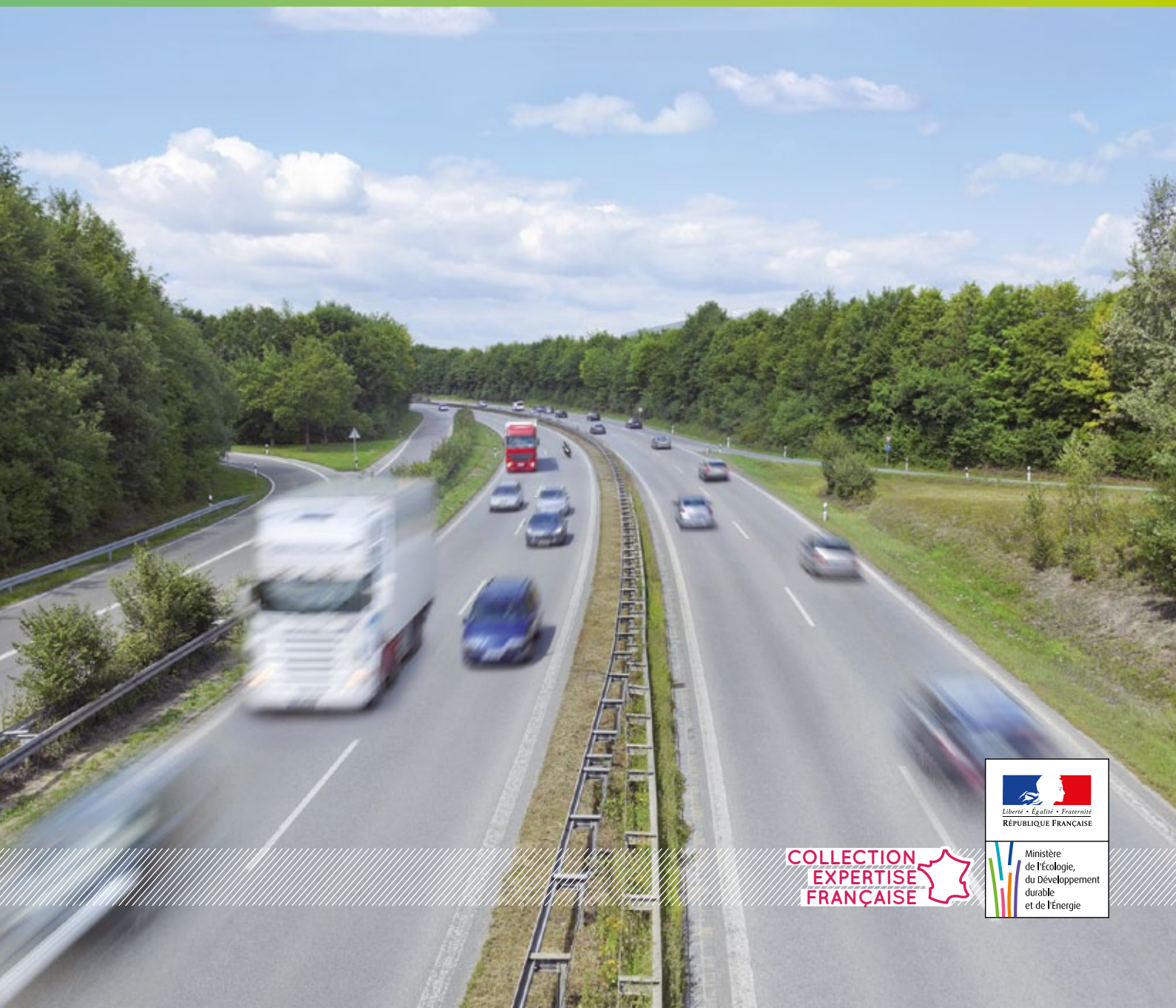
TRAFFIC MANAGEMENT
on the French Road Network

>>> FRENCH EXPERTISE <<<



COLLECTION EXPERTISE FRANÇAISE

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RÉPUBLIQUE FRANÇAISE

Ministère de l'Écologie, du Développement durable et de l'Énergie

MAINTAIN, UPGRADE AND DEVELOP the Road Networks

CONTENTS

IN FRANCE, roads are the main support for mobility of passengers (88% of trips) and freight (87,6%).

Since the 90s, the road network has been developed in order to connect areas, to open up the regions to Europe, to link the Channel and Atlantic coasts and major seaports to large cities and Europe, to answer the increase of traffic and to restrict the transit traffic in the capital region. The challenges of sustainable development have become a cornerstone of transport policy in France.

France has identified four major trends in maintenance, modernisation and development of transport networks:

- optimise the existing transport system to limit the creation of new infrastructures;
- improve its performance to service territories;
- improve its energy efficiency;
- reduce the environmental footprint of infrastructure and of transport equipments.

To achieve these goals, different strategies have been developed:

- implementation of dynamic traffic management systems on dense traffic sections;
- global management aimed at promoting public transport use;
- maintaining a high-level safety and comfort of road travels;
- extending predictive traffic information and real-time information.

IN THIS BROCHURE ARE PRESENTED:

specificities of the French non-urban road network

strategic orientations selected and developed by the State

their implementation by different network managers (State, motorway companies, local authorities) supported by many companies specialised in the field of intelligent transport systems

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The French Road Network CHARACTERISTICS

The network has been developed to meet more and more challenges

SPECIAL SITUATION OF THE COUNTRY, mid-way between Northern and Southern Europe, hence an intense international transit traffic. Challenges at the borders, and on the major national network.

LARGE METROPOLITAN AREAS DEVELOPMENT Peri-urbanisation around the 60 more-than-100,000-inhabitants metropolitan areas creates growing traffic flows which needs to be controlled.

TOURISM IN THE REGIONS triggers seasonal traffic peaks which require an adapted management.

DECENTRALISED ORGANISATION Calls for coordination between the several networks managers.

THE STAKEHOLDERS

Traffic managers are not the only ones implied: the also need emergency services, the police and services providers (information, maintenance, repair service).

	OWNER	STRATEGIC AUTHORITY	NETWORK MANAGER
Concession motorways (tolled)	State	Ministry in charge of Transport	Private Motorway Companies
Non-concession Motorways (non-tolled)	State	Ministry in charge of Transport	Interdepartemental Road Directorates (State Services)
National Roads	State	Ministry in charge of Transport	Interdepartemental Roads Directorates (State Services)
"Départemental" Roads	" Département "	General Council (elected local authority)	General Council Technical Services
Local Roads	City or metropolitan area authority	City Council or Metropolitan area Council (elected local authority)	Cities Technical Services

THE FLEET OF VEHICLES

- **more than 31 millions** of private cars
- **more than 5 millions** trucks

THE ELECTRONIC TOLL COLLECTION

39% of the transactions are electronic:

- **3.24 millions Liber-t badges** (nation-wide system)
- **685,632 TIS-PL badges** (new nation-wide system for trucks only)

Going through the toll is smooth thanks to dedicated lanes.

THE NATIONAL ROAD NETWORK accounts for less than 3 % of the total network, however it carries 35% of the traffic.

21,500 km *of national road network*

Source: DGITM/DIT/DRN - January 2014

MOTORWAYS NETWORK LENGTH (KM):

YEAR	CONCESSION MOTORWAYS	NON-CONCESSION MOTORWAYS	TOTAL
1970	1025	115	1140
2014	9000	2800	11800

OTHER NETWORKS

- **9 700 km** of national roads
- **380 000 km** of "départemental" roads
- **650 000 km** of local roads

1. Optimising THE NETWORK PERFORMANCE

MAIN MEASURES

Offering users alternative routes

Dynamic traffic management

PROVIDING A HIGH LEVEL of fluidity, ensuring reliability and travel safety, reducing local pollution, noise, fuel consumption and emissions of greenhouse gases are among the objectives of network performance optimisation.

France has indeed implemented measures at all scales:

› interregional, national and even international. Plans for traffic management enable to predict and to take timely decisions on a border or corridor in case of major difficulty. The strategy is mainly based on the establishment of alternative routes available to users;

› local. The main tools involve real time traffic information and dynamic traffic management on busy roads. Dynamic speed control, dynamic management or variable assignment of lanes, can maximise the traffic flow.

A Network Managed by Several Operators

The system

The road network in the Lyon metropolitan area is characterised by:

- a traffic overlay of a metropolitan area of more than 1.3 million inhabitants with intense national and international transit flows;
- a large grid network that offers several alternative road routes;
- a division between 6 network operators: The State, the Grand Lyon (metropolitan area authority), the Rhône "département" and three concessionary companies, South of France Motorways (ASF), Paris Rhin Rhône Motorways (APRR) and its subsidiary Rhône-Alpes Motorways (AREA).

To coordinate and regulate the traffic flow through 230 km of structuring roads of the urban area, the partnership Coraly was set up.

The management

Coraly is based on a two-level organisation:

- each operator ensures, through its own monitoring and intervention centre (PAIS) tasks related to the viability of the system and the safety of users in its sector (monitoring lanes, triggering interventions, infrastructure maintenance, etc.);
- the Coraly General Control Centre (PCG) supports missions that require a global vision of the network traffic management and user information.

Advantages

› The exchange of information collected by each partner on the field

› Their centralisation and analysis by the same system and operators

› The launch of coordinated action plans

Coraly Network (coordination and regulation of traffic in the Lyon metropolitan area)

APRR - Grand Lyon - OPENLY pour le Grand Lyon - DIR Centre Est - DIRCE pour le département du Rhône - AREA - ASF

Who are the equipment suppliers?

For the general control centre and that of the interdepartmental roads directorate (DIR)

Ereca, optical fiber specialist, for emergency call network equipment

Fareco (brand SIAT) for counting devices

La Barrière automatique for automated barriers

SES, Signature et Lacroix trafic for variable messages sign

SPIE for traffic management specific systems

For the network managed by APRR

Aximum, SPIE South East, Eurocapteurs for electromagnetic loops

Eiffage énergie Lyon for cameras

Fareco for counting devices

Lacroix, Signature, SES for dynamic sign systems

LA BARRIERE AUTOMATIQUE

Founded in 1984 and settled in Limonest, "Rhône" (close to Lyon), the company specialises in design and construction of automated road barriers for road maintenance and operation companies. In the road sector, it is a reference for French motorways companies. At the international level, its activities are developed in Morocco, Senegal, Mexico, Chile, Italy, Spain, Greece, Russia and India. Very innovative, the company especially developed an unbreakable automated barrier and mobile guardrails, adapted to reversible flow lanes. In 2011, its sales amounted to more than 11.8 million euros. It now employs about 40 people.

www.barriere-automatique.com

RHÔNE VALLEY

The Dynamic Speed Regulation on a Dense Traffic Corridor

The A7 motorway operated by South of France Motorways (ASF) is a north-south axis which follows the Rhone valley. It faces a strong traffic increase every summer. In order tolimit the inevitable effect of congestion during this period, ASF has implemented since 2004, and in close collaboration with the State, a dynamic speed limit control system. Building on its success, this measure was extended in 2008 to A8 and A9 motorways.

The system

During traffic peaks, speed control aims to improve traffic flow and to optimise the operation of the infrastructure according to actual traffic conditions:

- by homogenising and moderating gradually speed, it increases the level of service by improving the security, comfort and reducing the highest congestion;
- by limiting periods of high congestion, it reduces emissions of local pollutants and greenhouse gas.

The management

Every six minutes, the traffic data are collected on the whole network in real time and processed through a specific algorithm that anticipates the emergence of congestion risk on certain areas. The speed limit (110, 90 or 70 km/h) is then automatically adapted to the traffic conditions in those areas. It is gradually lowered by steps of 20 km/h. A complete set of measures (regular radio messages on 107.7 radio, variable message signs, etc.) informs the users about safety instructions.

Advantages

- **A better traffic homogeneity, by reducing the speed differences between the vehicles and between different lanes**
- **A better distribution of vehicles between lanes, thereby increasing the capacity**
- **A significant reduction in the duration and level of congestion**
- **A reduced number of accidents road and their severity**

Who are the equipment suppliers?

ASF to design and implement the softwares for data exploitation and processing (supporting operations systems), with various informatics engineering subcontractors for coding, in order to:
- operate and manage information;
- design and integrate various parts or equipments from French or European (Barco video wall, etc.) manufacturers;
- compute travel time from a software company

Cegelec et **Bouygues énergies et services,** shooting devices installers (hardware and cameras) for video recording deployment

Fareco, counting devices manufacturer

Labocom, counting data collection expert

Signature, SES nouvelle et **Lacroix trafic** for dynamic signage

Survision, sensors manufacturer for automatic reading of registration plates (information used for the computation of travel times)

Vinci autoroutes and its subcontractors, designer of the smartphone application

FARECO

Fareco (Fayat régulation contrôle) belongs to the Fayat construction group, and is specialised in road traffic control. It gathers brands having each a range of products specific to a field of activity, in particular:
- **Garbarini:** urban traffic management softwares, crossroad controls, signing devices, traffic lights;
- **SIAT:** data collection, road equipment management softwares, automatic incident detection system, detection and management of parking;
- **CAFR:** crossing red lights control, in-vehicle speed control, speed control in construction zones.

Fareco has many references, including trams signing in Ile-de-France. In 2012, its sales amounted to 15 million euros with a workforce of 60 people.

www.fareco-fayat.com

EASTERN PARIS

Creation of an Additional Lane

The four-lane highway common section of the A4 and the A86 located in the East of Paris and managed by the State services, supports 280,000 vehicles daily. Considered as "Europe 's largest traffic jam", this trunk faces congestion every morning and evening. Before dynamic management was implemented, the congestion could extend from 10 to 15 km every day during peak hours.

The system

In 2005, the emergency lane was opened as a fifth potential lane to traffic only during periods of high traffic. It is identified by a lighter colour.

The management

To enable efficient operation of the lanes, remote-control mobile assignment guardrails (GMA) were installed. They open and close automatically depending on traffic density. The dynamic vertical signing consisting in variable messages signs and lane assignment signals, warns users of the opening or closing of the lane. Automatic radars are involved in speed control and contribute to maximum safety on this section. The area is covered by video cameras, linked with automatic incident detection systems in order to identify quickly any incident affecting traffic on this road and to restore the primary function of the emergency lane. Operating conditions (4 or 5 lanes) are proposed by the system from traffic data and validated by an operator, after a visual control using cameras.

Advantages

The temporary opening of an additional lane has three main advantages*:

- increasing infrastructure capacity between 7.5 and 10%;
- reducing saturated traffic periods;
- an increase by 20 km/h of the average speed during peak hours in the morning.

* Evaluation conducted in 2006 by the National Research Institute on Transport and Safety (INRETS), now known as IFSTTAR.

Improving traffic flow and dynamic management also leads to:

- gain safety in Nogent and Champigny tunnels, since traffic operators that control congestion sites can lead traffic to avoid tunnels;
- reduce nuisance from traffic: fuel consumption, pollutants and greenhouse gas emissions decrease in the experimental area thanks to improved fluidity.

Who are the equipment suppliers?

SES, Citilog, Alcatel for dynamic equipment (variable messages sign)
Signature SA and SES for signing
Sodirel for mobile affectation guardrails

CITILOG

This SME is specialised in the intelligent and real-time traffic monitoring thanks to:

- **a suite of softwares** based on advanced image recognition (automatic incidents detection, traffic data collection, crossroads and urban traffic management);
- **a whole video management system.** The company provides a range of solutions from local device software to turnkey systems (video equipment, intelligent video, control and sanction, plate recognition, video management, etc.). These products enable intelligent road infrastructure management (bridges, tunnels, motorways, intersections) and safety of critical infrastructures (airports, public transport, ports).

Installed on more than 700 sites in the world, these products equip renowned and prestigious infrastructures such as the tunnels of New York (Lincoln and Holland), bridges of Shanghai (Lupu, Nanpu, Yanpu), M30 urban tunnels in Madrid, the Mont-Blanc tunnel, the Millau Viaduct, the tram des Maréchaux in Paris or the A86 Duplex tunnel. Citilog, whose headquarters are located in Arcueil near Paris, has subsidiaries in the United States, Hong Kong and Spain.
The company generated a turnover of 5 million euros in 2012. It employs 23 people in France.
www.citilog.com

SES

With over fifty years of experience, this company, whose is headquarters are in Tours, specialises in design, manufacture and marketing of road, highway, urban and temporary signing, as well as traffic management systems. Inventor of the variable message sign, it participated in several projects for different clients:

- **in France,** it has many references: motorway companies, general councils, municipalities, construction companies, etc;
- **across the 5 continents,** variables message signs inform daily users: in the United States, Africa, Australia, Malaysia, China, Russia, Belgium, Luxembourg, United-Kingdom, Brazil.

In 2012, its turnover amounted to 44 million euros. The company brings together today 300 employees with a specialised service in export and resellers worldwide.
www.ses-signalisation.com

SAINT-NAZAIRE

Reversible Central Lane of a Bridge

The bridge that connects Saint-Nazaire to Saint-Brevin in Loire-Atlantique, is the only one that spans the Loire estuary, downstream of Nantes. Connecting residential areas to a dynamic employment zone, it is the only commuting possibility. The old configuration of traffic lanes on the bridge, two lanes input which is reduced to one lane, was the cause of congestion every day in the morning and in the evening, in the most crowded way.

The system

To relieve congestion when crossing the estuary, the General Council of Loire-Atlantique established in 2010 a dynamic allocation of the central lane of the bridge, in the most circulated way. That requires features over a length of about 6 km.

The management

The assignment of the direction of central-lane flow depending on traffic is materialised by lights on gantries. Users safety is a priority, hence the whole site has a strong density of dynamic and communicating equipments: lighting, automatic barriers to let drivers use the right lane, dynamic signing. All these facilities are controlled from a departmental centre of traffic coordination and management, specially dedicated to this item.

Advantages

First evaluations of the system show a real improvement of traffic conditions. The crossing time is now very regular : between 4 and 6 minutes, including during peak hours in the morning and in the evening, to be compared with 4 to 11 minutes before. The users are very satisfied and they do not report reading nor understanding problems.

Who are the equipment suppliers?

Lacroix trafic and **SPIE,** while EGIS ensures the coordination of their actions.

SPIE

Specialised in electrical, mechanical and climate-related engineering services, as well as energy and communication systems, the SPIE group has specific expertise in the area of transport infrastructure. Thus, to make traffic safer, more fluid and more environmentally friendly, SPIE participates in the development of public transport (bus, tram, metro hubs, multimodal stations...), road signage, management of urban, interurban and motorway traffic, installation of charging infrastructure for electric vehicles, centralised management of car parks, airport signage and facilities, securing tunnels as well as the development of river and maritime areas (ports, locks, dams...).
SPIE has many motorways companies as clients and is in charge of the maintenance of automation of all A43 motorway (autoroute de la Maurienne) equipment and tunnels (ventilation, security, lighting) and ensures the development of the monitoring system.
In the field of transport, SPIE had a turnover of more than € 160 millions in 2011.
www.spie.com

LACROIX TRAFIC

Subsidiary company of Lacroix Signalisation very present on the French market of road signing and street furniture, Lacroix Trafic ensures the design, manufacture and marketing of traffic management products. Mastering the technology of collection, processing and dissemination of information, Lacroix Trafic offers a full range of management traffic amenities: traffic lights, crossroads management, lane assignment signals, pedestrian signals, variable message signs... Its products are used in many countries including Senegal, Malaysia, Brazil and Morocco. Its sales amounted in 2012 to € 32 millions. The company employed 91 people in 2012.
www.lacroix-trafic.fr

2. Optimising PERI-URBAN PUBLIC TRANSPORT

MAIN MEASURES

Dedicated-lane management

Dealing with interfaces between roads and other transport networks

OPTIMISING THE USE OF EXISTING NETWORKS also requires the implementation of measures to promote some categories of users:

› **dedicated lanes management** is a solution that expands to ensure better consistency and reliability of travel time by public transport through the entrance of large cities;

› **interfaces between road and other transport networks** are improving to enhance the competitiveness of alternatives to individual car (development of park-and-ride, park for carpoolers and multimodal platforms).

GRENOBLE

The Shared Dedicated Lane

The north-west of the A48 motorway, providing access to Grenoble, goes by a valley and concentrates traffic during peak hours, with no alternative solution.

The system

The General Council of Isere ("département" where Grenoble is located), in collaboration with road services of the State, studied the ability to circulate buses on the emergency lane. In September 2007, this studies led to the creation of a 4.5 km-long shared dedicated lane.

The Management

The shared dedicated lane is only open when the usual lanes of the highway are congested, usually at peak hours in the morning. Only bus drivers who received training are allowed to take the lane. Apart from these situations, the traffic is prohibited and the lane remains an emergency lane. When it is open to buses, an automatic incident detection allows to disable traffic on this path to restore its emergency lane function (for example, if a vehicle stops at some point). The speed limit is 50km/h with a maximum difference of 20km/h of speed measured on the other lanes and the maximum speed allowed to buses and coaches.

Advantages

The success of the shared dedicated lane is measured through satisfaction survey performed 6 months after opening. 26% of respondents are new customers of the line, 89% believe that the the lane is effective and 90% want an extension. This success is mainly due to the consistency of the time travel of the bus. Time reliability of buses is a key factor to attendance of the line. The lane will be extended and will be operational in 2014.

Who are the equipment suppliers?

Lacroix for dynamic devices
TTS for video recording

STRASBOURG METROPOLITAN AREA

Right-of-Way Public Transport

The Wasselonne-Strasbourg road, which serves the western part of Strasbourg metropolitan area, bears significant traffic. Intercity bus lines are thereby penalised.

The system

To revitalise these bus lines and strengthen their competitiveness in comparison to cars, the General Council of the Bas-Rhin ("département" in which Strasbourg is located) plans to develop an area of about thirty kilometers reserved to public transport (public transport dedicated lanes - TCSP). The objective of the General Council is to provide the equivalent regional train or tramway service through buses with a high level of service (BHLS): regular journey time, high frequency and easy connections with other modes of transport (park-and-ride, multimodal stations, etc.).

The management

An experiment was conducted since 2006 in the corridor going through the village of Furdenheim. The idea has been to treat homogeneously both ways by creating a 1500 m-long lane dedicated to "département" buses running in the two directions. In parallel, a light regulating system retains the traffic outside the village to give priority to buses. When a bus arrives, it is detected by GPS, and gets priority for its passage through lights synchronising so that it meets only green lights.

Advantages

The first feedback shows good rate of technical operation and significant gains in terms of regularity and flow for buses. The travel times have decreased by 5 minutes in rush hour. One can imagine the future extension of this type of measure for other categories of users, eg carpooling or vehicles with high occupancy rates.

Who are the equipment suppliers?

Gorba for bus to road communication (V2I)
Prosign for horizontal signage
SignalesT / Lacroix for vertical signage

3. Upgrading NETWORKS

MAIN MEASURE

developing intelligent transport systems

NETWORK OPERATIONS on a daily basis is primarily intended to ensure travels of people and goods in the best possible conditions.

> The fast development of intelligent transport systems (ITS, application of new technologies of information and communication to transport) provides useful services to users and facilitates the work of operators with the automation of some tasks.

> There are many applications: operating assistance systems, road safety (automatic incident detection) or electronic payment.

CONCESSION MOTORWAYS

Unified Electronic Tolling System: Liber-t and TIS-PL

The system

In 2000, an agreement was signed by twenty highways companies and tolling structures. Any light vehicle with an onboard equipment issued by a Liber-t approved issuer may pay the amount on 9,000km of motorways, 3 bridges, 2 tunnels and more than 200 car parks. A customer can choose his supplier out of 11 issuers. This service accounts today more than 4,250 accessible toll lanes. The device has been generalised for trucks in 2007.

the management

For example, trucks can register at one of the four provider companies approved by TIS-PL (intercompanies electronic tolling system for trucks): Eurotoll, Axxès, DKV Euro Service France and Total GR. Providers sign a bilateral contract with each highway company. The customer receives a single invoice with details (split by highway company) which allows it to recover VAT.

Advantages

The customer has a unique badge that facilitates the passage of the toll barriers. He receives only one invoice, published by the company with which he endorsed his contract. The two existing tolling organisations (light and heavy vehicles) are ready to work with other European electronic tolling service providers when a global scheme is to be implemented.

ALL ACROSS FRANCE

Automatic Incidents Detection

The system

Incidents and accidents have severe consequences on the flow of traffic, especially on highways. To minimise detection time, traffic managers use automatic incident detection systems. The deployment of these automatic video analysis systems has proved that they can reduce detection time to 20 seconds, whereas with traditional alarm systems (network emergency calls, patrols, telephone or operator-monitored video), this period could reach several minutes.

The management

The operator of a monitoring centre is alerted in real time by the device of the occurrence of predefined events. This facilitates its surveillance and monitoring of the network.

Advantages

The response time of the operators for incident management operation is shortened : call for emergency services, variable messages signs, radio, automatic barrier to let drivers use the right lane(s), access closure, users exit advice. This is a crucial safety factor: emergency services arrive more quickly and users expecting an incident can better anticipate their choices. The fast return on investment of these systems explains their success and their deployment by all managers.

4. Users INFORMATION

MAIN MEASURES

Forecast information

Real-time information

TRAFFIC INFORMATION essential to improve users travelling conditions:

› Forecast information, which provides alternative routes or optimal departure periods allows users to schedule their travel;

› Real-time information on traffic conditions, which ensures comfort, and allows users to adapt their driving speed or route. It improves road safety, mostly by avoiding accidents caused by accidents.

Overall, quality information can:

- reduce economic and environmental costs for road users, by improving traffic or increasing transport safety;
- let authorities better manage crisis situations.

ALL OVER FRANCE

ÎLE-DE-FRANCE REGION

Road Information Channel

The system

Traffic information is produced by road managers, police authorities or emergency services, before being integrated by management centres into an aggregate and workable set. They are concentrated in regional centres for road information and coordination and in the National Centre for Traffic Information. Dissemination of traffic information is coordinated between all actors. It is based on the Tipi system, established since 2010 on the basis of open standard, which allows sharing of information at the national level.

BISON FUTÉ
sur tous vos trajets, du départ à l'arrivée

The management

The aggregated information is then broadcasted to the public through public authorities or through private service providers:

- "Bison Futé" website, created and powered by the services of the State, is the main service to provide traffic information directly to road users, for both individuals and professionals;
- a unique FM radio channel (RDS / TMC service) broadcasts in France the data collected on the conceded motorway network (107.7 radio), the national interurban road network and some metropolitan areas such as Paris. It is the true precursor of collaborative services involving network operators, suppliers and car makers.

France Bleu: a Local Radio Stations Network

The system

With its 43 local radio stations located throughout the territory, France Bleu network (Radio France group) is a historical and effective vector of nearby information dissemination, including traffic information.

The management

France Bleu network has an access to the national database of traffic data and events collected in real time over the National Road network. Local stations make regular information points on traffic conditions. Airtime dedicated to traffic is increased during crisis situations.

Advantages

Signed in 2007, the partnership between the State and Radio France offers an efficient link to interested users. Several projects of multimodal information dissemination on road networks in major cities are in progress to have comprehensive information on the transport supply. They aim to inform in real time on the effectiveness of different available modes and thus encourage modal shift.

Sytadin: a Road Information Website

The system

Sytadin provides real-time traffic and work information in the Ile-de-France region. A free application for smartphones offers the main services available on the website. It gives the real time traffic status with different functionalities as touch navigation, the user GPS positioning information on works, congestion and planned closures. A website for Mobile phones has also been established. Sytadin was funded by the Regional Council of Ile-de-France and the State. The operation and maintenance of the website are done by the Directorate of roads of the Île-de- France region.

The management

All information provided on Sytadin is the result of close collaboration between operators of road networks who have real time systems for traffic data collection and computation: State services, the city of Paris, some motorways companies (Société des autoroutes Paris-Normandie, Société des autoroutes du nord et de l'est de la France, Autoroutes Paris Rhin-Rhône, Cofiroute).

Advantages

Thanks to real-time information provided on traffic conditions and in progress or scheduled works, the user can decide to reroute, or to change his departure time or mode of travel.

More INFORMATION

COMPANIES

Besides large groups of internationally famous, many small and medium-sized companies have expertise in the field of intelligent transport systems for traffic management. They make a major contribution to innovation.

The following list, which is not exhaustive, identifies some of these private players, divided into several large fields. It was established with the assistance of UBIFRANCE (www.ubifrance.fr) and from information from the intelligent transport website from the Ministry (www.transport-intelligent.net). Other references can be obtained from the Road Equipments manufacturers association (www.ser-info.com) and association Atec-ITS (www.atec-itsfrance.net).

Dynamic signing, electromagnetic sensors

Aximum
www.aximum.fr
Eurocapteurs
Fareco
www.fareco-fayat.com
Franche-Comté signaux (FCS)
www.franche-comte-signaux.fr
Isosign
www.isosign.fr
Lacroix signalisation
www.lacroix-signalisation.fr
Lacroix trafic
www.lacroix-trafic.fr
SEA signalisation
www.sea-signalisation.fr
SES nouvelle
www.ses-signalisation.com
Signature
www.groupe-signature.com
Signaux Girod
www.signaux-girod.fr
SPIE
www.spie.com
Optifib
www.optifib.com
TTS
www.ttsys.fr

Vinci énergies – infrastructures et mobilité
www.vinci-energies.com

Toll equipment, ticketing

Actoll
www.actoll.com
Axxès
www.axxes.fr
ERG Transit System France
Eurotoll
www.eurotoll.fr
GEA
www.gea.fr
Sanef ITS
www.sanef-its.com

Cameras, automated image processing, accident detection

Citilog
www.citilog.com
Neavia
www.neavia.com
Survision
www.survision.fr

Wireless sensors

HiKob
www.hikob.com

Mobile assignment guardrails

La Barrière automatique
www.barriere-automatique.com
Sodirel

Engineering

Artelia
www.arteliagroup.com
BMIA
www.bmia.fr
Carte blanche conseil
www.cbconseil.com
Ceryx
www.ceryx-ts.net
Clesmessy
fr.clemessy.com
EGIS
www.egis.fr
IBM
www-05.ibm.com
Ingerop
www.ingerop.fr
Orange business services
www.orange-business.com
Setec ITS
www.its.setec.fr
Steria
www.steria.com

Thales
www.thalesgroup.com
Traffic first
www.trafficfirst.com

Onboard devices, vehicles fleet management systems, freight monitoring, command centres devices

Aeroproduct
www.aeroproduct.org
Actia
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Actus system
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Labocom
www.labocom.fr
Mobility tech green
www.mobilitytechgreen.com
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