Despite the failure of initial attempts and still uncertain economic profitability, UCCs are continuing to develop in France and elsewhere in Europe. In this chapter, we show that there is no single solution but rather a whole range of urban logistics spaces between which local authorities must decide on the basis of the objectives assigned to these facilities. To do this, we propose the criteria to be taken into account and the institutional and regulatory measures that appear best adapted. We analyze the examples which we consider the most innovative, efficient and in tune with the changes occurring in lifestyles.

1.1. Introduction

The most widespread solutions for reducing the impact of goods delivery vehicles in cities (environmental, noise and safety) affect several domains. The most common are the land available for logistics activities, the pooling consolidation of flows, the implementation of restrictive regulations, the use of less pollutant vehicles better adapted for urban use, road sharing through time and by type of use, and performing studies to obtain better knowledge of flows and to design tools to evaluate measures [OEC 03, BES 07].

Among these solutions, the Urban Logistics Space (ULS), “a facility intended to optimize the delivery of goods in cities, on the functional and environmental levels, by setting up break-in-bulk points” [BOU 06], appears very interesting. It can be broken down into six categories: the Urban Logistics Zone (ULZ), the Urban...
Distribution Center (UDC), the Vehicle Reception Point (VRP), the Goods Reception Point (GRP), the Urban Logistics Box (ULB) and the “mobile” Urban Logistics Space (mULS). Each of these types of facility mirrors issues based on land (surface areas dedicated to logistics) and constitutes a place for pooling (equipment, m² and transport capacities). Some ULSs allow for better distribution of flows over the day by dissociating the delivery by the transporter from the collection by the client, and privilege the use of “clean” vehicles for last-mile deliveries. ULSs thus allow optimizing urban goods deliveries and pickups through better filling of vehicles, more efficient round organization, fewer conflicts linked to infrastructure use regarding goods vehicle traffic and parking.

Thus, it is clear why urban logistics spaces have given rise to a multitude of studies and experiments, especially in the form taken by the “urban distribution center (UDC)”. In order to avoid any misunderstanding, we underline here that according to the typology formulated by Boudouin, these UDCs also encompass “urban consolidation centers (UCC)”. The aim of both the UDC and the UCC is to consolidate flows destined for the city. In the UDC, this is done by pooling several actors, often with the involvement of the public authorities. In the case of UCCs, they are specific to an economic sector or to a zone of the city. Despite the large number of experiments, few have latched on to a working economic model, as most have been abandoned or subsist only thanks to public subsidies. Nonetheless, these failures do not appear to discourage initiatives and ULS projects continue to emerge. The objective of this paper is to classify the different types of ULS and, for each of the six categories identified, specify their scope of application, the elements regarding implementation and/or operating costs, and detail the appropriate accompanying measures needed to favor their success. Examples of successes and failures are presented to highlight the key factors underlying the former and the reasons for the latter.

1.2. Literature review

The literature on ULSs can be divided into two categories. The most widely known is naturally that which focuses on the experiments carried out. It would be futile to try to provide a full panorama, thus emphasis will be placed on syntheses performed in the framework of projects aimed at proposing recommendations regarding good practice. The other category concerns theoretical documents, presenting models of logistics centers [BRO 05].

Between these two focal points, the French approach of categorizing ULSs, performed in the framework of the National Urban Goods Program (Ministry of Transport and the Agency for the Environment), is particularly singular. Indeed, it is both a conceptual and pragmatic perception that identifies models of facilities while
providing an approach that uses a number of indicators to allow local actors to select those best adapted to the objectives desired. In addition, this classification of ULSs is based on taking into account the spatial dimension of the facility. By not setting a threshold on the surface area, the area of impact or the volume of goods handled, or applying rules regarding the institutional structure of these spaces, it is possible to group a whole array of facilities under the single denomination of ULS along with their respective scopes of application and between which urban actors can arbitrate to build their logistic framework. We obtain a typology of ULSs in five categories, now increased to six to integrate mobile ULSs [BOU 06, BOU 17], as a function of the objectives desired, the modifications introduced in the supply chain, the level of public involvement required to favor their implementation and their range of action.

\[\text{Figure 1.1. The typology of ULSs [BOU 06]. For a color version of this figure, see www.iste.co.uk/taniguchi/cities2.zip}\]

The literature has mainly focused on the concepts of UDC and UCC among the types of logistics spaces in this inventory. The generic term of ULS has essentially remained specific to France apart from a few exceptions (e.g. [DEO 14]). As for other variations of the ULS, concepts of freight villages have been observed in different countries, although they do not necessarily cover an essentially urban dimension. For the most part, the latter signifies areas enabling the intermodal transfer of goods at the national and international levels. However, the term “vehicle reception point” is used in several articles such as [VAN 14, BRI 12]. Likewise for the concept of “goods reception point” [JAN 13].

In Europe, the first experiments conducted to set up ULSs emerged in the United Kingdom in the 1970s. They involved the construction of Urban Consolidation Centers (UCC) by transporters, since the concept of ULS was deemed too expensive and likely to increase the volume of traffic linked to the use of large fleets of small vehicles to make last-mile deliveries [OEC 03]. Elsewhere in Europe, projects in this
area were mainly carried out starting from the second half of the 1990s, mainly in the form of UDCs. About 150 were initiated, although few are still operating [SUG 11]. Mention can be made of the city of Padua whose Cityporto concept was adopted by other Italian cities: Modena, 2007, Como, 2009, Aosta, 2011 and Brescia, 2012 [LEO 15]. The United Kingdom, a pioneer regarding UCCs, also focused on their most efficient models: Heathrow, Bristol and London.

In this brief panorama, France was no exception to the ebullience stimulated by the concept of UDC and more generally ULS. Since the 1990s, 44 ULSs (excluding Goods Reception Points) have been identified. However, the evaluation of these realizations is harsh: seven projects have been abandoned and 10 have closed. Only 17 are still in service. Nonetheless, the concept continues to attract attention since eight are currently in the project phase [SER 15].

1.3. ULS typology

These failures indicate that the Urban Logistics Space should not be an end in itself. It only has substance if considered within the framework of a global analysis of the urban context leading to the selection of the type of ULS best adapted to local issues, independently of considerations of political leaning. Before making any decision as to the installation of a ULS, it is therefore advisable to perform a detailed diagnostic of needs, to specify the objectives assigned to the equipment and the institutional framework necessary to achieve them, and to examine the perimeter of pertinence in order to finally choose the suitable site.

According to the size of the city, the needs identified and the objectives pursued, the installation may require integration in a logistics master plan and a full overhaul of the regulations relating to transport and town planning. Marked differences can also exist regarding the size of the tools considered, the financial implications of the actors involved and the regulatory measures taken to facilitate their operation.

1.3.1. The Urban Logistics Zone (ULZ) or freight village

1.3.1.1. The concept

The freight village ensures the transit of goods between the city and interurban areas, and it provides the interface between modes of transport: railway/river/ maritime/road. According to case they can be: enterprise zones comprising buildings or land made available for this purpose, agri-food markets, often freight terminals on railway or river port sites, that provide interfaces between urban and interurban areas, or logistic hotels, buildings with several floors accommodating simultaneously to reduce land costs, production and service activities and sometimes dwellings.
The localization must be chosen as close as possible to the barycenter of activities generating flows of deliveries and pickups intended for dense areas.

The role of the local authority is to preserve zones capable of accommodating these activities, and to ensure that the price asked is not dissuasive. It may pay for or subsidize equipping the land, and maintaining the quality of the site and the safety of access to it.

1.3.1.2. The challenge

Our analysis focuses on the case of agri-food markets which, year after year, are excluded from the borders of cities and relocated several tens of kilometers away on sites most often without rail or river links. This displacement of logistical activities is the result of land pressure, which incites to free the space for large urban development projects. This situation prevents the consolidation of upstream flows and increases the length of downstream trips made by all the clients that come daily to obtain their supplies from the agri-food market.

1.3.1.3. Case study: Montpellier agri-food market

Contrary to what has occurred in several French cities, Montpellier, a city in the south of France, decided to keep its agri-food market in the city by integrating it in an urban logistics master plan implemented at the scale of the greater city area.

The agri-food market is located on a 10 ha site and accommodates 40,000 m² of buildings, 220 companies, offset storage and producers. It delivers goods to the entire region. The City of Montpellier wanted to keep this facility as it is an instrument for developing the municipal area and an actor in local urban logistics. It reduces urban sprawl and land consumption, and it is a key element in local development. Its inclusion in the planning documents (master plan and Urban Mobility Plan) gave it a new status and new functions leading to the creation of new jobs:

– UDC (pooling of distribution for certain sectors) and the use of clean vehicles. Offset storage warehouses for retailers and SMEs in the city center;

– rental, maintenance and charging of clean utility vehicles for last-mile deliveries;

– service functions linked to urban distribution: training, business “nursery” premises, etc. Installation of selective sorting: recycling or urban waste plus waste removal;

– development of agro-food stuff processing activities;

– supply of services for wholesalers, transporters and express delivery services.
To strengthen the role of this agri-food market, the city has also implemented regulations to prohibit the most polluting transport vehicles from delivering to the city center.

**NOTE.–** The keys to success:

The influence of the local authority in ensuring the success of the project is obvious and goes beyond expectations: synergy has been generated and there is strong demand from innovative companies to set up on the site.

### 1.3.2. The Urban Distribution Center (UDC)

#### 1.3.2.1. The concept

The transit of goods via a grouping platform before delivery or after picking up is attractive and has long been considered as a means of rationalizing the urban supply chain. However, the additional cost linked to transit via this facility is often the cause for the failures observed, as the UDC is unable to generate a sufficiently large clientele to obtain the financial resources required for its survival. This is why, prior to setting up a UDC, it is vital to perform a diagnostic to evaluate the volumes that can be generated (not all types of products are eligible for transit via a UDC), the place of installation best adapted and specific local characteristics.

The objectives are variable:

– preservation of historic centers: clean vehicles and regulations aimed at encouraging or imposing transit via a UDC (Vicenza);

– dedicated to a sector of activity, such as the UDCs of Heathrow (UK) and Hammarby (Sweden);

– dedicated to pooling supplies to shopping centers (e.g. UDC of Bristol).

UDCs are adapted to areas for which supplying services is difficult (generally city centers, circumscribed according to the density of shops and the level of attendance). They are not intended for full batches, already bulked shipments, or certain categories of product (e.g. perishables, especially luxury products). However, some UDCs attempt to widen the list of receivable flows to improve their profitability. Thus, the UDC of Padua has experimented since 2016 with the delivery of fresh products and express deliveries [DOT 16], and the UDC of Cordeliers in Lyon receives both luxury products and perishable fresh foods.

They must be installed close to the city center, in accessible places, and with low rental costs, e.g. in multi-storey car parks.
Starting up a pooled UDC in a city of more than 100,000 inhabitants generally requires action from the public authorities, since the service providers, which compete with each other, rarely take the initiative to join together and exploit such a facility. This involvement by the public authority is all the more logical, as setting up a UDC generally requires restrictive measures aimed at encouraging its use.

### 1.3.2.2. Case study 1: UDC of Cordeliers (Lyon)

Covering a surface area of 300 m², this UDC is part of a space covering 1,200 m² dedicated to services linked to mobility (meeting place for car sharers and a station of self-service vehicles) on the ground floor of a public car park belonging to the City of Lyon and managed by Lyon Parc Auto (LPA). It is located on the strip of land between the two rivers running through Lyon and forming the city center, a district with a dense shopping area where space is rare and expensive.

Taking advantage of the reorganization of the car park in 2011, the city of Lyon launched the UDC project: LPA fitted the UDC and equipped it with a charging station for electric vehicles and then offered it for hire at a “logistic price”. “Deret Transporteur”, specialized in transporting luxury goods and which had been using electric trucks to serve Lyon city center since 2009, won the call for offers aimed at finding a tenant for the UDC. It set up in the premises to deliver to Lyon and the shopping centers of the greater Lyon area. However, its activity only uses the surface area of the UDC between 3 a.m. and 1 p.m., five to six days a week, hence the idea of pooling with Ooshop, a logistics provider for e-commerce in food goods. LPA reorganized the space to allow the storage of refrigerated and frozen products, and Ooshop now uses the UDC for home deliveries in the city center between 8 a.m. and 10 p.m.

At the request of LPA the two tenants “pool upstream flows”, a challenge for products with different added values, packaging and logistical organization. On leaving their platform located 23 km from Lyon, the Deret vehicles serve the Ooshop platform to retrieve products (excluding fresh and frozen products).

The result of this pooling is that the UDC is used from Monday to Saturday, its organization is optimized and its profitability is higher. In addition, the use of electric vehicles has led to Deret saving 14 tons of CO₂/year, while the negative externalities and local pollutants have been divided by more than 50. As for Ooshop, it has saved 20% on the time it takes to serve its clients from the city center due to easier parking for electric vehicles (which are smaller than traditional ones). The saving on fuel is 9%. These savings must be compared to the cost of bulk breaking of 23% and the fixed cost of occupying the UDC. Thus, political will is necessary to allow the occupation of the site at low cost.
NOTE.– The keys to success:

The UDC of Cordeliers shows an example of a “risky” experiment: pooling very different sectors regarding both their organizations and their respective clienteles. The success is due to the following combination of factors:

– a PPP with strong commitment from the public authorities (new regulations on the integration of logistic activities in car parks, restrictive measures relating to the circulation of pollutant vehicles) and a long-term strategy to duplicate this type of UDC to other sites;

– a supple and adjustable project in search of permanent improvement;

– good knowledge of urban logistics by the actors involved;

– a genuine business plan;

– an in-depth diagnostic upstream, with real-time monitoring; and

– car park management by a semi-public company that allows for action on costs that would be impossible to achieve with a private company.

1.3.2.3. Case study 2: CityLogistics (Lyon)

The originality of the CityLogistics UDC installed in the suburbs of Lyon (France) stems from two reasons: it was conceived as a network of ULSs (one UDC and several GRP) which mesh the region, and it is financed wholly by private funds. It was in operation for nearly two years, but had to close down at the end of 2016, due to poor profitability and a stock burglary that had driven clients away. Despite the fact that it failed, this model is interesting in several ways.

This UDC, very close to the urban ring road and the highways of Lyon, started operating at the beginning of 2015. Its objective was to serve two Goods Reception Points (one located in the historic center of Lyon and the other in the business district) intended to distribute and temporarily store parcels (for up to a week). The goods pooled in the UDC were then loaded in “clean” trucks (bioNGVs) to be delivered to customers, either directly, or via one of the GRP. The project also planned to make deliveries to local ULBs.

The fleet of vehicles was composed of units of different sizes, making it possible to choose the vehicle best adapted to the quantities of goods to be transported and the regulations allowing access to the area to be delivered. The CityLogistics model aimed to incorporate a river distribution service to serve districts located between the rivers Rhône and Saône and thus eliminate heavy vehicles from the city (optimization of urban deliveries in an approach to promote sustainable development). There was also a plan to set up a reverse logistics service for returned goods and waste collection aimed at the customers of the UDC.
The service which started with a clientele of three delivery services (50 rounds a week) quickly grew in size: 10 large operators and smaller transporters (a hundred rounds a week). The clientele was satisfied with the service provided (reliable information on the position of their deliveries, space saved on their bays, return management, etc.).

Despite its good performance, the company went bankrupt since the CityLogistics project had been conceived with the assumption that a restricted traffic area would be applied to the city center, which would have attracted to the UDC a large clientele of transporters and shippers unable to convert their fleets in order to be entitled to enter the city. The implementation of this restricted access area never took place and the company’s financial burdens (the withdrawal of a partner) led it to raise its prices which drove away its clientele.

NOTE.– The reasons for failure:

– a partner which withdrew its funds when the company had not yet settled for a business model;
– bad anticipation of regulation measures’ timing;
– the service was too new to cultivate real customer loyalty and the burglary scared potential users of the service;
– a clientele highly sensitive to prices; and
– the additional cost linked to bulk breaking overshadowed the system’s ecological performance.

1.3.3. Vehicle Reception Points (VRP)

1.3.3.1. The concept

VRP are a space facilitating the parking of utility vehicles intended to reduce the nuisance caused by deliveries and pickups. There are two types:

– the On-street Loading Bay (or Proximity Logistics Space) is a point where the deliverers can leave their vehicle to end the last few meters of their delivery on foot, the mode best adapted to very dense zones. This space can be equipped with handling facilities or electric three-wheeled vehicles made available to the deliverer to travel the final distance. In certain cases, the services of an assistant are used. The latter is responsible for helping the deliverer over the last few meters or for watching over the vehicles. This space can be used by residents for parking outside the times specified for delivery vehicles;
the road time-sharing space is a new type of VRP that facilitates a better organization of roads with large numbers of shops and where double parking is frequent due to the lack of available delivery spaces. According to the time of day, the road is dedicated either to the circulation of all vehicles or to the parking of delivery vehicles, whatever their size or mode of management, for a period generally limited to 30 minutes. No handling equipment or assistant is available. Barcelona was the first European city to implement this concept and an increasing number of cities are implementing it in view of ensuring that the road is shared between all its users without the need to make major investments.

Vehicle reception points are subject to time-sharing occupy a whole segment of road and can receive several types of trucks simultaneously. Suitable dimensions for a Proximity Logistics Space depend on the number of operations generated by the surrounding businesses and the configuration of the city. However, it is necessary to provide for angle parking (simplified maneuvers) for five to six utility vehicles from 7 to 10 meters long. It is also necessary to provide premises (or a vehicle) intended to store handling equipment and receive the delivery assistant.

The role of the local authority consists of offering a space for accommodating these VRP and installing clear signaling indicating who can use the space and under what conditions. It must also change the regulations accordingly and can grant advantages to the users of the equipment. The financial involvement in this type of facility for the local authority is therefore low (simple road surface marking and upright signs) except in the case of a Proximity Logistics Space for which a delivery assistant has been hired and for which technical premises are available. This may require a significant cost, although the gains expected in terms of improved service are considerable.

1.3.3.2. Case study: multi-use road (Barcelona)

To reduce the effects of higher traffic levels in the commercial center of Barcelona, the municipality introduced a new mode of road management. Five multifunctional lanes were created and signaled with variable message signs. These lanes are used from 8 a.m. to 10 a.m. and 5 p.m. to 9 p.m. for general traffic and buses, from 10 a.m. to 5 p.m. for deliveries and from 9 p.m. to 8 a.m. for residential parking.

This multi-function lane system is intended to reduce illegal and double parking, reduce the time spent searching for a parking space and optimize road space use. It has been designed by associating all the actors in urban goods delivery (municipality, transport operators, town planners, retailers and their representatives).
Quantification of goods movements performed by the City of Barcelona revealed the need for a large number of delivery areas. The multi-function lane provides a solution to the problem of parking, but it requires major investment: €0.5 million per lane to which must be added the cost of control by the police.

Variable Message Signs provide information to users regarding their rights of passage in real time (driving, parking and deliveries/pickups). When the lane is dedicated to parking or deliveries/pickups, a message signals which users are concerned.

Stronger police control has been introduced to ensure that the residents who have parked their vehicles for the night have removed them in the morning so as not to impede the road traffic (especially bus traffic).

The implementation of these lanes has proven efficient for improving traffic. Travel time has been cut by 12 to 15% and the system has been deployed progressively for new lanes.

![A street during a loading time window](image1)
![Regulation](image2)

**Figure 1.2. Barcelona multi-use roads**

**Note.**– The keys to success:

− the role of the municipality was essential (studies, investment, regulation and control);
− the police unit assigned to controlling adherence to the lane-sharing rules was strengthened; and
− a sufficiently large road network allows the introduction of this system without disturbing the rest of the traffic.
1.3.4. Goods Reception Points (GRP)

1.3.4.1. The concept

A GRP is an establishment used as a local relay. The transporter no longer goes to the client (or the client to the supplier) but to this establishment (with long opening times) where the packages are left during its rounds.

Besides relay points for e-commerce, a GRP can also be an establishment that offers a parcel reception service to its employees. This service can also include concierge services that provide a wide array of conveniences (for example, dropping off laundry bags). Finally, a GRP also includes drive-through pickup services where clients recover their products without entering the store.

This facility avoids the problem of a failed delivery made to an absent client. It can also be used as an offset storage point to eliminate storage space in stores and free them for selling goods or providing rest spaces.

Access to a GRP must be easy for both transporters and clients. In particular, it must be part of their clientele’s program of activities. One of the keys for their success is that they must form a network in the region.

1.3.4.2. Case study: Oxipio, a deported reserve

Given that approximately 30% of the surface of a store and of the working time of the staff is used for purposes of storage and stock management, in 2011 the company, Oxipio, developed a new concept of distant storage.

This service aims at allowing the storekeepers to enlarge their sales area and to re-assign their employees to sales and advice tasks thanks to the use of a storage platform located near the city center. Two complementary services are provided by Oxipio:

- A service of deported reserves dedicated to the city center storekeepers:
  - stocks are managed by the storekeepers through an Internet service (the Cloud) which allows them to place orders with suppliers, to plan returns, to ask for a delivery in the store or for the customer;
  - a 700 m² storage capacity close to the city center (less than 20-minutes bike ride from the trading center);
  - employees dedicated to the customer storekeepers who receive, check and store the goods, then prepare the orders and deliver them on request; and
  - a tailor-made approach for the customer storekeepers which also includes advice in organizational optimization.
– Last-mile distribution:

- reception of the goods on the Oxipio platform or on the customer carriers’ quay;
- constitution of the rounds according to the addresses, the time slot and the constraints of delivery; and
- drivers trained in eco-driving with vehicles adapted to the urban space (NGV vehicles and electric tricycles).

The delivery takes place one hour after the order, what is not possible with a traditional delivery by truck from a peripheral platform. This allows it to operate an average of 60 deliveries per run. Pickup rounds can take place in the afternoon. In the city of Lille, six jobs were created and more than 100 shops use this service. This offer of intelligent and sustainable urban logistics, which contributes to the protection of convenience stores, received the support of several local authorities and has already spread in Lyon and Annecy. The “Caisse des Dépôts” (financial public institution, long-term investor for the general interest and economic development of territories) invested in the company Oxipio by subscribing to a €1.2 million capital increase in September 2016 (44% of the capital). The company generated a revenue of €155,000 last year. Further to a successful first experience in Lille, the Oxipio company has spread to Lyon, Annecy and Chambéry and pursues its development in all of France today. Oxipio makes a commitment with municipalities willing to maintain the dynamism of their city center and to rationalize the urban transportation of goods in order to reduce negative externalities: congestion, impact on air quality and noise pollution.

NOTE.– The keys to success:

– good analysis of shopkeepers needs in city centers;
– investment of the “Caisse des Dépôts”, motivated by the “smart urban logistics solutions” dimension of the project, contributing to faster energetic and digital transitions; and
– support of local authorities and a public investor which saw in this concept a tool adapted for a sustainable city in economic, social and environmental terms.

1.3.5. The Urban Logistics Box (ULB)

1.3.5.1. The concept

These “boxes” can be cubicles or containers that have been fitted and brought to a site where parcels can be deposited and then recovered after entering a previously assigned code (Homeport) or they can take the form of automatic systems that
manage communication and item recovery directly (e-box and cityssimo). The ULB allows dissociating the delivery and the reception by the final recipient by doing away with the time constraints specific to Goods Reception Points. They are located in places of transit (railway stations, subway stations, shopping centers and underground car parks) to capture users within a range of 400 m (up to 20,000 people).

1.3.5.2. Case study: electronic concierge service of Sceaux (Sceaux-Shopping.com)

This is a new ULB concept, installed in Sceaux in the Paris suburbs, in 2013. The aim is to bolster local retailers threatened with disappearance due to the development of e-commerce and thus preserve the town’s economic dynamism. Another aim is to help local retailers to changeover to digital technology.

This project is being carried out by the town of Sceaux, the representatives of the retailers and artisans (Chamber of Commerce and Industry and a local association) with recourse to a service provider to transport parcels, namely the Post Office during the initial phase, and now BlueDistrib.

The town ensures the promotion of the project (preliminary surveys, communication and rental of deposit boxes). Representatives of the retailers and artisans operate the system (development and maintenance of the site, management of receipts and redistribution to the retailers). The service provider delivers to a deposit point installed at the entrance of the train station used by 600 commuters a day. The ULB now has 16 lockers. All types of products can be deposited, including packaged fresh products in refrigerated containers.

The 270 retailers, artisans and services of Sceaux can join Sceaux-Shopping by signing an e-commerce quality and sustainable development charter. Initially free, the association now invoices the retailers and artisans €100 a year to cover the management costs of the site and receipt collection, and the assistance provided to them (a part-time post).

The current service provider, BlueDistrib, is a subsidiary of the Bolloré Group which also manages the self-service car-share system, Autolib, and the self-service commercial vehicle system, Utilib. The structure housing the deposit point is also equipped with Autolib reservation terminals. The retailer can choose between depositing the parcel in the deposit point or offering to deliver to the client’s home, a service carried out by the personnel responsible for supplying the stations with self-service commercial vehicles.
The deposit points made available to Sceaux-Shopping by BlueDistrib are pooled with the other clients of the Bolloré Group (the web merchant Cdiscount). When a parcel is deposited in the deposit point, a text message is sent to the client with a code that allows them to withdraw the parcel within a period of 3 days.

Although it took a long time to get the project going and ensure that the retailers became sufficiently competent (2 years), it has met with unarguable success (an increase in the number of members, loyal clients, the unexpected result of orders to be dispatched abroad). The withdrawal of the original service provider (La Poste) and its replacement by BlueDistrib led to a change in the deposit system and organization, making it necessary to review the PPP.

**NOTE**.– The keys to success:

The Sceaux-Shopping experiment satisfies both the economic profitability and the public concern:

– maintaining the number of shops in the town and the attractiveness of the latter confronted by competition from Paris and e-commerce was a genuine collective challenge;

– the Logistic box fulfills a threefold function: territorial, economic and social development (shops are encouraged to stay and thus also the population and jobs). It becomes a kind of public service;

– the actors no longer measure its profitability only in financial terms;

– concretizing this concept revealed a strong political commitment which, given the issues, requires other measures (not only financial, but also training, information) to ensure it lasts through time; and

– the ULB manager is responsible for ensuring its financial profitability. That is why pooling a commercial mobility service (Utilib) with that of urban logistics appears to be the key for success. It is also an example of optimizing electric vehicles for hire by using them for last-mile deliveries.

**1.3.6. Mobile Urban Logistics Spaces (mULS)**

**1.3.6.1. The concept**

The cost of land in dense urban areas often limits the potential for installing ULSs, which is why projects for mobile logistics centers have emerged.
The principle is to prepare rounds in the vehicle that transports goods and not in a costly logistics center. The vehicle can be a wagon (CarGoTram) or boat (VCV-AFE) that becomes a mobile ULS carrying transport resources that will be used for last-mile deliveries.

This organization requires bulking the flows upstream for pooled collection by a single operator, organizing rounds during the circuit and carrying out rounds from each point reached. The gains expected include time-saving and environmental effects linked to both logistics reorganization and the use of sustainable modes of goods transport.

**1.3.6.2. Case study: “Vert Chez Vous au Fil de l’Eau” (VCV-AFE)**

In 2011, Vert Chez Vous proposed an innovative concept: urban deliveries by barge intended for local shops in the districts of Paris through which the Seine and canals flow. The goods are loaded at the same time as electric powered three-wheeled bikes used for last-mile deliveries and deliverers that prepare their rounds during the journey from one port to another. Thus, the barge is a floating logistics space that replaces the traditional urban logistics space, which is so difficult to find at a logistics price in dense urban areas. In addition to this financial aspect, the ambitious objectives were:

- zero CO$_2$ emissions for the distribution of goods weighing less than 30 kg (parcel delivery) in the city, transferred from road to river and electric vehicles for last-mile deliveries;

- obtain productivity at least equivalent to that obtained by a classical organization with delivery by road transport from point of origin to destination while remaining economically competitive, so the project can be deployed in other regions; and

- set up a frequency (passage of shuttles at fixed times for delivering and picking up goods in the city based on the model of passenger transport) and measure the impact.

The project has mobilized a large number of partners in different areas of competence (including prototype barges, on-board technologies, and materials and data transmission).

Distribution is ensured through three links and three different modes of transport:

- Pre-carrage: Vert Chez Vous collects the packages from different transporters using electric vehicles and consolidates them on its platform. The packages are loaded onto electric trucks with volumes of 20 m$^3$ and unloaded onto the barge moored at Issy-les-Moulineaux.
– The approach and order preparation: the barge sails down the Seine and reaches the first port. During the journey, the deliverers organize their rounds and place the packages in the containers of electric bicycles.

– Last-mile deliveries: on reaching each port, the loaded three-wheeled vehicles are transferred to the wharf at the same time as the deliverers. The round starts and ends at the following port after having served one or two districts.

**Note.**—Interest in the trial:

The experiment lasted one year and broke down prejudices regarding river transport: a mode dedicated to heavy items, bulk products, and low added value, over-long distances from one point to another. In this case, VCV-AFE targeted parcel delivery providers that transport products with high added value intended for shops in the city center, packaged in parcels to be distributed to a large number of recipients. The project proved the feasibility of preparing rounds on a waterway. The clients appreciated the frequency of the shuttles.

The environmental balance when comparing organizations before and after the experiment [LET 15] revealed that road occupancy time was only a quarter of that of traditional delivery services: 84 hours PCU versus 20 hours PCU. The distances traveled were significantly lower (from 682 to 194 km traveled by vans). The transferred freight amounted to 3–4 tons a day, corresponding to 500 parcels and 390 recipients delivered, which is lower than what is usually loaded in a barge because a large part of the surface is dedicated to the preparation of the tours and to the electric tricycles on the boat. Although the initial project included the fabrication of a hybrid prototype able to load up to 1,500 parcels (8–12 tons of goods), the experiment was performed with an old, traditional barge. The energy balance was bad: strong fuel consumption, due to the use of this standard barge. Thus, the consumption of diesel fuel by the barge was higher than that consumed by van transport and the project was abandoned. Nevertheless, even with the hybrid prototype, the lack of charging points on the quays implies the continuous functioning of the diesel engine for equipment and for life on board, which led to a negative energy balance.

This trial brought to light the conditions for ensuring a greater efficiency and profitability. Extending the experiment to include the hybrid barge and investments to equip the loading/unloading points with charging stations would require the undertaking of both public authorities and clients ready to commit themselves over a sufficiently long period to amortize such an investment.
1.4. Recommendations

Given the wide range of models falling within its scope, the ULS must be designed according to the urban context in which it must function, thereby requiring a global analysis of:

- the sector: the origin of the products, logistic organizations, the actors affected, the relevant perimeter for the final delivery service;
- its efficiency in comparison to existing logistics organizations (depending on the localization of the platforms situated upstream and the costs and volumes affected);
- the capacity to take into account current and planned modifications of the urban fabric in order to prepare for future flows; and
- the commitment to satisfy objectives for reducing environmental nuisances.

Thus, there is no “turnkey” model for a ULS. The choice of the best adapted type of facility relies on the diagnostic made of the existing situation and on proposing the principles of actions linked to the objectives targeted by public and/or private decision-makers.

At this stage, it is also advisable to envisage procedures for monitoring and evaluating ULSs. The indicators chosen could include those used to establish the diagnostic to allow ex-ante/ex-post comparisons. Regular monitoring of these indicators will make it possible, if necessary, to adjust the principles underlying the ULS so that it satisfies the objective set more efficiently.
It should be noted that these indicators include taking into account the ULS’s indirect advantages: improved traffic conditions, reduction of nuisances and better image of the city [PAT 10], all of which are elements difficult to monetize, whereas the additional cost linked to bulk breaking can be identified immediately by the ULS’s users (€1 per parcel and from €6 to €8 for a pallet). This leads to the question of distributing the costs linked to transiting via a ULS. As a whole, companies are against making any financial contribution: retailers and other customers can see no reason to pay insofar as their delivery conditions are satisfactory – even if they are aware of the associated problems. Service providers emphasize the productivity of their organization to minimize the advantage gained by concentrating deliveries into a single point and underlining the loss of direct commercial links with their clients.

Facilitating the success of a ULS therefore requires the provision of services paid for by its clients (offset storage, the collection and recycling of packaging are often proposed) and privileging flows that transit via this facility (in terms of traffic times, use of lanes reserved for public transport, etc.). This may also require tougher conditions for gaining access to the zone concerned by the ULS in such a way as to make bulk breaking more financially advantageous than direct delivery. The role of the local authority is therefore decisive for orienting behaviors towards more virtuous practices. Whatever the case, these measures must be chosen with perspicacity so as:

– not to penalize goods for which no advantage is gained by transit via a ULS (drinks, bulk deliveries to minimarkets, supermarkets, etc.);

– not to add to service costs in order to avoid penalizing shops in the city center vis-à-vis shops on the outskirts; and

– not to impose counterproductive practices that could cause conflicts between actors.

1.5. Conclusion

The response to the challenges of sustainable urban logistics requires the development of practices based on sharing: sharing spaces, premises, uses, infrastructures, transport capacities, etc. Urban Logistics Spaces provide interesting solutions to this end.

The role of the local authority is vital for encouraging pooling. First, from the standpoint of exemplarity: it is advisable to subject flows linked to public services to the same rules as those applicable to the flows of the private sector. Second, from the standpoint of stability: the policies implemented must be upheld in the long term to provide private actors with good visibility so they can invest without fear. Finally, from the standpoint of stimulus: public action has to facilitate private initiatives, by
bringing together the different actors involved, by preserving land for logistics and by introducing adapted regulations.

This role of the local authority can in certain cases include reimbursable subsidies. However, the latter should be limited in time. Experience has shown that private initiatives are the most efficient and, therefore, should be promoted.

The term “Urban Logistics Space” covers a wide variety of facilities, each of which has its use and scope of application in order to address pollution and congestion caused by urban goods movements. The UDC is not the only model, as it has been attempted in many European countries, with no success. The ULS-based approach widens the scope, and it is up to each city to select the best adapted to its context and the objectives pursued. As case studies have shown, each ULS corresponds to a specific need, is flexible, and is scalable. In a given territory, it is likely that this model will be an assembly of several types of ULS, organized in network to optimize urban goods deliveries by taking into account the strategies specific to the different districts of the city (see CityLogistics, MODUM project).

1.6. Bibliography


