



Car Sharing in Practice

Intelligent Service for Sustainable Personal Mobility



Conference proceedings

**TOSCA project final conference
6 February 2002, Bologna**

**Conference co-organised by ATC Bologna,
the Municipality of Bologna and Polis.**





Car Sharing in Practice

Car Sharing in Practice - Intelligent service for sustainable personal mobility is the final conference of the TOSCA project (Sept. 2000 – Feb. 2002).

Building on success of pilot experiences, the TOSCA project supports the take-up of IT-based Car Sharing throughout Europe. The project partners have developed and implemented a pilot Car Sharing service in Bologna, based on the experience of Bremen. This project, funded by the European Commission's IST programme, also promotes best practice for Car Sharing in Europe.

This conference not only provides the opportunity to learn "on the spot" how leading-edge Car Sharing technologies have been transferred, but also addresses the future of Car Sharing as an integrated mobility concept for European cities. In the recently published EC White Paper on Common Transport Policy, Car sharing is quoted as being promising. Therefore this conference is timely to explore avenues for future cooperation.

TOSCA project partners

- **ATC Bologna** – Co-ordinator and main contractor
- **City of Bremen** – Supplier of Car Sharing Strategic know-how

Followers

- **TMB** – Metropolitan Barcelona Transport
- **RATB** – Regia Autonoma de Transport Bucuresti
- **Auto'Trement Strasbourg**

- **Invers** – Supplier of hardware and software elements
- **Rupprecht Consult** – Evaluation coordinator
- **Polis** – Networking and dissemination coordinator
- **Access** – Networking and dissemination activities
- **Cambio** – Consultant for business an implementation planning



Conference Agenda

9.00	Registration
9.30	Welcome Franco Pellizzer, Assessore alla Mobilità, Comune di Bologna Maurizio Agostini, ATC President, & Claudio Claroni, ATC General Manager
I: CAR SHARING & SUSTAINABLE MOBILITY	
9.45	Chair: Nicola Nassisi, ATC Bologna The European Perspective on Car Sharing Lasse Buschmann-Nielsen, Directorate General Information Society, European Commission
10.00	Car Sharing & Integration into Urban Sustainability The experience of Bremen Michael Glotz-Richter, Freie Hansestadt Bremen
10.25	Car Sharing & Public Transport Together for a comprehensive mobility Mohammed Mezghani, Director Programmes and Studies, UITP (International Association of Public Transport)
10.45	TOSCA in Bologna Transfer of IT-based Car Sharing Mirco Armandi, ATC Bologna
11.00	<i>Coffee break</i>
II: CAR SHARING IN ITALY	
11.30	Chair: Mirco Armandi, ATC Bologna Car Sharing in Italy: ICS, Iniziativa Car Sharing Marco Mastretta, ICS General Manager
11.45	Car Sharing Take Up Experience in Italy: Bologna "CarAtc" & future developments Nicola Nassisi, ATC Bologna
12:10	Impacts of IST- based Car Sharing TOSCA evaluation results Siegfried Rupprecht, Rupprecht Consult GmbH
12.25	Discussion
12.45	<i>Lunch</i> Meet the experts Exhibition of Car Sharing organisations in the lobby

III: CAR SHARING IN PRACTICE	
14.00	<p>Practical Demonstration: CarAtc & Car Sharing technology (outside the conference venue)</p> <ul style="list-style-type: none"> • CarAtc auto • Smart card (online booking, admission to vehicle, financial administration) • On-board computer <p>Uwe Latsch, INVERS Mauro Maccagnani, ATC Bologna</p>
15.00	<i>Coffee break</i>
IV: EUROPEAN CAR SHARING TAKE-UP	
	Chair: Michael Glotz-Richter, Freie Hansestadt Bremen
15.30	<p>Evolutionary Approach of Private-Public Cooperation Jean-Baptiste Schmider, Auto'trement Strasbourg Odile Costa-Ausina, Communauté Urbaine de Strasbourg</p>
15.50	<p>Visions for Mobility Strategy Manuel Villalante I Llaurodo, Metropolitan Transport Barcelona (TMB)</p>
16.10	<p>Maintaining high Transport Patronage Florin Dragomir, Bucharest Transport Company</p>
16.30	Discussion & conclusion
17.00	<p>End of conference Meet the experts Exhibition of Car Sharing organisations in the lobby CarAtc Smart car test (outside the conference venue)</p>



Summaries of presentations

The European Perspective on Car Sharing

Lasse Buschmann

Directorate General Information Society,
European Commission

Beside the obvious benefits of car sharing in relation to society, there is also a special need to look at the individual's special preferences in order to secure that the user is satisfied and that larger groups can be targeted. In order to implement this, Car Sharing systems must have a certain scale / mass.

For wide-spread usage, it is important to standardise the technology especially within smart cards, billing and European-wide booking. This is to ensure European-wide mobility for the citizen.

At the same time, Car Sharing systems must be easy to use in a standard way like for example using a telephone. This will secure a wider acceptance of the systems.

At European level, standardisation work must be considered as well as clarifying legal aspects of European-wide usage of Car Sharing systems.

Disclaimer: The views presented are the views of the Author and not necessarily of the European Commission.

Car Sharing and Integration into Urban Sustainability

The example of Bremen

Michael Glotz-Richter
Freie Hansestadt Bremen

Car-Sharing to solve common problems



Too many cars – the same problem in Bologna....



...as in Bremen

There are similar problems for cities all over Europe: too many cars on the streets! There is not only a problem of congestion but also the lack of space for other functions of public space, like space for pedestrians and children, for cyclists, for greening etc. As parking is a very sensitive political issue, innovative solutions are necessary.

In Bremen the service of Car-Sharing started its business with about 30 members and a small fleet of 4 cars in November 1990. Meanwhile, there are about 2500 customers of the operator 'cambio StadtAuto Bremen' and a fleet of almost 100 cars – located at more than 40 stations all over the city.

Car-Sharing - a modern mobility service – how does it work?

Car-Sharing is a service that gives access to a fleet of cars – with easy and unbureaucratic procedures, using the latest technology. The TOSCA project transfers modern but already practice-proved telematics to be used to reduce the need for a private car.

Car-Sharing is a service that gives access to a car – whenever it is required. Clients of Car-Sharing operator have usually got a smart-card and a PIN code for access to the vehicles. The customer can book the car either via the call-centre (with a 24 hrs service) or the Internet (www.cambiocar.de). You can directly book cars in all "cambio-cities" and gather further information about the cars, details of the location etc.

If you have booked a car at a certain location you can directly also get the information about how to get there with Public Transport. There is a direct link with the trip-planner of the Public Transport company (www.bsag.de) – that even offers you a map with the walk from the nearest stop to the Car-Sharing location.

The drive data will be transmitted electronically. You will receive a monthly bill with detailed information about the riding data and the costs

The billing is according to the time of use and the driven mileage.

There are different types of cars available in the cambio fleet – from the small 'smart' up to also vans and mini-busses. The composition of the fleet allows even more flexibility than the private car. The availability of cars similar to the conventional private car is an essential element to attract many customers. Smaller cars are cheaper than larger ones – which gives an incentive to book smaller cars.

Impacts of Car-Sharing

The experience of a bit more than ten years of Car-Sharing shows, that Car-Sharing reduces the number of cars – as each Car-Sharing vehicle replaces 4 - 10 private cars
reduces the mileage driven by car – as the pay-as-you drive system is an incentive to drive less by car
increases the use of Public Transport and other modes of environmentally friendly transport
improves the environmental quality of cities
uses less polluting cars.

Car-Sharing is already existing in Germany, Switzerland, Austria, the Netherlands and in small-scale operation in some other European countries. About 100.000 people already use that modern service in Europe! With the support of the European Commission that figure is going to be extended.

Car-Sharing is an element of the strategies of sustainable development – as it offers a full alternative to the private car. It is a supplement to cycling, walking, public transport etc. Therefore Car-Sharing can play an important role to relief our cities from the burden of traffic.

Car-Sharing and Public Transport

Since 1998, there is a common offer of the Bremen Public Transport company BSAG (Bremer Strassenbahn AG) for a special tariff – including the annual season ticket for Public Transport (Bremer Karte) and the electronic car-key for Car-Sharing (AutoCard).

The user of Public Transport are quite often more rational in their modal choice. Therefore there are the right clients for Car-Sharing at the stops and in the vehicles. Stickers outside and inside PT vehicles, posters and stops and further information inform about the service

Quality Standards for Car-Sharing

To ensure a high environmental quality, the official German eco-label has defined requirements for environmentally friendly Car-Sharing. The major requirements are:

- high service quality (e.g. 24 hrs service etc.)
- pay-as-you drive (no free mileage)
- good environmental performance of the cars.

The requirements take into account that the major environmental benefits come from the change of mobility patterns and the replacements of private cars.

Car-Sharing for sustainable urban development

Car-Sharing can also be used to reduce the provision of parking in new developments – or reduce the problems in the existing neighbourhoods. For new developments which have good access to Public Transport, cycling facilities etc, Car-Sharing allows to save a lot of investment costs which are otherwise spent for a high level of parking provision.

The recently realised Bremer Beginenhof is such a model, where the (underground) parking has been drastically reduced as a Car-Sharing station (for the benefit of the entire neighbourhood) has been established on the ground of the new development. Good Public Transport access is of course a precondition for such less car-dependent developments.



life-quality instead of parked cars...



...Car-Sharing at the 'Beginenhof' Bremen

The integration of Car-Sharing into urban development is a key function to increase the efficiency of the urban infrastructure, to supplement Public Transport and to improve life quality in the streets.

The contribution of Car-Sharing to the 'City of Tomorrow' is a key point of the European *moses* project – with Bremen, Genoa, London, Palermo, Stockholm, Turin, the region of Wallonia and UITP as interface to public transport operators.

For further information: please contact www.moses-europe.org.

Conclusion

Car-Sharing is an example for applying modern telematics technologies within an innovative service module. The experience of the reference case Bremen (and other cases) has shown how much Car-Sharing does contribute to a more rational use of the car and to more sustainability in transport and urban development.

Life-quality in cities is the keyword. TOSCA did support the transfer of experience for the development in Bologna. There are many further options for the development of Car-Sharing in Europe – in terms of technology and service improvements. Only with the integration into intermodal services and into urban development the huge potential for the European city can be accessed.

Car Sharing & Public Transport Together for a Comprehensive Mobility

Mohamed Mezghani

UITP

The widespread changes, which have occurred in the mobility market the last decades could be summarised as follows:

- The organisation of transport in general, and public transport in particular, has fundamentally changed. The public transport sector has developed itself to answer to regular daily journeys like home – work, home – school. Yet, the urban rhythms have sped up and most cities are now “open” 24 hours on 24, to answer the demand of the city users. They want to access urban services when and where they want.
- At the same time, there has been a considerable qualitative and quantitative change in the demand for mobility during the last ten years. Today every one wants as good or greater mobility. We all need to be more flexible about the distances travelled to our work or place of employment, to schools and education, and other ‘essential’ journeys such as to hospitals and shopping centres or to other leisure and cultural activities.

The needs for transport – or mobility – are thus more frequent and varied in time and in destinations.

Therefore we now need to plan public transport networks to respond to those new demands in terms of mobility, in order to provide a ‘customer-orientated service’, which is a relatively new concept.

The question is, how can we reconcile these changes with the fact that we have reached the point of saturation in terms of traffic congestion in many urban centres with less and less possibilities to build more roads?

It means that we need to broaden our attitude to what we offer to come into line with the new philosophy on mobility. Public transport operators, in particular, must develop a service that truly responds to the customers’ needs, and really try to understand what these needs are.

In general terms, these customers’ needs could be stated as:

- as short a trip time as possible;
- a high frequency of service;
- clear and reliable information;
- a comfortable ride;
- a clean and nice and, shall we say, modern environment to travel in, and;
- of course, last but not least, an acceptable level of security.

In the context of fulfilling these customers’ needs, public and private, or individual, transport should not always been seen as competitors, but should rather complement each other and act as partners.

The market has developed in such a way that citizens expect 'comprehensive mobility'. The private car to be has been the major provider of this up to now. But, today, we have the opportunity to change this situation, particularly if public transport adapts to a demand responsive market and provides flexible solutions.

The fact is that, in the future, neither the private car nor public transport alone will be capable of satisfying all needs for travelling from one place to another, in a sustainable way.

Therefore, we need to create a flexible and user-friendly mobility system. It's a question of showing how easy it is to live without owning a private car, but having one at ones' disposal if necessary.

This leads to the question of what is the role of the public transport operator in car-sharing schemes? It is up to the public transport operator to find ways:

- o to integrate the mobility 'menu',
- o and therefore to help the customer - or user - to find his way around in an easy and stress free manner.

It can only do so by combining individual transport, with public transport, car sharing, car leasing and taxi. Yet, it isn't his role to provide car-sharing services, which remains a private service.

So in order to be effective in the market place today, operators need to position themselves as a competent and general contractor for mobility. They should build co-operations between actors that were previously not involved with the market. Each partner brings a particular service or speciality to the concept and the operator can therefore sell a mix of different types of mobility and, in addition, is also the best competent source of mobility advice.

It does not just mean better interoperability – we really need to provide a combined transport offer. This includes, car-sharing, car leasing, bicycles as wide an offer as possible of public transport and taxis. If we make it easy for the customer, people are ready to change their habits to include the full choice available.

So, in short, for car-sharing schemes truly to meet customers' needs, public transport companies must be encouraged to integrate these into the range of services they offer. They must do so in close co-operation with existing car-sharing, leasing and rental companies.

Widening the range of mobility services also has an important impact on the perception of the operator within a community. The operator moves away from its old image of an inefficient public service provider to being a dynamic and modern source of mobility solutions.

The main economic impact that car-sharing can have on operators, if it is properly set up, is to increase the fare revenue. The tendency of the user will be to use public transport more frequently as it occurs to be cheaper than the car.

In other words, car-sharing schemes reduce car ownership and therefore stimulate a rational choice of transport modes. Car-sharing will reinforce the current mobility integration between the different public transport modes. It's one link more in the chain to provide a seamless travel at any time the user requires it.

TOSCA in Bologna

Transfer of IT-based Car Sharing

Mirco Armandi

ATC Bologna

TOSCA project, promoted and funded by the European Commission under Information Society Technology Programme, is a strategic initiative that supports a number of European cities in the implementation of commercially sustainable IST-based car-sharing concepts, as an element of flexible, friendly and inter-modal door-to-door mobility.

TOSCA aims at facilitating further technological take-up developments, such as: Integrated smart cards for public transport, booking and information systems via Internet & call centre.

TOSCA was born from the necessity of setting up an alternative system to the traditional idea of mobility still aiming at integrating the various already existing transport modalities.

The idea of transferring a car-sharing system into an Italian framework his rooted in the experience gained by the city of Bremen in Germany; thus, to guarantee the successful outcome of the transfer, the city of Bremen offered the city of Bologna continuous practical assistance and all necessary tools required for setting up a car-sharing system.

Within TOSCA project, the City of Bologna (ATC-s.p.a), public transport operator, implemented a pilot application of IST-based car-sharing, called CarAtc. ATC with the support of the Bologna Municipality implemented the car-sharing pilot application to guarantee a high quality of customer services in order to improve more & more environmental conditions.

All proven technologies and methodologies were taken-up successfully within the TOSCA project lifetime.

Objectives

- **Transfer innovative technological tools of the car-sharing scheme in the City of Bremen to the public transport operator ATC-Bologna**

TOSCA supported the transfer of car-sharing technological elements for setting up a car-sharing organisation and communication system in Bobgna from the City of Bremen who is one of the leading cities in the management of an advanced IST-based car-sharing system.

The hardware and software components of the Car-sharing organisation and communication system (COCOS) provided by INVERS (Germany) were used for setting up a car-sharing system starting with 9 vehicles fleet placed at three locations in the central area of Bologna and involving a users group of about 100 customers.

COCOS helped to provide a reliable, user-friendly and efficient car-sharing management by setting up an electronic booking and accounting system for transferring trip data from car-sharing vehicles to the booking centre (mainly for accounting and fleet management purposes). By means of contact less smart cards it is possible to control user's access to vehicles.

- **Develop and implement a pilot application of car-sharing in the city of Bologna, based on the implementation and business concept of the car-sharing system in Bremen**

Within the TOSCA project ATC Bologna implemented a car-sharing pilot application to guarantee a high quality of customer services and environmental benefits, the car-sharing scheme shall satisfy the following emerging standards for car-sharing operation:

- Provide users with 24-hrs service accessibility, in order to offer a real alternative solution to the private car
- Offer a fee structure based on mileage, in order to prevent from driving more than really necessary ("pay as you drive" structure)
- Use of low emission vehicles (compliant with at least EURO III norm)

- **Develop a car-sharing business and technical implementation plan for three European cities in France, Spain and CEEC (Central Eastern European Country)**

The TOSCA project has enabled the cities of Barcelona, Bucharest and Strasbourg to develop a car-sharing technical and business implementation plan. All three cities have a high car-sharing market potential and are strongly committed to bring forward the idea of car-sharing around their countries.

- **Disseminate the project results and best practice examples of car-sharing**

Dissemination activities helped to increase awareness on the system benefits and potentials amongst transport policy decision-makers and users in Europe.

TOSCA consortium was in charge of organising on site car-sharing workshops where results of the car-sharing demonstrations in Bremen and Bologna were presented and the transferability of these examples to other European cities discussed. Dissemination activities also included the edition of a project brochure and the setting up of a car-sharing best practice web page.

Car Sharing Take up Experience in Italy Bologna "CarAtc" & future developments

Nicola Nassisi

ATC Bologna

The car sharing system is born and is having very successful in Northern Europe: there is already an active service in 300 cities of Germany, Austria, Switzerland and Holland but there are only few data about Mediterranean countries and the attitude of Latin people to share cars.

TOSCA Project, (Bologna, September 1999 - February 2002), realised by taking up the system of the city of Bremen, was followed with particular attention by the Commission because it was the first car sharing system set up in Southern Europe. The data obtained during the pilot experience were a remarkable starting point and helped city's decision makers.

ATC, with the support of the Municipality of Bologna and the co-operation of the Taxi Company *Cotabo*, will run in next months the Car Sharing system, called **Caratc** , experimenting advanced technologies, with the aim to integrate the various modalities of transport.

The users of **Caratc** , with a registration and an annual fee, by a smart card, can book the cars through the call center or via Internet, paying the tariffs for time of utilisation and kilometres run. The microchip card, approached to an appropriate device installed on the windshield will set in action the on-board computer and interrogates the headquarter for the authorisation. If the reservation is confirmed, the car is ready to leave, the key in the dashboard. At the end of the trip, the system records all the data. Every months the operator debits the amount of the invoice on the customer's bank account.

The **Caratc** users have the advantage of free parking and less mobility restriction in comparison with private cars users. The real-life operation start in February-March 2002 and we will have the first evaluation data in May 2002.

Impacts of IST-based Car Sharing

TOSCA evaluation results

Siegfried Rupprecht

Nina Berweger

Rupprecht Consult

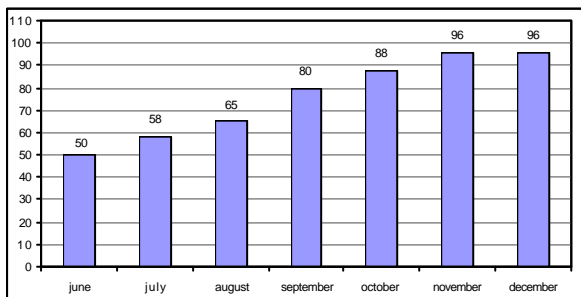
To assess whether the TOSCA project has been successful in meeting its objectives the TOSCA user survey and system data was analysed: 73 users from a total of 96 returned the survey (76% return rate) and 378 bookings were registered by the system.

The results from the TOSCA evaluation provide important input for other car-sharing take-up and transfer projects. The key outcomes are highlighted hereafter - the Evaluation Report offers the details.

HIGHLIGHTS:

Growing Number of Users

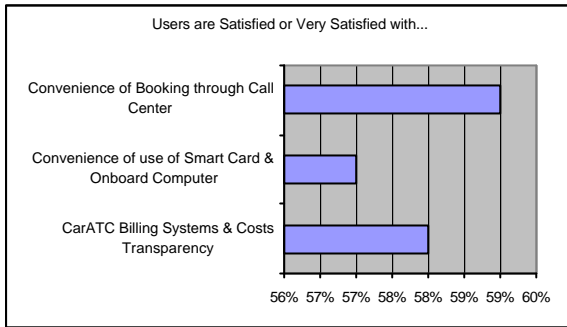
Number of CarATC users (ATC-Data)



The car-sharing take-up application CarATC has succeeded in steadily attracting more costumers each month to the new service. After six month of pilot operation 96 'qualified' users had subscribed in December 2001 ('qualified', because they gave CarATC the permission to withdraw the costs directly from the bank account – a precondition to use the service). The biggest growth in costumers was in September.

During the total pilot phase from July to December 2001, 57 costumers actually used – booked and used - CarATC.

SATISFIED CARATC USERS

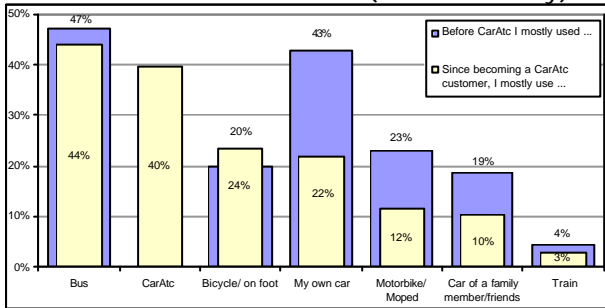


Around 60% of the users are satisfied or very satisfied with key actions of TOSCA pilot car-sharing: Booking, IT-Tools and Billing/Cost Transparency.

A positive result for the cooperation with COTABO taxi operator (booking via their call centre), the transfer of proven IT-tools from Bremen to Bologna as well as the billing system.

Added Mobility Value

Have your habits changed since you became a CarATC user? (TOSCA survey)



Before car-sharing was offered the respondents mainly travelled by bus, even more than using the private car.

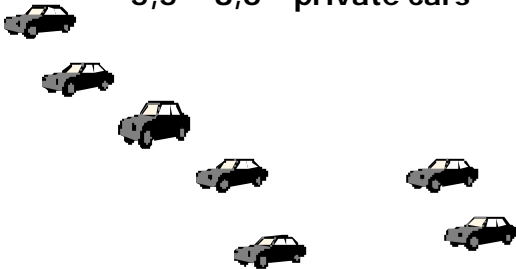
Since CarATC is used the public transport hardly lost in importance, whereas the motorised modes of transport - own car, motorbike/moped and car of family or friends - lost. The ecological modes, going on foot or by bicycle, even won in importance.

N before=70; N since=68



GOOD FUTURE PERSPECTIVES

1 CarATC vehicle potentially substitutes 5,5 – 8,6 private cars



CarATC has the potential to substitute minimum 5,5 private cars when taking into account the car owners that indicated that "yes" they would sell their car and persons without a car that said "no" they will not by a car. A maximum of 8,6 is calculated when adding those who answered "maybe" to both questions.

Evolutionary approach of private-public cooperation

Jean-Baptiste Schmider

Auto'trement Strasbourg

Mobility Background

Strasbourg, the 7th largest city in France with a population of approximately 240 000, is the centre of a 27 city urban area. This group of cities is called the Communauté Urbaine de Strasbourg (Strasbourg Urban Community (450 000 inhabitants).

It covers 6 % of the surface area of the district, i.e. 306 km², but accommodates 45 % of its population.

A major European centre, Strasbourg is also a highly active city, including in the area of business, administration, services, research and education (50 000 students).

Over 50 000 jobs in the Urban community are held by non residents.

Because of that, there is a great deal of commuting between the city centre, the urban community and the rest of the district. Most trips are made in private cars, with peak rush hours due to house/work commuting.

An overall transportation policy launched over 10 years ago

National car transportation growth figures, confirmed by the figures found in the region in the late eighties (based on the household transportation survey) encouraged the community to take action, based on the 1982 PDU's objectives (urban mobility schemes - Plan de Déplacements Urbains-) with « a co-ordinated use of all transportation modes, including through an appropriate assignment of roads and by promoting the least polluting and the least energy-consuming modes”.

In order to reduce air pollution, noise, stress and insecurity, the local authority has used the tramway as a powerful means to reorganiser public space.

In about ten years, major efforts were made in the area of

- o Public, bicycle and foot transportation means,
- o Improving and operating a better road network (shared between the various transportation modes ; traffic and parking information actions)
- o Sensible public parking management with prices suited to all users (residents, short and long term parking) encouraging low-pollution modes (electric vehicles, bikes).

Simultaneously, progresses were made in areas such as

- o car traffic reduction (inbound traffic is back to its 1980 level)
- o helping companies and local authorities to encourage their commuting personnel to use alternate solutions to the all-car solution
- o organising the transportation and deliveries of goods so as to reduce the impact on the traffic and on the environment (it should be noted that this latter area is the least developed)

The facts and figures corresponding to the major phases of the project (see appended slides) show the significance of the achievements.

Noteworthy is the boom in the available public transportation service.

Also noteworthy is the tramway/bus network clients' response, which is far more favourable than expected.

Last, it should be noted (as shown by the 1997 household transportation survey) that in the city centre (where the impact of alternate solutions to the all-car solution is the strongest) the share of car transportation is receding, as well as the average number of cars per household.

A close look at this trend shows the reasons for the change. Incentive measures (bus/tram network, bike lanes, pedestrian areas) complement dissuasive measures (parking costs, limited time and space assigned to cars). The ground is laid for durable behaviour changes, for instance by meeting occasional needs for car transportation by new services such as Car sharing.

Strasbourg approach of carsharing

This Car sharing is part of one of the work lines for 2010, the line of « soft method and new service development »

This line complements seven other goals, which include tramway network development, train/tram interconnections, regional pendular railway service improvements, additional Park and Ride (for cars and bicycles), more pay parking, new road bypasses and reduced main radial road capacity.

By 2010 : soft method and new service development

The Communauté Urbaine de Strasbourg is one of few French local authorities with adequate room to manoeuvre to manage transportation in an overall and consistent manner.

Its « authority » to organise public city transportation as it sees fit, the SEM system (semi-public companies where it has a controlling majority), subsidy flexibility, provide tools to promote soft modes and new services.

Regarding the development of car sharing for instance, provided the general interest of the service is recognised

- It can financially support a new association project with subsidies. In this instance « Auto'trement » can count on a financial support of some Euro 100 000 over three years.
- It can add aids in kind to its financial support (facilities, equipment, parking place)
- It can involve SEMs it controls (transportation, parking, real estate) or city-owned operations (such as bike rentals) in partnerships furthering the expansion of Car sharing (combined subscriptions, reductions, ticket system, parking place, etc)

Last, its involvement in advertising the project and « displaying » its support provide a guarantee to an innovative service, which could give rise to reserves. Although the car sharing system is very similar to conventional car renting, the philosophy of the project and its association aspect can generate slow-downs : the CUS' commitment can reduce or eliminate such reluctance.

Institutional framework

Auto'trement is a non-profit organization, a citizen initiative, which is born during the setting-up of the conurbation developpement scheme for 2010.

The strategy is to build private and public partnership to set up carsharing.

- Local authorities
- Public Transport Company (CTS which is involved in the TOSCA project)
- Other transport operators : bicycle rental, car-rental, taxis,...
- Private companies : insurance, car-companies,...
- ...

With the support of the CUS and other partners, ADEME, département 67, Auto'trement has launched an experimental car-sharing phase with one station and 3 cars in 2001.

Technologies

Actually, car-sharing started in Strasbourg in early 2001 without using any new technologies.

Schedule management and invoicing tools have been developed. The experimental phase worked very well without new technologies.

But new technologies (IST-based system) are essential for the next phase : to offer a local service in all Strasbourg districts.

After studying all solutions available on the market (not requiring any specific additional development), we turned to Invers' hardware system solution. The question was : should we buy the system directly ? Should we contract out to an existing operator ? A third solution seemed interesting : set up a group of several French cities to share the service and offer a network operation. That is the solution that was chosen.

- A central server, administering the system for all the cities
- Client / server terminal access for local structures and for the booking centre.

Both types of equipment offered by Invers will be considered : standalones for local district stations, Keymanagers for intermodal stations.

Commercial organisation

Auto'trement, which operates the car-sharing system, is currently an association. Its transformation into a co-operative company or a private limited company is being given consideration. A new form of collective interest co-operative company, enabling local authorities to buy stock in the capital of the company, could be suited to the expansion of car-sharing.

A company shared by different cities (France Auto-Partage) has been set up to handle the data processing system. Local car-sharing operators are the shareholders of this service providing company

The service offered to the users is the same as in all car-sharing organisations, annual membership, giving a 24hr access to the vehicles for any length of time, starting from one hour. The vehicle is charged by the hour and kilometre. The vehicles are urban-type cars (Twingo, Punto, Kangoo,...)

Three systems are available : free access, subscription or partner.

Special prices are granted to subscribers of other transportation modes such as bicycles, public transportation, ...

A combined price system will be implemented by the end of 2002 with the CTS, as part of the ticket system.

By the end of 2002, 20 vehicles will be available, in 6 or 7 stations of the urban community.

There will be two types of stations : local stations in the district and intermodal stations in relay parking lots and at interconnection point with the public transportation system.

Implementation status and prospects

The goal is to reach 40 vehicles within 3 years, i.e. approximately 15 per year.

The success of the objective requires :

- o A suited offer
- o A strong two-phase communication system : advertising the service and then the commercial offer
- o Integrate in the overall transportation service.
- o Make offers and advertise towards specific publics : users of public transportation services, 25/35 year olds in the process of acquiring their own cars, companies that want to manage their fleet of cars rather than car-sharing.

There will be three advertising targets :

- o The 25/35 age bracket, where 1 person out of 3 has been involved through magazines and places frequented by young people,
- o Users of public transportation services through advertising in the stations, buses and tramways, as well as through an attractive combined pricing system.
- o The residents of central and densely-populated districts, for whom owning a private car is a nuisance rather than an advantage.

The objective in client base terms is to reach 600 users, by the end of 2004, which would allow to reach a break even point.

The lessons learnt

Based on one year of car-sharing experience, several lessons can be learnt, which corroborate the experiments made in other places.

- o Strong public transportation, bicycle and car-sharing complementarity (average trip is 4h30, 45 kms)
- o Reduced use of cars when using car-sharing services (100kms/month and per user,

- There is a necessary concept appropriation time before actually using the service, except for young people acceding to the use of cars
- « Cars are like cigarettes, is easier not to start than to stop. »
- Need for strong service exposure « see it to believe it »
- In closing, there is an important potential for growth, but it requires human, financial, equipment and technological resources.

Visions for Mobility Strategy

Manuel Villalante I Llaurodo

TMB

Barcelona Territorial Framework

It is composed by three levels:

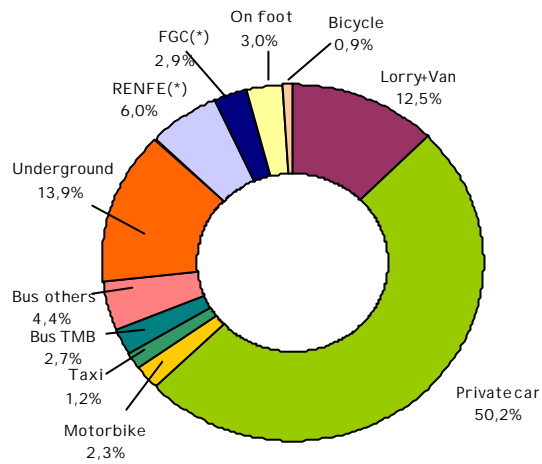
- Barcelona city.
- Barcelona Metropolitan Area (18 municipalities).
- Barcelona Metropolitan Region (164 municipalities).

Barcelona Mobility Patterns

The distribution of the trips in Barcelona is:

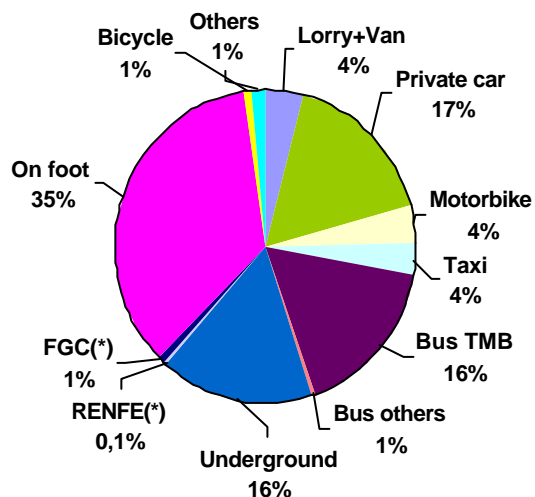
- Internal- External trips (I-E): 1.919.599

Trip-modes	trips(I-E)	%
Lorry+van	239.405	12.0%
Private car	964.333	50.0%
Motorbike	45.100	2.3%
Taxi	23.520	1.2%
Bus TMB	51.095	2.7%
Bus others	83.525	4.4%
Under ground	267.138	1.4%
RENFE(*)	115.000	6.0%
FGC(*)	55.443	2.9%
On foot	58.156	3.1%
Bicycle	16.884	0.9%
Total	1.919.599	100.0%



- Internal trips (I): 4.081.514

Trips-modes	trips (I)	%
Lorry+van	168.595	4,0%
Private car	676.265	17,0%
Motorbike	155.630	4,0%
Taxi	144.480	4,0%
Bus TMB	660.584	16,0%
Bus others	21.373	1,0%
Under ground	668.777	16,0%
RENFE(*)	5.138	0,1%
FGC(*)	41.103	1,0%
On foot	1.428.530	35,0%
Bicycle	58.795	1,0%
Others	52.244	1,0%
Total	4.081.514	100,0%



Barcelona Mobility Institutional Framework

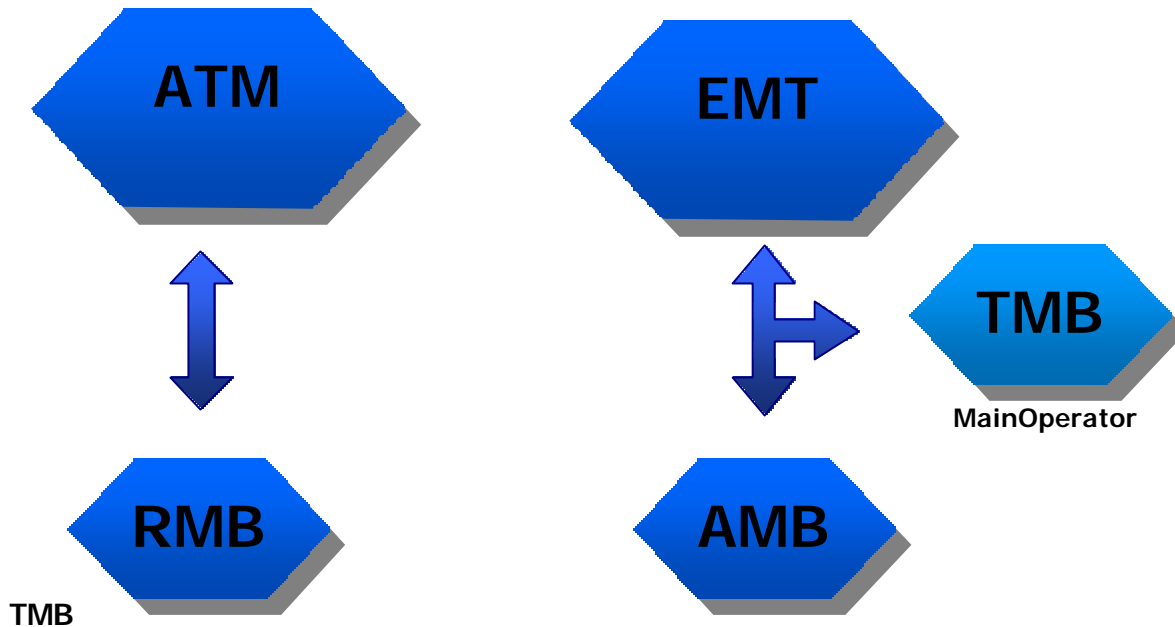
The main objective of the City Council is to guarantee the sustainable development as well as the economical competitiveness. The instruments used are:

- Equilibrated urban planning.
- Promote public transport: network and quality.
- Reduce the use of private car.
- Promote on foot and bicycle.
- Citizens' participation.

For example, the main goals of the Barcelona Mobility Pact are:

- Achieve high-quality, integrated public transport
- Maintain traffic speeds and improve the speed of surface public transport
- Increase the surface area and quality of public areas destined to pedestrian use
- Increase the number of parking spaces and improve their quality
- Improve citizens' information and preparation, and improve road signals and signs
- Achieve a set of legal regulation suited to the mobility of the city of Barcelona
- Improve road safety and respect among users of the different modes of transport
- Promote the use of less polluting fuels, and control air and noise pollution caused by traffic
- Promote the use of bicycles as a regular means of transport
- Achieve an agile, orderly distribution of goods and products throughout the city

Barcelona Transport Institutional Framework



- TMB is the management unit of the companies Ferrocarril Metropolità de Barcelona, S.A. (underground) and Transports de Barcelona, S.A. (bus).
- Is the main public transport managing company in the metropolitan area (73% of the public transport split).
- During 2000 TMB transported 500 millions of passengers 60% belonging to underground and 40% to bus.

Objective: Promote actions related to achieve a sustainable mobility. In this way, Car-Sharing appears as a suitable solution to provide the modal change to the public transport.

EMT (Metropolitan Transport Entity)

EMT is a local body formed by eighteen municipalities in the metropolitan area of Barcelona. The main functions are:

- Public transport co-ordination.
- Granting of concessions for regular services, authorisation of privately agreed services.
- Acting as the administrative body in charge of taxi services.
- Technical assistance to the municipalities in matters of urban traffic.

AMT (Metropolitan Transport Authority)

AMT is a consortium between the Regional Government (51%), the Barcelona City Council (25%) and EMT (24%), including 164 municipalities.

The main functions are:

- Infrastructure planning.
- Elaboration and follow-up of operators contracts.
- Fare arrangement: fare integration process.
- Elaboration and followup of agreements with the administrations and operators.

BARCELONA CAR SHARING

Background

1. Signature of the Agreement between Barcelona City Council (Comissió d'Ecologia Urbana i Sostenibilitat - Commission of Urban Ecology and Sustainability) and the PTP to obtain a first vision and opinions of the CarSharing (beginning 2000).
2. Presentation in September 2000 of the comments on the research work carried out in the media to the institutions and public opinion.
3. Interchange experiences with other countries (end 2000).
4. Barcelona (TMB) joins the TOSCA Project as a follower (beginning 2001).

Strategy for the implementation of CarSharing

- To achieve the collaboration of all the social agents: social entities, public administrations and public transport companies.
- Role of the administrations: financing of starting phase and facilitate logistic elements.
- Public transport companies must introduce an attractive price policy to stimulate its use by members of CarSharing.

Operation and viability

- Working system.
- Awareness of demand.
- Access to vehicles.
- Characteristics of the fleet.
- Collaboration of public transport companies.
- Co-operation with other Car-Sharing entities.

Economical feasibility plan

Basic concepts:

- Kind of clients: members, beneficiaries, particulars and enterprises.
- Members quota: 50.000 PTA (capital contribution).
- Beneficiaries quota: free.
- Particular annual quota : 15.000 PTA.
- Enterprise annual quota: 50.000 PTA.
- Prices according to time and distance (cheaper for members and beneficiaries).
- Special fares on holidays and weekend.

CarSharing Prices (Ptas/km)				
	members	beneficiaries	particulars	enterprises
Workable	24	24	27	Workable
Holiday	27	27	30	Holiday
Weekend	27	27	30	30

CarSharing Prices (Ptas/hour)				
	members	beneficiaries	particulars	enterprises
Workable	400	400	400	200
Holiday	400	400	400	200
Weekend	148	148	148	200
Lack of	3	3	0	0

Definition of work hypothesis:

	Vehicle acquisition alternatives		
Availability tax	Low renting	High renting	Purchase
High	<i>Hypothesis 1</i>	<i>Hypothesis 3</i>	<i>Hypothesis 5</i>
Reduced	<i>Hypothesis 2</i>	<i>Hypothesis 4</i>	<i>Hypothesis 6</i>

Results: (only including the good one)

	First year	Second year	third year
Basic variables			
Number of users	750	1.600	2.800
Vehicle fleet	60	110	160
Vehicles per user (x 100)	8	7	6
Users per vehicle	13	15	18
Average Km/user/year	2.480	2.506	2.600
Average Km/car/year	31.000	36.455	45.500
Incomes			
Total incomes per quota of particulars and enterprises	4.000.000	9.500.000	22.000.000
Total incomes per Km.	50.400.000	113.724.000	217.077.120
Total incomes per hour	35.451.429	80.614.857	156.195.401
Incomes TMB card	23.760.000	49.420.800	77.096.448
Total incomes	113.611.429	253.259.657	472.368.969
Costs			
A) Fix costs	44.840.000	48.553.600	53.580.544
A.1. Staff	25.560.000	29.702.400	34.135.296
A.2. Other structure costs	19.280.000	18.851.200	19.445.248
B) Variable costs	75.882.279	175.899.502	317.170.673
Own vehicles	24.507.279	43.560.138	61.466.013
Hire of other vehicles due to congestion	7.240.000	32.073.600	88.085.504
Parking	5.760.000	10.982.400	15.974.400
Insurance	9.000.000	17.160.000	25.958.400
Maintenance	0	10.936.364	28.223.636
Call center service	2.975.000	6.275.000	11.800.000
Public transport card	26.400.000	54.912.000	85.662.720
Total costs	120.722.279	224.453.102	370.751.217
Result	-7.110.851	28.806.556	101.617.752

Next challenges

- Achieve the Legal Study defining the different organisational possibilities (taking in to consideration that the partners can be public and private enterprises and NGO).
- Achieve the Market Research Study.
- Signature of the Second Car Sharing Agreement between the Barcelona City Council, TMB and APTP (Association for Public Transport Promotion).

Maintaining High Transport Patronage

Florin Dragomir

Bucharest Transport Company

Bucharest, the capital of Romania, is spread on 228 km² and has a 2,14 millions inhabitants. In the last few years there was a substantially increase of car numbers riding on the same infrastructure. As a result, also the pollution increased, traffic problems appeared and green areas were reduced leaving places to parking.

For car-sharing system implementation four research areas was chosen, based on car ownership rate, parking possibility, the number of companies' offices, the public transport network density, trips generation and the attraction.

Marketing research which consisted of a qualitative and quantitative analyze, was settled the members profile, car fleet composition, an acceptant price level.

Feasibility study estimated the car-sharing organization during 6 years, regarding profitability, tariff, optimal number of cars and members.

Our main goal is to attract customers by offering good tariffs and services. The car-sharing solution included in a public transport company scheme can be more attractive enjoying by staff experience, good service coordination, and competitive tariffs.

We estimate to obtain very good results regarding efficient land use management, increase of life quality, integration of all transport modes and travel attitude approach by introducing a car-sharing system in Bucharest.



Speakers' short CVs

Lasse Buschmann Nielsen is representing the European Commission within the Information Society DG on matters concerning Transport Telematics. He has a 5 years Industry background within Telecommunications and Transport Telematics Planning.

Michael Glotz-Richter holds a diploma in urban and regional planning (Technical University Berlin). He has focussed his work on mobility issues of sustainable urban and regional development. After work in Berlin, Bonn and Cologne he became head of section within of the Bremen City-State Department for Building and Environment.

He has gathered much experience within European projects – e.g. INTERCEPT, ZEUS and the new CIVITAS-VIVALDI project and also as European co-ordinator of the ongoing *moses*-project.

Mohamed Mezghani graduated as an engineer in Transport Economics in 1988. He joined UITP early 1999 as Senior Manager of the Programmes & Studies Department. He has been the Director of Programmes and Studies since July 2001. In his former position as Transport Consultant, he used to work for the European Commission and other international financing institutions on technical assistance and research projects from 1990 to 1999. In this framework, he carried out projects for DG Energy (THERMIE programme: demonstration and dissemination), DG Transport (EXTRA project) and DG External Relations (TACIS and PHARE programmes). Since he joined UITP, he has been involved on the DG TREN ELTIS project as project manager, the EUROSPIN project, the VOYAGER Thematic Network, and on the DG Research MOSES Project dealing with car sharing. Currently, he ensures the technical co-ordination of UITP commissions and the association's working programme. He seats in the UITP Executive Board and Policy Board.

Nicola Nassisi was born in 1956. He graduated in nuclear engineering at Bologna University. From 1985 to 1987 he worked as free professional. From 1987 to 1991 he worked as teacher of Electronics and Electrotecnics. He joined A.T.C. in 1991 as Environment, Safety and Security Manager. Since 1997 he has been responsible of Bologna Parking Management according to the charge ATC received from Municipality. Since 1999 he is also ATC Mobility Manager. He was also involved in several European projects (SEBBU, LRT PROJECT). He is still involved in COST 342 Project.

Armandi Mirco was born in 1962. He graduated in electronics engineering at Bologna University. His first and intense work experience relates to Olivetti's company, where, he had the chance to experience Computer science and Telecommunication. He joined ATC in 1991 as responsible of the Technological Research office. Since 1999 he is also in charge of the Business Unit Engineering and Plants including Technological Data Processing Centre and Plants offices.

Siegfried Rupprecht is a social scientist (universities of Bielefeld, Bamberg and Oxford) with 10 years of experience in European project cooperation. He has managed large projects, worked on software development, and was a lecturer for applied social sciences.

Nina Berweger, geographer (Universities of Bonn and Paris) with an international background in urbanism and an emphasis on qualitative research.

Uwe Latsch, 38 years old, is General Manager of INVERS GmbH. After his studies in electrical engineering he was employed as scientific assistant at the Institute of Communications at the University of Siegen. Since 1993 he has worked on the field of „Neural Networks“, the integration of smartcards and mobile radio communication in carsharing applications. In 1997 the concept „COCOS – Carsharing Organisation and Communication System“ was supported by the „Deutsche Gruenderfonds“, an initiative of german industries to start-up new enterprises. Uwe Latsch founded the INVERS GmbH in 1997. Nowadays INVERS supplies carsharing projects in eight countries.

Odile Costa-Ausina has been head of transport public relation department for the community council (Strasbourg) since 1996. She is Doctor in behaviour and communication sciences and University professor till 1989. She is also assistant for the Community Council first president assessor, in charge of mobility.

Jean-Baptiste Schmider, (37), graduated in *Sciences Politiques*, has been consultant in management, project management and organisation for Community Council (Strasbourg) since 1996. He is also Chairman of Auto'trement.

Manuel Villalante, as a Industrial Engineer, has developed his profession in activities relative to mobility, urbanism and transport at the Municipal Urbanism, Traffic and Transport services department of the City Council combined with lectures at the Polytechnic University of Catalunya. Nowadays he is in charge of the Director of Studies and Coordination of TMB (Transportes Metropolitanos de Barcelona), operator of Metro and Buses.

Florin Dragomir is diplomed engineer, graduated from the “Politehnica” University of Bucharest. He is the Head of International Projects Department of RATB. Previously, he coordinated the first steps in marketing research, organizing studies regarding the RATB image, quality of the services, the outputs helped mainly in taking the decisions of the managerial board. He was the technical coordinator in CAPTURE and DANTE projects under EU umbrella. He has experience in developing strategies in order to improve the company activity. He organized different meetings with foreign partners as valuable experience in project management such as the project implementation of the modern ticketing system on express buses, etc.



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