

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

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.

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1 Problem statement⁵

Both people and goods move in the urban environment, the ones transported by their individual vehicles and collective transports, the others by freight carriers, shippers, craftsmen, people;

An efficient and effective transport for passengers and goods is an essential element for cities life and development. As passengers need to resort to efficient transport solutions, allowing reaching their destinations at scheduled time, similarly, goods must be handled quickly to avoid creating excessive stocks and to minimize warehouses size and related operating costs.

As urban space is a limited resource, it is commonly argued that the movement of passengers and goods inter-act each other strongly. Consequently, the global level of urban accessibility decreases for both: according to this trend, congestion problems result and the travel time increases for all.

One of the key factors to reverse this trend could consist, for cities, to adopt a different way to manage the transport network, ensuring a smooth sharing 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 lean toward three axes of development:

1. Improve the sharing of road space between private & 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 others urban transport modes – i.e. public transport like buses, tramways, subways, car & bike sharing systems - . An increased use of public means could release cities from congestion while increasing revenues to public transport, making it less subsidy dependent.
3. Introduce distribution facilities- like consolidated centres, urban delivery stations and storage equipments - in urban areas already devoted to passengers hanging on – i.e. car park areas, public transport stations, etc - .This could be useful to avoid empty runs or unnecessary driving and parking.

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.

2 Existing Shared Solutions: Overview

Nevertheless, for each of the three identified axes, several experiments have been implemented in cities leading to a large range of results, showing in many cases the difficulty to set up solutions or compromises which can be accepted by both stakeholders. The detected solutions are detailed in the next part, and summarized in the Table 1.

2.1 Axe 1: To improve the sharing of road space

- *Multi - use lanes*: this solution aims to use lanes as priority bus lanes, during the peak hours and to convert on-street parking spaces into unloading spaces during the prescribed 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)⁶.
- *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 time⁷.
- *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-uponTyne (Browne, 1997). Recently, the Smartfreight project⁸ 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.

⁶ Source: www.civitas.eu

⁷ Source: www.bestufs.net

⁸ Source: www.smartfreight.info

2.2 Axe 2: To shift flows from private 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) and (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 CARAVEL9 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

service has been introduced too, since 2008, in the framework of the CIVITAS SUCCESS¹⁰ project (2005 – 2009).

2.3 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).

⁹ Source: www.civitas.eu

¹⁰ Ibid.

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

1. <u>To improve the sharing of road space</u>		
SHARED SOLUTIONS	WHAT IS SHARED	WHERE
▪ Multi - use lanes	Public road space	Barcelona
▪ Night deliveries	Public road space	Dublin Barcelona
▪ Shared bus & lorry lanes	Public road space	London Newcastle - UponTyne
2. <u>To shift flows from private transport to others urban transport modes</u>		
SHARED SOLUTIONS	WHAT IS SHARED	WHERE
▪ 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
3. <u>To introduce distribution facilities .in urban areas devoted to passengers hanging on</u>		
SHARED SOLUTIONS	WHAT IS SHARED	WHERE
▪ 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

3 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.

3.1 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 .

In 2006 Promo Métro, a RATP filial responsible of the RATP retail surfaces management, signed a contract with Coliposte, in order to purpose 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.

3.2 SNCF in Paris: green distribution channels in the behalf of Monoprix

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.

3.3 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).

3.4 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).

Table 2 : Urban transport operators as logistics providers: experiences

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

4 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.

4.1 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	Diversification

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.

4.2 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.

4.3 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.

5 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, 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 $\mu\text{g}/\text{m}^3$ PM10, 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 NO₂ annual average daily concentration was of 60 $\mu\text{g}/\text{m}^3$ (ARPA 2006, p. 86) and the O₃ 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:

- 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.

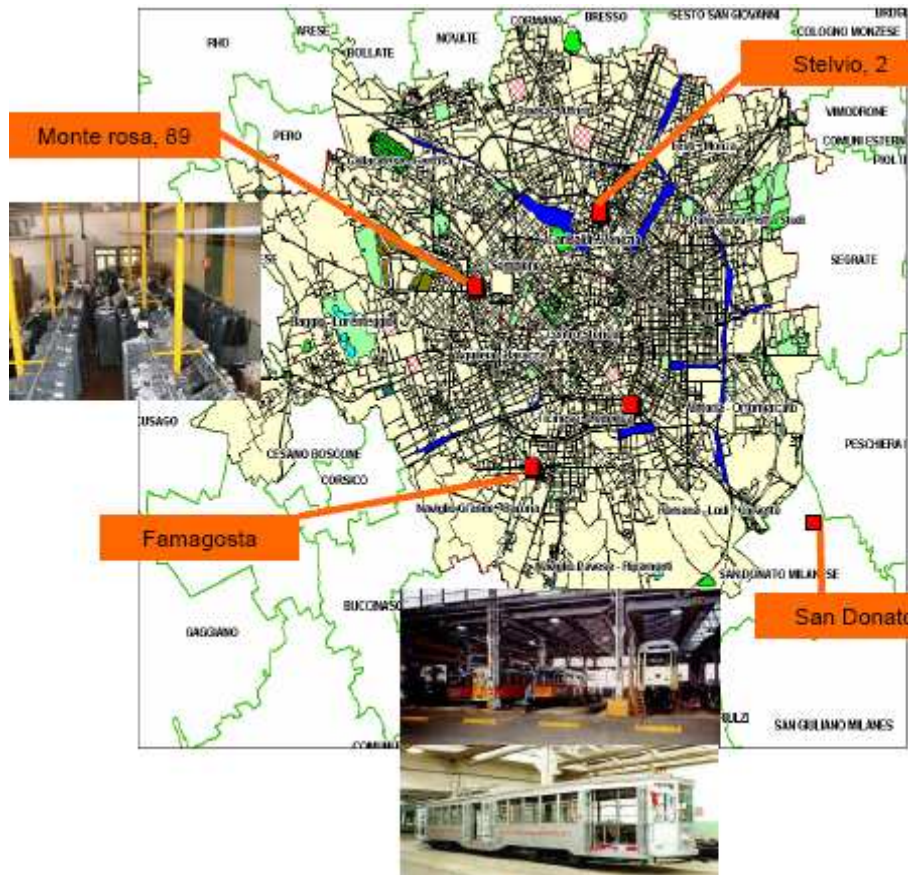


Figure 2: The ATM depot designated for the CityPlus project (Decio, 2006)

5.1 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 km² area (Figure 3) between 7:30 and 19:30 are subjected to the payment of a charge. The charging area is relatively small compared to London (22 km² before 2005, and 40 km² after 2005) and Stockholm (47 km²), but it is comparable to Singapore (7 km²). 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 3 : 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.

Table 4 : Toll classes based on Euro emission standard and Ecopass tariffs for cars (Rotaris et Al, 2009, pg. 7)

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) Cars and freight vehicles diesel Euro 4 or more recent with anti particulate filter
Class III	Gasoline Euro 1 and 2
Class IV	Gasoline Euro 0 Diesel cars Euro 1, 2 and 3 Diesel goods vehicles Euro 3 Diesel buses Euro 4 and 5
Class V	Diesel cars Euro 0 Goods vehicles Euro 0, 1 and 2 Diesel buses Euro 0, 1, 2 and 3

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

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 controlling the access to the monitored area.

5.2 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 et 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 thickets 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.

6 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 issue 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, CO₂ 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.

SOMMARIO

Le città sono alla ricerca di strumenti e politiche volte a garantire un'efficace ed efficiente mobilità urbana sia per i passeggeri che per le merci, in un'ottica di sviluppo sostenibile.

L'ottimizzazione del flusso di passeggeri e di merci nell'area urbana, finalizzata a ridurre i costi diretti ed esterni legati alla crescente mobilità, sta assumendo sempre maggiore importanza. Il trasporto delle merci, a lungo considerato come un problema non prioritario da affrontare nelle aree urbane, sembra oggi attirare un rinnovato interesse non solo da parte degli attori tradizionali, come le istituzioni e le imprese del trasporto merci su strada, ma anche da parte di nuovi attori, quali le aziende del trasporto pubblico. Alcuni operatori stanno valutando l'opportunità di impegnare risorse su questo tema, con particolare attenzione alla progettazione e alla gestione di soluzioni combinate di trasporto urbano che consentano uno scambio regolare di passeggeri e merci.

La progettazione e la gestione di soluzioni di trasporto mutualizzate, potrebbe aprire nuove e interessanti prospettive in termini di estensione dei servizi di trasporto pubblico tradizionali. Purtroppo, poiché gli esempi di coinvolgimento di operatori del trasporto pubblico urbano nel settore delle merci e della logistica urbana sono ancora pochi, non è al momento possibile definire in maniera certa gli effetti dell'integrazione di queste soluzioni innovative nelle tradizionali strategie imprenditoriali.

L'obiettivo del presente articolo è quello di esplorare questo tema. Nella prima sezione, è definito il concetto di trasporto urbano combinato di passeggeri e merci, sono descritte le soluzioni esistenti, attraverso una *survey* a scala internazionale. Sono inoltre analizzate le esperienze di operatori europei implicati in iniziative di trasporto urbano combinato.

Vengono quindi esaminati i fattori economici e le condizioni che potrebbero rendere tali soluzioni un'alternativa interessante alla produzione tradizionale di servizi di trasporto urbano. Infine, sono proposti alcuni possibili scenari per Milano, ipotizzati a partire dall'analisi del sistema di trasporto urbano del capoluogo lombardo.

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