

## EENA Newsletter

The automobile emergency call service of PSA Peugeot Citroën

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PSA Peugeot Citroën was the second largest European automobile manufacturer in 2004, with 14.6% of the Western European market (private vehicles and lightweight utility vehicles). The group's sales worldwide exceeded 3.37 million vehicles.

On the strength of its two general-market brand names, Peugeot and Citroën, the group has set itself three targets for the years to come: worthwhile innovation centred on the environment, comfort and safety; sustained sales growth through increased international expansion; and cost-effective growth that enables it to self-finance its investments and retain its independence.

For many years, automobile manufacturers have made enormous efforts to improve the level of safety of their vehicles. These efforts have chiefly addressed two complementary aspects. The first aspect was primary safety, aimed at preventing accidents: visibility, braking, suspension, lighting, and other features were the key technical solutions worked on. The second aspect, secondary safety, addresses protecting the occupants of a vehicle during an accident. For a few hundred milliseconds, following a carefully orchestrated scenario, the structure of the vehicle, the seats, the retention systems and the air bags act to reduce the consequences of the actual impact to the greatest extent possible. At present, these two aspects still receive the most attention in terms of safety but, just recently, systems for responding to the "aftershock" are emerging: the emergency call-out service is the keystone of tertiary safety.

### **General description of how the service works**

The emergency call-out service is available in France, Germany and now – just recently – in Italy, on Peugeot's 1007, 206, 307, 407, 607 and 807 vehicles, and on Citroën's C2, C3, C4, C5 and C8 models fitted with a communication system as standard or as an option. It can be triggered manually or automatically.

Shown below is the RT3 communications system of the Peugeot 407.



The illustration below is of the Navidrive communications system of the Citroën C8.



## Manual emergency call

When directly involved in an emergency (illness, an accident without loss of consciousness and without actuation of a pyrotechnic system, etc.) or indirectly (witness to an accident), a vehicle occupant pushes the SOS button of the communications system for at least two seconds. This sends an SMS to the IMA platform (Inter Mutuelles Assistance – see inset) of the customer's country of origin, so that the call is handled in the person's own language (at Niort for France, in Munich for Germany, and in Milan for Italy).

This SMS contains essential information to enable the emergency to be handled:

- the vehicle's type and serial number;
- the owner's name;
- the GSM telephone number;
- the vehicle's GPS coordinates;
- the triggering method: manual or automatic (air bag, safety belts with pre-tensioners, etc.)

This information appears instantly on the IMA operator's display as soon as the call is accepted, in the form of a customer information record, a position on a digital map, etc. This means that the IMA operator has useful information even before entering into telephone contact with the vehicle occupant.

As soon as the SMS is sent, the communications system establishes voice contact with the specific IMA operator whose screen displays the information contained in the SMS. Once this has been established, the IMA operator will gather more information. The operator will determine whether the situation is a genuine emergency, and will then gather information: risk to life, number of people involved, or whether the caller has witnessed an accident, and will then check the location on various types of map before sending all this information to the emergency services (fire brigade, hospital accident and emergency departments, police etc.) covering that area. Where appropriate, infrastructure management services (motorway operators, etc.) will also be informed. The emergency services will then decide how to respond, based on this information.

Depending on the situation and on relevant national law, the IMA operator can also bring one of the emergency doctors on permanent duty at the IMA platform into the conversation, via a three-way conference call facility, in order to analyse the situation or give advice to be followed while waiting for the arrival of the emergency services. This three-way conference call facility can also be used to manage difficulties that may arise if the customer, IMA operator and emergency services speak different languages.

From this point on, the response continues "in the field" with the attendance on-site of the emergency services until the people involved are cared for appropriately.

### **Automatic emergency call**

After a violent impact, and when one of the vehicle's pyrotechnic systems has been actuated (air bag or seat belt tensioning system), the vehicle itself triggers the communications system to send the SMS containing the basic information mentioned earlier, and establishes voice contact.

In every case, if no answer is received from the accident victim, the procedure employed makes it compulsory for the IMA operator to attempt to contact the vehicle three times within a limited time lapse: if the attempts fail, the operator has to alert the emergency services, using the information in the SMS: the vehicle type; the owner's name; the GSM telephone number; and the vehicle's GPS coordinates.

### **Obvious advantages for customers and the emergency services**

The system proposed by PSA Peugeot Citroën ensures that vehicle occupants receive speedy assistance in the event of an accident, and considerably reduces the dangers arising from delay, particularly of injury treatment. This is especially invaluable for accidents involving a single vehicle in remote countryside in countries

like France and Germany, where there is still a very extensive network of secondary roads.

The emergency call service is also receiving a very favourable welcome from the emergency services, because it ensures that a high-quality response can be prepared, with:

- the certainty that the call is genuinely an emergency, through screening out false calls, which account for up to 80% of each day's calls to some emergency centres;
- the ability to communicate effectively with the vehicle occupants in order to gather more information about the situation, regardless of which European Union language the occupants speak, because the IMA staff at the telephone assistance platforms are able to speak 30 languages;
- knowledge of the exact location of the accident, thanks to receiving GPS coordinates and to available landmarks in the IMA operator's mapping system (close proximity to a river, lake, monument, etc.).

#### *IMA inset*

*Founded in Niort in 1981, Inter Mutuelles Assistance is the joint subsidiary of a consortium of French mutual assurance companies composed of MAAF, MACIF, MAIF, MATMUT, SMACL, MAPA, AGPM, MAE, and Mutuelle des Motards.*

*IMA provides 24/7 assistance to the 36.5 million people covered by policies with the shareholding insurance companies, and to customers involved in situations when travelling in France or another country.*

*IMA provides medical care, material assistance, manufacturer assistance, assistance to expatriates, home help, funeral assistance and accommodation assistance.*

*As part of an agreement signed in 1990 with the PSA Peugeot Citroën group, IMA provides assistance throughout Europe to new and second-hand vehicles from the two brand names, whether the vehicles were sold in France or another European country.*

*IMA employs more than 1600 people.*

## **A service based on parallel product and back office development work**

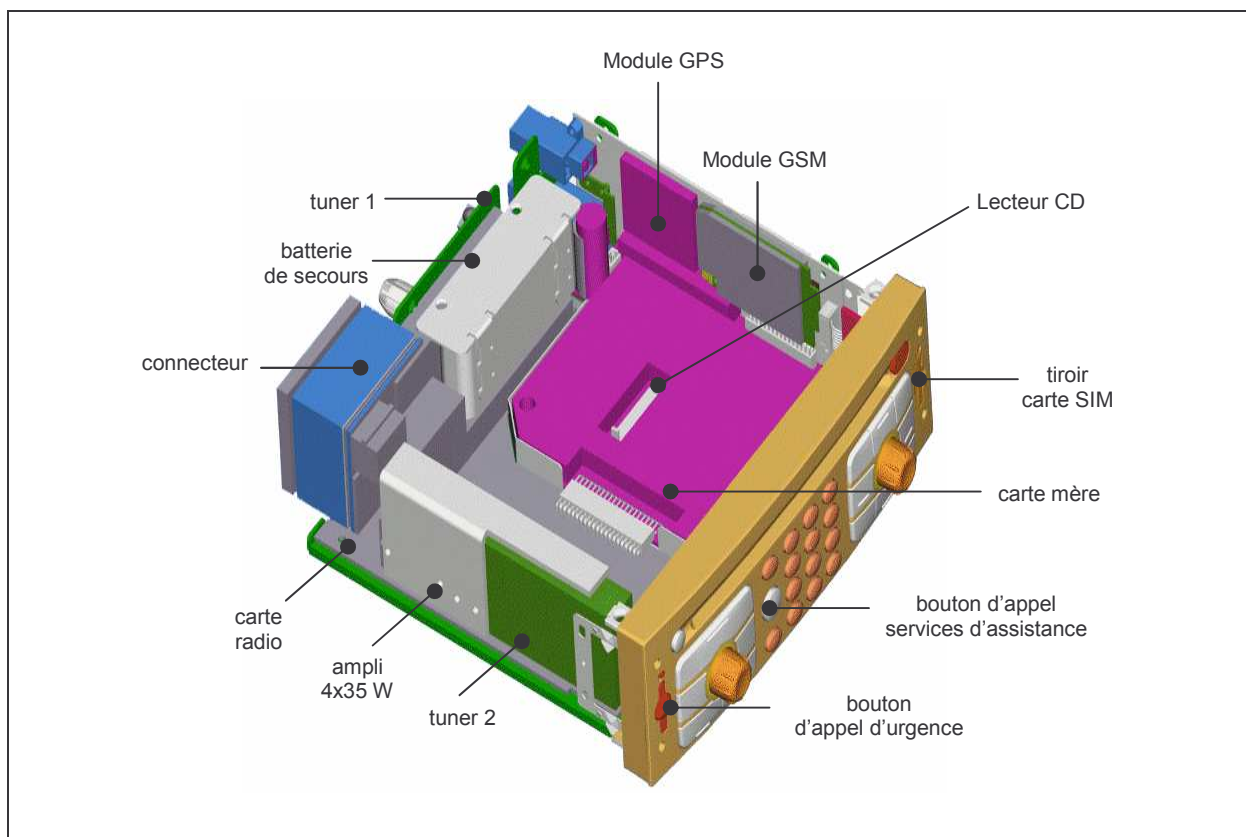
The emergency call service was launched in France for Peugeot vehicles in March 2003. To reach the desired performance level, the PSA Peugeot Citroën group followed an extensive train of innovation which closely intertwined product and service factors.

## The introduction of a full-featured communications platform

The "Communications Project" was started at the end of the nineties within the group's Automobile Research and Innovation Division, and gave rise to the market launching of a full-featured automobile communications system. Developed in partnership with Magneti Marelli, the installation is in 1 DIN format, which makes it the "standard" size of a car radio. The special care taken with integrating the various technologies simplifies vehicle architectural design work and provides an appliance that takes up very little space in the vehicle. (Usually, these technologies take up two hardware units.) In addition, across-the-range deployment is facilitated by the fact that there is no diversity: so the installation can be provided on all models, giving access to associated services. Called RT3 at Peugeot and Navidrive at Citroën, the system fields:

- a navigation system with onboard mapping;
- a GPS-type satellite positioning system;
- a GSM telephone module (900/1800Mhz GSM, via subscription, duplicate SIM or prepaid account);
- an integrated speech recognition and synthesis system (telephone's hands-free kit, announcement of guidance instructions, etc.);
- a radio and CD player.

The exploded diagram below shows the degree of integration achieved:



This integration of the range of technologies – particularly the integration of the GPS and GSM features – has given rise to a device of which the communications functions are provided through two buttons of different shapes and with perfectly explicit logos, on the instrument panel:

- one red button marked SOS lets you make an emergency call free of charge with no time limit;
- another button marked with the vehicle marque's logo lets you call the Peugeot or Citroën telephone call centres, which are immediately able to provide a large number of assistance services.

As an illustration, below is an excerpt from Peugeot documentation highlighting these two functions (the layout of the controls is identical on Citroën vehicles):



## The deployment of a high-performing "back office"

In parallel with the engineering work to develop the automobile communications platform, PSA Peugeot Citroën deployed a comprehensive and high-performing processing system able to provide the emergency call service. This crucial task required major cooperation with several partners.

As soon as the emergency call is triggered, an SMS is generated and fed back, via mobile operators' existing telephone networks, to a first partner that provides PSA Peugeot Citroën with a dedicated server for managing SMS messages intended for the application numbers of the PSA Peugeot Citroën localised emergency and call services.

These SMS messages are then decoded via an application specially developed for these services and hosted by a second partner. Once this decoding has been performed, it immediately sends back the data to IMA via its own infrastructure.

Naturally, these secure transmission and decoding tasks only take a few seconds, and then a third and final partner comes into play to finalise the emergency call. This is the start of the emergency response process enacted by the IMA operator described earlier. Obviously, the IMA operator uses modern telecommunications technologies, but it also employs databases that are of invaluable service for orienting the progress of response according to the appropriate action to be taken (these databases are for the collection and updating of emergency numbers in the countries where the service is provided). For this, IMA's assistance expertise and experience are very important in providing high quality service.

Now PSA Peugeot Citroën is extending this architecture – which has been proving its effectiveness in France since 2003 – abroad. It has already been deployed in Germany and Italy, as part of the opening of the emergency service in these countries in September 2004 and March 2005. It will be used again for the forthcoming extension of the service into other European countries by the end of 2005 (Benelux, Spain...), which will allow drivers in the biggest European markets to travel from one country to another while still receiving perfect emergency call service coverage.

## **Interesting prospects for road safety in Europe**

PSA Peugeot Citroën unveiled its emergency call system to the French press on July 9th 2004, after eighteen months of feedback from sales of vehicles of its two brand names, Peugeot and Citroën. Since the launch in 2003, more than 80,000 vehicles from the two manufacturers equipped with this feature have been sold in France, Germany and Italy. The numbers of vehicles equipped is increasing constantly, thanks to recent vehicle launches (407, C4, 1007, ...) and the strong demand for RT3 / Navidrive systems seeded by the GPS navigation system.

This makes PSA Peugeot Citroën the first general-market manufacturer in the world to succeed in deploying an emergency call service on a large scale, covering practically all its vehicle ranges, free of charge and with no time limit.

Taking account known accident data (number of single-vehicle accidents, accidents at night, etc.) and the characteristics of the French road network (large percentage of country roads, and low numbers of emergency call phones in service within the infrastructure, etc.), the various road safety experts (the DSCR and the LAB<sup>1</sup>) agree that around 250 to 300 people die each year in France as a result of emergency service call-out and response failures subsequent to road accidents. As one would expect, emergency service doctors say that the consequences of an accident are often less serious if the emergency services arrive very quickly, but it has to be

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<sup>1</sup> Direction de la Sécurité et de la Circulation Routières dépendant du Ministère de l'Équipement et des Transports (Road Safety and Traffic Directorate), under the authority of the Ministère de l'Équipement et des Transports (Ministry of Amenities and Transport)

Laboratoire d'Accidentologie de Biomécanique et d'Études du Comportement Humain (Laboratory of Accidentology, Biomechanics and Studies of Human Behaviour)

recognised that few studies currently exist on the subject, and that quantitative data are still rare. This should be a major future project.

Obviously, similar results are hoped for in every European country in which the service has been or is being deployed. In a recent document about the "eCall" project, which aims at bringing about a pan-European emergency service based on the e112 service by 2009 or 2010, the European Commission believes that 2000 lives would be saved every year if all vehicles on the road in Europe were equipped with such a system.

## **Automobile emergency call systems: a promising future**

The automobile emergency call system is now a reality in France, Germany and Italy.

As a general-market automobile manufacturer, PSA Peugeot Citroën strives to bring useful technologies to an ever-larger number of customers, and this quest takes on a vital nature when safety is involved. The central role played by automobile manufacturers in making such a service available has to be underlined.

In the case of PSA Peugeot Citroën, the manufacturer was to find itself in the position of architect from two standpoints: firstly, technology integration – a conventional role – and, secondly, implementation of a complete service chain – a more original role. For both of these, the manufacturer was able to procure the expertise of appropriate partners in order to meet set targets within a project that is, from many angles, innovative.

PSA Peugeot Citroën and other European manufacturers are working hard in the same spirit of openness and innovation, under the auspices of ACEA<sup>2</sup>, on the European Commission's "eCall" project, in liaison with public authorities, mobile telephone operators, insurers and other parties, so that a pan-European emergency call system sees the light of day before the end of this decade. Recently, there was initial experience feedback with the Commission and the eSafety eCall Driving Group at the IMA's Niort site to accelerate the sharing of useful knowledge with the various players.

While the current priority naturally remains the spread of this new emergency call-out service throughout Europe, via the PSA Peugeot Citroën system and the "eCall" project, thinking about possible future evolution of the emergency call-out service is not being ignored. Thanks to developments in technology, continual interaction with our partners and public authorities, and feedback from our customers or associations such as EENA, there are many trails to follow in order to devise the "pluses" to be implemented within the emergency call-out service of tomorrow for the greater benefit of people and emergency services everywhere in Europe.

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<sup>2</sup> Association des Constructeurs Européens d'Automobiles (Association of European Automobile Manufacturers)