

Neelie Kroes, Commission Vice-President for the Digital Agenda talks to ITS International (published on 16/08/2010)

Free for all

By 2050, the Europe Commission aims to make transport in Europe carbon- and accident-free. Between now and then, however, a significant technological development and deployment effort is needed. Here, Neelie Kroes, European Commission Vice-President for the Digital Agenda, talks about what's being done

In many respects, COOPERS, CVIS and SAFESPOT, set up by the European Commission (EC) to explore the potential of cooperative infrastructure systems, are already legacy projects. Between them, the three developed a unified technical solution and applications intended to improve road network safety and operations and these were presented for wider appreciation at the Cooperative Mobility Showcase 2010, which coincided with the Intertraffic show at the Rai, Amsterdam, in March this year.



More than 1,000 people took part in real-life demonstrations by taking minibuses along Amsterdam's roads which used more than 30 cooperative services such as incident-warning and lane-matching applications.

The theory was translated into practice however the story does not end there. The particular challenge for the deployment of cooperative systems, according to Neelie Kroes, European Commission Vice-President for the Digital Agenda, is to ensure the timely and widespread availability of in-vehicle equipment, infrastructure communication capabilities and, above all, useful services.

“Stakeholders from different administrations and industries with different corporate cultures have to work together closely to make these services a success,” she says. “The next phase is launching Field Operational Tests [FOTs] based on the results of COOPERS, CVIS and SAFESPOT to help the fast transfer of research results into innovative services which bring us more efficient, smarter and safer mobility. These tests will give us data from a large number of journeys performed in real-life traffic conditions. This will enable us

to assess the value of the different kinds of cooperative systems and to identify business models for the most promising cooperative services.”

FOTs – a step on

FOTs and pilots are comprehensive socio-economic assessments which help to verify the benefits of cooperative systems and pave the way for bringing these systems to the market.

“Tests and pilots have been taking place over the last decade at regional, national and local levels worldwide. We expect these to intensify in the future,” Kroes continues. “Therefore, our need to create a harmonised Europe-wide testing environment increases. Stakeholders are well aware that, despite the current economic climate, it is vital to maintain the drive towards sustainable transportation, of which cooperative systems are an integral part. Against this backdrop, the Commission is considering reinforcing and expanding FOTs. We sincerely hope that stakeholders will seize the chances provided by these new instruments.”

Kroes’s mention of the current economic situation is an acknowledgement of the reality behind the aspiration. But, she says, while the financial crisis poses difficulties for all sectors of the economy, and cooperative mobility has not escaped this, this is not the biggest challenge.

“We need to find the proper cooperative model, business case and partnerships for cooperative mobility. Dividing applications into Vehicle-to-Vehicle [V2V] and Vehicle-to-Infrastructure [V2I] is somewhat artificial; industry long ago admitted that deploying only V2V solutions would not be viable. The Commission supports technology independence, the CALM [Communications Architecture for Land Mobile environment] set of standards for vehicle communications and the pan-[European Communications Architecture for Cooperative Systems](#), developed by industry, which basically builds on the use of existing communications technologies such as cellular communication.

“Deployment is obviously an issue which we are discussing with the industry, our colleagues in the context of the ITS Action Plan and our international partners. I don’t see any need today to revise the timetable outlined in the ITS Action Plan. On the contrary, we want to come closer to the deployment of cooperative mobility

solutions at a European level through large-scale tests involving several cities and inter-urban corridors. Finally, we highly value the cooperation with European Union [EU] countries in the Easyway project.”

Extending cooperation

Standardisation at the international level has made great strides in recent months and years but there are some in the ITS industry who feel that the remit of the standardisation effort is still too narrow. Dedicated Short-Range Communication (DSRC) has long been considered the technology of choice, particularly for safety-critical cooperative applications, and the EC has harmonised with the US at 5.9GHz. Nevertheless some stakeholders continue to look to alternatives, such as cellular and 4G/4G+, and are against the mandating of standards and equipment fitments. The EC has ambitions towards an open architecture and Kroes points to support at several levels for standardisation.

“We fund research projects that are contributing significantly to the development of standards, for example, CVIS, COMeSafety, SAFESPOT, COOPERS, GEONET and SEVECOM. The [European Communications Architecture for Cooperative Systems](#) for example, coordinated by COMeSafety, has contributed greatly to the standard architecture approved by ETSI,” she continues.

“The Commission has asked the European standardisation organisations to develop the standards needed for the deployment of ITS Cooperative Systems (Mandate 453). This sets the scene, and allows funding of specialist task forces to progress quickly with the required standardisation.

“Commission services are working closely with the ETSI and CEN committees dealing with standardisation on cooperative systems – ETSI TC ITS and CEN TC278 WG 16 – to ensure progress. We are also seeking global harmonisation of standards, with our counterparts in the US, Japan and other regions of the world. We have signed an agreement with the US Department of Transport and have established a common European-US Task Force that is producing fruitful results. We are currently negotiating with Japan to extend this to triangular cooperation.

“As regards the choice of communication technologies, the architecture aims at being technology-independent. This does not

contradict the fact that the Commission is supporting DSRC for safety-critical applications and has assured frequency allocation in the 5.9GHz band; technology independence will ensure that ITS can use any communication means, depending on the needs of the application. You can use cellular communications channels (3G, 4G) for data communication for infotainment applications, or rely on broadcasting technologies to send messages to a wider geographic area.”

Getting the relationships right

Realising cooperative systems will involve bringing new stakeholders into the fold. It will also affect their relative importance, whether they be new or established players in the transportation sector.

Kroes: “Many different actors play a role in deploying cooperative infrastructure – local authorities, national and regional road authorities, car manufacturers, road operators, telecoms companies, fleet operators, travellers and so on. When you add electric vehicles, you must consider additional key players such as power generators, utility providers, renewable energy providers, electric vehicle OEMs and charging station operators. These stakeholders may have conflicting objectives and their role may vary from one service and from one country to another. For example, in the case of the cooperative infrastructure for electric vehicles, local and national authorities may have a role which varies from being an enabler to providing incentives to getting directly involved in the provision of the charging infrastructure.

“If we want to develop an effective business model, each stakeholder must see a business opportunity in the deployment of cooperative systems and the related intelligent infrastructure. If they are expected to invest in cooperative infrastructure, local and national authorities need to make sure that the other stakeholders will also play their part. I am well aware that there is a chicken-and-egg problem when each stakeholder is waiting for the others to invest first. We must work to avoid this potential standstill.

“Taking this problem into account, the eSafety Forum’s Intelligent Infrastructure Working Group focuses on the road infrastructure aspect of cooperative systems. It aims to identify the expectations about the cooperative infrastructure and to achieve a balance

between the goals of the road operators, the various levels of administrations, and the industry.”

Step changes

In terms of what this means for road network operators and users, Kroes says that developments have to be viewed over a series of timescales.

“In the long term, out to the 2050 horizon, our target is accident- and carbon-free transport in Europe. Across the 27 EU Member States, the goals for 2020, aligned with the targets of the European Transport Policy 2020, the Road Safety Action Plan for 2020 and the targets for increasing energy efficiency and reducing CO2 emissions, are a 20 per cent reduction of CO2 emissions in road transport and a 50 per cent reduction of road transport fatalities from 2010 levels.

“These targets would lead us towards an overall concept of smart-connected electro-mobility, which means the wider deployment of electric vehicles and the infrastructure needed to support them, and greater vehicle automation. These three factors are expected to influence road transport infrastructure. Although it may seem slightly different from what we know today, the overall transport picture will probably still be familiar in 2020.”

Each stakeholder must see a business opportunity in the deployment of cooperative systems and the related intelligent infrastructure



Coping with spectrum saturation

“Cooperative systems will use a multitude of communication technologies in a variety of spectrum bands. In the future, all cars will be able to communicate with each other and the surrounding intelligent infrastructure, and will also have radars in the 77 and 79GHz bands. Radars will allow cars to perceive their environment, to detect other vehicles, pedestrians and vulnerable road users, and any obstacle in their way. No safety system can work without such sensors.

“The technology which uses the 77 and 79GHz bands is still complicated and very expensive. Future technological developments will however overcome these economic limitations.

“Despite this positive development, which is opening up the 77 and 70GHz bands for wider use, spectrum is becoming an increasingly scarce and valuable resource. This is particularly true of the lower frequencies where technology is easier and cheaper. The simple reason for this is that cars will be connected any time and will need to exchange huge amounts of data with the infrastructure and each other.

“Use of the available spectrum for communications may therefore increase so much as to approach saturation. This could force us to use all sorts of available spectrum sources, including radar. We can therefore expect that in the future there will be a more intense use of higher bands such as the 63GHz for short-range as well as long-range communications. In addition to their prime functionality to monitor the vehicle’s environment for obstacles, radars will also need to carry data. To cope with the inherent limitation in radar systems’ range, different frequencies may be a possible solution.”