Is eCall calling?

eCall has missed important deadlines and key standards are still awaiting finalisation. But the momentum is building and suddenly the 2010 deadline is beginning to look as if it might stick.

eCall is a system that provides an automatic message to the emergency services following a traffic accident, including a precise location of damaged vehicles and an audio voice link with the vehicle occupants. The European Commission is looking for full deployment of eCall throughout the EU in the expectation that up to 2,500 lives could be saved every year because of accelerated intervention from emergency services.

With this potential in mind the eCall Driving Group has agreed a roadmap which should enable eCall to become a standard option on new vehicles type-approved after September 1, 2010 (Model year 2011) ready for roll out

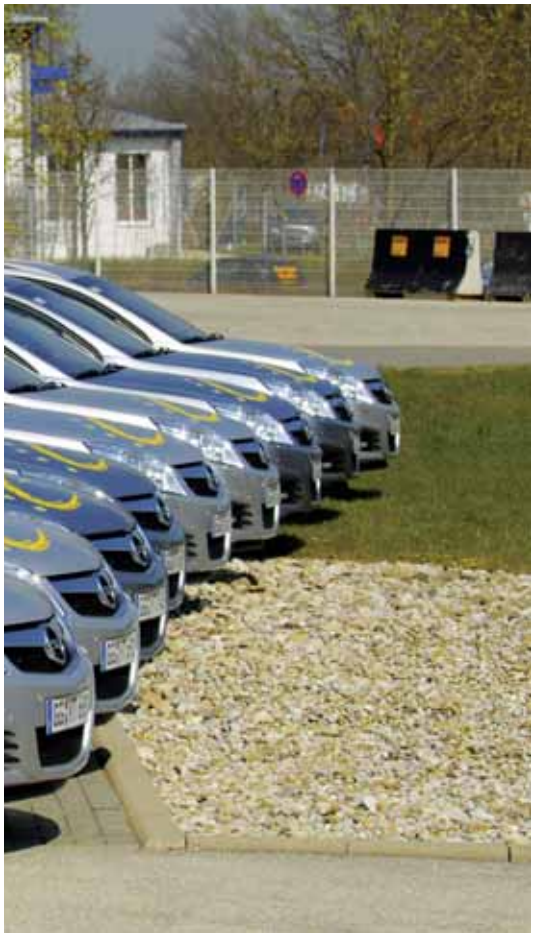
On the face of it, this might seem a very ambitious target. Although the technology involved is relatively straightforward, the path towards adoption has certainly not been smooth and key deadlines have slipped. The objective of having 15 Member States signing the MoU by July 2007, including Germany, France and the UK, was not met. Although Germany has signed, and France is now moving towards the adoption of a proprietary in-vehicle emergency service based on a priority SMS concept, the UK remains obdurate and, as recently as November 2007, announced it would not sign the MoU. The UK Department for Transport says that although improving road safety remains one of the department's highest priorities and that technology has the potential to play an important role in meeting these objectives, it is important that each initiative is carefully considered on its merits.

The formal statement from the Department says: 'After commissioning an independent review the Government is concerned that the benefits from eCall will not justify the cost of implementing it in the UK. We have decided, therefore, that it would not be appropriate for the UK to sign the MoU at this stage.

'We will continue to apply pressure on the Commission to address our concerns, and will review the case for signing should any new information become available.'

These concerns relate to the estimates of the number of lives likely to be saved. The UK argues that, because of the comparative safety of roads and the nature of accidents, the number of lives that would be saved is far fewer than European-wide studies suggest. Moreover, there are concerns about the cost of the additional emergency service ITS infrastructure and training that would be required to support eCall. With uncertainty about the cost of installing eCall functionality in cars, and the extent to which drivers in the UK would be prepared to pay for the service, the current position in the UK is that the figures don't stack up.

However, the UK is beginning to look increas-



Left, the ADAS fleet prepares for cross-border trials. Above, single vehicle accidents on rural roads are the most likely to benefit from the quick response promised by eCall. (Picture courtesy of Holmatro)

ingly isolated. Thirteen Member States have signed the MoU plus Iceland, Norway and Switzerland, and they will soon be joined by Luxembourg, Hungary and Slovakia. Some important milestones have now also been passed. The MSD (Minimum Data Standard) content was agreed in January 2008 and the standardisation process of the eCall Operations Requirements has started.

Field Operation Trials (FOT), originally planned for 2007, will now definitely begin in 2008. The Netherlands are currently planning their FOT and expect to have an operational eCall system by the end of the summer 2008. Finland, the only country where the Council of State has taken the decision in principle to deploy eCall, is also now planning the practical details of implementation. And the upgrading of Public Safety Answering Points (PSAP), which is awaiting the results of the FOTS, could start quite quickly once the first results are available.

There are still major uncertainties – a common standard and communication protocol has yet to be agreed by ETSI, the European Telecommunication Standardization Institute, and as Jan Malenstein Chief Inspector with The Netherlands National Police Agency says, this makes life difficult for those Member States who are pushing for early adoption. However, new proposals are expected by mid 2008.

And the business model, the commercial relationship between industry players and the public sector, is not yet fully developed although organisations like ADAC, the German automobile association, which has completed a successful cross-border trial of eCall, see a potential role for private sector players to become involved.

Despite these hold-ups, in 2008 three Member States are planning studies and ten Member States are either running or planning trials, including large-scale trials. If anyone was under the impression that eCall was going away, then they should think again. A 2010 target is beginning to look as if it might stick.

The first FOT

It currently looks as if The Netherlands will be the first country in Europe to have an operational eCall system, with Finland and Sweden in hot pursuit. Jan Malenstein points out that The Netherlands has a very big advantage over the rest of Europe in that it only has one call centre to update from a technological and organisational perspective.

This centre, which is currently handling some 4.2 million emergency calls a year, is now in the process of being adapted so that it can accept eCalls. Jan explains that this upgrading process, which follows E112 recommendations, will make it possible for the centre to handle eCalls and provide location information based on GPS. He points out that this process will have some side benefits. 'We have some locations, in different parts of country, which has in the past caused some confusion for our emergency services. The eCall will be based entirely on GPS positioning and will be very accurate and this problem will be solved.'

A key part of the upgrading process will be the creation of a central database with all automotive data on make, model, year and technical details, which will be available to emergency services responding to calls.

With the work at the centre expected to be complete by mid March 2008, Jan explains that the focus is now on getting a Field Operation Trial (FOT) up and running. A test plan scheme is being prepared for a trial in which Volvo and Peugeot will be supplying vehicles equipped with eCall functionality. The FOT will be monitored by the Commission and ERTICO and is expected to provide important on-road validation of the concept. The target date for the start of the FOT is late summer 2008 which will give time for testing and training at the E112 call centre.

Jan Malenstein makes it clear that in pushing for early adoption, The Netherlands is taking quite a risk. 'We still do not have agreed standards for eCall, agreement on the minimum data requirement or the communications protocol. We are deliberately taking this risk in the knowledge that we might have to adapt the technology further down the line. We do have a standard adopted by the eCall Working Group but the ETSI Working Group, which will define the functional requirements and performance criteria for E112 centres, is still deliberating. If I could send a message to the working group, I would say please follow the functional requirements that have been agreed for E112 centres.' He says it is a major concern for Member States. 'We have no idea which way ETSI will jump – effectively a lot of member states are waiting for standards.'

And the delay is damaging, he says. 'It is a chicken and egg situation because there is currently no guarantee for industry as to when all E112 centres will be technically upgraded.'

From the left, Bernfried Coldewey, Dietrich Heide and Volker Knapp of ADAC, with the eSafety Deployment Award, presented for their work on eCall last November.

Whatever the future holds, the Dutch Ministry of Internal Affairs and Kingdom Relations is committed to going ahead with its trial. An important aspect of this will be to establish service level agreements between the different parties. The Dutch concept is a triangular organisation involving the eCall, the PSAP and the service provider where, in the event of an emergency, a minimum data message is sent to the E112 centre and a full data message to the service provider. Jan says that they see a real benefit in this relationship. 'When a person is involved in a serious accident on the roads in Holland, there are a lot of additional issues which have to be addressed such as notifying the family, medical details, insurance company etc. For us it would be a win/win situation if, at the same time as the message is sent to the E112 centre, this additional information can be made available via the service provider.'

With a number of eCall FOTs planned for 2008, all eyes are now on The Netherlands which is likely to be the first. As Jan says, everyone will be looking carefully, both to iron out technical glitches, but all also to identify genuine, quantifiable benefits.

ADAC's cross-border trial

When the first eSafety Deployment awards were announced at the end of last year, it was the Germans who carried the day. The award went to the German Ministry of Transport and to ADAC. Volker Knapp, the MD of ADAC and his team, were honoured for their work on eCall which involved a study to test the feasibility of a cross-border system and a programme of end-user awareness which has been conducted through the club magazine and its website.

The trial focussed on cross-border processing of eCalls and the primary objective was to establish whether the system worked, based on the recommendations of the eCall Driving Group.

The key recommendations were to use geo-positioning via satellite to determine exact location; to use the specified minimum data set (MSD); and to use the in-band modem procedure voice and MSD data transmission which has been selected by ETSI/3GPP. The eCall Driving Group also recommends the use of the 112 emergency call number across Europe. In practice this was not possible in a trial so country-specific call numbers were used to route calls to the call centres of the participating automobile clubs.

A fleet of nine cars set off around Austria, Germany and Italy. In each of these countries, there was one vehicle equipped with an Austrian, one with a German and one with an Italian SIM card to simulate cross border traffic. The calls were taken by the central call centres of the local automobile club (OAMTC in Vienna, ADAC in Halle and ACI in Milan) with data uploaded nightly to the ADAC technical centre to be analysed via the internet.

The cars were equipped with GPS antennae to transmit the emergency call – an alternative was Bluetooth-based transmission to the driver's mobile device. The cars had a push button to manually activate an eCall – in real life the eCall would be triggered automatically by the airbag control unit. Other features included a navigation device to confirm location data and a mobile phone with a measurement function, supplied by Nokia, to determine network coverage per vehicle.

Over a ten-day period, the vehicle fleet made 834 test eCalls from 450 set points. These were 55% in urban areas and 45% in rural ones. In particular locations were chosen which were near borders, and cross border areas, and areas which were critical for GSM/GPS reception such as tunnels, garages and forests.

The success of an eCall was judged by a number of criteria. The first was whether or not there was sufficient GSM coverage – in Germany and Italy 91% of calls were successful with only 1% failing in Austria where fewer of the targeted call points had poor mobile network coverage. The pilot also looked at the distribution of total voice-call quality which was good for 96% of calls.

A match was also made between actual test vehicle locations and the unadjusted location transmitted via the eCall unit. The eCall Driving Group has recommended that the positioning should be less than 50 metres in 50% of cases and less than 150 metres in 95% of cases. In practice, in 95% of all test calls the GPS positioning accuracy was 50 metres or less.

The final test was the lead time between pushing the eCall button and its arrival in the club call centre. The performance criteria recommended by the eCall Driving Group is that 85% of all activated and sent eCalls should reach the PSAP within 35 seconds. In this trial, 94% arrived within 35 seconds, or less, and all calls achieved the recommended criteria.

So what does this test tell us about eCall? Volker Knapp says the trial proves that European eCall works. The recommended performance criteria for lead time and positioning accuracy were met or exceeded and, in all successful calls, the data was fully delivered. Only where the GSM coverage was poor were calls unsuccessful, which demonstrates that good GSM coverage is critical to the success of eCall.

But, beyond a successful trial, ADAC has made a series of recommendations which cut to the heart of the business model of eCall. They suggest that, in addition to an SOS button, the in-vehicle unit sold should be equipped with a 'service' button which would allow motorists to request other services, such as roadside assistance or traffic information. And further, ADAC believe that motorists should be able to choose and switch service providers for the 'service' button without incurring additional cost. Using ADAC's model, motorists could also choose to have the location transmission feature incorporated in the 'service' button.

On the question of GSM coverage, ADAC suggests that signal repeaters should be made mandatory in black spots such as tunnels, in order to boost mobile networks.

What this trial did not address, however, is how eCall would work in real-life circumstances and ADAC has proposed that further studies be carried out to make sure that transmission is maintained in a crash scenario when the vehicle may be badly damaged and possibly overturned.

In the June issue of ITS Solutions we will be looking in detail at Finland's deployment plans and at the UK's alternative telematics solution.