

### **Summarized in 300 words**

Great first in France since June 2005, the Urban Community of Lyon in partnership with the owner of urban furniture JCDecaux brought into service in Lyon and in Villeurbanne (600000 inhabitants) a park of 2 000 bicycles in hiring distributed on nearly 200 distant stations from approximately 300 Mr. Each station is made up of a terminal of access to the service and 10 to 40 bornettes where the bicycles are parked. Several shuttles traverse the city to balance the number of bicycles in each station.

The success of the service is due to the facility of its access, with a bank card directly, or an annual subscription, p **our a moderate sum,** each one can go from a point to the other of the en.vélo city by possibly combining its way with the subway or the tram.

Simple, original, practical and elaborate in depth, this new service " velo' V " was as of its launching a real success. **At the end of 2005, one counts nearly 40 000 subscribers and more than 10000 hirings each day – more than 3 million traversed km.** This new service is regarded as a means of individual public transport, the scale of the project can constitute a true response to the practice of the urban bicycle and encourages other cities to propose a similar service.

We propose to present:

The offer of service - the organization of the electric fluxes from one pole to another, the dimensioning of the stations according to these flows and adequacy of the service

The request of the users - starting from the first results of our investigations, we will in particular endeavour to look through the whole of the uses (leisures, work) if there were transfers of a mode to another or many complementarities of modes.

### **In 15 words**

system " velo' V " of hiring of 2000 bicycles in Lyon and Villeurbanne (France) on nearly 200 points and from here 2008, we will have a park of 4000 divided bicycles.

## " Displacements, we change era!"

Such is the ambition of Greater Lyon which wants to support the development of the soft modes in displacements of every days.

Voted in July the 2003 new soft modes plan is articulated around three complementary approaches:

- **services of parking and provision of bicycles** on public space
- **cycle installations and pedestrians** with about thirty kilometers of protected axes of which one of the most important projects is that of the reconquest of the edges of the Rhone with a park of 6 km on left bank in full heart of the city
- **the communication** near the public to support this new policy

The bet of this new policy is to carry out of face these three approaches. The Greater Lyon in partnership with the owner of urban furniture JCDecaux Company<sup>1</sup> has equipped in particular the centre of the agglomeration (Lyon and Villeurbanne) of the greatest service of hiring of bicycles in the world, "**Velo' V**":

2 000 bicycles on nearly 200 points installed between May and September 2005 and distant from approximately 300 meters from/to each other.

Each station is made up of a terminal of access to the service and 10 to 40 small boundaries where the bicycles are parked. Each bicycle can be borrowed on a station, then restored on another, thus the poles of dwelling, work, leisure all were equipped, which makes it possible to the inhabitants to carry out a complete displacement without having to restore the bicycle at the initial point of hiring. It is indeed the great number of points of hiring which makes the originality of this service, but it does not guarantee the natural distribution of it, therefore several shuttles traverse the city to balance the number of bicycles in each station.

The success of the service is due to the facility of its access, with a bank card directly, or an annual subscription, for a moderate sum, each one can go from a point of the city to the other by bicycle, combining its way with the subway or the tram.

Simple, original, practical and elaborate in depth with a bicycle of quality, this new service "velo' V" was as of its launching a real success.

With nearly 40 000 subscribers at the end of 2005, on average 12 000 hirings per day and nearly 40000 kilometers traversed certain days, this new service exceeds by far all the data observed in this field. The service Velo' V is regarded as a public transport with whole share whose advantage is to move only and freely.

The scale of the project by its width constitutes a true response to the practice of the bicycle downtown for all the uses.

Indeed, after a few months of observation, we can draw the first practices thanks to the time at the quantitative information resulting from the information processing system of JCDecaux and at the data of use more qualitative resulting exits of a survey carried out in October 2005 out of 13 Velo'V stations distributed to Lyon and Villeurbanne near 1 500 cyclists using velo' V.

### 1) Velo' V – which new practices?

The users of Velo'V are cyclists beginners since 96% of them did not use a bicycle downtown before – the majority of them use velo'V close to on their premises since they live in Lyon and Villeurbanne (86%), they traverse distances lower than 3 km most of the time.

The users of Velo'V are young, more half of them have less than 30 years

The practice is mixed, but there are a little more men (60%) than women.

35% are frameworks or resulting from liberal professions

32% are students

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<sup>1</sup> On the basis of schedule of conditions of Greater Lyon which made it possible to define the methods of the service of hiring of bicycles the JCDecaux company developed a product called "cyclocity". This product is not offered to date that within the framework of a contract of urban furniture where publicity compensates for the costs of this service. During the renewal of contract of urban furniture in 2004, the Greater Lyon mentioned that such a service of hiring of bicycles is set up. The recipient of this new JCDecaux contract dealt with the manufacture of the bicycles, the cost of the installations of stations, the maintenance of the system and his correct operation. The receipts of this service are collected by the person receiving benefits and transferred to the Greater Lyon.

These data consolidate main tendencies of a population tends to adopt new products or relevant services by their side practical and economic, attractive, ludic, good for the health of all, ecological for our planet.

However, in the majority of the French cities, mobility by bicycle continues to drop. In Lyon, at the time of the last investigation about displacements in 1995, the share of the bicycle was among 1,3%, that of the walk of 32%. This tendency seems to inflect with the arrival of Velo' V, the first tendencies are as follows:

### ***From collective transport to Vélo'V***

For half of them, the bicycle comes to replace collective transport without eliminating the use for certain longer or sloping ways from it.

50% of them remains subscribers with public transport, 25% use tickets and 25% preferred Velo' V.

65% carry out a way in public transport apart from the ways carried out by bicycle.

The intermodality between collective transport and Velo' V is weak, only 10% of the people use the two modes on the same way. That is explained by a relatively weak extent of Lyon and Villeurbanne accompanied by a density of the activities, it becomes faster then to carry out the whole of the way by bicycle without resorting to the subway – the breaking bulk between two modes of displacements lengthen from 5 to 10 minutes a way and that is justified only when the subway enables you to traverse a long distance quickly.

The installation of the Velo'V stations beside the tram and subway stations has currently more one role of location and alternative choice than a role of intermodality.

### ***From walk to Vélo'V***

37% of the users became " fast pedestrians " by discovering the effectiveness of the bicycle for short distances (< 3km) – We can note on this subject that the majority of the towns of Northern Europe which have a high practice of the bicycle (30% of modal share) have a practice of walk weaker than in France (20% instead of 30%)

### ***From Bicycle to Vélo'V***

Only 4% of them, used their own bicycle and passed to velo'V for reasons of simpler access to the velo'V in the street than in a difficult personal parking place, the quality of Velo'V sometimes justified its choice compared to that less of its personal bicycle.

### ***New urban cyclists***

Since only 4% of the people used their own bicycle downtown we thus have almost only new urban cyclists who discover that the city is less dangerous than they imagined.

### ***From car to Vélo'V***

7% of the users of Vélo'V used car before

It is the transfer more awaited and there remains very interesting in comparison with the number of hirings to which he applies.

For 15000 hirings veloV, that avoids each day 1000 displacements by car and approximately 3000 km traversed. Over one year, one could thus avoid the emission of approximately 219 tons<sup>2</sup> of CO<sub>2</sub><sup>3</sup>, and 2% of the users would not have moved if it had not used Velo'V

### ***Vélo'V, in week, in week end, all the year***

The significant number of Vélo'V stations in the city gives the possibility of taking a bicycle close to at home to park it at the arrival. It is thus noted that there are very few displacements " in loop " where we bring back the bicycle to the same station.

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<sup>2</sup> For 3000 km X 365 days = 1 095 000 km and an average of emission CO<sub>2</sub> of 200 gr/km that is to say 0,2 kg X 1 095 000 km = 219 000 kg or 219 tons

<sup>3</sup> the protocol of Kyoto defined the quantities of emissions (– 8 % for the European countries) in horizon 2008-2012 and the six gases concerned, whose CO<sub>2</sub> is the main thing.

France for its part was committed not emitting, into 2010, more gas for purpose of greenhouse than it did not emit any in 1990, that is to say 144 equivalent million tons carbon

The grid of the stations the every 300 to 500 meters made it possible to develop the use of this service for the whole of the traffic motivations for work and leisures.

### **In week, pendular displacements**

Thus in week : 73% of displacements are ways between the residence and work or the studies  
16% of displacements are related to the leisures.  
We observe on the curve of use one day of week three peaks : one at 8 o'clock in the morning for the departure to work, one at 12-13 o'clock for the lunch, and an another at 16 - 19 o'clock for the return of work.  
The spreading out of the schedules the evening is characteristic for all the modes of displacement.

A FIGURE ALONE

These tendencies are very interesting because the use of the bicycle at the peak hours in the week makes it possible to balance flows.

### **Saturday, displacements for the purchases and the leisures**

33% of displacements relate to work and 62% the purchases or the leisures.

2 FIGURES

On Saturday, the use of the bicycle really starts around 10 o'clock in the morning, it regularly increases up to 16 o'clock, then it decreases up to 20 o'clock to remain present until midnight.  
We observe approximately 1 000 hirings during the night (November). In summer, we reached 3 000 hirings during the night of the week end.

Sunday, the curve of use is close to that of Saturday, the reasons are of course related to the leisures

The image of the bicycle only related to the leisures thus changes with VeloV whereas this transition between bicycle-leisures and bicycle-utility is always awaited in the majority from the French cities.

### **Velo'V, a sure and visible parking without theft risk**

The parking of the bicycles in a way visible and protected on public space has several advantages.  
That gives access very quickly to the bicycle when the station is near our residence. In the old habitat, the bicycle parks are often non-existent, Velo' V becomes a perfect solution then to have a bicycle.  
The bicycles are firmly fixed on the little boundaries and very few flights were observed, moreover the theft risk on the station is assumed by the JCDecaux Company and not by the user.

### **Velo'V, an effect of drive**

For 5 years, we have seen the number of cyclists to increase by 50 % on the points of counting located at the center of the agglomeration and this progression accelerates while passing to + 20% between 2004 and 2005 with Velo'V because that influences the total use of the bicycle on Lyon and Villeurbanne.

In comparison with the number of displacements carried out by bicycle in Lyon and Villeurbanne (approximately 16 000 according to investigation of 1995<sup>4</sup>), the new displacements carried out with Vélo'V represent almost a progression of 100% per 15 000 VéloV hirings per day.

All these new cyclists found in Vélo' V a means of displacement more adapted than their car, or than their way in the bus or the subway, or than the walking, or simply that made it possible to move instead of remaining at home

Vélo'V is a new choice of displacement to whole share.

### **Vélo' V in figures**<sup>5</sup>

Vélo' V, is 36 000 customers including 27 000 subscribers (97% of Greater Lyon); between 1 400 and 1 500 operational bicycles, on a total park of 2 000, and 1 000 bicycles rolling at one moment T; 173 open stations including/understanding 3 050 small terminals.

The number of users per day go up to 16 623. A day of a normal week is almost 15 500 hirings in the course by day and 10 000 on Sunday.

It is 2,5 million kilometers traversed at the end of October since the beginning, 2,6 km on average per way. Lasted the average of loan is of 17 min, 70% of the ways last less a quarter of an hour, and 93% m less half an hour, and each bicycle turns on average 12 times each day.

The peak of Vélo'V-going is between 17 and 19 o'clock. But the activity by night remains significant : for example on Sunday October 23 th at 8 o'clock, Vélo'V had recorded more than 1200 hirings

The "Part-Dieu Station" is the N° 1 for the hiring : more than 2 650 hirings per week (semi-Nov.)

And the "Opera station" is N° 1 in term of a number of bicycle rotations since each small boundary is used 400 times per week – the station includes 22 small boundaries (semi-November) – one day numbers 4 434 hirings over one week mid-November 2005.

### **Vélo'V, an accessible and quasi-free service**

The success of the service is due to the facility of its access, with a bank card directly, or an annual subscription, for a moderate sum (first half an hour is free) each one can go from a point to the other point of the city by possibly combining its way with the subway or the tram.

This is one of the reasons of the big succès.

The users questioned have called the service " practical, ecologic and economic ".

### **the city differently**<sup>6</sup>

To roll on Vélo' V, it is to use an individual public transport, " people feel legitimate on Vélo' V ". it is not thus any more the exception, the use reserved for a curious minority, it became a standard " people are good aware when they are on a Vélo' V ".

### **The bicycle, by changing color, changed image. It belongs to the urban decoration**

The bicycle makes the city more open, accessible to all : those which did not come downtown, because a ticket of urban transportation or to take its own car is too expensive can now do it, and without feeling " marginal ".

The effects of this more open town planning from now on only start to be foreseen.

Environment downtown changes, that gives a side more relaxed, public space is shared better, and one also speaks about the " fast pedestrian ", to indicate this art which knows the urban cyclists well to make easily their ways. The fast pedestrian is not only a motorist or a user of the public transport which are put at the bicycle, it can also be a pedestrian who converts with the bicycle.

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<sup>4</sup> according to the investigation spares of 1995 the modal shares of the Lyons agglomeration are: convey 53% - TC 14% - bicycles 1,3 % - walk 32 % - there is 1 800 000 displacements on the whole per day on Lyon and Villeurbanne

<sup>5</sup> In November 2005

<sup>6</sup> Interview of Mr. Vesco – vice-president of LARGE LYON, in charge of the policy soft modes

## **2) - The offer of service, the organization of the fluxes of a pole with another, the dimensioning of the stations according to flows and adequacy of the service**

### **Method of establishment**

The Velo'V stations are installed according to two criterias related to the urban environment, the density of activity and the density of the population.

Certain places cumulate both criterias, we called them " strong points "

the strong points have a particular functionality dependent on the reason for displacement and correspond to a strong frequency of use. They are in particular the intermodal points or poles exchanges and folding back (stations and principal stations of urban public transport), the notorious points (places and places of patrimonial interest), the poles of public utility or cultural and sporting equipment (town halls, museums, cinemas, swimming pools, stadiums, sports grounds), the poles of companies, the poles of higher education, the major poles of purchase. The stations resulting from these strong points can be with less than 300 meters. one of the other.

Other places are either of the poles of activity, or poles of population, we called them " points of grid "

the points of grid make it possible to connect the strong points between them on the basis of the inhabitant. The stations resulting from this grid are to approximately 300 meters from/to each other and constitute as well as a stop of bus, a means of taking or of bringing back the bicycle to more close to the destination.

The dimensioning and the positioning of the stations were then elaborate according to this typology.

The number of fasteners (small boundaries) to park the bicycles is higher than the number of bicycles in order to manage the fluctuations, for 2000 bicycles we have 3 000 small boundaries (points of fastener)

Finally the stations were installed either on the park cars places, often along the pavement, or on public space (pavement or place).

The results in term of flow – which adequacies can one observe ?

We observe several operating modes which one can bring closer to described typology.

### **The Velo' V stations installed in zone of activity and strong population**

When the density of activities and population is strong, the stations function throughout the day and are controlled partly because the number of hirings and the number of returns balance.

The number of weekly hirings is in November, between 8 and 10 000 hirings on the stations of the centre town and around 11 000 hirings in station of share God.

However flows on these stations are very tended and the inadequacies can be very penalizing, in particular in a station, when the Vélo'V station is full and that you have a train to take.

the Velo' V stations installed in zone of economic activity

When the stations are installed on spot of strong density of activities without there being poles of dwelling, the regulation is difficult because we have significant " entering " the morning and "outgoing " pendular flows the evening.

The Velo' V stations installed in zone of habitat

When the stations are installed on spot of strong density of population without there being economic activities, we have significant pendular flows of the residence towards the pole of activities the morning.

The Velo' V stations installed in bottom of the slopes or on the top of a hill

When the stations are installed in bottom of the slopes or top of hill, we have downward flows the morning and flows of storage in bottom the evening.

Which assumptions can one emit and which solutions can one bring?

The impact of these entering or outgoing movements involve the fact that the Vélo'V stations are either full, or either empty. A regulation at any hour of the day and in particular late on the evening remains difficult from a logistic point of view and paradoxical from an environmental point of view, because the shuttles of distribution cannot contribute to the problems of circulation which one tries to limit with the bicycles.

To balance flows and to know the availability of the bicycles, we either multiplied the number of Vélo'V stations at the crucial points, or increased the stations where we had sufficient public space. Thus the stations in the proximity one of the other are coordinated by group of four and station limits it indicates the number of bicycles or places available in a radius of 300 meters.

In 2006, some luminous and dynamic panels will post the state of availability of the stations in a number of bicycles and a number of free places.

For better controlling these flows, some evolutions are envisaged by multiplying the stations of arrival of the bottom of the slopes, by installing stations with semi-slopes, by considering schedules of restocking of the bicycles to make the system more reliable for the users.

Velo' V will remain, despite everything the possible adjustments, a service of individual displacement which can of nothing compete with a mode of collective displacement when the generating poles are very significant.

Velo' V is a prototype " size natural " of hiring of divided bicycles, we work out the rules of operation of them by as well as possible bringing us closer the behaviours of the users. It is what makes its richness of it, it is also what makes its difficulty of it.

Appendices:

Chart of the establishments Velo' V

Flux plot residence-work

282 000 credits on Lyon-Villeurbanne of which:

- 158 000 are resident on LV (56%)
- 80 000 are resident on the remainder of the GL (28%)
- 44 000 are resident except GL (16%)

chart with density of population

chart density of the activities on Lyon and Villeurbanne