



Visionary & Vibrant Actions through Local transport Demonstration Initiatives

Aalborg • Bremen • Bristol • Kaunas • Nantes



Deliverable D10 Policy Recommendations Report

November 2005



Table of Contents

Page

1	Executive Summary	1
2	Statements from VIVALDI Politicians	2
3	Statements from the European Commission	4
4	The CIVITAS Initiative	5
4.1	CIVITAS: Overview	5
4.2	CIVITAS: Policy Strategies and Aims	5
4.3	The Policy Advisory Committee	5
5	The VIVALDI Project	7
5.1	VIVALDI: Overview	7
5.2	VIVALDI: Policy Goals and Aims	7
5.3	The Political Advisory Board	8
6	Key Recommendations	9
6.1	New Forms of Vehicle Use and Ownership	9
6.1.1	Bremen case study: car sharing	10
6.2	Stimulation of Collective Modes	11
6.2.1	Aalborg case study: new public transport terminal	11
6.2.2	Kaunas case study: PIKAS public transport software	11
6.2.3	Nantes case study: Nantes-Vertou rail line	12
6.3	Pricing Strategies	14
6.3.1	Bremen case study: BOB card	14
6.4	Telematics	15
6.4.1	Aalborg case study: VMS and kiosks for information	15
6.5	Goods Distribution	16
6.5.1	Bristol case study: freight consolidation centre	16
6.6	Clean and Efficient Vehicles	17
6.6.1	Nantes case study: CNG bus fleet	17
6.6.2	Bremen case study: CNG freighter procurement	18
6.7	Soft measures	19
6.7.1	Bremen case study: MobilPunkt	19
6.7.2	Bristol case study: TravelSmart	19
6.8	Access Management	21
6.8.1	Bristol case study: The Dings Home Zone	21
6.8.2	Nantes case study: Vélocampus	22
6.9	Partnerships and Co-Operation	23
6.9.1	Bristol case study: Community Travel Workers	23
6.9.2	Nantes case study: travel plans	24
6.9.3	Bremen and Nantes case study: working in partnership	25
7	Conclusions	27
7.1	Linkages to VIVALDI Policy Strategies	27
7.2	Summary of Principal Policy Recommendations	27

1 Executive Summary

This report provides the principal policy recommendations from the VIVALDI project, as carried out by the cities of Aalborg, Bremen, Bristol, Kaunas, and Nantes.

These are delivered by means of 16 case studies that make up the majority of this document. Before this, a viewpoint is provided on the role and the success of the project from city politicians and the European Commission. There follows a summary of the CIVITAS initiative, of which this project constitutes a quarter; and the project itself is then introduced more fully. The report closes with a review and summary of the principal policy recommendations.

In brief, the principal policy recommendations detailed at the end of the report can be summarised as follows:

1. The involvement of key stakeholders (including the public as well as public and private bodies) is very important.
2. However, it is also important to maintain strong project management from the part of the local authority.
3. A good communication plan is necessary, followed by awareness raising and promotion.
4. None of the VIVALDI measures can be seen in isolation, they are all part of integrated transport planning strategies.
5. The benefits of participating in European Commission-supported projects cannot be stated too highly.

6. Transferability is another key element of the role played by European projects – using good practice and learning from the challenges that others have faced.
7. The importance of strong local government with a clear vision on sustainable transport cannot be underestimated.
8. Finally, the role of people: both a political champion and the citizens in each city for whom all the schemes are implemented.

A number of very detailed recommendations have also been produced in relation to specific areas of work carried out in the project. For cities considering similar schemes, these should prove extremely useful; however, although transferable in this sense, they are rather narrow in reference to be considered in this summary.

The contributions for each city were made by Mette Skamris Holm for Aalborg; Ingo Franssen for Bremen; Alexandra Allen and Pete Davis for Bristol; James McGeever for Kaunas; and Olivier Sorin and Christine Lassalle for Nantes.

More detail on any aspect of VIVALDI can be found from the following:

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2 Statements from VIVALDI Politicians



The Political Advisory Board (PAB) of VIVALDI brought politicians together from the five cities so that they could share their experiences and support each other in the promotion of clean urban transport initiatives in the VIVALDI cities. The benefits of co-operating in VIVALDI and the CIVITAS initiative are summarised below by the political representative of each city.

Aalborg **Henrik Thomsen; Alderman**

By participating in the VIVALDI project, Aalborg has been able to improve initiatives which were already approved, resulting in more integrated traffic solutions. Today we offer users a higher standard of service as the citizens have been given a more attractive public transport system.

Aalborg has had great benefit from participating in the VIVALDI project from where we have exchanged experiences with other European cities. Our local approach to the public transport system has been put into perspective, which has led to better results.

Bremen **Kristine Kramer; Deputy Minister for Construction, Environment and Transport**

All cities in Europe face similar challenges. VIVALDI is an ideal platform to exchange experiences and to learn from each other.

As a member of VIVALDI, we are able to better express our common interests at a European level than any city could do on its own.

Bristol **Helen Holland; Leader of the Labour Group**

The VIVALDI project is really important; it's a joined-up project that brings together social inclusion, health and well being, urban vitality, and sustainability, all in projects that people can really see on the ground and are able to make a difference to the city. And many of the projects are making a difference in our local communities; so it's not just about the city centre, but also about making the city a much more liveable place.

Another important element of VIVALDI is working in partnership with partners across the city – with First, our major public transport provider, the University of the West of England, Sustrans, and Dial-a-Ride; all of those partners have brought their own strength to the table which has added to the project. It's been great to know that other cities across Europe have been finding similar problems and working out their own solutions with their partners, too. Being able to go and see what people in Europe are doing, and how their politicians deal with shared problems, taking leadership about these issues in their cities, has all been a great benefit to Bristol.

Kaunas

Eligijus Dzežulskis-Duonys; Deputy Chair, Kaunas City Council Transport Commission

For public users, VIVALDI has helped us to produce several clear tangible improvements to everyday travel for passengers in terms of comfort, increased information, and security and we have been able to do this within a larger European context.

For Kaunas, perhaps the most important thing about working on European Union projects is the ability to develop clear, practical, and extremely useful relationships with major European cities. The VIVALDI partnership has clearly helped Kaunas to not only share experience of other cities but also to promote our own achievements as a new member state.

Nantes

Camille Durand; First Vice-President of Nantes Urban Métropole

Twenty years ago, the local authorities in Nantes decided to invest in a modern tram system as they were convinced that mobility was going to be major development issue in the future. It's always necessary to be at the forefront, because the city is constantly developing and evolving.

The key issues motivating our decisions were clean energy and access restriction. The CIVITAS programme was therefore very timely. The exchange of experiences with other European cities and the financial support from the European Commission were key factors in helping us propose a harmonious future for the citizens of Nantes agglomeration.

3 Statement From The European Commission

As the CIVITAS Policy Advisory Committee stated in 2004, the CIVITAS Initiative aims to “achieve a real change in urban transport through the combination of innovative technology, infrastructure and policy based instruments”. This has certainly been carried out by the five cities of the VIVALDI project: Aalborg, Bremen, Bristol, Kaunas, and Nantes.

The VIVALDI project set out to meet the challenges of the CIVITAS initiative through four key urban policy goals: “sustainability”, “social inclusion”, “urban vitality” and “health and well being”.

The VIVALDI project focused on different aspects of these policy goals, the results of which will be seen throughout the recommendations in this report. A number of key case studies are presented, demonstrating areas that provide valuable lessons for other European cities looking to use a similar approach to clean urban transport: clean-fuelled buses in Nantes; new public transport information for Kaunas; Bristol’s freight consolidation centre; car sharing in Bremen; and Aalborg’s new public transport interchange.

One of the most important lessons learnt is that the involvement of local politicians is vital for successful implementation of innovative transport measures. The Political Advisory Board of VIVALDI brought politicians together from the five cities so that they could share their experiences and support each other in the promotion of cutting edge schemes.

Within the framework of the CIVITAS Initiative, the European Commission has supported the VIVALDI project for the past four years, and is very pleased that such good results have been gained from the demonstrations. Many of the valuable lessons learnt are contained in this report, assisting other European cities to promote clean urban transport.

Eleni Kopanezou
Head of Clean Transport & Sustainable
Development Unit
DG Energy & Transport
European Commission
September 2005

4 The CIVITAS Initiative

4.1 CIVITAS: Overview

CIVITAS (City-VITALity-Sustainability) is a European Commission (EC) initiative to promote cleaner and better transport in cities. Through CIVITAS, the EC aims to generate a significant improvement in clean urban transport by supporting and evaluating the implementation of integrated and sustainable urban transport strategies that make a real difference for the mobility and quality of life of European citizens. In supporting these innovative measures, the overall budget of the initiative is more than 300m Euros (100m Euros from the EC).

CIVITAS started in early 2002, and includes 19 cities clustered in 4 demonstration projects (of which VIVALDI is one). Following the success of the first phase of the initiative, CIVITAS II was launched in 2005 to support 17 cities in a further 4 demonstration projects.

4.2 CIVITAS: Policy Strategies and Aims

The overall objectives of the initiative are threefold: to promote and implement sustainable, clean, and (energy) efficient urban transport measures; to implement integrated packages of technology and policy measures in the field of energy and transport; and to build up critical mass and markets for innovation. Within these, eight policy strategies were identified:

1. Clean public and private vehicle fleets using 'alternative fuels'
2. Access management to inner city and sensitive zones

3. Demand management and revenue-raising strategies based upon integrated pricing
4. Stimulation of collective passenger transport and improved quality of service
5. New forms of vehicle use and ownership, and less car-intensive lifestyles
6. New concepts for the distribution of goods
7. Measures for managing mobility demand, walking and cycling, and integrated planning
8. Transport management systems and related information services

Each of the CIVITAS projects has defined a set of policy goals and measures that reflect these strategies; these are detailed in Section 5.

4.3 The Policy Advisory Committee

The CIVITAS Forum allows all 36 CIVITAS cities to exchange ideas and experiences in their pursuit of implementing clean urban transport. The Policy Advisory Committee (PAC) is a group of politicians from the CIVITAS Forum cities, and serves as the Forum's political steering group. The outcome of the work of the PAC takes the form of short, policy-styled notes (the "PAC statements"), which contribute to the development of the vision of the CIVITAS initiative. The PAC statements are directed to policy makers at the European, national, and local level, as well as to the industry, transport operators, and other stakeholders.

The PAC statement 2004 notes that the CIVITAS initiative aims to "achieve a real change in urban transport through the combination of innovative technology, infrastructure and policy based instruments". Meeting this aim has helped determine how the VIVALDI cities have

approached their project implementation. Reporting and analysing the results from the demonstrations can therefore lead to a number of valuable lessons learnt, as presented in this document. These lessons can assist other European cities to successfully promote clean urban transport.



5 The VIVALDI Project

5.1 VIVALDI: Overview

The VIVALDI project is made up of 22 partner organisations in the cities of Aalborg, Bremen, Bristol, Kaunas, and Nantes, and was developed in response to the 2001 Growth call for proposals. The project addresses the objectives of KA2.1.3/8 “increasing the urban transport systems’ sustainability and efficiency through radical strategies for Clean Urban Transport” (CIVITAS). It also jointly addresses the objectives of the ENERGIE5-T1 targeted action D “rational use of Energy – Clean Urban Transport”.

The project is co-ordinated by Bristol (administration and finance) and Nantes (scientific), and is organised into 12 workpackages. The first four workpackages are involved with horizontal management of the project, covering co-ordination, political issues, evaluation, and dissemination. The remaining eight workpackages are the project demonstrations, described further in the following section.

5.2 VIVALDI: Policy Goals and Aims

VIVALDI was developed to address the policy strategies of the CIVITAS initiative. This was done by defining four key urban policy goals that exhibited existing physical and organisational problems to be addressed as part of a transport strategy taking a long-term perspective:

- Economic vitality and success of the city
- Social inclusion of all groups in society
- Health and well being of citizens
- Sustainability

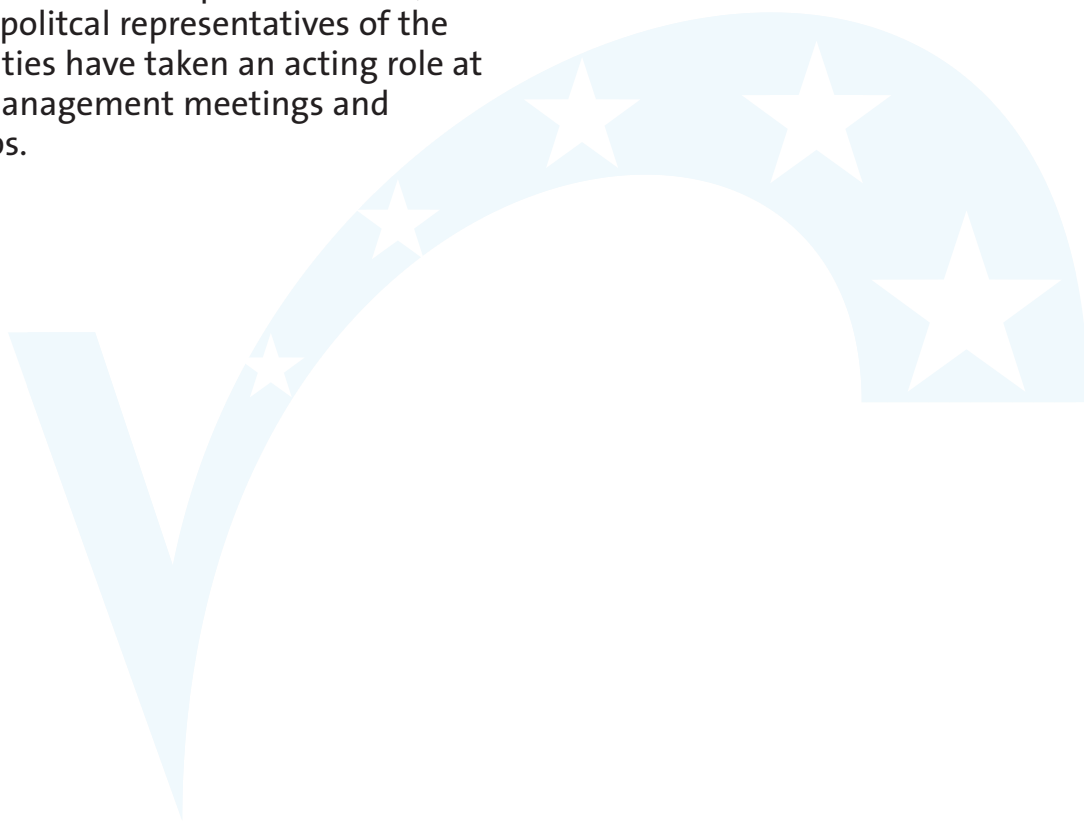
The demonstrations were designed to assess a package of innovative transport measures that would promote clean urban transport through eight workpackages that align with the CIVITAS policy strategies. Table 4.1 illustrates how the VIVALDI policy goals were designed to meet the challenges of the CIVITAS initiative’s policy strategies:

Table 4.1 CIVITAS and VIVALDI Aims

CIVITAS policy strategies	VIVALDI urban policy goals
New forms of vehicle use and ownership, and less car-intensive lifestyles	Social inclusion Sustainability
Stimulation of collective passenger transport and improved quality of service	Urban vitality Social inclusion Sustainability
Demand management and revenue-raising strategies based upon integrated pricing	Urban vitality Sustainability
Transport management systems and related information services	Social inclusion Sustainability
New concepts for the distribution of goods	Urban vitality Social inclusion Sustainability
Clean public and private vehicle fleets using ‘alternative fuels’	Health and well being Sustainability
Measures for managing mobility demand, walking and cycling and integrated planning	Health and well being Sustainability
Access management to inner city and sensitive zones	Urban vitality Sustainability

5.3 The Political Advisory Board

One of the most important lessons learnt in the project is that the involvement of local politicians is vital for successful implementation of innovative transport measures. The Political Advisory Board (PAB) of VIVALDI brought politicians together from the five cities so that they could share their experiences and support each other in the promotion of cutting edge schemes. The PAB will have been convened three times during the lifetime of the project, most recently in Bristol in September 2005; and in addition, political representatives of the partner cities have taken an acting role at project management meetings and workshops.



6 Key Recommendations

This report is structured according to the VIVALDI workpackages, which broadly match the CIVITAS policy strategies outlined above, with a further section at the end to showcase one of the other key strengths of the project. Within each section, an overview paragraph will be followed by one or more case studies that exemplify the work carried out in the relevant area, leading to a number of recommendations. These individual recommendations will be drawn together in a concluding chapter.

6.1 New Forms of Vehicle Use and Ownership

As cities attempt to create a culture of less car-intensive lifestyles among their citizens, encouraging trips to be made more by sustainable means and less by private car, introducing new ways of having access to a car without owning one is a way to help people make this change in behaviour. The idea of car sharing, or car clubs as it is known in some countries, provides a valuable service in many European cities; within VIVALDI, Aalborg, Bremen, and Bristol

Table 6.1 An Overview of the Case Studies

New Forms of Vehicle Use and Ownership Car sharing	Bremen
Stimulation of Collective Modes New public transport terminal PIKAS public transport software Nantes-Vertou rail line	Aalborg Kaunas Nantes
Pricing Strategies BOB card	Bremen
Telematics VMS and kiosks for information	Aalborg
Goods Distribution Freight consolidation centre	Bristol
Clean and Efficient Vehicles CNG bus fleet CNG freighter procurement	Nantes Bremen
Soft Measures MobilPunkt TravelSmart	Bremen Bristol
Access Management The Dings Home Zone Vélocampus	Bristol Nantes
Partnerships and Co-operation Community Travel Workers Travel plans Working in partnership	Bristol Nantes Bremen and Nantes

have operational schemes and Nantes are preparing a tender for a scheme in their city. Here, the Bremen case study is presented with a number of key recommendations that have come out of 15 years of operation.

6.1.1 Bremen case study: car sharing

The increasing number of cars is a big problem for most European cities. The innovative service of car sharing gives access to a car without the need to own one. Surveys show that each car sharing car may replace four to ten private cars – a great potential for sustainable urban development. Within VIVALDI, the integration of car sharing into public transport services has been improved by creating attractive combined offers and joint smartcards. There are about 3,500 customers of car sharing in Bremen – an increase of more than 42% within the VIVALDI project period!



Figure 6.1 Electronic access to a car sharing car with Bremer Karte plus

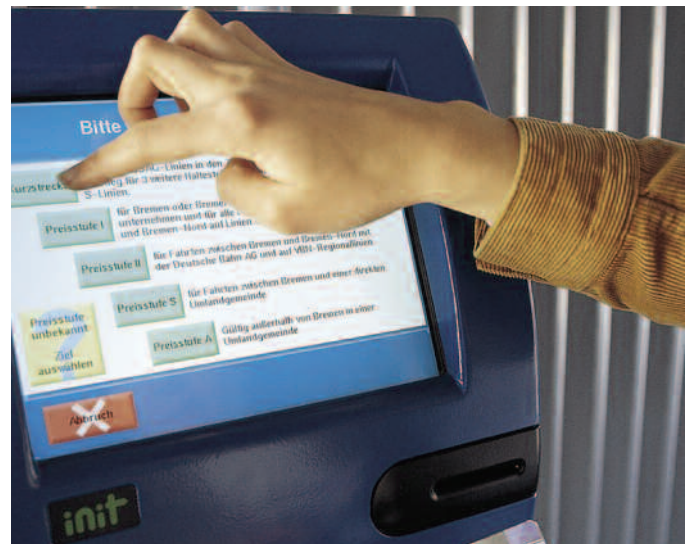


Figure 6.2 Electronic public transport ticketing with the same Bremer Karte plus

Recommendations:

- The needs of the customer are crucial. Car sharing not only needs reliable and user-friendly technologies (e.g. booking system, billing system), but also a customer orientated front-office service.
- Reliable technologies and efficient structures also contribute to a higher economic efficiency by decreasing running costs.
- The integration with public transport is important (e.g. joint offers or combined stations, as done within VIVALDI).
- Car sharing should be integrated in urban transport and development strategies (e.g. in new car-free housing developments and in urban regeneration processes).
- Awareness campaigns are necessary (e.g. in co-operation with PT operators).
- The use by business customers and administrations (as done in Bremen within VIVALDI) allows a much better balance in usage patterns.
- Finally, car sharing needs promoters with a professional approach, patience, and passion.

It's not automatically successful!

6.2 Stimulation of Collective Modes

Providing high quality public transport can be as effective in encouraging its use as access restriction on private cars. All the cities in the VIVALDI project have carried out changes and enhancements to the collective transport offer in their city during the project, from integrating public transport fares and car sharing tariffs in Bremen to a new ferry in Bristol harbour. Three case studies and sets of recommendations are presented below, representing new infrastructure work in Aalborg, PT scheduling software in Kaunas, and Nantes' new rail service.

6.2.1 Aalborg case study: new public transport terminal

The aim of creating the new public transport terminal in Aalborg was to change the image of public transport to be more competitive in order to increase its modal share. The new public transport terminal is located next to the central railway station in Aalborg and the modal shift between train, buses, and private cars has been shown to be faster and easier than before.



Figure 6.3 Aalborg's New Public Transport Terminal

A project like VIVALDI, to be realised in a municipal or county organisation like the City of Aalborg Technical Department and Nordjyllands Trafikselskab, demands solid political support. Key drivers in the process of getting this support are: the necessity of the project, funding opportunities, the chances of success, and the opportunities of becoming leaders at a national or European level. In Aalborg, the launch of CIVITAS coincided with the plan of restructuring public transport and a private initiative of revitalizing the terminal area. Through its tight time scale, funding opportunity, and focus on forefront technologies, CIVITAS proved an efficient driver – as acknowledged by politicians as well as technicians. CIVITAS/VIVALDI helped to set out the targets.

Recommendations:

A challenge during the project has been a physical conflict between commercial interests in maximising building opportunities and the achievement of an optimal layout of the terminal facility and the access ramps. The lesson learnt is that it is important to keep the lead in all aspects of a project.

6.2.2 Kaunas case study: PIKAS public transport software

With a fairly centralized city-based PT service, Kaunas needed to co-ordinate and optimise route schedules and frequencies for all three service providers. Two main objectives were therefore set:

- To formally co-ordinate the three main providers of road public transport services in Kaunas city and outer urban areas
- To install an easy-to-use traffic management system that would be able to produce quick results from regular public and service provider feedback

The PIKAS software provides the possibility to create new, or to effectively modify, existing traffic timetables – especially in the event of changes occurring in the traffic system, such as street repair works, accidents, or late running – and this is done by having pinpoint accuracy data (streets, street segments, and turn radii) provided in the digital map.



Figure 6.4 PIKAS

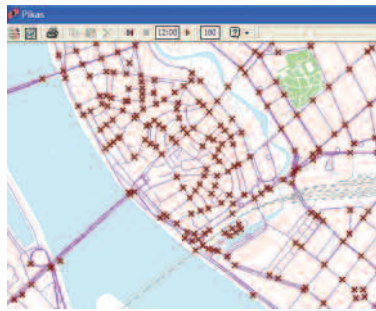


Figure 6.5 PIKAS network map of Kaunas

Using the PIKAS system, timetables can be designed based on the time intervals between vehicles required at specified times of the day and then calculated automatically, as well as on the varying passenger counts for the three modes of transport. It is possible to prepare printed versions of departure times of particular public transport vehicles throughout the city and these are provided for passengers at public transport stops and shelters. All new routes are also published on the Municipality transport department's website.

PIKAS has a friendly user interface, easy to use controls with self-explanatory icons, and tool tips with all data at your fingertips and displayed in one main window, rather than scattered in a maze of secondary windows. The PIKAS software has proved that scheduling tasks can be done through a swift and simple method.

Recommendations:

There were several issues experienced working with PIKAS, but most noticeably was the fact that the system required updating fairly soon after implementation, which required the reinvestment of substantial funds in the system.

The key recommendation from this is to ensure that the model bought includes all technical maintenance, internal training, and system updates for a fixed period of time after first stage implementation; otherwise one may find oneself running an out-of-date traffic management system very quickly!

6.2.3 Nantes case study: Nantes-Vertou rail line

The creation of a new railway link between the communities of Vertou, St Sebastien, and Nantes promotes new public transport facilities, provides an alternative to car use, and lessens dependency on the car in the southeast parts of Nantes, especially for commuters.

This zone did not benefit from any collective transport linking it to the city centre, had the lowest public transport market share of the city, and was expected to have a strong demographic growth in the next 10 years. Thus, as well as creating a new public transport reserved corridor, complementary studies showed that a credible alternative to car traffic could be encouraged by the implementation of an integrated project.



Figure 6.6 Opening the Nantes-Vertou Line

Many partners were concerned with the project:

- Nantes Métropole Urban Council: accessibility of the three railway stations with intermodal links
- SNCF (railway public transport operator) and RFF (railway infrastructure owner): railway station building and infrastructure adaptations
- Financial help from the French State
- Conseil Général: public transport operator in the Loire Atlantique district which aims to extend the Nantes-Vertou link to Clisson (to the south)
- Regional Council, as regional railway transport authority
- Communes of Vertou, Saint Sébastien



Figure 6.7 Real Time Information at the Station

Recommendations:

Integration and efficiency:

- The guarantee to integrate different levels of different public transport networks and public spaces (timetables, design of the stations, and so on)
- Users benefit from a common and integrated level of service (planning of the stations, fares, timetables)
- The possibility to use the infrastructure of another operator (SNCF and RFF) instead of creating new infrastructure

New professional practices and development of the train infrastructure. The project has proved that the train can be relevant as an urban public transport mode. Planners could see how they could use trains with existing modes to create an urban transport system. This test measure has permitted:

- To create a global programme of actions to develop and improve the train service in the agglomeration and in neighbouring cities
- To sign a convention between partners to promote and evaluate the service, which will be used for other routes
- To work through the administrative and technical barriers of the railway operator (SNCF), allowing faster development of future projects

Finance:

- The large number of actors means that the costs have been shared

6.3 Pricing Strategies

Pricing can be used as a method of demand restraint for vehicle use, as demonstrated in cities such as London and Singapore. However, pricing strategies can also be used to increase the uptake of public transport use by irregular users, as Bremen shows in the following case study. The integration of charging for more than one means of transport on one payment media can be a highly effective way of encouraging use. Also through VIVALDI, Bristol is introducing a smartcard for payment on Park and Ride services, with smartcard users receiving a 20% discount on cash ticket prices in order to encourage uptake and more regular use of the services.

6.3.1 Bremen case study: BOB card

Surveys in Bremen show that about 30% of all citizens use public transport frequently. About 70% of all citizens rarely or never use buses, trams or trains.

Innovative ticketing can improve access to PT for non-frequent passengers who are not familiar with networks, schedules and fares, or how to get a ticket. Within VIVALDI, electronic seamless ticketing was created by BSAG (PT operator in Bremen) and VBN (co-operation of all 34 PT operators within the region).

The customer registers once for a (post-paid) BOB ticket and receives a specially designed smartcard. BOB stands for *Bequem ohne Bargeld* – convenient without cash. When entering the PT vehicle, the customer electronically books in the destination area and the number of passengers for his journey on a touch screen that is already installed for prepaid PT smartcard users. The ticket information is stored on the smartcard and transferred to a main database; the passenger's bank account is

then charged at the end of the month. Customers making several journeys a day will only be charged for the cheaper one-day ticket.



Figure 6.8 The BOB Ticket

The BOB ticket was launched on 25 May 2005, accompanied by a promotion campaign. Within the first three months, already more than 8,000 citizens have registered as BOB ticket holders.



Figure 6.9 A passenger registers his journey at a touch screen

Recommendations:

It can be concluded that e-ticketing can make the use of PT easier and thus more attractive. Of course, e-ticketing is one element in a chain that also contains service quality, accessibility, security, and pricing.

6.4 Telematics

The terms Intelligent Transport Systems (ITS) or Telematics cover a multitude of different ways in which new information and communication technologies can have a beneficial impact on transport systems, cutting across many of the other areas of work discussed here. The new PIKAS scheduling software in Kaunas and Bremen's BOB card are both examples that also fit into other categories. Within VIVALDI, a major focus of telematics implementation has been in the provision of new and improved information for travellers, such as the TravelBristol info centre in Bristol.

6.4.1 Aalborg case study: VMS and kiosks for information

To improve the new public transport services in Aalborg, several telematic solutions have been integrated into buses, bus stops, and the public transport terminal.



Figure 6.10 Real Time Information at the Public Transport Terminal

Successful completion of ITS in Aalborg is closely related to the capability to take effective charge of the project, and a common commitment to succeed by project partners, consultants, and suppliers. It is important to ensure a certain magnitude of such a complicated project to attract the suppliers that are in fact able to manage the development component professionally. In the Aalborg case, a national partner was

found while in previous projects Aalborg has benefited from European contacts.

Monitoring the planning and implementation process has been an ongoing procedure throughout the project. Continuous dialogues were held between key stakeholders – politicians, technicians, operators, and users – to keep the project on track. Processes and approaches have continuously been adapted whenever the situation required it.

These factors, along with targets, political backup, and funding, have led the way to a successful project completed within time and budget.



Figure 6.11 Kiosk-Based Transport Information

Recommendations:

A challenge during this project has been to get the best available technology and make it work satisfactorily. To reach this goal, and get the best supplier, the project was put out to tender. It has been a challenge to get all the relevant stakeholders involved so all ideas and relevant experiences could be collected. The lesson learnt is that it is important for the Authority to keep the lead in all aspects of a project.

6.5 Goods Distribution

Efficient goods distribution has become a particularly important issue in European cities over the past few years, despite studies since the 1970s. The German model of 'City Logistiks' has been taken up in several other cities recently, Bristol being the first in the UK (see case study below). The concept is used to reduce the number of goods vehicles driving on often unsuitable urban streets – many goods vehicles make their delivery to a centre on the urban periphery, and the goods are consolidated into one delivery vehicle for transit to the city centre. Bremen has also continued working on their scheme through VIVALDI, as detailed in Section 6.6.2 in relation to their new vehicles.

6.5.1 Bristol case study: freight consolidation centre

The development of the Broadmead freight consolidation centre, the first serving an urban centre in the UK, has relied to a large extent on the support of partners and stakeholders. Being so innovative in the UK context, the specification and development of the scheme initially evolved, and has subsequently been refined, through discussions with the key stakeholders. These include the manager of the Galleries shopping centre, the Broadmead Board who represent the interests of retailers, members of the Freight Quality Partnership, Business West (formerly the Bristol Chamber of Commerce), the Road Haulage Association and other representatives of the freight sector, and the UK Department for Transport.

Another important aspect of stakeholder involvement has been working closely with the commercial operator of the scheme, Exel, as a partnership as opposed to a more orthodox contractual relationship.

This extended to the operator supporting surveys and discussions with retailers and stakeholders during the development phase, utilising their existing relationships within the retail sector.



Figure 6.12 Delivering to the Scheme's 50th Retailer, July 2005

The active support of stakeholders has been maintained throughout the operation of the scheme through regular communications including sharing results and any issues as they emerge. The scheme has retained a high profile throughout its operation, supported by the dissemination activities of BCC and Exel including conference presentations, discussions with other authorities considering this concept, and success in a number of national awards.

Recommendations:

Involve the key stakeholders at the outset of the scheme design process to ensure they can play an active part in its development creating strong levels of ownership.

Good communication exchange with partners and stakeholders, including regular sharing of tangible outputs of the scheme, is important particularly during the initial stages of operation when levels of uncertainty and risks are higher.

6.6 Clean and Efficient Vehicles

In the attempts cities are making to reduce the pollution and poor air quality from road transport, while retaining mobility for their citizens, there is a clear role for 'alternative' fuels to be used. There are many technologies in this field, with more emerging all the time. Examples include compressed natural gas (CNG), more common in continental Europe; liquid petroleum gas (LPG), more widespread in the UK; and electric or hybrid vehicles (combined electric and petrol engines). All of these technologies have been tested in VIVALDI: as well as the CNG examples in Nantes and Bremen, below, 5 electric cars and 129 LPG vehicles have been introduced in Bristol.

6.6.1 Nantes case study: CNG bus fleet

Two major factors strongly influenced the willingness of the urban area to develop a large-scale policy of non-polluting public transport fleet: the implementation of the first tramline in 1985 and the experimentation of CNG buses within the Jupiter 2 project. Moreover, opinion polls conducted on public transport perception showed that it was necessary to enhance the image of buses, which had been left behind in comparison with the modern tram.

By a convention signed in 2000, Nantes Métropole Urban Council mandated Semitan (PT operator) to conduct a bus fleet procurement programme for the three-year period 2001-2003. As a minimum, the specifications of the new buses had the same ones as those of standard diesel buses already operating on the network:

- Integral low floor
- Easy access due to the ramp and 'leaning' of the bus
- Electronic information display both outside and inside wheel chair space

Following the call for tender, 125 Heuliez GX317 GNV standard buses and 30 Volvo 7000 GNV articulated buses were delivered, all operating by the end of 2003.

Some deviation occurred in this delivery and operating schedule, due to homologation, ratification, and operational problems. Despite these problems, Nantes Métropole decided in June 2005 to continue to purchase new CNG buses.



Figure 6.13 CNG Buses in Operation in Nantes

Recommendations:

A need to harmonise the standardisation:

- A need for a European standard, instead of 25 national rules – this would permit a reduction of cost, instead of adapting each bus for the national standard, and it would increase the choice

A need for greater stability for providers by not changing the standards too frequently:

- Because the providers are required to make a large investment, they don't know if they will be able to cover the investment before the standards change
- The risk is that buyers will await the next generation of buses
- To improve the level of research to offer more efficient and affordable buses, otherwise the image of clean buses could deteriorate.

The role of EU projects:

- EU projects offer the possibility for cities and PT operators to test innovative vehicles. The evaluation of these projects can suggest different types of alternatives to stakeholders.

6.6.2 Bremen case study: CNG freighter procurement

The clean air directive of the European Commission has set clear limits for particulates and NO_x to improve air quality. As heavy diesel vehicles are quite responsible for high NO_x emissions, one key measure for Bremen in VIVALDI was to implement CNG trucks (7.5-12.0 tons) for city logistics. One core objective was to prove synergy between the use of clean fuels and intelligent logistic systems for delivering goods in urban areas.

Whereas the CNG incentive programme for cars worked well, unfortunately no CNG truck was really available. Advertisements and concrete offers from the motor industry induced some hope for success with this

measure, but all negotiations turned to be either just hot air or much too expensive to run under real market conditions. The higher costs for CNG vehicles of up to 40% compared to diesel, and vague promises about warranty conditions, made it impossible to go further. Dealers withdrew from promised delivery dates after the international policy of the manufacturer changed.

The stereotypical excuse is the classic 'chicken and egg' principle: "Give us a sufficient number of orders and we will produce the vehicles you want". To a city authority, this is not possible.

Recommendations:

One potential answer from this experience is a common procurement to achieve affordable prices of clean heavy-duty vehicles. A further point is that the creation of advantages in operation of such vehicles (e.g. through clean-air-zones or reduced costs in tolled areas) would increase their demand in the market.

The implementation of stakeholder meetings on clean vehicles at DG TREN with representatives from the city level, motor industry, energy industry and umbrella organisation of various interest groups is a good way to discuss pros and cons and find suitable ways for a sustainable urban mobility policy.



Figure 6.14 CNG Freighter: promised for June 2005 but not available (September 2005)

6.7 Soft Measures

‘Soft measures’ include ways of managing mobility demand in new and innovative ways. These measures are designed to encourage people who perhaps would not have considered it to use public transport or a bicycle for a journey that would previously have been made by car, or not to make the journey at all. Considerable benefits can be achieved by such measures; in fact, the UK government recently published a report that encouraged measures such as home-working and tele-conferencing to have a more prominent role within ‘traditional’ sustainable transport planning.

6.7.1 Bremen case study: MobilPunkt

Space is very limited in urban areas; to regain street-space for greening, bike parking, and widening pavements, innovative solutions are required. As part of the strategy of sustainable urban transport, two integrated intermodal car sharing stations have been created in Bremen with the basic principle of ensuring their combination with a public transport stop, the integration of bike-racks, and mobility related information.



Figure 6.15 Intermodal integration: public transport, car sharing access point and bike-racks

After two years, operation, a survey has been carried out to assess the impacts (there are about 435 users of the car sharing service in a radius of 500m around the two mobilpunkt stations):

- There are predominantly private users (83%); but 17% corporate customers
- 76% have no (other) car in the household or company
- 30% of the private customers have replaced a private car, 55% have not purchased a car due the car sharing service
- 21% of the corporate customers have replaced a company car, 67% have not purchased a car due to the car sharing service
- The nearness of the car sharing service is named as a key factor for being very attractive

In total, more than 90 cars have been replaced in the adjacent area around the mobilpunkt stations, which relieves the parking situation and allows reallocation of road space. Based on this good experience, the decision has been made to extend the number of mobilpunkt stations in Bremen.

Recommendations:

It can be recommended to make car sharing an integral part of urban planning (renewal and new developments) and to offer combined services with public transport – and make this combination highly visible in the streets. As proximity is a key factor of an attractive service, decentralised stations are necessary, linked to good accessibility and safe storage of bikes. In conjunction, there is a high level of synergy between attractive public transport and a good car sharing service.

6.7.2 Bristol case study: TravelSmart

TravelSmart works with households offering tailor-made information and support, allowing people to walk, cycle, and use

public transport more often. It is proven to deliver measurable and sustained reductions in car use by enabling people to make a few changes to their daily travel choices when and where it suits them best. The TravelSmart process – known as Individualised Travel Marketing (ITM) – uses direct contact with households to identify and meet their individual needs for support, and to motivate people to think about their day-to-day travel choices.

The three separate TravelSmart projects in Bristol enabled the ITM process to be tested in a diverse range of geographical and socio-economic conditions, but with all target areas linked to the city centre by the same cross-city bus service, upgraded to a Showcase route as part of the VIVALDI project.

The evaluation of each ITM intervention in Bristol showed that TravelSmart achieved significant changes in travel behaviour among the target populations. There were substantial increases in walking, cycling, and use of public transport, leading to relative reductions in car trips of between 9 and 12%. The travel surveys used to evaluate the first two TravelSmart projects showed that these changes were achieved without significantly constraining daily mobility among the target population and with only minimal impact on daily travel time. The reductions in car use were spread across all trip types and throughout the day.



Figure 6.16 TravelSmart Incentive Material

A comparison of outcomes across the entire VIVALDI TravelSmart programme shows that reductions in car travel were achieved by consistent increases in public transport trips but varying increases in walking and cycling levels. The area with the lowest relative increase in walking (Bishopston) also showed the highest relative increase in cycling, while the reverse was true in Bishopsworth.

Recommendations:

The outcomes of these projects provide robust evidence of the potential of TravelSmart to increase travel choice, reduce traffic congestion, promote physically active travel, make better use of existing transport infrastructure, and help tackle climate change. It is therefore recommended as an integral part of sustainable travel planning. Future ITM programmes should consider the following success factors:

- The focus on households allowed TravelSmart to influence travel choices for a wide range of trips, and enable households to reflect on and discuss their choices in a relaxed setting.
- The direct contact with households provided for an open dialogue on individual needs for information and support and the opportunity to motivate people to think about their travel options.
- A personalised service was offered, with high-quality and up-to-date travel information tailored to individual needs, together with further personalised support and encouragement.

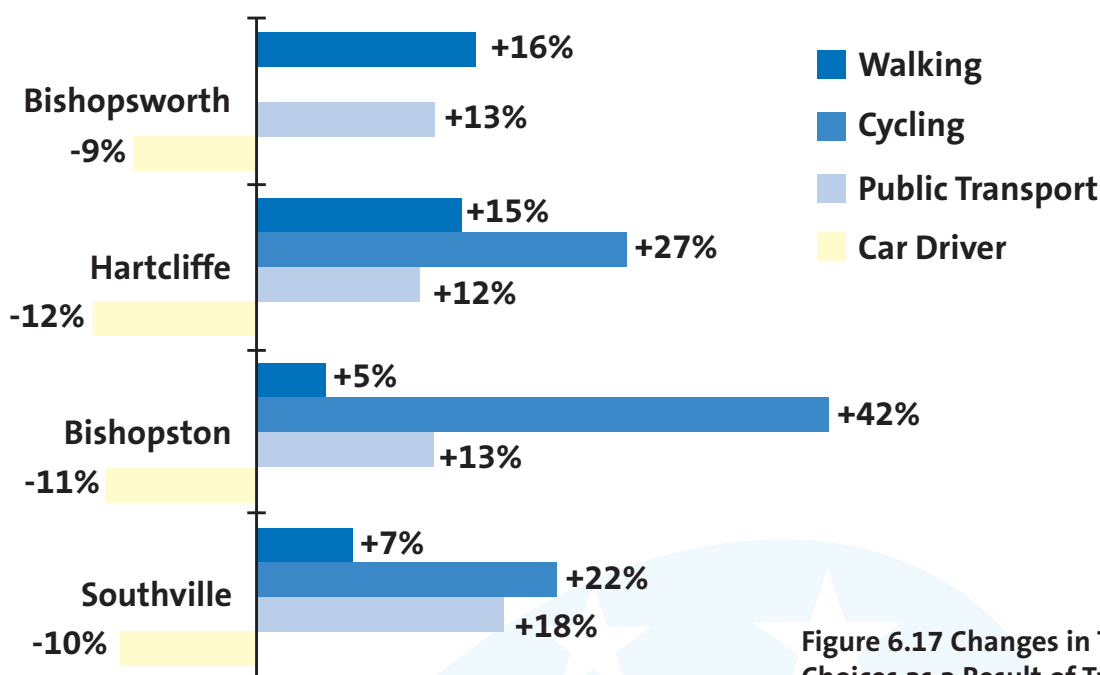


Figure 6.17 Changes in Travel Choices as a Result of TravelSmart

6.8 Access Management

As well as city centres that have access restrictions to protect areas of historical significance (Rome), reduce congestion (London), or raise revenue (Trondheim), there are other sensitive parts of cities that need protection for other reasons. Demand management in these cases can take a number of forms: in the case studies presented below from Bristol and Nantes, the reclamation and reallocation of road space for pedestrians and cyclists has been the main focus in calming and reducing motorised road traffic.

6.8.1 Bristol case study: The Dings Home Zone

The Dings is in central Bristol, in an area of high social deprivation. It consists of seven streets, surrounded by light industry and brownfield land. Blighted by a severe commuter-parking problem, rat-running vehicles, and long-term decline in the quiet residential streets, it was identified as an ideal location to implement a Home Zone.

Through a series of door-to-door surveys, public meetings, and street layout trial events, local residents, Sustrans' designer, and the City Council's Home Zone team agreed a master plan for the area. The design also features artworks, included both to enhance the new street design and to give another way for the community to participate in the process, assisted by the Community Travel Workers (see Section 6.9.1).

Land adjacent to the Dings is being developed as new housing incorporating Home Zoned streetscapes. An important element of the Dings Home Zone project is the way in which it has successfully partnered the private housing developer and, working closely with the planning authority, co-ordinated the two Home Zones such that they are being developed as one unifying area. As part of this partnering, the City Council has entered into a legal agreement with the developer such that the developer is part-funding the Home Zone works on the street that runs between the new and existing communities.



Figure 6.18 Birkin Street, The Dings, 'Before' and 'After' Home Zone Implementation

Recommendations:

In implementing schemes of this type, it is important that the project team is multi-disciplinary, and that representatives from all relevant fields, together with the key stakeholders, are engaged from the outset.

Partnering with the private sector can produce new residential development that complements and integrates, rather than isolates or overwhelms, existing communities.

Examining issues of access should be done in a holistic way, examining the needs of disabled people, children, older people, as well as walkers, cyclists, and cars – and devising solutions that try to meet all of these.

6.8.2 Nantes case study: Vélocampus

Vélocampus is a student association that offers a yearly rental of bicycles for Nantes students. It also offers bicycle services and repairs, and the sale of bicycles, parts, and anti-theft devices at cost price.



Figure 6.19 Cycle Parking on the University Campus

Vélocampus hires more than 300 bicycles to students on an annual basis in return for an annual association membership fee of 30 Euros. Repairs are free for members, except for those resulting from accidents or incorrect use, and there is a 150 Euros deposit to cover theft. The 3-year-old bicycles are sold at an attractive price and new ones are bought each year.

The association's headquarters are near the Tertre campus, which has been remodelled by Nantes Métropole, reducing space and parking for the car and improving public transport service and soft modes facilities; 200 new parking spaces for bicycles have been created in the campus. Students are good messengers to promote cycling, and travel a lot in the city with easily identifiable Vélocampus orange and green bikes. Many of them are rented by foreign students who don't own a car, and there is a waiting list

because demand is so high. Renting a bicycle represents a good alternative, and the possibility to test cycling for students who would not previously have been in the habit of doing so.

Recommendations:

- It needs strong support from partners (the University and public authorities), to balance the budget, provide accommodation, and promote the service
- The campus needs to be easily accessible, especially by bike, and the city should offer an attractive cycling network: travel and parking in the campus should be easier by bike than by car
- The bikes need to be reliable, well designed, with efficient anti-theft devices, and with the service available for repairs
- The fare needs to be attractive for students

6.9 Partnerships and Co-operation

This final section is not a formal workpackage in VIVALDI, but working with others within each city and within the project has been an area of which the partners are particularly proud. The synergy created by sharing experiences between cities with different strengths has been key to VIVALDI's success in the local demonstrations. As well as local examples from Bristol's community involvement and Nantes' employer travel plans, the final case study shows how working together in VIVALDI has encouraged closer co-operation between Bremen and Nantes.

6.9.1 Bristol case study: Community Travel Workers

Community Travel Workers seek to increase levels of involvement and participation in the development of new transport schemes. Although true across several measures, the project plan for the Dings Home Zone in particular was felt to require a significant effort to encourage residents to participate in the process of planning and design that would replace the traditional street layout on their doorsteps (see Section 6.8.1).

Two part-time workers led a programme of community involvement including:

- In-depth face-to-face surveys
- Community meetings
- Street trial events
- Co-ordination of an arts group
- Continual liaison between all project partners and residents
- Assisting with the co-ordination of the project's steering group and design advisory group
- A programme of sustainable travel promotion



Figure 6.20 Community Travel Worker delivering a TravelSmart Information Pack

The Community Travel Workers also assisted in the delivery of TravelSmart information packages and home visits (see Section 6.7.2), and have worked to promote use of new walking and cycling facilities, and the Taxi-Sharing scheme developed as part of VIVALDI in Bristol.

Recommendations:

The community involvement process has helped to demonstrate the positive impact residents can have on local transport projects, and the enthusiasm they have for helping to improve their local environment.

Ensuring residents were involved in the decision-making process at every stage of the project has led to high levels of satisfaction with the project upon completion.

Allowing residents to lead involvement on a number of art installations in the forms of plaques recording memories of the Dings and gateway sculptures has helped to strengthen the local identity of the Dings.

6.9.2 Nantes case study: travel plans

As the main actor of mobility policy in the urban area, UCN has to be an example for the other big companies and institutions

concerning travel plans. Therefore, UCN (2,200 employees) implemented its own travel plan and promotes this issue to other companies and institutions to encourage their employees to choose public transport and soft modes and to have a better use of car.

The UCN mobility plan study started in May 2002 with a diagnosis on the accessibility of UCN offices by all modes, showing that some of the UCN outskirts sites still have accessibility problems by PT and soft modes. Following this, a travel habits survey was carried out on employees to find out the modal share at different sites. The survey showed that the PT modal share is high in the centre of Nantes and low in the outskirts.



Figure 6.21 Half price PT Fares with Nates Travel Plans

After this phase, the UCN travel plan was prepared in 2003 with consultation of employees, and the first measures of the travel plan were implemented in 2004 with the help of a new mobility co-ordinator. These were: a reduction of PT fare (50%) for employees with an annual pass; removal of 98 employee car park spaces; PT tickets made more easily available for professional journeys (such as meetings); new safe bicycle park spaces at work for commuters and visitors; a professional bicycle fleet; and a trial of car-pooling software.

Recommendations:

- Nantes Métropole's travel plan was the first plan to be implemented in Nantes and therefore has to be a good example in term of study, implementation process, and type of measures to promote other plans and to help study other plans.
- The methodology used to study and define the plan can be transferred easily to other institutions and companies to implement their own.
- Initiated with the Nantes Métropole travel plan, a cost reduction for the PT annual pass of a minimum of 30% is implemented with new mobility (15% reduction given by Nantes Métropole, employers give a further 15% or more). It represents the main measure to promote travel plans.
- Nantes Métropole mobility plan permitted to test new measures such as the professional use of bicycles and car-pooling software, which will be transferred in 2006 to all companies that implement a travel plan.

6.9.3 Bremen and Nantes case study: working in partnership

As all European cities face similar problems of having too much traffic, it makes sense to share experiences and ideas of sustainable transport strategies. Innovative ideas need some transfer of experience and also some inspiration to get implemented in another city.

Cycling and car sharing are two core elements of Bremen's sustainable transport strategies. Some European partners showed interest in the experience – to benefit for their own transport strategies.



Figure 6.22 Discussing potential co-operation with cambio Bremen



Figure 6.23 Learning about cycling measures at the Senator for Construction, Environment and Transport

Bremen was one of the pioneer cities in Europe, which implemented car sharing in 1990. The operator cambio is a partner in VIVALDI to further develop the strong co-operation with public transport (BSAG) and improve customer-orientated services and back office software. Cambio Bremen sets a high standard with more than 3,500 satisfied users and a highly sophisticated booking and operating system. One VIVALDI measure in Nantes is to implement car sharing in their city, a process very much influenced by the Bremen example. With a modal split of 22% cycling, Bremen belongs to the 'Champions League' for environmentally friendly modes!

Within VIVALDI, some enhanced co-operation developed between Bremen and Nantes. Following presentations of Bremen's car sharing and cycling policies in Nantes, a political and administrative delegation from Nantes visited Bremen in March 2005 to get deeper insights of the car sharing system on the one hand, and to learn about the excellent cycling infrastructure on the other. The fruitful mixture between practical presentation, workshops, and political talks made this visit successful. The knowledge transfer on a political, administrative, and technical level has been followed up by a technical exchange of the experts. Following these meetings, and the recommendations of the MOSES EC project, a call for proposal to start a car sharing service in Nantes was launched in May 2005: the objective is to launch the service in 2006.

One key objective of European projects is sharing experiences and ideas. Trustful co-operation in European projects allows sharing good practice as well as an exchange about not so successful experiences. Such lessons learnt are crucial to avoid 'reinventing the wheel'.

7 Conclusions

7.1 Linkages to VIVALDI Policy Strategies

In the preceding 16 case studies, a large number of recommendations have been brought out of the work of VIVALDI over the past four years. Many of these are very specific to the type of project being undertaken, which will be useful for other cities and regions planning such a scheme; but a great number are of key relevance to everyone involved in progressing the sustainable transport agenda in Europe (and beyond). The closing paragraph, below, will summarise the principal policy recommendations that have come out of the VIVALDI project.

The table in chapter 5 showed how the four policy strategies mapped against each of the VIVALDI workpackages, each strategy represented in at least two of the areas of work progressed by the project. It is this close integration of the objectives that led to the clear vision of the work to be achieved, and the successful outcomes of VIVALDI across all the demonstration sites. The recommendations detailed above, and summarised below, can be clearly linked back to the policy strategies that determined the measures put in place in the cities. One key example of each is shown here:

7.2 Summary of Principal Policy Recommendations

- The involvement of key stakeholders (including the general public as well as public and private bodies) is very important – from people feeling involved at the design stage, through sharing costs and developing working relationships during implementation, to successful launch and agreements for future collaboration.
- However, it is also important to maintain strong project management from the part of the local authority.
- A good communication plan is necessary, putting across the message of the work being carried out, then raising awareness and promoting the new service once it is available.
- None of the VIVALDI measures can be seen in isolation, they are all part of integrated transport planning strategies in the five cities – linking walking and cycling improvements with new public transport provision, better information, and the need to travel less through travel plans.
- The benefits of participating in European Commission-supported projects cannot be stated too highly.

VIVALDI policy strategy	One key recommendation
Urban vitality	Involvement of stakeholders, such as the business community, in scheme design
Social inclusion	Communication with residents in managing the demand for access in their neighbourhood
Health and well-being	The promotion and integration of walking and cycling with other modes to encourage participation
Sustainability	The integration of public transport with 'soft' and other modes to increase the options available for all trips

With financial support from the EC, cities have the ability to test innovative technologies that they may not have been able to procure otherwise. On top of this, the networking benefit to the cities in sharing experiences within the consortium has been useful for each site, as has the support for local politicians.

- Transferability is another key element of the role played by European projects. Not only can cities implement new schemes, but they can also learn from partners that have a longer experience in certain fields – using good practice and learning from the challenges that others have faced.
- The importance of strong local government with a clear vision on sustainable transport cannot be underestimated. This will be the basis for a consistent policy supporting the objectives of the CIVITAS vision. There should also be a requirement felt by the local authority to act as a good example in using, as well as promoting, their own policies.
- Finally, the role of people. Without a political champion, it can be difficult for cities to pursue innovative projects such as VIVALDI with the necessary vigour, as the opening chapter of this report showed. And the citizens in each city are also key: it is for them that all the schemes are implemented, and without whose support projects like VIVALDI would not succeed.

