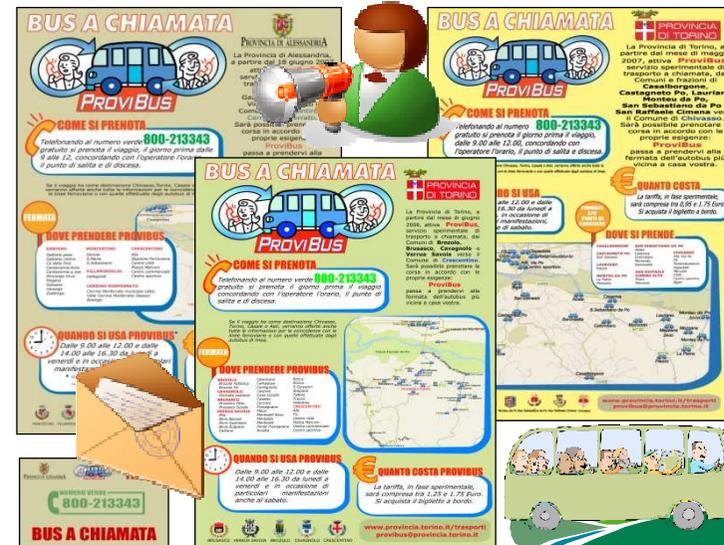


INTERNATIONAL SEMINAR ON FLEXIBLE TRANSPORT 24 JANUARY 2011 - PROVINCE OF ASTI



PROVIBUS: THE APPROPRIATE RESPONSE OF PUBLIC TRANSPORT IN LOW DEMAND AREAS

Presentation of Transport Service - Ing. Teodora Hadzhiivanova





PHILOSOPHY OF FLEXIBLE SERVICES



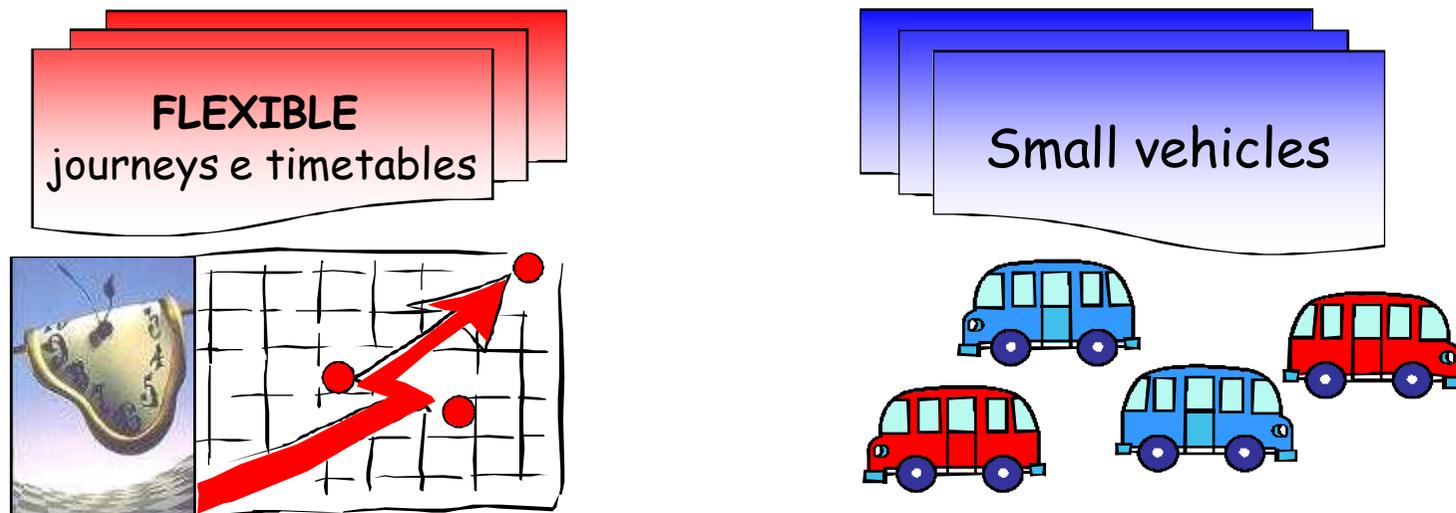
Today, in areas of low demand **the mobility needs** for systematic and occasional journeys, are increasingly growing and diversified.

In these areas **the lack of public transport services** affects the quality of life of most weakest groups in society and restrict the activities.

This is one of the main causes for which small towns and villages without an equal level of services (shops, administrative services, etc.) are very livable and tend to be repopulated.

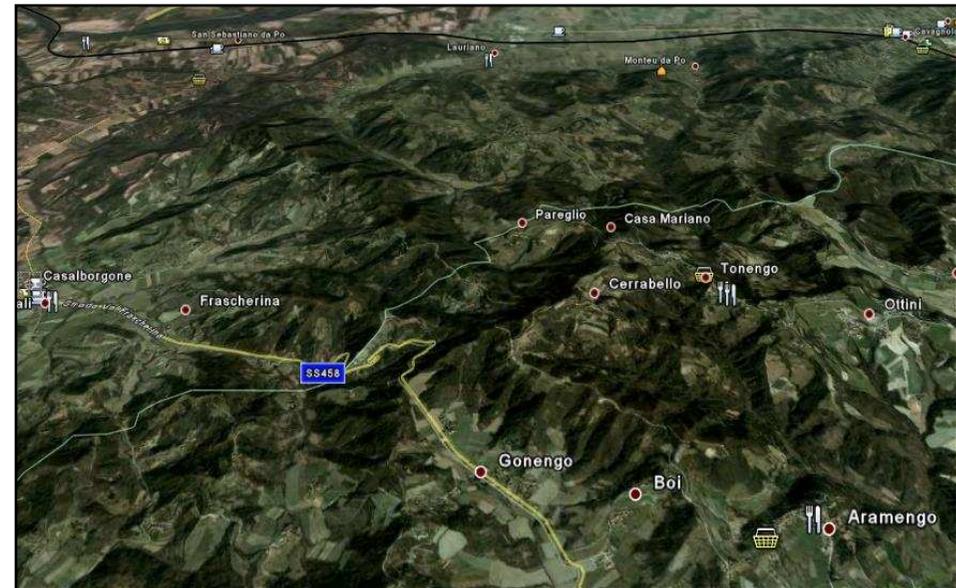
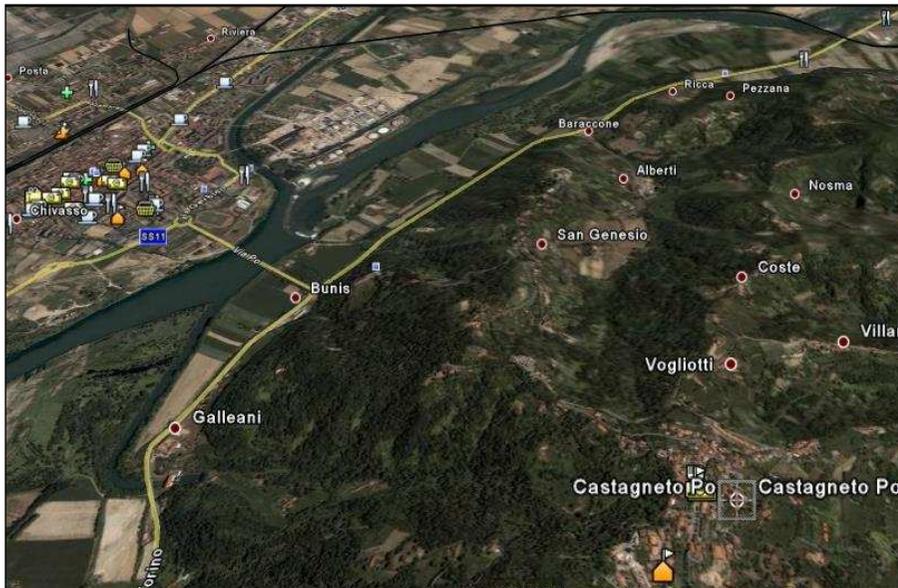
In this framework, **the flexible services** are an answer to the needs of modern mobility and an alternative to achieve reductions in operating costs of conventional service.

The flexible service is a form of public transport characterized by:



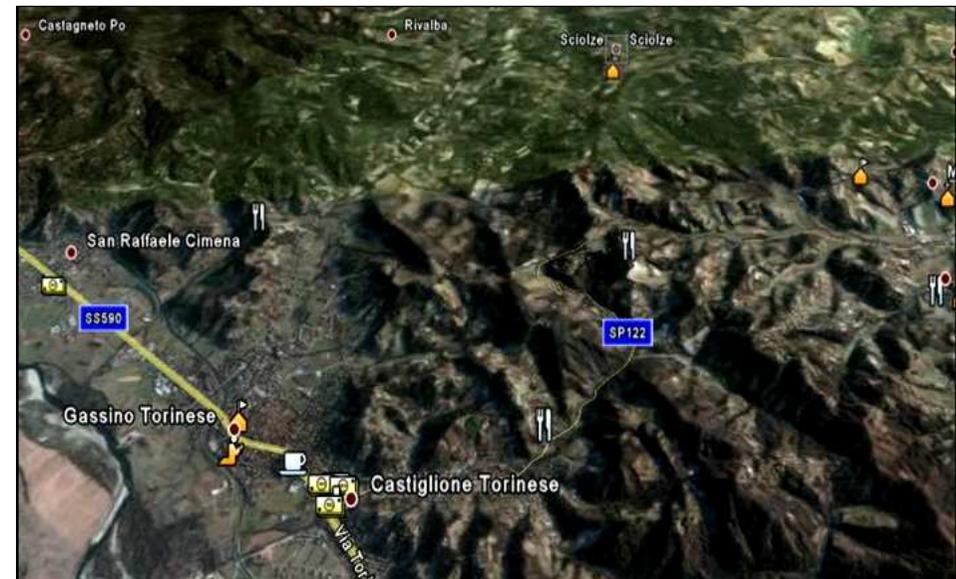


AREAS OF WEAK DEMAND



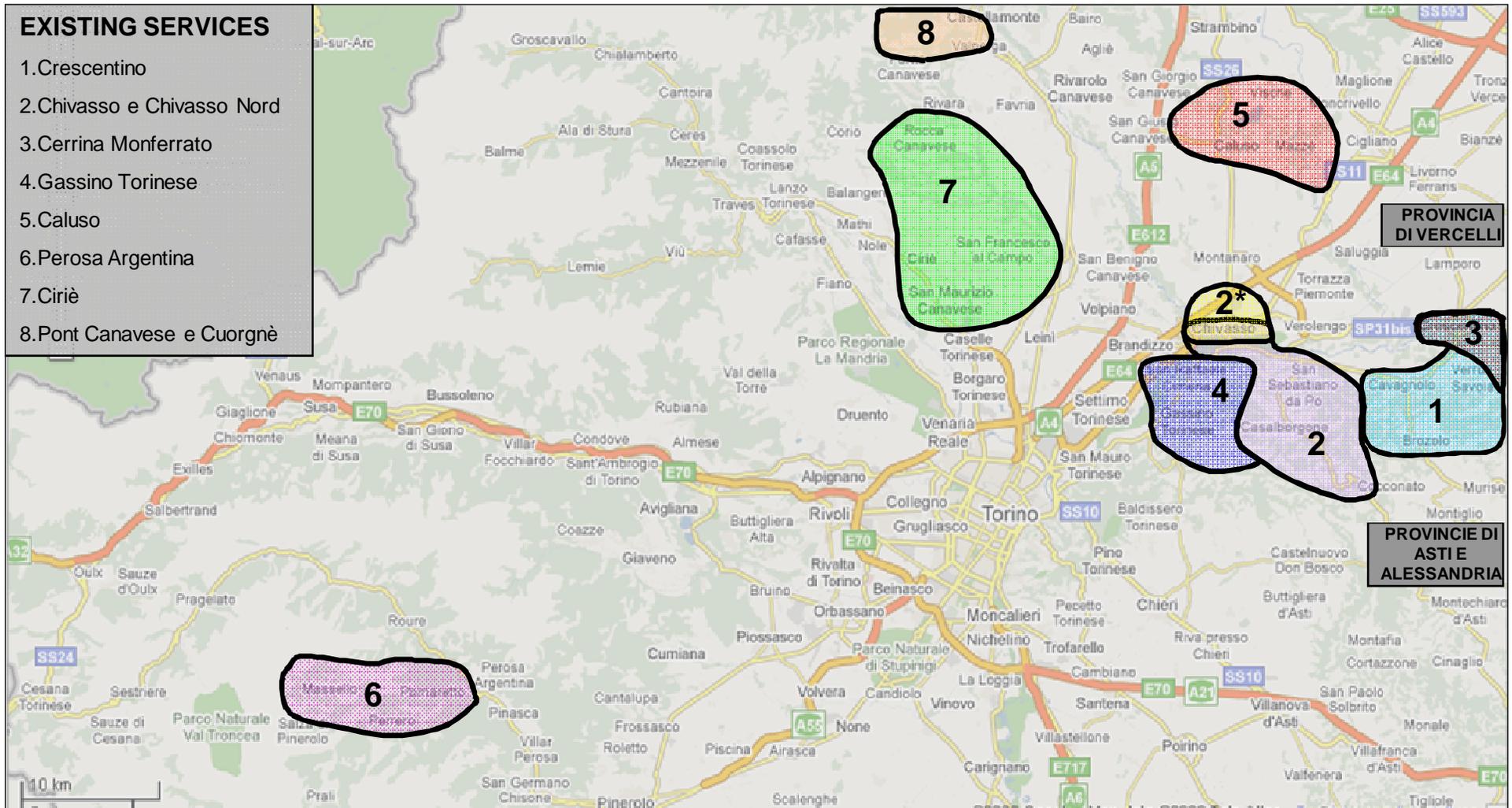
The territory covered by the flexible service Provibus is mostly hilly area, with a main city generation/attraction centres, located in the plains, where are concentrated the most important services such as the town hall, the hospitals, the post offices, the modal interchange points (train-bus), etc.

Roads and transport network runs on a difficult and tortuous paths, with low commercial speed (less than 35 km / h).





THE STATE OF THE ART ON THE DEMAND RESPONSIVE TRANSPORT "PROVIBUS"





THE AREA SERVED BY PROVIBUS



THE AREA SERVED BY PROVIBUS	MAIN CITY	Surface sqkm	Residents 2007	Density residents / sqkm	Service activation
1. Crescentino (Brozolo, Brusasco, Cavagnolo, V. Savoia)	Crescentino	113	13.962	124	JUNE 2006
2. Chivasso + Chivasso Nord (Casalborgone, Castagneto Po, Lauriano, Monteu da Po, S. Sebastiano da Po, S. Raffaele Cimena, Aramengo)	Chivasso	142	35.179	320	MAY 2007
3. Cerrina M.to (Gabiano, Moncestino, Villamiroglia)	Crescentino e Cerrina Monferrato	98	11.442	117	JUNE 2007
4. Gassino T.se (Castiglione T.se, Sciolze, Cinzano, Vernone (Marentino), Rivalba)	Gassino T.se	61	18.487	303	OCTOBER 2007
5. Caluso (Barone C.se, Candia C.se, Mazzè, Montalenghe, Orio C.se, Vische, Villareggia)	Caluso	119	17.456	147	OCTOBER 2007
6. Perosa Argentina (Massello, Salza di Pinerolo, Perrero, Pomaretto)	Perosa Argentina	124	2.010	155	MAY 2009
7. Cirie' (Barbania, Front, Levone, San Carlo Canavese, San Francesco Canavese, San Maurizio Canavese, Riva Rossa, Rocca Canavese, Vauda Canavese)	Cirie	115	27.151	237	OCTOBER 2010
8* .Pont C.se (Sparone, Ribordone) e Cuornè (Canischio, San Colombano, Prascorsano, Pertusio, San Ponso, Valperga)	Pont C.se e Cuornè	113	6.757	106	NOVEMBER 2010
TOTALE / MEDIA		885	132.444	189	

* Service on-demand with predefined bus stop and fixed timetables

Source dati: ISTAT 2007



MAIN OBJECTIVES OF PROVIBUS



PROVIBUS responds to users' needs through:

- the strengthening of links between villages and their towns;
- the link between the villages and towns where they are located for the main services (social, health, administrative, commercial, sports, etc.);
- connection to the areas not served by local public transport;
- the integration of local public transport on the road with the railways from Turin, Milan, Asti, Alessandria, Aosta;
- make the service more calibrated on the real needs of citizens, with the same transport tariff;
- greater security of access and customization of the journey.



THE USERS CATEGORIES INVOLVED



1. The customer:

There are three main categories of users who do not usually use the car:

- **Older people** who are living alone and people with limited movement capability, in both cases often become marginalized and do not participate in social life;
- **Young people** between 14 and 18 years with the need to travel for purposes of studies, sports, entertainment, etc. outside of school time;
- **People on low incomes.**



2. Operators:

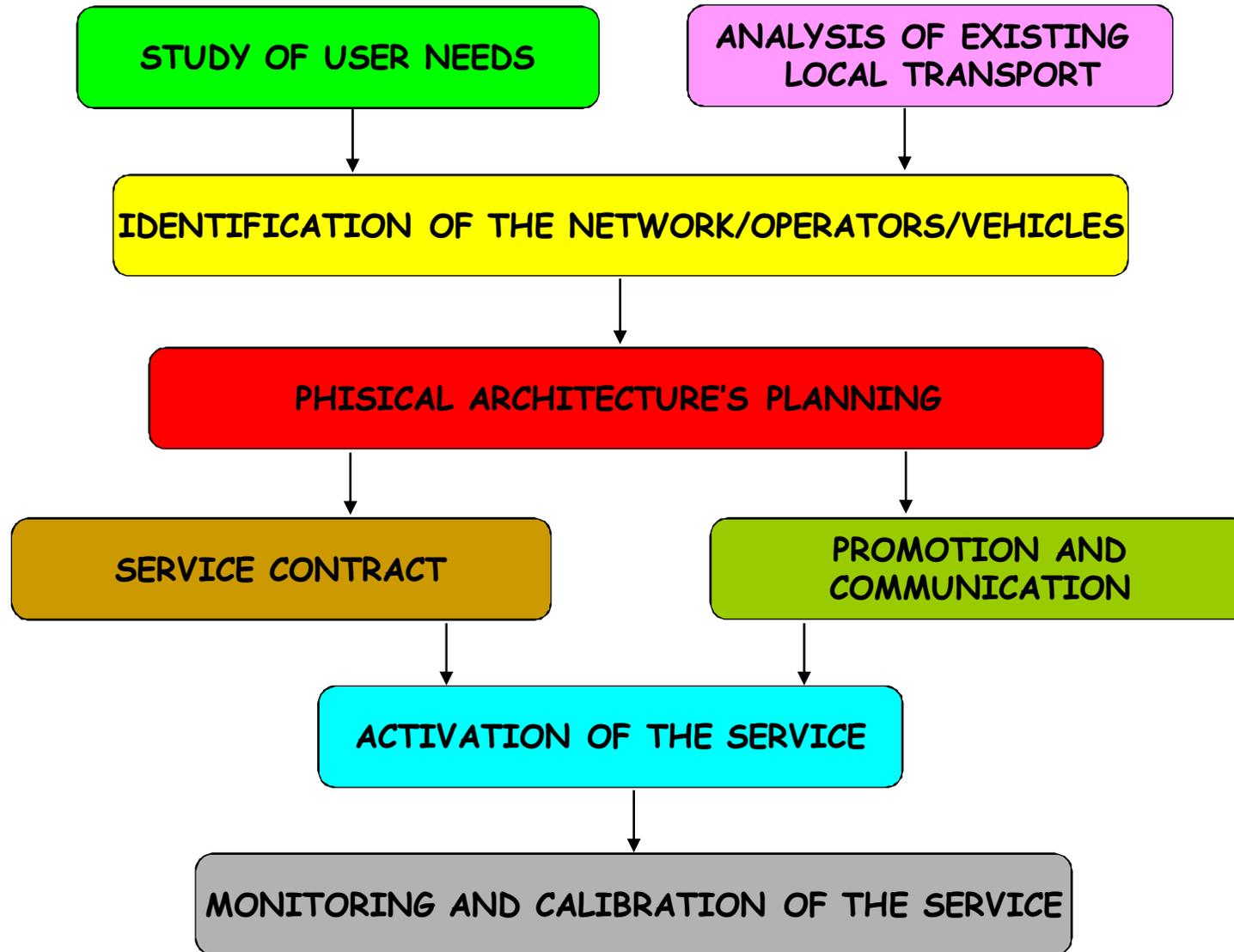
Transport companies engaged in the service with their own vehicles and drivers.

3. Authorities:

Local authorities have direct or delegated responsibility to ensure the transport services in the target area.



PROJECT'S STEPS





PROJECT'S STEPS



STUDY OF USER NEEDS

Analysis of user needs is one of the basic steps to design and realize of the transport service on demand. This study is a form of market research. Before defining the service it is important to understand:

- who are the intended users of the product?
- what users expect?
- do some of the users have special needs?, etc.

The study is used for:

- ✓ the estimation of the travel demand;
- ✓ programming the service in terms of space and time;
- ✓ the design marketing and information campaigns;
- ✓ the development of service quality criteria (punctuality, regularity, etc.).

User needs have been identified through analysis of approximately 20,000 questionnaires (16% of the population of the areas served by ProviBus) distributed at associations, schools, points of aggregation of involved municipalities.



PROJECT'S STEPS



ANALYSIS OF EXISTING LOCAL TRANSPORT

The conventional public transport, in an area to weak demand, demonstrates some critical issues in relation to the different mobility requirements of the population:

- High costs caused by travel with no passengers on board;
- Scheduled services in prevalence in peak times;
- Large buses with low frequency in soft hours;
- Limited information about the services provided (timetable, routes, cost of ticket, etc.).

The analysis of the supply of transport involves a detailed review of the program for existing lines, identifying the paths with low frequency in soft hours, the bus stops and the distance between them.

The objectives of the analysis of the existing local integrated transport are:

- Identification and use of resources retrieved from the existing transport analysed in service on demand without additional costs;
- Rationalisation of the transport network through better use of all available resources for a more efficient operation of the whole system.



PROJECT'S STEPS

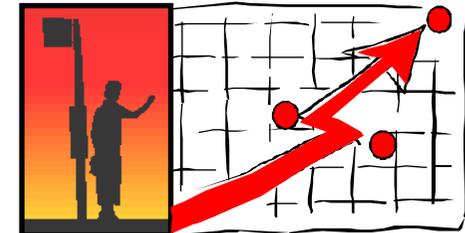


IDENTIFICATION OF THE NETWORK/OPERATORS/VEHICLES

The intersection between the study of the user needs and analysis of the EXISTING TRANSPORT allows to definitively identify the service network. Very important is the presence of a carrier with adequate fleet (mini-bus), and with good experience and knowledge of the territory.

PHISICAL ARCHITECTURE 'S PLANNING

- Drawing the graph of network service, road and traffic situations;
- Identification of stops and the space-time matrix;
- Identification of the timetamble and booking;
- Identification of the costs of ticket;
- AVM (Automatic VehicleMonitoring) based on an existing sistem for vehicle localization and monitoring named OTX.



SERVICE CONTRACT

- 📖 Duration, areas, management;
- 📖 Operator's service responsibilities (monthly summary of km, passengers, etc.);
- 📖 Responsibilities of the Province (payments km and toll-free call center, monitoring and calibration of the service, etc.).



OPERATING MODELS



- The model is many predefined stops within a network served with destinations that are predominantly used in the Municipalities center of social health and administrative services, shops, etc.
- The journeys are variable and flexible with arrival/departure to and from any stop within the network e they change every day depending on the bookings recorded;
- The possibility of travel combined with the interchange and/or connections between the various services (Provibus, conventrional local transport, rail services);
- The service timetable is from 9 to 12 and from 14 to 16/19 every weekday, and in occasion of special holidays events.
- The pricing is the regional public transport services, which are calculated on the basis of distance and varies from 1,10 € 2.20 €. There are 20 races carnet. Tickets can be purchased on board without extra charge.
- Offline booking system with the possibility to book the day before for one or more journeys, for one or more persons, for one or more days, indicating the points to up and down, the time of departure or arrival and the number of posts requested;
- Only way of booking is by telephone, via operator and Travel Dispath Centre supported by the GeoProvibus application software with then following functions: customer request management (booking, modification, enquiring), journey planning, database and statistic management (user, vehicles, services, etc.).



THE FUNCTIONALITY OF PROVIBUS



The operation of the service includes the following steps:

1. The user contacts the Operations Centre and make the travel request, indicating the points of origin and / or destination, the desired times, the number of seats, the type of journey (one-way, round trip, period);

2. Management or modification of the journey - operator manages the scheduling of service and after acquiring the parameters of the user's request creates or edits an existing journey;

3. Negotiation of the service between the operator and the user- the operator immediately communicate the scheduling of the trip to the user who can refuse or accept the proposal.

4. Communication of the service to the driver - the operator updates the DB and communicate to the driver the journey composed from the proposals accepted by the user.

The requests from the customers can be processed in such a way to allow:

- ✓ A maximum possibility to serve passengers;
- ✓ A minimum amount of kilometres to be driven;
- ✓ A minimum amount of vehicles to be used;
- ✓ A minimum on-board time for the passengers;
- ✓ A minimum cumulative difference between passenger's requested pick-up time proposed, etc.



Travel Dispatch Centre - GeoPROVIBUS



GeoProvibus is a software for the management of the service that allows to optimize the journeys, using the vehicles closely necessary to satisfy the demands for travel.

RICHIESTA VIAGGIO

Data viaggio: 24/12/2009

Orario partenza: 00 hh 00 mm

Fermata di partenza: BILA

Fermata di arrivo: BILA

Numero passeggeri: 1

Note:

OK reset

dic 14, 2010		Report Viaggi			
Automezco	Tipologia	Totale passeggeri	Capienza sfruttata		
MINIVAN 9 POSTI		29	6		
Fermate	Orario	Durata (min)	Km	Salita	Nomi
Caluso p.zza del mercato	8:10	0	0	1	SALOMONE 3481366094
Caluso - Aze	8:15	5	2,7	1	DE FAZIO 0119822198
Caluso - Vallo	8:18	3	3,1	0	
Totale	8	8	5,8		
Trasferimento	12	11,9			
Fermate	Orario	Durata (min)	Km	Salita	Nomi
Orto V. C. Alberto / V. Borgo Nuovo	8:39	0	0	1	GRUA 0119898107
Barone p.zza Ossola	8:43	4	1,7	1	SCATOLIN 0119898702
Candia Via Roma	8:45	2	1	1	MEDINA 3208920818
Caluso ASL Via Roma 18	8:50	5	3,6	0	
Caluso Pese	8:51	1	0,4	0	
Totale	12	6,7			
Trasferimento	11	19,2			
Fermate	Orario	Durata (min)	Km	Salita	Nomi
Villareggia p.zza Caluso ASL Via	9:58	0	0	1	TERESA 3241648000
Roma 18	10:10	12	9,6	1	SCATOLIN 0119898702
Barone p.zza Ossola	10:16	6	4,6	0	
Totale	18	14,2			
Trasferimento	6	4,6			



1. User management:

- Management the archives customers

2. Management user's requests:

- Optimizing km routes
- Optimizing type and number of vehicles
- Optimising journey times
- Proposal of alternatives, in real time, for the demands not satisfied

3. Journey report:

- Production sheet of travel for the driver
- Visualization of timetables, number fleeing previewed, kilometers necessary for the monthly reporting

CRESCENTINO

JUNE 2006 - DICEMBRE 2010

SERVICE MONITORED

- ◆ 1.113 days
- ◆ 5 days weekly
- ◆ 5 booking hours daily
- ◆ 5 hours of service daily until September 2007
- ◆ 8 hours of service daily since October 2007

PASSENGERS

- * 40.778 passengers transported
- * 37 passengers average daily
- * 5,32 average km for transport a passenger

SERVICE

- ⊕ 2 minibuses
- ⊕ 2 drivers e 1 Call Operator
- ⊕ 36 stops

KM CARRIED OUT

- ✦ 216.886 total km
- ✦ 194,9 km average daily



PROVIBUS

MUSASCO VERVA SAKOLA BREVOLIO CARONNOLO CRESCENTINO

PROVINCIA DI TORINO

BUS A CHIAMATA

NUOVI ORARI DI PROVIBUS PER CRESCENTINO

DA OTTOBRE 2007

Telefona il giorno prima del viaggio al numero verde **800-213343** in orari **9-12** e **14-16** da LUN a VEN e concorda con l'operatore l'orario, il punto di salita e discesa. Usa Provibus in orario **9-12** e **14-19** da LUN a VEN.

FERMATE E/O PUNTI DI RACCOLTA

PROVINCIA DI TORINO

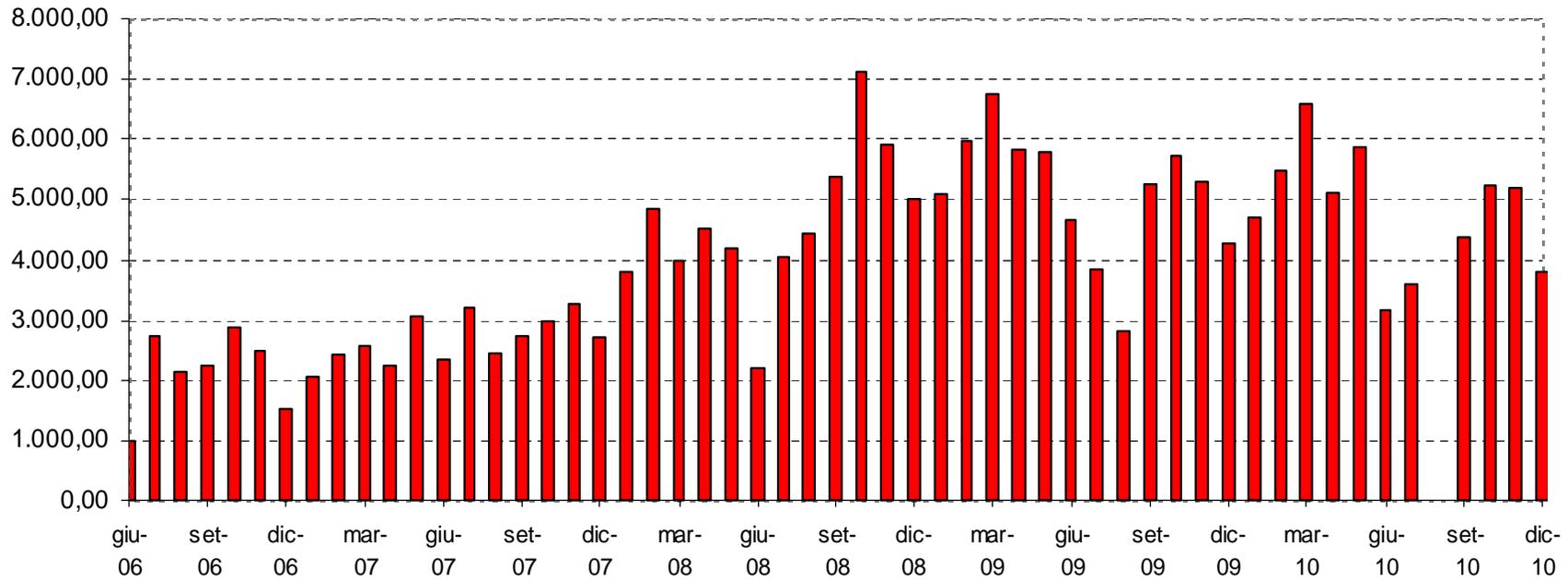
€ QUANTO COSTA PROVIBUS
La tariffa, in fase sperimentale, è compresa tra 1.10 e 1.70 Euro. Il biglietto si acquista a bordo.



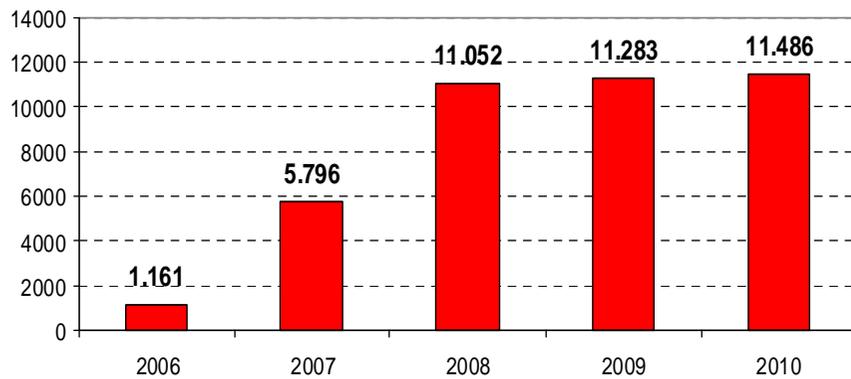
CRESCENTINO - KM E PASSENGERS



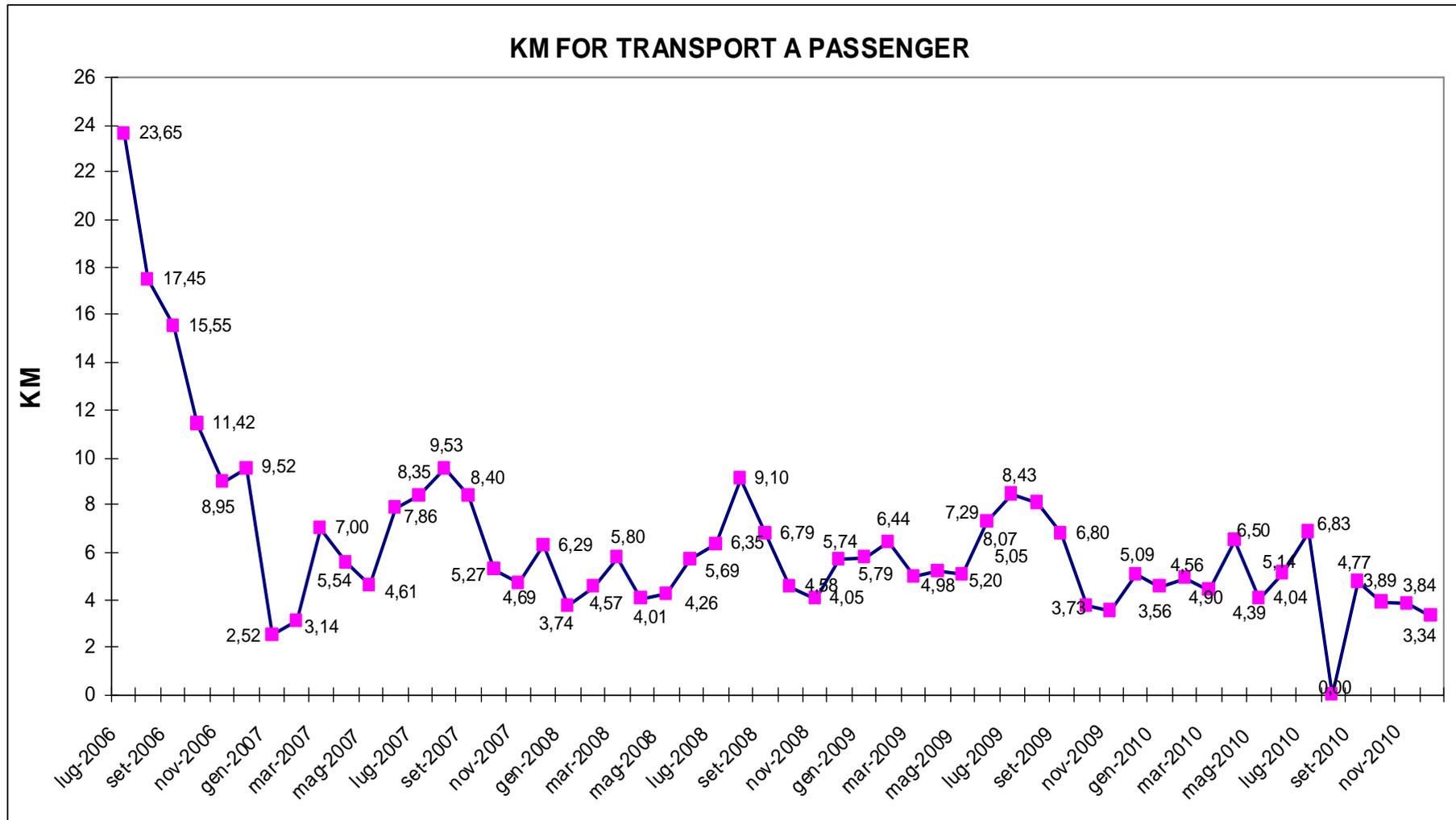
DISTRIBUTION OF THE PASSENGERS



PASSENGERS



The distribution of the passengers shows a significant increase between June 2006 and December 2007. From 2008 until today the service is regular e costante. It is verified a lower utilization in the summer months.



The indicator KM/pax (km carried out to transport a single passenger) which evaluates performance of service in relation to costs, shows a decrease in early 2006, with an average that over time has attested to **5.32 KM/pax**. The national average in suburban areas is between **6 and 8 KM/pax**.



THE RESULTS OF PROVIBUS

(June 2006-Dicember 2010)



TERRITORY COVERED

- * **132.444** residents
- * **885** sqkm
- * **106-320** density
- * **56** towns (4 in Province of Alessandria, 1 in Province of Vercelli, and 1 in Province of Asti)
- * **271** stops
- * **4** borders (Provinces of TO, AL, VC, AT)



SERVICE MONITORED

- * **53** months
- * **5** day/week
- * **34.846** hours of offered service
- * **6,3** hours/day average*bus
- * **5-8** hours/day offered
- * **5** hours/day booking



PASSEGGERI

- * **113.947** passengers
- * **103** passengers/day
- * **21** passengers/hour
- * **358** booking cancelled



SERVICES

- * **6** transport companies
- * **12** mini buses
- * **10** drivers
- * **3** operations Centre
- * **4** operators



CUSTOMER SATISFACTION

- * 97% are declared satisfied
- * 26% use Provibus every day
- * 67% use it in round-trip



KM CARRIED OUT

- * **638.171,7** km
- * **574** km/day
- * **5,60** km/passenger
- * **1,11587** €/km
- * **22,8** commercial speed



COMMUNICATION

- * **20.000** user needs questionnaires
- * **39.000** communications packages



COSTS / INCOMS

- * **728.839,10** €*km
- * **220.741,6** €*km
(paid by the Province of Alessandria and the Municipality of Chivasso)
- * **90.394** € Travel Dispatch Center
(€ 15.236 paid by the Municipality of Chivasso)
- * **1,14207** €/km
- * **23%** costs/incoms





PROVIBUS AND OTHER SERVICES ON DEMAND



COMPETENT ISTITUTION		Province of Torino**	Province of Mantova*	Region Marche*	Province of Torino**
SERVICE		PROVIBUS	TAXIBUS	TWIST FANO	PROVIBUS CRESCENTINO
PRODUCTION	KM / YEAR	93.415	190.000	27.200	55.893
	PAX / YEAR	17.059	10.000	5.000	11.039
	KM / PASSENGERS	5,48	18,10	5,44	5,04
COSTS	€ / KM	1,31	2,17	2,24	1,12
	€ SERVICE	122.748	413.000	60.930	66.725
	€ PASSENGERS	7,19	43,26	12,19	6,02

Source of data: * Federmobilità 2007 ** Province of Turin Monitoring Year 2008

The table compares the parameters of production and cost of Provibus with those of similar services performed in the Province of Mantova. With the same criteria is compared Provibus Crescentino with the service Twist of Fano (Regione Marche).

The data show, in both cases, the economy, effectiveness and efficiency of Provibus.



CRITICAL FACTORS



Below are listed the main difficulties identified in the process of design and realization of Provibus services and the respective applied solutions.

CRITICAL TECHNICAL OR ORGANISATIONAL ASPECTS	
Difficulties encountered	Solutions
Need for telephone booking	Habit of using the toll-free number
Optimization of journeys (pen and paper)	Introduction of SW GeoProvibus (2008)
Transport services in spatio-temporal overlap	Suggestion of use the conventional transport
Distribution of the informative campaign	Involvement of local authorities
Equipments to stopped (the small poles, penthouses, support for posting information, etc)	Involvement of local authorities and transport companies
Bookings / travel proposals refused	Additional calibration service (extension timetable, inserting new stations, increase the fleet, etc.)
Financing of the service Provibus	Management of economics through revision of conventional transport

In conclusion, the flexible well-functioning services can be considered real tool for the introduction of scheduled service only where and when need.



FUTURE DEVELOPMENTS OF PROVIBUS



1. Organisational developments:

- Territorial expansion of the service Provibus;
- Development of "Provibus +" for the adduction modal interchange nodes and conventional services with request deviations;
- Provibus for the school tourism, for parascolastic activities, enhancement of the territory, holiday cottages, sporting, gastronomic, cultural excursions, etc.
- ProvibusFest for holidays and and events.

2. Technological developments:

(Participation in the project program Elisa Infocity)

✓ In the course of implementation of the service Provibus dynamic (real time) through terminal board that visualize the travel information and guarantee bidirectional transmission (GPRS/GSM) of the data between the Central and vehicles. The localization (AVM) is based on satellite tracking system OTX (Observatory of suburban transport) and GeoProvibus; booking and confirmation in real-time via SMS/UMTS/WI-FI.

✓ Information to the customers about the Provibus exercise and public transport lines (road-railway) through informative totem poles.

3. Management Developments:

Under realization is a database G.E.U. (Unique Economic Management) that will manage all the economic-administrative movements.



BENEFITS AND IMPACTS OF PROVIBUS:



It guarantees the continuity and the coverage (space-time) of the public transport service



Through better information provides a service more adapted to the needs



It improves mobility and the access to the local services of the greater centers for the people with limited social economic possibilities



It is an appropriate tool for real evaluation of the user needs that depends of the adjustment of the conventional transport



It increases the accessibility to the transport, improves the perceived quality of the public service and make more valuable the territory



It rationalizes the expense and optimizes the cost of transport



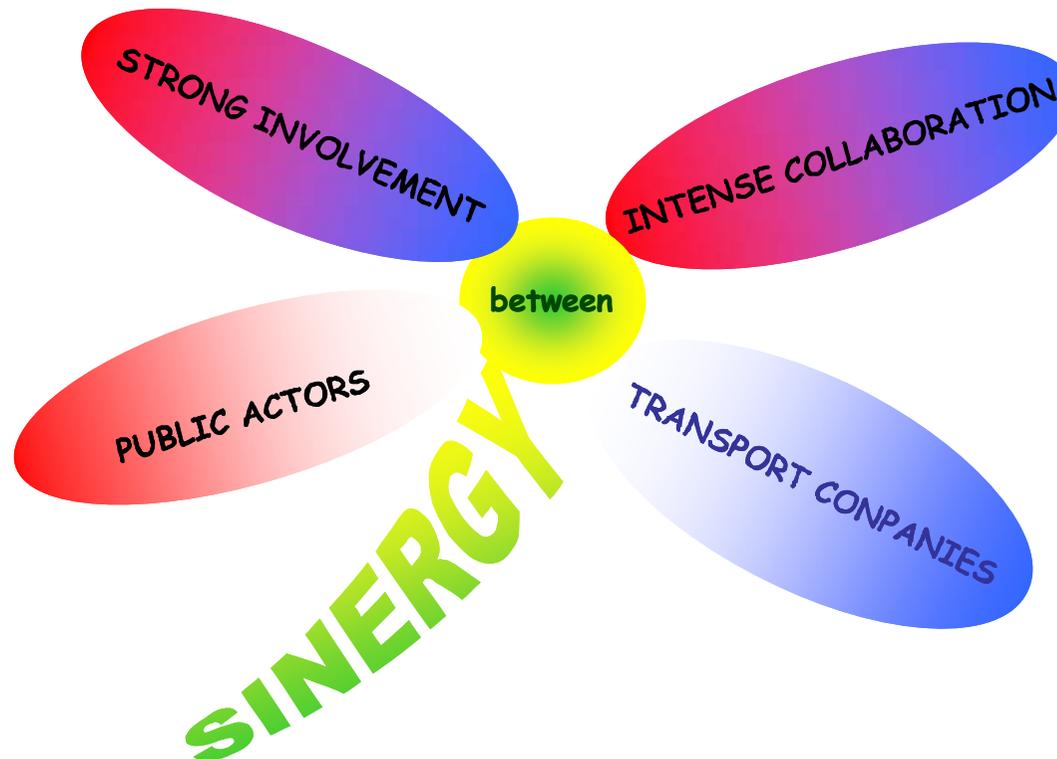
Creates a virtuous circle of improvement
(+ passenger + operation + profitability)



THANKS



The result was achieved thanks to the collaboration of municipalities, local authorities, associations, sports and commercial centers, schools, social-health residences, etc.



FOR NEW MODES OF TRANSPORT

TRANSPORT COMPANIES:

- ✓ GTT
- ✓ AUTOLINEE MARLETTI
- ✓ AUTOSERVIZI MENINI
- ✓ STAAV
- ✓ SADEM
- ✓ VIAGGI FURNO
- ✓ VI.MU.

DIVITECH S.p.A.:

Provider of SW GeoProvibus and of satellite tracking system OTX

PROVINCE OF TORINO:

Transport Service

For contact: provibus@provincia.torino.it www.provincia.torino.it