

Measure title: **Innovative multimodal PT contracts, services and electronic ticketing in Toulouse**

City: **TOULOUSE**

Project: **MOBILIS**

Measure number: **7.1**

A Introduction

Based on an innovative interoperability chart between the different public transport authorities, Toulouse aims to totally renew and improve its ticketing and tariff system. Electronic support and multimodal pricing should encourage an increased use of the public transport services and provoke multimodal behaviour.



A1 Objectives

The measure objectives are:

- **Objective 1** Establish an interoperability chart between the different PT networks' ticketing system and apply it for the development of multimodal contracts – *objective partly postponed due to the decision of the other PT authority to develop their own ticketing system for 2009, whatever an important cooperative work has already started to define the interoperability conditions of these systems;*
- **Objective 2** Realize a marketing study and take it into account a certain flexibility for the development of new type of services, that will be developed in the future (including back-office treatment) and for the redefinition of the whole PT contracts offer – *objective extended to the analysis of the whole users behaviour for the PT journey / PT contract use ;*
- **Objective 3** Develop and implement inventive PT contracts targeted to specific user groups and exploiting innovative functions proposed by the new ticketing systems – *objective mainly focused on the demonstration of the ACTIVEO product in relation to the conclusion of the marketing study ;*
- **Objective 4** Create a new mobility card, integrating new type of services (front-office & back-office) – *objective replaced for strategic reason by the creation of an anonymous card ;*
- **Objective 5** Develop an electronic purse and multi-service support (including transport) for schools – *objective modified in the way that the electronic purse will not be integrated for technical / administrative reason ;*
- **Objective 6** Develop and promote a new integrated offer: car parks and public transports targeting residential inhabitants of the city centre – *objective modified due to the technical feasibility and strategic reason issued from the marketing study ;*

- **Objective 7** Develop an integrated fare product between motorways frequent users and PT – *objective modified due to the technical feasibility and strategic reason issued from the marketing study* ;
- **Objective 8** Push forward the P&R infrastructures, multimodal behaviours and reduce the traffic in the city centre – *objective modified due to the technical feasibility and strategic reason issued from the marketing study*.

A2 Description

Contextual information :

The Toulouse urban PT network was one of the 1st equipped in France, in 1992, with a multimodal ticketing system. The system was based on a magnetic system (ISO ticket), all data were centralised. Actually with the same ticket, users can use bus network, the metro, the P&R (free for PT users), but have also access to 1 railway line (Line C), transport on demand were previously able to rent a bike (renting service proposed by Tisséo that stopped in the early 2008).

The main objectives reached were to reduce fraud and improve our knowledge about the PT network (producing statistic). In this the fraud rate is actually about : 3.5 % - one of the lowest in France - mainly due to a specific policy associated with the ticketing system like the obligation to enter into the bus by the front door (also named in France “montée à la toulousaine”).

The system needed to be renewed by 2006 with a contact-less ticketing system based on the European and ISO standard with the same goals: an interoperable system with a high level of reliability, able to contend with fraud and offering new opportunities in transport services. The development of the new urban PT ticketing system started at the end of 2004 (the definition of it had already begun for many months – the call for tender was closed in the middle of June 2004). The new system was installed in June 2007 and the contactless Carte PASTEL was launched and distributed to more than 300.000 users.

One of the reasons of the contactless choice was to be able to propose new type of products, especially for the multimodal development. This means the interoperability between the different PT networks' system has to be developed. A cooperative work has started in the middle of 2003 in order to develop what is locally called the interoperability chart that has been signed by the 3 PT authorities that are the Region Midi-Pyrénées, the County of Haute-Garonne and Tisséo-SMTC.

Initially, the number of PT users travelling with an annual or monthly contract was very low. The attractive price of these contracts doesn't affect this issue, and it was necessary to analyse in detail the situation and state of the impact of the new contactless PASTEL card. Indeed, it is acknowledged that by changing 'occasional' users in 'frequent' users we can change the modal share of private cars in favour of the PT share.

Within the development of this new PT ticketing system, the aim of the PT operator and authority was to propose new types of PT products and develop innovative integrated / combined tickets to final users. This work was done through the result of marketing analysis, communication and awareness actions, changing the users' behaviour, and increasing the PT use.

One of the other targets was the integration of new services on the PT smart card (development of a multi-services card) and the integration of PT application, with dedicated services card for students (access to the restaurant, the library...). This last demonstration was planed in relation with the LYCEODUC experimentation that has been launched in 1989 through the development of an experimental cyber-school using new technologies especially based on the smart cards standards (CALYPSO). However, it hasn't been possible to develop this multi-service card and this part is not developed in the last part of this document.

Expected realisation and analysis :

Application of the interoperability chart for the whole regional PT systems :

- Define the interoperability chart of the ticketing system at the regional level.
- Implement this chart in the new ticketing system.
- Define common back-office and front-office procedures between PT operators.
- Define dedicated technical requirement / functionalities and implement them to permit by 2010, to have an interoperable ticketing system and permit the development and the treatment of multimodal PT contract.
- Demonstrate the interoperability of systems through the development of multimodal PT contracts that will be defined together with the respective PT authorities and targeted to 1000 PT users at the regional level.

This work, called "*Interoperability*", in the following was done with the support of the Region of Midi-Pyrénées, the Council of Haute-Garonne and the SNCF. The development of the ticketing systems by these partners was postponed, and is scheduled in 2009. It was so decided that the multimodal contract will be developed for the second half of 2009. No demonstration were so possible within the MOBILIS project, either if the first common tests have been successfully passed by the end of 2008, permitting by the way the possibility for a Tisséo "clients" to use his PASTEL card to buy a Regional contract and its reciprocity.

Realisation of an overall analysis of the urban Public Transport fare system and of the impact of the new contactless PASTEL card introduced within the new ticketing system :

- The main aim of this major marketing analysis that was realized within CIVITAS-MOBILIS was to understand the behavior of the final users towards the PT fares, in order to understand their consuming logic and behavior in relation to their mobility needs and their socio-economic profile. It has permitted to produce :
 - a detailed segmentation of the PT users that permits to identify the different level of needs for the most representative parts of the population;
 - a list of proposals in terms of PT fares and tariffs in order to increase the use of PT and to develop the PT occasional users loyalty;
 - an identification of the niches and expected products / fares that will increase the financial income of the PT network;
 - a model that will permit to estimate the impact of any modification of the PT fare and of associated tariffs.
- This marketing study was based on a major consultation of end-users and non-users :
 - qualitative enquiry based on the consultation of 6 specific users groups
 - quantitative enquiry based on the consultation of 3.800 frequent and occasional PT users and 400 non-users.
- Definition of a pluriannual action plan issued from the marketing analysis statement in order to plan the evolution of the PT fare system, taking into account the final users needs, the income preoccupation and the PT use development. The application of this action plan will be done out of the CIVITAS-MOBILIS time schedule, but its definition is considered as one of the most important local output of the project.

The results and the information drawn from this marketing study are presented in this document. It is one of the main analyses performed on the Tisséo clientele which are quite applicable to other public transport networks, insofar as they reflect the general expectations of the PT clientele. It is however true that that the format of the evaluation sheet is not really adapted to this type of evaluation insofar as it is more an evaluation of behaviour than of a set of measurements collected after the implementation of an action.

Demonstration of innovative PT fare and concepts in relation with the conclusion of the marketing study conclusions :

- In the same time, following the overall recommendations extracted from the global analysis, some specific analysis have been carried out, followed by different demonstrations in order to assess some innovative products or functionalities of the new ticketing system with the view to integrate them in the global pricing scheme of the PT network. These analysis / demonstrations were focused on the 6 following themes :
 - Anonymous smart cards development, with an impersonal PT subscription. The demonstration was concerning a panel of 100 users, while 40.000 anonymous cards will be distributed in the first stage of the demonstration.
 - Dedicated tariff(s) for the participants to a commuter plan approach. The demonstration was concerning between 500 and 1.000 commuters of identified partners societies.
 - New forms of payment / subscription (using Internet and automatic payment...). The demonstration will concern the whole PT network.
 - Integrated fare between PT and highways. The demonstration was oriented to the commuters or occasional users (living outside the Toulouse conurbation) and was supposed to concern around 200 persons – *objective modified due to the technical feasibility and strategic reason issued from the marketing study.*
 - Integrated fare between PT and car parks. The demonstration was oriented to the residential clients and was supposed to concern around 200 persons – *objective modified due to the technical feasibility and strategic reason issued from the marketing study.*
 - Integration of the PT contract in a multi-service smart cards (LYCEODUC). The demonstration was to be done in the Lycée of Tournefeuille (neighbour city of Toulouse) and to address 1.200 students – *objective modified due to the local partner change of interest.*

The realization of these pilot experimentations were depending on the conclusion of the global marketing study. The choice and the schedule of the measure to be developed, was done taking into account the technical and operational feasibility, the marketing relevance.

At the end, the present document come back on :

- The overall results measured within the global marketing study;
- The anonymous smart card concept that has been concretely tested;
- The experimentation of the dedicated tariff to the participant of commuter plan that has been concretely tested;
- The main other results stated within the whole marketing study and experimentations.

As explained, previously, some demonstrations have not been realised for strategic or for priority reasons (regarding the schedule of local implementations / projects).

B Measure implementation

B1 Innovative aspects

Innovative Aspects:

- New conceptual approach
- Use of new technology
- New organisational arrangements

The innovative aspects of the measure are:

Innovative aspect 1 – interoperable ticketing systems

The commitment to achieve between PT authorities and PT operators at the regional level for implementing interoperable ticketing systems will permit to create multimodal contract and simplify the use of PT. Such kind of commitment is not so usual at the national level and considered as one of the main issue to achieve at the political level, in order to develop PT use and intermodality. This should be done by implementing within the development of the new ticketing system the interoperability French standards: INTERCODE (contact less support) & INTERBOB (back office management).

Innovative aspect 2 – deployment of the contact-less system at the conurbation level

Either if the contact-less technology exists for many years, one of the Toulouse project's specificity was the fact that first of all, it was concerning the whole customers / the whole PT network and that secondly, there was already one ticketing system in place. Though, one of the most important difficulty of this project was the shift from the old system to the new system in a very limited time, and the preparation of the distribution of the new PASTEL Card.

Innovative aspect 3 – creation of innovative contracts using the contactless cards' functionalities

The exploitation of the marketing analysis results and the experience acquired with the creation of innovative PT contracts and concept (anonymous card for PT) would be disseminated in order to contribute to the PT modernisation and its way of use.

B2 Situation before CIVITAS

Toulouse's PT network is equipped since 1992 with an integrated ticketing system valid for the whole bus and subway network. The addition of the line B in 2007 accelerated the renewal of this ticketing system whose obsolescence had been proved. This operation had been programmed before the starting of the project for a commissioning at the end of 2006 (before the addition of line B).

Before the launching of teleticketing, the share of subscribers was rather low (less than 1 trip out of 4 / 24 % of the earnings). On the other hand, the occasional tickets were among those most used (more than 1 trip out of 3 / 76% of the earnings). The other tickets were those used by the beneficiaries of free travel: senior citizens, job seekers and students (40% of the trips). The addition of line B as well as the new PASTEL card (related to the technology selected for the renewal of the ticketing system) should allow reversing this trend.

Besides, one of the motivations of the choice of the technology without contact, apart from simplifying the validation by the user, was to allow the implementation of ticketing interoperability with the other PT networks of the Toulouse region as well as new products / services intended for the clientele of the Tisséo network, thus contributing to the modernization of the image of the Toulouse PT network.

B3 Actual implementation of the measure

The ticketing system was commissioned in June 2007. More than 300 000 PASTEL cards were issued. The specifications regarding interoperability had been developed but their tests could not be completely performed (the Region and the Department did not have their own systems).

The marketing study was performed as foreseen. On the other hand, in view of these conclusions and especially of the change in priorities for Tisséo as well as for some partners concerned, only the following products were really set up and evaluated:

- Anonymous smart cards development, with an impersonal PT subscription;
- Dedicated tariff(s) for the participants of a commuter plan approach.

More recently (outside the MOBILIS project) the work for interoperability of the ticketing systems was resumed and allowed testing and setting up the first functions in relation with the developments performed by the Region and the SNCF notably.

B4 Deviations from the original plan

This measure had to be modified for the following reasons:

- Delay in the development and the installation of the new ticketing system from November 2006 to June 2007;
- Decision of the Region and of the County to delay the renewing of their own ticketing system;
- The wide extension of the P&R offer and the apparition of structural / organisational problem at the level of the PT operator for their efficient exploitation;
- Local political willingness to analyse in-depth the users practice towards the new ticketing system and especially towards the creation of the PASTEL card which has been developed in the frame of a major extension of the PT network with the arrival of the 2nd metro lane.

Following this last point, the work methodology and the overall objectives of the measure have been reviewed focusing more on the in-depth analysis of the whole final users' behaviour in term of travel and in term of PT contract use. A major marketing study has then been launched, in order to analyse the global impact of the PASTEL card and understand the way people are using the Tisséo network and contracts. Some specific demonstrations of innovative PT products have been undertaken following the results of this analysis (obtained in February 2008). Some others have been cancelled as there were not considered as relevant regarding the marketing study conclusion.

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

No.	Measure title	Relation
6.1.T	Definition and implementation of a new parking management policy in Toulouse	These 2 measures are directly linked, the integrated pricing (task 2) being considered as a dedicated measure for the new car parks policy, especially for the residential user.
8.3.T	Improving the accessibility of PT services in Toulouse.	The integration of every type of mobility services would be done within the development of the Mobility Card.
9.1.T & 9.2.T	Promotion of car-pooling and integration with PT services in Toulouse Implementation of a new car-sharing service linked to PT services in Toulouse.	The integration of every type of mobility services would be done within the development of the Mobility Card.
11.1.T	Awareness campaign for mobility behaviours & ideas change in Toulouse.	The promotion of the new Mobility Card (and others innovative contracts) to create would be done through the individualised marketing action.
11.2.T	Promotion of bicycle use and integration with PT services in Toulouse.	The integration of every type of mobility services would be done within the development of the Mobility Card.
11.4.T	Commuter and school mobility plans in Toulouse	The definition of a specific PT contract for the commuters working in a society that has developed a commuter plan will directly affect the work to be done in this measure.

C Evaluation – methodology and results

C1 Measurement methodology

C1.1 Methodology used for the global marketing study

As a recall, the objectives of this marketing study were the following:

- To better understand the characteristics of the network clientele, its using and tariff behavior and to understand notably the reasons for which the sales of single tickets to occasional clients was so high,
- To evaluate the suitability of the offer for the demand, notably by indicating the segments of clientele to be explored because they showed growth potential,
- To study the ways for winning over and increasing client loyalty, finally allowing an increase of the earnings,
- To explore the behavior and the expectations in order to define new tariff concepts which will contribute to these objectives.

To meet these expectations, it was necessary to go back to the general determining principles for the use of public transport by exploring and quantifying the modal practices, including that of non-clients, their priority expectations, the obstacles for use, the wishes for change, etc. and the representations underlying them and, this by targeted clients.

This analysis presupposed a work of segmentation of the actual and potential clientele which is simultaneously pertinent and operational, in order to be able to propose a consistent pricing strategy for each segment with a suitable marketing approach.

To perform this general evaluation, it was necessary to perform:

- a fine analysis of the existing system and the past trends,
- a benchmarking between networks of the pricing policies and their efficiency,
- a long-term statistical and econometric exploration of the sales and earnings data of the Toulouse network,
- a large quantitative enquiry with the clientele (sample sufficiently large to provide usable data per ticket for about a dozen tickets) and by segment of the clientele,
- a specific enquiry with non-clients,
- a qualitative enquiry to grasp and well understand the behavior of clients and be better able to foresee their ability to change their modal habits.

The study procedure was thus broken down into 5 stages:

- The first stage was devoted to a descriptive analysis of the pricing and a comparison of the pricing and its performances with a sample of ten French networks of a size comparable to the Tisséo network and three foreign networks.
- The second stage was devoted to a statistical and econometric quantitative analysis of the development of sales, frequentation and earnings of the overall network and by type of ticket over the last fourteen years.

These first two stages allowed framing the pricing problem in its time dimension and with respect to the practices and behaviors in this sector of activity.

- The third stage was devoted to the quantitative enquiry which had two main objectives:
 - As to the actual clients of the network, it was a question of deciphering the relations between mobility behavior and the behavior of purchasing and using tickets (including free tickets), identifying the inhibitions for the purchase of some tickets, the inhibitions for a more intensive use of the network, the specific expectations of some segments of the clientele and their reactions with respect to the various approaches for changing the pricing and the social and economical characteristics of these clients. One of the results expected from the enquiry was also to be able to quantify each of the segments of the clientele in order to estimate the rate of penetration with respect to the residing population and the market share with respect to the volume of trips made using mechanized modes, within the PTU.
 - Concerning non-clients, it was a question of identifying the various inhibitions to the use of the network where there is a pertinent public transport offer with respect to the private car, quantifying the level of interest for a possible change in the mode and determining, among the inhibiting or inciting factors, the role which could be played by the pricing.
- The fourth stage was devoted to setting up and analyzing six group meetings with clients in order to explore more in detail the explanatory factors for user behavior and pricing and to work with these customers on their expectations and the pricing innovations which one wishes to propose to them.
- The fifth stage was devoted to a reflection on the diagnosis made through these various analyses, the definition of the objectives to be attained by clientele target and the determination of the strategies to be implemented to attain them.

It must be noted that the general marketing study, notably the enquiries, were also used to prepare several experimental approaches and notably the two demonstrations described in this report.

C1.2 Methodology used for the anonymous smart cards

Tisséo wished to test an impersonal (anonymous) rechargeable smart card in order to check the pertinence of this concept knowing that all the smart cards currently issued are rechargeable nominative and reserved to their bearer who alone is authorized to use it to access the network, whatever the type of ticket charged on the card.

The objective of this experiment was to:

- Help to define the types of tickets which could be recharged on the impersonal card, the price levels, the possible tariff advantages associated with this card, the marketing methods and the public targeted for the impersonal card,
- Follow the experiment and evaluate the results through enquiries and the analysis of the statistics of use.

To carry out the experiment, it was decided to recruit a hundred experimenters to whom the impersonal card would be proposed for testing under real conditions over a period of 3 months.

To evaluate the experiment, it was decided to hold a group meeting with 10 participants selected from the experimenters. The purpose of this meeting was to have described and to understand the manner in which the experimenters and their near ones used the card and the network with this new card, what type of tickets they charged, to what an extent the card simplified their access to the network, the advantages and the disadvantages which they found with respect to their traveling requirements and with respect to other types of tickets and media.

It also aimed at collecting their expectations for improvement of this pricing concept as well as the services which they hoped to add to the medium in order to test other pricing scenarios similar to this concept.

It was also decided to perform a telephone enquiry with the experimenters at the end of the experiment to check and quantify the results of the group meeting: practice of using the card and the network, notably sharing of the card with near ones, the practical nature of the card and the proposed solutions concerning the recharging, the possible problems encountered at validation, the interest for a insurance against loss and theft, the pertinence of the information given to the experiments, the recommendations in the case of generalization.

Finally the statistical data of recharging the impersonal cards in the course of the experiment as well as the validation statistics were analyzed to check the behavior in the use of the network and recharging of the cards and their evolution in the course of the experiment.

C1.3 Methodology used for the dedicated tariff for the participants to a commuter plan approach

To meet the expectations of companies and their employees having selected a commuter plan (PDE), Tisséo wished to experiment a subscription at an attractive price which could be subsidized by the companies. The objective was to favor selection of the public transport network for travel between home and work as well as for other traveling by these employees within the agglomeration.

The ticket selected for the experiment is an annual subscription with direct monthly debit. It is sold via the companies for the price of an annual subscription for the general public divided into twelve equal monthly payments. The employers can subsidize it by refunding a part of the cost of the subscription to their subscribing employees.

Through this subscription, Tisséo, in partnership with the experimenting companies, aims at winning over new clients and their loyalty as well as a modal transfer from the automobile to public transport.

The objective of this experiment was:

- To define the information to be collected in the framework of the experiment,
- To pilot the enquiries, analyze the statistical data and the results of the enquiry and make recommendations in view of the results of the experiment.

The study took place in three stages from January to December 2008:

- The 1st stage (Spring 2008) consisted in meeting the experimenting companies and defining the methods of the enquiry with their employees in order to measure their knowledge of the new ticket named ACTIVEO and for those who had subscribed, to know their expectations and to what an extent it had incited them to travel oftener by public transport.
- The 2nd stage (Summer 2008) was devoted to the implementation of the enquiry distributed by the experimenting companies among their employees via Intranet or on a paper medium, to the filling up of the responses to the questionnaire, to the building up of a file containing the results of this enquiry (1610 replies) and to the collection of the validation data of the 1331 ACTIVEO subscriptions sold between April and September 2008.
- The 3rd stage (Autumn 2008) was devoted to the analysis of these results, to interviews with the managers of the project in the companies to evaluate the results which they draw from the experiment, to the presentation of the results and the recommendations in view of a generalization.

C2 Measure results

C2.1 General Marketing Study Conclusions

The following results correspond to the results obtained following the marketing study performed in the framework of the MOBILIS project. They can be classified simultaneously under the title of economy (insofar as they form an essential component of the pricing), under transport (insofar as this type of measurement directly affects the use of public transport) and under social (insofar as this study concerns the analysis of traveling as well as purchasing behavior) but are presented globally to respect the reality.

This study was performed in 5 stages marked by ten work meetings gathering the Tisséo staff in charge of development and marketing of the network. The results of the various investigations were presented to two pilot committees.

Stage 1: The analysis of the current pricing system and the comparison with 10 French networks of similar size and 3 foreign networks showed a certain number of particularities of the Tisséo pricing which result in large losses to earnings and form hindrances to use and preserving client loyalty.

To start with, we noted the profusion of free passes of which none was based on revenue criteria, an exception with respect to the practices of other networks. As for school children, the association of partial free travel reserved to two trips per school day along with individual reduced tariff tickets hindered use of the network and made it complex. Paradoxically it led to a much greater use of individual full tariff tickets than of those theoretically dedicated to them. In a more general manner, the absence of long term subscription and of facilities for payment did not encourage the clientele to adopt the network as a regular mode of traveling over the long term. To compensate these deficiencies, the network has the tendency to apply relatively low subscription rates compared with other networks and this leads to a loss of earnings.

In terms of rates, the network applies rates which are a little higher than the average French network of the same size for individual tickets which are meant in priority for occasional clients, rates lower than the average for monthly subscriptions and full rate annual subscriptions, the only one to exist and paid cash. Side by side with these paying tickets there are 43% of free trips, which is an exception for France and all the more for Europe.

Stage 2: The analysis of the pricing policy from 1994 to 2007 showed that in 13 years, the network had increased its frequentation by 53% whereas its direct earnings in constant euros had only increased by 23%. This result is highly dependent on the last year of the history insofar as 2007 benefited from the commissioning of line B of the subway. At the end of 2006, a quasi stagnation of the earnings in constant euros was noted for a growth in frequentation of about 34% in 12 years. The reason for the decrease of the average earning per trip remained in the explosive growth of free travel during the first half of the history, almost completely due to the passes issued to job seekers, use by whom increased from less than 1 million trips in 1994 to nearly 15 millions in 2006, a level reached already in 2000. It can be noted on this subject that only 50% of the users of free passes as job seekers declare themselves as such in 2007, whereas the others affirm that they are working (40%) or are students or are housewives. In parallel with this explosive growth of free passes, the prices of individual tickets were increased by 8% in constant euros between 1994 and 2000 whereas the price level of subscriptions remained stable.

The second marking event was the creation of the monthly subscription for 16-25 years in 2002 at a price attractive for the youth and a decrease in the price of the general public subscription in 2003. This price policy notably decreased the average earning per trip for all tickets taken together, in spite of a stability of the price of individual tickets. In fact, the direct earnings increased during the period from 2001 to 2005 by 13% in constant euros, a share due to increase of the offer in 2004, but another due to the decrease in the price of subscriptions for the youth notably. This confirmed the pertinence of this reduction in the price of subscriptions which allowed winning new clients, winning client loyalty and turning away others from free passes for job seekers which they managed to obtain rather than pay the full rate.

Over the period from 1994 to 2007 inclusive: the annual earnings thus increased by 8 M€, under the influence of an increase in the frequentation which represents a potential for the increase in earnings of 14.7 M€ and of escalation of the paying tickets which results in a potential increase of 1.7 M€ but this growth of the earnings was reduced by 8.5 M€ because of a decrease mainly due to the extension of free passes at the beginning of the period.

Stages 3 and 4: The quantitative enquiries with 3800 clients and 400 non-clients staying close to a structured line of the network and the meetings of the group with participants belonging to different segments of the clientele (school goers, frequently traveling young adults, occasionally traveling adults, senior citizen and job seekers) allowed quantifying the clientele according to its class of age, its status, the type(s) of tickets used, its frequency in using the network and its contribution to the earnings of the network. This quantification, counting of the clients, physical persons using the network on one hand and the trips performed regularly on the other hand. They were also used to identify the priority expectations of the clients when it was a question of traveling in the agglomeration, of analyzing the inhibitions for a more intensive use and collecting their suggestions for improvement of the pricing offer and their viewpoint on the various proposals for change of the pricing.

From these analyses, several points can be noted:

- On one hand the priority expectations when it was a question of traveling in the agglomeration mainly concern (53% of the clients) the suitability of the transport offer and the trip being considered. Good ratios of quality to price (12%), traveling at the lowest possible cost (12%) or being comfortable and in security (16%) concern the minorities of clients.
- The students and the young people form the large majority of the frequent clients of the network. But after 20 years, the number of frequent clients decreases greatly: it is divided by more than 5 between the age of 20 and 30 years. Beyond 30 years the network consists of occasional travelers who are more or less regular and a low share of frequent clients.
- The free travel granted to seniors from 65 years has little impact on their level of frequentation which remains low, at the same level as that of seniors between 60 and 65 years who pay full fare.

- The young people who select the monthly subscription massively and partial free travel to school when they have a right for it, are also consumers (in addition to the free school ticket which only allows two trips per school day) of full rate counted down passes for 1 and 2 trips, rather than the reduced passes which are nevertheless dedicated to them but are poorly adapted to their needs and expectations.
- All the clients are awaiting an improvement in the pricing offer in terms of flexibility of use, which can be adapted to their life rhythm.
- The creation of the rechargeable smart card is highly appreciated by those who hold it. It is considered as a regular transport Pass by the young people but it was not yet known by all the clients. The success of this card comes from the fact that it gives real advantages with respect to the earlier system where it was necessary to hold two cards. It draws new expectations for simplification of the pricing offer which had been designed for throw-away media but which is not the most suitable for recharging on a perennial card, for facility in remote recharging via Internet, etc.

The reactions to the various pricing scenarios which are submitted to them confirm the attraction exercised by all simple and non-restrictive tickets. Thus the frequent clients would prefer to the actual annual subscriptions, subscriptions without a predefined period of validity, along with an automatic monthly debit which could be suspended. Occasional clients are attracted by the project of an anonymous and transferable rechargeable card.

Concerning free travel, everyone is conscious of its extent, except for the school goers and the job seekers who underestimate its extent. The question of the systematic free travel could be solved by the setting up of a policy based on a criterion of income level, felt by the majority as being more just than the current criteria for attribution. Such a reform supposes, in time, an improvement of the public transport offer or even of justifying the soundness of suppressing the free travel, accessible today to numerous categories of clients.

In short, the pricing expectations are focused on:

- A more flexible offer, more suitable for the concrete needs of the clients,
- A more complete, better targeted more just offer, which better takes into account the income level,
- A basic offer which is less costly and less restrictive of occasional trips,
- A loyalty keeping policy which rewards frequent clients,
- Facilitation to access of the pricing offer: improvement of the information, clarification of the offer, facilitation of the purchase.

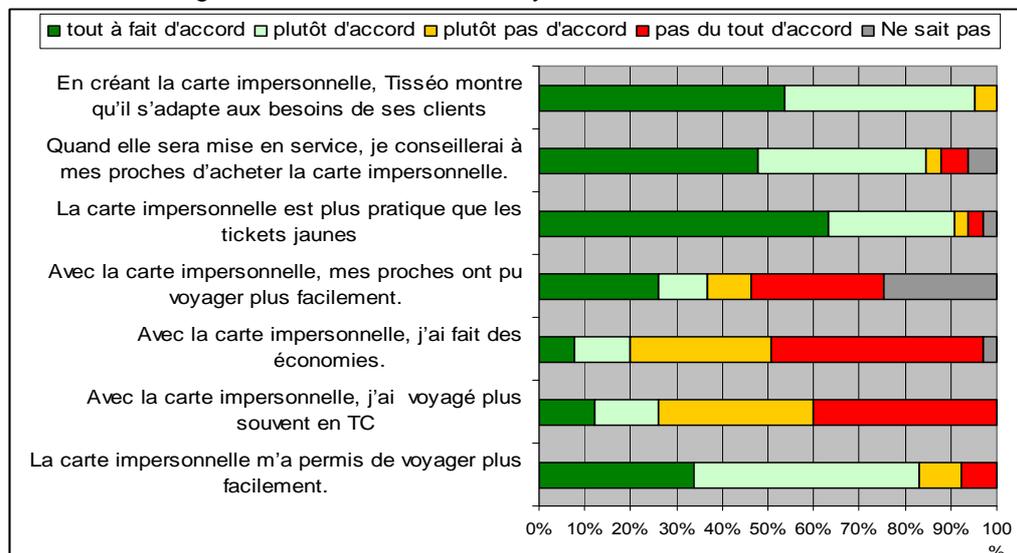
Stage 5: The marketing and pricing recommendations which had been worked out in close cooperation with the managers of the network are targeted according to a segmentation of the clientele taking into account the age classes (<18 years, 18 to 25 years, 26 to 59 years, 60 years and above) as well as the frequency of use of the network. This segmentation which groups client categories with similar behavior and expectations is operational in the sense that it will be easy to address these segments since they are identifiable and have common preoccupations.

On the other hand, these segments are quantifiable and it is thus possible to follow the development of the rate of penetration of the network in the resident population and the market share of the network with respect to the automobile for each of them.

C2.2 Anonymous smart cards

The client enquiries made in the framework of the demonstration show the advantages which the clients draw from the anonymous card. They also allowed showing that the network would draw a non-negligible image benefit.

The following table, through the opinion of the experimenters on some typical affirmations, sums up well the advantages which would be drawn by the clients and the network from the anonymous card:



For 91%, the anonymous card is **more practical** than the yellow tickets (single tickets or ticket booklets) and 83% are convinced that it will **allow traveling more easily**. It is thus a large advantage to win over new clients and develop the frequentation of the occasional adult clientele.

It will also allow 37% of the holders to **facilitate the travel of their near ones** some of whom will be discovering the network and in general travel a bit more often.

Concerning the network, the anonymous card and the tickets associated with it during the experiment show that the **network is preoccupied by and is adapting to the needs of its clients** (95% agree).

On the other hand, in case of issue of the card, 85% of the holders of the card will not hesitate to recommend it to their near ones. This would contribute to the promotion and sale of the card as well as the improvement of the network image and its fame.

There is thus no doubt about the interest of selling anonymous smart cards which will allow extending the use of the rechargeable smart card in replacement of the magnetic throw-away ticket, both for the clientele (simplified and practical use), increase in the frequentation as well as the image and attractiveness of the network.

In the perspective of sale of the card, there are numerous choices to be made beforehand with respect to what has been set up in the framework of the experiment.

Anonymous card and impersonal and transferable subscription

Must the anonymous card be only the medium for count-down tickets or must it only be the medium for an impersonal subscription as in the framework of the experiment? In other terms, are we to take advantage of the setting into service of the anonymous card to create a new type of impersonal and transferable subscription or must we remain in the world of actual tickets?

The data collected in the course of the experiment show that the transferable subscription should favour the increase in frequentation of the network by occasional customers who pay full rate and that the average mobility of the subscription should give an average price per trip of that of a 10-trip card (or even higher as this was the case during the experiment) and that this would not thus generate a loss of earnings per trip but would on the contrary generate a surplus of earnings because of the development in the mobility of occasional clients.

In terms of image, the creation of an impersonal and transferable subscription shows that the network is coming closer to the expectations of its clients by diversifying the pricing offer, by adapting it to the specific expectations of some segments.

This type of subscription also forms a quite pertinent element for competing with the automobile in the city since, like the automobile it can be transferred within the family and can be used to help out near ones whereas the personal subscription cannot be shared within the family circle.

Therefore Tisséo proposes to its clients to load an anonymous and transferable subscription from the anonymous card while the PASTEL card continues to be personal and non transferable between persons paying the general public rate.

In terms of price differences with that of the personal subscription, an additional cost of 10 % seems amply sufficient to us and a limit which must not be exceeded. This allows making the difference (and not encouraging the holder of a PASTEL card to change over to an anonymous card), without becoming an obstacle to registering a subscription for those having chosen the anonymous card and wish to load a subscription even if they have no intention of benefiting third parties.

Decreasing price scale for the traveling according to the number of trips loaded

The decreasing price scale demanded by several experimenters to encourage persons to load a larger number of trips at each reloading goes much beyond the case of the anonymous card since, if this pricing principle is adopted, it must be also extended to the PASTEL cards.

The experiment shows that without a decreasing price scale, the clientele is divided between reloading of 10 and 20 trips.

The impact of a decreasing price scale thus runs a risk of favoring the reloading of 20 trips and more with respect to the 10 and leads a marginal clientele to very high reloading (more than 50). The decreasing price scale will thus have little impact on the frequentation. The only impact will be that of an additional cash flow for the network on account of a much higher average profit from the clients and higher attractiveness of insurance if the latter is set up.

The introduction of the decreasing price scale will also have an impact on the image the clients have of the network. The latter will be seen as a commercial gesture towards them since, through the decreasing price scale it shows its interest for the loyal and regular clients, a common demand of clients who consider that networks lack commercial spirit.

If the decreasing price scale is installed, it should be very limited to prevent earning losses on the count down tickets of the trips. We could imagine applying 1 free trip for 30 trips loaded, 2 free trips for 40 trips loaded, 3 free trips for 50 trips loaded, etc. up to 8 free trips for a maximum of 100 trips loaded.

According to their estimates made, this could lead to a loss of earnings of about 3.7 % on the earnings for travel loaded on the count down cards, taking into account as assumption of distributing re-loading acts.

The decreasing price scale seems to be an interesting solution on condition that it is well highlighted in the communication and information of the clientele in order to draw all the advantages mentioned above in terms of induction and carry-over (otherwise it would remain just a bargain) thus on the commercial level and in terms of image for the network.

Possibility of traveling several together using the anonymous card

This wish expressed by several experimenters to be able to travel several together with the anonymous card is obviously very interesting. It would result in no dilution of the earnings but on the contrary should induce new trips and especially facilitate the traveling of several together with a smart card.

This assumption poses technical problems (possibility offered by the anti-passback of the ticketing system and adjustment of its time delay), knowing that it is necessary to manage the case of a subscription holder and the trips who wishes to pay for an accompanying person with the reserve of trips.

Of course it also poses the problems of information since it is necessary to explain to clients how it works and the precautions to be taken to prevent a double debit notably in the bus.

Therefore, before foreseeing this improvement, check the technical and functional feasibility of this possibility and obviously test it.

Insurance and other appended services

The instauration of an insurance against loss and theft would be an advantage to win over a part of the anonymous card potential clientele which needs to be reassured.

This can also be a non-negligible of earnings for the network. Since if 40 % of the anonymous card holders pay an insurance of 4 to 5 € per year, this could generate an additional income of a hundred thousand euros per year from which must be deducted the cost resulting from the claims (time spent to restore the content of the card and cost of the card). It is probable that the number of claims will be low.

To be able to implement this feature, a prior technical problem will have to be solved, insofar as it is necessary to be able to follow the balance status of the anonymous cards insured by their holders, just as the system allows tracing that of personal cards.

Once this requirement has been dealt with, the fact of insuring anonymous card will imply that the holder takes out the insurance at the moment of purchase and that the card number is associated with the insurance contract which will be nominative to prevent risks of insurance fraud and abuse regarding the policyholder.

The other services requested by the experimenters go beyond the field of this evaluation insofar as they involve third parties such as the City of Toulouse and the operator of the service assuming that there is a coupling of the anonymous card with the Vélo Toulouse service. It must be simply recalled that today the long-term subscription to Vélo Toulouse is a personal subscription which cannot be shared. This creates a risk of blocking any negotiation on this matter unless the service operation contract is changed. As for the possibility of coupling a Tisséo card with short-term subscription to Vélo Toulouse, we know that the operator of the service is not at all in favor of this possibility.

Name, communication and distribution of the anonymous card

We have mentioned the problem regarding the name of the card and we can but recommend the choice which has most votes among the experimenters, i.e. « Tisséo Pass ».

As we have noted, this name will require less communication expenses than those for a more exotic name and it will have the advantage of benefiting to Tisséo brand for the effects of communication which will be implemented to promote the anonymous card. Besides it was suggested to adopt a color code different from blue and from that of the PASTEL card.

Concerning the distribution, it seems indispensable for us to foresee its sale by internet and its home delivery. To start with, it will be necessary to place on-line, on the internet site, an order form to be printed out and the associated information. After this it must be possible to buy the anonymous card whether or not loaded with 20 trips as well as an insurance, if the latter is implemented. Finally, it would obviously be interesting to reload ones card remotely.

Finally in terms of communication, it is necessary to target the occasional adult clientele of the network to be won over whose loyalty must be gained and their use of the network intensified which are the strategic objectives of the network.

The anonymous card is a means to win over and keep loyal those who detest filling up administrative forms or who are clash with the idea of giving their identity or providing their photograph to obtain a smart card. The communication and the information must take into account the remarks made by the experimenters with respect to those which they received and which can still increase in clarity and completeness.

It must not be forgotten, in fact, that the main target aimed at has no experience of the smart card or of the reloading and they must be ensured before being confronted with the PLCs.

C2.3 Dedicated tariff for the participants to a commuter plan approach

The ACTIVEO experiment is globally very concluding. The subscription has charmed and ACTIVEO has reached a very high level of satisfaction from its holders 90 % of whom are ready to recommend it to their relatives and friends.

It has also certainly favored the modal changes for trips between home and work in favor of using Tisséo for one end to the other, as well as in favor developing car + public transport inter-modality.

The success of ACTIVEO depends on the location of the company within the agglomeration. It is also related to its cost and above all to the 50 % refund paid by the employers. The automatic withdrawal is not considered as an innovative and triggering factor (it is a novelty for Tisséo but not for its clients). Some even find that the withdrawal is a constraint and would like to have other modes of payment.

ACTIVEO has more easily attracted the feminine clientele, more sensitive to financial arguments than men and the clientele of more than 40 years of age. It is now necessary to win over the masculine clientele, that of less than 40 years and that of the employees who do not come under the standard of full-time permanent employment (CDI).

The results of the enquiry show that the employees are divided into four segments:

- A Those who already use public transport for their commutations between home and work, and who:
 - 1. Find in ACTIVEO a practical and financially advantageous solution. They form a target which is relatively easy to win over, notably among those who are already subscribers.
 - 2. Do not find in ACTIVEO a suitable solution for their particular case because the ticket is too expensive when compared with the 4-25 years monthly subscription, because they work part time, change their transport modes during the week or in the course of the year (bicycle for part of the year).

- B Those who do not use public transport and who:
 - 1. Could consider using it if they find the solution for public transport for one end to the other or in combination with the automobile or the regional train (TER).
 - 2. Do not consider using public transport because they have no suitable offer for their commutation between home and work or they like their current means of transport which they find fast, practical and pleasant.

The current targets are segments A1 and B1. A part of segment A2 could be interested by ACTIVEO on condition that the concept is worked out. As for segment B2, a part could be converted on condition that there is a notable improvement of the service of their company from their home or from a well-located multimodal exchange point.

The majority of subscribers do not have any suggestion to make in terms of improvement. We can therefore consider that the current features and the prices are adapted to the major part of the attainable targets and that they can thus be generalized as they are.

Nevertheless, to attain the targets for which ACTIVEO poses a problem because of relative prices (<26 years) part time work, alternate modal practices, it would be necessary to:

- Propose an ACTIVEO annual subscription in terms of prices for employees of less than 26 years of age, comparatively to the monthly subscription price for 4-25.
- Propose a subscription which is more flexible and possibly more expensive (related to the price per day of free travelling):
 - The post-payment with ceiling would be suitable for the part time employees and for the multi-modal home-work commuters who alternatively use several modes in the course of the week (car-pool or public transport for example);
 - Subscription with an undetermined duration which can be suspended would be suitable for those who alternate various modes in the course of the year (PT and then bicycle for example).

The communication proved to be very effective in some companies and less so in others.

The fact that the company which distributes information by the usual internal communication channels (memorandum, intranet) is an essential factor for success for selling of the ticket which must be reinforced by display within the company, more frequent presentation meetings as well as by displaying on the network.

The information documents are to be reviewed with those concerned since there are too many persons who found the information incomplete and not clear (procedure of activation, what happens at the end of the year, etc.)

The information must not be restricted to the sole promotion of ACTIVEO. It is necessary to sell the network, propose a transport diagnosis, refer to other tickets, draw up price comparisons between tickets and with the car use (cost of the subscription compared with the marginal cost of the car : fuel + maintenance + toll).

Finally, it is necessary to reinforce the principle of partnership with the companies and share sound practices. In fact, the method for selling ACTIVEO via the companies has resulted in few remarks and is appreciated, notably the fact that the approach is made at the place of work.

It will nonetheless be necessary:

- to inform the subscribers on the time required to received the card, and to inform them in case of delay,
- to develop procedures for registration of subscription without paper (via internet).

For employers who refund a part of the cost of ACTIVEO, the transmission by Tisséo of the listing of employees who are debited every month is appreciated and spares the employees concerned the task of transmitting justifications and the human resources personnel from dealing with the cases individually.

The procedure could nevertheless be simplified:

- the companies could program the refund in view of the payment schedule which will be submitted to them by the employees and an information transmitted following the activation of the ACTIVEO;
- in case of interruption of the subscription, the refund will be suspended;
- this would mean that Tisséo transmits, with the agreement of the persons concerned, the real dates for activation of the subscription and the cases of subscription interruption, whether at the initiative of Tisséo or of the persons concerned.

Whatever the option selected, the information channel must be made reliable between Tisséo and the companies which practice refund, before any generalization of the ACTIVEO product.

C3 Achievement of quantifiable targets

No.	Target	Rating
1	Establish an interoperability chart between the different PT networks' ticketing system	**
2	Realize a marketing study and take it into account a certain flexibility for the development of new type of services	***
3	Develop and implement inventive PT contracts targeted to specific user groups and exploiting innovative functions proposed by the new ticketing systems	**
4	Create a new mobility card, integrating new type of services	**
5	Develop an electronic purse and multi-service support (including transport) for schools	*
6	Develop and promote a new integrated offer: car parks and public transports targeting residential inhabitants of the city centre	*
7	Develop an integrated fare product between motorways frequent users and PT	*
8	Push forward the P&R infrastructures, multimodal behaviours and reduce the traffic in the city centre	*
NA = Not Assessed * = Not achieved ** = Achieved in full *** = Exceeded		

C4 Up-scaling of results

It is obvious that general marketing study which was performed on the whole network is not suitable for the up-scaling practice.

Concerning the works performed on the anonymous card, considering that the purpose of the experimentation was to test the concept of an anonymous card on a non frequent users group. It is understood that its generalization and its extension to the whole network was studied. The conclusions were developed in the previous chapter describing the obtained results.

Concerning the ACTIVEO product, the approach was similar and some lessons learnt from the experimentation performed in the frame of MOBILIS will be reworked with the purpose of extending ACTIVEO product to all the companies, or perhaps even adapting it to other client targets and notably, the "youth". For the extension of this product, the following improvements should however be taken into consideration:

- reinforcing of accounting chain/ creation of a group dedicated to the management of the automatic debit / reminders for non-payments;
- definition of the procedures and information flow between Tisséo and the companies, notably, in order that taking charge of a part of the employees subscription is correctly ensured;
- developments concerning the ticketing system to be able to produce this information and propose facilities, such as tacit renewal of the subscriptions or again the possibility of payment at consumption (post-payment).

These developments will be put into operation in the following months to allow a generalization of the ACTIVEO product at the agglomeration level.

C5 Appraisal of evaluation approach

One of the limits of evaluation concerns the fact that it is extremely difficult to draw pertinent information on the arrival of teleticketing and on the creation of these new products.

Firstly it took place at the same time as the opening of the subway line B which generated an upheaval in the transport offers, which prevented measuring the effects of the ticketing alone. However, the general investigation has proved the success of the PASTEL card and the interest shown by the Toulouse inhabitants for this new opening.

Besides, the general study has also proved that the measurement of the impact of creation of a specific pricing product can take many years. This is mainly due to the inertia which can exist between the creation of a product and its penetration among the users. The associated communication can help to accelerate this process; however, it is by hearsay that we obtain the best results. It is the reason for which there is a strong link with the measure 11.1 relative to the direct marketing which we hoped to develop on the Toulouse network.

The tendency shows us however that after the arrival of the subway line B and the PASTEL card, the subscribers share thus increased from 1 trip out of 4 to 1 trip out of 3; that the share of the occasional travelers has decreased slightly and remained around 1 trip out of 3 (the rest being the free transport beneficiaries). Concerning the earnings of January 2009, for the subscribers, we passed from 24 % to 37 % of earnings whereas on the contrary for occasional travelers we passed from 76 % to 63 % of earnings. Thus confirming the attainment of one of the targets aimed to develop customer loyalty, with as proof the considerable development of the annual subscriptions market share (+ 700 % with however a market share extremely low a year earlier.

D Lessons learned

D1 Barriers and drivers

D1.1 Barriers

The ticketing is probably one of the most complicated domains in transport. In fact, it requires the technical mastery of the tool and especially the application of the standards, while relying on the knowledge of the various trades of the company:

- beginning by the commercial department (and all its procedures / internal habits),
- passing through the inspection bodies,
- without forgetting the other departments which make use of the numerous data produced whether it is for accounting purposes or for network analysis statistics
- and finally the managers and policy makers who define the pricing products in keeping with their social or economical objectives.

From then on, it becomes difficult to mobilize around a same project, all the players involved. This is nevertheless necessary where huge investments are involved and when it concerns one of the main tools at the disposal of transporters for a system service life between 10 and 15 years. For information only, the cost of the ticketing project of the Toulouse agglomeration is about 30 M€ (not including mobilized internal resources) and it is between 1 and 2 M€ per year for cost of extension operation of the equipment population, knowing that the 530 buses, the 38 subway stations and 12 of the commercial counters were all fitted in 2007.

These difficulties are reduced from the moment we deal of the interoperability with other ticketing systems of other networks. It is then a question of harmonization of the system functions as well as the commercial procedures, with the final purpose of creating integrated products usable on the different networks. This sometimes requires some concessions which result in giving up of principles and by additional development costs. It is then understood that the main purpose that must not be forgotten is the simplification of the tariff range from the customer point of view. This contradicts the wish to create products made to measure for the needs of each customer / group of customers.

D1.2 Drivers

On the other hand, the main advantages of a ticketing system are the following:

- the control of fraud and especially of earnings,
- the possibility of having a vast source of data allowing a better knowledge of customers and to better understand their needs.

Even if it involves a huge investment (30 M€ for the Tisséo system) it remains marginal comparing to the earnings obtained during the year (50 M€ in 2008 on the Tisséo network). It is proved that the return of profits from a ticketing system is ensured within a few years by the 'additional' earnings which it allows obtaining, on condition an appropriate control strategy is set up.

A more global analysis, including the resources to mobilize with / without ticketing system will nevertheless be interesting to perform.

Beyond these economical aspects, it was seen with the general investigation that the ticketing and particularly the smart card allow giving a modern image to the network, thus contributing to its attractiveness. The overall study has also allowed to explore the customers expectations / needs regarding the multi-service card concepts, even the dematerialization of the ticketing medium (use of mobile) which will be interesting to follow up, insofar as these open concepts allow facilitating the access to PT and thus to favor its use.

D2 Participation of stakeholders

As previously indicated, the arrival of the ticketing system mobilizes nearly all the services of a transporter. This thus deserves a good coordination within the transport operator, in interface with its organizing authority and its supplier. In fact, the specification and deployment phases require many exchanges with the manufacturer in charge of setting up this system which is fundamental to privilege to help to the changes which were induced by the arrival of this working tool.

Otherwise, the setting of the systems interoperability requires a mobilization of the various networks and the organizing authorities concerned around the same project. This work project is a long term project, marked by negotiation to be performed on the various functions/ common principles that we wish to apply.

D3 Recommendations

Beyond the conventional recommendations that we can have for a "system" project of this type (collection of needs, preparation of tests, organization of the deployment and staff training) it is important to privilege the project management, and to ensure the interface with all the future users of this equipment.

The use of norms and standards is also necessary to ensure the starting of the system and thus to allow implementation of interoperability.

Finally, the pricing range simplification and the suppression of complex products (e.g. a product valid only for one client category, requiring the creation of status, and valid only for some days, or even for some time slots, on some lines), is an assurance of success, because it generally allows facilitating upgradeability of the pricing range and of the system itself. In fact, as soon as we introduce the technology, it is generally necessary, to simplify since any specificity leads to a complication of the

system (possibly of its cost but especially of its maintenance and by this fact limiting its upgradeability).

It is to be recalled that this principle of the pricing range simplicity meets a high expectation of many clients (problem of legibility). The complete rethinking of the pricing principles and the definition of some structuring principles seem to be a good method to start this kind of project. The arrival of a new tool can besides justify the reworking of pricing range.

D4 Future activities relating to the measure

The ticketing system is set up since June 2007. The major projects of the year 2009 are fully included within the works executed in the MOBILIS framework, i.e.:

- the generalization in April 2009 of the ACTIVEO product... and the definition of a similar product (yearly, with direct debit) for the "youth" by the end of the year;
- the finalization of the interoperability works with the arrival of the systems for the Department and Region both foreseen for 2009;
- the definition and the implementation of the multimodal products towards September 2009.

Concerning the generalization of the anonymous card, it was decided to postpone this major project, this in order to preserve the commercial service because of the difficulty of the major projects previously mentioned.

Finally, the works are also in progress, with the objective of soon proposing a multiservice card (probably for students). This also concerns the possibility of using the PASTEL card to hire one's bicycle (feasibility studied in the framework of the MOBILIS project but not developed in this document).

It's evident that the marketing study performed in the framework of the MOBILIS project is a reference document for the coming years and the decisions to be taken regarding changes of the pricing.