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Combined passenger/goods urban transport solutions and public transport operators: which challenges? Some scenarios for Milan through an international comparison

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# **Shared passengers & goods urban transport solutions and public transport operators: which challenges? The case of Milan through an international comparison**

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## *Abstract*

*At present, cities are looking for instruments and policies to ensure an efficient and effective urban mobility for both passengers and goods, from a sustainable development point of view. The optimization of the flows of passengers and goods in the urban area, with the aim of reducing the direct and external costs related to the increasing mobility, is assuming growing importance.*

*The transport of goods that for long has been excluded from the city's problems, seems now to attract renewed interest, both from the traditional players, such as institutional or professionals of road transport, and from the new players, such as operators of public transport.*

*Transport operators are deepening this issue with the aim of designing and managing combined urban transport solutions allowing for an appropriate shared transport of passengers and freight, this resulting also in a real opportunity to extend their services.*

*Since examples of involvement of urban transport operators in urban goods transport and urban logistics are still few, it is not immediate to predict how these innovative solutions can be integrated into companies' strategies.*

*The paper is concerned with the investigation of this opportunity. First, the concept of shared passengers and goods urban transport is defined through the analysis of the existing practices an international survey is presented. Different experiences of European operators are investigated.*

*The conditions and the economic factors that could make such solutions an interesting alternative to traditional urban transport services' production are then discussed.*

*Finally, an accurate analysis of the case of the city of Milano is presented and some scenarios are outlined.*

*Keywords: sustainable urban mobility, city logistics, shared passengers and goods solutions, public transport, Milan*

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## PROBLEM STATEMENT

Both people and goods move in the urban environment, the former transported by their individual vehicles and collective transports, the latter by freight carriers, shippers, craftsmen. An efficient and effective transport of passengers and goods is an essential element for the cities' life and development. As passengers need efficient transport solutions in order to reach their destinations at a scheduled time, similarly, goods must be handled quickly to avoid creating excessive stocks and to minimize the size of warehouses and the related operating costs .

Urban space is a limited resource, so that it is commonly argued that the movement of passengers and goods have a strong interaction. As a consequence congestion problems arise with an overall increasing in travel time.

One of the key factors to reverse this trend consists in the adoption of a different transport network management, to allow for an appropriate shared transport of passengers and freights.

*“Urban freight distribution could be better integrated within local policy-making and institutional settings. Public passenger transport is usually supervised by the competent administrative body while freight transport distribution is normally a task for the private sector. Local authorities need to consider all urban logistics related to passenger and freight transport together as a single logistics system”.* (European Commission, 2007).

To be coherent with this European recommendation, cities could develop along three different axes:

1. **Improve the sharing of road space** between private and public motorised road transport passengers flows and private motorised road transport goods flows;
2. **Shift passengers and goods flows** from private motorised road transport to other urban transport modes as public transports like buses, tramways, subways, car and bike sharing systems. An increase in the use of public transport could decrease city congestion while increasing the income and making public transport less subsidy dependent.
3. **Introduce distribution facilities** as consolidated centers, urban delivery stations and storage equipments, in areas already dedicated to passengers transport as car park areas, public transport stations and so on. This could be useful to avoid empty runs and to decrease the external costs generated by the sector.

Actually, these axes of development are not really explored, because of several reasons (cultural, historical, and economical). Sustainable urban mobility plans still adopt approaches taking into account passengers and goods flows separately, even if encouraging measures for

both sides; this situation leads sometimes to antagonist solutions and introduces perverse effects which limit the efficiency of global mobility in the city.

## POSSIBLE SOLUTIONS

For each of the three identified axes, several experiments have been implemented in different cities, these leading to a large range of results. In many cases, the difficulty to reach solutions that are accepted and shared by both stakeholders was highlighted. The detected solutions are detailed below, and summarized in Table 1.

### Axe 1: To improve the sharing of road space

- *Multiuse lanes*: this solution aims at exploiting priority lanes (i.e. bus lanes) and at converting on-street parking spaces into unloading spaces, during the peak hours. Web-based information services give bus priority regulations, through variable message signs. Multi-use lanes have been implemented in Barcelona, as an implementation of the CIVITAS I MIRACLES project (2002 – 2006)<sup>1</sup>.
- *Night deliveries*: this solution aims to manage vehicle traffic in high density central business districts of urban areas, delivering to retailers and shops in the inner city area during the night hours when the city is usually quiet and inactive. Typical times are between 10.00 p.m. and 7.00 a.m. In several cities such as Barcelona or Dublin, successful experiences with trials on night delivery are made replacing a higher number of vehicles operating during day time by a fewer number of vehicles operating during night time<sup>2</sup>.
- *Shared Bus&lorry lanes*: this solution aims at recognising lorries, along with buses, as essential components of urban traffic, assuring a prioritise treatment where possible (e.g. shared lorry and bus lanes). At present, in Europe, there is only limited experience from this type of prioritisation initiative. The introduction of shared bus & lorry lanes has taken place in London and Newcastle-upon-Tyne (Browne, 1997). Recently, the Smartfreight project<sup>3</sup> aims to specify, implement and evaluate Information and Communication Technology (ICT) solutions that integrate urban traffic management systems with the management of freight and logistics in urban areas.

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<sup>1</sup> Source: [www.civitas.eu](http://www.civitas.eu)

<sup>2</sup> Source: [www.bestufs.net](http://www.bestufs.net)

<sup>3</sup> Source: [www.smartfreight.info](http://www.smartfreight.info)

## **Axe 2: To shift passengers and goods flows from private motorised road transport to others urban transport modes**

- *Shared buses*: this solution aims to combine a door-to-door service for passengers and a transport service of goods (parcels and small packets), in order to develop a public transport service oriented to users needs in time of little demand. This solution has been implemented in Germany, in the framework of MULI project (1996 – 1999). The project had the aim to propose buses able to carry not only passengers, but also small goods. The project takes place in three German municipalities, Gangelt, Selfkant and Waldfeucht (district of Heinsberg) located at the border to the Netherlands, about 20 kilometres north to Aachen. The region is characterized by disperse settlements. Usually, the transport of small goods was carried out in an uncoordinated way by different service providers. Multibus aimed at bundling up these transportation trips. (Shaefer, 2003)
- *Shared subway*: within urban areas there are only limited opportunities to enhance physical capacity of road infrastructure at surface level. This solution aims to reserve access to underground infrastructures, during specific periods, for goods vehicles. Some Japanese, American and Dutch cities have considered such option. (Van Binsbergen and Visser, 1999), (Chiron-Augereau, 2009).
- *Shared tramway network*: In Zurich, Cargo tram and E Tram assure free services to collect large and heavy rubbish and electrical items, such as hairdryers, keyboards, etc.. This offer is reserved for pedestrians, cyclists and passengers using public transport, at stated times and stops on the line. In Dresden, supplies to the Volkswagen factory are delivered by tram. In Vienna, there are plans to introduce a freight tram service. Various Dutch cities are planning freight tram services. Of these, the plans of Amsterdam are most advanced. (Chiron-Augereau, 2009)
- *Car sharing*: this solution aims to enlarge the urban use of the sharing vehicles systems, to the good distribution, to answer a demand for goods transportation by craftsmen, shopkeepers and even citizens. In Osaka, a new co-operative system of electric vehicles started, in 1999. In Genoa, car-sharing service dedicated to goods transport (Van-Sharing service), has been introduced in the framework of the CIVITAS CARAVEL<sup>4</sup> project, (2005 – 2009), to rationalize the vehicles use, by the traders who transport goods to the shops with their own cars, through the introduction of a In La Rochelle, a van sharing

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Source: [www.civitas.eu](http://www.civitas.eu)

service has been introduced too, since 2008, in the framework of the CIVITAS SUCCESS<sup>5</sup> project (2005 – 2009).

### **Axe 3: To introduce distribution facilities in urban areas**

- *Shared delivery bays*: this solution aims to increase of parking areas in cities, allowing all vehicles parking in loading/unloading bays, during the night and the bank holiday. They should only be restricted to goods vehicles if absolutely necessary. A recent implementation of this solution has been done in Paris, often characterized by a lack of parking areas.(Maire de Paris, 2009),
- *Automatic goods lockers in car parks*: : this solution aims to offer to the small shops and the costumer service professionals to receive during night- time on its dedicated urban logistic automats their spare-parts delivered by the freight company of their choice. One of the advantages of the system is to reduce the traffic by avoiding workers from the small shops and technicians make daily return trips to their providers located in the suburbs. An implementation of this solution has been done in Paris, where the Consignity Company settled up the first Parisian network of eight logistic relays located in car parks of the city. (Atlassy, 2006)
- *Lockers in underground stations*: this solution aims to settle up lockers to be used to facilitate consumer deliveries, i.e. those times when it is more convenient to collect a parcel from a locker in a chosen location than wait somewhere for it to be delivered – This service is becoming increasingly popular in Europe. In Paris, Coliposte, the parcel division of LaPoste, launched a postal lockers service, Cityssimo, during 2006. (Chiron-Augereau , 2009).
- *Urban delivery stations in car parks*: this solution aims to settle up services and infrastructures to urban distribution in urban areas, already devote to the passengers hanging up. Experimentation has been done by Chronopost International, in Paris. The company started a programme to gain ISO 14001 certification at its sites. For this reason, an Urban Delivery Station has been placed, in the underground park of La Concorde, to deliver the Champs Elysées quarter. This experimentation, managed in cooperation with the city of Paris, has seen interesting results, achieving reductions in greenhouse gas emissions. (Chiron-Augereau, 2009)

<b>1. <u>To improve the sharing of road space</u></b>
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<sup>5</sup> Ibid.

<b>SHARED SOLUTIONS</b>	<b>WHAT IS SHARED</b>	<b>WHERE</b>
▪ Multiuse lanes	Public road space	Barcelona
▪ Night deliveries	Public road space	Dublin Barcelona
▪ Shared bus & lorry lanes	Public road space	London New Castle Upon Tyne
<b>2. <i>To shift passengers and goods from private transport to others urban transport modes</i></b>		
<b>SHARED SOLUTIONS</b>	<b>WHAT IS SHARED</b>	<b>WHERE</b>
▪ Shared buses	Public transport service	Heinsberg
▪ Shared subway	Public transport service	Japanese, American and Dutch cities
▪ Shared tramway	Public transport service	Zurich Vienna Dresden Amsterdam
▪ Shared Car sharing service	Public transport service	Osaka Genoa La Rochelle
<b>3. <i>To introduce distribution facilities .in urban areas devoted to passengers hanging on</i></b>		
<b>SHARED SOLUTIONS</b>	<b>WHAT IS SHARED</b>	<b>WHERE</b>
▪ Shared delivery bays	existing urban areas	Paris
▪ Automatic goods lockers in car parks	existing urban areas	Paris
▪ Automatic goods lockers in underground stations	existing urban areas	Paris
▪ Urban delivery stations in car parks	existing urban areas	Paris

Table 1 : Summary of existing shared passengers & goods urban mobility solutions

## **URBAN TRANSPORT OPERATORS AS LOGISTICS PROVIDERS**

Some urban transport operators are wondering whether or not to enter further into the issue of urban freight transport: to design and manage combined urban transport solutions, allowing a smooth sharing of passengers and goods flows, could be a real opportunity to extend their services.

Unfortunately, examples of their involvement in urban goods transport and urban logistics are still few, so we don't know much about how these innovative solutions can be integrated into companies' strategy. In this section we will detail some examples of involvement of urban transport operators in UFT, in Europe. We will distinguish between private and public urban transport operators: we are aware that public transport operators have more difficulties to embark on this subject than private ones. That's because of the strong regulation framework typical of the public sector, and because of the corporate governance bridling the possibilities of creating new openings for these companies. Table 2 summarizes the main contents.

### **RATP in Paris: Cityssimo**

RATP (Régie Autonome des Transports Parisiens/Autonomous Operator of Parisian Transports) is the major transit operator responsible for public transportation in Paris and its surroundings. It is under the authority of the Syndicat des transports d'Île-de-France (STIF), the Paris region transit authority. Its operational divisions include the Paris Métro system (16 lines), part of the RER, an extensive bus system, and four tram lines. It also operates the Montmartre funicular<sup>6</sup>.

In 2006 Promo Métro, a RATP filial responsible of the RATP retail surfaces management, signed a contract with Coliposte, in order to propose a new service to transport users: Cityssimo. It is a pickup service packages available through a free subscription and without obligation. This service allows receiving packages in one of 28 spaces Cityssimo and removing them when wanted, 7 days on 7 and 24 hours on 24. The 28 Cityssimo spaces are present in Ile de France (19 in the inner Paris and 5 in Paris suburbs) in Lille, Nantes, Lyon and Aix en Provence Access is through a membership card which is given to users for free after their subscription online.

### **SNCF in Paris: green distribution channels in the behalf of Monoprix**

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<sup>6</sup> [http://en.wikipedia.org/wiki/R%C3%A9gie\\_autonome\\_des\\_transports\\_parisiens](http://en.wikipedia.org/wiki/R%C3%A9gie_autonome_des_transports_parisiens)



Monoprix is a French brand of supermarkets, engaged in sustainable development. In Paris, its engagement in urban logistics is disclosed through the initiative started in November 2007, in collaboration with SNCF, a public French company that operates passenger and freight transport by rail and road modes. The initiative consists in the transportation of goods on behalf of Monoprix shops, on a very short distance - about thirty kilometres, in Paris. Goods are delivered in from the warehouse suburbs (40 km) to a multimodal platform in Paris (Hall Gabriel Lamé). From there, the “last kilometre” is performed using a fleet of CNG trucks. SNCF, through two subsidiaries, provide the transport service. VFLI is charged of rail traction and manoeuvres, Geodis has a fleet of vehicles running on CNG.

### **Veolia Transport in La Rochelle: the ELCIDIS management**

Implemented in La Rochelle, by the Urban Community, in February 2001, in the framework of the ELCIDIS program (Electric City Distribution System), Elcidis represents one of the first examples of a city distribution centre using electric vehicles, in Europe.

The platform is located in edge of the historical and commercial heart of the city of La Rochelle. The deliveries realized by ELCIDIS concern only the historic city centre. Conveyers, who cannot (Trucks of 3.5 tons and over are not allowed to enter the city centre after 07:30) or do not want to enter in the city centre, can discharge goods at the platform. Then, parcels and pallets are gathered by city's sector and are delivered to their recipients by electric vehicles. (Civitas Success, 2009)

Since 2007, The Urban Community selected Veolia Transport as contractor who will operate and develop the system. Through an innovative partnership, the "Délégation de Service Public", the operation of the public service is delegated to Proxiway, a French filial of Veolia Transport. The same company has the responsibility over three other areas: car sharing service, Electric and Hybrid buses management. (Trentini et al, 2009).

### **VBZ in Zurich: the e-Tram and Cargo Tram experience**

In Zurich, there was a need clearly identified: the collection and transportation between the downtown center and the periphery of the sorting of waste type "bulky".

The municipality and the public transport operator (VBZ) jointly with the Physical Services Department ERZ (Entsorgung + Recycling Zürich), played a central role to introduce the tram-freight. For the first time in service in 2004, Cargo –Tram is intended to collect bulky waste from residents of the city. The E-Tram, more recently established (2007), is intended to collect waste electrical and electronic types. The principle is simple: each station is served

once a month for four hours, between 15h and 19h with the exception of one case for which the tramway parking from 11:30 to 15:30. (Orsini et Huard, 2009)

COMPANY	EXPERIENCE	CITY	PROFIL	DEVELOPMENT STRATEGY
RATP	CITYSSIMO	PARIS	Public Urban Transport Operator	▪ Through Subsidiary : PROMOMETRO
SNCF	MONOPRIX	PARIS	Public Urban Transport Operator	▪ Through Subsidiaries : VFLI&GEODIS
VEOLIA	ELCIDIS (Electric City Distribution System)	LA ROCHELLE	Private Urban Transport Operator	▪ Through Subsidiary : PROXIWAY
VBZ in collaboration with ERZ – Entsorgung + Recycling Zurich)	CARGO TRAM AND E -TRAM	ZURICH	Public Urban Transport Operator	▪ Introducing new services managed by the same urban transport company

Table 2 : Urban transport operators as logistics providers: experiences

## SHARED TRANSPORT: AN OPPORTUNITY FOR TRANSPORT OPERATORS

In the previous section, we presented an overview of existing shared solutions and the certain experiences of European operators on this topic. The aim of this section is to discuss the conditions and economical factors that could make such solutions an interesting opportunity to be developed in urban environment, as an alternative to traditional urban transport services' production. We move toward diversification as the really strategic choice for public transport operators that want to invest in freight transport in cities. Diversification would mean for them to enlarge their traditional area of activity while being able to use their skills, by offering new services to their customers, both users of transport networks and delegated public services.

### The concept of diversification

Diversification is a form of corporate strategy for a company. It seeks to increase profitability through greater sales volume obtained from new products and new markets. Diversification can occur either at the business unit level or at the corporate level. Diversification is part of the four main marketing strategies defined by the Product/Market Ansoff matrix:

		Products	
		Present	New
Markets	Present	Market penetration	Product development
	New	Market development	<b>Diversification</b>

Figure 1 : the Product/Market Ansoff matrix, (Ansoff, 1957),

Ansoff, (1957) pointed out that a diversification strategy stands apart from the other three strategies. The first three strategies are usually pursued with the same technical, financial, and merchandising resources used for the original product line, whereas diversification usually requires a company to acquire new skills, new techniques and new facilities.

### The different types of diversification strategies

The strategies of diversification can include internal development of new products or markets, acquisition of a firm, alliance with a complementary company, licensing of new technologies, and distributing or importing a products line manufactured by another firm. Generally, the final strategy involves a combination of these options. This combination is determined in function of available opportunities and consistency with the objectives and the resources of the company. There are three types of diversification: concentric, horizontal and conglomerate:

**Concentric diversification** This means that there is a technological similarity between the industries, which means that the firm is able to leverage its technical know-how to gain some advantage. For example, a company that manufactures industrial adhesives might decide to diversify into adhesives to be sold via retailers. The technology would be the same but the marketing effort would need to change. It also seems to increase its market share to launch a new product which helps the particular company to earn profit. However, there's one more example, Addition of tomato ketchup and sauce to the existing "Maggi" brand processed items of Food Specialities Ltd. is an example of technological-related concentric diversification.

**Conglomerate diversification.** The company markets new products or services that have no technological or commercial synergies with current products, but which may appeal to new groups of customers. The conglomerate diversification has very little relationship with the firm's current business. Therefore, the main reasons of adopting such a strategy are first to

improve the profitability and the flexibility of the company, and second to get a better reception in capital markets as the company gets bigger. Even if this strategy is very risky, it could also, if successful, provide increased growth and profitability.

**Horizontal diversification** The company adds new products or services that are technologically or commercially unrelated (but not always) to current products, but which may appeal to current customers. In a competitive environment, this form of diversification is desirable if the present customers are loyal to the current products and if the new products have a good quality and are well promoted and priced. Moreover, the new products are marketed to the same economic environment as the existing products, which may lead to rigidity and instability. In other words, this strategy tends to increase the firm's dependence on certain market segments. For example company was making note books earlier now they are

#### **Which diversification fits better to urban transport operators?**

For urban transport operators, the *concentric diversification* seems most appropriate because these firms could, based on their expertise, develop new services. This concentric diversification assumes strong commonalities between the original activity, the passengers urban transport service, and the activity to be integrated, urban freight transport. Those commonalities already exist, at the used network level (i.e: surface network, underground network, transit areas and commercial spaces), at professional level (largely related to the operation and marketing of these networks) and clients (transport users, local).

Finally, we have to keep in consideration the following aspects: the public transport operators and the private transport operators have two different points of view on the subject of diversification. Indeed, the private transport operators decide to enter in the challenge of urban freight transport because they want to offer a global transport service. Pertaining to Public transport operators, it is more difficult for them to embark on this kind of project. That's because of the strong regulation framework typical of this sector, and because of the corporate governance bridling the possibilities of creating new openings for those companies.

## THE CASE OF MILAN

Milan is one of the largest Italian metropolitan areas, with more than 3.1 million inhabitants (1.3 million within the city boundaries), and it is the centre of the polycentric Lombardy region (around 9.8 million inhabitants, ISTAT 2009).

Although the area is served by an important transport public network<sup>7</sup>, there is the perception that road traffic is excessive and that it generates a lot of congestion as well as air pollution (Rotaris et al, 2009, pg. 5). This perception is consistent with the high level of car ownership in the city: 0.6 cars per inhabitant (0.74 including all vehicles), which ranks Milan in the cities with the highest car concentration in the world. The high reliance on car use for travelling in Milan, together with unfavourable geoclimatic conditions, results in high pollution levels. (Rotaris et al, 2009, pg. 5).

For instance, in the time period 2002-2007, the concentration limit, set by EU at 50  $\mu\text{g}/\text{m}^3$   $\text{PM}_{10}$ , was exceeded during 125 days, with an average value of 51.2  $\mu\text{g}/\text{m}^3$  (data according to the Agenzia Milanese Mobilità Ambiente, AMMA 2008). The  $\text{NO}_2$  annual average daily concentration was of 60  $\mu\text{g}/\text{m}^3$  (ARPA 2006, p. 86) and the  $\text{O}_3$  was about 30  $\mu\text{g}/\text{m}^3$ , both in increase (Rotaris et al, 2009, pg. 5).

During the time, the Milan Municipality tried to introduce different measures to reduce impact of private cars in urban environment. Globally, it seems pertinent to state that there is a lack of continuity in the political approach toward mobility. That is because of the difficulty to define compromises between the environmental and social objectives and the stakeholders' weight and their economical interests, strongly implicated in the urban mobility issues.

However, the experience of Cityplus will be presented. It started in 2005, and unluckily ended in 2007. Cityplus seemed to be a radical new urban transportation system concept, potentially allowing changing the economic and environmental costs of passenger and freight transportation.

### **The CityPlus experience**

The Milan local public transport company ATM (Azienda Trasporti Milanese), following the liberalization process of local public transports, has turned increasing attention to the threats specific of the transport sector. Working on different levels, including a strong lobby activity in order to modify the sector laws, ATM points at:

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<sup>7</sup> the local public transport company, ATM, runs 49 bus lines, 18 tram lines, 3 trolleybus, 3 metro lines, for a total of 1300 km, together with 3 subway lines, for a total of 75 km, [http://www.atmmi.it/ATM/Azienda/ATM\\_cifre.html](http://www.atmmi.it/ATM/Azienda/ATM_cifre.html), consulted 09/06/10

- Help the Municipality in tackling traffic congestion and pollution;
- Perform eco friendly transport services;
- Diversify its business by considering other transport activities.

Among the others initiatives, in June 2005, ATM activated an urban freight distribution service, named CityPlus, exploiting some partially unused vehicles depots (for buses, trams and trolleybuses) as trading platforms. According to the original idea the organization was based on the use of four “24 hour access depots”, located in strategic areas, such as high-density commercial streets. To optimize the delivery service the project aimed at a synergy with the technology exploited to manage the shared taxi service "Radiobus”, already in use at ATM. In fact, the Radiobus service, as a commercial vehicle, must plan in advance deliveries and collections (people, rather than freights) and should provide real-time information to the users.

"Cityplus" had a fast start-up and a positive market response. The service was presented as the best solution for third party transport in the Milan urban area. In particular, it managed perishable fresh products, frozen food, personal letters, high value packages and also clothing. The most important CityPlus clients are the forwarding agents, which are assumed to maintain a contract with third party operators for the long distance transports and to sign the contract with ATM for the Milan “last mile”. In working conditions Cityplus made over 200 deliveries in Milan, reaching more than 3000 different destinations. Despite this first excellent phase, in a short time period, the initiative lost impulse and attractiveness. In fact, since the early stages, the project lost the use of the Famagosta and San Donato depots and the number of clients dropped to the current value of 5.

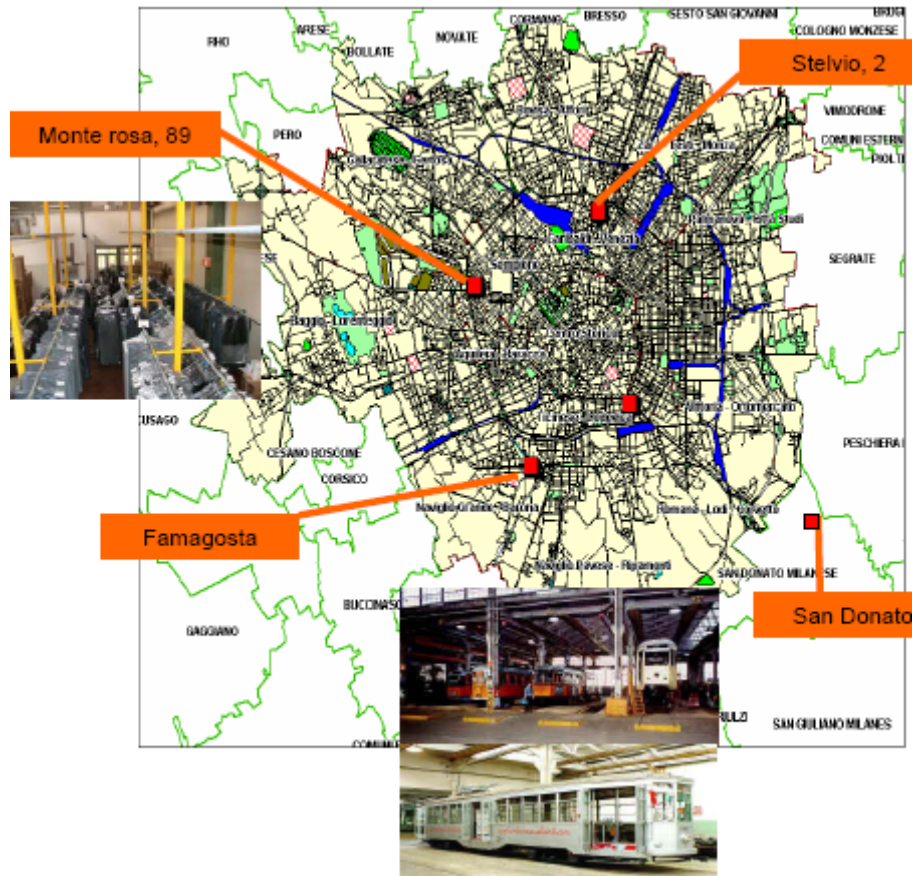


Figure 1: The ATM depot designated for the CityPlus project (Decio, 2006)

### The current situation

It seems to be pertinent to observe that nowadays Milan is living a dichotomy in the mobility policies. Since January 2008, an important measure, based on a road pricing rationale, has been introduced by Municipality to reduce the impact of the private car access in the inner center. As it will be detailed further, Ecopass is not a commercial vehicle dedicated project. To reduce the level of congestion and pollution generated by urban freight transport, neither dedicated policies have been introduced nor has more support been ensured to Cityplus service.

The main consideration that comes out from these statements is that Milan Municipality has not still adopted an integrate approach to urban mobility. Passengers and Goods flows are seen as two different entities to manage thought distinct and non communicant rationales. Furthermore, it is quite difficult to understand how it is possible to hope reaching durable results in the field of urban mobility, only introducing pricing measures, without offering new services to city users. If one of the main objectives of mobility policies is to change citizen commuter behaviors, a main municipalities achievement should be the introduction of radical new urban transportation system concepts and services, potentially changing the traditional way by which passengers move and goods are moved in cities.

### The end of the Cityplus service

The negative issues related to the initiative are associated with three principal factors: service coverage, men cost and public policies.

ATM operates solely in the metropolitan area of Milan, so that a company that must deliver goods in Milan, and uses the service Cityplus, has to sign an additional contract in order to guarantee the deliveries in all other regions. This means that the company has to handle complex relationships with more than one operator, though the CityPlus service allows slight savings (in terms of lower urban congestion, avoiding partial loads and regulatory constraints, etc..).

Another solution is that it is directly the carrier in charge of the national or regional distribution to stipulate the contract with CityPlus. Also in this case Cityplus could be exploited with the objective of reducing the costs due to the complex urban distribution. In Milan, however, the high numbers of retailers allows to easily reach the full load conditions. Furthermore, the inadequate control of traffic rules (e.g. vehicles double parked) allows operators to reduce the costs of parking and of loading and unloading operations.

Cityplus is the brand through which ATM offers the new freight distribution service. However, from the administrative point of view, the distribution agreement is signed with ATM. It is here recalled that the public transportation company ATM is a subsidiary of the municipality of Milan, their employment contracts are therefore quite onerous in terms of men cost, as stated by the Italian regulations. It is then apparent that it is difficult for ATM to compete with private operators who exploit flexible and temporary contracts, which are not allowed in the public transportation sector. Moreover, additional costs arise also from the desire to use environmentally friendly vehicles, LPG or electric, which are much more expensive than those usually adopted in the private sector.

Finally, in all the successful city logistics cases, the role of the local governments appears fundamental. In Milan, the municipality, as owner of the company, initially supported the design concept of ATM. However, the institution did not introduce laws concerning the rationalization of freight transport or the reduction of its external costs. The adoption of such regulations, still absent today in Milan, could have provided a small but important advantage for the Cityplus service that was created with the ambition to bring benefits not only to the business sector but also to the community.

### **The introduction of the Ecopass scheme**

Since January 2008, Milan has launched an experimental pricing system to limit the access to the city's historic center to the most polluting vehicles: the Ecopass system.



The vehicles entering the 8 km<sup>2</sup> area (Figure 2) between 7:30 and 19:30 are subjected to the payment of a charge. The charging area is relatively small compared to London (22 km<sup>2</sup> before 2005, and 40 km<sup>2</sup> after 2005) and Stockholm (47 km<sup>2</sup>), but it is comparable to Singapore (7 km<sup>2</sup>). The choice of the location and of the dimensions of the charging area (4,8% of the urban territory and just 80.000 people) was based on the historic urban layout, rather than on accurate transport planning considerations. Therefore, despite the positive opinion on the fundamental motivations, the Ecopass area appears too small to allow a substantial effect on the transport speeds (such as the one recorded in the Stockholm case, Rotaris et Al, 2009, pg. 5) or on the local environmental conditions.

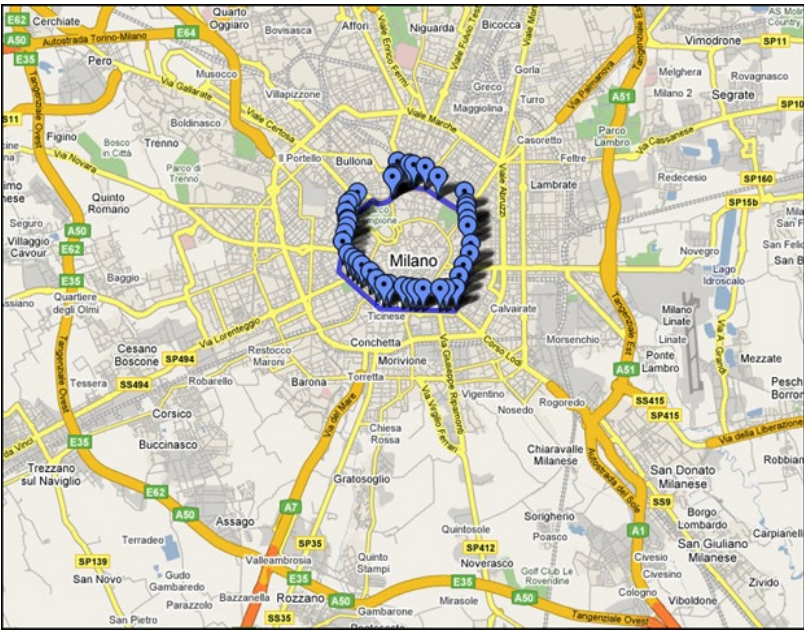


Figure 2 : The Ecopass area in relation to the whole Milan municipality territory (www.maps.google.it)

The main features of the Ecopass system are presented below.

Toll classes	Definition
Class I	Liquid propane gas – methane – electric - hybrid.
Class II	Gasoline Euro 3, 4 or more recent Diesel Euro 4 without Anti-Particulate Filter (up to 30/06/08)
Class III	Cars and freight vehicles diesel Euro 4 or more recent with anti particulate filter Gasoline Euro 1 and 2
Class IV	Gasoline Euro 0 Diesel cars Euro 1, 2 and 3 Diesel goods vehicles Euro 3
Class V	Diesel buses Euro 4 and 5 Diesel cars Euro 0 Goods vehicles Euro 0, 1 and 2 Diesel buses Euro 0, 1, 2 and 3

Figure 3 : Toll classes based on Euro emission standards (Rotaris et Al, 2009, pg. 7)

Toll classes	Daily charge	Discounted multiple entries (max 100 entries per year)		Yearly pass for residents
		50% rebate (first 50 entries)	40% rebate (successive 50 entries)	
Class I			Free	
Class II			Free	
Class III	€ 2	€ 50	€ 60	€ 50
Class IV	€ 5	€ 125	€ 150	€ 125
Class V	€ 10	€ 250	€ 300	€ 250

Figure 4 : Ecopass tariffs for cars (Rotaris et Al, 2009, pg. 7)

Ecopass is not a commercial vehicle dedicated project. However, it is still possible to introduce some particular fees or regulations for freight transport. The automatic control system is, in fact, strongly innovative and easily allows to control the access to the monitored area.

## The to be situation

### *The incoming of EXPO 2015*

In March 2008 the submission process for Expo 2015 ended: Milan won, thanks to the choice of the theme concerned with nutritional problems in the world, and with safety and food need. The opportunity provided by this event for Italy, and in particular for Milan, has focused the interest of citizens, media and politics on this event, especially thanks to the complex program, objectives and actions planned to strengthen the international image of Milan. The aim is to regenerate the urban quality of the city, following the example of other European cities such as Barcelona, Bilbao and London, by finding an "extended urban quality".

The large-scale projects, especially those intended to transform parts of the city, can play a crucial and fundamental role in improving the regional life quality. Effective results can be reached if projects are supported by a new micro-design that is attentive to the regeneration of

the public space: squares, streets, sidewalks can make the city more liveable thanks to this reorganization of the connective tissues.

It is exactly in this direction that the new urban planning choices move now in Milan, showing a new design method characterized by three basic concepts: relocate, regenerate and polarize.

- To relocate: to move assets from the city center towards the suburbs, preserving and giving new importance to these areas
- To regenerate: to create the rebirth of the degraded areas.
- To polarize: to make these new areas, attraction poles.

Examples of urban restoration zones are: the Grande Bicocca project, the Bovisa project, and the Portello project. Several projects to make the city "greener" have been also planned. Through four ambitious projects – Metrobosco, Parco Agricolo Sud, Nove Parchi, Cintura Verde e Raggi Verdi - Milan wants to offer the opportunity and the tools to discover a “green city”.

In this framework it is fundamental to consider transport issues not just from an infrastructural point of view but also from a new organizational level.

Pertaining to the infrastructures' system, many plans have been designed to extend the transport network, these ranging from the national and international railways system to the urban and suburban transports (Metro and suburban railway lines).

A study aimed at identifying the transport capacity of the infrastructure network was conducted, in relation with the traffic forecast during the opening of the exhibition. (Pinto and Trentini, 2009).

Pertaining to the organizational level Municipality must work on the creation of a single public transport system for the metropolitan area. This means that it is required the unification of a several local system in terms of thicketts and operational time table. On the other hand some new public rules for freight vehicles access and circulation are necessary in order to face congestion, pollution, incidental and working cost problems. Many cities in Europe had already developed a local integrate politics for freight transportation activating “city logistics” actions.

### ***A Cityplus renaissance as an opportunity to rationalize urban freight flows?***

In the previous sections the role of the service Cityplus was considered from a business point of view and distribution costs and organizational complexities were analyzed. However, it is

important to recall that the rationalization of freight flows leads also to a reduction of externalities such as pollution, congestion, accidents and travel time.

The local government should consider these priorities. In the respect of free market, the council could act to make more competitive the worthy initiatives. Literature and study cases have shown the effectiveness of different possible public actions: weight and length limitations, vehicles pollution standards, advanced management systems for loading bays, restricted traffic areas.

Milan, such as many other Italian municipalities, is going through difficulties associated with the global economic crisis. The few available resources should then be primarily used to strengthen the welfare state. Nonetheless, it is fundamental not to forget the incoming *EXPO2015*, which will represent a crucial moment for the city, also from an international point of view. City logistic politics should then integrate the existing ECOPASS program in order to present Milan as a functional and environmental model for all the European metropolitan areas.

The re-launch of the CityPlus project could thus be inserted in a wider logistic strategic program. The service could be strengthened by using depots located outside the urban area, possibly near to the major motorways.

In this way, the burden of the carriers would considerably decrease and all the described issues related to urban transport could be avoided. At the same time, the environmental and social benefits would also increase. It would also be important to create a new company specifically dedicated to freight transport in urban areas. Finally, it is highlighted that a true breakthrough can be achieved only with the intervention and contribution of the local governments.

### ***Conclusions***

The objective of this paper is to give a contribution to the study of urban transport solutions. Case studies and the actual European situation were presented. Particular attention was turned to the mobility in Milan. Though the focus was not voted at a costs-benefits analysis of the impacts of the proposed solutions on the different urban mobility stakeholders, it is apparent that this issues should be tackled.

Political attention should then be turned to the development of new regulations taking into account themes as meagre resources, climate change and safety. Until now, the most important parameters for supply chain designs have been related to cost efficiency and on-shelf availability. However, the increasing importance of new factors, such as traffic congestion in urban areas, energy consumption, CO<sub>2</sub> emissions and the permanent rise in transportation costs, is becoming critical.

Finally, it is shown that a management model is needed for Milan. This should serve as a basic framework for the planning and control of both passengers and goods flows. The starting point of the model building process should be the adoption of a systemic approach towards urban mobility.

## **BIBLIOGRAPHY**

**Ansoff, I.** (1957), Strategies for Diversification, Harvard Business Review, Vol. 35 Issue 5, Sep-Oct, pp.113-124

**ARPA,** (2006), Rapporto sullo stato dell'Ambiente in Lombardia, Agenzia Regionale per la Protezione dell'Ambiente, 239 pages, Milano.

**AMMA** (2008), Monitoraggio indicatori Ecopass. Prime valutazioni.  
<http://www.comune.milano.it/dseserver/ecopass/>

**Atlassy M.** (2006), Urban Freight: Strategies, actions and experimentations in London and Paris, Short-Term Scientific Mission - Scientific report for the COST 355 working group, March.

**Browne M.** (1997), United Kingdom introductory report, in Freight transport and the city, Round Table 109, ECMT

**Civitas Success** (2009), Improving Mobility in Medium Size Cities, final project report, edited by Breuil D. Blackledge D.

**Campi A** (2010), La gestione delle merci in area urbana: studio di casi e politiche per Milano, Ph.D. Thesis, Politecnico di Milano, Milano.

**Decio B.** (2006), Il caso Milano, 5th Bestufs II Workshop, Vienna, Austria, 21-22 Settembre 2006.

**Chiron-Augereau, V.** (2009), *Du transport de marchandises en ville à la logistique urbaine, quels rôles pour un opérateur de transports publics urbains? L'exemple de la RATP*, thèse de doctorat, Ecole Doctorale Ville et Environnement, Discipline : transport, Université Paris-Est

**European Commission** (2007), Green Paper - Towards a new culture for urban mobility {SEC(2007) 1209}/\* COM/2007/0551 final \*/

**Boscacci F., Maggi E.** (2004), *La logistica urbana. Gli elementi conoscitivi per una governance del processo*, Polipress, Milano

**Lemoine C.** (2009), Ecopass : Le péage urbain écologique de Milan, Institut d'aménagement et d'urbanisme, Ile de France, IAU

- Maire de Paris** (2009), Les zones de livraison ouvertes au stationnement la nuit, les dimanches et les jours fériés, Expérimentation dans le 3<sup>e</sup> arrondissement et trois quartiers du 17<sup>e</sup>, [www.paris.fr](http://www.paris.fr)
- Roque M., Delaître L.** (2009), *Vers une interopérabilité de la modélisation des flux de passagers et de Marchandises en milieu urbain*, 8<sup>eme</sup> Congrès International de Génie Industriel, Bagnères de Bigorre, France, 10 -12 juin.
- Orsini D., Huard H.** (2009), Des tramways pour transporter des marchandises en ville: revue de quelques projets, pg. 8 – 11, in *Revue Transports*, SETRA, N. 10, février 2009.
- Pinto F., Trentini A.** (2009), Expo 2015 in Milan: an opportunity to define new territorial Policies, Colloque international "Gouvernement et gouvernance des espaces urbains", Rouen, France, 13 – 15 Mai
- Rotaris L, Danielis R., Marcucci E., Massiani Jerome,** (2009), The urban road pricing scheme to curb pollution in Milan: a preliminary assessment, Working paper n.122, Università degli Studi di Trieste, Dipartimento di Scienze Economiche e Statistiche.
- Shaefer C.** (2003), A new and innovative approach for bus systems in rural areas, Association for European Transport proceedings.
- Trentini A., Delaître L., Malhéné N.** (2009), How to improve citizen's welfare implementing integrated sustainable urban transport strategies: the La Rochelle Urban Community experience in the Success Project framework, Colloque international "Gouvernement et gouvernance des espaces urbains", Rouen, France, 13 – 15 Mai
- Van Binsbergen A, Visser J.** (1999), *New urban goods distribution systems, paper for: Conference on Urban Transport Systems*, June, Lund, Sweden.