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T.aT. - Students Today, Citizens Tomorrow

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REPORT

European Best Practices in Bike Sharing Systems

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1. Introduction

T.aT. is the acronym of "Students Today, Citizens Tomorrow" (from now on referred to as T.aT.), "Students Today Citizen Tomorrow" a non-technological project co-funded by the Intelligent Energy Europe Program (IEE) and by the group of project partners.
The project concerns the identification, definition and testing of intervention policies with the intention to reduce the environmental impacts and the energy consumptions related to the mobility of workers and students of the universities. T.a.T involves 9 European partners: 1 university, 1 municipality and 1 energy agency from 3 different countries that are Italy, Cyprus and Portugal. The duration of the project is 30 months, from 15/10/07 to 15/04/2010.

The project aims to evaluate the mobility patterns of academic campuses and to assess the energy consumption and pollutant emissions produced by the universities. In addition the project is expected to mobilise the target groups in terms of energy efficiency and lower environmental impacts, helping to change mentalities and behaviours on mobility by the ideation and creation of a bike sharing within the university and the surrounding municipality area.
Mobility is increasing quickly. Students use a variety of transportation methods to move into and through the Universities. This increase of mobility needs to be controlled and planned strategically. To create and maintain harmony between the different kinds of transportation, it is crucial that urban planners work out the better ways to combine all means of transportation so to lose the least possible amount of energy, time, money, and stress; eventually to improve the students and the people's welfare. The congestion in the universities and cities creates major problems, notably during the rush hours.

We can see the emergency of this lifestyle's phenomenon, and more particularly since Universities and cities have grown up around automobiles. To limit this increase of automobile traffic and coinciding pollution problems, the urban planners have to promote the common transport like bus, metro or train, but it was inefficient. That is why, in many European towns, we have seen, and we do again now, a general increasing of the parking prices and lot of others urban policies to stop people from

using theirs cars. But nowadays, with the augmentation of the pressure groups about the environment's safeguard and the people's volitions to change their lifestyles, there are new environmental actions. In few European towns, we can see new attractive alternative kinds of transportation like tram-way, electricity car's rent and bicycle's sharing systems which are cleaner and less noisy, but they will have to show their proof.

The improvement of the mobility efficiency is crucial in order to reduce the energy consumption and the consequent environmental impacts. The promotion of a sustainable conscience in transport behaviour among students can be considered as an important first step towards the desirable sustainable future.

Universities is by definition a place of research, knowledge, awareness, and discussion were the future citizens can reflect and develop more conscious ways of participating in the society to which they belong. This principle is on the very definition of T.aT.: Students Today, Citizens Tomorrow. Universities are obliged to introduce and consolidate sustainable concepts of mobility to people that, in a near future, will belong to the core of the active society, not only as regular citizens but also as future community decision-makers.

The project brings together a series of institutional partners from Cyprus, Italy, and Portugal covering Universities , local administration, and energy agencies with the objective to improve energy efficiency in Universities considering the main stakeholders involved in the process.

In each country, a university campus will be the subject of a deep study that will characterize the mobility patterns of academia members, assess the amount of emissions and energy consumption, and propose and implement a series of measures to reduce these emissions and improve energy efficiency within given values. One of the most important measures is the developing of a bike sharing system within the university. This process is developed by a local team of experts in mobility and environmental assessment with the participation of the local administration and of the local energy agency. The goal is to guarantee the necessary political and technical involvement to ensure that all the proposed measures are implemented and the project can produce the

expected reductions on emissions and the enhancement of energy consumption efficiency.

The three universities involved on the project are: the University of Cyprus (UCy) at Aglantzia, Cyprus, the University of Gabriele d'Annunzio (UdA) at Chieti Italy, and the Polytechnic Institute of Leiria (IPL) at Leiria, Portugal. The administrations of the cities where these universities are located are also involved in the project: the Municipality of Aglantzia, Cyprus, the Province of Chieti, Italy, and the Municipality of Leiria, Portugal. Finally, three energy agencies are also involved: Stratagem in Cyprus, ALESA in Italy and Enerdura in Portugal.
Universities participate in the project as both case studies and providing technical experts for the local project teams. These local teams are expected to carry out all the working packages considered in the project program.
Local administrations participate as the hosts for the university campuses. These facilities produce important impacts on the mobility patterns of the territories where they are located in. On the other hand, only local administrations have competence over the use of the territory; universities are legally powerless of promoting the implementation of accessibility infrastructures. These two constraints impose the consideration of the local decision-making agents – the local administrations – in order to ensure a desirable degree of execution for the project outcomes.

Energy agencies are the natural link between the previous partners for these energy efficiency issues. They are in charge of a series of local energy policies and they represent local administrations in the energy consumption forums. So, they are naturally able to link universities (the demand) and local administration (the supplier) in promoting efficient means of transportation that can reduce energy consumption (and pollutant emissions) beyond university campuses boundaries.

This report presents the result of an overview of the European Best practices and therefore inspiring models that can be adapted and followed in Europe's University sites. It is one of the deliverables of the project's Work Package 5 (WP5).

The WP5 deals with the ideation and creation of a university bike sharing. The idea is to set up a demonstrative fleet of 50 bicycles within each university for students and

professors that can use it to move in the university areas and to make little day trips such as: home-university, university-library, university –gym etc. The main aim of the WP5 is to stimulate positive behaviours and change attitudes putting at disposal of the university users bicycles without fees. The expected impact of the action is that users that try bicycles and become aware of the benefits deriving from this experience (traffic and parking problems avoided, health benefits, shorter travel times..) will buy an own bicycle and will use it in everyday travelling. The WP is composed by three tasks: gathering and sharing of best practices, planning, realization of a bike sharing prototype.

Chapter 2 gives a brief description of the underlying principals at stake namely the road and parking system, the pedestrian and bicycle infrastructure, the public transport system and multimodal systems.

In chapter 3 we will find a characterization of University Mobility main issues along with some basic principles and mobility management programs that can be applied in these contexts.

Chapter 4 presents the European Best practices gathered by the participants in this project. For clarity and convenience purposes these examples are presented in a standardized format enabling a quick comparison of the practices.

In chapter 5 the conclusions of this part of the project are drawn as well as some considerations concerning the implementation of some of the best practices identified.

2. Bike Sharing System

Bicycle sharing systems are an increasingly popular system whereby bicycles are made available on a large scale in a city allowing people to have ready access to these public bikes rather than rely on their own bikes. Municipal governments and community groups have promoted bicycle sharing systems as part of intermodal transportation by allowing people to shift easily from transit to bicycle and back again. By making alternatives to motorized travel easily accessible, they hope to reduce the carbon footprint of commuting as well as enable residents to become healthier through exercise.

Bicycle sharing systems can be divided into two general categories: community bike programs organized mostly by local community groups or non-profit organizations; and large scale public bike programs that are implemented by municipalities or through a public-private partnership as in the case of Paris' Vélib' program. The central concept of many of the systems is free or affordable access to bicycles for city transport in order to reduce the use of automobiles for short trips inside the city thereby diminishing traffic congestion, noise and air-pollution. A secondary goal is to reduce thefts of privately owned bicycles.

Bike sharing systems in urban areas usually differ from traditional bicycle rental services since they are rather offers for daily mobility than leisure oriented systems. In contrast to those conventional renting schemes, bike sharing systems can be used one-way for either monomodal or intermodal trips. As a flexible mobility option they can be considered as an additional part of public transport systems. A long list of possible benefits makes bike sharing attractive for municipal organisations as well as for businesses. First of all, the increasing price of natural resources especially for oil necessitates thinking about sustainability, efficient use of

resources and development of new innovative solutions. This situation is comparable to the late seventies after the two oil prize shocks. Cities like London and Stockholm created a city toll for using the car downtown. Other cities like Rome or Sao Paolo (Brazil) permit car use depending on the number plate.

Furthermore, the increasing urbanisation brings the necessity to think about alternative transport concepts. Growing density of the population in cities intensifies the problem of insufficient infrastructures. Those infrastructures can only be enlarged to a certain level. Thus, new ways and concepts for an efficient use of the existing infrastructures have to be found. Bikes require only little space and also reduce the emission of exhausts and the need for fuel in cities.

Bike sharing also offers an economic effect for cities and individuals. Bikes are an inexpensive mode of transport with need for only low-tech infrastructures. Therefore, a relatively low amount of investments is needed to create or expand infrastructures. With concepts for bike sharing even the costs for owning vehicles cease to apply. Operators benefit from a change of mobility behaviour and the improvement of their image. As cities are competing for tourists and guests they invest a big effort in presenting their city as modern and innovative. In that context bike sharing can be seen as an environmentally friendly service to support the modernity and individuality of a city.

Getting to know the city by cycling will be more and more promoted as a unique experience. A further long term effect is the overall increase of awareness for cycling and sustainable transport modes. With the possibility to connect bike sharing with other modes of transport new mobility options are being created. This may lead to a change in minds and with that to a change in mobility habits. Since there have been some successful bike sharing systems operating in different cities for several years (Call a Bike, Clear Adshel, JCDecaux, Cemusa, Veolia, …) a new market for innovative urban mobility is born. The role of bike sharing is not still a minor one as it was at the beginning of the project.

3. Overview of Existing Bike Share System Elements

Technology-driven bike share programs have many common elements including equipment and systems (e.g., bike fleets, parking and locking mechanisms, user interface and check-out protocols, and station networks), as well as maintenance and management requirements (e.g., fleet and station maintenance, status information systems and bicycle redistribution systems).

Equipment and Systems

Bike Fleet

Fleet bikes should be distinctive, designed for easy city use, and be clearly branded to increase their visibility. Bikes typically come with full fenders, chain guards and, in some cases, bike locks. Most bikes come equipped with a Global Position System (GPS) unit, Radio Frequency Identification (RFID) tag, or other type of tracking mechanism. This function is typically used in fleet management and location of lost or stolen bikes

Fleet bikes, such as those used in Bicing Barcelona system should be easily distinguishable

Parking and Locking Mechanisms

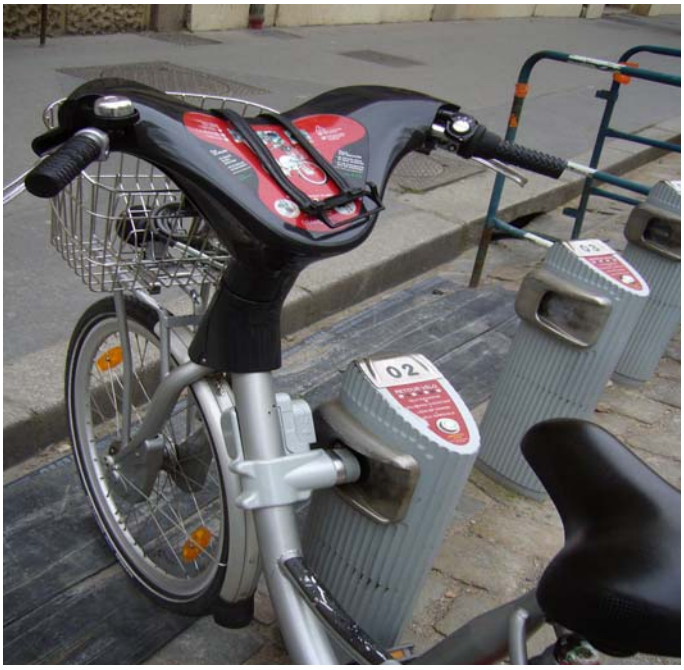
Two major types of locking technology, both fully automated, are available:

1. Bikes lock to either a rack or kiosk where users collect and drop bikes using a credit card or other card with a magnetic strip. This is commonly referred to as a smart card system. Smart card systems are found throughout the world. These systems are generally simple to operate, making them accessible to the general public.

2. Bikes are secured using an electronic lock mounted on the bike. Users must phone the operating company to receive the code to the lock. This is commonly referred to as a dial-a-bike, or call-a-bike system.

These systems require very little infrastructure as the necessary mechanisms are mounted on the bike itself. Stations using smart card systems generally require:

- A bar, post or other physical structure to lock bicycles between uses
- A computerized system to check bicycles in and out
- A power source to control check-in/check-out and track bicycles



Bike sharing system locking mechanism

Station Design, User Interface and Check-in/Check-out protocols

All bike share programs require a user interface to collect and retrieve bicycles, through a check-in/check-out system. The interface should be simple and easy to understand. Stations should provide clear directions on how to access and return a bicycle. Other recommended elements and design guidelines include:

• Instructions on where and how to return bicycles
• Cost and pricing information
• Contact information to report damaged bikes or stations
• Maps of nearby stations and recommended bicycle routes
• Damage resistant locking mechanisms
• Quick access to avoid queues and maximize safety

Both system styles may require the user to register prior to bike check-out. Any registration process and related technology should be well thought-out and intuitive. The best systems will offer multiple options to register and pay for bike check out (e.g., smart card or credit card.)

Smart card systems allow quicker, more convenient bicycle access as users are not required to make a phone call in order to check bikes in or out. Programs using a smart card system generally do not provide users with a lock.

Call-a-bike systems require the user to know and plan for the need to place a phone call in order to unlock the bike, but allow increased flexibility in terms of return locations and provide the ability to temporarily secure the bike during the rental period.

Check-in/check-out procedures at a smart card kiosk. Instructions are available in several languages. Call-a-bike check-out is accomplished in part by phone but also operates via an automated user interface.

4. Types of Bike Sharing System

Although users of such systems generally pay to use vehicles not their own, that is they rent bicycles, sharing systems may differ from traditional bike rental. Some are seen as a distinct break, having grown out of free community bicycle programs. Most require a user to become a member, and do not cater to tourists, shoppers, or other casual users. Most of the systems have bicycles available at unattended urban locations; and they operate in a manner that could be seen as "bicycle transit". Most bicycle sharing systems have been undertake by community groups, public agencies or by public-private partnerships. In these regards they resemble carsharing.
There are many ways to provide community bicycles, but most programs are loosely based around one of the following designs:

4.1. Unregulated

In this type of program the bicycles are simply released into a city or given area. In some cases, such as a university campus, the bicycles are only designated for use within certain boundaries. Users are expected to leave the bike unlocked in a public area once they reach their destination.

Bicycle sharing programs without user electronic identification struggle against theft and vandalism. In one program tried in 1993 in Cambridge, United Kingdom, the overwhelming majority of the fleet of 300 bicycles was stolen, and the program was abandoned.

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4.2. Deposit

A small cash deposit releases the bike from a locked terminal and can only be retrieved by returning it to another. Since the deposit (usually one or more coins) is a fraction of the bike's cost, this does little to deter theft.

4.3. Membership

In this version of the program, bicycles are kept either at volunteer-run hubs or at self-service terminals throughout the city. Individuals registered with the program identify themselves with their membership card (or a smart card, via cell phone, visa card, etc) at any of the hubs to check out a bicycle for a short period of time, usually less than two hours. In many schemes the first half hour is free. The individual is responsible for the bike until it is returned to another hub.

4.3.1. Public-private partnership

These bicycles may be given free of charge, for a refundable deposit, or sold at a reduced price. They are assigned to one person who will typically keep the bike for months or years and lock it between uses. A disadvantage of this model is the much lower using frequency, around three uses per day as compared to between 10 to 15 uses per day in a bike sharing.

Advantages of long term use, or the Library Bike model, include a familiarity the rider gets with their bicycle, a mode of travel that is ready for the borrower at any time during the months of use. The bicycle can be checked out like a library book, a liability waiver can be collected at check out, and the bike can be returned anytime. A Library Bike in a person's possession can be chosen for some trips instead of a car, thus lowering car usage. This model requires less repair as the users tend to care for the bikes as their own.

4.4. Long-term checkout

Many of the membership programs are being operated through public-private partnerships. Several European cities, including the French cities of Lyon and Paris as well as London, Barcelona and Stockholm, have signed contracts with private advertising agencies (JCDecaux in Lyon and Paris, Clear Channel in Barcelona) that supply the city with thousands of bicycles free of charge (or for a minor fee). In return, the agencies are allowed to advertise both on the bikes themselves and in other select locations in the city. These programs also prevent theft by requiring users to purchase subscriptions with a credit card or debit card (this option requiring a large, temporary deposit) and by equipping the bike with complex anti-theft and bike maintenance sensors. If the bike is not returned within the subscription period, or returned with significant damage, the bike sharing operator withdraws money from the user's credit card account. Some other programs, are not linked to an advertising deal, for example CityByke, B-cycle in Denver, Smoove with Vélomagg' in Montpellier and vélopop in Avignon, but can be financed by public support

4.5. Partnership with railway sector

In a national-level programme which combines a typical rental system with several of the above system types, a passenger railway operator or infrastructure manager partners with a national cycling organization and others to create a system closely connected with public transport. These programs allow usually for a longer rental time of up to 24 or 48 hours and as well for tourist and round trips. See OV Fiets for more information (in Dutch with English summary) or Call a Bike in Germany .

In some German cities, the national rail company Deutsche Bahn offers a convenient bike rental service: "Call a Bike". The Call a Bike principle is very simple, the bikes are locked electronically and again left in the open at widely distributed locations. After initial online registration, a potential user can phone a number printed on the bike. He then receives a number code that opens the lock. If desired, billing can be done directly to the users mobile phone account. The more recent Stuttgart operation requires bikes to

be returned to defined locations as the users' choice of places to leave bikes off-hire can occasionally provide an opportunity to 'hide' a bike for a return trip. Bikes are also being locked to the Velib stands in Paris because no system can yet offer the option of reserving a bike for a return journey, and balancing flows can give problems as at Montmartre where special measures are needed to get bikes back to hire points at the top of the hill.

4.6. Partnership with car park operators

Some car park operators such as Vinci Park in France lend bikes to their customers who park a car.

5. Evolution of Bike sharing System

The earliest community bicycle program, or at least the most legendary, was started in the 1960s by Luud Schimmelpenninck in Amsterdam, the Netherlands. This so-called White Bicycle Plan provided free bicycles that were supposed to be used for one trip and then left for someone else. Within a month, most of the bikes had been stolen and the rest were found in nearby canals. The program is still active in some parts of the Netherlands (the Hoge Veluwe National Park; bikes have to stay inside the park). It originally existed as one in a series of White Plans proposed in the street magazine produced by the anarchist group PROVO.

In 2000 Schimmelpenninck admitted that "the Sixties experiment never existed in the way people believe", that "no more than about ten bikes" had been put out on the street "as a suggestion of the bigger idea", but the police confiscated the bicycles within a day.

In 1974 the French city of La Rochelle launched a free bike program featuring yellow bicycles that were free to take and use. It is regarded as one of the first successful bike sharing programs.

One of the first community bicycle projects in the United States was started in Portland, Oregon in 1994 by civic and environmental activists Tom O'Keefe, Joe Keating and Steve Gunther. It took the approach of simply releasing a number of bicycles to the streets for unrestricted use. Portland's Yellow Bike Project was an amazing publicity success, but proved unsustainable initially due to theft and vandalism of the bicycles. The program was later revised to operate under a more restrictive system. Since then many community projects around the country have attempted similar models and met with varying degrees of success.

Madison, WI, for instance, had a program where specific bicycles, always painted red, were available for the use of anyone coming across them on the street (especially used on State Street between the UW campus and the capitol). The only rule regarding their use was that they were always to remain outside and unlocked for any passerby to use. This program (called **Red Bikes**) has since been modified to include deposits for the bicycle and a lock and is only available from spring (when all snow has melted) to November 30.

A similar program, **BikeShare**, operated by the Community Bicycle Network (CBN) in Toronto from 2001 to 2006, was North America's most successful *community* bicycle system, but has paled in comparison with the launches of the large-scale systems Washington, D.C.'s SmartBikes and Montreal's BIXI. BikeShare was designed to attempt to overcome some of the theft issues by requiring yearly memberships to sign out any of the 150 refurbished bikes locked up at 16 hubs throughout central Toronto. At its height over 400 members could sign out a bike from any hub for up to 3 days. The hubs were located at stores, cafes and community centres where the staff would volunteer their time to sign bikes out and in.The major failing of such more secure community bike programs was that it required a lot of administration, but could only charge users a portion of the overall costs. Over 80% of its operating costs had to be covered through grants as users were unlikely to spend more than $50 per year for a membership. By 2006 CBN was unable to secure enough private and government grants to continue operating BikeShare[1]. BikeShare was very popular and did not have any major problems with theft or loss, but without a secure source of funding it was not possible to operate.

Other bike sharing systems were evolving to reduce the operating overhead as well as find other sources of funding. The first system of this 'generation' was Copenhagen's Bycyklen - **City Bikes**, launched 1995. This was the first large-scale urban bike share program featuring specially-designed bikes with parts that could not be used on other bikes. Riders pay a refundable deposit at one of 100 special bike stands and have unlimited use of a bike within a specified area. The scheme is funded by commercial sponsors. In return, the bikes carry advertisements, which appear on the bike frame and the solid-disk type wheels. Helsinki has a similar scheme, using bicycles available at over 26 stands for a €2 deposit, which is refundable at any other stand. This model of community bike has spread to many other cities.

The next innovation was to use smart cards. **Bikeabout**, launched in 1996 by Portsmouth, UK, included cards with magnetic stripes that the students would swipe to sign out a bike. A similar system was set up in Rotterdam. They were not particularly successful, as the number of stations and operating times were seriously limited.

The launch of Velo'v in Lyon, France turned out to be a watershed. An bike unfriendly city prior to the launch of Velo'v in 2005, Lyon saw an increase of 500% in bicycle trips, a quarter of which were due to the bike sharing system. Velo'v introduced a number of innovations that were later copied by Velib and most other systems, including electronic locks, smart cards, telecommunication systems and on board computers

6. Operations

Many of the community-run bicycle programs paint each bicycle yellow, white, or another solid colour. This is usually done for two primary reasons. First, as a fleet of colored bicycles begin to appear around the city, it helps to get the word out about the program. Secondly, many programs paint over the brand name and other distinguishing features of the bicycle, some even going so far as to paint every component such as the pedals, shifters, and wheels. This is helpful in deterring theft since the painted bicycle has little resale value.

Large scale bike sharing programs, however, have designed their own bike with singular designs of frame and other parts to prevent disassembly and resale of stolen parts.

Another advantage of bike sharing systems is that the smart cards allow the bikes can be returned at any station in the system, which facilitates one way rides to work, education or shopping centres. Thus, one bike may take 10-15 rides a day with different users and can be ridden up to 10,000 km (6000 miles) a year (this figure from the city of Lyon, France). The distance between stations is 300-400 m (1000-1300 feet) in inner city areas.

It was found that to have a major impact —such as in Paris and Copenhagen— there has to be a high density of available bikes. Copenhagen has 2500 bikes which cannot be used outside the 9 km² zone of the city centre (a fine of DKr 1000 applies to any user taking bikes across the canal bridges around the periphery. Since Paris' Velib program operates with an increasing fee past the free first half hour, users have a strong disincentive of taking the bicycles out of the city centre.

Maintenance and Management

A key aspect of any bike share program is system and fleet maintenance and management. These activities can help to ensure the bike share system is in top operating order and sufficient bikes are available to accommodate all users. To ensure that bicycles are available at all stations, it is likely that bicycles will have to be redistributed from one station to another from time to time. Past performance of systems in Lyon and Paris indicates that many locations experience peak times of business when a rack will be either completely full or completely empty, making the rental or return of bikes impossible. Information about bicycle demand should be gathered through GPS units, Radio Frequency Identification (RFID) tags and any other means used to track bicycle locations.

Bike fleet maintenance includes common activities such as filling tires with air and ensuring that bike gears shift smoothly. Station maintenance may include repairing lock mechanisms, replacing damaged interfaces, and installing new power sources. Bikes and stations not kept in good repair can create safety and liability issues.

Cost, Funding and Operational Models

Costs associated with a bike share systems fall into four categories:

• Direct capital costs (e.g., bikes and terminals)

• Direct operating costs (e.g., administration, maintenance, and electricity to power terminals)

• Associated capital costs (e.g., construction of the system for building the necessary infrastructure and streetscape improvements)
• Associated operating costs (e.g., maintenance of docking infrastructure and the exsiting bikeway network, insurance costs)

It is common for a public agency to undertake operation of a bike share system with an operating partner, as most bike share systems are not financially self-sustaining. Funding for public bicycle systems commonly comes through a combination of advertisements, user fees, and public government funds and operates as a Public-private partnership.

Issues

The major issues with the earlier generation of bike-sharing schemes were people keeping bikes longer than the allowed period, theft and vandalism. The use of smart technology and credit cards has reduced these risks. For example, Clear Channel Outdoor bikes have a unique identifier and use a GPS tracking system to reduce theft. The OYBike in London has an anti-theft system that uses an algorithm to generate unique codes to open and lock the bikes (Curran 2008). In most systems, users must provide credit card information so that if they do not return a bike, they will be charged its replacement cost. In addition, smart bikes are designed to require the use of special tools for disassembly, thereby discouraging unauthorised removal, and most of the components are of uncommon dimensions that would not be usable on other bikes. The bikes also have a unique design so as to stand out from other bikes (DeMaio 2004).
Nevertheless, theft and vandalism have run higher than expected in Paris, where the operator has replaced thousands of bicycles at a cost of 3 to 6 million Euros a year. In some cities, people will borrow a bike for a week or longer and others will not return the bike to a rack. To encourage people to return bikes to underused stations, Paris recently announced a 15-minute credit for returning bicycles to specific stations, particularly those on hills.
Topography and climate may not be appropriate in some cities for bike-sharing schemes. Stuttgart (Germany) is hilly and the city is launching an electric bike scheme called “Pedelec”. Although many bike-sharing programs aim to reduce traffic congestion, in

some cities, bikes are used instead of walking or public transportation.

Implementing Bike-sharing Schemes

For cities which are considering the introduction of bike-sharing schemes, some key conditions for implementation are:
A strong commitment for sustainable urban mobility and the promotion of cycling;
A minimum structure of infrastructure (bike lanes and bike paths) for safe and convenient cycling;
Sufficient recourses to achieve a real impact
Sufficient space for racks/parking to guarantee access to bicycles.

The NICHES (New and Innovative Concepts for Helping European Transport Sustainability) project (Bührmann 2007) 2008 has developed the following checklist to help policy-makers design and plan for a successful bike-sharing scheme.
City size
Most suitable for medium large cities (> 200,000 inhabitants).
Implementation time
Short time (<2 years)
Stakeholders' involvement
For service implementation and operation Rail or public transport operators, street furniture companies, advertising companies or local authorities
For political and financial support, Local authorities, users association

Challenges
Mutual respect between cyclists, pedestrians and car drivers needs to be strengthened (especially in cities with little bicycle use).

Costs
Principal cost factor include staff needed for operation, service and maintenance;
bicycles (costs can range from _250 to more than _1,200 depending on smart bike technology); and racks and service terminals.
In most cases financial banking is needed as most of the schemes are not financially self-supporting.

Most bike-sharing schemes need to be financially backed by a large transport operator or by public resources, either through direct funding or indirectly through Public Private Partnerships (PPPs). In most cases, a PPP between a billboard company and a local authority is established. The billboard company receives the right to use specific public spaces for advertisements and in return implements and operates a bike-sharing scheme (e.g.Clear Channel Outdoor and JCDecaux). The Barcelona system operated by Clear Channel Outdoor is financed by revenues from on street parking.

7. European Best Practices

In this chapter some examples of good practices concerning Bike sharing systems with a significant percentage of citizens are presented. In general Europe has more of a culture of cycling than other parts of the world. We will examine 24 cases in particular which offer more modern systems and show the way to progress

Nowadays bike sharing programs are often offered as package deal by advertisement companies such as Clear Channel and JCDecaux. It seems a convenient deal for governments who can't afford to provide the service otherwise. Although a lot of issues can occur by mixing up different things like outdoor advertisement contracts and providing bike sharing for the community. That is the reason that cities as Rennes for example separated the tender for outdoor advertisement and the new bike sharing contract.

This collection of European best practises examples can be useful in inspiring new projects or methodologies that can be translated or adapted with success to other locations improving the implementation of bike sharing systems.
The description and presentation of the projects includes the details, the key players and the results achieved.

Example 1

Name	**Velib System**
Logo	
City	Paris
Country	France
Implementation date	1995
Participants/ Stakeholders	JCDecaux Paris City Council
Main goals	• Act on air quality and public health • Improve mobility for all • Render the city a more beautiful and agreeable place to live in • Encourage economic vitality • Reinforce regional solidarily
Link(s)	www.velib.paris.fr www.jcdecaux.com
Description	
Vélib' which in French is: vélo libre or vélo liberté and in English is: free bicycle or bicycle freedom) is a public bicycle rental program. The system was launched on 15 July 2007, following Lyon's Vélo'v success and the 1974 pioneering scheme in La Rochelle. Ten thousand bicycles were introduced to the city with 750 automated rental stations each with fifteen or more bikes/spaces. This number has since grown to 20,000 bicycles and 1,450 stations, roughly one station every 300 meters throughout the city centre, making Vélib' the largest system of its kind in the world. Each Vélib' service point/station is equipped with an automatic rental terminal and stands for dozens of bicycles. Maps showing the station locations are available at all kiosks. The robust grey bicycles were produced by the French bicycle company Mercier, in Hungary and are repaired by JCDecaux. The price per bicycle has been variously stated as US$500 US$1,300 (if provided by JCDecaux, €300, US$3,460 or US$3,500 a piece. They are three-speed bicycles, each weighing 22.5 kilograms, have always-on LED lighting powered by a front hub dynamo, a locking system and a front bicycle basket.	

If a user arrives with a rented bicycle at a station without open spots, the terminal grants another fifteen minutes of free rental time. The rental terminals also display information about neighbouring Vélib' stations, including location, number of available bicycles and open stands. A fleet of twenty bicycle-transporting vehicles are used over night to redistribute bicycles to high-demand stations in time for the next morning.

In order to use the system, users need to take out a subscription, which allows the subscriber an unlimited number of rentals. Subscriptions can be purchased at €1 per day, €5/week or €29/year. With a subscription bike rental is free for the first half hour of every individual trip; an unlimited number of such free trips can be made per day. A trip that lasts longer than 30 minutes incurs a charge of €1 to €4 for each subsequent 30-minute period. The increasing price scale is intended to keep the bikes in circulation.

A credit card or Maestro debit card with PIN is required to sign up for the programme and to rent the bikes. The credit/debit card will be charged €150 if a rented bike is not returned. The credit card is required to contain an EMV-chip in most cases (this includes all French cards, most European cards, but as of June 2008[update], few USA credit cards), although American Express cards without an EMV chip work. The sign-up can then be attached to a Navigo pass or a one year card], which allows direct use of the card readers at bikes' attach points; alternatively a numerical identification code can be used at the pay station.

The system is financed by the JCDecaux advertising corporation, in return for the city of Paris signing over the income from a substantial portion of the on-street advertising hoardings. JCDecaux won the contract over a rival bid from Clear Channel.

JCDecaux paid start-up costs of about $115 million and employs the equivalent of about 285 people full-time to operate the system and repair the bikes for 10 years. The city receives all revenue from the programme as well as a fee of about US$4.3 million a year. In return JCDecaux receives exclusive control over 1,628 city-owned billboards; the city receives about half of that advertising space at no charge for public-interest advertising. (Slightly different numbers were reported in July 2008.) This model was first used in France in 1998 by Adshel (now part of Clear Channel) in Rennes.

Due an unexpectedly high rate of vandalism compared to the Lyon system, the Paris City Council has agreed to pay $500 per bicycle needing replacement, which is expected to cost up to $2 million per year.

Paris velib bike sharing system

Example 2

Name	**Bicing**
Logo	
City	Barcelona
Country	Spain
Implementation date	May 2005
Participants/ Stakeholders	Clear Channel Barcelona City Council
Main Goals	• Improve interchange between different modes of transport • Promote sustainable travel • Create a new individual public travel system for citizens • Implement a sustainable , health inducing service fully integrated with the city's public transport system • Promote bike as a common means of transport • Improve quality of life , reduce air and noise pollution.
Link(s)	www.bicing.com/ www.clearchanneloutdoor.com/

Description

The name is derived from bici short Catalan or Spanish form for bicycle and the Airport code for Barcelona which is BCN. As well the English continuous ending of -ing is used for other means of transport in Spanish like footing (Anglicism used for jogging), parking (car park), camping (campsite) and vueling, which is a Catalan airline. Due to the hybrid nature of this Spanglish neologism, few of Bicing's English-speaking users can agree on how to pronounce it

Bicing is the name of a 'community bicycle program' in Barcelona inaugurated in March 2007, similar to the Vélô service in Toulouse, Vélo'v in Lyon and Vélib' in Paris, and apparently uses the same system and bicycles with Stockholm City Bikes. Its purpose is to cover the small and medium daily routes within the city in a climate friendly way, almost without pollution (especially the emission of finest particulate matter), roadway noise, traffic congestion and to reclaim the urban streets with non-polluting vehicles

The city council and Clear Channel manage and maintain the system. To use it one must

acquire a yearly membership. Currently the network consists of more than 400 stations to lend and return the more than 3000 bicycles distributed throughout the system. The stations are situated through most othe flat areas of the city with a distance of around 300 to 400 metres between each one, with many situated next to public transport stops to allow for intermodal use. Metro Stations usually have signs pointing to the locations of nearest Bicing stations. The bikes can be lent from, and returned to, any station in the system, making it suitable for one way travel. Each station has between 15 and 30 parking slots to fix and lock the bicycle. To rent a bike one simply swipes the contactless RFID-card at a service station to be personally identified by the system, which then unlocks a bike from the support frame. Bicycles can be used for the first 30 minutes with no extra cost, with subsequent half hour blocks (up to 2 hours) costing 0.50 € each. Use of a bicycle for more than 2 hours at a time is discouraged with a penalty rate of 3 € per hour, but also with the possibility of having your membership cancelled after a certain number of uses in excess of 2 hours. To return a bicycle one simply places the bike in a spare slot at a Bicing station: the bike is recognized automatically and is locked into place (as indicated by the small light at the slot turning red), so one does not need to swipe the RFID-card to return the bike. Nevertheless users are encouraged to swipe the card to receive a system message that the returned bike has been correctly recognized as the small red light sometimes give erroneous signals.

Specialised vans are used to redistribute Bicing bicycles between the stations should it be required to even out usage patterns. However, as of November 2007, the number and frequency of vans is not able to keep up during the peak hours, making it very difficult to find a spot at which to return the bike

To use the system you must become a member. Subscription to the system is possible through the Bicing website (www.bicing.com), or through visiting the service office. The provision of a credit card number is necessary. It takes ten days to receive your card.

The Bicing member cards are only sent to addresses in Catalonia in an attempt to prevent tourists from using the system. This limitation was imposed upon the City Council by pre-existing local bike hire companies (grouped under Bicitours) that feared what they called illicit competition from the Bicing system. Bicitours and City Council agreed as well in enforcing a user block to change bikes of ten minutes (that is, when docking a bike, the user is blocked for ten minutes before being able to leave with another bike). As a result tourists are barred from using what is officially denominated a "public transport system" - a bit like barring touirsts from using the metro or buses.

The system is paid for mostly by local car drivers with an effective on street parking control distributed throughout a large part of the densely populated inner-city. This money is then used to pay 2.23 million € annually to the system operator for a period of ten years. The yearly user fee is 30 €, which makes it the city's cheapest public transport service.

The sharply increased rate after 2 hours of continued use ensures each individual bike is used between 10 and 15 times a day by different people. More than 95% of the rides are shorter than 30 minutes. When a bicycle is returned it is necessary to wait 10 minutes before taking another one, again for free. Although there are over 90,000 registered users as of September 2007 only 1/3 of them are using the system on a regular basis. So far the network extends through Ciutat Vella, Example and some parts of Saint Martí and Gràcia. As of November 2007 the system had been used more than 2,750,000 times, representing 8,000,000 km of travel.

As the bike sharing system was received by the inhabitants with great enthusiasm, it is currently expanded to other parts of the city and equipped with additional stations within the area already covered. So by the end of the year it's planned to offer 3000 bicycles at 200 stations and by spring 2008 quadrupling to 6000 bikes at 400 stations to cover approximately 70% of the city area, except areas with slopes of more than 4% and the hilly area of Montjuic and Tibidabo. Several neighboring cities have asked to extend the service to their city as well and studies are underway on how to implement this for the flatter part of the wider metropolitan area.

Example 3

Name	**Vélo'v**
Logo	
City	Lyon
Country	France
Implementation date	May 2005
Participants/ Stakeholders	• JCDecaux. • City of Lyon
Main Goals	• Help to create a more sustainable transportation system

	• Provide a new mobility option for short trips • Help to achieve transport and land use planning objectives including pollution emission reductions, reduced traffic congestion, • road and parking cost savings, consumer cost savings, energy conservation, • reduced crash risks, improved public health, and support for smart growth land use development.
Link(s)	http://www.velov.grandlyon.com/ www.jcdecaux.com

Description

Since the 2 June 2005, a new plan has been put in place to cope with the agglomeration of Lyon and its problems concerning urban traffic: air pollution, noise, unhealthy and dangerousness of traffic. In effect, 75% of Lyon's workers use cars between home and their work. It's only recently (2 June 2005) that the city has introduced a UDP (Urban Displacement Plan).
To eliminate the traffic problem Lyon has restrictions for cars in the city (speed limited and one-ways), improved traffic conditions and safety through elevation of cycling tracks, planting trees between different kinds of tracks: cars, cycling, tramway, pedestrian ways, pedestrian path enlargement and improvement of coordination between other means of transport. The new tramway track was inaugurated on 4 December 2006, and alongside it a cycling track has been set up, as we can see in the following figures:

Lyon needed to improve availability of bicycle parking. For that,Lyon decided to install bike racks in public places such as sporting venues, some residential areas, etc. Also, the 'Lyon Park Auto', allows cyclists to park theirs bikes for free (availability: 300 bike tracks).
Since 2005, Lyon has seen bicycle numbers increase by 41%. This increase would not have happened without a program called 'Vélo'v', which was introduced on 19 may 2005, covering the cities of Lyon and Villeurbanne. 'Vélo'v' puts forward a bicycle rent system of 3000 bikes can be used all the year round. The 'Vélo'v' bike works with season tickets. Users have two card choices - long duration (1 year) or short duration (7 days). After this period users must pay extra when they want to use bikes. We can see below that it's free use for a continuance of 30 minutes or 1 hour.

	Cost of card	30 min	1h 30 min	Additional hour
Long Duration	5€	0€	1€	1€

Short duration	1€	0€	1€	2€

When users buy their card, they receive a code, which is used when they want to take a bike at one of the 250 electronic lockable parking terminals.

To use these bikes people need to be more than 14 years old and have a civil risk assurance. Also users must pay a refundable deposit costing 150 € for the long duration card. For the short duration card, people must pay by bank card in order that the Vélo'v's team can identify the people who don't bring back or break bikes.

One of the user-friendly features of 'Vélo'v' kicks in when electronic racks are unavailable. Instead of wasting time (and money) to find another terminal, cyclists can insert their cards in the electronic devise of the busy rack and be granted an additional fifteen minutes to find another rack.

One of the advantages of the Lyon system is that with bus, train or other public transport cards, you can benefit from discounted bicycle rental rates. This and the new tramway line project prove that there are relations between means of transport and rental bike systems.

'Vélo'v' and this Lyon cycling system is going to be exported to other cities of France(Marseille, Paris) and other countries (Belgium).

Example 4

Name	**Vélomagg**
Logo	
City	Montpellier
Country	France
Implementation date	June 2007
Participants/ Stakeholders	• City of Montpellier • Smoove
Main Goals	• Improved public health • Reduced crash risks • Support for smart growth land use development.
Link(s)	http://www.velomagg.com/ http://www.smoove.fr/

Description
Vélomagg' is a bike sharing scheme in Montpellier, France launched in June 2007, engineered by Smoove. This community bicycle program comprises 750 bicycles and 59 stations for short and long term renting, optionally coupled with tramway, bus and car sharing services. Individual bicycles can park in secured parking lots linked to the system, equipped with electrical public pumps. The bicycles are secured by mechanical keys distributed by automatic dispensers. The system is reliable and appreciated, the bicycles are relatively cheap, sturdy and light. Contrary to most other such programs, it is not linked to an advertising deal. For 2 euros, visitors and residents can rent a bike for the entire day and head out for a smooth ride over the area's 150 km of bike paths. Bike stations can be found at convenient locations throughout the Agglomération area.

Example 5

Name	**Vélopop'**
Logo	
City	Avignon
Country	France
Implementation date	July 2009
Participants/ Stakeholders	City of Avignon Smoove
Link(s)	http://www.velopop.fr/ http://www.smoove.fr/
Description	
Vélopop' is a bike sharing scheme in Avignon, France launched in July 2009, engineered by Smoove. This community bicycle program comprises 200 bicycles and 17 stations for short term renting. The bicycles are secured by a special fork in easy to install bicycle stands with	

mechanical keys distributed by automatic dispensers
The system is designed and assembled in France and accessible 24h/d and 7d/w, inside and outside city walls.
Packages there are packages of 1 days and 1 week . You can acquire by calling a specific number and charge your credit card and an sms will be sent outlining the withdrawal amount

It costs 1 euro for 4 hours or 2 euros for the day. You need to give them a piece of ID.You can also have an annual subscription with a € 5 credit and can also have Bus + Bike Package with 50% discount on the fares
Bikes may be rented at machines (Velo Magg) in various places in the city centre including Virgin, the tourist office on the place de la comedie and the main TAM velo office, located adjacent to the train station. The price is 2€ for one day. Just remember if cycling in the old centre that there are streets which are actually staircases and although they are a sight to behold (the rue du bras de fer), a glorified shopper bike will not tackle them as well as a fully suspended Cannondale (guess which one you can hire and which one you can't)!
Be adivsed that only a small subset of the Velo Magg kiosks operate on Sundays, in which case it may be better to visit one of the manned offices, either adjacent to the train station or near la opera.

Example 6

Name	**Stockholm City Bikes**
Logo	
City	Stockholm
Country	Sweden
Implementation date	June 2007
Participants/ Stakeholders	Clear Channel City of Stockholm
Main Goals	• Raise the status of cycling • Promote using bicycles for short distance trips
Link(s)	www.citybikes.se/

Description
Stockholm City Bikes is the name of a public-private partnership project of the City of Stockholm in Sweden and the outdoor advertising unit of Clear Channel Communications. It is a community bicycle program that allows renting a bicycle for a maximum period of 3 hours, between 06:00 and 22:00 (last rental at 22:00). The rental system requires a membership and a rental card. These are obtained by buying a season card (for 250 Swedish kronor SEK) or 3-day card (for 125 Swedish kronor SEK). Rental cards can be bought at "SL centres" (SL is Stockholm's public transportation company) and require registration with personal identification containing the Swedish national identification number called personnummer. For foreigners a passport is required. Several one-day rental periods can be loaded onto a rental card, but once it has expired it cannot be reloaded again with a new rental period. Stockholm's rental system is available between April 1st and October 31st, unlike other public bicycle programs that are available throughout the year. Financing The season card entitles the buyer to receive a free bicycle helmet that is decorated with advertising. The entire system is financed by advertising sold and managed by Clear Channel Communications. The advertising is displayed on the bikes and on outdoor bilboards set up in connection with the bike stalls. Complications The system has been criticised for being somewhat complicated for foreigners who do not understand Swedish. Moreover, the hubs sometimes physically lock the bikes to the hubs, but do not register the fact in the computer system, resulting in blocked rental cards. Furthermore, the rental hubs have been vandalised during night time resulting in bicycle thefts and destroyed bicycles and hubs. Management of the project has stated that if vandalism is not limited, the project might become too expensive and eventually canceled.

Example 7

Name	**Call a Bike**
Logo	
City	Berlin, Frankfurt, Cologne, Stuttgart, Munich, Karlsruhe
Country	Germany

Implementation date	
Participants/ Stakeholders	**Deutsche Bahn AG**
Link(s)	http://www.callabike-interaktiv.de/ www.bahn.de/

Description

The German 'Call-a-Bike' scheme, run by transport provider Deutsche Bahn (DB), is in use across six cities: Berlin, Frankfurt, Cologne, Munich, Stuttgart and Karlsruhe. The programme is often considered a late 'second generation' or early 'third generation' public bike system. It applies a mid-tech, mobile technology dependent solution, to secure and release the bikes, designed so users can easily pick them up and drop them off in many locations, normally without specific parking stations. The DB bikes are typically left parked near road junctions or intersections throughout the city, or at specific rental points in the case of Stuttgart.

Once registered, users can ring the phone number printed on the side of any bike and read out the unique number printed on the digital box (to identify which bike it is). They are then given a pin code to type in which releases the in-built lock. The user's account is then timed and debited for as long as the bike is used. When cyclists want to drop the bike off they can park the bike at any major junction (or rental point for Stuttgart) and ring again to be given a new number to tap in and inform the location of the bike, which terminates the use for that journey.

To register, users can do so online or by phoning a service hotline and pay a registration fee of €5.00 which is then credited to towards the first rental invoice. With exception of Stuttgart (first half hour is free) there is a minimal hire charge of €0.08 per minute, or €0.06 per minute if you have a "BahnCard"(German railcard). For a 24 hour period the charge is €9.00 and weekly rentals are available at €60. There are also yearly flat rates available for BahnCard holders allowing free hire for half an hour in all cities, prices range from €25-€99/year.

The system is based on specifically designed bikes, which are visibly distinct from any commercially available model and are well branded with the DB identity. The frame design is unisex. The unique appearance makes them unmistakable and difficult for thieves to disguise their origins. All the components are non-compatible with other bikes. Accordingly there is likely to be no application or resale market for components, making theft of the bikes or components unlikely.

The bikes provide an inexpensive and flexible form of public transport, and once the system is mastered, users can usually cycle around the city for less cost than a one-day travel pass

Strengths

Registration fee is returned (or part returned) in the first rental

Relatively cheap compared to other European schemes

A scheme which enables visitors to navigate the city for less than the cost of a travel card

Easy to return bikes, owing to flexibility of parking policy

Weaknesses

Without specific rental locations in most cities it can be difficult to locate bikes especially if a group rental is required

Theft has reportedly been a problem

Visual explanation on the scheme for foreign visitors, without a good level of German, is limited

Early versions of the scheme were shown by several websites to be 'hackable', enabling the unmonitored and free release of bikes, although it is believed this has now been addressed via the programming of the DB Bikes' electronic system

Example 8

Name	Sevici
Logo	
City	Seville
Country	Spain
Implementation date	June 2007
Participants/ Stakeholders	JCDecaux Ayuntamiento de Sevilla
Link(s)	http://www.sevici.es/
Description	

Sevici is the name of a community bicycle program in Seville inaugurated in April 2007, modeled after the Vélo'v service in Lyon and Vélib' in Paris. Its purpose is to cover the small and medium daily routes within the city in a climate friendly way, almost without pollution (specially the emission of finest particulate matter), roadway noise, traffic congestion and to reclaim the urban streets with non-polluting vehicles.

Operation

The Ayuntamiento de Sevilla (Municipal Government) and JCDecaux manage and maintain the system. Two membership options are available; a weekly pass, purchasable at each of the station kiosks by credit card at a cost of 5 euros, and a yearly pass,

requiring an application to be sent to the municipal government at a cost of 10 euros . Before the end of 2008 more than 250 stations and 2500 bikes will be available. The stations are situated throughout the inner-city with a distance of around 200 metres between each one, with many situated next to public transport stops to allow for intermodal use. The bikes can be borrowed from, and returned to, any station in the system, making it suitable for one way travel. Each station has between 10 and 40 parking slots to fix and lock the bicycle.

To borrow a bike with a yearly pass, one simply swipes the contactless RFID-card at a station kiosk to be personally identified by the system, which then unlocks a bike from the support frame. With a weekly pass, a ticket is printed with an ID number that can be punched in at the station kiosks to identify the user account. Bicycles can be used for the first 30 minutes at no extra cost. The next hour costing 0.50 Euros and all subsequent use costing 1 euro per hour for the yearly pass, double the cost for the weekly pass. To return a bicycle one simply places the bike in a spare slot at a station, the bike is recognized automatically and is locked into place.

Subscription

The yearly subscription costing 10 euros requires an address where the pass is sent, whereas the weekly alternative (5 euros) can be obtained directly at any station by presenting a credit card. In both cases a 150 euro deposit is authorised in order to deter theft. (If a debit card is used, the 150 euros will be taken immediately and returned at the end of the hire period.)

When a weekly membership is purchased the user is provided with a member code ticket to be used at the stations rather than an RFID card, making the service immediately available to tourists.

Example 9

Name	**OYBike**
Logo	
City	London, Reading , Famborough, Cardiff
Country	U.K.
Implementation date	2004
Participants/ Stakeholders	• OYBike • Veolia Transport
Goals	• getting people out of their cars and onto bikes for point-to-point journeys in big cities
Link(s)	http://www.veolia-transport.com http://www.oybike.com
Description	
OYBike is a bicycle sharing scheme based across London and in other areas of the United Kingdom including Reading and Farnborough. The program is similar to, but not exactly the same as, other programs in different cities. The OYBike system was developed by former-cabbie Bernie Hanning over the last twenty years but officially launced as a trial in 2004. He sees these bikes as one aspect of a larger public transportation network. Trials initially began in Hammersmith and Fulham in West London where it was put in place at tube stations and theatres with the support of the local council.The relative ease with which an OYBike hire station can be erected has been cited as potential for growth in the city of London. Bikes are parked to, and rented from, the electronic lock, which is controlled through a keyboard and LCD display. The locking station holds the cable secure until that bicycle is rented out. Once registered, users can borrow (release) and return a bike by entering one of two unique codes, which are sent as texts to their mobile phone when they call the number shown at the rental station. The user's phone receives a pin number to unlock the bike at the start of a journey and a second one to lock it at the end. This also determines the time rented and how much the rider is charged. Users pay an initial fee of £10 (annual) and then are then charged based on usage.	

The electronic locks are mounted on standard U-stand bicycle parking furniure – either stands already installed on a street, or new ones installed with the system, without the need for any IT or physical infrastructure. Up to 3 bikes can be parked per OYBike parking station. The Hammersmith pilot introduced 25 locations and approximately 50 bikes.

On-street bicycle hire by means of automated locks that are mounted on standard U-stand bicycle parking furniure, with rental and return of bicycles via user's mobile phones.

Strengths

• Easy to install using existing U-stands

• Stations can be moved as necessary according to patterns of demand

• Lower start-up costs for small schemes, than many other 3G city bike systems

• Increases U-stand capacity (up to 3 OYBikes per station/side)

• No installation of shelter or enclosure required to issue or store the bikes

• No infrastructure or public works requirement

• Bikes available 24/7 and 365 days per year

Weaknesses

Slightly over-complicated rental process, compared to RFID card-based 3G bike systems

• Issues with distribution of bikes at peak periods

• Issues with limited usefulness where the scheme is only set up in small pockets and does not serve wider areas

• Interface and design of current docking stations is not ideally suited to the OYBike rental process

• To some, the bike designs are unattractive or not modern enough

• Issues with vulnerability of some components of the bike

Example 10

Name	**BikeMi**
Logo	
City	Milano
Country	Italy
Implementation date	December 2008
Participants/ Stakeholders	Clear Channel
Link(s)	http://www.bikemi.com
Description	

BikeMi is a public bicycle sharing system in Milan, Italy.

The system was launched on 3 December 2008 with the opening of the first 40 stations. There are at present 100 stations and 1400 bicycles, and the system is planned to grow to 250 stations and about 5000 bicycles within the year 2010.

A yearly subscription of €25 is available offering the first 30 minutes at no charge with graduated rates for additional time. There is a plan for weekly and daily rates for residents and tourists.

The bicycle model will be nearly the same as the one used in Barcelona. Only the colour might change from the Spanish flame red to the many shades of orange, which remind of the Milanese public transport's fleet.

The environmental-friendly vehicles will be provided with a padlock and a hooking system soldered to the frame for little columns.

Occasional users will cycle around thanks to a magnetic card, according to a tariff that goes by hour, while habitual riders will have the chance to buy a favourable season ticket.

You can get information, by stopping at one of the information points promoting this new transport alternative.

Sign up now for the season pass (one year) online at the BikeMi website.

The season pass is available online at Euro 25,00 for an annual badge.

Example 11

Name	**Next Bike**
Logo	
City	Germany: Berlin, Frankfurt, Düsseldorf, Friedrichshafen, Erlangen Bielefeld , Cottbus ,Cologne ,Halle ,Dresden ,Leipzig, Munich, Karlsruhe Austria: Mörbisch Eisenstadt
Country	Germany - Austria
Implementation date	2006
Participants/ Stakeholders	Next Bike
Link(s)	http://nextbike.de www.nextbike.at

Description

Nextbike has been in operation for three seasons now. Another 30 rental locations are to be added shortly in Austria, with 220 bicycles bearing the name LEIHRAD-nextbike, on this occasion in co-operation with the Austrian railways. And in the German town of Düsseldorf there will be 300 rental bikes waiting at 25 stations this season. The site www.nextbike.at demonstrates the rental bike is a success in the German-speaking countries. Nextbike has a simpler set-up than the Vélib-like rental bikes in Paris and Barcelona and states that it is cheaper by a factor of 10. After registration users may open the bicycle lock with a code transmitted by text message. After use the cycle is to be reported back by mobile phone. One hour's use costs one Euro, a full day five Euro. Once registered, people may rent a bicycle in any country and also rent in one location and return it somewhere else. Nextbike was founded in 2004 and by now has locations in seven German cities, as well as in Austria in Vienna and the Burgenland region. Nextbike is also active in New Zealand. The system is financed by the rental income and advertising on the bicycles themselves. Currently an outdoor advertising firm has taken a share in the company.

Nextbike is a customer friendly bike sharing system. Thanks to its combination of an as easy as flexible rental-process and the involvement of our ad-partners nextbike is able to offer very attractive prices and high availability.

Next bike works very simple. You just go to the next rental point, choose a bike and call the customer hotline . After registration via credit card you will receive a number code to open the combination lock. For returning the bike, please bring it back to a rental point, lock it up and call the customer hotline . The prices are 1 € per hour and 5 € per 24 hours.

Example 12

Name	Citybike
Logo	
City	Wien
Country	Austria
Implementation date	
Participants/ Stakeholders	City of Wien Stadt Wien Meine Raiffeisen Bank
Link(s)	http://www.citybikewien.at/ http://www.wien.gv.at/ http://www.raiffeisen.at/
Description	

The Citybike Wien system is an innovative and environmentally friendly means of public transport and not a conventional bike rental system.

You can hire our bikes at 61 bike stations across Vienna and return them at any station, independent of where you started your trip. 24 hours a day, 7 days a week. In a nutshell: It allows you to be mobile whenever you want.

To use Citybike Wien services, one-time registration is required – via the Internet or directly on the Citybike terminal. Registration is possible by using a MAESTRO card (cash-dispensing card) issued by an Austrian bank, a credit card from VISA , MasterCard, or JCB Creditcard. Following your initial registration, you can hire one bike per card immediately.

You also have the option to order your own Citybike Card. Then any open fees will simply be paid via automatic debit transfer from your Austrian bank account. In addition, you can apply for additional partner cards – to travel through Vienna with your entire family. Also in this case you can hire one bike per Citybike Card.

If you just visiting Vienna then you can hire a Citybike Tourist Card for every bike you want to hire. The fee for using the Citybike Tourist Card in the amount of € 2.00 per calendar day can be paid at one of our issuing offices.

The registration procedure requires payment of a one-time fee of € 1.00. This amount will be credited to your Citybike Wien account for your next ride that takes longer than one hour. Because the first hour of every ride is free of charge! And should you then make another trip after a break of more than 15 minutes, you will again have the ‘free-hour bonus’.

Example 13

Name	Bycyclen
Logo	bycyklen københavn
City	
Country	Denmark
Implementation date	1989
Main Goals	• to encourage the use of bicycles, • to consider this means of transport as an addition to the public transport network and • to decrease the theft of private cycles.
Participants/ Stakeholders	• The Fonden Bycyklen i København foundation, • Transmedia A/S advertising agency, • Cycle Imports of Scandinavia (CIOS) and • København's municipality.
Link(s)	http://www.bycyklen.dk/
Description	

The city bikes in Copenhagen are world famous. When you tour the city you notice, that especially tourists love riding the city bikes. Some even regard them as the major tourist attraction of Copenhagen!

But don't get surprised, if you see an officially looking clerk on a city bike on his way to the office. The copenhageners themselves do sometimes use "bycyklen" as a quick alternative to cars, busses and taxis, when they want to get around in City.

The city bikes are Copenhagen! This is emphasized by the fact, that a city bike was the official gift from The City of Copenhagen to the American president, when he visited Copenhagen in 1997. Bill Clinton recieved a specially designed city bike called "City Bike One".

The city bikes are also a story about our town. They tell you that Copenhagen City is a little big green (horizontal!) town, in which you easily get around. The cool yet funny design of the city bikes illustrates our playing approach to city-life.

City bikes give job-training

"Bycykelservice" maintains the city bikes. "Bycykelservice" is a departement in the rehabilitation agency of Copenhagen. It trains around 30 rehabilitees. During a 6 month-training program the rehabilitee qualifies for a job on normal conditions. The program is a succes. Around 80% of the rehabilitees get a job afterwards, mainly as lorrydrivers or bicycle repairers.

Environmental transportation

To encourage even more citizens to use their bicycle for transportation, The City of Copenhagen systematically expands the net of bicycle lanes and routes. Hence, you can get faster around in City by bicycle than by car or bus!

We see the city bikes as a positive, dynamic supplement to this traffic structure. The city bikes highlight the status of Copenhagen as one of the leading bicycle-cities in the world!

There are
- 2.000 city bikes
- 110 city bike-racks in City
- 1 bicycle repairshop only for city bikes
- 4 mobile city bike-repairshops - for reparations on the spot

Example 14

Name	**Bicyclen**
Logo	
City	
Country	Netherlands
Implementation date	
Participants/ Stakeholders	ProRail
Link(s)	www.ov-fiets.nl/
Description	

OV-fiets (Public Transport Bicycle) is a fast growing Bike Sharing program in the Netherlands. It is a unique supplement to public transport. It is available at almost all important train stations (180 stations). It is very easy to pick-up a bicycle from automatic dispensers or from a staffed rental location. Bicycles are always accessible at least during public transport operation hours, and in many places 24 hours a day 7 days a week. The Bike Sharing program leads to better accessibility of city centres during peak-hour by reducing car use and parking problems. It thereby also reduces negative environmental effects. And last but not least: riding a bicycle is not only healthy for the environment, it is also good for personal health. The widespread availability of the OV-fiets makes it successful

The Netherlands has a long cycling tradition and culture. It was the first country to launch a bicycle-sharing system. In 1968 Amsterdam launched the 'White Bikes' program, but it failed in a short span of time. However, the Netherlands are always trying to improve the bicycle way of life. In the capital they tried to implement a new modern system called 'Depo' in the late nineties. Actually it was a replacement of the first program ('White Bikes'), but unfortunately it folded again. It consisted of a network of parking lots where you picked up bicycles by using a magnetic card. The users could go everywhere using the same system. It was possible to book a place for parking and a service that redistributed bikes around the city when some parking lots were full. But, this program failed and was closed due to theft and lack of funding.

A new program is now being tested and implemented across the Netherlands. It is called 'OV-fiets', which means 'public transport bicycle'. It is run by ProRail, a company which works for the maintenance of Dutch railways, since 2001. The concept of this recent project is defined by its meaning: the customer can rent a bike as a part of the Dutch public transport. It's inside the third generation of public use bicycles, because it uses smart cards and automated racks. The idea is to enable people to cover short distances, mainly between the train station and the work place. For this reason at the moment it's only possible to find these kinds of bikes in stations. Currently around 1000 such bicycles are available in 100 railway stations in the Netherlands, with more to come in the future.

The operation is simple. The user rents a bike automatically, located inside white stalls. These bikes are rented for a maximum period of 60 hours, for 2.75 €. There is an annual subscription fee of around 10 €. So the price is not expensive. The user must be member of this program and it's only possible to do it with a Dutch bank account. So, this system is aimed at commuters and not tourists.

The program is already running with a good web interface with all the locations. It is also possible to rent these bikes in some common bike-rental shops. Additionally, the white stalls which are found near railway stations have added to the nation's character.

Example 15

Name	Bicincittà
Logo	
City	21 cities
Country	Italy and Spain
Implementation date	2004
Participants/ Stakeholders	Bicincittà (Comunicare s.r.l.) in partnership with City councils in respective towns, Italy. In Rome, Pamplona and San Sebastián, the installation is also linked to an agreement with advertiser and transport company Cemusa
Link(s)	http://bicincitta.com/ http://www.cemusa.com/
Description	

Bicincittà is referred to as a 'bike sharing' initiative. The system is targeted at public administrations, to make bicycles available in towns and cities for point to point journeys around urban centres, mostly in Italy, but also now in Spain.

Emphasis is placed on this being a 'bike-sharing' scheme rather than traditional bike rental, meaning bikes are intended for short loan periods for city errands. The service is indended to dovetail with other public transport systems in order to facilitate intermodal options for travelling around and in and out of the city without a car.

First introduced in 2004, the Bicincittà scheme has now been installed in 21 cities, mostly in central and southern Italy, but also other locations including Turín, San Sebastian (Spain) and Pamplona (Spain). There are indications of nearly 11,000 registered users and currently 1700 individual stands across all 21 locations. It is however a well-developed 'smart' networked service and its operation is not dissimilar to those offered by Clear Channel, JCDecuax and other competing programs.

The charging structure for the service varies between cities where Bicincittà is implemented. In Cuneo, Chivasso and Savigliano, for example this service is free, in Parma and Pistoia it costs about 80 cents per hour. Some cities require pre-registration and an annual membership fee.

Through the use of an electronic pass, each individual user can take his/her bicycle from any bike-parking stand present in the city and return it wherever they find an open parking space - even in a different rack from the original. This system creates a rapid and flexible network of bikes in the city, where the cyclist utilizes a bicycle for less time than by automobile transport with the added benefit of reduced pollution. He'd be sharing in an alternative means of transportation shown to be faster and more efficient over short distances (bicycles for sustainable mobility). As a result, the parked bicycle will be automatically available for the next cyclist, who in turn will move it to yet another bike-park. Thus the bikes are used temporarily, interchanging among the various bike-parks in the city, assuring that there is always a great availability of bikes in any one stand.

The physical mechanisms of Bicincittà

Bicincittà is comprised of the following elements:

- the bicycle and the bike-rack parking
- the monitoring and inventory system
- a system of tele-diagnosis.

The bicycle and the bicycle rack parking system

The bicycle is obviously the fundamental element of this uniquely open-hiring system. Each bicycle is anchored solidly to a bicycle-parking column that prevents its theft. It is also equipped with an electric locking device activated by the user who inserts a special electronic card to obtain the bike and to return it. These parking areas make up the distribution stations and the number of parking columns is determined by demand, without any necessary minimum number. Each station has an information sign upon which you can find a map of the area with the availability at the various distribution stations, rules of their use and useful contact information.

Monitoring and organizational systems

Every movement of the bicycles is transmitted to a server that updates in real time their availability in the area. Upon receiving an electronic card, each cyclist is then registered in the server, having inserted his/her personal information and telephone number. This card is distributed for an indeterminate amount of time and can be deactivated remotely at any time at the director's discretion. The system's interface supplies us with the user's personal information at the moment of the hire, giving us a general overview of who is exploiting the system. As a result we can analyze bike movements and study their statistics in order to increase or decrease the number of bicycles according to demand.

Tele-diagnostic system

Bicincittà is equipped with a remotely enhanced diagnostic system that allows us to know the conditions of the parking stations at any moment. Wherever there may be a damaged or malfunctioning unit, a remote mechanism allows us to reset the device, be it a single parching space or the entire parking station. The practicality of the tele-diagnostic system allows us to solve problems from a distance. This guarantees a completely efficient, indispensable organization in providing quality available alternative public transportation.

Strengths

Relatively simple 'third generation' system can be installed in small or larger numbers, according to town budget, size, demand, etc

• No necessary minimum number of bike stands at one station for system operation

• On-stand swipe-card readers

No need for on-site digital interface, keeps costs down, reduces opportunities for vandalism/ failure and simplifies user interaction process

Weaknesses

Dubious security of bike components and fixings

• Not sufficient evidence of custom non-removable or non-transferable parts. Little use of security screws

• Design of bikes is very 'traditional' in style and may not communicate a 21st century system to some

• No information available on issues with theft or vandalism among current installations

• Some existing installations too-small scale for the size of towns/ populations they have been installed for – implies possibility of too few bikes available to meet demand and the service not being convenient (local) enough for user's destinations

Example 16

Name	*Cyclocity*
City	Odense
Country	Denmark
Implementation date	Not found
Participants/ Stakeholders	City of Odense
Links	http://www.odense.dk
Description	
Odense is situated on the island of Fyn and, with a population of 185.000 inhabitants, is the	

third largest city in Denmark. It's among other things famous for its promotion of cycling and cycle safety, due to a fine budget that support all the projects (20 million of DKK for four years including 50% support from the state). Moreover it has a long tradition of planning for cyclists and has almost the same length of cycle network than Copenhagen (350 km).

The municipality has created a strategy which considers 50 sub-projects to improve bicycle conditions in the city. Some of them will be described in the following paragraphs. Improvements of roads and cycle tracks are being carried out. One of the most innovative of these has been the installation of a row of small light posts along the paths. These help cyclists avoid stopping at red lights. The guide lights are adjusted to the traffic lights so cyclists can increase their speed if it's green. In fact there are also some speedometers that can help cyclists to adjust the speed instead of stopping when the light is red. It is called green wave when cyclists can flow fluently.

Parking facilities have also been developed around the city. For instance, a central square was converted from car parking to bicycle parking, with weather protection and alternative design. A module system of automated parking will be established too, as we will see below. At the moment they have a plan to improve parking in specific places like train stations (underground rooms) or in bus stops (normal racks). Also special care has been taken to give it a pleasant appearance and make it environment friendly.

Odense has invented a meter that counts cyclists every day. That means all trips coming in and out of the city are registered. It could be used as a gimmick to drum up interest and encourage people to ride bikes. Around 5000-10000 cyclists pass every day the barometer.

Recently, the city has introduced a modern system to detect problems in the cycle tracks. A little car (Smart brand) checks the paths for holes, bumps, etc. by using a laser. Then this data is registered into digital map, making the process of repairing them a lot quicker.

Another famous project is the promotion of safe routes to school, which aims to popularise trailerbikes for transporting children to and from kindergardens and schools. More campaigns aimed at popularising bicycle usage are being tested, such as the one which allows local inhabitants to borrow special bikes from the municipality.

The Odense municipality has good maps of cycling networks and routes, not only for the city, also for the countryside. They have been distributed to all inhabitants. On the web page there is a tool for calculating the distance of a trip between two locations, and for locating the shortest route. The user can also access this system using a mobile phone. So, it's possible to get cycling routes on a map with descriptions using WAP technology. And all this is for free.

As we have seen, Odense is a city totally adapted to cyclists and cycling culture, with a lot of facilities and the use of the latest technology. Some of these new developments have been introduced for the first time, so they have been hard working. Also, it's quite ambitious, because

the goal for the city is to be the best 'cycle-city' in Europe.
However, at this point we must observe that as far as bike-sharing programmes are concerned, there is not much to be learnt from Odense. This is because they don't have any programme as such. However it's very interesting to understand general operating systems for bikes in general, even though all the improvements have been made with private bicycles in mind. It is the spirit that Copenhagen would do well to copy.

VIP-parking for shoppers

Odense Cycle City has invented an automatic parking system. In this secure house you can park your bicycle and prevent it from being stolen, getting wet or ruined. You can also leave your luggage behind along with the bicycle because the house is locked.
It functions by you putting 5 DKK in the slot. Then you place your bicycle in a booth in a kind of carousel and close the door. You are the only person with access to the bicycle. After three hours the 5 DKK is spent but if you park longer than three hours you pay the rest when you fetch your bicycle.
Today the parking system has been rebuilt and is now a house of safe boxes where you can leave your luggage.

Example 17

Name	**Spicycles**
Logo	SpiCycles
City	**Ploiesti**
Country	Romania
Main golas	• It was set up with 50 bicycles offered to the pupils, students, teachers, local police and employees of PMP. The system especially had a promoting role. The citizens used the system for a period of six months free of charge with the only responsibility to keep the bikes in a proper condition. • Raised the awareness for bike sharing and generally for cycling at all. New stakeholders (companies, instituations etc.) could be involved in the cycling project by financing bikes.

Brief description
The bike sharing system was targeted at students, pupils, employees of PMP and private companies, active citizens and retired people. Questionnaires to potential users were distributed in schools, the university, during street campaigns and special public events organized by public authorities in order to find out the level of bike use. Another online questionnaire it was posted on the PMP website (www.ploiesti.ro) concerning the important role of citizen's involvement and of changing the social environment. Finally, a special questionnaire was distributed to local authorities, private companies and decisions makers to find the specific conditions which must be created for infrastructure, logistics and other cycling facilities. It was found that the number of bikes had to be raised to meet the demands of the private companies. Initially the number of bikes was 50 but with the help of interested local private companies (Unilever) the actual number of bicycles was raised to 100. In comparison to other European bike sharing schemes, the Ploiesti system is system is free, without taxes, and the only obligation of bikes' users is to maintain the bike in a good condition. Also, bike sharing in Ploiesti is not a commercial enterprise; it is aimed at promoting and supporting cycling as a new means of daily transport. The main difficulty was to ensure a coherence and convergence between the decisions and perception of all the local actors involved. The innovative character of the system could be a barrier for older citizens but in the same time could arises the interest of young people. Therefore, it is very important to choose the appropriate methods for promoting the bike sharing system according to the different target groups. Students who have received bikes could be used as promoters of this new system. The project was related to WP5: Planning for cycling and WP6: Building local partnership.The project found that in the future it might be necessary to be more aggressive in promoting the project's objectives and actions to local authorities and citizens and to valorise all the opportunities appearing in the private field in order to develop cycling infrastructure

Example 19

Name	**Spicycles Rome n Bike**
Logo	
City	Rome
Country	Italy
Implementation date	June 2008.
Important link	www.roma-n-bike.com.
Main goals	• To registered: 2.000 subscribers, 34.000 movements, more than 6.000 enquiries to the dedicated contact centre. • The users categories are different: employees, self employed, students. Most of the people's age ranges from 30 to 50 years, 62% of the users were men and 38% women.
Brief description	
The Rome n Bike system has • N° of public bicycles: 200 • N° of locations: 19 • N° of racks: 270 Bicycle rental is active from 07:00 am to 11:00 pm and free of charge for the first 30 minutes. The relevant magnetic badge (smart card) can be found in one of the following Touristic Info Point (PIT): Stazione Termini (Termini railway station on the corner of Via Giolitti) • Piazza delle Cinque Lune (next to Piazza Navona) • Via Nazionale • Santa Maria Maggiore • Via Minghetti (on the corner of Via del Corso) • Castel Sant'Angelo (between Castel S. Angelo and Via della Conciliazione) • Piazza Sonnino. The fare is 1 Euro for the second half an hour, 2 Euro for the third half an hour, 4 Euro for any successive half an hour.	

Example 20

Name	SPICYCLES
Logo	
City	Gotenburg
Country	Sweden
Implementation date	2006
Main goals	

Brief description

The pilot bike sharing system in Lundby has now been operating for several years and the City of Göteborg has been able to draw some definitive conclusions. The system has mainly been mainly targeted towards companies in the area and they have mainly been positive in respect of the bike sharing scheme. The stations were considered to be functional and the bikes to be practical. The occasional technical problems as described in the earlier report do not appear to have had a detrimental influence on further companies' decisions to participate in the system. The companies' position in relation to the stations and the bikes' adaptness to them are decisive factors in the extent of how the bikes are utilised.

Generally, the companies have been positive to the active efforts of the Traffic &SAM) Public Transport Authority and have welcomed the initiative regarding questions of current interest or information when a new service is created, as with the example of the bike sharing scheme. The bike sharing scheme is a service that suits certain companies extremely well whilst others due to their geographical location or the business activities of the company do not consider themselves to have any use for the bikes. The system works very well on a technical level and the bikes are wellliked.

The success of a bike sharing system depends to a significant degree on the needs of the individual companies and in particular the location of the company's premises in relation to the stations. In certain cases, for example the most active companies, an alternative might be to provide the employees with leasing bikes.

Areas that can be improved in the future are the coordination between the marketing activities of the Traffic & Public Transport Authority and the operating company. Sometimes those marketing activities have led to a demand that could not be met.

A general conclusion is also that there seems to be a limited potential for further growth of the system in Lundby. This is most likely because the companies not using the system have travel

habits that are not suitable for the system. Also, because companies can not receive an unlimited amount of key cards employees may not be aware of the existence of the bike sharing system. If all employees at one company would receive their own cards, it is likely that the bikes would have been used to a higher degree.
The pilot in Lundby has provided valuable information and experience for the future roll out of a full scale system in Göteborg. Although plans have been delayed, there is a readiness within the city to continue the plans. Building on the experiences from other full scale bike sharing systems in European cities, the full roll out is expected to become a success and important part of a more sustainable mobility in Göteborg

8. Conclusions

Bicycle Sharing combines the simplicity and efficiency of the bicycle itself with new internet-based rental systems. It gives people an alternative for using a car for all trips, as it ads an extra option to public transport. A share bike is a kind of virtual bike, people can get a bike wherever they want within one minute. The concept of bike sharing is booming. Successful bike-sharing programs increase bike use and decrease car use and pollution. It is a low-cost manner of transportation, and provide people a way of exercise and stay healthy.

Bike-sharing programs have expanded rapidly throughout Europe in recent years as universities cities search for ways to increase bike usage, meet increasing mobility demands and reduce adverse environmental impacts. The introduction of smart technology has resolved many of the vandalism and theft problems of earlier bike-sharing programs and has made bike sharing popular and trendy, especially among younger users. The city of La Rochelle has shown that bike sharing can be fully integrated with other transport modes by adopting a single smart card ticketing system. In Paris, tens of thousands of Vélib users on the street have boosted a renewal in cycling with resultant sales of bicycles jumping 35 percent. A key ingredient for success in any city is the availability of an extensive and continuous bike lane/path or car free network. Equally important is the combination of a bike friendly

The future of bike sharing is clear and there will be a lot more of it. Gilles Vesco, Vice President of Greater Lyon, France, quotes his mayor when saying, "There are two types of mayors in the world: those who have bike‐sharing and those who want bike‐sharing." This certainly seems to be the case as each bike‐sharing program creates more interest in this form of transit call it a virtuous cycle.

As the price of fuel rises, traffic congestion worsens, populations grow, and a greater world wide consciousness arises around climate change, it will be necessary for leaders around the world to find modes of transportation to move people in environmentally sound, efficient, and economically feasible way. Fortunately, bike sharing fits these needs and not a moment too soon. Not a panacea, as bike sharing's detractors point out, bike sharing is a complementary mode of transport and another tool in the toolbox of public transport.
When the world comes out of the present global economic downturn, hopefully we won't be back to exactly where we left off before it began, but rather a new world order one in which environmental and social issues take the forefront, and where bicycling and bike sharing play a strong role in transport.

Bike sharing systems may be used alone or combined with other types of public transportation. It is less restrictive and often faster than a car. Nonetheless, it also means rethinking the use of the streets and the transit to ensure safety and mobility. Bike sharing systems are a high performance service, which enables everyone to take advantage of a practical, inexpensive and ecological means of transport 24 hours a day and 7 days a week, providing a new approach to urban mobility. Bike sharing system in Europe has so definitely become a role model for sustainable transport. It's even now a worldwide movement in which European major cities like Paris, Barcelona, Amsterdam has a strong leadership. Paris and Barcelona have all strategy plans to implement changes in transportation habits. The strategy plans are different from one city to another. This worldwide movement enables a city's administration to study the plan so as to adapt and improve them for their own city.
Small initiatives are experienced also in the university campuses. The bike-sharing program is a work-in-progress on a world scale: cities launch their system, adapting it from an older one and improving it. Year after year, the system becomes increasingly

adaptable for usage and a provides friendly cooperation between the cities that already have a bike-sharing with those that have an emerging one. In each case, the use of bikes in a mass-urban transit systems must be part of a larger plan regarding mobility and urbanism. These initiatives become essential components in the dialogue that addresses the inevitable struggle to assure that our cities become sustainable for the future.

All these measures usually require the intervention of more than one local authority. As a consequence this involves coordination and commitment of all stakeholders to the global plan.

It must also be highlighted that that the main target populations which are the university students is of utmost importance since they will incorporate environmentally friendly transport habits that can be maintained throughout lifetime and passed to younger generations.

The examples shown in section four show quite a wide variety of good examples of interesting initiatives implemented throughout European university sites. The ideas concepts and approaches they contain can indeed be good starting points when planning a mobility strategy to a given location.

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