FINAL REPORT

Car sharing in France:
A study of the potential benefits, barriers and alternatives

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Harold Wilhite – Ressurskonsult A/S
Senior Author

Sophie Attali – ICE

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PREFACE

The authors would like to express their appreciation to Carsten Petersen (StattAuto), Peter Novy (DENZELDRIVE Car-sharing), Marie-Helene Massot (INRETS), Gilles Garcia (DIREN Ile-de-France) and Loic Mignonette (Caisse Commune) for consenting to interviews and responding to our questions about car sharing. They have contributed significantly to our understanding of the issues surrounding car sharing, though they are not to be held responsible for any of our conclusions or recommendations.

The report contains a considerable amount of detailed information in sections 3 and 4 on the experiences of a number of car sharing organisations. This information is presented for those who are interested in reading and comparing for themselves different approaches to organisational forms, pricing, obtaining cars, management systems, co-operation with public transport, etc. For the reader mainly interested in a synthesis, analysis and summary of car sharing experiences, these can be found in sections 5 through 9.

Contacts:

<table>
<thead>
<tr>
<th>Hal Wilhite, Ressurskonsult A/S</th>
<th>Sophie Attali, ICE</th>
<th>Anna Chêne, Ademe</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:hal.wilhite@sum.uio.no">hal.wilhite@sum.uio.no</a></td>
<td><a href="mailto:sattali@iceconsultants.fr">sattali@iceconsultants.fr</a></td>
<td><a href="mailto:anne.chene@ademe.fr">anne.chene@ademe.fr</a></td>
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1. INTRODUCTION

1.1 Background and purpose

Congestion and pollution due to the use of the private automobile are increasing in many European cities. These have contributed to the growth of various forms for car sharing, in which ownership is shared among a number of users. There is evidence that car sharing reduces both the number of cars per family and car utilisation, measured in both trips and kilometres, both important goals for environmental and urban transport authorities. Car sharing arrangements have also been shown to be popular with participants. On the other hand, economic solvency has been a struggle for many organisations.

The potential environmental and other practical benefits make car sharing an interesting possibility for cities of all sizes in France. In this study we have collected and analysed information on the burgeoning car sharing industry in Europe and elsewhere in the world. We have looked at benefits, problems and barriers to the growth of car sharing, and have discussed possible public interventions to foster the development. More specifically we:

- characterise the different types of car sharing solutions
- flesh out the motives, goals and target groups
- examine the statutes, car to person ratios, acquisition and use of cars, parking, membership solicitation, etc.
- investigate the ways in which car sharing can be integrated with public transportation
- discuss keys to success, barriers and benefits
- discuss whether and how government support might foster the development
- recommend avenues for further study

Car sharing, which allows shared access to the vehicle’s drivers seat, is distinct from car pooling, which is an effort to maximise the person per vehicle ratio in commuting vehicles. Both are interesting from a congestion and pollution perspective, but the focus will be on car sharing because it affects multiple vehicle usage as opposed to just commuting; it is a relatively new phenomenon; it is growing rapidly; and it demands a significant social innovation in the form of an altered relationship between car user and the car. Car sharing participants trade reduced control, access and independence for practical advantages such as better economy (reduced fees, insurance, maintenance, depreciation), easier parking, and access to different kinds of vehicles.

In its initial stages in the 1980’s and early 90’s, car sharing members most often joined together in clubs or collectives which share access to of a fleet of cars. More recently, car sharing organisations are increasingly organising themselves as commercial entities. Car sharing organisations have been established in a number of European countries, in North America and in Asia. The biggest and oldest organisations are in Germany, Switzerland, Austria and Netherlands, with newer organisations in Norway, Sweden and Ireland. The four most active car sharing countries in Europe collectively have over 100,000 participants (Shaheen et al 1998). Many of these are members in the European Car Sharing Organisation, established in 1991. In 1999, the organisation has 60000 members, and 2700 cars at 850 locations.

Other forms for car sharing have somewhat different goals and focus on particular segments of the urban car-using population. An example is the station car concept, aimed primarily at
commuters, though the target group is expanding. Car sharing in its most common form has little effect on auto-commuting. In a study of car sharing in Switzerland only about 2% of individual (as opposed to corporate) members used shared cars for commuting. Station car organisations place cars at rail and metro stations. Members can take public transport into the city then use the station cars for their needs, whether it be shopping, for business purposes or other purposes.

1.2 Method.

The project has been carried out for Ademe by Ressurskonsult A/S, Oslo, and ICE, Paris. The method has consisted of a review of the existing literature on car sharing, as well as personal contacts and on-site interviews with representatives of a few selected car sharing projects inside and outside France. Four organisations have been analysed in depth: StattAuto (Germany), DENZELDRIVE (Austria), Bilkollektivet (Oslo) and Praxitèle (France). In addition, essential information has been assimilated and summarised on car sharing organisations around the world.

1.3 Report Organisation.

In Section 2, we briefly discuss the role of the car in modern life and point to problems associated with the over-saturation of cars. In section 3 we present case studies of four car sharing projects. Section 4 reviews essential information on car sharing organisations in Europe, North America and Asia. Section 5 is an synthesis of developments in car sharing. In Section 6 potential benefits of car sharing are discussed. Section 7 elaborates the keys to success and potential barriers to car sharing. Section 8 is a fleshing out of issues particular to France, including how car sharing would fit in with French transport and environmental goals. Alternative forms for government (public) intervention are discussed in relation to the success factors and barriers of section 7. Section 9 consists of conclusions, recommendations and proposed avenues for further study.
2. BACKGROUND ON AUTOMOBILITY AND PROBLEMS ASSOCIATED WITH CAR USE

2.1 The role of the car in modern life

The story of development in the industrialised countries of the 20th century is intimately linked to the story of automobilisation, by which we mean the transportation of goods and people by roadway. In economic terms, since the 1980’s, each 1% increase in GDP has been accompanied by an increase of 1.40% in private automobile traffic (Nijkamp 1994). Between 1950 and 1990 the number of road vehicles in the world grew from approximately 75 million to 675 million, and in OECD countries, the number of vehicle-kilometres (see below) travelled grew from 3.2 trillion to 6.9 trillion (OECD 1997). Sales of passenger cars in Europe has been in a period of strong growth over the last few years. In 1998, sales increased by an average of 7%. France experienced a 13.5% increase in car sales in 1998 (Swartzberg 1999).

The USA has the highest per capita car ownership in the world, today about 60 cars per 100 inhabitants. In Europe the cars per 100 inhabitants are as follows: Switzerland (53); Austria (52); Germany (50); France (43); UK (41); the Nordic countries (39); NL (37) (Schipper, personal communication). Interestingly, the countries in which car sharing have had the fastest growth in Europe are in the most car-dependent countries of Switzerland, Austria and Germany.

Today, it is next to impossible to accomplish the tasks of everyday life without access to a car. This is especially true for families with children. Schools, workplaces, shopping centres, etc., are located such that except in urban zones with highly developed public transportation systems, a daily routine of commuting, delivering children to school, picking them up after school, requires a car.

Aside from the practical necessity of having a car, car ownership and use are loaded with symbolism. They provide thrills, assure freedom of mobility, offer quiet spaces, exhibit machismo, and display social status (Wilhite and Lutzenheiser 1999). Several decades ago, a single car served a multiplicity of tasks. The so-called "family car" was the rule. Today, there are different cars for different uses (work versus free time), and increasingly, each adult in the family has access to his or her individual car. In North America and parts of Europe, the car is a social marker of the coming of age of teenagers. According to Shove (1999), to own a car is to be seen as full social adult, with the concomitant power to access anywhere in space.

Another trend in the 1990’s is a reversal of a general decrease in the size and weight of cars over the previous two decades. In North America, jeeps, vans, and pickup trucks, which were once were considered "work" vehicles, have increasingly been seen as "play" vehicles and now are standard "family" vehicles. These all record fairly low fuel efficiency ratings - often significantly less than 0,12 litre/km. In 1998 more than 11 million units of these sports utility, light commercial and multipurpose vehicles were produced world-wide, as opposed to a few thousand 10 years ago. This trend towards the use of off-road vehicles as family vehicles is also picking up in Europe. The total world-wide sales is predicted to rise 25% over the next five years, powering the automobile industry as a whole to a 12.5 percent increase in output (Swartzberg 1999).
To summarise, the numbers, size and energy inefficiency of cars are increasing in OECD countries. This can be linked to social necessities, physical infrastructure and a plethora of symbols linking automobiles to freedom, independence and in some cases to the owner’s identity.

2.2 Societal problems attributable to cars.

Car ownership and use are positively valued by the vast majority of politicians, commercial institutions and users. In fact in developing countries, the state of economic development is often measured in terms of the degree of automobility. There are nonetheless a number of problems associated with car use and ownership which are growing, and which are increasingly entering the public discourse.

*Pollutants.* Cars use energy and emit pollutants such as NOX, CO, and VOCs. These contribute to degraded local air quality in urban areas. In a report by Ademe in 1997, it was estimated that the health costs of local air pollution in Paris were around FF 1 billion. A single day of moderate pollution was estimated to cost up to FF 4.5 million in medical expenses and lost production, rising to FF 9 million when levels of sulphur and nitrogen dioxide climb to the “high” pollution level.

*Greenhouse gases.* In OECD countries, on average about 20% of all CO₂ emissions come from private automobiles.

*Congestion, noise and accidents.* According to the OECD, wasted time, air pollution, noise and accidents due to auto transport consume an average of 10% of OECD nation’s GNPs. This is roughly equivalent to national health care costs and is escalating at the same pace (Kingsley 1996).

*Time and economic concerns from the perspective of the car owner.* Owning and maintaining a car consume significant amounts of time and money for routine servicing, repairs, parking, coping with traffic, break-ins, accidents, depreciation, registration renewals, road fees, insurance, and permits.
3. Four case studies in car sharing: STATTAUTO (Germany), DENZELDRIVE (Austria), BILKOLLEKTIVET (Norway) and PRAXITÈLE (France)

3.1 StattAuto

3.1.1 Background.

Today there are 35 car sharing organisations in Germany. The majority are non-profit associations. StattAuto, the largest car share organisation in Germany, began as an association but has recently incorporated. Both StattAuto and DOA, another large car sharing organisation, grew out of a university research project in 1988. The two organisations split several years ago over differences in philosophy about centralisation. DOA gives more control to its local chapters, allowing for local adaptations in the way that car sharing is administered. StattAuto is more centralised and top down, having standard rules and procedures for all members of the organisation.

Automobile companies have experimented with car sharing in Germany. Volkswagen and Daimler Benz have both done pilot projects and have co-operated with StattAuto and the other large car sharing organisations in various ways. This interest on the part of automobile companies is probably due to predictions of further growth of car sharing in Germany. Automobile organisations want to be a part of the new market which will be created by car sharing. One prediction, done by a highly respected and reportedly conservative economist, and supported by the Ministry of Transport, estimated the potential for market share for car sharing at 2.5 million users. It also made a largely positive assessment of the societal benefits of car sharing (Baum and Pesch 1994 reported in Harns and Truffer 1998). Volkswagen predicts that car sharing will grow at a rate of 50 percent per year leading to a potential market of 2.45 million shared-use vehicles across Europe by 2005.

The environmental organisation Greenpeace has also encouraged car sharing. In 1998 they launched a programme called the “car diet.” People turned in their keys and car registration to Greenpeace for one month and they got a trial month free in StattAuto. The programme was not successful, possibly because it was done in the summer months when many people are on vacation and car use increases.

3.1.2 Organisation and administration.

StattAuto’s largest operation and main office is in Berlin, but it has established groups in Bremen, Cologne, Aucken and Munich. In the beginning phase of StattAuto, there were very few paid employees. As the organisation has grown and the economy has improved, it has gradually hired people to work in various parts of the operation. Today, StattAuto has 11 fully paid employees and 35 part time employees.

StattAuto has recently formed a company called DRIVE, which will operate internationally. DRIVE plans to work with car sharing organisations in other countries and to establish car sharing affiliates in London and other cities.

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1 This section is based on literature (cited) and on interviews with Martin Cames and Anke Huber of Ökoinsitut, Berlin, and with Carsten Pedersen of StattAuto.
The StattAuto model for administrating memberships, fees and cars is one which is shared by new car sharing organisations the world over. Members join the organisation by paying a deposit, returnable on leaving the organisation. A yearly (or sometimes monthly) fee is paid to cover administrative costs. Otherwise, people pay for the time which they use cars and for the distance driven. They are billed monthly.

Being a member of StattAuto also provides other advantages. One is a discount on the monthly pass for public transportation. Another is a travel agency service. Members can order food delivery at a rate below the commercial rate. Other advantages for members: bikes with a special tray for shopping, and reduced tariffs for car renting.

Members of StattAuto have the option to join a registered membership association. Members of the association can vote in the annual general assembly and the association is invited regularly to contribute to the corporations decision making. There is a contract between the corporation and the association which has three main points (Janes and Bryant 1998):

- The books of the corporation are open for members.
- The corporation may not change the prices and the rules of car usage without asking the member association.
- No part of the corporation may be sold without consulting the members.

3.1.3 Goals and marketing.

The goals of the organisation have been to improve the environment (reduce pollution, noise, congestion and other car induced problems) and to provide a new concept in mobility service. The initial marketing strategy projected the image of the environmentally conscious car user. In fact, in the beginning years there was a rule that no one could join StattAuto who had a car. According to Petersen, this was very popular politically and with the press, but it was negative for the organisation. “We stopped saying you have to get rid of something and started to say we offer you something. StattAuto provides car driving at a good price and without the bad effects. The goal is contented clients (Janes and Bryant 1998: 2).”

3.1.4 Member profiles.

Today there are 3800 members of the Berlin chapter of StattAuto. The majority live in central Berlin. StattAuto has kept track of its membership profile. About half of the members have a university degree and the majority or in their 30’s or 40’s. The average member is 10 minutes from the nearest parking station. There is a new strategy to try to tap into other market segments through a new tariff design, described below, which would lower the entry fee but raise the use fee.

Commercial businesses only constitute 8% of the membership. StattAuto is making an effort to get commercial businesses to join, partly to increase utilisation of cars on weekdays.

3.1.5 Procurement of cars.

StattAuto started with a ratio of about one car for every 12 members, but as membership has grown, the ratio of members per car has increased. Today there are about 26 members for each car.
StattAuto buys its cars and typically keeps them for 2.5 years. They buy and sell cars through a contract with one dealer which gives them a good price relative to market price. They turnover about 100 cars per year. They buy the cars in the spring and sell them in the autumn, so that they have more cars during the summer peak demand. This means that they have about 300 cars in the summer, 200 in the winter. StattAuto vehicles average 34,213 km per year, compared to the 14,587 km of the average German car. At 2.5 years old, the cars typically have been driven 80,000 km. According to Petersen, they sell the cars just before the age at which they begin to have maintenance problems.

Concerning the type of cars, they started with small and medium Opals. Later they added mini-compacts and still later bigger vans. Very recently they have added an Audi A6 limousine. Today members have a choice between 6 different types of cars. Nonetheless, today half of the fleet is still made up of the small and medium Opals.

The organisation also offers bicycles, which are placed in their parking stations around the city.

3.1.6 Parking.

There are 52 parking stations to accommodate the on average 250 cars, or about 5 cars per parking station. According to Petersen, obtaining parking areas at reasonable prices has been one of the biggest problems for the organisation. They were fortunate that churches provided some parking areas in the start-up phase of the organisation. Also, some apartment buildings entered agreements with StattAuto so that buying an apartment carried with it a membership in StattAuto. These buildings provided parking for the StattAuto vehicles.

3.1.7 Fees and financial arrangements.

The standard joining fee is 800 DM (408 €). If the new member pays as much as 1300 DM (663 €) they are paid 3.5% interest on their deposit. A deposit of 1600 DM (816 €) gets 4.5% interest. This deposit with interest was introduced a few years ago and has helped the organisation to avoid taking loans to finance its expansion.

In addition to the fixed fees, members pay when they use cars. There are daily, half-day and hourly rates which vary depending on the type of vehicle. For the smallest Daihatsu Cuore, the hourly rate is 8 DM (4,1 €) from midnight to 0800 and 3 DM (1,5 €) from 0800 - midnight. The daily rate is 32 DM (16,3 €). Kilometre rates are 0,30 DM (0,15 €) up to 100 km, 0,27 DM (0,14 €) from 101 - 500 km and 0,25 DM (0,13 €) for mileage over 500. For a Ford Transit bus the night-time hourly rate is the same, 8 DM (4,1 €), but the daily rate is 7 DM (3,6 €) per hour. The daily rate is 85 DM (43,4 €) and the mileage rates are 0,37 DM (0,19 €) per kilometre up to 100 kilometres, 0,34 DM (0,17 €) from 101 - 500 kilometres and 0,32 DM (0,16 €) for more than 501 kilometres.

Gasoline is included in the kilometre fee. Each car has a StattAuto credit card to which gasoline is charged when the tank is near empty, so that members do not have to go through the procedure of paying themselves and then being reimbursed.

StattAuto members are covered by a blanket insurance policy negotiated by StattAuto. StattAuto has been able to obtain low rates through its membership in the European Car Sharing Association and because the accident rate among car sharing members is lower than
that among the general population (Janes and Bryant 1998). Insurance is included in the membership fee, with accident coverage up to a maximum fee specified in the membership contract. Members who want greater coverage can arrange it themselves.

StattAuto has recently introduced a new tariff with lower entry fee, called the Start tariff. The hour and kilometre fees are somewhat higher than for the standard membership. For example for the small Daihatsu Cuore, the daytime hourly rate is 5 DM (2.6 €) per hour (as opposed to 3 DM -1.5 €- for the normal tariff), the daily rate is 39 DM (19.9 €) (as opposed to 32 DM -16.3 €) and the kilometre rates are 0.02 DM (0.01 €) higher per kilometre. The idea is to attract people who are only interested in using the car occasionally, and who may have been put off by the entry fee. Those who choose the Start tariff do not get issued a Mobility Card.

Another new programme is called "Cash car," designed to help deal with weekend peaks. A person leases a car from StattAuto, but can allow StattAuto to use the car on weekends, or for longer periods of time. The leaser and StattAuto share the short term rental income. There are now 100 people participating in the Cash car programme.

3.1.8 Ordering and using a car.

StattAuto has developed its own software system for tracking cars, taking orders and sending invoices. To order a car the member either calls, faxes or emails to a central number. The car is ordered from a specific parking station for a specific time. If the kind of car, time or placement is not available, the central operator, using the software control programme, provides other options, such as another car, another pick up point, a taxi or a rental car.

Each parking station has a key box in which all of the vehicle keys are kept. When arriving at the parking station, the member uses his/her card to open the box and get access to the appropriate key. There is a logbook where the beginning taximeter reading (kms) is recorded, as well as the time. When the member returns the car, they also record time and kms. Log forms are collected periodically to give input to the monthly billing. The user has also to look around the car and describe on the logbook anything wrong with it.

If a car is not there as ordered, the member is authorised to use a taxi. If it is due to a late return, the person who did not return the car on time must reimburse the taxi payment. If there is a problem with the vehicle under way, the user calls a StattAuto service number and help is dispatched.

About half of the uses of cars are for periods less than 5 hours and only 15% of the uses are for periods longer than 24 hours. The most popular usage periods are on the weekends and evenings.

3.1.9 Maintaining the cars.

Cars are periodically taken out for servicing by the contracted automobile company. Cars are cleaned by students who are paid on an hourly basis by StattAuto. In some cases, people living near the parking station volunteer to clean the cars periodically.
3.1.10 Co-ordination with other forms for mobility

In addition to the reductions in fees for public transport (15%), StattAuto also has an agreement with Hertz. Members can book cars with Hertz through StattAuto when StattAuto cars are not available. This most often happens on the weekends when demand sometimes exceeds availability. With the "mobility card" which members are issued, they can also charge taxi fares.

On the question of what makes car sharing different from commercial rental organisations, according to Petersen (interview), the differences are that:

- StattAuto cars can be rented by the hour
- members have access to the cars during the night hours
- all cars are new with good ecological standards.
- stations are placed in the centre of cities, where people live, whereas rental cars are usually placed where big roads cross each other or near stations and airports

3.1.11 Government involvement

There has not been any direct government involvement in supporting car sharing in Germany. However, the existence of a large transport NGO created in order to promote alternative transport planning, called Vakertscblubb Deutchland (VCD) has made a difference (Huber, interview). It is mainly a grass roots organisation with 70,000 members. Its main goal is to obtain funds for marketing of alternative mobility solutions. It gets a lot of media attention when each year it announces the most "environmental" car. VCD has supported car sharing in its marketing and lobbying strategies.

Petersen believes that the positive effects on parking should be an incentive for municipal authorities to provide parking for car sharing organisations. They have refused to do so thus far because of a concern that to do so would raise a request from rental organisations and taxis for similar concessions on parking. An alternative role for local government would be for government organisations to actually join car sharing as members. This would have positive economic and marketing effects.

3.1.12 Benefits of car sharing and key elements of success according to StattAuto.

Benefits

According to Petersen, membership in StattAuto leads to fewer cars and less kilometres driven. While the average car use in Germany carries 1.3 persons, the average StattAuto shared car carries 1.9 persons. The average German car owner drives 8,758 km per year, while an average StattAuto member drives 4,025 km per year. Every shared car in StattAuto reduces the car driven distance by 42,500 km per year, a savings of 10 tons of CO₂ (Petersen 1998). A typical car sharing member drives less for every year they remain a member, stabilising after 4 years. 20% of those who quit do so because they have realised that they do not need a private car anymore. At the same time, another 20% of those who quit do so because a need arises for a private car. This is often connected with the birth of the second child. Other reasons for quitting are that the person moves or changes jobs.
Those who join car sharing increase their usage of other forms for transportation, including public transportation, taxi, biking and walking.

According to Petersen (interview) every shared car frees up 5 parking spaces in the city. This reduces congestion and traffic. An acknowledgement of the environmental benefits is a recent decision by the German Environment Ministry to allow StattAuto and other German car sharing organisations to apply for the Blue Angel environmental certification. The jury has announced the following criteria as essential for the awarding of the certification:

- the 24 hour access to the service
- the pay-as-you-drive tariff structure with no free miles included.
- the fact that the vehicles are new, well maintained, and have a high environmental standard

Key elements of success

Media attention was important in the beginning phase. There was an article in Spiegel in 1990 which gave a good description of car sharing and talked about it in a positive way. This lead to interest by newspapers in the early 90's (Harms and Truffler). Recently, this media attention has waned.

One of the keys to success of the car sharing business, according to Petersen is to know the demand patterns very well. The time of the year, weekend vs. weekday, even weather can affect demand. StattAuto is building a software which predicts demand. Another key to success is co-ordination with public transport, taxi and rental companies. A creative approach to service is also important. Two examples of popular services: a member is allowed to take up to four other people with them on the metro in the evenings and week ends (a virtual automobile); women who use cars at night are allowed to return them the next morning, so that they do not have to walk back from parking stations to their residences late at night.

According to Petersen, car ownership is a thing of the 20th century. StattAuto does not see itself as remaining an alternative movement, but rather as representatives of a new concept in automobility, where the emphasis is on use, not ownership. This evolution in automobility will provide new markets and new opportunities for car sharing organisations.
3.2 DENZELDRIVE Carsharing, Graz, Austria

3.2.1 Background.

Peter Novy started AutoTeilen Oesterreich in 1993 in Graz and quickly expanded the organisation to the cities of Alpiet, Innsbruk and Salzburg. ATO has since gone through two name changes, first to Easydrive and recently to DENZELDRIVE Carsharing (hereafter referred to as DENZELDRIVE). The organisation had 800 members by the end of the first year (1993) and has 1600 members today. DENZELDRIVE received support in 1997 from the European Union DGXVII Save programme (the project was called CASUAL). The purpose of CASUAL was to evaluate the economic aspects and energy savings potential of car sharing.

ATO encountered financial problems in the early phase of its operation. Partly as a consequence, Novy eventually sold the organisation to the car trading company The Denzel Group in 1997. Denzel was able to stabilise the economy of ATO. Two aspects of the business were improved: access to finance capital, and the acquiring and selling of the cars. Denzel also owns Europcar Car Rental.

Members of DENZELDRIVE get a discount in car rentals from Europcar. According to Novy, this works well because for longer journeys like vacations, car rentals are less expensive than car sharing. Denzel also has an automobile club. Members of the club can join DENZELDRIVE at a reduced rate. Many of automobile club members use DENZELDRIVE as a second car. The automobile club does advertising for DENZELDRIVE, provides information about car sharing, and takes reservations.

3.2.2 Administration.

The company is run on a commercial basis. Novy is the director. The organisation has 9 full time staff including a manager, 4 administrative assistants, 3 working with fleet management and 1 person working with system development.

3.2.3 Goals and marketing.

While environmental goals are implicit to the operation, DENZELDRIVE puts its main emphasis on improved mobility service at a lower cost than car ownership. DENZELDRIVE does not project car sharing as the negation of the car, but rather that the car is a good idea. The car sharing form for mobility is simply a more flexible and cheaper way to have access to automobility.

According to Novy, Austrians are fascinated with the car. Many of the sports heroes are race car drivers. DENZELDRIVE takes advantage of this relationship to cars in its marketing, showing how car sharing is an alternative, interesting, less expensive way to have access to a range of cars. Its main marketing campaign compares driving a car with drinking milk, posing the question: When you want a glass of milk, do you buy the cow? And then, When you want to drive, why buy the car?

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2 This section is based on literature (cited) and on interviews with Karl Steininger of University of Graz and Peter Novy of Easycar.
3.2.4 Member profiles.

Members have a profile similar to that of StattAuto: most of them are well-educated, between 25 and 45 years old and have a middle to high income. According to Novy, there are two potential market segments of car sharers. One is the middle to high income families who want to avoid the hassles of car ownership. The other is lower income families who need a car but who cannot afford it. This remains an untapped market segment.

Young people are also a potential market, but in Novy’s opinion, if you do not get them to join before they get their first car, they are lost to car ownership for 15 years before there is an opportunity to recruit them. Many parents give a car to their children for their 18th birthday. Novy is working on a marketing strategy to have parents give teenagers a membership in DENZELDRIVE instead. He has statistics which show that most accidents in a drivers lifetime occur within 15 days of buying their first car. He thinks car sharing would reduce accidents among young people.

3.2.5 Procurement of Cars.

DENZELDRIVE obtains its vehicle on a leasing contract from Europcar. There are 160 cars of all types for the 1600 members. DENZELDRIVE expects to have a fleet of 200 vehicles in use by the end of 1999. In addition to the standard fleet of small cars, the organisation offers a limousine, a sports car (called a “fun” car) and a Van.

The member to car ratio is 10 to 1. DENZELDRIVE thus has a lower member to car ratio than most other car sharing organisations. This increases the car availability and the quality of the service, but is more costly. Cars are used on average 30 times per month, and the average distance driven is 80 kilometres per trip.

DENZELDRIVE gets new cars in the Spring on a six month lease from Europcar. According to Novy, Denzel sells the cars after 6 months due to their experience with resale prices. This contrasts with StattAuto’s policy of keeping the cars for 2.5 years.

3.2.6 Parking.

DENZELDRIVE has a total of 120 parking stations. Novy says that finding parking spaces is one of the biggest problems for DENZELDRIVE. They have had to make the parking spaces small in order to accommodate all of the cars – this has lead to a lot of small dents and scrapes as the members take and return cars.

3.2.7 Fees and financial arrangements.

The fees and financial arrangements are similar to StattAuto, except there is only one option for a membership arrangement: the member pays a deposit of S 5000 (365 €), an entrance fee of S 950 (69,3 €) and a 100 S/month (7,3 €/month) fixed fee, as well as paying by the hour and kilometre when a car is used. Hour and kilometre rates range from 21 S (1,5 €) per hour and 3,80 S (0,28 €) per kilometre for the smallest car to 31 S (2,26 €) per hour and 5,40 S (0,39 €) per kilometre for a Van.

Gasoline is included in the fee. Members who fill the cars can either charge to the DENZELDRIVE common credit card or pay on their own and get reimbursed. A blanket insurance fee covers members.
3.2.8 Ordering and using a car.

The DENZELDRIVE procedures of ordering, driving, returning and reporting on car use are almost identical to that of StattAuto. In 1993 Novy developed a software system for reservations which is now mature and functions well. DENZELDRIVE is developing a chip used by Mobility, Switzerland, to automate the reservation system. When a member books a time, the car is programmed to accept the card only during the hours reserved. The car will not start until the users card is inserted. The fuel and kilometres used are automatically recorded on the chip. No manual report by the driver is necessary.

There is a common booking system for all cities: Graz, Alpiet, Innsbruk and Saltzburg. Novy says that this is expensive, but he thinks it is important for the success of the expanding organisation.

3.2.9 Maintaining the cars.

Cars are serviced and maintained by Denzel. As far as cleaning the car goes, each car has a "car manager" who goes round occasionally to check on the condition of the cars assigned to them and clean if necessary. Each manager is responsible for 15 or so cars. Novy says the work does not pay well (150 S -10,9 €- per car per year). They use students and other volunteers as car managers.

3.2.10 Co-ordination with other forms for public mobility.

There is an arrangement for memberships in DENZELDRIVE for annual pass holders on public transportation. Pass-holders can pay an additional annual fee of S 400 (29,2 €) and obtain a membership in DENZELDRIVE. Novy thinks the public transportation systems in Austria will benefit from a growth in car sharing.

DENZELDRIVE members also get discounts on Europcar car rentals.

3.2.11 Government involvement.

DENZELDRIVE had a brief co-operation with the city of Vienna which Novy says did not work well. They helped with promotion of car sharing, but gave no economic support. He is also disillusioned with the Austrian Ministry of Environment, who made promises for funding which they did not keep, even when DENZELDRIVE was on the verge of bankruptcy. He thinks car sharing will function better on a purely commercial basis, given that it has access to finance capital in the early stages. The best role for the government according to him would be to provide parking spaces.

3.2.12 Benefits of car sharing and key elements of success according to DENZELDRIVE.

Benefits

In 1997 (with 65 cars) members of DENZELDRIVE saved 2.7 million car kms in one year. There was an increased demand for public transportation of 1.2 million kms, an increased demand in taxi journeys of 100,000 person-kms and an increased demand for rental cars of 200,000 person-kms. This resulted in a savings of 3,400 tonnes of CO₂, 5.75 tonnes of CO,
1.5 tonnes of NOX and 0.8 tons of HC. There was a reduced demand for parking space of 6000 sq. meters (Novy 1998).

According to the same study, the longer the member is in the organisation, the number of trips decline and their length increases. The shorter trips fall out. The implication is that chores are either grouped by members or that some chores are accomplished by other means of transport (walk, bike, public transport).

The same study showed there is a 13% potential for car sharing in Austria. Novy mentioned a recent market study conducted with people who had just bought cars. First, the basic facts about how car sharing works were explained and people were asked if they would have joined. 33% said yes. Then the economic advantages of car sharing were then explained and the number who said yes increased to 37%. Finally, the environmental and social advantages were explained and 50% said yes.

**Key elements of success**

It is Novy’s opinion that car sharing will have greater success with normal cars than with electric cars. In their everyday lives, most people want to feel comfort and familiarity as opposed to dealing with new technology.

He strongly emphasises that the person to car ratio should not exceed 10:1. When it gets higher, the service aspect suffers. Cars are not there when people want them and this is not good for the image of car sharing.

Novy strongly believes that car sharing is the new wave in automobility. In fact he believes it will take off like mobile telephoning and is worried that there will not be sufficient infrastructure to support it. Another example of his positive view is that he says that the success of public transport systems of the future will depend on car sharing, not the other way around.
3.3 Bilkollektivet, Oslo, Norway

3.3.1 Background.

The Oslo collective was established in 1996 with 25 members and 5 automobiles leased on two year contracts. The idea grew out of a study by a Norwegian research institute, supported by the Norwegian Parliament, which examined trends in car sharing around Europe. The final report of the study gave advice on how to start a car sharing collective (Hille 1993).

The organisation has grown slowly over the past three years and has struggled with some economic difficulties. In 1999 there are 220 members and 16 vehicles placed in five parking areas situated in different parts of the city.

3.3.2 Administration.

The organisation is run by its members and their elected Board of Directors. Members meet annually to discuss strategy, fee setting, etc. A small staff consisting of one manager, occasional volunteers and a secretarial service, keeps control over orders and movements of the cars. When a member wants to use a car, he or she calls a central telephone number or fax, giving pick-up time, duration and desired pick-up point. There is 24 hour booking by fax, but telephone booking is only accepted in business hours and weekend days.

3.3.3 Goals and marketing.

The most important goal of the organisation has been reducing the environmental impacts of cars in Oslo. The service aspect of car sharing, automobility without the expenses and responsibility of the car, has been used in marketing, but not to the extent it has been emphasised in StattAuto and DENZELDRIVE.

The Wilhite (1997) study found that an important motive for joining the collective was to be free of responsibility for the car, including freedom from worrying about maintenance, service, cleaning, registration, road fees, insurance and parking. The report concluded that the greatest potential for growth of the collective was not among the environmental idealists, but rather among the growing frustrated segment of urban dwellers who are tired of traffic jams, parking problems, and the increasing costs and responsibilities of owning a car. It was recommended that the organisation emphasise this improved service aspect in subsequent marketing.

3.3.4 Member profiles.

In 1999 there are 220 members. Their profile is very similar to the membership of StattAuto and DENZELDRIVE: mainly well educated people, aged from 25-45, and middle income.

3.3.5 Procurement of Cars.

Cars are leased on three year contracts from a Peugeot dealership in Oslo called Bertil O. Steen. The dealership does regular maintenance on the cars. Most of the cars are small to medium compacts, but there are 2 station wagons and 2 larger vans as well.

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3 This section is based on analysis of the Oslo organization done by Wilhite in 1997.
3.3.6 Parking.

Finding parking has not been as great a problem in Oslo as in Berlin and Vienna. Oslo is a compact city of 500,000 population and parking outside of the main city centre is not excessively expensive. The organisation's cars are placed in 5 lots spaced around the city.

3.3.7 Fees and financial arrangements.

The fees and financial arrangements are similar to those of StattAuto. The cost of membership includes the purchase of a share in the collective, and a recently established annual fee of NOK 350 (42.3 €). The membership share today costs NOK 5000 (605 €). Should a member decide to withdraw from the collective, the share can be sold to a new member (with staff assistance). Rental of sedans (middle sized passenger cars) costs NOK 110 (13.3 €) per day and NOK1100 krone (0.13 €) per kilometre and rental of station wagons costs NOK 160 (19.3 €) per day and NOK14 0.17 € per kilometre. The shortest time interval for a rental is one half a day, which costs one half the full day rate.

Members pay for their own petrol. The standard procedure is that the tank is filled immediately before returning the car, a different procedure from that in which the petrol costs are included in the km price. In the Wilhite (1997) evaluation, some members indicated that they found this procedure inconvenient. It was recommended that the procedure to be changed to that of including petrol in the kilometre price, but the leadership chose not to implement the change.

3.3.8 Ordering and using a car.

The system for ordering a car is similar to that of StattAuto. A secretary in a central office takes orders by telephone or fax. Members fill out a log with their pickup and return times, and with the kilometres driven.

The principle usage for most of the members is to use the car as a weekend "get-away" vehicle. Some use it for shopping excursions for heavier items or large purchases of food. Members satisfy many of their weekday transport needs, including commuting, with public transport and bicycling. Weekday rentals are low, and this is a headache for the collective, since on the one hand the weekend peak demand is hard to satisfy, and on the other, the idle periods during the week are economically inefficient. An effort is being made to solicit small businesses to the collective which might be interested in using the cars during the week.

3.3.9 Maintaining the cars.

Periodic maintenance is provided by the car leasing organisation. Otherwise, each individual member is responsible for cleaning the cars before returning them to the parking area.

3.3.10 Co-ordination with other forms for public mobility.

There are as yet no discount arrangements with public transportation, taxi or rental car organisations. The car sharing administration helps members obtain Hertz rental cars if they are needed on the weekend, but at commercial rates.
3.3.11 Government involvement.

The government has not been involved in any way except to sponsor the initial research project and the study by Wilhite (1998), financed by the Ministry of Social Affairs.

3.3.12 Key elements of success.

The Wilhite (1998) study, revealed some surprises for the car sharing organisation’s leadership. The most significant of these was that the resolving of practical needs was a more predominant motive for joining the collective than idealism. Most members joined for one or more of the following reasons:

- they had a need for a car, but only occasionally
- they were tired of parking and maintenance problems (especially weighed against the alternative of buying a used car)
- they could not afford a car.

Joining the collective offered the opportunity to have a car available for periodic needs at low cost. Even those who were strongly idealistic indicated that their continued participation was contingent on a well-functioning and reasonable organisation. Some of the most important aspects named were:

- that the price out-competes rental companies, including the cheap alternatives like Rent-a-Wreck- the biggest rental company in the world of super-used cars. They rent well worn cars at cheaper rates than main line rentals
- that the reservation process functions error free, i.e., that cars are there at the time and place ordered.
- that parking areas are within walking distance or are easy to get to on a public transport route.

As one respondent said, «in our very hectic daily lives, in which we already have difficulties squeezing everything in time-wise, idealism is one thing, but you have to get things to go around. When you have chosen not to have your own car, the thing is that when you order a car it’s because you really need it.» When the administrative system breaks down, this causes big problems and irritations.

As to the economic difficulties and relatively slow growth of the organisation, some problems are:

- The leasing contract for cars is expensive.
- There are no discounts available on public transport (no member discounts).
- Administrative routines have not been efficient.
3.4 Praxitèle, France

3.4.1 Background

The concept behind Praxitèle is free access to small electric cars, stationed primarily close to public transportation hubs or important firms. The North American projects based on the same principle have given the name station car to this form for car sharing. The Praxitèle concept was born in a research institute and later supported by manufacturers (as opposed to we haven't mentioned it yet StattAuto, created as associations and then formed into companies).

The Praxitèle concept is:
- individual transportation, shared in time, in order to reduce consumption of parking spaces and duration
- easy to use: free access 24 hours a day, using electronic devices
- complementary to public transportation
- a clean and noiseless mean of transportation.

Praxitèle was implemented in the city of Saint Quentin en Yvelines, a "ville nouvelle". The concept for this kind of city was born in the early 70's and was based on the use of private cars. Saint Quentin was created by grouping old villages that have different characteristics in terms of wealth and average citizen age. Today, there are 150 000 inhabitants, and the city hosts 70 000 jobs. A number of roads and public transportation (RER) connect the city to Paris. There are no problems of parking spaces or traffic jams. Another reason for choosing Saint Quentin for the Praxitèle experiment was that the participating industries are located within its city limits (Electricité de France, Renault, Dassault).

There were two phases for the project:
- a "manual" phase, before advanced car tracking technology was installed, which lasted from November 1997 to June 1998. During this phase there were 12 persons working for the service, and 5 parking stations located in three geographical areas.
- an "automatic" phase, from June 1998 to July 1999, with 5 more stations, 24 hour a day service, and new technologies, including cars location in real time (GPS system), automatic client identification, and video watch against robbery. Praxitèle was terminated as planned at the end of the second phase.

The first phase of the project has been evaluated based on a quantitative analysis (automatic data given by the system, telephone questionnaires, and a notebook in the cars) and a qualitative analysis based on 17 individual interviews.

3.4.2 Organisation and administration

A consortium was created which included the local public transportation, the national electricity authority (EDF), several industries and two research institutes. Financial support came from several ministries (including Transportation) and several local authorities. The total cost of the project was 4.57 millions francs (around 700 000 €) over a 21 months period.

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4 This section is based on an interview of Mrs. Massot, in charge of the follow up and evaluation of Praxitèle at the INRETS institute, and an evaluation report of the first implementation phase.
PREDIT, a research programme on transportation common to several ministries, has followed and financed part of the project.

Users (considered as "subscribers") were issued a "Prxicard", delivered in a "Prxicenter" after signing a contract and presenting an ID, a driving license and a bank account number. 500 Parxicards were issued.

3.4.3 Goals and marketing

Since the main goal was to test a type of car sharing and not create a demand for a permanent service, tariffs did not reflect economic realities. They were rather based on the results of a marketing study which predicted a price tariff level which would be realistic to attract users.

Marketing arguments used were: freedom (pick up and return the car to any station, monthly bill, no booking), price, ecology, easy to drive in the city, complementarity with public transportation, and an offer of 15 minutes free trial.

3.4.4 Members profile

It was thought that the system would be used mainly by people working in the areas where the stations were located, but the evaluation of the first phase showed that the majority of users came from inhabitants living near the stations. Other characteristics of vehicle users:

- Users were young (54% between 18 and 34), employed (84%) and mostly inhabitants of Saint Quentin.
- 80% of users were men (further analyses should be made as to why women used it less).
- Most of the users walked to the station.

3.4.5 Procurement of cars

In the first phase, 50 electric Clios, called "Prxicars" were provided by Renault, one of the partners in the project.

3.4.6 Parking

In the first phase, these "Prxicars" were placed in 5 stations, with a total of 100 parking places. Five more stations were added in the project's second phase.
3.4.7 Fees and financial arrangements

<table>
<thead>
<tr>
<th>Tariffs</th>
<th>Full hour * (peak)</th>
<th>Low hour*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhabitants or users of local public transportation</td>
<td>30 FF / 4,58 € for ½ hour</td>
<td>15 FF / 2,29 € for ½ hour</td>
</tr>
<tr>
<td>Others</td>
<td>50 FF / 7,63 € for ½ hour</td>
<td>25 FF / 3,82 € for ½ hour</td>
</tr>
<tr>
<td>Additional minutes</td>
<td>2 FF / 0,3 €</td>
<td>1 FF / 0,15 €</td>
</tr>
</tbody>
</table>

* Full hour = 7.30am / 10 am - 16pm / 19 p.m. ; Low hour 10am / 16 p.m.

The evaluation showed that the pricing system was appreciated because there was no need for administrative complex registration (trying the system was possible without paying), and because the prices were reasonable. However, there was criticism of the length of the pricing period: 30 minutes was judged too short. The evaluation showed the price of the service was a key issue for attracting captive clients (those not owing a car).

3.4.8 Ordering and using a car

There is no ordering system for this type of station car. "Jockeys" take care of balancing the number of cars between stations.

Over the first phase, 6 out of 10 possessors of Praxicards really used the system (the others just tried it). There were in average 2.2 uses per month, and for the clients who used the service most, 4.2 uses per month.

The evaluations showed that cars were used for short periods of time (average duration 35 minutes), and most of them were used as transportation from one station to another (67%); Only 12% of the interviewees stated they would not have made the trip if Praxitèle were not available; 9 out of 10 users were satisfied with the service (41% very satisfied) ; the human presence is judged as very important (but was lighter the second phase, more automated); the fact that the car is electric is also very important (new, modern, non polluting, "makes you want to try it").

One of the main conclusions was that the availability of a private car at home and the location of the station near the home are the 2 strong determinants for the use of Praxitèle.

3.4.9 Maintaining the cars

"Jockeys" were hired to move the cars during the day, to balance the number of cars between stations, wash them, watch after them and put them away at night.

3.4.10 Co-ordination with other forms for public mobility

Praxitèle was thought of both as a substitution for private car and as a complement for public transportation. The evaluation showed that:

- 2/3 of the users indicated that public transportation means are not satisfactory in non-rush periods
- Cars were used mainly for private purposes, then in co-ordination with public transportation and going to work.
- 1/3 of the clients used Praxicars in link with public transportation.
- Taxis kept their occasional clients.
3.4.11 Government involvement

Some public transportation companies are now trying to develop a "service à la carte" which would give car sharing a public transportation status (and would be subsidised by the State) for low density areas, where buses can not circulate in a satisfactory way. But if these systems are profitable, with normal cars and no electronic devices, the State might decide to let the system operate on its own, with not subsidies.

3.4.12 Benefits and key elements of success

In the end, Praxitèle did answer to the mobility needs of certain users: those without cars (20% of the clients, but 40% of the uses) and the ones with access to a car sometimes (28% of the clients but 31% of the uses). The system also attracted car owners: 52% of the clients always have a car available, but low tariffs were attractive enough to encourage occasional use of shared cars.

A Ville Nouvelle is a good place to start this kind of free-access station car because the population is rather young and very receptive to new technologies and developments. According to Mrs. Massot, the fact that cars are electric is important because it attracts people due to the newness of the vehicle ("let's try it", modern, non polluting) but also because it serves the concept of short uses between one station and another.

Other elements which attracted users were: the non availability of a private car, the location of the station near to the user's home, the free access system, the possibility to use the car without booking in advance, and the human presence around the service (during the first phase).

Another key element of success lies in public information, even when the project is tested: people were aware that it was an experiment. People should not come to depend on a "wonderful" service that might disappear.

The car sharing concept fits in well with the general trend to attempt to limit the expansion of cities, to develop more transport services, and to delegate public services to private enterprises. In France, even if there is a consensus to put constraints on car ownership, the lack of constraints on space might be a very strong obstacle. Developing car sharing is then a political decision (and the political opportunity might come soon), but according to Mrs. Massot, plentiful space in Saint Quentin and other French cities does not justify the development of a new service like car sharing. Another difficulty is to find the minimum size and mass effect needed so that the car sharing project is viable.
4. A SUMMARY REVIEW OF OTHER CAR SHARING EXPERIENCES AROUND THE WORLD

We have found in our review of car sharing projects around the world that two types predominate. By far the most widespread is the variant similar to that of StattAuto and DENZELDRIVE, in which a range of types of cars are made available to members at a number of parking sites. The other is the station car concept, of which Praxitèle is an example. Most of the station car organisations are still in the project, or experimental stage. In sections 4.1 and 4.2 we review the car share organisations around the world in each of these two categories. We discuss another variant of car sharing in section 4.3. Since organisational forms and rules are similar, we only highlight differences to the cases presented above.

4.1 Car sharing organisations organised on the StattAuto model

We describe three European car sharing organisations which operate along similar lines to those of StattAuto: Mobility Carsharing (Switzerland), Autodate (Netherlands), and StadtAuto Bremen. A number of smaller organisations exist around Europe, notably in Denmark, Sweden and Great Britain. These will not be discussed, as their rules, procedures and approaches are reflected in the cases of chapter 3 and the three European organisations described in this section.

The StattAuto-type car sharing organisation has also been established in several Canadian cities, a few cities in the United States, and one in Asia. We include CAN (Vancouver), Autoshare (Toronto), AutoCom (Quebec City), CommunAuto (Montreal); STAR (San Francisco) and Car Sharing (Portland) and finally, from Singapore, NTUC INCOME. Again, we highlight differences and contrasts with the cases of chapter 3.

4.1.1 Europe

Mobility CarSharing, Switzerland

Mobility Carsharing was created in 1997 through the merger of Auto Teilet Genossenschaft and ShareCom (ATT and ShareCom were formed in 1987). It now has 30,000 members and 1200 cars placed at 700 locations in 300 communities. According to Ziegler (1999), there are now 3.5 million people in Switzerland within a 10 minute walk or bicycle ride from a parking station.

The explicit goals of the organisation are to reduce the environmental impacts of automobile use, reduce congestion and provide a service to members.

Many of the principles behind Mobility’s organisation are similar to those of StattAuto. Members pay entry and annual fees. The way cars are reserved and use fees are similar. There is however a choice of three kinds of memberships:

- A 571 € deposit, a 143 € annual fee and hourly and km rates of 1.4 € and .29 € respectively.
- No deposit, an annual fee and slightly higher rates.
- No fees but 2.4 € per hour and .38 € per km.
A «smart card» is used by members to open the car and get access to keys. According to Ziegler (1999), there is a 97% availability of vehicles at peak hours, accomplished through a good demand management system built up over the years. Data on the use of the car is automatically relayed to a central number which translates it to billing information.

According to Muheim (1998), car sharing began to take off in Switzerland in 1996, when car sharing, rental car and public transport were integrated. Within 6 months, 3,500 new people joined Mobility. Mobility members now get a 35% discount on Hertz rental cars.

Mobility has recently taken new initiatives to integrate car sharing with other mobility service organisations. An example of a national service is the “444” card which gives a discounted 2 year Mobility card and a two year train pass on the national rail system. Almost every regional public transportation company in Switzerland is a partner in a car sharing mobility package (Shaheen 1999). Examples of the regional mobility packages are “Zuri Mobil and “Zuger Pass Plus.” “Zuri Mobil” is a mobility package that is based on a regional public transit offer that also includes car sharing and car rental for the city of Zurich. The availability of this package for Zurich is credited with contributing to the relatively high use of public transport in Zurich, where use of public transport is three times that of any city of comparable size in Europe. “Zuger Pass Plus” (ZPP), provides a discounted combination of car sharing, public transit, car rental, taxi, bicycle, and other non-transport related services for its customers (similar to a frequent flyer programme). ZPP is a partnership of several transportation providers and other businesses.

On September 1, 1998, a new partnership was started with the Swiss National Rail System (SBB), offering a mobility package to 1.5 million SBB pass-holders (approximately 35% of the country’s adult population). This package provides users with special discounts and easy smart card access to car sharing vehicles, rental cars, and transit (Wagner and Schmeck 1998). A pilot project scheduled to start in 2001, EASY-RIDE, will encompass most Swiss transportation activities by 2005. EASY-RIDE will make all public transport, car share and rental services accessible by smart card. This will simplify ticketing and encourage intermodal trip-making.

Mobility packages have also been designed in collaboration with auto manufacturers. Mercedes-Benz’s “Smart,” a small two-seater, combustion engine vehicle, has been marketed in Switzerland as a complementary vehicle to car sharing and public transportation. When an individual buys a “Smart” in Switzerland, they can also purchase a “mobility package” (a value of 381 €) for just 48 € per year. This package includes free access to all car sharing vehicles — with no membership fees — at a slightly higher hourly rate and the same mileage rate paid by Mobility customers. This package also includes a half-price pass for the Swiss public transportation system. This allows the pass-holder to purchase train and bus tickets for half price throughout the year.

In Switzerland there are 3,268,000 cars for 7 million inhabitants, i.e., one car for 2.2 persons. In Mobility, 22 persons share a car. According to Mobility’s advertising, if everyone in Switzerland changed to car sharing, the number of cars would be reduced to 264,000.

A survey conducted by Mobility showed that average annual use of members decreased from 12,500 km per year before membership to 5000 km/year after. The difference made up in using public transport (Muheim 1998). While the transport share for members before joining was 80% car and 20% other means, after joining it is 20% car and 80% other means.
The government has supported car sharing in Switzerland for ten years through its programme Energy 2000, which has consisted of financial support for specific projects (as opposed to a general subsidy to the organisation) and help with promotion and networking. In the study by Harms and Truffer (1998), interviews were done with both government officials involved in Energy 2000, and with leaders in Mobility. Interestingly, Mobility leaders felt that the promotional and networking support was much more important than the financial support. By giving its support to car sharing, the government added a sort of legitimacy which was very important.

Autodate, Netherlands

Autodate is an umbrella organisation for car sharing organisations in the Netherlands which is comprised of about 30 different organisations which have a total of 85,000 members. It assists its member organisations to solicit commercial companies which can use vehicles on weekdays, and it promotes car sharing in conjunction with the building of new residential areas.

According to Harms and Truffer (1998), the car sharing organisations in Netherlands can be grouped into three types. By far the most widespread is the StattAuto-type. The second and third are hybrid models somewhere between car sharing and car rental. In one, a coupon-based system is used by members with standard car rental companies like Europcar and Budget. Members are issued coupons which they cash in when they use cars. They are given a special telephone number which they use to order the cars, which are located on the lots of the car rental organisation. The minimal reservation time is half day. Another difference from normal car sharing is that members must leave a deposit every time they take a car. In another variant, members decide in advance how many days per year they are going to use a car. They pay a fixed fee for one type of car. If they need the car more days, or need a different kind of car, they can pay an extra fee. The cars must be reserved 24 hours in advance using a special member number. Reservation and payment are easier than normal car rental and members are given some extra benefits, such as a reduced tariff for using a taxi to get to the rental car office.

The Dutch government gave its support to car sharing from the early 1990’s. It published a transport plan which proposed a number of initiatives to reduce both the number of cars on the road and car use, among them car sharing. The Ministry of Transport conducted a feasibility study in 1993. The study concluded that car sharing is a commercially viable system which should lead to a massive reduction in car use (Bakker 1995 as reported in Harms and Truffer - 1998). It pointed to a potential for 2 million car sharing users by 2010. The government played an active role in putting major actors together to foster car sharing. It jointly produced a brochure on car sharing in 1993 and sponsored a series of workshops in 1994 and 1995. The «Stichting van Gedeeld Autogebruik» umbrella organisation grew out of these workshops. It later changed its name to Autodate.

The government has also formed a service centre for the promotion of car sharing in the Netherlands, funded by the Ministry of Transportation. It works with local communities in incorporating car sharing in the planning stage for newly built areas. In addition, the Ministry is monitoring and documenting the development of car sharing and is working on how to best further stimulate car sharing (Bakker 1998).
According to Meijkamp (1999), a broad variety of policy measures have been taken or will be taken with regard to car sharing:

- Research and knowledge development
- Monitoring
- Market communication
- Knowledge transfer to local and regional authorities
- Facilitating an appropriate parking policy
- Promotion of further development of car sharing services
- Facilitating the co-operation between service suppliers
- Facilitating the implementation of information and communication technology in car sharing.

The government sees itself as a facilitator, but essentially sees car sharing as a market driven enterprise.

In a study by Meijkamp and Teunissen (1996), it was shown that former car owners in four car sharing organisations in the Netherlands reduced private vehicle mileage by 29% (from 5,394 to 3,800 km). There was an increase among participants in use of bicycles and trains.

**Stadtauto, Bremen**

Stadtauto Bremen was established in 1990, with 28 participants and 3 cars. In 1999, there are 2000 members of Stadtauto, with 80 cars located at 46 parking stations. There are different types of vehicles available, from subcompacts to vans. The system for ordering, using and paying for cars is similar to StattAuto in Berlin (the two organisations are not related). Reservations are open on a 24 hour basis. The basic membership costs 32 €. There is also an initial fee of 30 € for those who choose to have a Smart Card described below. Smart Card owners pay slightly higher hourly and kilometre fees, but are not required to pay a deposit.

There was a lot of scepticism in the beginning about whether the success in Switzerland, where there is a tradition of sharing, could be transferred to Bremen. Rapid growth in the organisation, coupled with a transition from an environmentally-oriented to a market-based approach has lead to reduced scepticism (Glotz-Richter 1999). Car sharing has now become a part of the city development plans and parking stations will be incorporated into future developments.

On June 1, 1998, a system with a common smart card was initiated. It can be used as a monthly or annual pass on public transport and as a Smart Card for using cars. All parking stations either have an “intelligent” key box containing the car keys or give direct access to the cars via the smart-card. Vehicles have an on-board computer which is linked by mobile phone to the central booking offices. The user places the card on a transponder screen in the windshield and the doors automatically unlock. The ignition keys are left in the glove compartment. The computer tracks kilometres and hours, and bills are sent automatically.

According to Glotz-Richter (1999) the smart card changed the image of the organisation. It came to be seen as a professional organisation with modern routines. It has other advantages as well: it is cheaper than a key box system, it reduces misuse and loss of keys, and reduces the risks of mistakes.
An important objective of the Bremen organisation has been to integrate its car sharing services with public transport. There was initial scepticism in Bremen on the part of public transport authorities who were worried about creating a competitor rather than a complementary type of mobility. In 1998 an agreement was reached with the public transport system on an “Autocard,” which was developed with funding assistance from the European Commission Thermie programme. For 60 DM (30 €) an Autocard can be purchased which gives access to all public transport and all Stadtauto vehicles for a month. The usage rates on the vehicles are slightly higher than for regular Stadtauto members. On the other hand, the purchaser does not have to pay any deposits or monthly fixed costs. The Autocard won an environmental award in September of 1998.

There was a survey conducted by the University of Bremen after one year of the implementation of the Smart Card. The 500 participants reduced their car use by more than 800,000 kilometres, with a CO₂ reduction of about 180 tons (Glotz-Richter 1999). It also showed benefits for public transportation. Sixteen percent of the new car share participants had never had a seasonal public transport pass. And there was an increase from 54% to 78% of new clients who chose annual passes.

In a result similar to that from the evaluation of the Oslo Bilkollektivet, 72.3% of the participants listed “avoiding repair, maintenance and insurance” as the most important benefit of car sharing.

The Bremen organisation both initiated and has been the beneficiary of European Projects concerning car sharing. It has been a part of the “European Car Free Cities Network”, funded by DGXVII of the European Union. It is also the location of the European Car Sharing Organisation. DGXIII and VII of the European Commission are providing funding for the further development of the smart card.

Bremen has actively solicited local governmental organisations to become members in Stadtauto. Governmental organisations are offered a discount on membership.

According to Drozdiak (1999), car sharing has reduced daily traffic circulation in the inner city by about 500 cars per year. With financial support from the city government, apartment complexes in Bremen now offer substantial discounts on monthly rents if owners pledge not to own cars.

Future goals are increased on-street parking, on-line booking and the integration of car sharing, banking and many other services into one single credit card.

**Caisse Commune, Paris**

Caisse Commune⁵ started in September 1999 as an association. It was advised by car sharing organisations in other European countries to adopt a commercial profile. It was rapidly transformed into an incorporated company along the lines of StattAuto.

The booking system functions 24 hours a day. The system has 4 GLP medium size cars in a private parking station near Montmatre. This area was chosen because of its density and the

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⁵ Caisse Commune is a play on words, "Caisse" meaning a cash box, but in slang, a car.
extreme difficulty to park in the area (many of the streets are restricted to pedestrians). The parking station belongs to the Town Hall but is rented at a normal commercial fee. Outdoor parking stations have not been considered because of fear that the key-boxes will be robbed.

Caisse Commune and the Research Department of Renault have three kinds of partnership contracts:
- one regarding the leasing of cars;
- one regarding the booking of cars and an agreement with Renault Relais car rental for rentals of more than 24 hours (at least in the first phase, since Caisse Commune does not yet have a large variety of cars, suitable for week ends);
- one regarding follow-up and evaluation of the project (Renault wants to study the sociological aspects of car sharing).

Caisse Commune has also received public support, mainly for a feasibility study and evaluation of the project. The "Predit" programme has contributed financing - 600 000 FF (around 90 000 €) for the follow-up and evaluation - but in addition to their participation, there are a number of public bodies represented in a sort of advisory board, including Ademe, public transportation, administration and research institutes.

Fees have been established as follows:
When joining the organisation: 4 900 FF (750 €), composed of:
- Subscription: 90 FF / 13,74 € per month (established to generate revenue for the company and to filter out non-serious participants)
- Entry fee: 1 500 FF / 229 € (finances the development of the organisation and car equipment)
- Guarantee: 2 000 FF / 305,35 € that the client can be reimbursed on leaving the organisation (finances the insurance)
- Advance on consumption: 900 FF / 137,4 €, which is also reimbursed on leaving the organisation (finances the operation)

Fees for the uses of the cars are indicated in the following table.

<table>
<thead>
<tr>
<th>Package</th>
<th>Length of period</th>
<th>Small* (Twingo)</th>
<th>Medium* (Clio / Kangoo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprint</td>
<td>hour tariff</td>
<td>25 FF / 3,82 €</td>
<td>30 FF / 4,58 €</td>
</tr>
<tr>
<td>Demi-fond</td>
<td>4 hours</td>
<td>65 FF / 9,92 €</td>
<td>75 FF / 11,45 €</td>
</tr>
<tr>
<td>Marathon</td>
<td>8 hours</td>
<td>120 FF / 18,32 €</td>
<td>130 FF / 19,85 €</td>
</tr>
<tr>
<td>Biathlon</td>
<td>24 hours</td>
<td>150 FF / 22,9 €</td>
<td>170 FF / 25,95 €</td>
</tr>
<tr>
<td>Price per km</td>
<td></td>
<td>1.50 FF / 0,23 €</td>
<td>1.90 FF / 0,29 €</td>
</tr>
</tbody>
</table>

*GLP fuel is included in these tariffs. Clients receive a monthly bill.

Table 4.1. Fees for car uses in Caisse Commune

Marketing is based on freedom of use, simplicity of the service, money savings ("pay when you drive, not when you sleep"), improvement of urban environment, synergy with transportation and city actors. Caisse Commune says that it will open a new parking station if there are 10 people indicating an interest in joining from a given neighbourhood. The Caisse Commune brochure targets both individuals and businesses. This system is said to be profitable for those who use a car less than 12000 km/year.
4.1.2 North America

With the exception of STAR, the American StattAuto-type organisations discussed here are newer and smaller than their European equivalents (the Station car-type organisations are discussed below). Comprehensive evaluations of issues like member use patterns or attitudes have not yet been accomplished. We draw out those aspects of these new organisations which differ from the European organisations discussed above. Unless otherwise indicated, information comes from the organisation’s Internet site.

Short Term Auto Rental (STAR), San Francisco

The STAR organisation is no longer in existence, but is interesting as a historical example of one of the early attempts at car sharing in the U. S. which failed, mainly due to economic problems. The company operated as a private enterprise from December 1983 to March 1985, providing individuals in an apartment building complex use of short-term rental vehicles, for periods ranging from a few minutes up to several days. Funding for a feasibility study was made available from the U. S. Urban Mass Transportation Administration and the California Department of Transportation.

STAR was operated from the parking garage of a 9,000 resident apartment complex located near San Francisco State University. Users paid on a per minute and mile basis up to a maximum daily rate. This rate was kept low to discourage auto ownership and encourage transit use. The maximum daily rate for subcompact, mid-, and full-sized vehicles ranged between $8 to $9 (8 to 9 €) per day with an additional mileage charge of 10 cents a mile (0.01 € per mile). The members shared a fleet of 51 vehicles (44 cars, five wagons, and two light-duty trucks), with 10 additional vehicles available as backups during periods of peak demand. The fleet size was maintained until January 1985, when it shrank to 35 vehicles. Membership peaked at approximately 350 participants (Walb and Loudon 1986).

This project failed halfway through the planned three-year programme. The primary problem was the low and erratic income of many of the tenants. Many were later discovered not to be credit worthy for car ownership and many were students who shared an apartment and were not actually listed on the lease. Another failing was the pricing structure of STAR: it encouraged long-term, as well as short-term rentals. STAR’s management tried to cut costs by purchasing used, economy-class vehicles, but this resulted in high repair costs and towing charges for vehicles which broke down (Shaheen 1999).

The failure STAR shows how sound business practices and a professional approach to the organisation must be a complement to idealistic motives. The rate structure needs to be high enough to cover expenses. Cars need to be relatively new and technically sound. The reservation system has to work smoothly.

AutoCom, Quebec City and CommunAuto, Montreal

These two organisations are affiliated, the first to be created being AutoCom, the oldest car sharing organisation in Canada. It is one of those organisations which began as a non-profit collective, but has converted to an incorporated business.