanish technology company GMV and Sara Gutiérrez-Lanza is its project coordinator: "The purpose is to analyze and hopefully demonstrate the technical effectiveness and economic viability of such a scheme, using first EGNOS and later Galileo as a next step in the use of GNSS, and to validate the possibility of value-added services (VAS) running on a same platform."

Effective strategy

Gutiérrez-Lanza and her colleagues hope that the success of the project will lead to a greater understanding of GNSS. "No-one has ever attempted a national all-road all-vehicle GNSS-based pricing system before, and its benefits are little understood on a national level," she suggests. "What is crucial for the project is to demonstrate that European GNSS suits the expectations of the different road pricing schemes and improves congestion and pollution. If we can show that this is technically effective and economically feasible, the politicians will be on the side of using European GNSS and the public will better understand its advantages."

At its inception in 2009, GINA was divided into two distinct phases: the first was to analyze user requirements, assess the technology and parameters of the project, define a preliminary business approach and understand the local context of the project. The second involves what Gutiérrez-Lanza refers to as "the core" of the project – the trial phase. The trials themselves are nationwide and are divided into exhaustive trials and the end-to-end trials.

"The trials took place over a four-week period in March," she adds. "Two vehicles equipped with our I-20 OBUs and accurate reference systems followed three different routes defined by the project. Each route was repeated a minimum of 20 times in order to gather enough data to create statistical significance. These trials looked at specific issues regarding the performance of EGNOS, including accuracy, integrity, performance of distance measurement, detection of geo-objects and charging performance, particularly in comparison with GPS. We were very pleased with the way the trials went and the preliminary results have revealed some interesting information."

busier times obviously you pay more. This incentivization not to travel during peak times should reduce congestion and lessen the environmental impact."

Konstandinos Diamandouros is employed by the European Road Union Federation (ERF) and is the dissemination leader of GINA. Similar to Gutiérrez-Lanza, he believes the project is a landmark in data collection: "No-one has ever implemented a European GNSS-based road pricing pilot on such a scale as this," he states. "The crucial question is whether EGNOS will perform in terms of integrity and accuracy. If you do not have these factors present it could lead to a driver being charged incorrectly. We have to protect the driver from such an outcome and instill confidence. Also, if we can produce tangible evidence that such a scheme influences road behavior and in the process lowers congestion and pollution levels, it will provide ammunition for policy-makers as it will help overcome widespread skepticism that road user charging is merely an extra tax on drivers."

Overall assessment

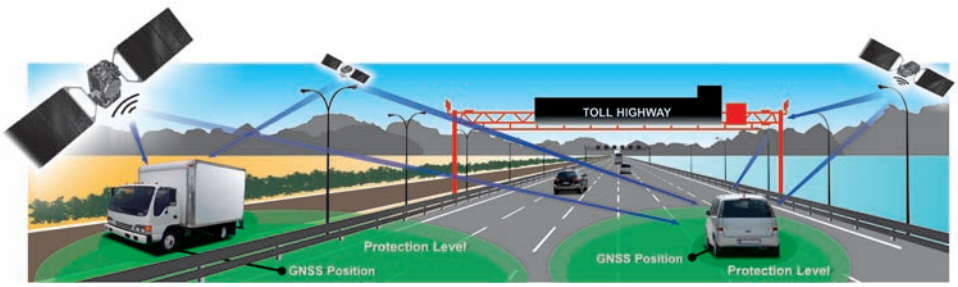
Different aspects will be assessed in the end-to-end trials, which are more drawn-out and set to begin soon – 100 vehicles are to be equipped with I-20 OBUs for a period of six months and allowed to drive freely across the Netherlands. "These drivers will be volunteers comprising car leasing company ARVAL's employees and customers. This phase is more of an overall assessment of the capabilities of the system, for instance the ability of the OBUs to generate invoices and the opportunity for us to analyze the feedback of the drivers participating in the trials. This is our opportunity to look at driving behavior. The idea of the Dutch ABvM scheme was to charge per kilometer and this price would depend upon different elements such as the use of specific road segments and the time of day. If you drive during

All in the timing

With many RUC schemes currently under discussion across Europe, GINA is extremely timely. Those involved have created an intensive and well-defined strategy to identify decision-makers within Europe's ministries who have influence on their own country's forthcoming road-pricing schemes. "We are trying to connect with them and convince them of the added value of EGNOS," Gutiérrez-Lanza confirms. "We are also in contact with manufacturers such as Siemens who are involved in this kind of technology."
In September 2010, a dedicated GINA workshop will be run where the full results of the project will be revealed for the first time. "We hope to gather as many high-level policy-makers and companies to give them first glimpse of results and persuade them of system," she concludes. "This will be the first time that people will have not only the proof of concept but actually something real. When we show them our results, we hope they understand the added value of European GNSS."

> "If we can produce tangible evidence that such a scheme influences road behavior and in the process lowers congestion and pollution levels, it will provide ammunition for policy-makers

In the UK, combined taxes raised from motoring are around £42 billion a year, yet only £10 billion is spent on new roads and maintenance



The use of GNSS – such as GPS, Galileo and EGNOS – for electronic road tolling is part of a growing trend in Europe