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Directorate-General for Transport
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**Communication from the Commission to the Council and the
European Parliament**

on a

**COMMUNITY STRATEGY AND FRAMEWORK FOR
THE DEPLOYMENT OF ROAD TRANSPORT
TELEMATICS IN EUROPE**

and

Proposals for Initial Actions

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SUMMARY

1. Road Transport Telematics (RTT) can benefit individuals, transport service providers, fleet managers, road operators, policy makers and the environment. It can also create market opportunities for European industry and service providers.
2. The potential of RTT has been recognised by the Council of the European Union, the European Parliament and the Economic and Social Committee¹: The aim of this communication is to provide a framework for action at European Union, national, regional and local levels. It sets out specific initial actions covering the period 1997 to 1999 in five priority areas:
 - RDS-TMC?-based Traffic Information Services
 - Traffic Data Exchange/Information Management
the main action in these two areas is to create a framework for the use of technical standards and operating protocols. This should be done by way of voluntary Memoranda of Understanding between the actors³ involved. If this is not achieved by October 1997 the Commission will consider putting forward legislative proposals.
 - Electronic Fee Collection: the key action is to devise and implement a strategy to achieve convergence between existing and new systems to ensure an appropriate level of interoperability Europe-wide.
 - Human/Machine Interface: a code of practice will be developed to ensure on-board telematic devices do not impair driver performance or cause discomfort.
 - System Architecture: the aim is to define a European open system architecture.
3. Further analysis will be undertaken of other applications to determine whether and what specific actions are required, their priorities and any necessary additions.
4. The Commission will bring forward detailed proposals in the period 1997 to 1999, monitor implementation progress and report annually. It will also roll forward the present actions, adding new proposals to take us into the new millennium and beyond.

1 OJ 94/C 309/01, OJ 95/C 264/01, EP (95) 212.659/fin, Ecosoc CES 1160'95 and Council Resolution of 11.3.97 n° 6321/97 Trans 33

2 RDS-TMC (Radio Data System-Traffic Message Channel) is a broadcast service which gives drivers messages about the latest traffic conditions in their chosen language or on a visual display tailored to their particular Journey

3 In this document "actors" does not include the Commission.

1 . INTRODUCTION

Road Transport Telematics (RTT) will benefit individual citizens by making driving safer and easier with fewer delays. It can help transport service providers and fleet managers by providing logistical and management support. Road operators can use RTT to manage traffic more effectively and reduce congestion, and by allowing a more efficient use of infrastructure, RTT gives policy makers an alternative to road building. RTT can also have a positive effect on the environment by encouraging the use of public transport, helping to secure a more balanced and improved modal mix, reducing pollution and securing a more efficient use of energy sources. At the same time market opportunities for industry and “added value” service providers will be created as part of the growing Information Society.

RTT will, however, be most effective if it is integrated into transport strategies to deliver specific policy objectives.

The potential of RTT has been recognised by the Council of the European Union, the European Parliament and the Economic and Social Committee.⁴ This communication has been prepared in response to the Council’s request’ to the Commission to propose a general strategy and framework for the deployment of telematics in the road transport sector. It has been prepared with the help of a High Level Group of representatives from the Member States taking into account the report on activities within the EU in the field of Road Transport Telematics⁶ and after discussions with industry and user representatives. It is the first part of a general strategy for the deployment of transport telematics in Europe which will need to embrace all transport modes and their interfaces taking into account the rapid evolution of the Information Society.⁷ Its aim is to provide a framework for action at European Union, national, regional and local levels. It also sets out the initial phase of a rolling action plan for the deployment of RTT in Europe, covering the period 1997 to 1999.

2. FRAME WORK FOR DEPLOYMENT OF ROAD TRANSPORT TELEMATICS IN EUROPE

2.1 SUSTAINABLE MOBILITY

An efficient road transport system can make a major contribution to economic growth in the EU, increase personal mobility and promote employment opportunities. The other side of the coin is a death toll of more than 44,000 every year on EU roads, severe congestion in and around many cities and pollution.

The EU’s Common Transport Policy seeks to maximise the first set of factors while minimising the second: its objective is sustainable mobility. This objective is reinforced by the specific objectives in the Community guidelines for the trans-European transport

⁴ Council Resolution of 24.10.94 OJ 94/C 309/01 of 5.11.94, Council Resolution of 28 .9.95 OJ 95/C264 of 11.10.95, Resolution of the European Parliament of 29.6.95 PE 2 12.659/fin, Opinion of the Ecosoc on COM(94) 469 final of 25. 10.95 CES 1 160/95 and Council Resolution of 11.3.97 n^o 632 I/97 Trans 33.

⁵ OJ 95/C 264 of 11.10.95

⁶ Commission Staff Working paper SEC (97) 475 OF 7.3.97 Trans 42

⁷ A separate action plan for a Global Navigation Satellite System (GNSS) is being prepared by the Commission. This will also impact on road transport

network⁸ - to contribute to the attainment of the smooth functioning of the internal market, the strengthening of economic and social cohesion and the sustainable mobility of persons and goods under the best possible social, environmental and safety conditions.

New applications and pilot projects have shown how road transport telematics, as part of an intelligent transport system, can help optimise existing infrastructure capacities, link networks and services, improve safety and reduce the negative effects of road transport on the environment⁹ (see Chapters 3 and 4 for details).

Trans-European Transport Network (TEN-Transport)

The TEN-Transport guidelines define the trans-European road network (TERN) as comprising motorways and high-quality roads as well as the infrastructure for traffic management and user information systems, based on active co-operation between traffic management systems at European, national and regional levels. The guidelines give priority to the development and establishment of systems for the management and control of network traffic and user information with a view to optimising use of the infrastructure. Projects of common interest on the TERN are eligible for support from the TEN-Transport budget in accordance with Council Regulation (EC) No 2236/95.

2.2 THE INFORMATION SOCIETY AND EUROPEAN INDUSTRY

The Information Society evolution plays a vital role in almost all sectors of the economy, through the provision of new products and services. However the sector of the economy where better access to timely and reliable information may have the most immediate impact on our daily lives is transportation: efficiency and safety gains from a better knowledge of how transport networks perform and how to manage them more effectively are proven; on-line travel and traffic information provide opportunities for new “added value service” businesses for the benefit of people and transport operators; tele-services will affect mobility; and finally the automotive and transport industries will benefit from the market demand for new products.

The Information Society and intelligent transport infrastructures will benefit each other by addressing common issues such as interoperability, security, liability and privacy. However a mechanism for engaging governments and other actors more formally in the policies of the information society and transport telematics needs to emerge. This is one of the objectives of this Communication.

⁸ Decision on Ten-Transport Guidelines of 23.7.96 OJ 96/L228 of 09.09.96.

⁹ Council Directive 92/72 EEC provides, inter alia, for the monitoring of ground-level ozone pollution and the information of the population if certain threshold values are exceeded. Council Directive 96/62/EC requires that air quality be monitored against limits to be fixed by the Community in the next few years. Member States are also required to draw up action plans, which will normally include traffic-related provisions.

Trans-European Telecom Network (TEN-TELECOM)

Guidelines for the establishment of Trans-European Telecommunications networks have been agreed in principle by the European Parliament and the Council. Part of the TEN-TELECOM work programme will be to promote projects of common interest for user-orientated services in the transport sector. This includes:

- logistical support for transport operations
- commercial and publicly funded services for trip planning, route guidance and other information services, freight and fleet management, integrated payment and reservation services, etc.
- transport telematics services in urban areas.

The deployment of these services based on advanced fixed and mobile telecommunication networks should satisfy, wherever applicable, the necessary complementarity and interoperability with the TEN-Transport network.

2.3. NEED FOR EU ACTION

Present experience suggests that without an agreed framework, European investments in RTT will take place on a fragmented basis, with at best poor continuity in services and at worst islands of incompatible technology. The risks, if RTT applications are not developed according to sound principles, will be:

- an incoherent telematics infrastructure and therefore a weak market for RTT products and services within the EU;
- slow development of vital support arrangements for priority RTT applications;
- lack of critical mass in the market to enable RTT applications to be cost-effective;
- consequently a poor take-up of RTT in support of transport policy objectives;
- a weaker basis for European suppliers to service markets for RTT products and services in Eastern Europe and other markets in competition with US and Japanese suppliers of products and services.

2.4 THE EU APPROACH

2.4.1 Objectives

The Commission's objectives in drafting this EU strategy and the accompanying deployment actions are

- to provide a framework for developing a comprehensive range of RTT services and systems in a flexible way in answer to local and EU needs and requirements;
- to be open to all technologies (although priority actions will necessarily be based on mature applications, technologies or procedures such as RDS-TMC);
- to encourage authorities when planning transport infrastructure to incorporate RTT into projects;
- to use TENs projects and funding as an important motor for deployment;
- to encourage private sector participation and funding, including public/private partnerships;
- to provide stable conditions for SMEs as users of RTT services by taking proper account of their requirements in the proposed actions;
- to ensure an appropriate level of interoperability between infrastructures and services so as to provide an optimum service to users.

2.4.2 Principle of Subsidiarity

In accordance with the principle of subsidiarity, the strategy should build on actions at Community level where progress can best be achieved by Community action, or where success cannot be sufficiently achieved by action at national level. Table 1 indicates the roles and responsibilities of the various players.

Table 1: Roles and responsibilities

The legal, organisational and administrative framework for road transport varies considerably from one part of Europe to another. The following gives a very broad outline of the division of responsibilities in the field of Road Transport Telematics (RTT). The details will vary from region to region.
<u>The European Union:</u> responsibilities include technical harmonisation; concertation of research and technical development; concerted action on RTT implementation with Member States; the promotion of standards (implementation of standards, publicly available specifications, protocols, reference position documents etc); financial support from R&D in appropriate fields of European interest, TENs, etc. and, whenever necessary, appropriate legislation.
<u>The Member States:</u> In accordance with the principle of subsidiarity, Member States will develop their own Deployment strategies for RTT to reflect national priorities, requirements and preferred legal and institutional arrangements. In particular they will need to determine which RTT applications should be provided as a service of general interest (however delivered, whether by the public sector, the private sector or both in partnership) and what is for purely commercial exploitation by the private sector.
<u>The regions and local administrations:</u> will also be major actors in securing effective deployment of RTT. Their support for and commitment to agreed common European goals will be important.
<u>European Standardisation bodies:</u> are expected to develop and adopt European standards and thus provide the foundation for interoperable systems and services. They must have an active contribution from all participating partners (industry, public authorities, etc.).
<u>Commercial RTT service providers:</u> are expected to play an increasingly important role in developing the market for RTT products and services in various ways, and in funding RTT projects either directly or through Public/Private Partnerships.
<u>The automotive industry equipment manufacturers, systems designers and suppliers:</u> will spear-head these developments in response to market opportunities and customer requirements.

3. FIRST PRIORITY DOMAINS

In line with the resolutions of the Council of the European Union¹⁰ and the European Parliament, advice from the High Level Group as well as the views of industry and consumers, the Commission has proposed the following areas for priority actions.

- Traffic Information Services(RDS-TMC)
- Electronic Fee Collection
- Transport Data Exchange / Information Management
- Human Machine Interface
- System architecture

Whenever possible responsibility for action has been identified and assigned to the appropriate actor(s). Actions have been grouped into five different categories :

- A. Research & Development covered by the current 4th Framework Programme and mentioned in the Commission's proposal for the 5th Framework Programme (1998 - 2002) under the theme "Creating a user-friendly Information Society¹¹ as well as national actions;
- B. Technical Harmonisation, including standardisation, publicly available specifications, protocols, reference position documents etc. and the development of Memoranda of Understanding by the actors involved (see Footnote n⁰³);
- C. Concertation and co-ordination of implementation at the European level including concerted action with Member States
- D. Financing, in particular through the Trans-European Network budgets for Transport and Telecommunications ¹²;
- E. Where necessary, EU legislation such as harmonisation measures (Table 2, p. 20, sets out Community instruments available for Road Transport Telematics); Existing legislation, e.g. consumer protection, will be used and augmented where appropriate.

3.1. RDS-TMC BASED TRAFFIC INFORMATION SERVICES

RDS-TMC (Radio Data System-Traffic Message Channel) is a broadcast service which gives drivers messages about the latest traffic conditions. Specially adapted in-vehicle units can deliver the information by speech or visual display and can be selected in a particular language to provide information tailored to a particular journey. EU objectives are to guarantee cross-border interoperability and to facilitate the creation of a European market for products and services, These measures will also provide the

¹⁰ Council Resolution of the 28 September 1995, OJ 95/C 264.

¹¹ This symbol used in chapter 3 shows where actions are required.

¹² Community finance will be used mainly as "seed" money.

groundwork for upgraded and other technologies as they become available, e.g. GSM and DAB based services.¹³

A. Research & Development

- RDS-TMC technology is almost at the end of the R&D phase. Work is continuing on the development of the information exchange protocols.

B. Technical Harmonisation

Technical harmonisation is needed in various key areas (such as geographical location referencing, data dictionary, event list, application and data exchange protocols) to ensure continuity and interoperability for multi-modal travel and traffic information services.

- The Commission will encourage the rapid adoption of the standards in the European standardisation bodies
- In the meantime, as requested in the Council Resolutions of September 1995 and March 1997, the Member States should promote the introduction of RDS-TMC and implement their services according to the proposed pre-standards or specifications to ensure continuity and interoperability.
- The Commission will facilitate the conclusion of a common framework (possibly “Memoranda of Understanding” (MoU) by the relevant actors involved, e.g. road authorities, broadcasters, equipment and service providers. This will cover, inter alia, the commitment to service provision and the use of standards on the TERN. The target is to conclude such MoU by the date of the Berlin World Congress on Intelligent Transport Systems in October 1997. It is, of course, open to the Commission to put forward legislative proposals at any time. If MoU have not been achieved by the target date, the Commission will consider putting forward proposals by the end of 1997 for the use of the necessary technical specifications for such service.
- In certain countries some features of RDS are misused for publicity purposes and may endanger road safety. The national radio regulatory bodies need to enforce the application of the CENELEC standard regarding the use of RDS features.

C. Co-ordination of implementation

Co-ordination activities are needed to define pan-European RDS-TMC implementation policies and strategies, and to ensure commitment of all parties involved.

The Commission will:

- restructure the RDS-TMC Steering Committee to include representatives of the broadcasters and industry so as to promote the commitment of all actors to the MoU. The definition of minimum requirements for a common trans-European RDS-TMC traffic information service should be part of the MoU;
- facilitate a dialogue between industry and Member States regarding the availability of language modules for lesser spoken languages in line with the Council resolution of 11 March 1997;
- propose procedural rules for national location databases for the TERN;
- encourage consensus building and deployment via TEN-T projects;

¹³ GSM = Global System for Mobile Communications, DAB = Digital Audio Broadcasting

- publicise the potential benefits and characteristics of RDS-TMC to accelerate implementation.

The Member States should:

- ensure that their organisational framework clearly defines roles and responsibilities for the different parties in the provision of services;
- establish and improve cross-border data exchange with their neighbours.

D. Financing

A minimum level of basic intelligent infrastructure (monitoring, Traffic Information Centres, data exchange) needs to be established on the TERN for guaranteeing a Pan-European service.

- The TENS Committees should take full account of the importance attached to the establishment of the basic intelligent infrastructure. A priority has already been given to large scale demonstration and implementation projects in 1995/96 and 1996/97.
- ⇒ The Member States should define and make provision in their infrastructure implementation plans for RDS-TMC, and establish/ maintain corresponding national location databases.

E. Legislation

Will be reviewed at a later stage (see 3.1. B).

3.2 ELECTRONIC FEE COLLECTION (EFC)

Electronic fee collection (EFC) covers not only automatic toll collection but also provides the means to introduce electronic differentiated pricing to address problems of congestion and pollution and to influence the balance between different transport modes¹⁴. An appropriate level of inter-operability must be achieved so as to provide an optimum service to the user at a reasonable cost; i.e. users should need only one type of equipment wherever they travel in Europe.

Some countries have already invested heavily in EFC systems. However the proposals for pre-standards for the Dedicated Short Range Communications (DSRC) link being developed in CEN are to a different specification. Therefore a strategy is needed for the convergence of all EFC systems to achieve interoperability at a European level.

The adoption of a technical standard for the communication link is not the only issue. Questions of vehicle classification, multi-lane enforcement, non-equipped users and legal and institutional issues remain.

¹⁴ The policy issue of using differentiated road pricing as a way of reducing congestion and pollution is dealt with in the Commission's Green Paper, "Towards Fair and Efficient Pricing in Transport" and the Commission proposal for a replacement of Directive 93/89 Includes provisions on a greater differentiation of reduced taxes and user charges

A. Research & Development

EU projects should inform the following activities :

- ⇒ validating the DSRC link to the CEN/TC278 DSRC proposed pre-standard as suitable technology for automatic toll collection and other RTT services;
- ⇒ devising a strategy for the migration from existing systems;
- ⇒ harmonising financial, institutional and commercial requirements in order to achieve contractual interoperability between operators;
- ⇒ achieving greater precision in the essential parameters and mechanisms involved in road pricing and tolling.
- ⇒ The European Union should support R&D projects and multi-national field trials, in order to demonstrate and validate technical solutions in multi-lane environments (including classification and enforcement as well as compatibility of technical solutions for the communications) and will facilitate the strategy for inter-operability as requested by the Council Resolutions of 28 September 1995 and 11 March 1997.

B. Technical Harmonisation

- ⇒ The European standardisation bodies will be asked to define the technical standards and specifications for interoperability of EFC systems at a European level, taking into account multi-lane operations and the introduction of additional telematics services using the same technology, i.e. booking and payment facilities. The aim will be to complete the work by the year 2000 at the latest.
- ⇒ The Commission will examine with appropriate authorities the European availability of extra band-width for DSRC in the frequency already allocated for RTT.¹⁵

C. Co-ordination of implementation

- ⇒ The Commission and Member States will develop a strategy for convergence of EFC systems in order to achieve inter-operability at a European level, taking into account systems already existing and the work in the European standardisation bodies.
- ⇒ The CARD-ME (Concerted Action for Research on Demand Management in Europe) Steering Committee has been asked to accelerate the work on contractual and procedural interoperability on issues such as:
 - * vehicle classification (using on-going work of CEN)
 - * reliable and fair enforcement
 - * non-equipped users
 - * legal and institutional issues, e.g. data protection, privacy, liability.
- ⇒ Other concerted actions will be undertaken, as necessary, for example to achieve a coherent European strategy on road pricing.
- ⇒ As the public perception of the situation is very important, attention will need to be given both at EU and at national levels to the dissemination of information on the potential benefits of EFC systems.

¹⁵ Conference for the European Postal and Telecommunication Administrations (CEPT), ERC Decision of 22.10.92 (DEC/92/02).

D. Financing

- The Community, for example through the TEN-Transport budget, will support projects for implementation of interoperable electronic fee collection systems.

E. Legislation

- The legal aspects of enforcement requires as a first step, identification of relevant provisions in Member States legislation; the operational aspects of Trans-European enforcement will be studied; if necessary, harmonisation proposals will be made. Other elements, such as vehicle classification, may also need legislative action.

The Commission will take into account the requirements and experience of Commission Regulation (EC) N° 1524/96 (eco-tags using DSRC technology) in framing any proposals on electronic fee collection.

3.3 TRANSPORT DATA EXCHANGE AND INFORMATION MANAGEMENT

Transport data collection and exchange is a prerequisite for most RTT services, including RDS-TMC. The deployment of RTT services in Europe will require a close co-operation between different countries and regions particularly by exchanging traffic data and establishing cross-border traffic information and management services.

The private sector is also expected to be an important supplier of telematic services such as route guidance and travel information for the road transport sector in addition to those already offered by the road administrations.

A stable European harmonised framework within which these service providers can provide cross-border services will help ensure the interoperability of the services on the TERN and facilitate deployment of the services across borders in a seamless way. Such a framework could also be used as a model for the extension of the value-added services into other parts of the road network.

A. Research & Development

- Harmonisation and validation of data exchange specifications are currently being carried out within the DATEX initiative, and R&D projects.

B. Technical Harmonisation

- The Commission will encourage adoption of common standards for cross-border traffic data exchange including the data dictionary and its events list, message format and protocols, digital road maps and geographical location referencing.
- The Commission will request the European standardisation bodies to formally approve common interfaces for traffic data exchange. Multimodal information will also be covered.
- The Commission will facilitate the development of a framework (possibly the conclusion of “Memoranda of Understanding” (MoU) by the relevant actors, e.g. road authorities and service providers, for the use of data exchange standards on the TERN. As in the case of RDS-TMC, the target for conclusion of such MoU is the Berlin World Congress on Intelligent Transport Systems in

October 1997. If the target date is not met the Commission will, if necessary, put forward proposals to ensure that data and information exchange is carried out in accordance with the necessary technical specifications.

C. Co-ordination of implementation

Efficient cross-border exchange of traffic data between the relevant authorities and organisations will necessarily have to go beyond the technical aspects (related to the procedure, format and meaning of data exchanged) to consider other aspects such as reliability of data, mutual responsibilities, data exchange procedure, liability and cost/payment.

- The Steering Committee on Traffic Centres and Data Exchange Issues will, following an overview of the situation in Member States, provide recommendations on:
 - * financing cross-border data exchange
 - * integration of other modes
 - * procedural interoperability aspects for data exchange between traffic centres.
- A number of other issues, including those listed below, will need to be resolved by the Member States in order to stimulate the development of RTT services.
 - * Principles for access to public traffic data by the RTT service providers and for the exchange of public and privately owned traffic data.
 - * Provision for an enabling framework facilitating the formation of public-private partnerships and more generally the participation of the private sector in developing RTT services. Issues include: simplified licensing procedures, obligations for compliance with policies of public interest and a consistent and harmonised approach to trans-European services.
 - * Provision of a framework allowing for traffic monitoring by independent traffic service providers (public or private sector or in partnership) including the possibility of installation and maintenance of traffic monitoring equipment along the roads.
 - * Right for RTT service providers (public or private) to broadcast and disseminate travel and traffic information as free or paid service, destined for the general public or for specific user groups.
 - * Principles for the interconnection of driver, vehicle and transport operator databases between transport administrations.
- The Commission will review the arrangements operating in each Member State and will bring forward, if necessary, appropriate proposals for harmonisation measures by the end of 1998.

D. Financing

- The Commission will examine ways to encourage and support national and cross-border traffic data exchange infrastructure via national, or European co-ordination projects in the TEN budget lines. In addition it will examine the possibility of using Community financial instruments (e.g.: interchange of Data between Administrations) to fund activities linked to the exchange of data between Member States on driver, vehicle and transport operator information.

E. Legislation

Will be reviewed at a later stage (see 3.3. B and C).

3.4 HUMAN MACHINE INTERFACE (HMI)

Telematics devices inside vehicles will have an impact on traffic safety. There are two main types of devices 1) information displays intended to support driving decisions and 2) vehicle control devices (such as Autonomous Intelligent Cruise Control and Collision Avoidance Systems) which influence the driver task. Two separate codes of good practice applying to the actors should help to maximise the safety benefits of these devices and avoid problems. The European Conference of Ministers of Transport (ECMT) has positively supported such an approach.

While safety must be paramount, actions should not create unnecessary obstacles or constraints to the free development of future innovative products.

A. Research and Development

HMI issues on information displays, vehicle control and multimedia applications for mobile users should receive continuous R&D effort.

B. Technical Harmonisation

- The Commission will convene a taskforce which will consider the elaboration of a Code of Practice on HMI for information devices taking as a reference ECMT Statement of Principles (in: New Information Technologies in the Road Transport Sector, p. 35-42, ECMT 1995) together with relevant guidelines about the modalities for its application.
- The European standardisation bodies will be asked to continue work on ergonomics of in-vehicle systems and to extend it to vehicle control systems.
- The Commission, along with the relevant actors, will examine how to progress:
 - * a code of practice on HMI for vehicle control devices.
 - * methods for successfully integrating HMI when more than one in-vehicle device is involved;
 - * agreed methods for safety evaluation.

C. Co-ordination of implementation

- A proposal from the Task Force for a code of practice on information devices will be submitted by the Commission, after consultation with industry, to the High Level Groups on RTT and on Road Safety.

D. Financing

Not foreseen at present.

E. Legislation

- If after an initial period it is found that the code of practice on HMI for information devices has not been adhered to by the actors involved, the Commission will consider making a proposal either to adapt the directive of 18 June 1992

(92/53/EEC, OJ L225 of 10.08.92) on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers or to introduce a supplementary directive, using CEN/ISO standards.

3.5 SYSTEM ARCHITECTURE

The full potential of RTT will only be realised if the systems and applications introduced can achieve an appropriate level of interoperability. We need to understand the functionality of the different RTT applications as well as the structures and interfaces of the different elements, organisations and players in RTT provision and support them with a system architecture that will deliver interoperability in the longer term and priorities for standardisation. This architecture should be “open” to allow the use of different technologies or designs within an overall framework which should

- maximise the benefits of RTT system integration;
- support a wide range of “added value” commercial RTT services;
- accommodate a broad compass of institutional requirements;
- allow for step-by-step integration with maximum benefit from existing systems.

Initial results from the Commission’s review of the USA National ITS (Intelligent Transport Systems) Architecture shows that it will not be appropriate simply to adopt the American work. RTT in Europe has to serve many different needs and requirements that were not considered in depth in the USA, such as public transport and integrated payment.

A. **Research and Development**

- The European Commission will complete a review of European and American results on RTT architecture, drawing on the output from results of European research on RTT systems architecture in the Third and Fourth Framework programmes and TELTEN¹⁶. Further work should be carried out to integrate the existing results into an overall architecture and develop the areas considered in this first phase to be of higher priority.

B. **Technical Harmonisation**

- CEN is likely to be a key player. The Commission will discuss with CEN its precise contribution, including revision of the workplan of its appropriate committees, taking into account R&D on system architecture and other international developments.

C. **Co-ordination of implementation**

- The Commission will consult the relevant actors (national, regional and local authorities, standardisation bodies, automotive manufacturers, electronic industry, telecommunications operators, RTT service providers and operators, etc.) in order to develop an approach for a European system architecture that provides the necessary framework for interoperability without stifling innovation.

¹⁶ TELTEN2 - Telematics Implementation on the Trans-European Road Network

D. Financing

- Will be considered at the appropriate time.

E. Legislation

Not foreseen at present.

4. OTHER APPLICATIONS ON EU AGENDA

The five priority applications described above are a first step in the implementation process of RTT in Europe. The EU action plan needs to go wider. Other possible priority applications are outlined in this chapter. These proposals meet the request of the Council to the Commission “to define the other applications to be developed as a priority”.¹⁷ The selection took into account the input of Member States, professional organisations, results of R&D work and international experience.

The RTT applications described below form an open list which will be revised and updated as priorities at the European level become clearer. These other priority applications are:

- * Pre-trip and on-trip information and guidance,
- * Inter-urban and urban traffic management, operation and control,
- * Other urban transport telematics services,
- * Collective transport,
- * Advanced Vehicle Safety/Control systems,
- * Commercial vehicle operations (logistic chains)

The preliminary list of requirements and activities presented here are based on a first analysis made by the Commission on whether and what specific actions are required. This analysis will continue in order to determine priorities and further specific proposals. The HLG and the Industry Forum will be asked to help in reaching final decisions. R&D will be required under each of the following subheadings. The Commission in its proposal on the 5th Framework Programme has identified general R&D needs. Further details of the required R&D actions will be given in the Commission’s proposals for the specific programmes. Continuing R&D is also likely under national initiatives.

4.1 PRE-TRIP AND ON-TRIP INFORMATION AND GUIDANCE

One of the EU's top priorities is the promotion of intermodal transport ¹⁸. Pre-trip travel information and trip planning provides the basis for selecting the most suitable mode of transport. Dynamic intermodal travel information (trip planning) systems may become

17 Council Resolution on the deployment of telematics in the road transport sector(OJ95/C264/01 of 11.10.95).

18 TEN-T Guidelines, OJ L228 of 9.9.96, and Green Paper on Citizen's Network, COM (95/601).

widely available across the EU for use by travel-agencies, traffic centres and navigation systems. Actions are needed to ensure interoperability and continuity of messages and protocols between modes and between countries, and common access across Europe. Travellers and commercial operators (e.g. freight shippers) can then make an objective and personal choice out of all transport modalities that are available on the route. Such a system would have a positive benefit on traffic safety, the environment (shortest route, modal shift) and local congestion. Moreover local authorities have an interest in pre-trip and on-trip information and guidance as a means of changing people's behaviour and influencing their mobility choice e.g. to reach certain air quality standards.

Travel information services also have the potential to develop a strong market for commercially driven products (such as portable information devices) and services for on-trip information (e.g. navigation and route guidance). A major European interest will be the creation of a framework to encourage investment by the private sector.

Technical Harmonisation

- Standardisation of information architecture and user-interfaces, in particular harmonised and consistent location referencing schemes.

Coordination of Implementation

- The Commission will prepare and agree with relevant actors advisory guidelines on purchase and selling of information between owners and service providers, including a code of practice of quality control procedures and considerations regarding impact on traffic management and road safety.
- Encourage Public Private Partnerships to develop (travel and traffic information) services on a European, national, regional and local scale.

Financing

- Study the business case for a European-wide inter-modal trip planning application.
- Examine the scope for innovative funding of organisations for inter-modal travel-information services on national or Pan-European scale
- Consider initial financial support through the TENS budgets.

Legislation

- Analyse existing privacy and data protection regulations and make further provision if necessary.
- Member States to publish guidelines setting out the responsibilities, obligations and rights of the Information Content Providers and Value Added Service Providers.

4.2 INTER -URBAN AND URBAN TRAFFIC MANAGEMENT, OPERATION AND CONTROL

RTT has been applied to Urban and Interurban Traffic Management, Operation and Control for many years. Transport telematics applications provide advanced solutions to achieve a more homogeneous traffic flow, increasing road safety and comfort. Future evolution will lead toward greater integration of the services. The Commission objectives have been outlined in the TEN Guidelines for Transport and in the Green Paper "The Citizens' Network" and are directed towards establishing a comparable

level of quality of services and continuity of traffic management and information services.

4.2.1 Inter-urban Traffic Management Operation and Control

The objective is to promote - where appropriate - a European perspective, for instance to ensure a minimum quality, continuity and co-ordination of traffic management and information services across the trans-European Road Network.

Technical Harmonisation

- The Commission will consider how best to establish common usage of pictograms for variable message signs, including the promotion of a code of practice on pictograms already developed in the EC Framework Programmes, and what modifications are necessary to the Vienna Convention on Road Signs and Signals, 1968, as amended.

Coordination of implementation

- Develop additional trans-European multi-corridor and network management projects (wide-area re-routing, event information, weather and environment-related traffic management and network control).
- Exploit automatic incident detection and ramp metering at national/regional level.
- Harmonise the means for travellers, especially drivers, to get assistance in the different Member States (to overcome language problems). In particular, to pursue the application by Member States of an EU emergency call number (No. 112) on the fixed infrastructure and mobile network as required by Council Decision 91/396¹⁹.

Financing

- Develop innovative methods for financing the implementation and operation of advanced telematics systems including a financial basis for public/private partnerships.
- Member States are invited to provide project proposals in the framework of the TENs, but also to use other EC financial instruments (e.g. Cohesion Fund, Regional Fund) wherever applicable.

Legislation

- Review legislation to identify suitable models for traffic management enforcement.

4.2.2 Urban Traffic Management Operation and Control

The objective is to develop an open European system architecture for urban telematics applications (see also 3.5) and create guidelines to help cities with the design and procurement of systems and services.

Technical Harmonisation

- Define the necessary interfaces for the integration of urban traffic information and control systems with bus priority, other related demand management measures and

¹⁹ Council Decision of 29 July 1991 on the introduction of a single European emergency call number (91/396/EEC)

air quality monitoring systems in order to provide optimised and integrated urban traffic management systems.

- Define specifications for the interconnection of urban and inter-urban/regional management and control centres to facilitate traffic flow in the urban centres (code of practice for data exchange).
- Support the development of inter-operable access control systems for demand management in city centres.

Coordination of Implementation

Exchange best practice on:

- dynamic signal control;
- telematic systems for vulnerable road users (e.g. detection of pedestrians at traffic signal installations);
- deployment of improved data collection and handling facilities to achieve coverage of all 'important' roads;
- real-time monitoring of network conditions at a 'travel and traffic information centre'.

Financing

- TENS projects will support applications in this area, (e.g. linkage between urban traffic control and air quality monitoring).

4.3 OTHER URBAN TRANSPORT TELEMATICS SERVICES

In the domain of electronic payment and booking a number of powerful applications of RTT have been demonstrated and await full exploitation. Many are gaining ground locally and regionally within Europe but there are a number of issues which require a consensus between Member States before a strong European market can become established.

Technical Harmonisation

- Agree strategies for achieving technical compatibility and inter-operability of payment systems for collective transport and parking in different regions of Europe;
- Develop common communication platforms, such as GSM or Internet for pre-paying for information and services (e.g. collective transport information and fares, parking information and charges, hotel information and booking).

Coordination of implementation

- Measures to combat fraud and payment avoidance, especially cross-border arrangements.

4.4 COLLECTIVE TRANSPORT

Operators of collective transport need specifications for cost-effective RTT applications. These cover fare collection systems, vehicle location and operational support systems

including bus priority/ security/ scheduling/ maintenance and real-time passenger information services (i.e. public terminals, electronic travel guides).

Technical Harmonisation

- Promote the use of the common data model for collective transport telematics components. Support the work of the corresponding standardisation working group in CEN.
- Secure the availability and accessibility of databases (to enable trip planning).
- Promote the harmonisation of interfaces (HMI) for information terminals!

Coordination of implementation

- Promote the interconnection of national and regional databases for trip planning using electronic dissemination tools (i.e. Internet or GSM for handhold terminals).
- Promote the integration of traveller information services with other value-added services (i.e. reservations, tourist information).

Financing

- TENS projects are expected to work in this area.

4.5 ADVANCED VEHICLE SAFETY/CONTROL SYSTEMS

Advanced vehicle safety and control systems include a wide range of systems that are designed to improve safety and increase driver comfort in line with the Common Transport and Industrial Policies of the Union. They support drivers in their driving tasks, help avoid potentially dangerous driving situations, provide assistance to drivers in emergencies and in adverse driving conditions (i.e. reduced visibility), and in general reduce driving workload. Some examples of first generation systems are intelligent cruise control, lane-keeping, anti-collision, vision enhancement, dynamic speed adaptation, driver monitoring, vehicle emergency handling and anti-theft devices. Other systems being developed will provide autonomous vehicle functions linked with automated highway concepts such as autonomous cruise control, stop & go automation, autonomous lateral control, electronic tow-bar and platooning, providing also a better use of the infrastructure. Some of these systems will be introduced into the market within the next 3 to 5 years.

Technical Harmonisation

- Driver assistance services in case of emergencies based on GPS/GSM (automatic generation of emergency signal with precise localisation).
- Standardisation of on vehicle anti-theft devices is needed to enable their use throughout Europe.
- Standardisation of on-board diagnostic systems to enable a timely and efficient road-side assistance response.

Legislation

Commission will consider along with relevant actors establishing a minimum set of European-wide rules facilitating the deployment of these systems, including:

- development of a framework/guidelines for experimental assessment including the safety requirements, test strategies and methodologies for the assessment of controllability; requirements for the access to live testing on the road network;
- guidelines for the manufacturers, codes of practice or standards and certification/type approval procedures with European-wide mutual recognition;
- consumer protection including the possibility of delimiting responsibilities between the driver, owner, system provider and manufacturer.

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4.6 COMMERCIAL VEHICLE OPERATIONS(LOGISTIC CHAINS)

Measures include electronic tracking and tracing of goods (particularly important for hazardous goods) and combined transport (e.g. road/rail). Greater use of electronic documents and record-keeping, notably the electronic tachograph, smart card driver licence and a non-stop border process will support transport policy objectives, particularly safety and efficiency.

Technical Harmonisation

- Develop the means to integrate freight management systems so that internal telematics applications within transport companies can be interconnected to national and regional authorities. This would enable hazardous goods notification and border crossing services to be automated.
- Support the work in European standardisation bodies on an open architecture for freight and fleet management.

Coordination of implementation

- Develop a telematics network to provide assistance in case of an accident with hazardous goods in accordance with the KEMLER²⁰ code of practice applying in the EU and “HAZCHEM”²¹ code of practice as an exception for the United Kingdom.

Financing

- Consider appropriate funding for projects which cover combined transport, in particular tracking and tracing.

5. CONCLUSIONS

Road Transport Telematics deployment in Europe can help make our roads safer, exploit them more efficiently and at the same time reduce the negative effects of road transport on the environment. It will also ensure that European industry will stay competitive on the world market. All this to the benefit of the European citizens and consumers.

This Communication sets out a strategy, framework and initial actions for the deployment of RTT in Europe. Five priority domains have been identified via RDS/TMC-based

²⁰ Directive 94/55/EC

²¹ HAZCHEM = IHAZardous and CHEMical Goods

information services, electronic fee collection (EFC), traffic data exchange/information management, human/machine interface and system architecture. Urgent actions need to be undertaken for each of them in particular:

- the conclusion of “Memoranda of Understanding” between the actors involved to provide a framework for the deployment of RDS-TMC and data exchange on the Trans-European Road Network. If such MoU are not achieved by October 1997 the Commission will consider putting forward proposals by the end of 1997;
- the European standardisation bodies will be asked to define standards for interoperability of EFC systems at a European level; the Commission and Member States will develop a strategy for convergence of EFC Systems in order to achieve interoperability at a European level, taking into account systems already existing and the work in the European standardisation bodies;
- the Commission will convene a Task Force to help it in drafting a code of practice on HMI for in-vehicle information devices;
- the European standardisation bodies will be asked to review their appropriate workplans and the Commission, together with relevant actors will develop a European RTT Systems Architecture.

Other priority applications are pre-trip and on-trip information and guidance, inter-urban and urban traffic management, operation and control, other urban transport telematics services, collective transport, advanced vehicle safety/control systems and commercial vehicle operations. The analysis of these other priority applications with the help of the High Level Group and the Industry Forum will be reinforced to determine whether and what specific actions are required, their priorities and any necessary additions.

Special attention will be given to the incorporation of telematics concepts into integrated transport strategies with a view to promoting particular policy objectives (transport, environment, etc.).

The Commission will bring forward detailed proposals in the period 1997 to 1999, as indicated in this communication, to assist the speedy deployment of RTT. It will also monitor implementation progress and report annually. In addition, the Commission will roll forward the present list of actions and put forward new proposals under the headings of R&D, technical harmonisation, co-ordination of implementation, financing and legislation to take us into the new millennium and beyond.

Taking into account Council Resolutions on RTT of 1994, 1995 and 1997²² the Commission asks the Council and the European Parliament to endorse this communication as the framework for action within the EU on RTT deployment.

22 OJ 94/C 309/01 OJ 95/C 264/01, EP (95) 212.659/h, Ecosoc CES 1160/95 and Council Resolution of 11.3.97 n° 6321197 Trans 33

Table 2: Community Instruments available for Road Transport Telematics

In accordance with the provisions of the Treaty, the Community may:

<i>Research and Development</i> • support research development and demonstration activities by setting up a multi-annual framework programme. Such actions on RTD activities for the development of transport telematic tools and services are covered by the current Fourth Framework Programme and mentioned in the Commission's proposal for the Fifth Framework Programme (1998 - 2002). • Title XV Research and technological development (Article 130 f,h,i) of the EC Treaty applies:
<i>Technical Harmonisation</i> • implement any measures that may prove necessary to ensure the interoperability across national frontiers of telematic applications and to facilitate the functioning of the Internal Market: this includes support of the standardisation work done by the European Standardisation Bodies (CEN/CENELEC/ETSI), which, where necessary, might be complemented by Community legislation and Memos of Understanding; • Title V Common rules on competition , taxation and approximation of laws (Article 100a) and Title XII Trans-European networks (Article 129c) of the EC Treaty apply.
<i>Co-ordination</i> • concert and co-ordinate national policies . Can also include co-operation with third countries; • Title XII Trans-European networks (Article 129c.2) of the Treaty applies.
<i>Financial Support</i> • support under the TEN-Transport and TEN -Telecom budget lines projects of common interest²³ defined in the TENS guidelines. The Community may also contribute, through the structural instruments, i.e. the Cohesion Fund and Regional Policy budgets, to the financing of specific projects in Member States in the area of transport and telecommunications which contribute to regional objectives; • Title XII Trans-European networks (Articles 129c) of the EC Treaty and Title XIV Economic and Social Cohesion (Article 130a-e) of the Treaty apply.
<i>Legislation</i> • adopt legislation which will facilitate the proper functioning of the Internal Market through the development and use of Transport Telematics; • adopt legislation establishing an Internal Market for Transport Telematics services, networks and equipment; • Title III Free movement of persons, services and capital (Articles 59-66) and Title V (Article 100a) of the Treaty apply. • adopt legislation establishing guidelines for Trans-European networks which highlight the use of telematics systems in the various modes of transport²⁴; • Title XII Trans-European networks (Article 129c) of the Treaty applies. • include in the regulatory framework for the development of the Information Society, measures for the development of transport telematics applications and services; • Title III Free movement of persons, services and capital (Article 59) of the Treaty applies. • adopt legislation to improve transport safety; • Title IV Transport (Article 75c).

²³ Council regulation (EC) N2236/95 of 18 99.95 laying down general rules for the granting of Community financial aid in the field of trans-European networks, OJ n° L228/1 of 23.09.95

²⁴ Decision N° 1692/96 of 23.07.96