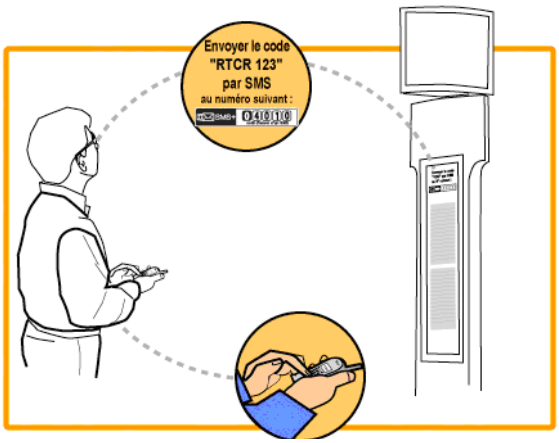
CiViTAS
Cleaner and better transport in cities

SUCCESS
LA ROCHELLE - PRESTON - PLOIESTI



TELEMATICS

Deliverable 12 of the Success Project

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FOREWORD

Jean YATES, Emil CALOTA, Denis LEROY

As senior political representatives of the SUCCESS cities we have been personally involved in the project from its beginnings as a Proposal submitted to the CIVITAS Programme in 2004. We have been honoured to take part in the second phase of CIVITAS and we have been pleased to see how well the plans have been implemented in our cities and how our citizens have benefited.

The rich cooperation that has been the hallmark of SUCCESS, both between the cities and between local partners in each city, has resulted in greater understanding and mutual respect between different organisations and different cultures. This will have long-lasting effects that will benefit all who have been involved in the project.

We have been pleased to cooperate with the European Commission and the wider CIVITAS family, and have contributed to the CIVITAS Political Advisory Committee.

We trust that this document will provide useful lessons for others considering the adoption of measures similar to those that we implemented in the SUCCESS project.

***Denis Leroy**, Communauté Urbaine de La Rochelle, Vice Président en charge des transports*

***Jean Yates**, Lancashire County Council, County Councillor*

***Emil Calota**, Primaria Municipiului Ploiesti, Mayor*

SUMMARY

1 SUCCESS PROJECT

SUCCESS (Smaller Urban Communities in Civitas for Environmentally Sustainable Solutions) is a 4-year project, within the European Research and Demonstration Programme CIVITAS II, with 12 partners including local authorities, transport companies, universities and experts from La Rochelle (FR), Preston (UK) and Ploiesti (RO). The main objective of SUCCESS is to demonstrate that, with an ambitious package of mobility and traffic management measures, significant results can be provided regarding sustainable transport and energy policy in small and medium sized cities. SUCCESS addresses technical, social, environmental and economic aspects of an integrated mobility strategy. As a demonstration project, SUCCESS involves extensive investment in the participating cities, along with a large range of stakeholders and integrated packages of demonstration measures. Several actions have been engaged in each city ranging from controlled access zones to biofuels, from real time information systems to alternative modes for transport, from cycle and walking paths to integrated ticketing. In total, more than 50 different projects have been set up involving a large number of stakeholders leading to a very wide scope of sustainable mobility management and implementation.

The main goals of SUCCESS are:

- To demonstrate that vehicles using clean and alternative fuels can be an efficient choice for urban transport
- To demonstrate that, with an ambitious package of mobility and traffic management measures, significant results can be seen regarding sustainable transport and energy policy
- To demonstrate that accession countries, soon to be new member states, can learn from our previous mistakes and contribute to urban collective transport issues, while implementing at the same time actions promoting alternative transport modes
- To contribute deeply to many different related research and assessment activities such as new, all-inclusive training and communication initiatives supporting the project objectives

La Rochelle, Preston and Ploiesti represent well the medium-sized cities in Europe. Most of medium sized cities are built around an historical city centre. This city centre is quite often rich with several types of shops as well as craftsmen and small industries, with other commercial or tourist areas scattered around in the city. Commercial and industrial zones have grown up in the surrounding areas and are accessible within a short time.

Regarding transport, the main characteristics of such cities are their small surface area, the human size of relationships and their small investment capacity. Buses often provide the main form of public transport.

Medium sized cities generally have a low demographic density, with the population often spread over a large area, sometimes in surrounding small towns which are included in the "life zone". On the one hand this means short travel times, good accessibility and freedom for travelling, but on the other hand it makes collective transport very difficult to organise.

In such cities, relationships between citizens and between citizens and politicians are closer. The proportion of inhabitants involved in the city life is quite often higher than in larger ones: through different associations and clubs, inhabitants come to know each other more easily and have often direct access to politicians involved in these motors of the city life. So the city culture is more widespread and is shared by a many inhabitants.

Smaller cities have in general lower investment capacity; this capacity is not proportional to size and it is sometimes difficult for the local authority to raise financial levers to fund projects.

1.1 The Project Consortium Cities

PROJECT CO-ORDINATOR :

Communauté d'Agglomération de La Rochelle (CdA), FR

PARTNERS :

Ville de La Rochelle (Ville de LR), FR

EIGSI, Ecole d'Ingénieurs de Génie de Systèmes Industriels, FR

Lancashire County Council (LCC), UK

Preston Bus Ltd (PB), UK

Transport and Travel Research Ltd (TTR), UK/FR

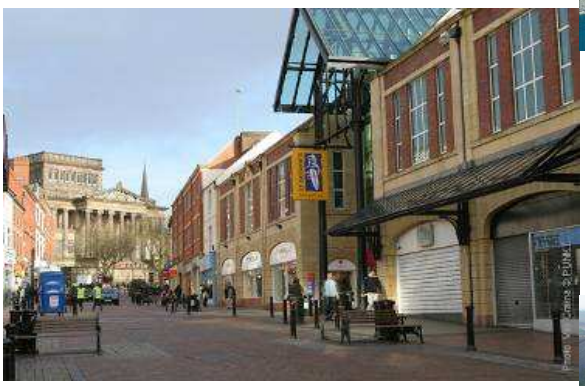
Preston City Council (PCC), UK

South Ribble Borough Council (SRBC), UK

Primaria Municipiului Ploiesti (PMP), RO

Regia Autonoma de Transport Public (RATPP), RO

Universitatea Petrol-Gaze Ploiesti (UPGP), RO



1.2 La Rochelle

La Rochelle lies on the Atlantic Coast of Western France. The Urban Community of La Rochelle includes 17 surrounding towns and La Rochelle itself. 160,000 inhabitants live in this area of 20,650 hectares and the total population may reach 250,000 people in summer. Based on a strong maritime heritage with several ports (commercial, leisure, fishing), the economic dynamism of the Urban Community of La Rochelle is the main factor of evolution of the city and the foundation of the urban strategies among which policies in favour of the framework of life and urban ecology (sustainable transport and protection of the landscape) stand in first position.

The Urban Community of La Rochelle has been involved for several years in improving urban transport and more specifically in introducing clean vehicles, developing new concepts for sharing vehicles, bicycles, in implementing Park + Ride, and even starting the "car-free day". Clean transport is not the only environmentally friendly improvement introduced in the town. Other actions have already been started to make the city one of the best in the country for environmental issues. Among these are "master planning" for wind turbines in urban areas, an observatory for air quality (ATMO existing since 1976), coastal protection studies (with La Rochelle University) and littoral management, electric boats for collective transport in the harbour. So SUCCESS is clearly part of the global environmental strategy of the local authority for improving quality of life in all of the city's communal areas.

1.3 Preston

Preston is England's newest city – city status was granted in 2002. It has a population of 129,000 plus suburban areas in South Ribble (combined population 250,000). Preston is the administrative capital and largest commercial centre of Lancashire in the North-West of England.

Preston is, however, an ancient place, receiving its Charter in 1179 - its historic Preston Guild is celebrated every 20 years with the last celebration in 1992. Preston has a strong economic and retail base. The area is also on the threshold of major regeneration, which will see a transformation of Preston's inner urban areas. This transformation is community-led with the Council and its key partners giving full support. The Council - in partnership with the private sector - is also working on a multi million pound scheme to redevelop Preston's City Centre through better retail, transport, housing, office, leisure and other mixed uses. Preston's student population is acting as a major catalyst too. With over 30,000 students, the University of Central Lancashire in Preston is the sixth largest and one of the fastest growing Universities in the UK.

Preston is already a UK leader in the field of transport telematics through its involvement in the UK UTMC programme and Lancashire County Council was recently awarded the title of UK Local Transport Authority of the Year 2004. The planned major regeneration of the city centre has created

an opportunity for SUCCESS to support a step-change in the provision of sustainable transport systems within the city.

1.4 Ploiesti

Ploiesti City is located in the south of Romania 60 km north of Bucharest, the capital of Romania. Ploiesti is the capital of Prahova County and is located south of the Sub-Carpathian hills and north-west of the confluence point of two main rivers, Prahova and Teleajen. The municipal economy is characterised by a concentration of large and very large businesses. The population of Ploiesti went from 56,460 as indicated by the December 1912 census returns, up to 252,715 in January 1992**.** At the end of the year 2001, the population had slightly reduced to 248,688.

Ploiesti City (5,844 ha) is intended to become the nucleus of a metropolitan area, which will include some nearby villages adding around 70,000 new inhabitants to the administrative area. The road network has a radial-ring structure and extends from the city to the neighbouring villages. The municipal roads comprise over 800 streets with a total length of 324 km. East and West ring belts mean around 5,300 vehicles transit Ploiesti each day.

Ploiesti is situated at the crossing of the European Corridors IV and IX.

Ploiesti is a railway hub providing connections between Bucharest, Transylvania and Moldavia. The city has several railway stations for passenger and goods transportation.

Ploiesti is also an important national and regional motorway hub. The municipality lies at the confluence point of the North-South and East-West axes, respectively at the crossroads of Transylvania-Bucharest (Danube River or the Black Sea) and Moldavia-Oltenia (the sub-Carpathian connection).

The local transportation company RATP, which is municipality owned, provides connections to all areas within the city. The municipal vehicle fleet comprised 193 buses, 62 trams and 10 trolleybuses carrying about 70 million passengers annually.

2 LA ROCHELLE

2.1 REAL TIME INFORMATION SYSTEMS

2.1.1 Context

The Urban Community has a large variety of transport modes and services. For many years, La Rochelle's transportation strategy aimed at developing new modes of transport, equipping the network with more vehicles and engendering a better frequency of the lines, giving a better network in terms of efficiency. Information to the users was not considered as a priority. In the 2000's, it has become a more crucial issue – users having maximum of quality information in a minimum amount of time. Some companies became specialised in this domain and proposed interesting and complete solutions, affordable for small local authorities.

Information to the users is becoming one of the priorities in La Rochelle. Indeed, users are giving greater importance not only to the efficiency of the network, but also to the information they are provided with: real-time and precise details about the status of the bus they are waiting for, potential problems in the network. These expectations are generated by some situations encountered in current everyday life:

- Buses late compared to the paper timetables at bus stops;
- No warnings about strikes, demonstrations;
- High comfort expected in public services.

PT users are so far provided with information on arrival/departure time of the buses through paper timetables at bus stops. Since late 2004, the whole bus fleet has been equipped with a GPS system indicating to the bus operator the exact position of the buses in real time. At the moment, this information has been used for the benefit of management, but not for the benefit of users.

2.1.2 City Objectives

In La Rochelle, the main objectives in this work package are:

- To develop real-time information for PT users
- To extend the bus ticketing system to other services or other modes, in order to make possible the use of one unique smartcard for everything.
- To offer new services to users in order to make the management of their subscription more flexible.

In order to reach these objectives, the following measures were launched in La Rochelle:

- Implementation of real-time information systems :
    - Departure panel at the central bus station
    - 36 terminals in shelters
    - Real-time information via mobile phones

- Extension of the smartcard system to PT modes other than bus, notably with the implementation of ticketing systems at the Park-and-Rides, allowing access to the P+R with the regular PT smartcard.
- Set-up of a remote management of the user subscription via Internet.

The objective is to set up a real-time information system within the area of the Urban Community, composed of two major projects:
- Implementation of 36 terminals in shelters on the main bus stops of the network and a departure panel in real-time at the central bus station
- Creation of a real-time information service by SMS, covering the entire network.

2.1.3 Achievements

The main transport hubs (Place de Verdun central bus station and railway station) have been equipped with real-time information panels and the 36 bus shelters with real-time information terminals.
This new system has been very well received by the bus users and few of them still use paper information at the bus stop.
Real-time information through mobile phones.
After 4 months of operation, 173 people have registered to the disruption alerts service, and 1181 requests for the waiting time at the bus stop have been received.

2.1.4 Implementation and operation actions

Terminals in the shelters

The first task consisted of studying both technical and economical points of view and the various solutions available on the market.
Alongside this, the Urban Community identified which bus stops of the Urban Community were worth equipping with terminals.

A call for tender was launched for acquiring at least 30 terminals. The tender of JC Decaux offered a real added-value from a technical point of view. Indeed, the equipment has been designed to fit in the bus shelters, also manufactured by JC Decaux - La Rochelle's supplier.

Each terminal includes 3 lines with LED characters. The information for each line serving the bus stop is:
- The number of the line
- The destination
- The real-time estimation of the next bus arrival, in minutes due

The first line mentions "line", "destination" "waiting time"

If more than two different lines serve the bus stop, the information will appear on different pages. Moreover, at the last bus journey, "LAST BUS" appears alternately with the destination. When no information is to be given (for example during the night or on Sunday), the hour appears on the terminal screen. The terminal also aims at providing users with information in case of disruption of the bus network.

A dedicated server has been installed at the bus depot with an interface communicating with the Vehicle Scheduling Control System (VSCS), essential for the real-time information on the terminals. The JC Decaux server updates every two seconds the VSCS information and translates it in a format compatible with the terminals. The data is transferred to the depot and then to an antenna covering the whole Urban Community. The antenna includes a specific box connected to each terminal at the bus stops. The link between the bus depot and the antenna has been exclusively established for this service, thanks to a Transfix line. The Urban Community signed a contract with 'France Telecom' for the creation of the line and the subscription. Another contract has been agreed with 'Télécommunications de France' (TDF) for specific installations and maintenance of the antenna. The activation of the service took 3 months. The opening of the telecommunication lines and the adjustments on the antenna has taken more time than initially foreseen.

Two main sources of technical problems were reported:
- Wrong arrival estimations due to an inability of the system to locate the bus in narrow streets in the city centre (problem in the GPS system in the bus). When it happens, the estimation of the following bus is announced.
- Only the hour is announced when the link between the bus depot and the shelter does not work. It can be caused by technical problems on the Transfix line of France Telecom or on the antenna box installed by TDF. Once both companies are informed of the problem, solutions are found usually quickly.

Real-time information through mobile phone.

- *Identification of the most appropriate system*

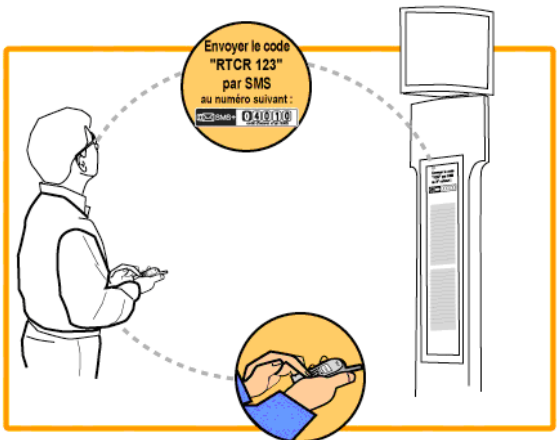
Two options had been initially considered by the Urban Community of La Rochelle.
The first one was the information on the departure times through a WAP interface. It consisted of the creation of a derived version of the operator website for the mobile phone, with a search engine for the consultation of the departure time by bus stop. This option has not been taken up for two reasons:

- Accessibility of the information: people using the internet through a mobile phone are mainly the 15-35 years old – and only a small part of them have access to such a technology. The others don't use this technology and find it difficult to use.
- Response time: a user waiting at the bus stop wants to have the information as quickly as possible. Going to a webpage through the WAP access has been judged too long and not very appropriate for this use.

The second option consisted in the launch of a vocal server, accessible through a phone number. A number would have been attributed to each bus stop; the user was supposed to enter the number of his/her bus stop and then, a voice would have announced the departure of the next bus(es). However, this option has not been retained: the suppliers had difficulties with this system – not reliable enough and expensive.

The project adopted was inspired by practices implemented in other European countries, especially in the United Kingdom where an information system on mobile phone exists all over the area. The system adopted in the UK provides users with theoretical departure time (schedules) at a bus stop by sending a SMS to a short and unique number. In La Rochelle, implementing such a system providing theoretical schedules would have been useless as they are already indicated in timetables at each bus stop. The idea of the Urban Community of La Rochelle has then been to implement a similar system but providing users with real-time information.

How does it work?



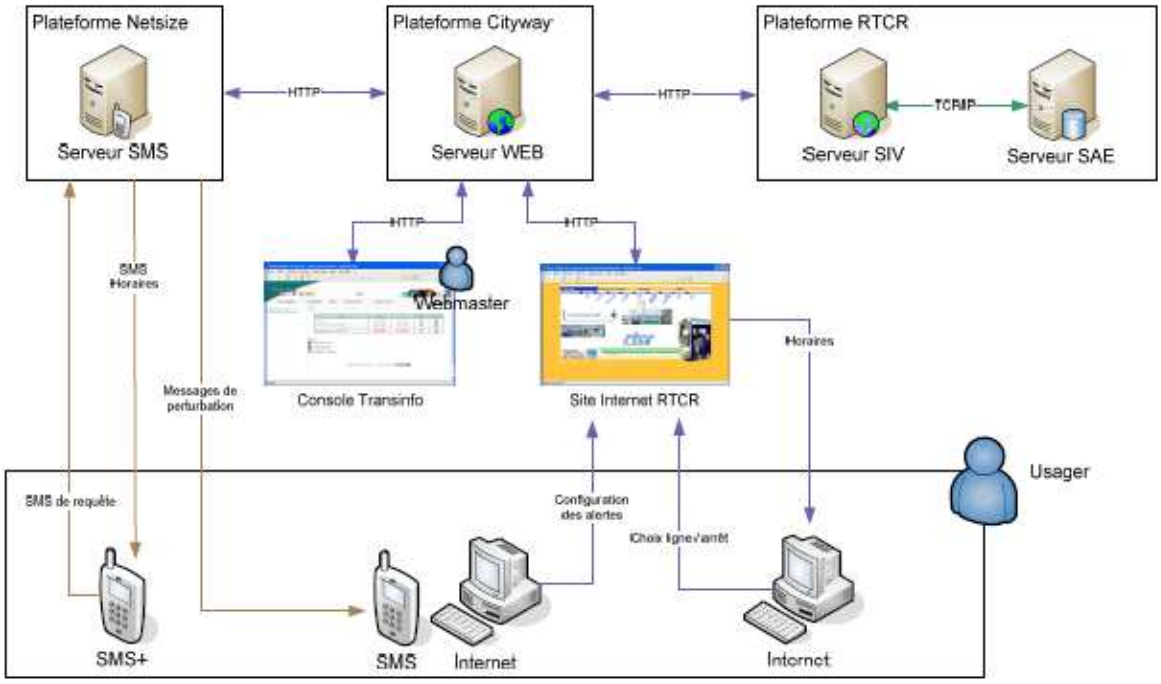
Example of use of the service

Information received by the users

The user first reads the number of his/her bus stop. He then types "monbus" followed by the number of the bus stop. After a few seconds the user receives the information by SMS. The service is available for each bus stop in the network.

-Technical details

After several months studying the various options, the implementation of the service took more than 6 months. The supplier of the system had to list all the bus stops in a database and associate each bus stop to its dedicated number, already attributed by the VSCS used by the bus operator. The database is connected to the VSCS to have the exact arrival time; also, it is also linked to a telephony platform (the Netsize society) which connects the VSCS to the mobile phones of the users.



Two configuration options were offered for the short phone number:

- A dedicated phone number: only our service would have used this call number and the users would have only sent the number of the bus stop.
- A common phone number: several services (including the one developed in La Rochelle) coexist on a same short number. An alternative identifier has to be defined and provided by the user in the SMS request.

The solution of the common phone number was chosen, mainly for financial purposes. Indeed, it represents a sizeable saving in comparison with the dedicated number, and the inconveniences are quite limited (a longer request SMS). It was decided together with the Communication department to choose “monbus” (mybus) as an identifier – easy to remember.

A series of tests have been set up to check the integrity of the data sent on the mobile phones. Indeed, the communication between the VSCS and other server for the users’ information has proved to be sometimes difficult to set up in the past: this test phase was an opportunity to avoid the delivery of a “semi-finished” service.

- Definition of the cost of the service

.

For such a service, the user will be charged extra when sending his/her SMS.

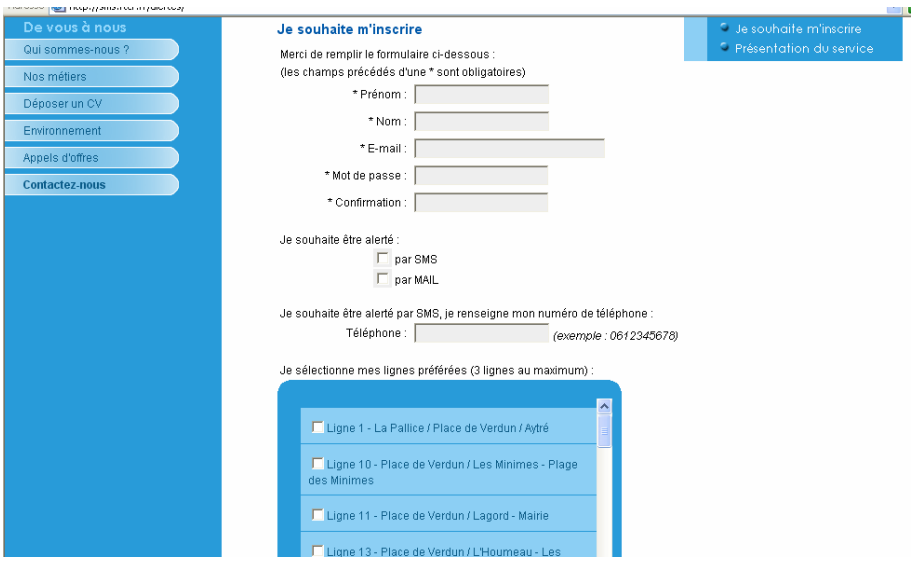
6 different extra-cost options are possible:

Paliers	Numéro commençant par	Prix du service
3	3xxxx	0,00 € TTC
4	4xxxx	0,05 € TTC
5	5xxxx	0,10 ou 0,20 € TTC
6	6xxxx	0,35 € TTC
7	7xxxx	0,50 € TTC
8	8xxxx	1,00 ou 1,50 € TTC

Option 3 corresponds to a free SMS service. It was rejected to avoid abuse of the system (using the service without need) and the potential hacking. As this is a public service and not a commercial one, local decision-makers chose level 4, with 0,05 € extra cost – affordable for all, notably the youngsters. This additional price covers the back office-SMS cost, supported by the local authority.

- free real-time information in case of disruption of the bus network

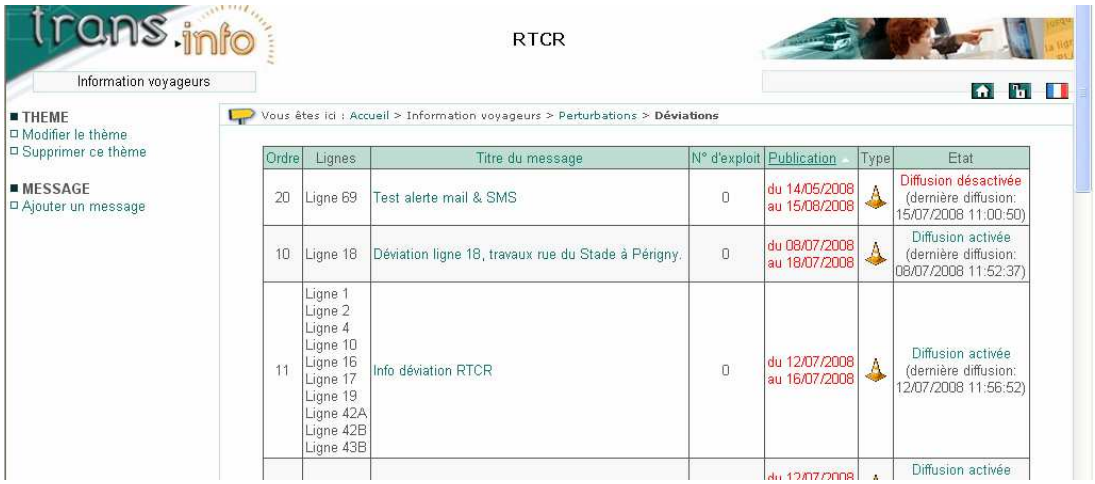
Another service has been implemented under the same contract: free real-time information through SMS and e-mail in case of disruption of the bus network. This service is directly accessible via the bus operator website (http://www.rtcr.fr) where a subscribing interface is available on line.



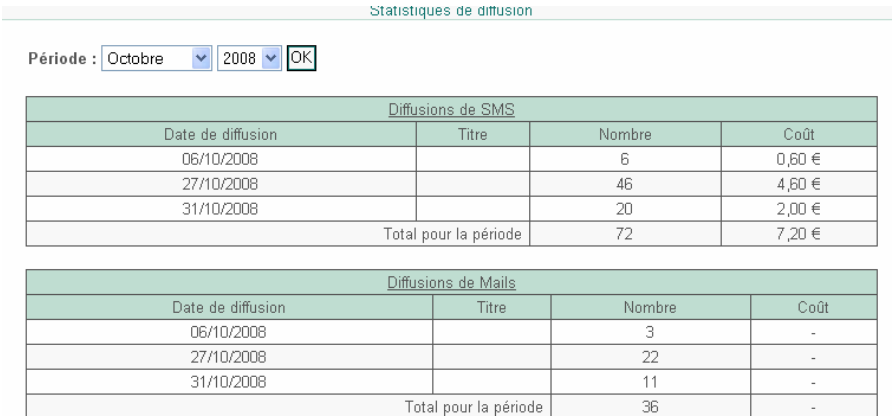
The user chooses to be informed either by SMS, by e-mail, or both of them, and then selects the bus lines he wants to be informed about.

For each disruption or diversion, the bus operator types the text to be sent either by e-mail and SMS. For example, a disruption on line 17 will only be sent to the users of the line 17 having registered to the service.

Each SMS costs 0, 10€/SMS to La Rochelle Urban Community.



The administration hub also enables easy monitoring of the e-mails and SMS sent and their cost per month.



2.1.5 Conclusions

The terminals installed at each bus stop bring permanent reassurance to the users, but the cost of the investment for the local authority can impede equipping the whole of a medium sized network. The mobile phone solution turns out to be a very interesting system, providing the user with information at a low price and covering all the bus stops of the network. To draw a comparison, implementing the SMS service on the whole network represented approximately the same cost as implementing 5 terminals in bus stops. Of course, it can be argued that user has to pay for the SMS service whereas obtaining the information through the terminals is free. However the choice can be made by the local authority to make this service free. The user would only assume the cost of an SMS, most of the time included in his mobile phone subscription. In that case, each demand would cost from 0,10€ to the local authority.

Summary: the SMS service is a highly appreciated service because it covers the entire network without huge investments (mainly because it doesn't require much equipment). The choice of the price setting impacts the degree of accessibility to the population. Also, it is interesting to offer a free and more visible service by equipping some bus stops with terminals, mainly at:

- *The hubs bus stops: railway stations, bus stations, airport*
- *The High Quality Bus Service bus stops*
- *The bus stops with a high tourist usage*

This equipment brings a high quality of service and comfort for the users.

2.2 EXTENSION OF THE BUS TICKETING SYSTEM TO THE PARK-AND-RIDES

2.2.1 Context

Before CIVITAS-SUCCESS, the Park-and-Ride Jean-Moulin/Vieux Port (South of La Rochelle) was equipped with a ticketing system independent from the rest of the PT network. The users carrying a PT smartcard had to buy another magnetic card with a validity stamp. In the framework of CIVITAS-SUCCESS, a second P+R has been installed in the North of La Rochelle. As the P+R's are integrated in the PT network (free access for the PT annual subscribers) and as the buses/shuttles reaching the city centre are PT vehicles, P+R users would like to access the P+R with their regular PT smartcard.

2.2.2 City Objectives

The global objective was to integrate the P+R ticketing system into the PT network.

2.2.3 Achievements

- Buses have been equipped with on-board smartcard validators
- The P+R Hermitage has been open since September 2006. The scheme is managed with the PT network ticketing system.
- The P+R Jean Moulin have been equipped with the same PT network ticketing system. The former system is still used but only for occasional visitors.
- The shuttles between the P+R and the Vieux Port have also been equipped with validators.

2.2.4 Implementation and operation actions

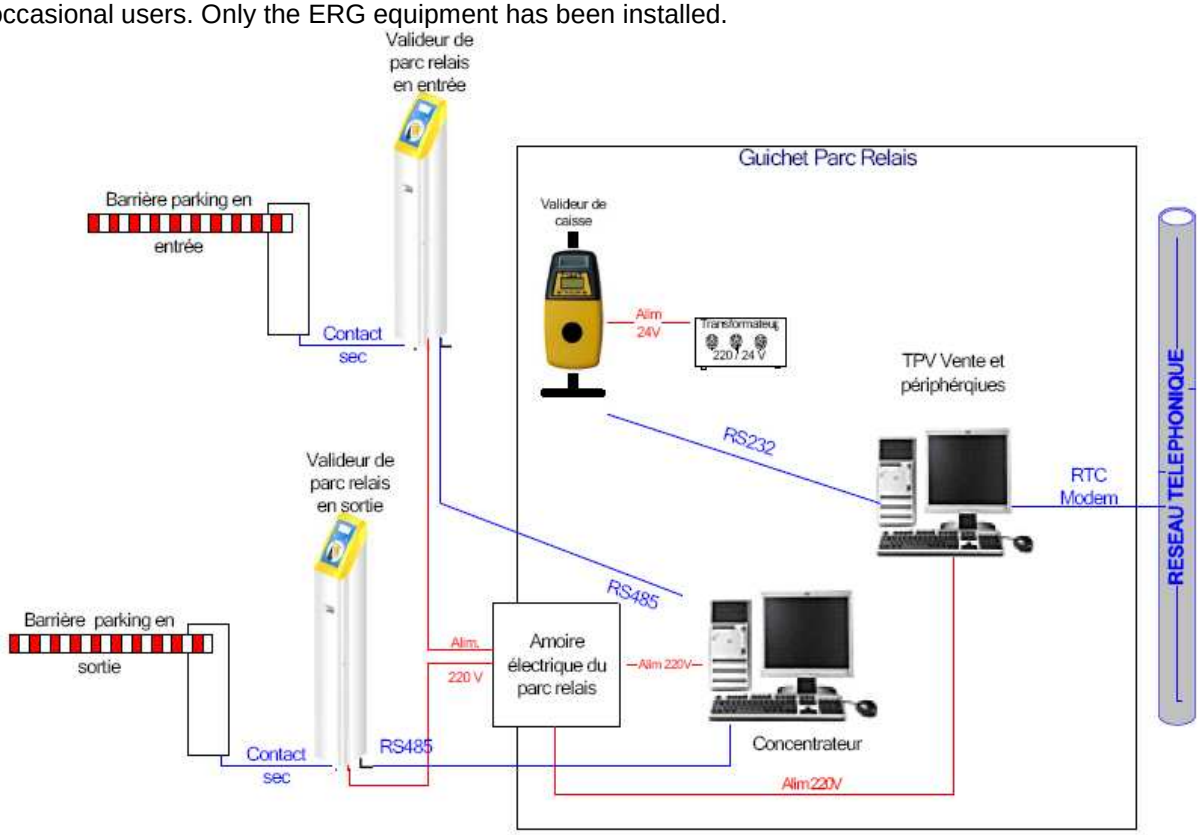
A significant part of the project was dedicated to the feasibility study**.** Indeed, the manufacturer of the ticketing equipment (ERG Transit Systems) never had an opportunity to manage a P+R scheme so far.

A system already existed in the Jean Moulin P+R, delivering magnetic tickets at the entrance. The user had to keep it until he pays and inserts it in the exit terminal.

As ERG Transit Systems could not install a system delivering magnetic tickets, it has not been possible to change in parallel the former system. A decision has been taken to have both systems coexist:

- One for the occasional users, using a magnetic ticket
- Another one for the PT users (ERG), allowing them to have access to the P+R through their regular PT smartcard.

As the P+R Hermitage was reserved for the PT users, it was not necessary to set up a system for occasional users. Only the ERG equipment has been installed.



Both P+Rs equipment are almost the same.

- An entrance validator connected to the entrance barrier.
- An exit validator connected to the exit barrier.
- A computer dedicated to monitoring the entrances and exit: users' data, statistics, authorised tickets.

This monitoring computer connects daily to the ERG ticketing server to update the users' modifications and send its usage statistics.

The tickets/smartcards are available at a selling point at P+R Jean Moulin. The Point of Sale Terminal (POS) is equipped with a computer with specialist software, an encoder saving the smartcards' contacts and magnetic tickets, and a printer to personalise the smartcards.

Compared to the in-depth study phase, the implementation phase has been quite short and the system operational in both P+R from September 2006. A lot of maintenance has been necessary to ensure the proper functioning of the equipment. Those have been recurrent but minor. Malfunctioning occurred in the connection between the P+R and the ticketing service of the network.

To allow the P+R access to the PT users, the concentrators have been customised. The validity of the contract is the information saved in the chip of the contactless smartcard. The smartcard is read directly without need to search in the database.

The hybrid shuttles have also been equipped with validators. The subscribers have access to the shuttles with their regular smartcard - the one used for the P+R and the bus. Occasional users are given a one day magnetic ticket, validated in the same validators.

2.2.5 Conclusions

All regular P+R users have been provided with a single smartcard for the PT and P+R[1].

Summary: the management of the users' entrance and exit and the statistics is now easier as they are included in the PT network data. A negative aspect is that it is so far impossible to make a P+R accessible for all (notably occasional users) only through the deliverance of regular PTsmartcards and PT magnetic tickets.

2.3 REMOTE MANAGEMENT OF THE USER SUBSCRIPTION VIA INTERNET

[1] The P+R subscribers without PT subscription also use the PT smartcard for simplicity and comfort reasons

2.3.1 Context

People had to come and renew their public transport subscription at the bus station located on the Place de Verdun. They sometimes had to queue for more than 45 minutes, especially in September, at the start of the school year.
In addition, a new ticket office has been created in the bus station for the “Les Mouettes” interurban departmental network, increasing the number of people coming to this selling point.

2.3.2 City objectives

The main objectives are to enlarge the functionality and the application domain of the pricing system approach and to develop an interface between the existing software to harmonise the pricing system in the Urban Community and with the surrounding zones (Park and Rides for example).

2.3.3 Achievements

The reloading interface has been put online for the bus operator from September 2008, after a long period of adjustments on the payment interface and the ticketing system. The first results are very encouraging as more than 400 subscribers have renewed their subscriptions after only a few weeks of operation.
Several positive points are to be highlighted:

- No more queue a the bus station
- Before the implementation of the website subscription service, a user whose contract had finished had not only to go to the bus station for renewing his subscription but to buy a ticket to go to the bus station! Therefore doing it by the Internet is really more convenient for them as it not only avoids queuing but also the smartcard can be used by the user once the transaction has been accepted.

2.3.4 Implementation actions

A contract has been passed with the ERG society, in charge of our ticketing system on the PT network. The project is divided into two main phases:

a- The equipping of the bus depot and the vehicles with a WIFI system

Several important problems have occurred since the beginning of the setting up of the ERG ticketing system (starting in 2003). The connection between the vehicles and the bus depot ticketing server used an infrared technology; this was quite slow for the reloading of the statistics and data from the bus validators. This connection occurred when the bus came and filled up with fuel, usually at the end of their service. However, frequent problems were reported: the time necessary for filling up the bus was not long enough to fully download the data. Some data, for example users’ contract updates, were not downloaded in the vehicles on the evening and often lost.
With the reloading service offered through the internet, a user must be guaranteed that he can use the bus the day after on any network with his smartcard. The update is done every night on all the vehicles. Consequently, 100% of the data has to be uploaded on the bus validators. It has therefore

been decided to change the connection system between the ticketing server and the buses, to use WIFI technology, which is more reliable than the infrared.

The more relevant difference with the WIFI is that a vehicle can update data at any point of the bus depot. A bus parked at any point on the bus depot has the whole night to update the complete data. Moreover, the transfers are totally reliable: if a transfer is not finished, the source files are not destroyed.

The set up of this system took quite a long time because modifications on the equipment have been required:

- Changing the software on the validators.
- Equipping of each vehicle with a WIFI antenna and WIFI interface.
- A WIFI antenna on the bus depot's main building, in connection with the ticketing server.
- Ticketing server update

A study on the WIFI coverage has been carried out to find the better place for the main antenna, in order to cover the whole bus depot and parking area. Only 1/5 vehicle have been equipped for the tests[2].

b- Reloading interface set up

The system is built around a platform "User Web service", utilising the interface between the web server (via a VPN – Virtual Private Network connection) and the ticketing server (via an Ethernet connection). The web service is used for:

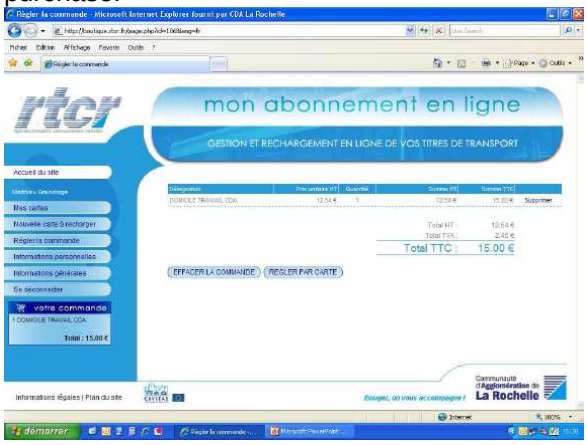
- The extraction of the data of the ticketing database to the telesales web server.
- The savings of the sales data from the web server to the ticketing server.

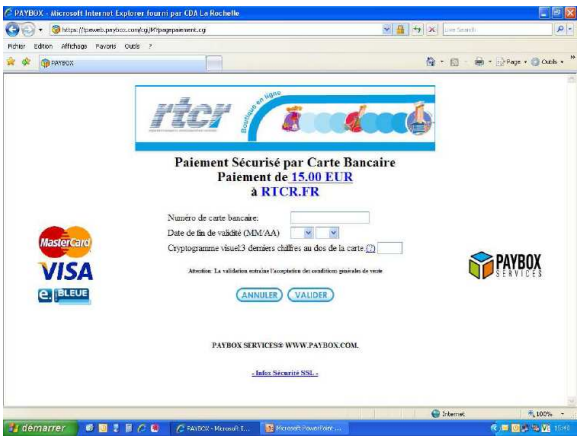
The subscription to a bank web application has been necessary to enable a secure payment with a credit card on the Internet[3].

[2] Late in 2004 during the implementation of the VSCS system, the whole fleet was equipped. However bugs were reported on the recently installed software and if an update was necessary, the reinstallation had to be done on all the vehicles, which caused a great loss of time. As for the boats (Passeur and Sea bus), they cannot benefit from the WIFI system as they don't remain in the harbour during the night. GPRS modems have been installed on the boats and on the ticketing server in the bus depot, allowing a daily download of the data.

[3] The transaction can be done with the bank of our choice, who proposes a monthly tariff for the subscription to this service. This application is on a secure server which validates the client's payment after keying the credit card data.

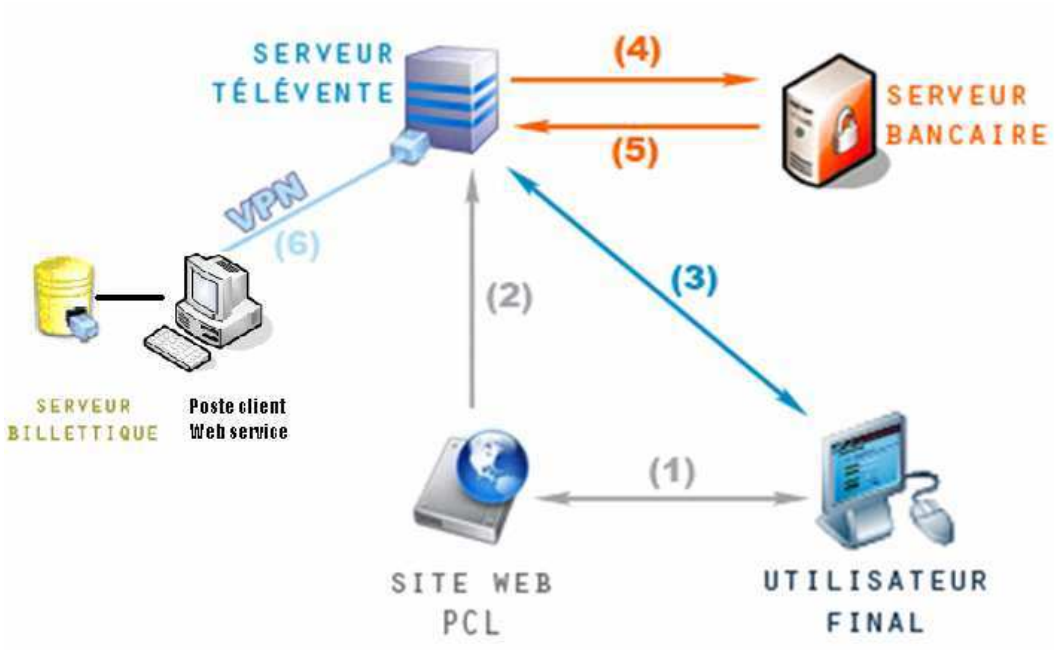
The selling interface is composed of several web pages. The first one corresponds to the client's identification or subscription if he uses the service for the first time, and the last one sums up the purchase.





From the users' point of view, everything is combined with the bus operator website, under the same graphical charter

The architecture is the following:



(1)The user goes on the website to reload his card.
(2)He connects to the web server
(3)He selects the different reloading options available for his seasonal ticket and pays.
(4)The web application asks the secure bank server to realize the payment.
(5)The secure bank server gives the confirmation of the payment or the non payment.
(6)The web server is connected to the bus operator ticketing server through a VPN connection. An estimation of the volume of transactions allows the definition of the flow and passes bandwidth between both servers.

NOTE: 1 "Serveur Télévente" is located on the client station Web Service to exchange the information with the server and the ticketing server.
NOTE 2: "Serveur Télévente" does not store any sensible information. This information is stored by the ticketing server, protected by the VPN.
The VPN (Virtual Private Network) enables the creation of a secure communication channel between two sites. The protection of the remote links is assured.

A client, creates a personal web space (log in & password).

On this project, a whole range of tests have been carried out to check the modification of the data in the ticketing database when a client renews his contract and its transfer toward all the vehicles.

Several problems have been detected on the validators. After updates of the software and tests among sample users, the service has been launched.

Promotion
- 1 200 mails have been sent to the subscribers
- Posters at the bus stops
- Leaflets
- Magnets
- Promotion of this new service on the terminals at the bus stops.

2.3.5 Conclusions

The set-up of the WIFI brought security and reliability in the data transfer between the vehicles and the ticketing server. The bus drivers are satisfied as they do not have to worry any longer about the data loading at the filling station, compelling them to wait extra time.
The first feedback on the subscriptions reloading via the internet seems quite positive: the users find it convenient not to have to go to the central bus station to renew their contract.

Reminder:

- *Internet reloading is an added-value service for the users and easily accessible through the PT operator website. The only negative point to be mentioned is that this service does not enable the creation of a complementary subscription on the same smartcard.*
- *The WIFI technology is the most efficient solution for the data transfer between the ticketing server and the vehicles. The system manages automatically the loading of the vehicles and there is no loss of data. Contrary to the infrared, the transfers are done quickly and the intervention of the drivers is not necessary.*

3 PRESTON

3.1.1 Context

3.1.2 City Objectives

Preston's WP 12 follows 3 themes:

- Improvements to Lancashire's Common Database
- Development of multimodal Web Travel and Transport Information.
- Application of Telematics to manage a Clear Zone including the introduction of a new Traffic Light Priority System

An introduction to this work package is explained on the information leaflet - Transport Telematics in Preston and South Ribble shown at the end of the report. The aim for this group of initiatives is to support the objectives of other measures in particular Work Package 6, which incorporates the Clear Zone proposals. WP12 also aims to develop timely and accessible information to enable travellers to make informed decisions. *Fig. 4* shows the themes and work elements of WP12.

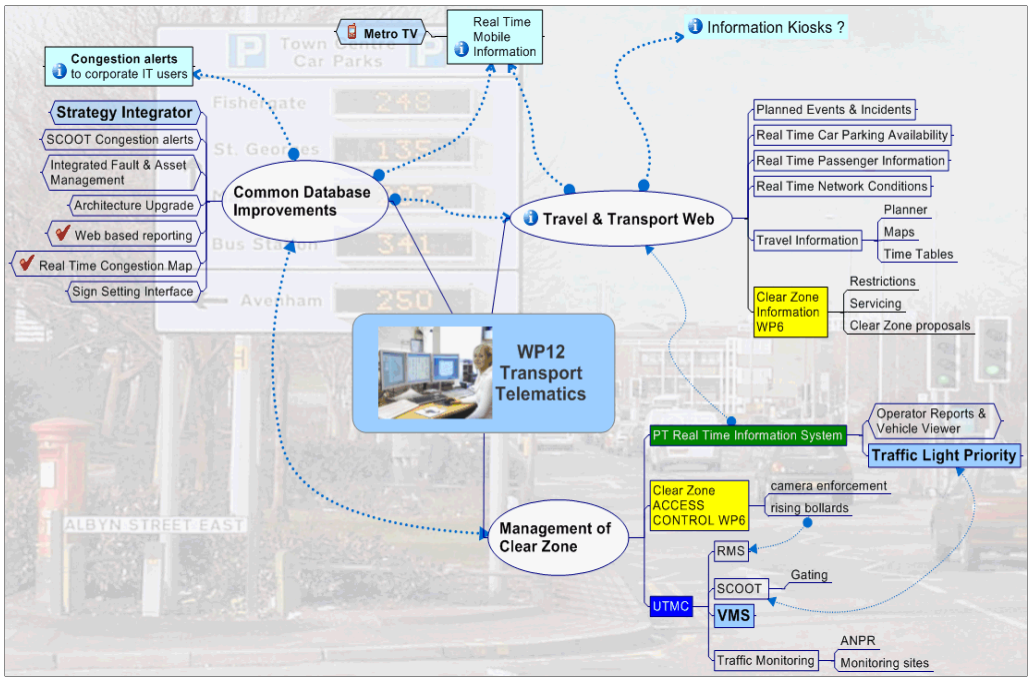
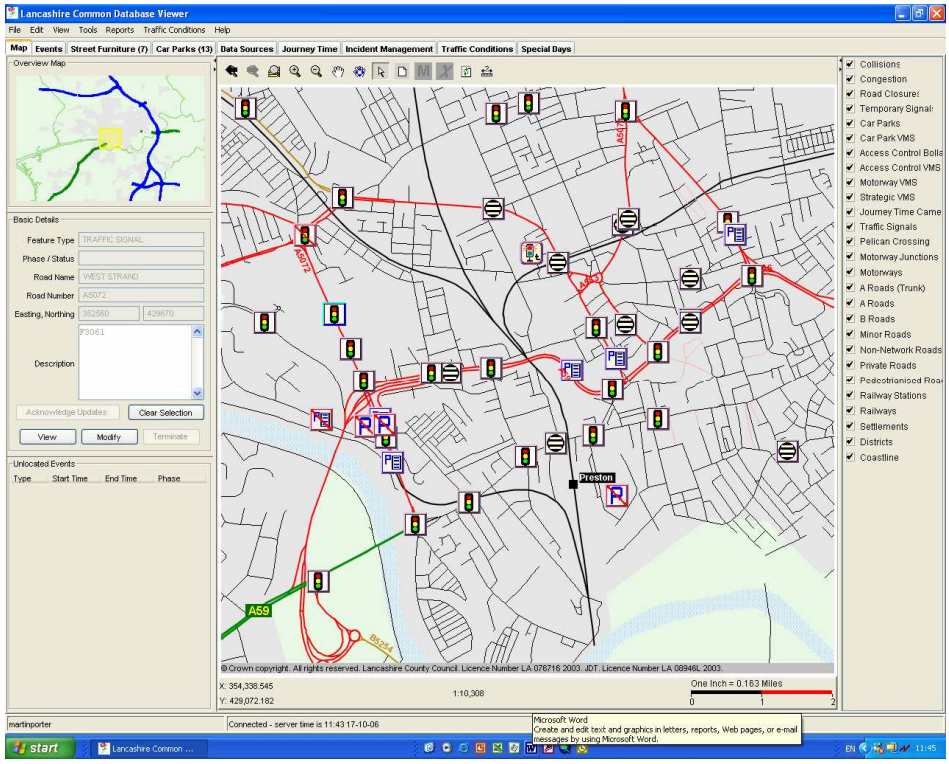


Fig. 1:Themes and work elements for WP12 Preston

3.2 IMPROVEMENT TO LANCASHIRE'S COMMON DATABASE

3.2.1 Context

The UTMC Common Database is a software package that collects data from various systems and can then provide information or take actions. *In Lancashire the Common database is essentially a tool used by the Traffic Systems Team as an aid to manage traffic flow on the County's highway network.* Technical descriptions of UTMC and the common database can be found at www.UTMC.com.uk. The image below shows the GUI to Lancashire's common database.



3.2.2 City Objectives

The main objectives of this work package will be firstly to reinforce the integration of the different transport information systems, which are often functionally dedicated and/or run by different operators. The second objective is to strengthen the services that information systems may bring to users. Some of these are already present, but are not presented to users in a unified way

3.2.3 Achievements

The improvement to the common database is centred on the procurement of a Strategy Integrator, which will provide greater functionality, flexibility and response for traffic management purposes in the SUCCESS area. The specification for this software development is the initial part of the design phase. The innovative design stage will centre on the development of particular network strategies to help with the management of the Clear Zone as well as other highway management requirements.

There are other associated enhancements to the common database that very much support the Strategy Integrator development and these are simultaneously being pursued. These developments include Architecture Improvements, Congestion Monitoring *using output from the UTC/SCOOT system and* Fault Management. The *Strategy Integrator* application has direct links to the successful operation of, for example, access control rising bollards as part of WP6. Two enhancements have already been procured and implemented through the SUCCESS project; Web based Management Reporting and Real Time Congestion Traffic Map.

The screen shots below are examples of these two enhancements:

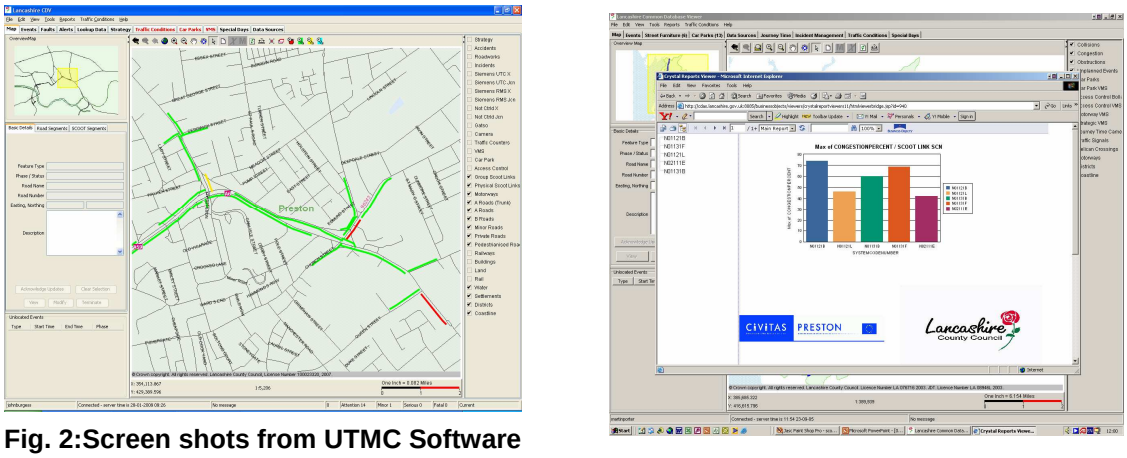


Fig. 2:Screen shots from UTMC Software

3.2.4 Implementation and operation actions

Development

The current UTMC common database has the capability to set sign messages automatically in response to congestion, but these strategies have to be built in by the software developer, Mott MacDonald. The Strategy Integrator is a fully operator configurable application that has an automatic interface to the SCOOT system as well as other systems.

The software is probably best described by its likely use, for example, by helping to manage the knock on effects that full car parks could have on network congestion. A particularly sensitive car park in the Clear Zone may be recorded on the Common Database as being full whilst at the same time the UTC/scoot system is reporting congestion on the road links approaching the car park. A possible cause is that traffic is having difficulty leaving the car park because the road links leaving the area are congested. The Strategy Integrator monitors the associated inputs and if both occur will trigger a strategy response that would implement a variety of actions in relation to traffic flow in the area. The first might be to set variable message signs outside the area to warn of the problem. A more positive response would be to trigger changes in the UTC system to change traffic signal sequences in favour of traffic leaving the car park. In this way spaces would be created in the car park thereby easing congestion on the approach road(s).

Trigger conditions can be set from a variety of sources in order to set conditions for a strategy to be activated. Car park occupancy is one obvious example, and the level of congestion or traffic flow on a

link in the SCOOT model can also be used. Congestion by other on street monitors can also be used. The other form of trigger is the creation of an event on a road link by an operator. This is again best illustrated by an example. It is likely that when an accident occurs on a particular road, drivers will divert to other routes. In Preston an accident on the A6 leading south out of the city will tend to generate extra traffic through part of the SUCCESS area with congestion likely to remain high for two or more hours after the incident has been cleared. By entering the incident onto the database this trigger can be used in a strategy to change signal timings to help the diversion route.

Strategies have three levels of operation within the Common database;

- Inactive – Not monitoring for trigger events. The Strategy Icon (Arrows arranged in a circle) is coloured blue on screen.
-

Active - Monitoring for trigger events. The icon is coloured red, yellow, and orange.

Running - Trigger levels detected. The icon turns green.

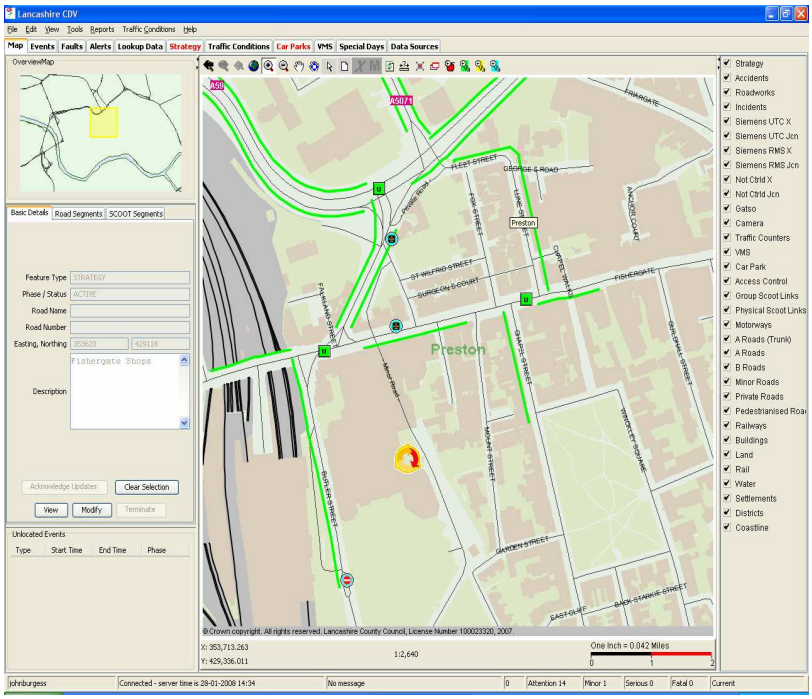


Fig.7: Strategy active, monitoring for trigger events.

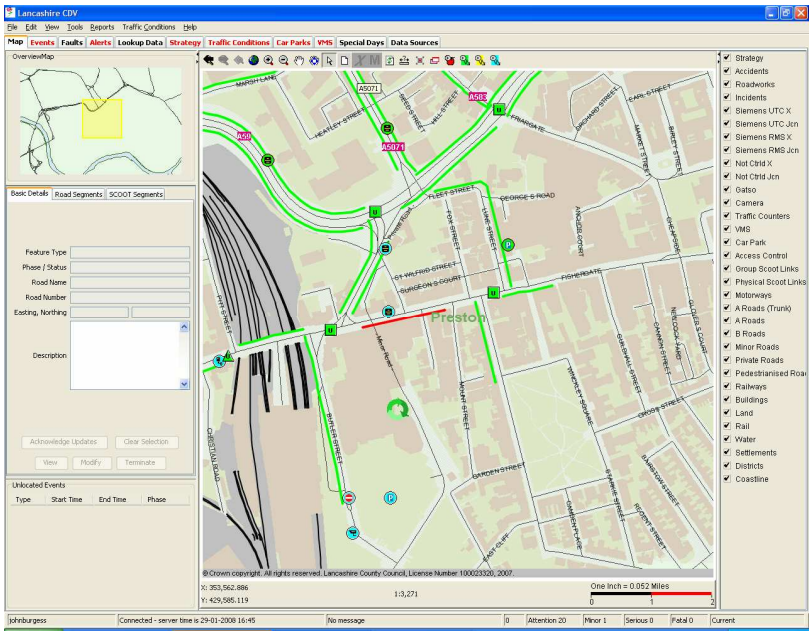


Fig.8 Strategy running, trigger conditions detected

The Common Database will also help with providing information to the Travel Information Web site described in Section 4.5. Events and other issues affecting traffic movement are recorded on the Common Database and those having a major impact will be automatically input to the Travel Website. Travellers will have access to this information either directly or via other parties such as local radio stations who it is anticipated will make use of the web site.

Partnership

The enhancements to the Common Database have been carried out in partnership with the supplier of the original system, Mott MacDonald. The work was based on a Task Proposal prepared by that company and approved by the County Council. Throughout the design process regular reviews were held to ensure that the development was progressing in a satisfactory manner. The County Council's corporate IT Section were also involved in the process, procuring the new server and assisting in its installation.

Promotion

Consideration is being given to the use of the common database in the three Area Offices of the Environment Directorate. These offices essentially cover the North, South and east of the County area. Information presented on the Common Database viewer may well be useful the 'AREA' staff in their day to day tasks, providing information on traffic conditions which might affect their own work programmes.

A series of presentations is being arranged for Area Office staff which will raise their awareness of the system and demonstrate the potential of the system for use beyond the confines of the Traffic systems control room.

Training

The system is essentially a tool to be used by engineering staff employed in the Traffic Systems Team. Accordingly, training has been undertaken at two levels:

i. Strategy Development for Senior Staff
ii. Strategy awareness for control room technicians

The first has enabled senior engineering staff to design new strategies with a variety of 'triggers' and response. The second has enabled operators to be aware of the status of strategies on the Common Database and bring alerts to the attention of senior staff.

3.2.5 Conclusions

The procurement of the new system was completed in November 2007. Some initial use of the Strategy Integrator was trialled over the Christmas period which followed.

One strategy set to monitor the status of two busiest car parks in the SUCCESS area alerted staff to a potential problem that would not have been recorded as a fault on the source Car park management system and consequently allowed engineers to make adjustments to the system to indicate to drivers the correct status of one of the two car parks.

Technicians on duty in the control room routinely monitor the system for strategy alerts and are to be surveyed using a questionnaire as to their awareness of strategy events.

Engineers are continuing to identify potential strategies and gather data on the highway conditions that can be used. This data collection is time consuming in respect of data from the SCOOT system on congestion levels. Whilst it is possible to identify actual high levels of congestion for use in strategies, the new system is still building average profiles for use in identifying when the level of congestion is excessive relative to the norm. This process will take several months to build realistic profiles.

3.3 TRAFFIC AND TRAVEL WEB INFORMATION

3.3.1 Context

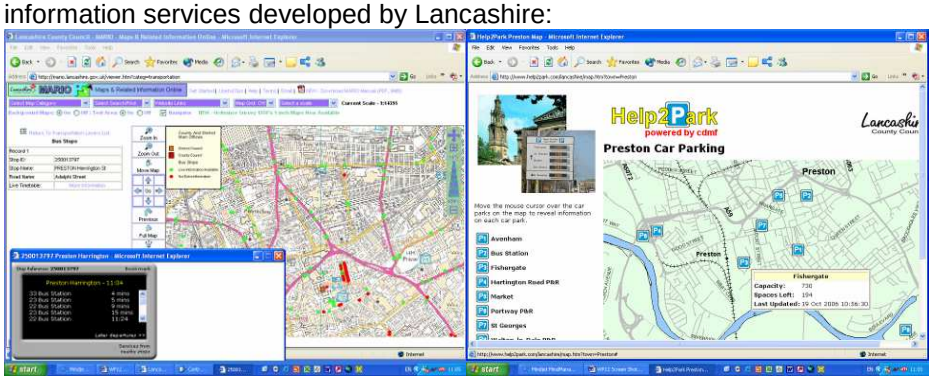
The Department for Transport has set out its policy framework for the roads sector regarding Intelligent Transport Systems and Lancashire's aim and objectives marry with this framework.

Journey planner, maps, timetables, options and information are currently available through transport for Lancashire but this site will be reviewed. It is expected that both map and menu based information would be made available. Mxdata's Metro TV product has the potential to replicate the design features of a travel web service to provide a consistent look and feel service.

Travellers typically want information about:

- The current state of the network based on real-time information about all transport modes
- Where congestion is and any special conditions (such as weather or incidents)
- Options for travel and who provides what service

The aim is to provide such a service through one web site by building upon the current Web based information services developed by Lancashire:



http://www.help2park.co.uk/ http://www.mario.lancashire.gov.uk/

Fig. 3:Examples of we-based travel information

Although there has been some integration of travel information it has been recognised that these sites do not provide the whole range of information in one place that travellers can easily access to enable them to make informed decisions.

3.3.2 City Objectives

The main objectives of this work package will be to strengthen the services that information systems bring to users. Other related objectives of such improvements will be: to improve the quality of travel information, to increase use of public transport and to reduce traffic congestion.

The specific aim of this project is to provide:

- Information for all travel modes.
- Real time as well as static information.
- GUI that is intuitive and accessible.
- Promote sustainable travel
- System that is easily maintainable but also has scope for development
- Addresses requirement of Network Management Duty of the Traffic Management Act
- Address Lancashire's e government requirements.

Although the extent of information available has not been finally decided it is expected that the following real time information would be included:

- Real time next bus information
- Car Parking availability
- Road network conditions
- Network incident information
- Information of planned highway works that could effect travel

Finally it is expected that the Clear Zone proposals and effects on travellers, delivery services, workers and visitors will need to be clearly publicised. The development of associated web information that also clearly explains the traffic restrictions as well as aims and objects will need to be developed to support the WP6 proposal.

3.3.3 Achievements

4.5.3.1 State of the Art Review of web based travel Information

This has been undertaken as the initial step in the development process. We have reviewed current good practice in the design and delivery of web based travel information, and thereby specified the look and feel of a state-of-the art site. Two principle activities have been undertaken:

- Assessment of previous studies of good practice in the design and delivery of travel information websites.
- Appraisal of current travel information websites.

User Needs Assessment for Travel Information Portal

A report has been produced on the user requirement for a web based travel information portal. The report has provided recommendations to enable Lancashire County Council to take steps towards the

development of a website that delivers transport information according to user needs and current good practice.

Life in Lancashire Transport Information

Life in Lancashire uses a panel of willing participants who were approached to seek their views on the theme of travel and transport information. The results have been very useful in guiding the development and marketing of the website.

A diagram showing the schematic functionality of the travel and transport web is shown below.

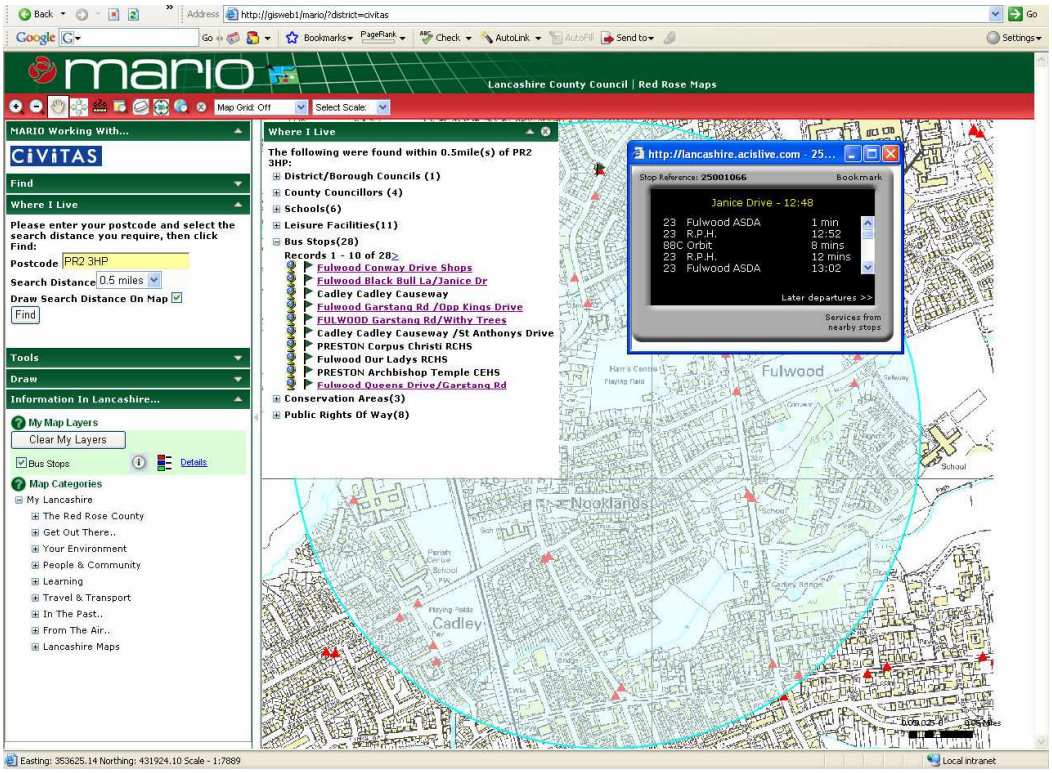
3.3.4 Implementation actions

Development

ArcGIS Server is the underling software for the web site. Lancashire County Council is currently customising this software. Datasets are being finalised. The project has procured ArcGIS Network Analyst and has been tested to provide network routing, travel directions, and closest facility functions.

The software that interfaces between the Common Database and the Web server is called SOAP. The SOAP specification for enhanced data exchange has been set out. Datasets are being finalised and beta versions of the software are being tested with a target date for a summer 2008 launch.

The screen shot below shows the beta version interface:



Partnership

Working groups have been developed with officers involved in promoting cycling, walking, public transport use and travel planning.

Promotion

A promotion and marketing action plan has been initiated with target set to reach the following level of use in Preston and South Ribble.

- Used regularly -10%
- Used occasionally -26%
- Heard of -22%

Training

User training and advice will be made available with interactive online help functions.

4 PLOIESTI

4.1 DEVELOPMENT OF THE GPS SYSTEM FOR THE PT FLEET

4.1.1 Context

The most important priority both for the board of directors and the employees is to increase the quality of the services offered to the citizens. According to the main target of RATP Ploiesti, namely to assure a safe and comfortable public transport for the passengers in Ploiesti, the board of directors established **the quality** as a basic principle for the whole activity.

In order to demonstrate our capacity to offer services according to users' requirements, in 2003 it was decided to implement the system for quality management SR EN ISO 9001: 2000. In July 2003 RATP Ploiesti became the first public transport company in Romania certified ISO 9001:2000.

RATP Ploiesti has been implementing a GPS system since December 2001 in order to introduce telematic innovations in dispatching. Before CIVITAS there were 41 buses which had GPS system as part of a pilot project. The buses worked on two lines: 30 and 44. These routes cross the centre of the city, the traffic congestion is avoided and, thus, the pollution is reduced. The GPS system for the PT fleet will be developed further on with the same supplier.

4.1.2 City Objectives

Ploiesti City Hall and RATPP (the public transport operator in Ploiesti) have a great interest in implementing telematics for the public transport. The GPS monitoring system will improve the quality of the public transport service and the real time information system is also a positive step as the passengers get useful information. Moreover, improving the quality of the public transport can attract new users for the PT. WP12 means innovations which help both the local transport operator and the passengers.

Before Civitas, there were no possibilities to control buses` activity according to their timetables. Moreover, the communication between drivers and depot was almost impossible, no possibilities to report any emergencies etc. The dispatching system was obsolete, i.e. dispatchers placed at the end of the routes, lots of subjectivity and delays in reporting the activity. The GPS system is the best way to improve communication, and the fleet is very well co-ordinated from a central dispatching point.

4.1.3 Achievements

The whole bus fleet is equipped with GPS monitoring devices. Moreover, RATPP started to equip its trolleys buses. The first 15 trolleys buses were equipped by the end of 2006 and the other 10 units have been equipped during the next reporting period. Therefore, all the trolleys are now equipped with GPS monitoring devices. The number of monitored routes has been increased from 10 to 14.

There is a unique dispatching centre located at RATPP headquarters. There are 26 dispatchers who work in three shifts, 24 hours a day, and there is no subjectivity in their work.

Fig. 1 GPS Dispatching centre

There is a database, including an archive, which contains all the data we need to prove the real activity of the buses/drivers.

The data transmitted via GPS and GPRS and is displayed on real time information panels located in the main stops along the monitored lines. Before Civitas, there were 10 panels installed in bus stops located in the centre of the city. Another 28 panels have been purchased an installed during Civitas-Success project.

Fig. 2 Real time information panel

4.1.4 Implementation actions

The activity within CIVITAS-SUCCESS project started in Month 7 (August 2005). We started working on this measure appointing the local leaders of the work package and the measure, the tasks and the risks of the measure were established.

The GPS system was developed with the same supplier. The monitoring on-board devices have been gradually purchased so that the entire fleet is equipped. In 2005 RATPP bought and installed 64

monitoring devices. In 2006, another 105 GPS devices were purchased all the fleet being now able to receive/transmit real time data.

Fig. 3 On-board monitoring device

Partnership

Local partnership between RATPP, Ploiesti City Hall and “Petroleum-Gas” University is one of the keys to implementing telematics successfully.

Our supplier is also of great importance in implementing and developing the GPS system. Technology evolves and there is a continually need to improve software, vector maps, GPS equipment and so on.

Promotion

Dissemination posters were placed inside the buses in order to inform the passengers about the GPS system installed within Civitas-Success project. There were also stickers placed on the real time information panels.

Training

Several training sessions have taken place within the project. At first, the supplier trained dispatchers, the technical co-ordinator and other staff involved in traffic monitoring department. The drivers were also trained to properly use the on-board monitoring devices.

Then, monthly trainings sessions have been held in order to analyse and solve various problems that appear in normal operation of the GPS system.

Moreover, training takes place every time there are improvements of the system. Both drivers and dispatchers are informed about any changes that can appear in the system.

4.1.5 Conclusions

It is obvious that there are many advantages of using the GPS system. This has been already proved by its implementation all over the Europe.

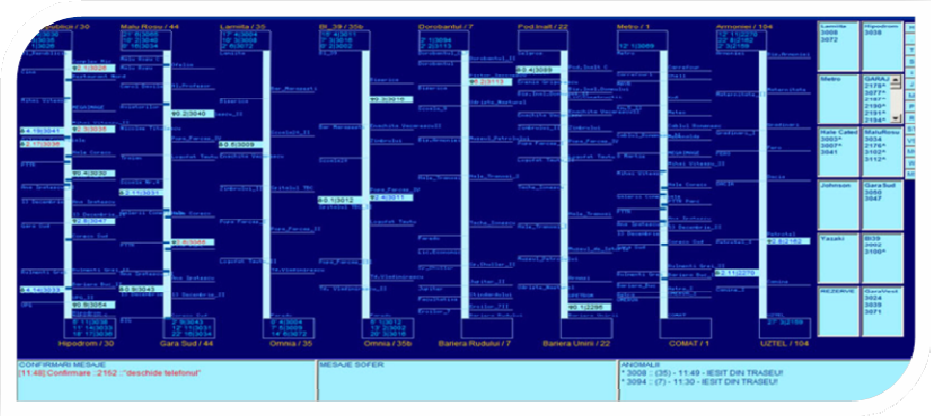
There are many advantages in Ploiesti: - This measure is a real **SUCCESS** because the quality of the public transport in Ploiesti is continually improved, the timetables being better accomplished. Despite

the fact that the passengers don't really know how the GPS system works, they can realise the improvements day by day.

There is a unique dispatching centre where all the data is stored, quality reports are obtained daily, and corrective actions are taken according to each unexpected situation.

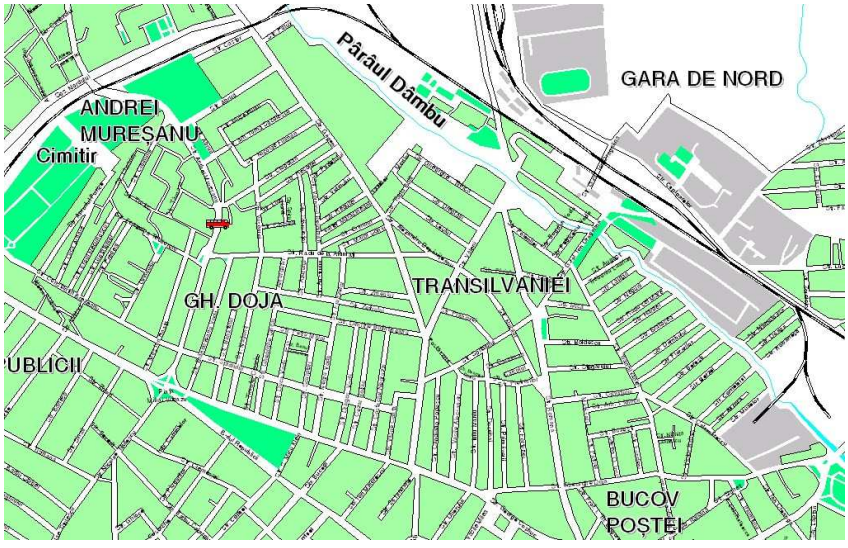
The figure below shows eight monitored lines displayed on the computer screen. All the stops of each line are included and the location of the vehicles is monitored in real time. If the vehicles are ahead or behind the timetable, the dispatcher announces to the driver by means of a written pre-defined message which is displayed on the on-board monitoring device. Then, the driver can take corrective actions if the problem is easily solved. If the problem is more serious, i.e. traffic jams, technical damages etc., the driver sends a written pre-defined message to the dispatching centre. The dispatcher can rearrange the timetable, increasing automatically the time between vehicles until the fault is solved or the vehicle is replaced by another one.

Fig. 7 Screen shot presenting eight monitored lines



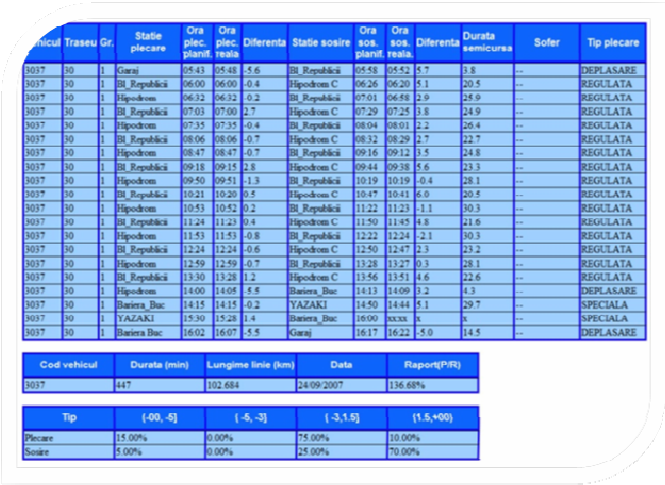
The next figure shows a part of the city map where a bus is located. It is very important to check in real time where each bus is (either if it is on route or in the bus depot). The dispatcher knows in real time whether the driver keeps the route or not. The driver is aware of this and knows he must fulfil all his duties according to the schedule.

Fig. 8 Vector city map



The figure below shows various data stored in the database. All the data is archived so that information about vehicle can be used in case of emergency. For example, if an accident occurred in a certain part of the city we can find out which of the buses were in that area to give additional information to the police or to whom may concern.

Fig. 9 Sample of the information in the database (screen shot)



hicul	Traseu	Gr.	Statie plecare	Ora plec. planif.	Ora plec. reala	Diferenta	Statie sosire	Ora sos. planif.	Ora sos. reala	Diferenta	Durata semicursa	Sofer	Tip plecare
3037	30	1	Garaj	05:43	05:48	-5.6	Bl_Republicii	05:58	05:52	5.7	3.8	--	DEPLASARE
3037	30	1	Bl_Republicii	06:00	06:00	-0.4	Hipodrom C	06:26	06:20	5.1	20.5	--	REGULATA
3037	30	1	Hipodrom	06:32	06:32	-0.2	Bl_Republicii	07:01	06:58	2.9	25.9	--	REGULATA
3037	30	1	Bl_Republicii	07:03	07:00	2.7	Hipodrom C	07:29	07:25	3.8	24.9	--	REGULATA
3037	30	1	Hipodrom	07:35	07:35	-0.4	Bl_Republicii	08:04	08:01	2.2	26.4	--	REGULATA
3037	30	1	Bl_Republicii	08:06	08:06	-0.7	Hipodrom C	08:32	08:29	2.7	22.7	--	REGULATA
3037	30	1	Hipodrom	08:47	08:47	-0.7	Bl_Republicii	09:16	09:12	3.5	24.8	--	REGULATA
3037	30	1	Bl_Republicii	09:18	09:15	2.8	Hipodrom C	09:44	09:38	5.6	23.3	--	REGULATA
3037	30	1	Hipodrom	09:50	09:51	-1.3	Bl_Republicii	10:19	10:19	-0.4	28.1	--	REGULATA
3037	30	1	Bl_Republicii	10:21	10:20	0.5	Hipodrom C	10:47	10:41	6.0	20.5	--	REGULATA
3037	30	1	Hipodrom	10:53	10:52	0.2	Bl_Republicii	11:22	11:23	-1.1	30.3	--	REGULATA
3037	30	1	Bl_Republicii	11:24	11:23	0.4	Hipodrom C	11:50	11:45	4.8	21.6	--	REGULATA
3037	30	1	Hipodrom	11:53	11:53	-0.8	Bl_Republicii	12:22	12:24	-2.1	30.3	--	REGULATA
3037	30	1	Bl_Republicii	12:24	12:24	-0.6	Hipodrom C	12:50	12:47	2.3	23.2	--	REGULATA
3037	30	1	Hipodrom	12:59	12:59	-0.7	Bl_Republicii	13:28	13:27	0.3	28.1	--	REGULATA
3037	30	1	Bl_Republicii	13:30	13:28	1.2	Hipodrom C	13:56	13:51	4.6	22.6	--	REGULATA
3037	30	1	Hipodrom	14:00	14:05	-5.5	Bariera_Buc	14:13	14:09	3.2	4.3	--	DEPLASARE
3037	30	1	Bariera_Buc	14:15	14:15	-0.2	YAZAKI	14:50	14:44	5.1	29.7	--	SPECIALA
3037	30	1	YAZAKI	15:30	15:28	1.4	Bariera_Buc	16:00	xxxx	x	x	--	SPECIALA
3037	30	1	Bariera Buc	16:02	16:07	-5.5	Garaj	16:17	16:22	-5.0	14.5	--	DEPLASARE

Cod vehicul	Durata (min)	Lungime linie (km)	Data	Raport(P/R)
3037	447	102.684	24/09/2007	136.68%

Tip	(-00, -5]	(-5, -3]	(-3,1.5]	(1.5,+00)
Plecare	15.00%	0.00%	75.00%	10.00%
Sosire	5.00%	0.00%	25.00%	70.00%

There were also some difficulties in implementing the GPS system.

The GPS system was initially rejected by the drivers. Therefore, there were misunderstandings between dispatchers and drivers. That's why several meetings have been held in order to demonstrate the usefulness of the GPS system both for the drivers and the PT users. Moreover, the dispatchers help the drivers to do their work properly.

To avoid this possible conflict situation, we recommend, to whoever it may concern, to prepare a training session prior to implementation of the GPS system. Meetings to describe how the GPS system works as well as its usefulness in improving the PT quality and co-operation between all the persons/departments involved in this activity are of great importance.

There are also situations when the communication between the drivers and dispatching centre is interrupted because of technical malfunctions of the system. It is important to have a secondary method of communication, for example cell phones (as it is the case in RATPP) or other communication devices. It is also important to foresee these situations before concluding the contract with the supplier in order to have certain penalties in case of malfunctions.

5 REFERENCES

Real Time Information Systems

TRIS Online, National Transportation Library, http://ntlsearch.bts.gov/tris/index.do

The Transportation Research Information Services was launched by the Transportation Research Board (TRB) to establish a comprehensive database and multimodal (roads, TC, air and sea) of research publications on transport. TRIS Online contains more than 475,520 records updated on a regular basis.

GpsPasSion, http://www.gpspassion.com/fr/default.asp?_SetCurrentVersion=EN

GpsPasSion is a forum that aims to share news, tests, opinions and assistance on personal GPS receivers and navigation software.

Intelligent Transport Systems, FHWA EDL, http://www.its.dot.gov/index.htm

This is the online bookstore FHWA of all documents concerning its diffusion to date. A catalog of an astonishing wealth alphabetical order.

CIR, Centre Informatique Recherche, http://www.inrets.fr/ur/cir/rech_cir.htm

The Science Research Center, established in 1970, is a common and INRETS Laboratoire Central des Ponts et Chaussées. It has set up a search engine focused on a broad base of links devoted to transport and safety.

ADIT – France http://www.adit.fr/

The Agency for the Dissemination of Information Technology is under ministerial (Decree 25 May 1992) and aims to collect, process and disseminate scientific information and technology, to support the development of French companies.

ITSIndex http://itsindex.com/

Sponsored by I95 Corridor Coalition, ITSIndex is a portal dedicated to the ITS. Hundreds of links

NAWGITS http://www.ntoctalks.com/its_res1.html

The National Associations Working Group for ITS, in partnership with the U.S. DOT is composed of national associations (state and local) and suppliers of transport services with a common interest dissemination of ITS technologies. The NAWGITS also facilitates the ITS Cooperative Deployment Network, a resource base on the Internet containing updated information on many of the professional world of transport. The site ICDN succeeded ITS Online which ended in January 1998 (many records).

Autoroutes Trafic http://www.trafic.asf.fr/

The Web traffic is an information service on traffic conditions in real time with a European vocation carried out in partnership with different dealers and managers of road and motorway networks. From the traffic information and évènementielles provided by all partners, GIE Autoroutes Traffic ensures the generation of Web traffic maps on the Internet.

DRM http://www.drm.jp/ The Japan Digital Road Map Association was founded in 1988 to produce and update databases for the entire road network and prepare Japanese, including in terms of standards, the digital maps used in applications ITS such as navigation systems.

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