SUMMARY

This study is one of the ten area studies within the ACTIF project, carried out between October 2000 and March 2001. Its objective is to describe the influence of new dynamic positioning techniques on Intelligent Transport Systems, and the modifications which they entail in the ACTIF framework architecture.

The document brings together information gathered in the course of the study. It addresses each aspect of the issues in turn: services, actors, technology, standardisation. For each of these aspects, it assesses the current situation, and indicates current trends. A service / technology grid summarises the study's technological approach and those services which may use dynamic positioning functions.
The document also details the current status of standardisation relating to dynamic positioning technologies and functions.

Finally it explores the effects that will be felt by Intelligent Transport System modelling carried out within the ACTIF architecture.

A large number of appendices report on issues related to the study: terminology, communication standards, information sources, etc.

Dynamic positioning is a new possibility offered by different emerging techniques, the best known of which is GPS. It allows both the possibility of creating new services and new ways of distributing current services. In transport, dynamic positioning requirements are crucial elements for two major purposes characterised by how positioning information is used, irrespective of the transport mode involved:

- use of information obtained locally in the vehicle,
- centralisation of information in order to provide a personalised service using this information or more "collective" information.

There are a great number of potential applications, possibly affecting all transport actors, in every sector : road, rail, maritime / river, aviation and space.

From the technology viewpoint, two positioning systems stand out, and in the main, these cover all services linked with positioning. These are the GPS positioning system, coupled with dead reckoning, and the mobile telephone positioning system:
The GPS system is largely developed and has been defined to act as a positioning and navigation system. It is likely that this system will be the one which is most used in the future.
The emerging mobile telephone positioning system benefits from having a direct communication link, which is vital for the use of dynamic positioning. This point gives it an advantage, above all in m-commerce applications, even though it will take a long time for its accuracy to match that of GPS.
Their different characteristics in terms of accuracy, coverage, influence on privacy are not equivalent in every context and, depending on the case, these will direct development choices.

It is necessary to note also the importance of related technologies like wireless communication which are widely covered in the document, and geo-referencing techniques (digital mapping, geographical information), dealt with in an other ACTIF study.

Indeed, with the development of positioning systems, mobile telephony and the democratisation of the Internet, the “positioning – telecommunications – portal” association will give rise to a multitude of services.

These services are firstly internal to an actor, as with fleet management (lorries, taxis, buses, etc.). Indeed, it helps to improve the operator’s efficiency by increasing proactivity. It must, however, be noted that outsourcing solutions already exist and are developing, mainly around ASP (Application Service Provider) solutions.
Services may also be opened up to the general public, offering personalised journey information services: information on a given journey, tourist information, etc.

This multitude of issues, which needs to be taken into account in order to produce and operate geo-dependent services, entails the presence of a wide range of actors: positioning information suppliers, telecommunications operators, cartographers, journey (-related) information suppliers, etc. Co-operation between all of these actors, whose viewpoints often remain "egocentric”, is one of the major challenges in the success of mobile applications.

The definition of standards for Intelligent Transport Systems is one requirement for their integration. In the area of dynamic positioning, several aspects are yet to be standardised, such as the building blocks for the creation of services, the protocols for positioning information exchanges, positioning data formats, etc.

Similarly, for mobile telephone positioning, working groups have been set up. The equipment suppliers provide many interfaces, but generally these are proprietary. The LIF (Positioning Interoperability Forum), set up at the end of September 2000 by Ericsson, Motorola and Nokia, intends to define and harmonise these interfaces.

Finally, in terms of mapping, we should consider MAGIC Services, whose task it is to develop and promote an open standard for the diffusion of services linked to navigation, telematics and geographical information. The focus must be on how to transmit the information, and thereby establish a standard. In particular, transmission of the accuracy of the displayed value could be included.

Several complementary issues merit specific study.
For example, it would be interesting to widen the present study, via a study of the market and the different actors operating in it. These actors could be segmented by system and by types of service, as well as being classified by type of actor. The cost of each of the systems and system durability must also be covered. It would then be useful to carry out an in-depth study of the major actors and their proposed solutions. It would also be appropriate to assess the associated benefits with respect to the services studied.

Finally, in the longer term, it is also necessary watch developments in driving assistance, in terms of technology and safety. The addition of a black box to vehicles would also facilitate the outcome of accident litigation cases through access to data recorded in the few minutes preceding any accident. The format of these data (positioning, speed, date, etc.) must however be standardised.

It will be the responsibility of the Steering Committee and the ACTIF High Level Group to decide on the next steps.