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# Developing urban logistics spaces: UCC and PLS in South-Western Europe

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## Abstract

In this paper we propose a critical analysis of the development of urban logistic spaces in southwest Europe. We focus on Urban Consolidation Centres (UCC) orienting the study towards an analysis of the cooperation strategies set up to ensure the financial stability of these infrastructures. First, an overview on the main urban logistics platforms is proposed. Second, a state-of-the-art of UCCs in southern Europe is presented. Then, a rapid overview on EU funding project is also proposed. After that, an analysis of the main organizational models for UCCs is made. Finally, a discussion of the analysis is made to identify the key factors of success in the development of UCCs.

**Keywords:** Urban consolidation centres; city logistics; state-of-the art; organizational models; cooperation.

## 1 Introduction

Public authorities increasingly focus their attention on goods transport as a component of their governance of urban mobility. In this context, urban transport planning is no longer limited to considering the city as a space in which people circulate (Hensher and Button, 2001). According to a systemic vision, the city is considered as a place that involves economic factors vital for the life of the community and which inevitably generate flows of goods.

To make planning these flows more efficient and ensure that the burden resulting from the use of public resources (space, energy, time lost by persons, etc.) is distributed more fairly, cities must have available infrastructures adapted in terms of functionality, technical capacity and geographic pertinence. These infrastructures, intended to participate in optimising the urban transit of goods and people, can be:

- Linear: all the fixed installations that have to be equipped to permit the circulation of vehicles and more generally the operation of transport systems. These infrastructures are generally

specific to a mode of transport and are designed to permit the circulation of different types of vehicles.

- Punctual or nodal: the nodes that ensure the organisation of infrastructures into networks. For example the rail network is composed of lines linked together by stations. These can be of two types: terminals (such as stations, ports and airports as well as goods distribution centres, stations, and other infrastructures linked with each other on the outskirts of cities) or stops (places for alighting, boarding or parking). Large nodes also serve as points of contact and exchange between two or more modes of transport.

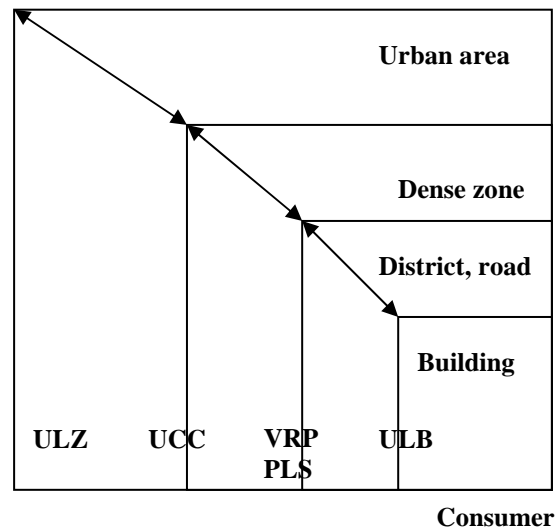
Thus nodal transport infrastructures are a primordial element for guaranteeing the freedom of movement of people and goods. In this article we focus on nodal infrastructures intended for the movement of goods. The subject has been dealt with by several works from authors including: Whiteing, 1996, Mc Kinnon 1998, Whiteing and Edwards 1996, 1997, Dablanc and Massé, 1996, Boudouin and Morel, 2002, Browne et al., 2005; Boudouin, 2006; Spinedi, 2008; Gonzalez-Feliu and Morana, 2010; Dablanc et al., 2011; Allen et al., 2012). Although none of them call into question the advantage of these for the purposes of logistics, it is difficult to identify an economic model capable of ensuring their perpetuation (Delaître, 2008).

In this article, we propose to identify the key factors of success of this type of infrastructure through a comparative study on specific examples developed in south-west Europe over the last decade. We focus on consolidation platforms for urban deliveries in the following countries: France, Italy, Spain, Portugal and Greece. The study is more particularly focused on analysing the cooperation strategies set up to ensure the financial stability of these infrastructures. We first present the main types of nodal infrastructure, by concentrating on grouping-ungrouping platforms for deliveries in urban environments. Next, we present the main experiments performed in the countries of southwest Europe country by country. This is followed by an analysis of the contribution of European funds for these experiments. Lastly, we provide a detailed analysis of inter-organisational model type solutions that ensure continuity.

## **2 An overview on urban logistics facilities**

Urban consolidation centres (UCC) are specific types of urban logistic facilities (ULF). Urban logistic areas can improve the transit of goods and their relations between the road system and the place of operation, and between the city and its nearer and remoter outskirts (Boudouin, 2006). These areas can take different forms and do not all have the same function or the same range of action. In order to situate UCCs in relation to ULFs, we provide the main categories of ULF by presenting their principal characteristics (cf. Figure 1):

**Producer and/or distributor**



**Figure 1 - Characterisation of ULFs (Adapted from Boudouin, 2006)**

Figure 1 is divided according to different categories of aggregation of urban space, in descending order (from most to least aggregated). Urban logistic areas (ULF) have developed over the past few years at the periphery of urban areas. These logistic areas group several transport companies. Their role is not to share the flow of goods between these companies, rather they are part of the regional logistics scheme of each of these companies and permit them to rationalise their fleets of delivery vehicles (Boudouin, 2006). The presence of a ULF will not therefore change the delivery and pickup practices of each company involved. Several categories of ULF can be defined within the city centre or inner suburbs as a function of the range of action associated with them. Urban consolidation centres (UCC) are grouping-ungrouping platforms generally located a few kilometres from the city centre whose primary aim is to manage flows to dense areas.

Vehicle reception points (VRP) are infrastructures dedicated to assigning part of the road for parking vehicles transporting goods. They can offer additional services. This category includes several subcategories of which the three main ones are proximity logistics spaces (PLS), goods reception points (GRP) and delivery points. We propose in the following to focus on the local delivery points. These facilities take the form of micro-logistics platforms that combine part of the road developed as a parking space reserved for goods transport and a structure for providing assistance with several associated services, notably subcontracting last mile delivery, a system with low environmental impact, and assistance for loading and unloading goods. Contrary to other vehicle reception points, proximity logistics spaces (PLS) can, despite the fact that they are not required to do so in every case, modify the logistics schemes of the actors concerned by these facilities, and facilitate delivery to a company in a district or to part of a dense area of a city. In addition, they are associated with operators specific to local delivery points which offer services similar to those of an urban consolidation centre of smaller scale. Urban logistics boxes (ULB) are installed in a street or building. These are small, mobile or fixed structures that provide an interface and a temporary goods storage space for optimising passages during delivery rounds. This category includes dedicated protected spaces inside buildings, deposits and new goods withdrawal points for delivery close to the place of consumption.

As seen above, the different urban logistics facilities do not have the same function or the same range of action. We will focus on the grouping-ungrouping platforms which, a priori, have an impact on the organisation of goods transport in which specific operators can propose their services.

### **3 The spread of UCC and PLS in southwest Europe**

The spread of UCCs in southwest Europe has not occurred homogenously; on the contrary, the development of these infrastructures has been very strong in France and Italy, contrary to Spain, Portugal and Greece, where they are practically inexistent, despite the cultural similarities between these countries.

#### **3.1 *Experiments in France***

The experiments performed with urban consolidation centres in France have been very varied and started much earlier than in other countries (the first experiment dates back to 1967). However, very few are still operational. In the 60s, the first experiment with an urban grouping platform operating in pooling mode took place in Paris (Dablanc and Massé, 1996) managed by Sogaris. This private experiment was based on a road terminal for grouping-ungrouping operations for the urban area of Paris. The platform functioned for two years before becoming a multipurpose logistics centre and losing its pooling dimension. It was not until the 1990s that new experiments of this type were started. In 1990, the municipality of Aix en Provence raised the question of how to optimise flows of goods within the town, and developed a project of a pooled UCC (Dablanc and Massé, 1996). This project was not taken to its conclusion and was suspended. A similar situation occurred in Strasbourg, the capital of Alsace, which proposed the first multimodal UCC, by using the SNCF rail freight station. The project was stopped in 2002 following the departure of the railway operator from the project. Other unsuccessful UCC projects took place in Toulouse, where the project was not fully implemented, and in Montpellier. The UCC of La Rochelle is the only example to have been operational for 10 years. The characteristics of the remaining urban logistic facilities in France are somewhat different, such as Proximity Logistics Spaces (Bordeaux and Rouen), which are small and sometimes mobile urban platforms used to organise deliveries in the city centre, and ecological systems designed for “last mile” delivery, such as La Petite Reine and Colizen, which rely on small logistics platforms in dense urban areas. There are also single-user UCC type consolidation platforms, notably in Paris with the experiments conducted by Chronopost, Monoprix and Natoora. Lastly, we have not forgotten the case of Monaco, which we develop in paragraph 5.1.

N.	City	Name of initiative	Origin of main fundings	Starting date	Current status
1	Paris	Sogaris Road Terminal	Private	1967	stopped in 1969
2	Aix en Provence	-	Other	1990	project suspended
3	Besançon	BELIV'R	National	1999	project suspended
4	Strasbourg	-	Other	2001	stopped in 2002
5	La Rochelle	Elcidis	EU	2001	active
6	Toulouse	-	Other	2002	project suspended
7	Bordeaux	Local Delivery Point (ELP)	National	2003	active
8	Several towns <sup>1</sup>	La Petite Reine	National	2003	active <sup>2</sup>
9	Paris	Chronopost	National	2005	active
10	Paris	Monoprix	Other	2006	active
11	Montpellier	-	Private	2002	active
12	Paris	Colizen	Private	2009	active
13	Annecy	Urbanecy	EU	2010	under deployment
14	Paris	Distripolis	Private	2011	under deployment
15	Lyon	ELU Cordeliers	Local and Regional	2012	active
16	Saint-Etienne	Simplicité	Local and EU	2013	in test phase

**Table 1 - Summary of UCC projects in France**

### 3.2 Experiments in Italy

A large number of experiments with urban consolidation centres have been performed in Italy. In most cases, it has been observed that UCCs are set up in already existing infrastructures, except in the case of Lucca, where the urban platform was designed and installed using funds made available by the European Community. The first example of a UCC is that of Sienna, in 1999. In 1983 the municipality of Sienna launched a taxi service for goods. This service, which was originally intended for private users, was progressively strengthened to extend distribution in the city's historic centre. The positive results obtained led to the purchase of a storage area of 500 m<sup>2</sup> in 1999, to satisfy the new needs of the service and its rapid development. The second experiment was that of Ferrara, with the Ecoporto UCC, which has been active since 2002. A UCC was launched in Genoa in 2003. It was co-funded by the European project MEROPE (Frosini et al., 2004). However, the service has not reached equilibrium since the experimental period and the UCC ceased operating after the end of European funding. The urban logistics platform Cityporto in the city of Padua was launched in 2004, under pressure from local interests, namely the municipality, the regional intermodal logistics platform installed outside the city, and the chamber of commerce (Gonzalez-Feliu and Morana, 2010). The platform of Vicenza was set up in 2005, driven by the municipal authorities. In 2005, the goods distribution service of Milan, Cityplus, was developed on an experimental basis by the public transport operator ATM-Milano and the municipality. In 2007, urban consolidation centres were introduced in the town of Lucca, Modena and Frosinone. The new urban distribution services in Lucca and Frosinone were set up using available resources from European projects, while the Cityporto project in Modena was set up using local economic investments. Lastly, in 2008, Parma, Venice – Mestre, Aoste and Ravenna started projects to set up UCCs (Gonzalez-Feliu, 2012). The initiatives developed in

<sup>1</sup> La Petite Reine has been deployed in the cities of Bordeaux, Geneva (Switzerland), Dijon, Lyon, Paris and Rouen (source: <http://www.lapetitereine.com>).

<sup>2</sup> La Petite Reine also developed similar services in the cities of Bordeaux, Paris, Geneva (Switzerland), Dijon, Lyon and Rouen (source: <http://www.lapetitereine.com>).

Parma, Venice – Mestre and Aoste were funded by local economic investments. However, the project of Ravenna stemmed from a measure proposed in the framework of the European project START (2006 -2009).

N.	City	Name of initiative	Origin of main fundings	Starting date	Current status
1	Sienna	Piattaforma logistica COTAS	A	1999	active
2	Ferrara	Ecoporto	R	2002	active
3	Genoa	“Progetto M.E.R.Ci.”	EU	2003	stopped
4	Padua	Cityporto Padova	R	2004	active
5	Vicenza	Veloce	A	2005	active
6	Milan	Cityplus	A	2005	stopped
7	Lucca	Life CEDM	EU	2007	active
8	Modena	Cityporto Modena	A	2007	active
9	Frosinone	C- Dispatch	EU	2007	active
10	Parma	ECOCITY	A	2008	active
11	Venice-Mestre	-	R	2008	active
12	Ravenna	CONSAR OBI	EU	2008	active
13	Venice-Mestre	-	Local	2008	active
14	Abbano Terme	Cityporto Abbano Terme	Local	2009	active
15	Bologna	Vansharing	EU	2009	project suspended
16	Saint-Etienne	Simplicité	Local and EU	2013	in test phase
16	Aoste	Cityporto Aosta	UCC-Multi	2010	active

Table 2 - Summary of projects to set up UCCs and PLS in Italy

### 3.3 Experiments in Spain, Greece and Portugal

Very few experiments with urban logistics platforms have been identified in these three countries. We will see in what follows that most of these experiments rely on French and Italian examples, but scarcely any were pursued. In Spain, two experiments were carried out between 2003 and 2009. In Malaga, a UCC based on the example of La Rochelle (in its first version) with a model very similar to that of Vicenza was developed in 2004 (Gonzalez-Feliu, 2008). This distribution centre was endowed with public aid (like La Rochelle) and after operating for more than three years its revenues began to balance its operating costs<sup>3</sup>. This UCC is still operating. An experiment to supply 60 shops in a district of Barcelona was started in 2006. It was based on a micro-platform similar to an PLS. In view to optimising supply to shops, the transporters stopped at the PLS, after which a messaging service supplied the shops. The experiment was stopped due to excessive operating costs. The results were nonetheless very informative for subsequent experiments and permitted identifying a certain number of key factors of success for setting up PLSs (CITET, 2009). The town of Kavala (Greece) participated in the City Ports project (Rosini, 2005) and a feasibility study was performed in 2005 to examine the possibility of starting a UCC similar to that of La Rochelle (Browne et al., 2005). The project was stopped with the end of City Ports and the study had no sequel. In Portugal, we identified an urban consolidation platform in Evora. The ECOLOGUS project (Eco-efficient distribution in Evora) led to setting up a platform for collaborative goods distribution in 2004, on the basis of a model that differed slightly from that implemented by French and Italian cities. The project planned for a pooling platform where the transporters could organise last mile delivery, by exchanging goods to optimise filling vehicles going into the town centre. This promising model failed to give rise

<sup>3</sup> Source: <http://www.sur.es>, updated on 10 February 2008

to an operational system. However, it forms the basis for other projects to pool urban deliveries like LUMD in Ile-de-France (Gonzalez-Feliu and Morana, 2011) and Vansharing in Bologna, Italy (Dablanc et al., 2011).

N.	City or town	Name of initiative	Origin of fundings	Start-up	Current status
1	Evora (Portugal)	ECOGUS	Other	2004	project suspended
2	Malaga (Spain)	CUDE	Local	2004	stopped in 2009
3	Kavala (Greece)	City Ports	EU	2005	project suspended
4	Barcelona (Spain)	SAMP	Local	2006	Stopped
5	Madrid (Spain)	FRevue	EU	2009	Under study
6	San Sebastian (Spain)	-	Local	2010	Active

**Table 3 – Summary of projects to implement UCC and PLS**

## **4 The European Community’s involvement in spreading the use of UCCs and PLSs**

Over the years, we have observed that the European Community has become acutely aware of the urban dimension of goods logistics. This is certainly visible at strategic level, through a new “integrated and holistic” vision of logistics. In the Green Book on Urban Mobility, (Commission Européenne, 2007), the European Community specifies that “Distribution in urban areas demands efficient interfaces between long distance transport and distribution over short distances to the final destination”. This objective is emphasised by the payment of subsidies to encourage the introduction of UCCs and PLSs in European towns and cities. As stated by Russo and Comi (2004), the fifth framework programme (1998 – 2002) of the European Community sets out the priorities for research in the European Union in the field of urban goods transport. The sub-programme “Competitive and Sustainable Growth” is positioned in the context of the fifth framework programme and has given rise to a large number of projects like: CUPID, (Co-ordinating Urban Pricing Integrated Demonstrations) (2000 – 2004), EUTP II (Thematic Network on Freight Transfer Points and Terminals) (2000 – 2004), MOST (MObility management STRategies for the next decades) (2000 – 2002), PROGRESS (PRicing REGimes fOr inteGrated SuStainable mobility) (2000 – 2004), OSSA (Open framework for Simulation of transport Strategies and Assessment) (2000 – 2003), REVEAL (Remote Measurement of Vehicle Emissions At Low cost) (2000 – 2003), SULOLOGTRA (Effects on Transport of Trends in Logistics and Supply Chain Management) (2000 – 2001). The European Commission launched CIVITAS (City-VITALity-Sustainability) and the programme INTERREG III in 2000. The CIVITAS initiative supported cities in the framework of tests of audacious and novel measures to radically improve urban transport. The programme was performed over a period of time: CIVITAS I and CIVITAS II. A third cycle of CIVITAS PLUS is now in progress. CIVITAS I, (2002- 2006), involved 19 European cities that cooperated in four projects: VIVALDI, TELLUS, TREND SETTER and DES MIRACLES. CIVITAS II (2005 – 2009) involved 17 European cities that cooperated in four projects: SUCCESS, CARAVEL, MOBILIS, and SMILE. Today, CIVITAS PLUS (2008 – 2012), involves 25 cities with 5 projects: MIMOSA, ELAN, ARCHIMEDES, RENAISSANCE, and MODERN. The INTERREG III program is a community initiative of the European Regional Development Fund (FEDER) in favour of cooperation between the regions of the European Union for the period 2000-2006. It encourages transnational cooperation by relying on interaction between national, regional and local authorities and a wide variety of nongovernmental organisations. The objective is to achieve sustainable, harmonious and balanced development in the Community and better territorial integration. Major urban goods

transport projects were launched: CITYPORTS and MEROPE. The SUGAR project was launched in the framework of Interreg IV, in 2007, for a period of four years.

PROJECTS		France	Italy	Spain	Portugal	Greece
FP5 (1998 – 2002)	SULOGTRA	X			X	X
	MOST	X	X	X	X	X
	REVEAL		X			X
	OSSA	X		X		
	CUPID		X			
	EUTP II		X			
	PROGRESS		X			
INTERREG III (2000 –2006)	MEROPE	X	X	X		
	CITYPORTS		X			X
CIVITAS I (2002- 2006)	VIVALDI	Nantes				
	TELLUS	Lille				
	MIRACLES		Rome	Barcelona		
CIVITAS II (2005 – 2009)	SUCCESS	La Rochelle				
	CARAVEL		Genoa	Burgos		
	MOBILIS	Toulouse	Venice			
	SMILE		Potenza			
INTERREG IV (2007 – 2013)	SUGAR	Paris	Emilia Romagna	Barcelona, Palma de Mallorca		Heraklion, Athens
CIVITAS PLUS (2007- 2013)	MIMOSA		Bologna			
	ELAN				Porto	
	ARCHIMEDES		Monza	Donostia - San Sebastian		
	RENAISSANCE		Perugia			
	MODERN		Brescia	Vitoria - Gasteiz	Coimbra	
TOT		9	17	8	4	5

Table 4 - The financial involvement of the EC in setting up PLSs in the countries analysed

## 5 The main cooperation strategies and organizational models of UCCs and PLSs

The main brake on the development of urban logistic areas remains the absence of a genuine economic model permitting these facilities to reach financial equilibrium. In this part we focus on identifying the main forms of interaction between local public and private actors in the framework of managing urban logistics via consolidation schemes (using either UCCs or PLSs), for each country studied. It should be recalled that the additional costs, the urban space used for this purpose and the new logistic organisation of the users are considerable brakes and even genuine barriers that can hinder the success of implementing local storage areas.

### 5.1 France

Experiments in France can be divided into two groups: the first mainly concerns the experiments carried out before 2002 and first characterised by the desire of public authorities that seek the support of certain sectors of activity. The second groups the experiments carried out after 2002 which are characterised by essentially private initiatives by operators that included an urban logistics dimension in their strategy and set up forms of cooperation with local public administrations. Regarding France, we propose to analyse two experiments belonging to the first group (La Rochelle and Bordeaux) and the experiments belonging to the second group (Chronopost, Monoprix and the Monegasque platform).

## The UCC of La Rochelle

The experiment conducted at La Rochelle is particular since it can be placed in both the groups mentioned above as it comprises two key phases:

- The experiment with a UCC began in La Rochelle in 1998 in the framework of the European project ELCIDIS (ELeCtric City DIstribution System), aimed at protecting the town's historic centre from the effects of congestion generated by deliveries (Interface Transport, 2003). The instigator of the project, the Urban Community of La Rochelle, linked up with the Chamber of Commerce and Industry (CCI), the Société du Commerce Rochelais, the transporters and PREDIT, French Program of Research for Land Transport. A facility located on the inner periphery of the town-centre was built to allow distribution to the 1,300 shops of the urban centre using electric vehicles. The experimental phase started at the beginning of 2001 and received financial aid from Europe and the municipality of Rochelle. The Urban Community of La Rochelle, the regional Council, the CCI and the ADEME also provided funds for the project. The town became the owner of the equipment: rolling stock (six Berlingo type electric vans and an electric vehicle of over 3.5 tons), handling equipment and computer hardware and software. The platform was operated through a delegated public service, as the operator financed by the Urban Community of La Rochelle (Dablanc and Bossin, 2002). The most sensitive part of the project was the difficulty in reaching financial equilibrium.
- Since December 2006, in the framework of the European project CIVITAS SUCCESS, the Urban Community of La Rochelle has decided to delegate the operation of this public service to Veolia Transport, a private public transport company, in order to perpetuate the system and permit new developments (Trentini et al., 2010). Veolia Transport committed itself to managing the Elcidis UCC through its subsidiary Proxiway, which oversees two other services: Liselec (self-service electric vehicles hitherto managed by the Urban Community of La Rochelle) and an electric shuttle between the park-and-ride and the town centre. This new management model seemed interesting due to the possible synergies between urban transport services for passengers and goods operated by Proxiway in the same town, as it generates considerable economies of scale. In other words, Proxiway found itself in a position to reduce its service production costs, otherwise known as “services marketing” (Alix, 2009), by widening its range of services (joint production). This was possible because Proxiway can now use the same facilities and personnel in La Rochelle to produce several services, and spread its fixed costs (such as rent for the premises) over a larger number of products (Trentini and Malhéné, 2010).

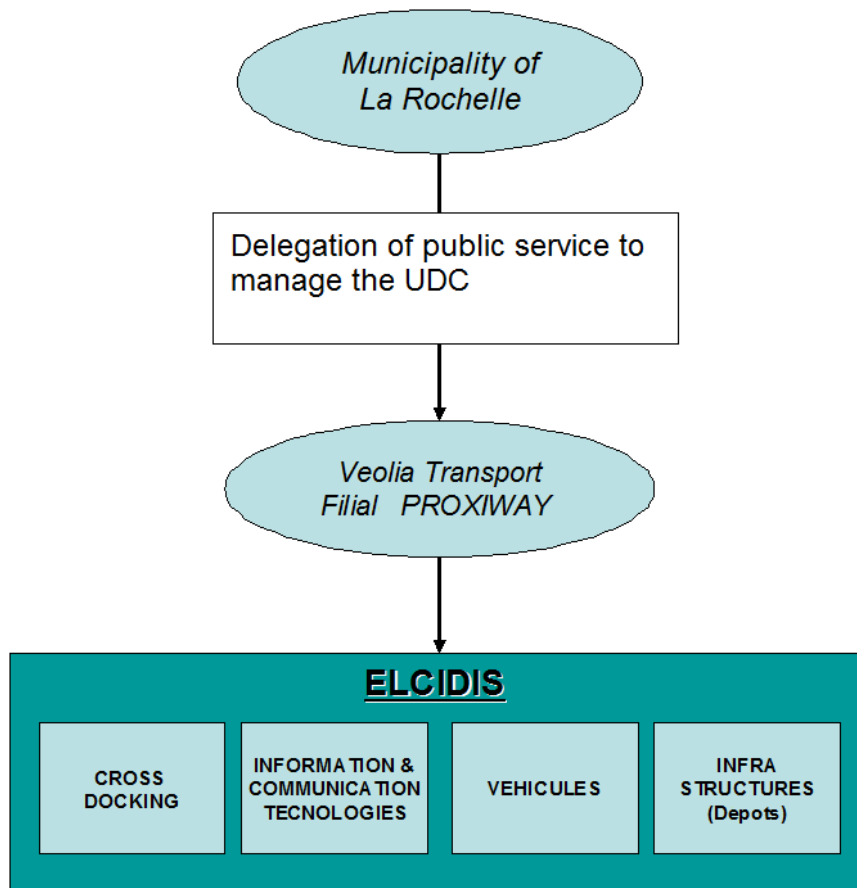


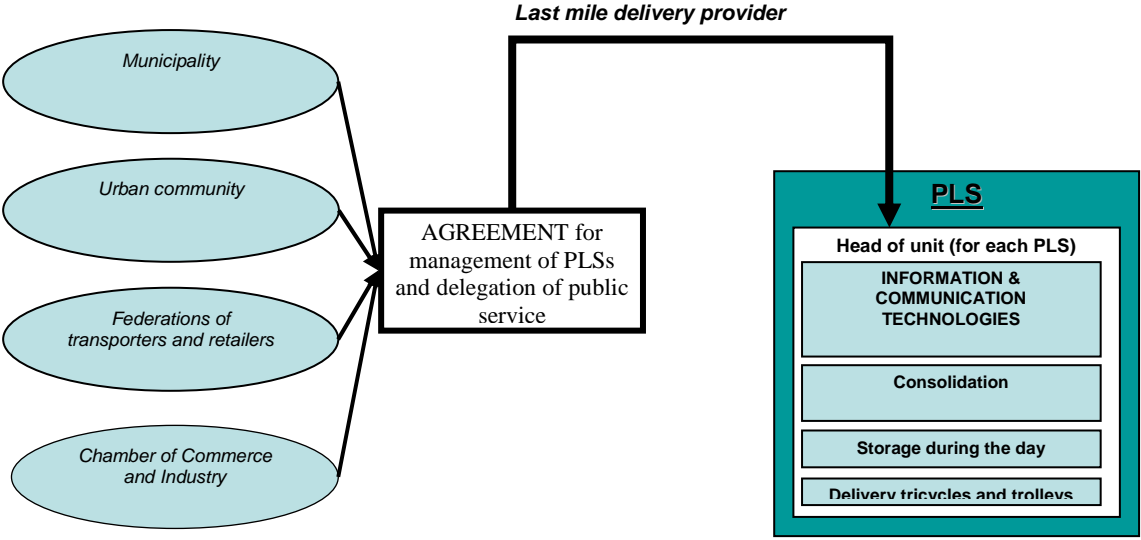
Figure 2 -The management model the UCC of La Rochelle (source: the authors)

### The PLS of Bordeaux

Proximity Logistics Spaces were developed in the framework of the reconfiguration of the urban area and the public transport service of the Bordeaux Urban Community (CUB). To minimise the constraints relating to the construction of the tram network, the Urban Community and the Municipality of Bordeaux, transporters' and retailers' associations, and the city's Chamber of Commerce and Industry decided to set up terminals and handling points dedicated to the delivery of goods in the city centre. Access to these areas is controlled by personnel independent of the transporter and they participate in handling and final delivery. The first phase of the experiment was carried out from June 2003 to June 2004 in an area of the construction works. Following the success of this phase, a second site was installed in the city centre in June 2004. The management of the PLS was entrusted to the *Association de Développement des Emplois de Services de l'Aquitaine* (ADES Aquitaine) in 2003, under the control of the CCI of Bordeaux, then to the company "La Petite Reine". 90% of the funds for the PLSs of Bordeaux came from the public purse in 2003. This percentage fell to 50% in 2004 and then to 15% in 2005<sup>4</sup>. The operation should reach financial equilibrium now the management of the PLS has been transferred to the company "La Petite Reine". Other PLSs have been set up in Paris and Dijon, in close collaboration with "La Petite Reine". The PLSs can be linked to this company's distribution system, which is based on electric powered carrier tricycles or cargocycles for last mile delivery. This allows transporters to improve their performance as they remain in the main

<sup>4</sup> <http://www.innovations-transport.fr/Espace-de-livraison-de-proximite>

corridors of the city and avoid traffic in the smaller side streets and pedestrian zones. These schemes therefore contribute to the sustainable development of cities by encouraging the development of new local delivery structures and limiting greenhouse gas emissions. La Petite Reine’s other distribution platforms can therefore be assimilated with PLSs.



**Figure 3 – The management model used for PLSs resulting from the experiments of Bordeaux and Rouen (source: the authors)**

**The Chronopost model<sup>5</sup>**

Chronopost has invested in urban logistics and proposed a new logistical program for the City of Paris since 2007, based on two concepts that have redefined its delivery system: the single-user UCC and the urban container. The result of reflection carried out with the City of Paris, the project came into being in July 2005, motivated by the desire to privilege environmentally friendly projects, while preserving economic activity in Paris. Located under the Place de la Concorde, this UCC allows deploying delivery routes as close as possible to customers to ensure the environmental-friendly distribution and collection of parcels in the 7<sup>th</sup> and 8<sup>th</sup> districts of Paris. Using the same model, Chronopost also started a UCC in Toulouse in June 2005. In order to optimise its delivery system, Chronopost has also changed its organisation to use an electrically assisted urban trolley developed in 2002. The trolley consists of a small container (1.3 m<sup>3</sup>), mounted on four wheels and equipped with an electric motor. This container resembles the trolleys used to transport baggage at airports, but traction is manual (the electric motor is used to assist the traction exerted by the agent). Initiated in November 2000, the aim of this project is to pick-up and to deliver Chronopost’s letters and packages in regulated pedestrian zones. The container was tested from September 2002 to March 2003 in Strasbourg city centre. It was subjected to a social, economic and environmental assessment in view to its industrial production. Lastly, it was linked to an UCC that was awarded ISO14001 certification in 2008. In two years of operation (from 2007 to 2009), more than 110,000 km were travelled by Chronopost electric

<sup>5</sup> Most informations have been extracted from the Chronopost website: <http://www.chronopost.fr/>

vehicles from the Concorde’s PLS. The fleet of this PLS now includes 9 electric vehicles and 2 Chronocity trolleys. It was recently bolstered by two small electric vans particularly adapted for the narrower spaces of city-centres with a capacity of 2.8 m<sup>3</sup> of parcels each. These vehicles have also been deployed recently for delivering parcels in the city-centres of Marseille and Toulouse.

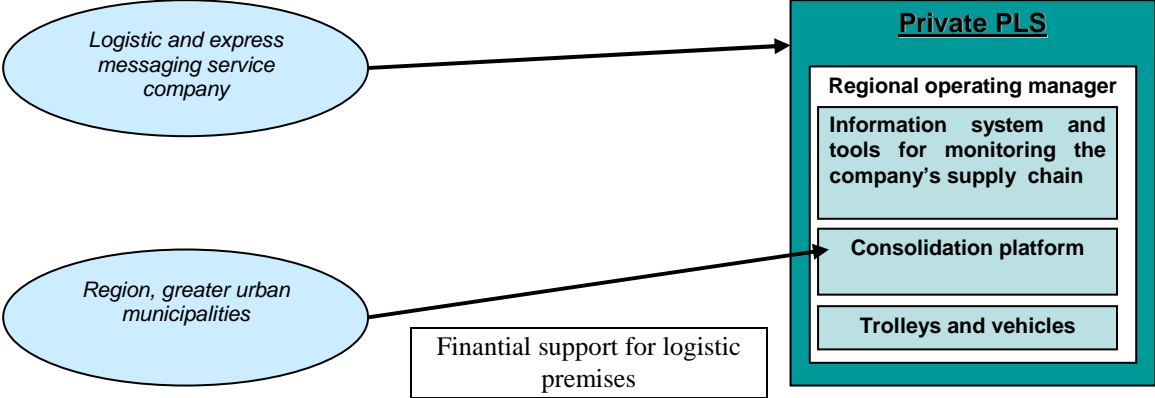


Figure 4 – The management model of Chronopost’s UCC (source: the authors)

**The Monoprix model**

Via its subsidiary VFLI, the SNCF has been transporting goods on behalf of Monoprix since November 2007. The goods are routed by railway and NG vehicles to the Monoprix and Monop' stores in Paris. Up to 210,000 pallets are moved every year, i.e. 120,000 tons of goods. The goods are transported by rail to Bercy (in Paris) from 2 warehouses located in Seine et Marne (77). These warehouses belong to Monoprix’s logistics subsidiary, SAMADA, and were linked to the railway network at the end of 2006 for Lieusaint (non-alcoholic beverages) and in 2007 for Combs-la-Ville (textiles, and beauty, household and leisure products). From Monday to Friday, a rail shuttle composed of twenty wagons runs on the tracks of line D of the RER (Regional Express Network, Paris-Melun line), and travels the 30 km between the SAMADA warehouse and Bercy Station (Delaître and De Barbeyrac, 2012). The goods are ungrouped in the Gabriel Lamé hangar in which Monoprix has a specially adapted space of 3,700 m<sup>2</sup>. The hangar can accommodate up to 20 wagons at the goods unloading platform. The goods are unloaded from the wagons, sorted and then reloaded onto NG powered trucks without cross-docking. Delivery to the 60 Paris stores is done by “26 ton” GN powered trucks. The fleet of NGV distribution vehicles is private. The specific system set up by Monoprix for entries and exits in and out of the site generates about a hundred vehicle movements per day. These NGVs are equipped with an anti-noise device. The hangar at Bercy is equipped with an NGV service station for refuelling. For more information, see Delaître and De Barbeyrac (2012).

**The Monaco model**

An Urban Consolidation Centre (UCC) was set up in Monaco in 1989 (Interface Transport, 2004). A freight platform was made available to transporters. It was installed in the area of Fontvieille, under the shopping centre. The choice of Fontvieille can be explained by the presence of industries and thus by the fact that it is the only area in the principality not subject to a limitation on the tonnage of HGVs. In addition, it is located at the entry to the principality, thereby reducing through traffic. The platform in the basement has a surface area of 1.300 m<sup>2</sup>. The territory served covers 202 ha and has a population of about 30,000 and a considerably higher number of jobs. The platform has 8 agents and 6

vehicles including an electric Kangoo (van) and a rigid 7.5 t truck. The consignees of the goods can come to pick them up or have them delivered. The platform is used to manage all goods, though does not handle removals, fuel and gasoline, bulk foodstuffs, frozen products and construction machines. The Monagasque government requires heavy vehicles over 8.5 t to deposit their products at the platform. The company holding the platform concession then handles the goods and distributes them in the city using small vehicles. The company Monaco Logistique holds the public service concession for distributing the goods. Monaco Logistique also manages the warehouses acquired by the Monagasque government on the platform of Nice Saint Isidore. More information can be found in Interface Transport (2004).

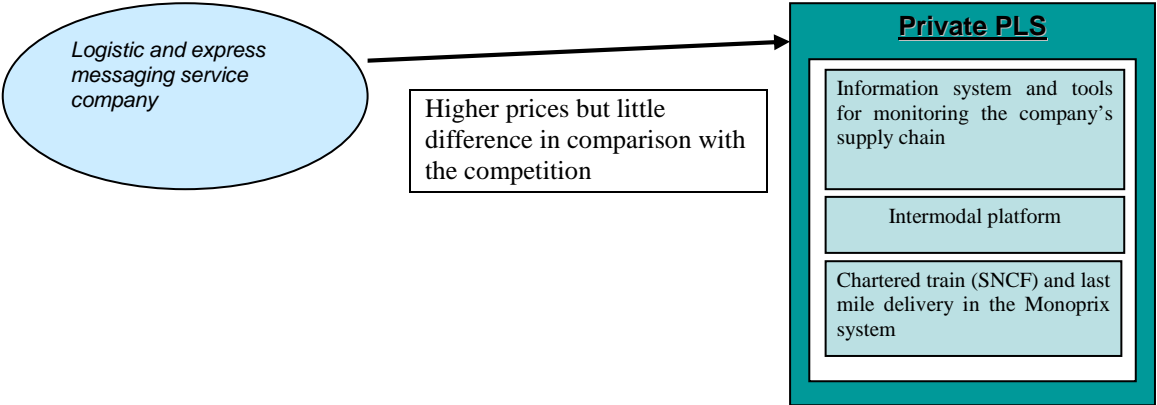


Figure 5 – The management model of the Monoprix multimodal UCC (source: the authors)

5.2 Italy

The Italian experiments are characterised by the involvement of public and private actors in the management of urban logistics platforms, such as administrative bodies (municipalities, regional administrations), Chambers of Commerce, and logistics companies. They agree on two main issues: the regulation of goods traffic (regulated access into city-centres, access permits or credits, incentive policies) and the participation of each actor in an economically sustainable organisation (links between the platform and regulations, aspects linked to infrastructures, expertise in logistics and goods transport). We present four experiments in what follows.

The Padua model

The public and private actors involved in managing the platform are the Municipality of Padua, the Chamber of Commerce, Interporto SpA, a company specialised in planning and implementing infrastructures and services for logistics and transport, and APS Mobilità SpA. APS Mobilità SpA represents the branch of activity of APS Holding dedicated to managing the urban public transport system in the city of Padua, in the spa area of Abano, Montegrotto e Torregliana. By signing a Framework Agreement (Accordo di programma), these four actors have agreed to the principles of regulation (implicitly accepted by all the partners when signing the agreement), and the provisions for the reciprocal supply of fixed assets (Gonzalez-Feliu and Morana, 2010). The urban logistics platform is run by a manager appointed by the partners. The operator of the local public transport provides the vehicles. A municipal ruling was drafted to officialise the installation of the urban platform and regulate access to the city centre for delivery vehicles. Only vehicles for postal deliveries and the

transport operators associated with the initiative are exempt from any limitations (hours of circulation, loading/unloading, etc.). The UCC reached economics viability in its second year of life and is still working. Environmental evaluations have been carried out and show the positive impacts of Cityporto on quality of life (see Vaghi and Percoco, 2011 for details on those evaluations).

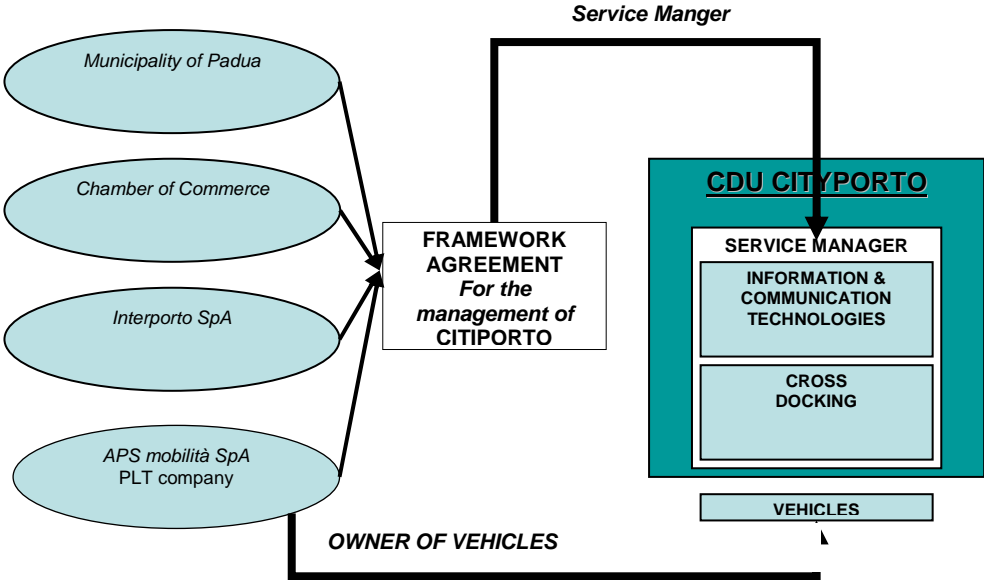


Figure 6 – The model of UCC management in Padua (source: authors, inspired by Vaghi and Percoco, 2011)

**The model of Venice -Mestre**

This experiment has strong similarities with that of Padua, except that in this case, the management of the UCC and the last mile delivery service is ensured by a transport company selected after a public call for offers. Nonetheless, the vehicles remain the property of the municipality. More details are seen in Vaghi and Percoco (2011).

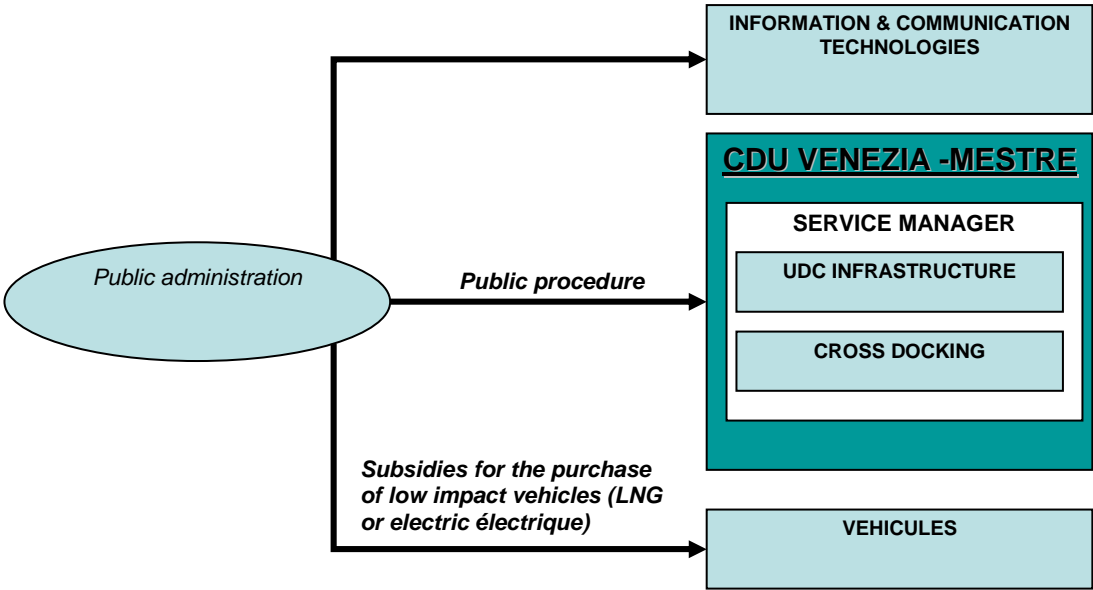
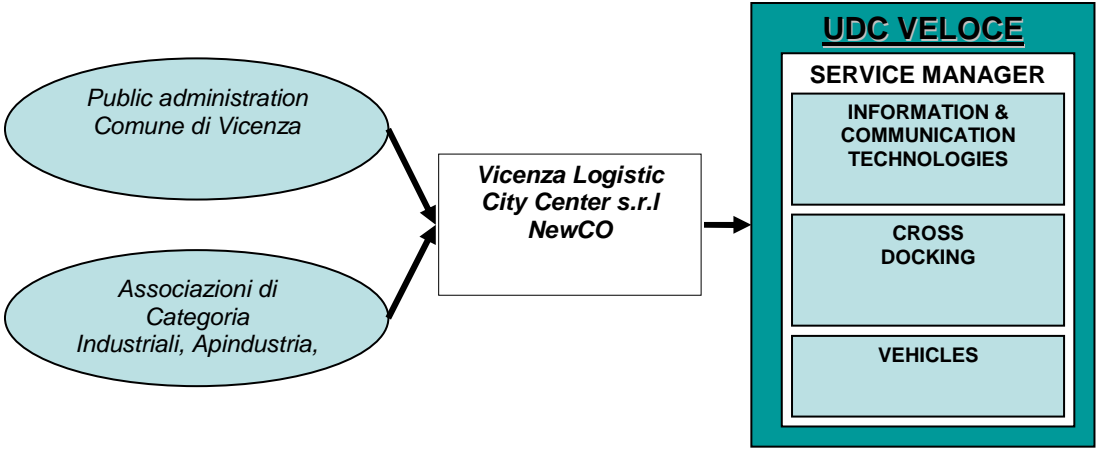


Figure 7 – The management model of the UCC of Venice -Mestre (inspired by Vaghi and Percoco, 2011)

**The model of Vicenza**

This model is characterised by the creation of a NEWCO, Vicenza Logistic City Center S.R.L, a company founded through a public/private partnership that groups the municipality, the Chamber of Commerce, and trade and retail associations. This model has specific characteristics: Vicenza is the only city that totally prohibits access to goods vehicles for loading/unloading goods in the city centre. This prohibition concerns all delivery vehicles except those made available to the Veloce platform. This measure was subject to debate and passed into legislation in spite of claims by the Italian authority responsible for ensuring competition (AGCM) that had been alerted by letters of complaint (Ville et al., 2010, Vaghi and Percoco, 2011).



**Figure 8 – The management model of the UCC at Vicenza (inspired by Vaghi and Percoco, 2011)**

**The model of Milan.**

The “Cityplus” service in Milan is managed by the public transport company ATM (Azienda Trasporti Milanese). Azienda Trasporti Milanese<sup>1</sup> a public limited liability company owned by the City of Milan. In June 2005, ATM set up a goods distribution service in the urban area by operating previously partially unused bus and tram depots as exchange platforms. The initial concept planned for the organisation of a service based on the availability and use of four warehouses located in strategic areas, near roads with highly dense goods traffic, and geographically well-distributed (northeast, southeast, northwest and southwest) and always open (Gonzalez-Feliu, 2008). To optimise the goods delivery service, the project planned the deployment of a technology already used by ATM for managing the collective taxi service called “Radiobus<sup>6</sup>”. “Cityplus” got off to a quick start with positive feedback from companies. From the outset the service acted on behalf of third parties for delivering very varied products though excluded perishable products, frozen foods, packages and parcels with high added value, and clothes on hangars and racks. The contractors with the Cityplus service for last mile delivery in the Milan urban area were mainly transporters under contract for the

<sup>6</sup> Radiobus is an on-demand mode of public transport that responds to telephone reservations, operating daily from 8 p.m. to 2 a.m., for a cost only slightly higher than that of a normal bus fare. As with goods distribution, Radiobus has to plan its route, deliveries and pickups (of people rather than goods, of course) before leaving, and providing information in real-time to the users of the service.

upstream supply chain with 3PLs (third party logistics providers). The first sectors interested in the service were the garment, food, stationary, health and beauty sectors. In addition, Cityplus delivered travel documents for ATM, serving 2,000 sales points (bars, tobacconists, etc.) During its breakeven phase, Cityplus carried out more than 200 deliveries in Milan and the provinces, serving more than 3,000 destinations. The promising concept of Cityplus could have benefited from possible synergies between passenger and goods transport services to generate considerable economies of scale (Maggi, 2007). However, despite the solid bases on which the venture depended, the experiment was not continued.

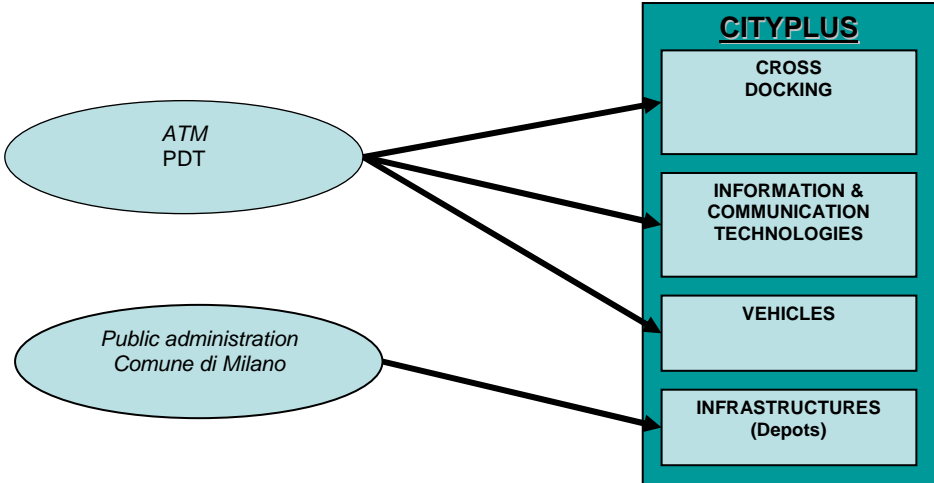


Figure 9 – The management model of Cityplus in Milan (source: the authors)

5.3 Spain, Greece and Portugal: experiments with an eye on France and Italy

We propose to end this study in Spain and Greece, by presenting two experiments inspired by the model used in La Rochelle in 2003, that of Kavala in Grèce and Malaga in Spain (cf. § 3.3), and a project very similar to that of an PLS, that uses existing infrastructures without the need to install new ones in the roads. The last example from Portugal was chosen for its proximity with recent studies on pooling logistics resources (Gonzalez-Feliu et Morana, 2010b).

The model of Evora

In comparison to other UCC projects, ECOLOGUS presents the particularity of being the initiative of an association of transporters (ANTRAM) in reaction to a modification of regulations controlling access to the city centre. The nine members of ANTRAM, the instigators of the project, were the main investors in the UCC and the associated facilities including vehicles running on biofuel. The organisation of transport and the delivery system in the city centre is organised by ANTRAM with the support and acceptance of the transporters (IRU, 2003). We are therefore witnessing the first project designed to pool urban logistic resources. This experiment is now setting an example and has inspired several other projects now in progress.

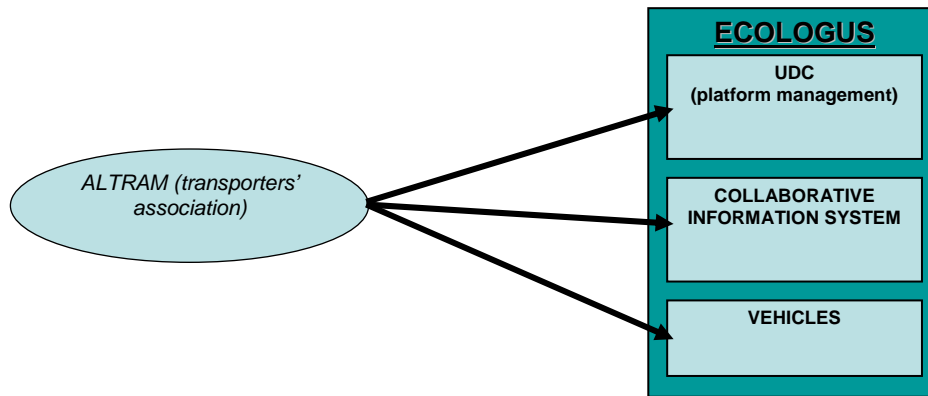


Figure 10 – The management model of Ecologus in Evora (source: the authors)

## 6 Discussion

Analysis of these case studies and their organizational models permits identifying the factors of success (or failure) in the framework of perpetuating urban infrastructures economically. We identify three main factors. The first is to implement a finalised consultation process aimed at involving the main actors appears to be an essential element in setting up such infrastructures for ensuring goods transport in cities. The study of Cityplus in Milan shows that although the conditions for success are present, the lack of advice and dialogue between the transport operators, the municipality and the actors in the city rapidly led to the demise of the experiment.

The second key factor appears to be the measures implemented in terms of local policy to promote the use of these facilities. As suggested by the experiment performed in Vicenza, the introduction of more or less stringent restrictions regarding access to the city centre facilitates developing the activities of a UCC provided that collateral effects such as lawsuits can be controlled (Ville et al., 2010). The third factor of success is related to the operational management of the platform which has to permit breaking even and reaching financial stability. Three scenarios can be considered:

- “public” management by an operator set up ad hoc (La Rochelle before 2006, Genoa, Ferrara) with or without delegating the service, whose organisation requires considerable public funds;
- “private” management requiring investment by the public authorities and ensured by an actor carrying out the services of a goods transport company. This actor, generally a cooperative of small and larger transport and logistics companies, is given the responsibility of ensuring that the service is profitable while being freed of the costs linked to the depreciation of the facilities (Padua; Vicenza). This scenario is similar to that of the PLS of Bordeaux and the UCC systems set up by Chronopost and Monoprix;
- The third scenario does without the public/private aspect but places more emphasis on grouping services. The entity in charge of operations manages several activities (fleet of hired vehicles, passenger transport, etc.). Therefore, depending on the financial year, one of the activities could be temporarily in the red provided that the profits of the other are

sufficient to offset these losses and ensure overall financial stability (La Rochelle after 2007).

These scenarios match the real situations observed and are not intended to be economic reference models. There is no evidence to prove that they can be transferred as they are to other experimental sites with guaranteed success. These scenarios require conceptualising to respond to the European problem (beyond southwest Europe) such as was considered during the debates of the POLIS Working Group on Urban Freight, in February 2010: the development of urban logistics platforms depends on the definition of a reliable economic model. Indeed, the investments associated with the implementation of these infrastructures are generally considerable and often rely on public funds. Thus, to guarantee success, it is absolutely essential for the promoters of such schemes to be capable of presenting their budgets to the elected representatives who have to vote for their acceptance.

The third factor is that of evaluating the impacts of the UCCs and measuring their added impact. However, and although we raised the question of an economic model designed to perpetuate the activity of these infrastructures, it should be considered as incomplete with respect to the issue of sustainable development which covers dimensions other than that of costs related to environmental impacts, social impacts, etc. Simple observation shows that the installation of such infrastructures fits in perfectly in this context as it results in reducing congestion and accidents, and it generates new jobs. However, this observation is not enough and we are obliged to consider that the works in progress (Taniguchi and van der Heijden, 2000; Behrends et al., 2008; Melo and Costa, 2011; Vaghi and Percocco, 2011; Morana and Gonzalez-Feliu, 2012) do not yet allow formulating a methodology, especially at European level, capable of measuring the added value of these infrastructures objectively from the standpoint of sustainable development. It is therefore important to link evaluation methodologies to the objectives of infrastructures and the transport systems derived from them, whether they are related to issues such as congestion, greenhouse gas emissions or environmental and acoustic pollution.

## **7 Conclusions**

This paper presented a study of the development of urban logistic areas in southwest Europe. Attention was focused on UCCs, since, these logistic platforms require assistance and services performed by dedicated personnel. In the light of the UCC and PLS experiments performed in the different countries of southwest Europe (France, Italy, Spain, Portugal, Greece), we observed that they are unevenly distributed. Although we noted a dynamic trend towards the use of these infrastructures in France and Italy, very few examples of urban logistic platforms were identified in the three other countries considered. Analysis of these case studies permits identifying three main factors of success in the framework of perpetuating urban infrastructures economically, which are consensus and agreement reaching by consultation, adequate management structures and a standard added-value and impact evaluation method.

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