



**PRESS CONFERENCE**

**'European Bus of the Future' Catalogue**

**28 July 2006 at 09:30**



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### Why such an approach ?

Although genuine innovations have taken place in the field of bus manufacturing over recent years, they have mainly focused on technical performance and have not enabled users or local, national or European authorities to change their perception of bus transport.

The gap between proposed solutions for vehicles and users' expectations reveals a clear lack of major innovations in that field. Furthermore, while rational thinking leads most city-dwellers to understand that the bus is a reasonable solution for urban mobility, it is not really appealing to the public in the same manner as tramways which project a more modern and innovative image.

Yet, the bus is a very efficient mode of transport, for it is cheap, more flexible and, in many cases, tailored to the needs of users both in terms of capacity and speed. From an economic, environmental and social standpoint, the bus still remains the most universal solution for a balanced and sustainable urban development.

Thus, it is indispensable to speed up the modernisation of the bus just like the modern urban tramway or the high-speed train. This requirement concerns not only the bus as a mode of transport through the emergence of the BRT (Bus Rapid Transit) concept, but more especially the vehicle proper for which there is need to encourage a generational leap.

The necessary bus revolution is still ahead...

### Who are the stakeholders of the project?

The "European Bus of the Future" is a European research project initiated by RATP in 1999. Its launch was prompted by the observation that bus transport had a very poor image and the situation could no longer last. The aim of the scheme was to define common specifications for operators in a bid to innovate and standardise basic vehicular elements and ultimately to cut costs while improving the service.

The Think Tank was actually established in the autumn of 2001 with 8 operators and organising authorities from 5 European countries, running transport systems across Europe (and the world).

These 8 European companies have a bus fleet totalling 19,000 buses and representing a purchasing power of 2,000 vehicles per year as against 12,000 buses for the European market.

UITP quickly joined the group and actively supports its work.



[www.carris.pt](http://www.carris.pt)



[www.hur.dk](http://www.hur.dk)



[www.keolis.fr](http://www.keolis.fr)



[www.ratp.fr](http://www.ratp.fr)



[www.tec-wl.be](http://www.tec-wl.be)



[www.transdev.fr](http://www.transdev.fr)



[www.tpa.ch](http://www.tpa.ch)



[www.uito.com](http://www.uito.com)



[www.connex.net](http://www.connex.net)

## First phase: Functional analysis

### What methods were used?

The work was based on a value assessment method which led to the description of the vehicle to be designed as a set of functions; each function representing the service the vehicle is to render to users and the environment. Initially, a support mission was entrusted to Covalence, a consultant specialising in value assessment.

As part of the assessment, the following elements were studied for each function identified:

- the precise definition of the function,
- the operators' underlying motives,
- the aims of each function,
- minimal performance required,
- assessment methods,
- legislation and standards,
- recommendations or technical suggestions.

Thereafter, a multidisciplinary team (engineers, salesmen, designers...) worked for a few months to fine-tune these functions and present them as the characteristics of a "European bus of the future".

### Results

Value assessment and the pooling by stakeholders of their experiences resulted in a background document, drafted collectively and endorsed in 2003. This document contains 90 functional specifications classified under 9 themes.

Many of these characteristics are well known today. They are just mentioned here as a reminder. 40% of these specifications represent a huge innovation potential, especially those relating to passenger comfort, objective and subjective safety, information quality and design.

Innovation priorities concern the following areas:

- new on-board living concepts,
- access optimisation (getting on and off the bus),
- optimisation of the driver's immediate environment,
- streamlining information
- modularity and adaptability of facilities,
- greater safety concern,
- greater attention to environmental issues,
- manufacturing methods taking into account actual maintenance,
- integration of economic parameters at the early stage of design.

These results should now serve as the basis for discussions with manufacturers in order to make it easier to take into account users' needs in the design of new-generation vehicles.

## Second phase: Re?bus advanced design competition

### What is the use of a design competition?

An advanced design competition, dubbed « re?bus », was launched in November 2004 in European design schools to conceptualise specifications from functional analysis and to illustrate them around 8 identified themes:

- passenger spaces and flows
- bus boarding, interface with the floor
- driver's immediate environment and interface with passengers
- streamlining passenger information inside and outside the bus
- adaptability and modularity according to the type of service (local buses, standard buses, high-quality buses)
- integration of security/safety concerns
- sustainable development
- maintenance and LCC

The «European Bus of the Future» Think Tank does not intend to replace bus manufacturers. Through this competition whose organisation was entrusted to APCI (French Agency for Design Promotion), it wanted to promote the emergence of innovative ideas capable of guiding the R&D activities of the industrialists of the sector.

### Organisation of the competition

The competition was funded by the members of the «European Bus of the Future» Think Tank, UITP and the Predit (French Research Programme on Land Transport):

- launch : November 2004 (159 teams registered)
- submission of files: February 2005  
(41files received. Nationalities: F, I, GB, NL, B, P, CZ, H, EE)
- Preselection Committee (\*) : March 2005 (31 files)
- Jury (\*\*) : April 2005 (3 winners)
- prize award in Rome : June 2005

(\*): members of the «European Bus of the Future » panel + UITP + APCI (Agency for Design Promotion, organiser of the competition)

(\*\*): Jury members

#### **Hans Rat,**

UITP Secretary General, President of the Jury, Brussels, Belgium

#### **Paul Priestman,**

Founding Director, Priestman Goode, London, Great-Britain

#### **Christophe Rebours,**

Director, Agence in Process, Paris, France

#### **Jaime Moreno,**

Director, Mormedi Studio, Madrid, Spain

#### **Giovanni Rovere,**

Director of Network Planning, ATAC, Rome, Italy

#### **Alain Flausch,**

CEO, STIB, Bruxelles, Belgium

#### **Louisa Prista,**

General Manager of Research, European Commission, Bruxelles, Belgium

#### **Florence Masbernat,**

Director of Development and Industrial Relations, INRETS (National Institute for Research on Transport and Safety), Arcueil, France, representing **Guy Bourgeois,** General Manager of INRETS

#### **Peter Kercher,**

President, EIDD, European Institute for Design and Disability, Oliveto Lario, Italy



## Results

The creative diversity and convergence of approach noted during the scrutiny of design projects made it possible to come up with a summary that is useful to the bus profession. Below are some of the major trends recorded:

- identification of original vehicle designs (asymmetry, large glass surfaces, balconies, ...)
- vehicle modularity principles,
- relevance of reserved areas and passageways for better passenger flow,
- integration of fixed and mobile communication aids inside and outside the bus,
- new style trends based on urban furniture or communication objects

Thus, many innovation possibilities were identified. They match, to a great extent, the research priorities highlighted by the functional analysis.

<b>Final phase:</b>
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### Comparing functional and design results

The visual results of the re?bus competition constituted a pool of ideas that were well exploited in order to illustrate or develop the 90 functions identified by the functional specifications.

This catalogue is therefore the final deliverable of the “European Bus of the Future” Think Tank within the framework of its mission to provide a methodical, practical and comprehensive didactic document enabling industrialists to have a better grasp of the main thrusts of their R&D activities.



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# Members of the Consortium



## UITP: Better mobility for people worldwide



The International Association of Public Transport (UITP) is the worldwide **network** of public transport professionals.

UITP represents over 2700 urban, local, regional and national mobility actors from more than 90 countries on all continents.

UITP unites the entire supply chain of public transport players, such as:

- operating companies;
- local, regional and national authorities;
- the service and supply industry; and
- research institutes, academics and consultants.

UITP covers all modes of public transport - metro, bus, light rail, regional and suburban railways, and waterborne transport. It also represents collective transport in a broader sense (for instance car-sharing). UITP is currently further expanding its presence on the mobility market, including the taxi sector.



UITP acts as the **point of reference** and a centre of best practices for the public transport sector. UITP gathers and monitors public transport statistics and mobility indicators, and acts as knowledge hub on past and current developments and future trends.

UITP's international presence gives it a unique global perspective on hot mobility issues, whilst at the same time enabling it to place these issues in their local and regional contexts.

As such, UITP is THE worldwide expert on public transport and related issues.



UITP houses an international **forum** for public transport policy, offering a unique platform for inter-sectoral dialogue and for exchange and debate between the different profiles of mobility actors.



As the prime **advocate** and promoter of public transport, UITP works to mobilise political will with its sound evidence, and to create a favourable climate for the sector. As the representatives of the entire mobility market, UITP has a strong voice and significant influence when it comes to defending the interests of public transport.

UITP is actively engaged with a number of international bodies - such as the United Nations (UNEP, UNDESA, UNFCCC), the World Bank and European institutions – and is currently developing contacts with regional development and lending institutions.



Carris is a mass public transport company founded on 18 September 1872 and is closely connected to the development of the city of Lisbon. Over time, it has aimed to supply a satisfactory transport service for the resident and floating population.

Carris is one of the main public transport systems in Lisbon with a network of buses (on 97 lines covering almost 300 kilometres), a tram network (5 lines covering almost 25 kilometres), one lift and 3 funiculars. Nearly 277 million passengers use these services every year.

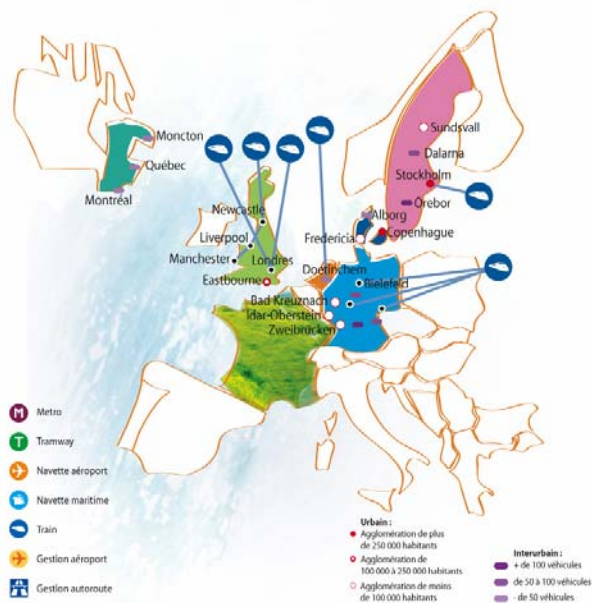
### Key Figures

	<b>BUS</b>	<b>TRAM</b>	<b>Light Rail</b>
<b>Number</b>	797	48	10
<b>Number of users</b>	238x10 <sup>6</sup>	18x10 <sup>6</sup>	
<b>Offer (vehicles x km)</b>	40x10 <sup>6</sup>	2x10 <sup>6</sup>	
<b>Lines (number)</b>	97	4	1
<b>Network (km)</b>	660	48	

Keolis, with operations in 7 European countries and in Canada, operates passenger transport systems on behalf of Transport Authorities, providing them with high quality and efficient services at optimum cost.

A specialist in automatic metros, manager of the largest bus and coach fleet in France, operator of trams and rail networks in Europe, Keolis also provides more specialised transport services such as on demand services, assistance to people with reduced mobility and non-polluting vehicles.

Information, management, mobility, safety and security, sustainable development, electronic ticketing and inter-modal transport are all areas with which Keolis is fully conversant.



## Key figures

- 1,8 billion users
- 200 subsidiaries.
- 33 250 staff members including more than 22 000 drivers
- 2,7 billion euros of turnover (62% in France, 38% abroad)
- more than 12 000 buses
- 2 400 km of railroads
- 64,5 km of automated metro network and 15 km of traditional metro
- 60 km of tramway
- 3 airports management, 100 trolleybuses, 1 « Oxygène » station in Lille and several ferries' services



Enriched by the competencies and input of the nearly 45,000 persons it employs to engineer, maintain and operate a full range of public transportation modes, the RATP Group harbours serious ambitions in the area of sustainable development. Its vocation as a fully-fledged business and national Public Sector Company is to become a French champion of excellence in the Ile-de-France Region, elsewhere in France and all across the world.

Running public transportation and urban mobility services in markets that are in the process of being opened to competition, the RATP Group is constantly attempting to act more innovatively and show greater responsiveness to all its customers' needs in order to provide them with greater levels of service quality.

Rooted in a public service ethos and committed to corporate social responsibility, RATP and its subsidiaries also seek to implement their resources in an efficient and economic manner, thereby achieving constant improvement in all entities' performances.

### **Key figures**

- 44,860 employees (Average 2005 staffing levels in firms where the RATP Group has an at least 50% capital interest)
- 10 million passengers a day (Metro, RER, Bus, Tram)
- € 3.6 billion in revenues under management
- inc. €3.4 billion in consolidated revenues
- €549 million in cash flow generated
- €816 million in investments
- €56 million in Group share of net profits

[www.ratp.fr](http://www.ratp.fr)



Veolia Transport (ex-Connex) has placed its mobility management know-how at the service of local authorities which have entrusted it with their transit systems as delegated public-utility operations since 1876.

In 25 countries, the company and its 72,302 employees provide responsive services whose reliability, comfort and quality are in keeping with clients' and our passengers' expectations, and with respect for economic, social and natural environments.

Europe's leading private operator in public transportation, Veolia Transport operates 30,757 road vehicles, sea vessels and trains and carried over 2.5 billion passengers during 2005 over a total distance of 1.6 billion kilometres. The company generated turnover during 2005 of €4.35 billion, an increase of 21.2% compared with 2004.

## Key Figures

### Turnover

	Turnover in main locations (in millions of euros)		
	2003	2004	2005
France	1 374	1 464	1 732
Germany	292	366	404
North Europe	727	748	819
Central and eastern Europe	89	110	162
Spain	29	39	51
North America	187	271	403
Benelux and miscellaneous	292	327	359
Australia and south pacific	130	263	397

### Passengers

Passengers carried (in billions)		
2003	2004	2005
1,5	2,1	2,5

### Employees

Employees (December 31, 2005)		
2003	2004	2005
56 168	61 288	72 302

[www.connex.net](http://www.connex.net)



TEC is an acronym that stands for "Transport En Commun". It covers the five transport companies working the Walloon Region:

- TEC Brabant Wallon;
- TEC Charleroi;
- TEC Hainaut;
- TEC Liège-Verviers;
- TEC Namur-Luxemburg.

These five bodies are controlled by a parent company: the S.R.W.T (acronym for « Société Régionale Wallonne des Transports »). Its role is strategic and commercial management:

- It coordinates and controls the actions of the five TEC companies;
- It suggests to the Walloon Government the price structures;
- It suggests to the Walloon Government the infrastructure investments needed and then undertakes these;
- It develops common policies, depending on whether they are of regional interest (general commercial policies, promotions, etc...) or generate economies of scale (group orders, pooling together human and technical resources...)

The TEC group:

- employs 4,795 people;
- operates 2,186 vehicles (,1634 directly and 552 through sub-contracting);
- transports more than 185 million people in 2004;
- travels more than 115 million kilometres in 2004.

Key figures for 2004						
	TEC Brabant Wallon	TEC Charleroi	TEC Hainaut	TEC Liège-Verviers	TEC Namur-Luxembourg	Total
<b>Standard buses</b>	184	281	291	674	476	1906
<b>Articulated buses</b>	5	2	26	75	15	123
<b>Midibus and minibus</b>	4	12	54	10	39	119
<b>Power units</b>	0	38	0	0	0	38
<b>Total</b>	<b>193</b>	<b>333</b>	<b>371</b>	<b>759</b>	<b>530</b>	<b>2186</b>
<b>Total number of Kilometres</b>	<b>10 302 846</b>	<b>15 955 018</b>	<b>20 988 046</b>	<b>38 845 430</b>	<b>28 931 940</b>	<b>115 023 280</b>
<b>Population</b>	1 203 365	580 000	860 452	1 000 000	708 666	4 352 483
<b>Number of lines</b>	54	70	111	201	224	660
<b>Length of lines' axes (in km)</b>	1 550	948	2 548	4 140	8 736	17 922
<b>Number of bus stops (1 direction)</b>	1 283	3 290	2 844	4 824	5 624	17 865
<b>Users (millions)</b>	<b>16,1</b>	<b>24,9</b>	<b>27,6</b>	<b>84</b>	<b>33</b>	<b>185,6</b>

[www.infotec.be](http://www.infotec.be)



TRANSDEV operates a range of complementary activities in urban and intercity transport. Present in Great Britain, Italy, Portugal and Australia; TRANSDEV operates transport networks in urban areas of all sizes, from major metropolitan areas such as London, Porto, Melbourne, Rome and the east of the Paris region, through French regional centres such as Grenoble, Montpellier, Orléans and Strasbourg, to smaller French towns such as Briançon or Autun (10,000 inhabitants).

With 43 subsidiaries active in urban transport across 42 French départements, Over the last few years, the company has also expanded into specialist markets such as tourism, with VISUAL an up-market tourism bus; airport ground transportation with AIRCAR and transportation in ski resorts with ALTIBUS.

#### Fleet

9,540 buses and coaches,  
950 tramway vehicles  
92 metro trainsets  
18 trains

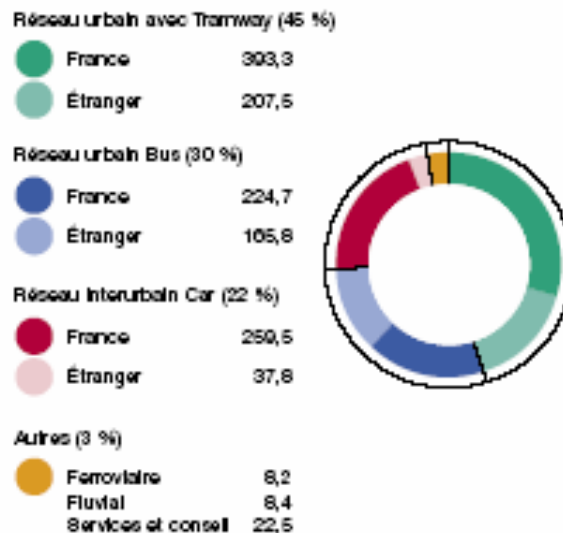
#### Staff

25,975 employees  
(o/w 10 179 abroad)

#### Consolidated group sales

800 million euros  
Sales abroad : 44 %

RÉPARTITION DU VOLUME D'AFFAIRES  
GÉRÉ PAR SECTEUR D'ACTIVITÉ  
(en M€)



Figures 2004 except (\*): 2005



***Transports publics genevois***  
**membre unireso**

Succeeding in 1976 to the CGTE, the Genevan Public Transport (TPG) are, since 1999, an autonomous company under contract with the State of Geneva which provides financial means and defines the TPG objectives both in qualitative and quantitative terms.

The region of Geneva goes from the French border to the limits of the Canton de Vaud and its demographical growth, requests capacities of transport and network extension in constant progress. No least than 360 vehicles (trams, buses and trolleybuses) that cover more than 17 million kilometres per year.

**Key figures**

Length of the network:	376 km
Number of vehicles	360 (trams, trolleybus, buses)
Number of passengers per year	118 millions
Number of employees	1500 (including 900 drivers)

As a modern company, the Public Transports of Geneva takes up successfully the ambitious objectives and challenges that have been defined by the State of Geneva in the framework of the Contract of services 2003-2006.





The Greater Copenhagen Authority (HUR) is a politically-governed regional organisation covering the Greater Copenhagen Region. HUR started up in July 2000 and has since then achieved a wide range of results within the six core areas of the organisation: public transport, regional and traffic planning, co-ordination and development, industrial policy, tourism and culture.

HUR is responsible for the provision of an overall transport policy for Greater Copenhagen. Our aim is to determine the preconditions in terms of transport policy that would best promote the development of Greater Copenhagen with a strong focus on growth, welfare and a healthy environment.

In 2004 HUR had:

- 914 buses driving 95 million kilometres on 270 routes,
- 200 million passengers per year or about 550,000 passengers a day.

Greater Copenhagen Authority has six areas of responsibility. The operational structure reflects the span of activities in which the organisation is involved.





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# Other project Stakeholders



## Agency for the Promotion of Industrial Creation

Created in 1983 on the initiative of the ministers responsible for industry and culture, to contribute to the bringing together of culture, research and industry, and having become entirely private in 1993, the APCI, in collaboration with its members and its partners, develops tools and group actions that provoked the economic, social and cultural aspects of French design in France and abroad.

### **A conception of design**

For the APCI, design is first of all an approach that gives greater importance to the individual in their relationship with objects, environments, systems and image, and gives the same amount of attention to work-related objects, public areas, domestic life, health, leisure, sport and transports.

If the objects created with designers bear witness to a culture and try to anticipate trends, above all they should simply:

- Be better designed and therefore more sensitive, more intelligent, more comfortable and more enjoyable to manufacture, transport, sell, use and maintain, and possibly be less expensive.
- Propose scenarios to the users that meet the requirements of their lifestyle, aspirations, and needs.
- Participate in the finding of solutions tackling contemporary issues: the aging of the population, limits to natural resources, and development of technologies.

### **Diversified targets**

The APCI is aimed at:

- Designers in order to encourage them and help them improve in an overall and intuitive approach complementing those of specialists, to implement behaviour analysis, relations with objects, spaces and services, and the evolution, to develop future planning action, carry out a permanent watch which focuses on technology and knowledge transfers.
- To companies that have only had minor contact with design in order to incite them to take the risk of innovative creation that stand out from the crowd.
- To companies who already use design to reinforce future planning action.
- To public and private design consultants.
- To researchers looking for outlets for their research or research themes.
- To politicians responsible for the quality of public areas.
- To teachers of all disciplines
- To design consultants
- To purchasers
- To the general public

### **Specific know-how**

At the request of its partners, its members, or on its own initiative, the APCI uses its know-how to carry out specific actions, whose results can be seen on the web site.

- Ideas competitions and national and international projects, for professionals or students.
- Qualitative and quantitative surveys giving a better understanding of the world of design and its role in Europe and in France.
- Exhibitions, and seminars.
- Organisation of study trips and professional meetings for French designers abroad or for foreign designers in France.
- Advice and document resource centre.

[www.apci.asso.fr](http://www.apci.asso.fr)



Covalence runs an ethical quotation system, EthicalQuote, a participatory database measuring the reputation of multinational enterprises on ethical issues.

Covalence SA was founded in 2001 in Geneva as a limited company by six persons coming from finance and social sciences.

45 criteria of business contribution to human development have been defined within an international legal framework. 25 interns from 12 different countries have collected 11'000 documents from 2000 sources on 14 sectors and 300 companies.

Inspired by stock quotes, EthicalQuote is a base for services offered in the field of ethical and sustainable investments, reputation analysis and risk management. Covalence produces detailed reports on companies, sectors or specific issues, which offer a synthetic view of claims and initiatives related to corporate social responsibility at a global scale.

Covalence regularly collects information regarding multinationals on the Internet and receives email messages through an open network of correspondents among civil society organizations, enterprises, researchers, consultants and other stakeholders. Interested parties can communicate their information using the online form, thus feeding the database and influencing the "ethical quote" of companies.

[www.covalence.ch](http://www.covalence.ch)



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**Bus Market: facts and figures**

**I.A fragmented market**

- 12.000 buses produced in Europe every year
- Market volume of the 50 biggest networks: 4.500 buses yearly
- Yearly Belgian market : very small only 2,8%
- D, F, I, UK, ES : **73%**
- GR, SV, NL, AT, BE : 18% } 91%
- CH, NO, PO, DK, IR : 8%

**II. Market Shares in 2004**

France:	Irisbus 55% Evobus 16% Van Hool 7%
Germany:	Evobus 58% Neoman 30% Volvo 2,2 % Irisbus 1,3%
Italy:	Irisbus 43% Evobus 27% Scania 8% Man 7%
Spain:	Irisbus 28% Evobus 20% Scania 20% Man 19% Volvo 13%
United Kingdom:	Dennis 25% Volvo 30% Scania 13% Evobus 7% Neoman 5%

### III. Current market situation

OPERATORS	MANUFACTURERS
The 50 largest networks have: <b>54 700 buses</b>  They purchase (renewals): <b>4 500 bus / year</b>	Evobus Neoman Irisbus Volvo Scania They produce <b>73%</b> of the buses manufactured in Europe: <b>8 500 bus / year</b>

### IV. Automotive Market

Passengers individual cars: 14,6 millions units

Commercial Vehicles: 640 000 units

Trucks 360.000 units (+ 6 T)

Trucks 280.000 units (+16 T)

Buses: 25-27.000 units

Public Transport buses 11-12.000

Coaches/Autocars 14-15.000



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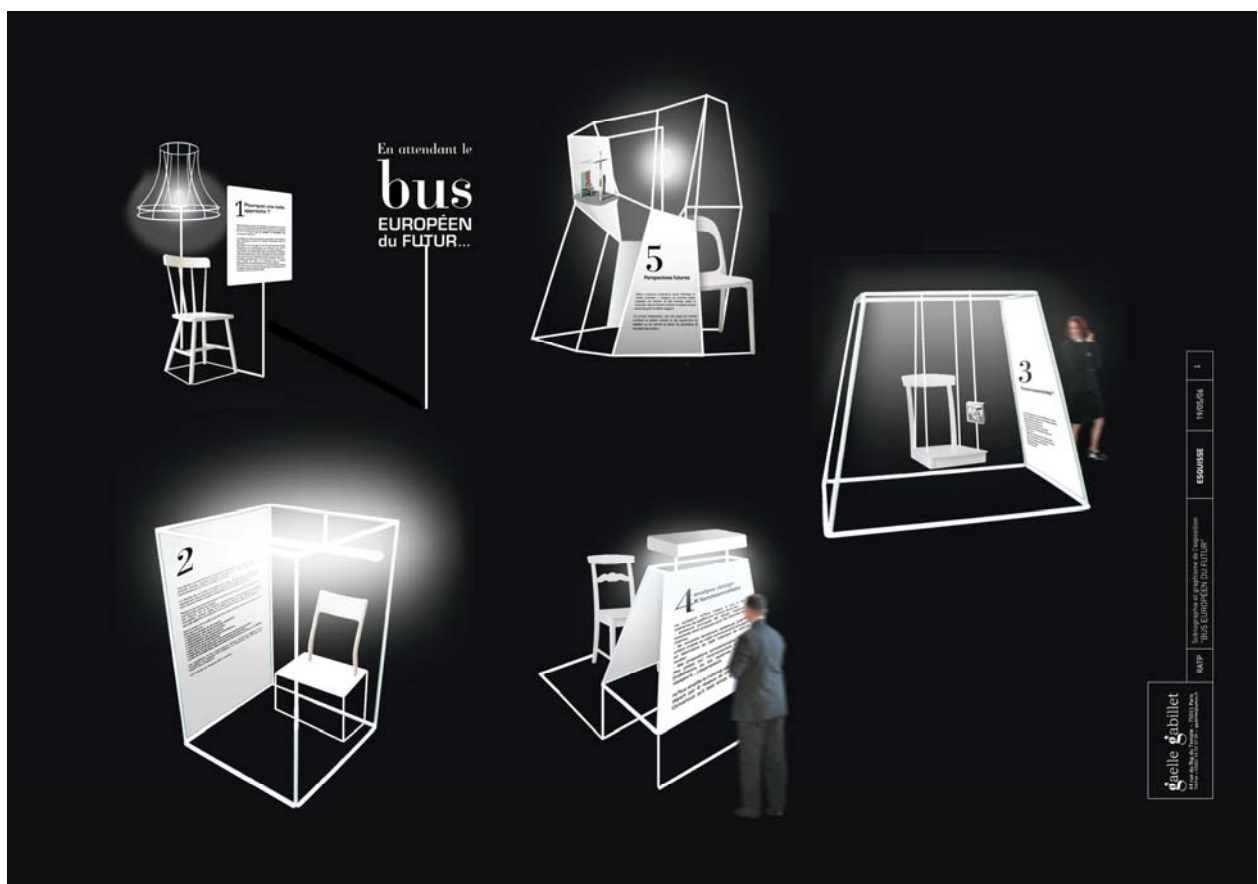
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### Mini-exhibition European Bus of the Future

Illustration of the five different steps that led to the creation of the 'European bus of the future' catalogue, the exhibition stages the five-years work of the Consortium. Presented under the title of "Waiting for the European Bus of the future", five modules were developed:

- 1) Why such an approach?
- 2) What methods?
- 3) What is the use of a design contest?
- 4) Recommendations and guidelines
- 5) And now?

This traveling exhibition is presented for the first time at UITP. Between July and December, it will make its way through Europe, going from one consortium partner to the other.





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### Additional Ressources

#### I. This members of the Consortium are available for individual interviews

**UITP :** Arno Kerkhof, Division and Commission Manager, UITP

**Veolia Transport :** Jean-Laurent Franchineau, Directeur du département recherche

**TEC :** Jean-Paul Etienne, Ingénieur principal, SRWT-TEC

**RATP :** Yo Kaminagai Responsable de l'unité design et projets culturels,  
Philippe le Ny, Responsable de l'entité Développement Autobus

**Carris :** José Freire da Fonseca, Director de Unidade de Negocios de Manutenção

**Keolis :** Régis HENNION, Directeur Etudes & Projets

**TPG :** Thierry Wagenknecht, Directeur Technique  
Michel Dunand, mandataire des TPG pour le Projet Bus Européen du Futur.

#### II.Pictures

Pictures presented at the beginning of the conference are available on request as well as the pictures of the Re?bus competition.

#### III.Presentations

Power point presentations are available on request.

You can address all your requests to:

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+32 2 663 66 72

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# Bus européen du futur

Caractérisations fonctionnelles  
et recommandations



## “European Bus of the Future” catalogue

This catalogue explains in detail the functional characterisation of the bus of the future. It contains 90 functions identified by a team of engineers, designers and retailers. Designed for manufacturers and their teams as well as for organising authorities and operators (buyers of rolling stock), this guide, as illustrated by the results of the advanced "re?bus" design competition, deals with key themes such as:

- on board,
- transit,
- driver's cabin,
- communication,
- revenue,
- safety,
- environment,
- maintenance,
- road.

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