BHNS: the French BRT approach

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RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'ÉCOLOGIE, DU DÉVELOPPEMENT ET DE L'AMÉNAGEMENT DURABLES

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Structure of the presentation

1. Short presentation of CERTU and CETE
2. Introduction: some general remarks
3. The tramway re-birth since the 80's
4. The recent BHNS concept
5. Conclusion



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What is Certu?

Centre for studies on urban planning, transportation and public facilities

- **Agency** of the French Ministry of Ecology, sustainable Development and Spatial Planning
- **Capitalizes, develops and disseminates knowledge and methodologies** on a wide variety of urban issues
- Works in strong relationship with **CETE** (7 Centres in France) within a technical and scientific network
- **For** local government agencies, local authorities, institutes and companies interested in town issues

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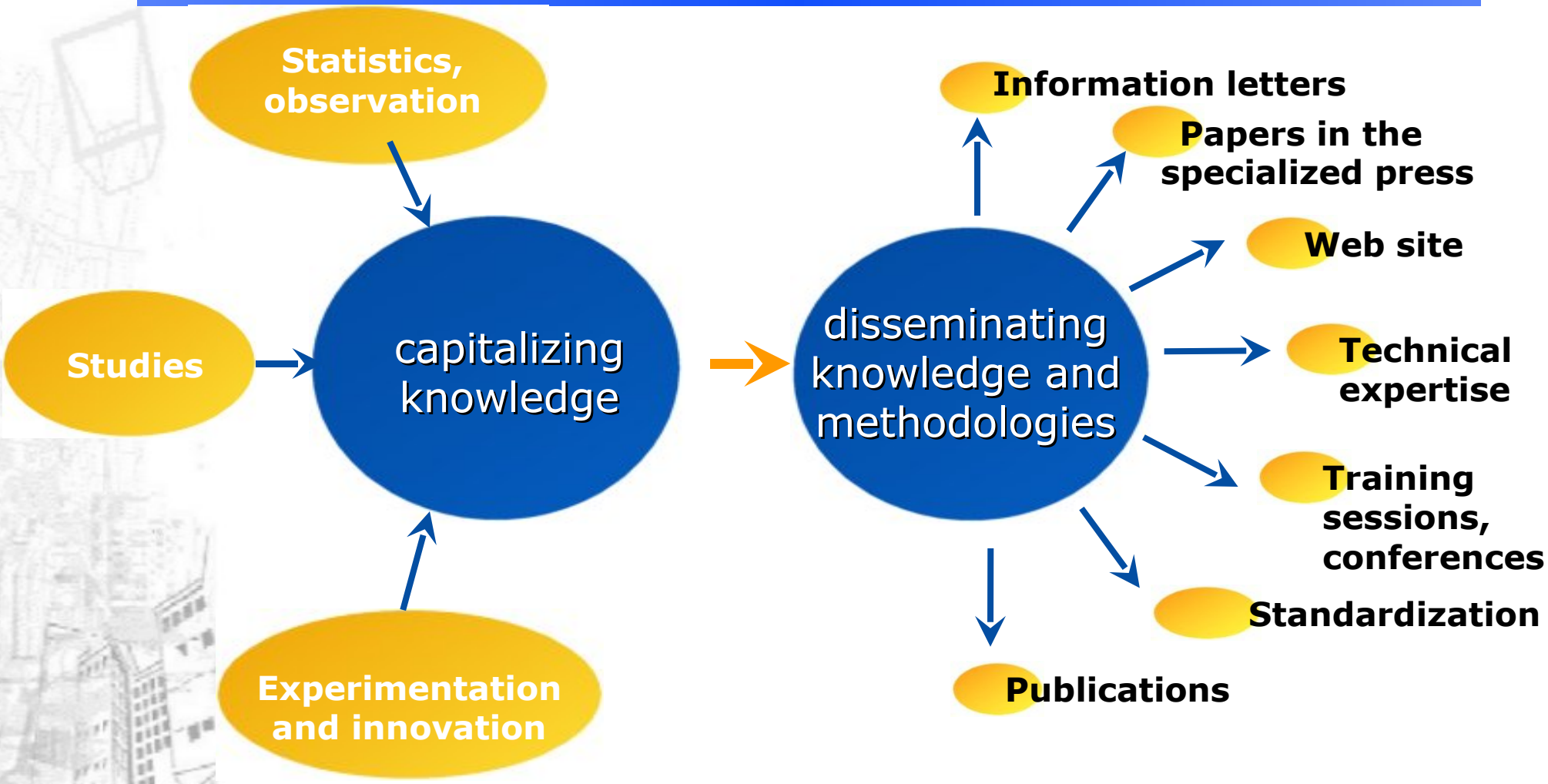
Certu's mission



2 - Introduction: some general remarks

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Some key points in urban transportation

- Cars are the less efficient mode in terms of space occupancy, including its parking needs
- Clean modes (walking and cycling) are very important and complementary with PT
- The public space is rare and precious; it should be shared properly between each mode
- Hence, the transport system should be organised and regulated within the whole urban area

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Definitions:

Level of service ≠ Quality of service

<u>The level of service:</u> measures the quantity of the service as it is planned (frequency, capacity, operating span …)

<u>The quality of service:</u> measures the gaps observed between the planned service and the service really provided (regularity or punctuality, reliability, comfort, accessibility,…)

Reference to our European standard "quality of service" EN 13816

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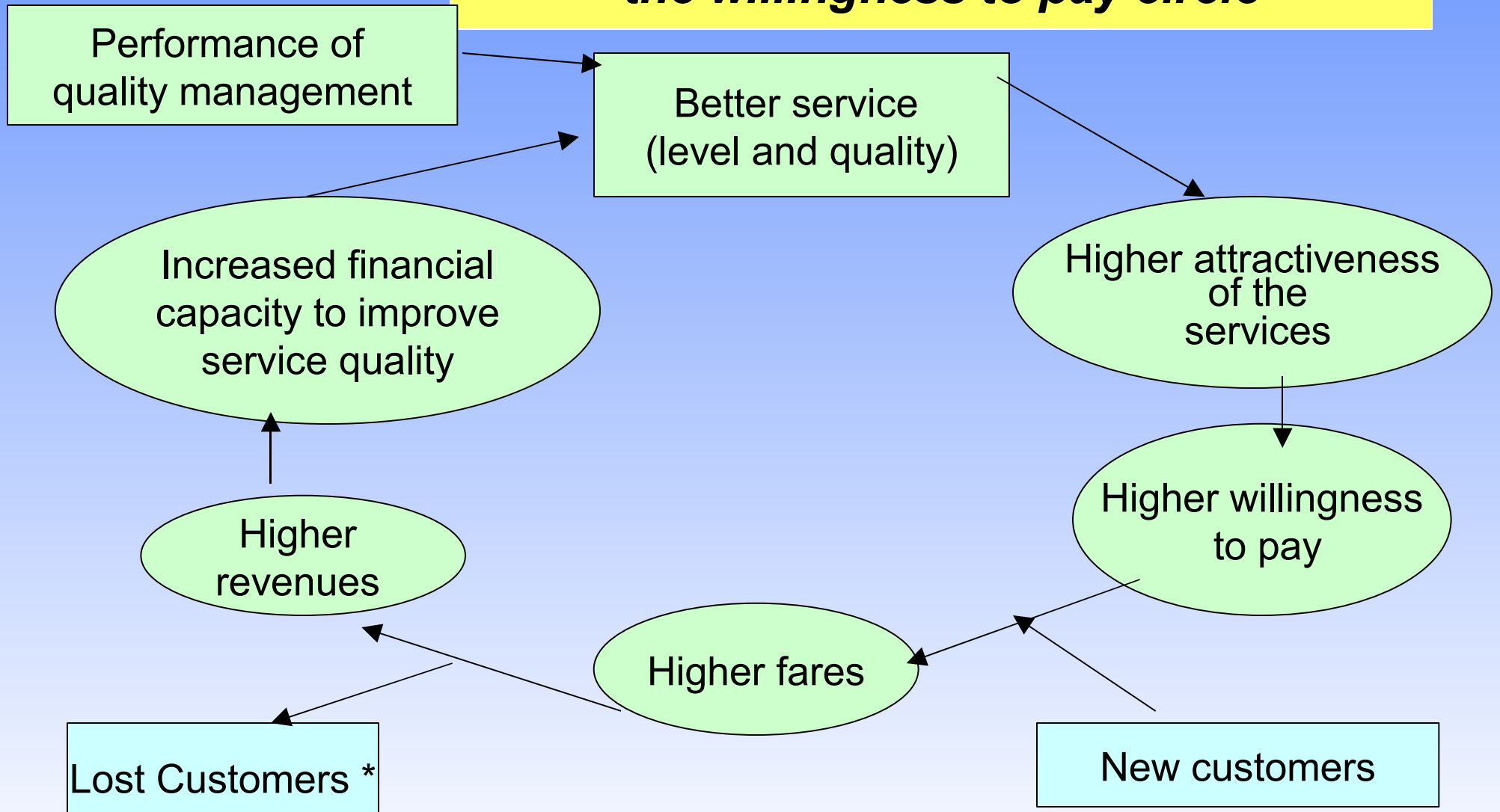
The virtuous quality circle or the willingness to pay circle



* Social compensations are needed

3- The tramway re-birth since the 80’s

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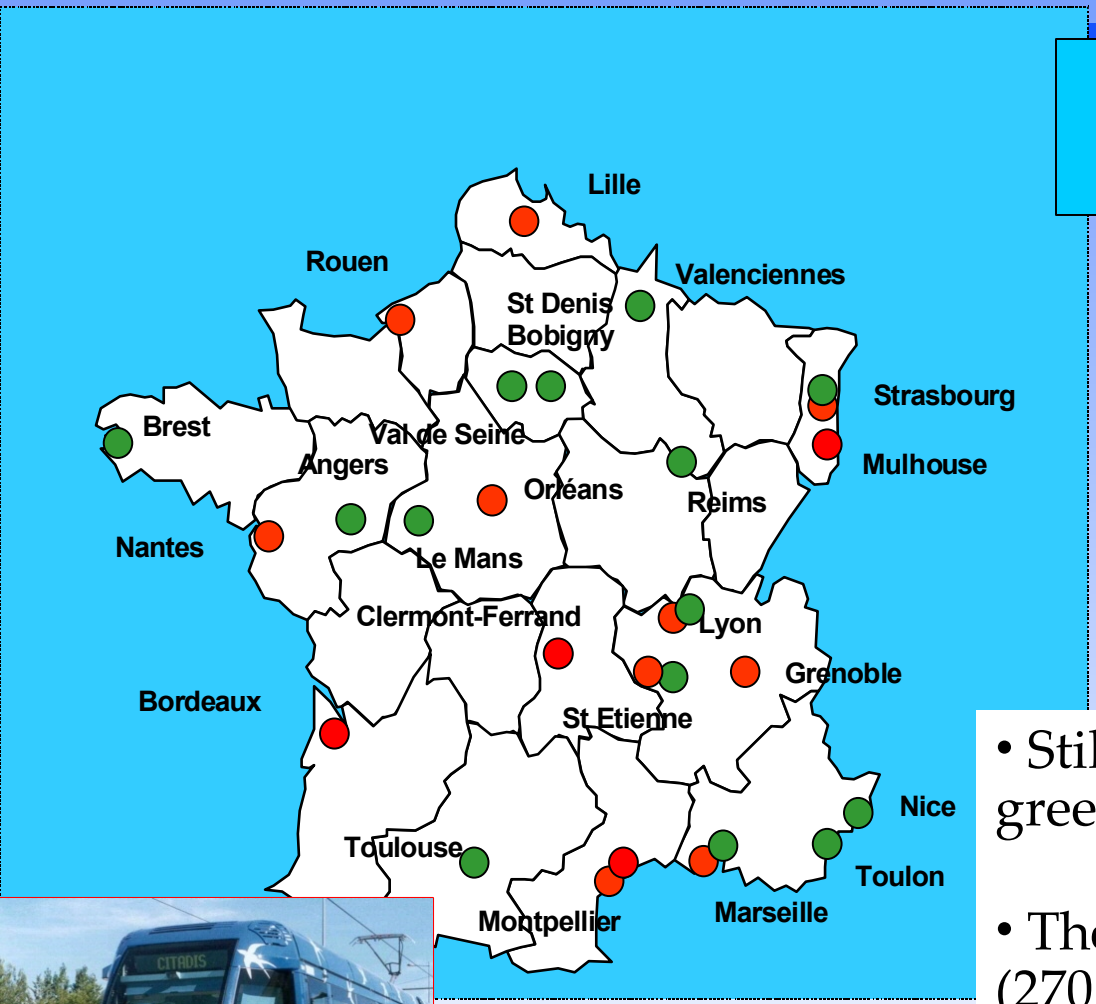
French tramway re-birth, since the 80th



Tramway into service: 350 Km

Tramway in project: 170 Km

- Still a lot of tramway routes in project (14 green dots)
- The smallest "tram cities" are Orléans (270.000) Brest (220.000) and Reims (210.000)
- The first Tram-train projects are appearing, such as in Paris, Lyon and Mulhouse.

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In 2000: a strong trend towards best design on vehicles as well as on infrastructure

Bordeaux

Lyon

Citadis from Alstom: a different "nose" and look with the same technical basis

Orléans

Montpellier

Source : AMTUIR

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Evolution of tram implementation process: more transparent, more flexible

Nantes: first line - 1985

Nantes: third line - 2003

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Some other examples

Montpellier, the tramway leaving the main central pedestrian square (down town)

1987: Grenoble -> pedestrian area

1994: Strasbourg
-> interchange hub of 2 lines in the

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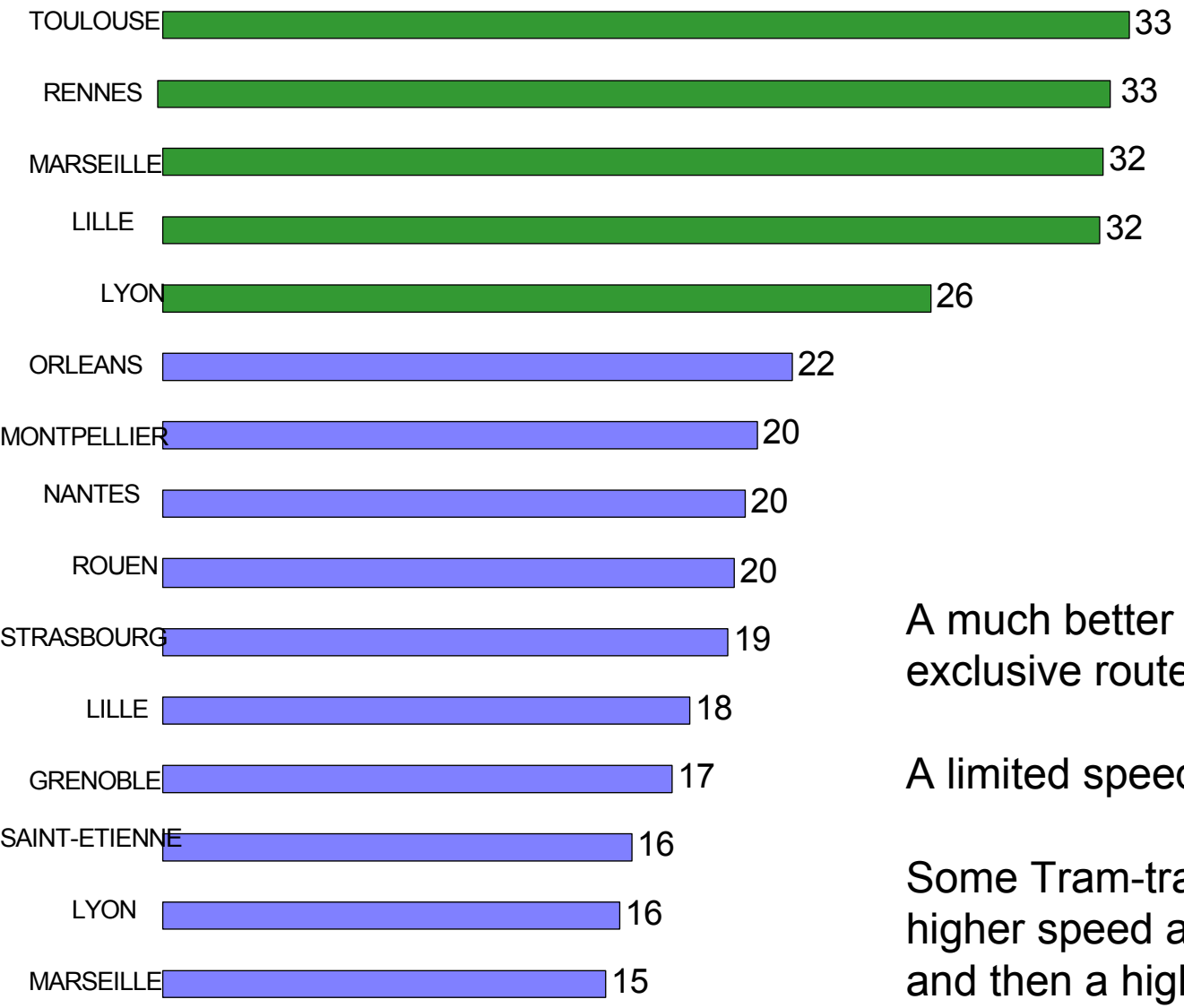
Tramways versus metros

- **More adapted to the needs**
  - lower capacity
  - lower costs than metros
- **Also a great urban planning tool**
  - Sharing public space
  - Improving “soft” modes
  - Enhancement of the quality of life
- **Compatibility with tram-train**
  - Better connection
  - Opportunity solution

	Capacity (pass./hour)	Cost (M€/km)
Metros	12 000 32 000	70 80
Tramways	1 300 6 400	15 30

Operating speed of main routes (km/h)



Metro systems

Tramway

A much better speed with the metro, due to its exclusive route

A limited speed for urban tramways

Some Tram-train projects appear with a much higher speed and spacing (Lyon, spacing 1km, and then a higher speed -38 km/h-)

4- The recent BHNS concept

(BHNS: Bus à Haut Niveau de Service/ High Level of Service Bus)

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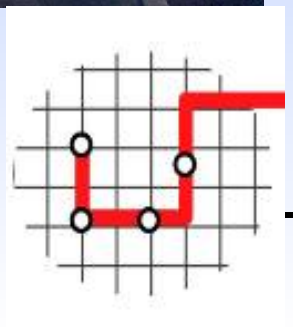
The components of any PT system

The vehicles

The running ways

The stations



The operating matters:
ITS, timetables, quality approach …

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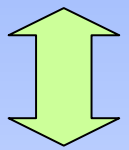
Think "system" at every stage

Components of the BHLS into:
- Running Ways and Stations
- Vehicles
- Operation (ITS, schedules, Service and Operations Plan, priority at traffic lights, Information, ticketing, …)

System Performance:
- Travel Time Savings or running time
- Reliability
- Safety & Security
- Capacity
- Identity and Image
- Availability
- …



System Benefits (internal, external)
- Ridership
- Transit - Supportive
- Land Development
- Environmental quality
- Capital Cost Effectiveness
- Operating Efficiency
- …

Necessity of an integrated implementation …

…but it does not lead to uniformity!

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Various approaches of the same concept

- reliable

+ reliable

Bus Line 1 in Grenoble

20 000 trips/day - 18 KM/h or even less…

1 M€ / Km

Busway in Nantes

25 000 trips/day – 21 Km/h

7 M€ / Km

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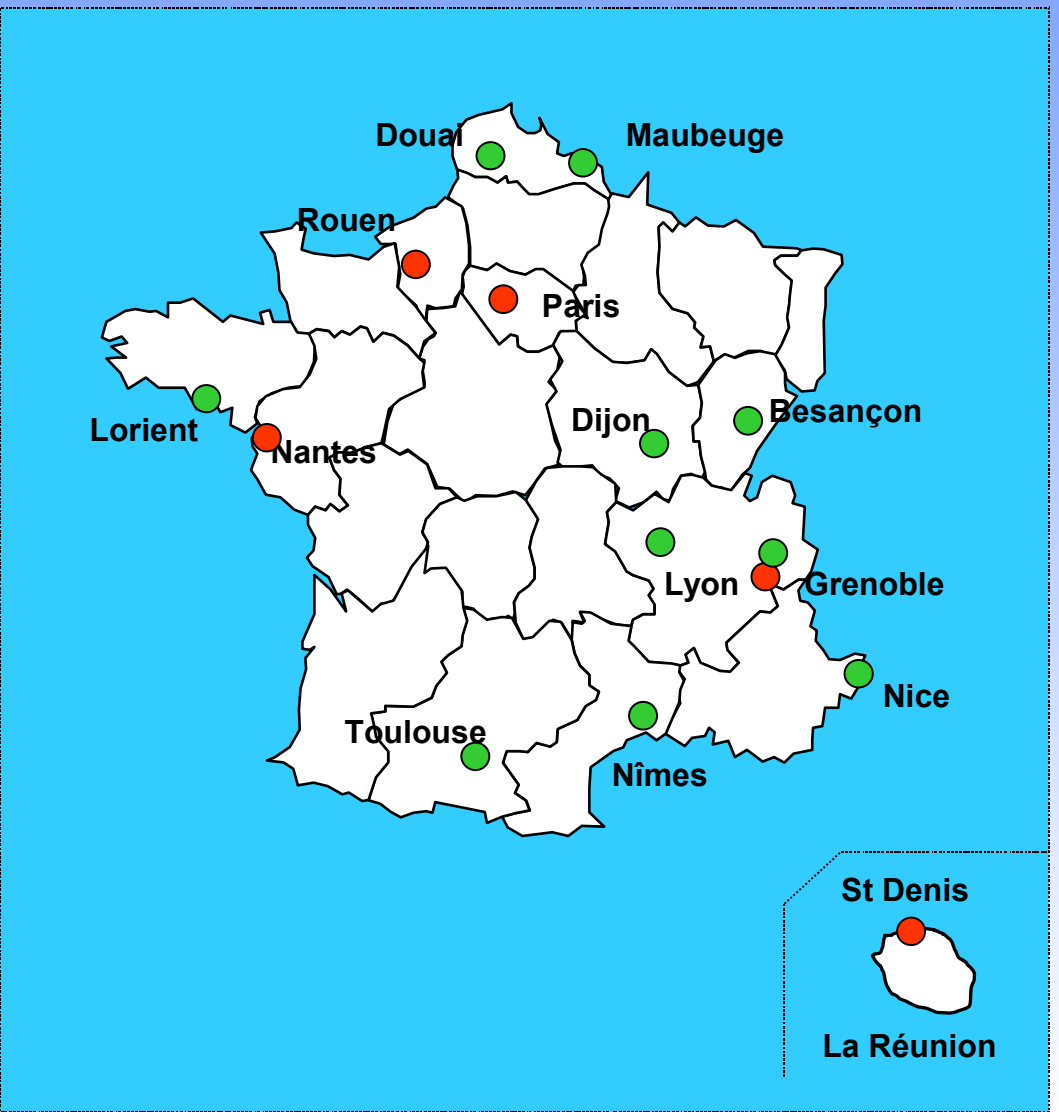
French BHNS approach
a Bus implemented like a Tram

BHNS
Bus à Haut Niveau de Service



BHNS into service

BHNS in project

- Urban tramway projects appear as too expensive below 50 000 trips /day
- Two bi-modal technologies appear, one with a rail, the other with a camera, which was implemented with success in Rouen
- A lot of projects, not necessary guided, but often implemented as a tram, such as in Nantes, branded "Busway" as the fourth tram line (7 M€ / km)

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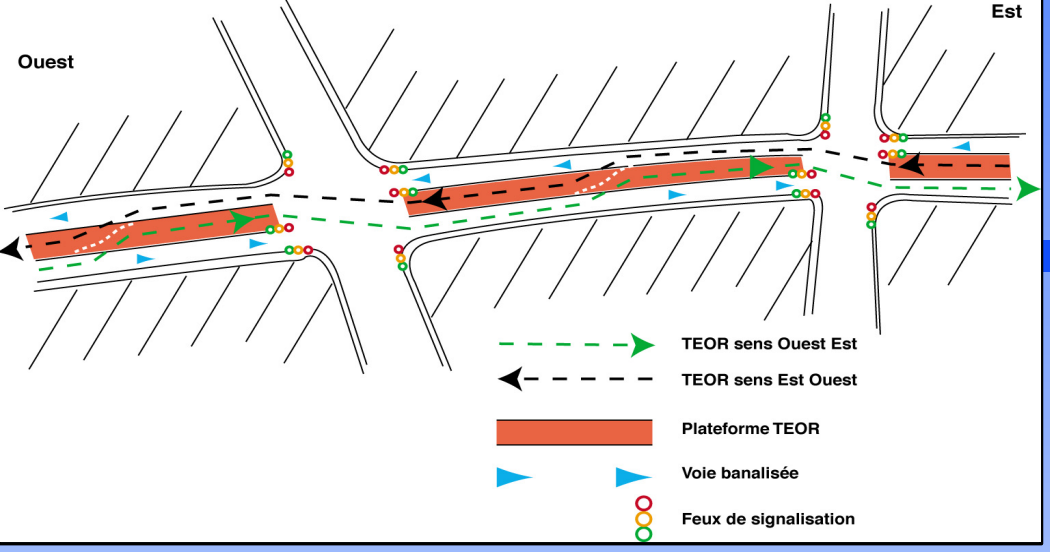
Example of Rouen

Rouen : Station avenue Pasteur

Rouen: TEOR is guided only at stations, that are looking like tramway stations

Other pictures from Rouen



TEOR:
alternate dedicated lane, the bus is « the first » at the traffic lights

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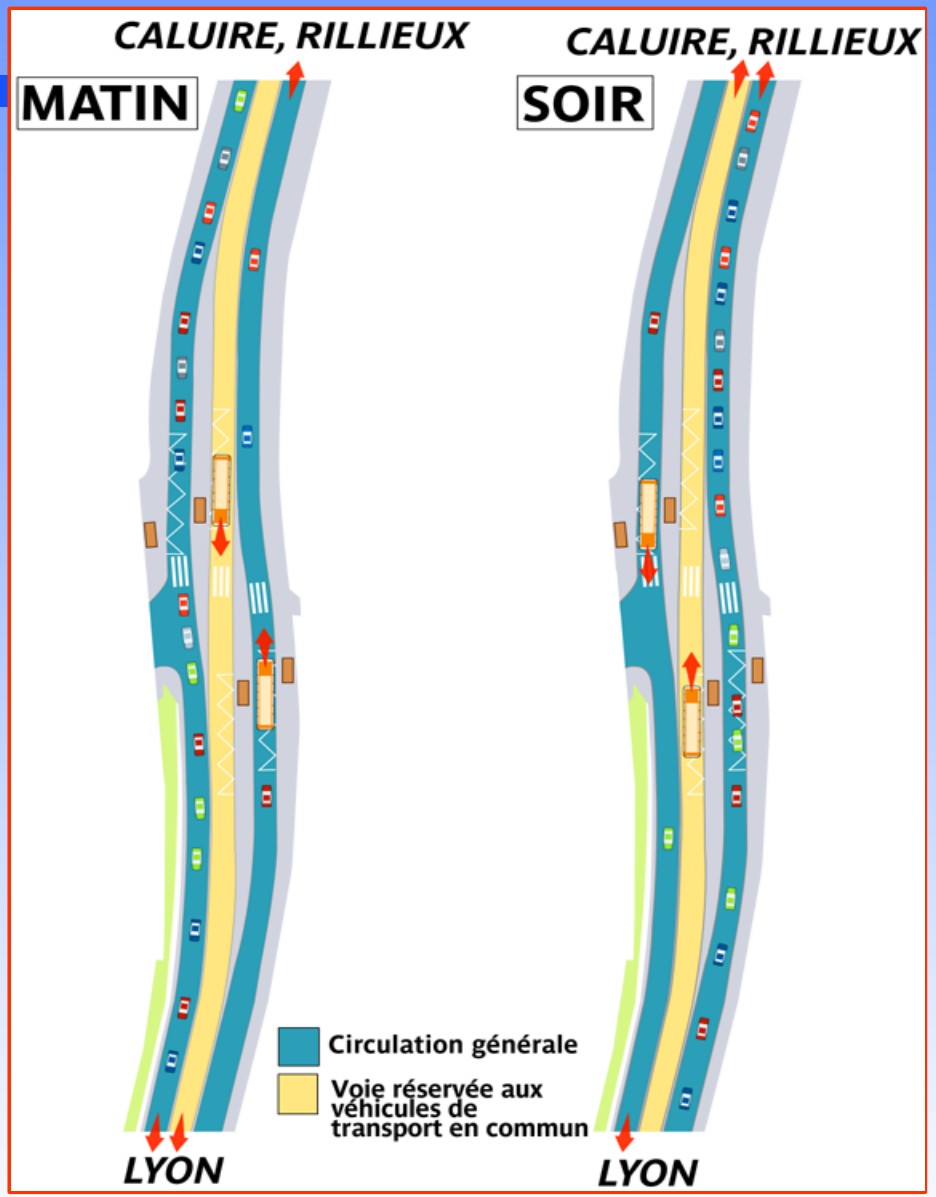
Lyon: reversible bus lane: the principle



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Lyon: reversible bus lane: some other photographs

Nantes: the “Busway”

Operating speed: from 21 up to 23 km/h

25 000 trips per day

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Lorient: example of a small city (250,000 inhabitants)

Enhancement of a central common section (6 bus lines)

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The Bus lane in Grenoble

- Busses are allowed to use the emergency lane of highways (with conditions)
- Bus priority at the exit

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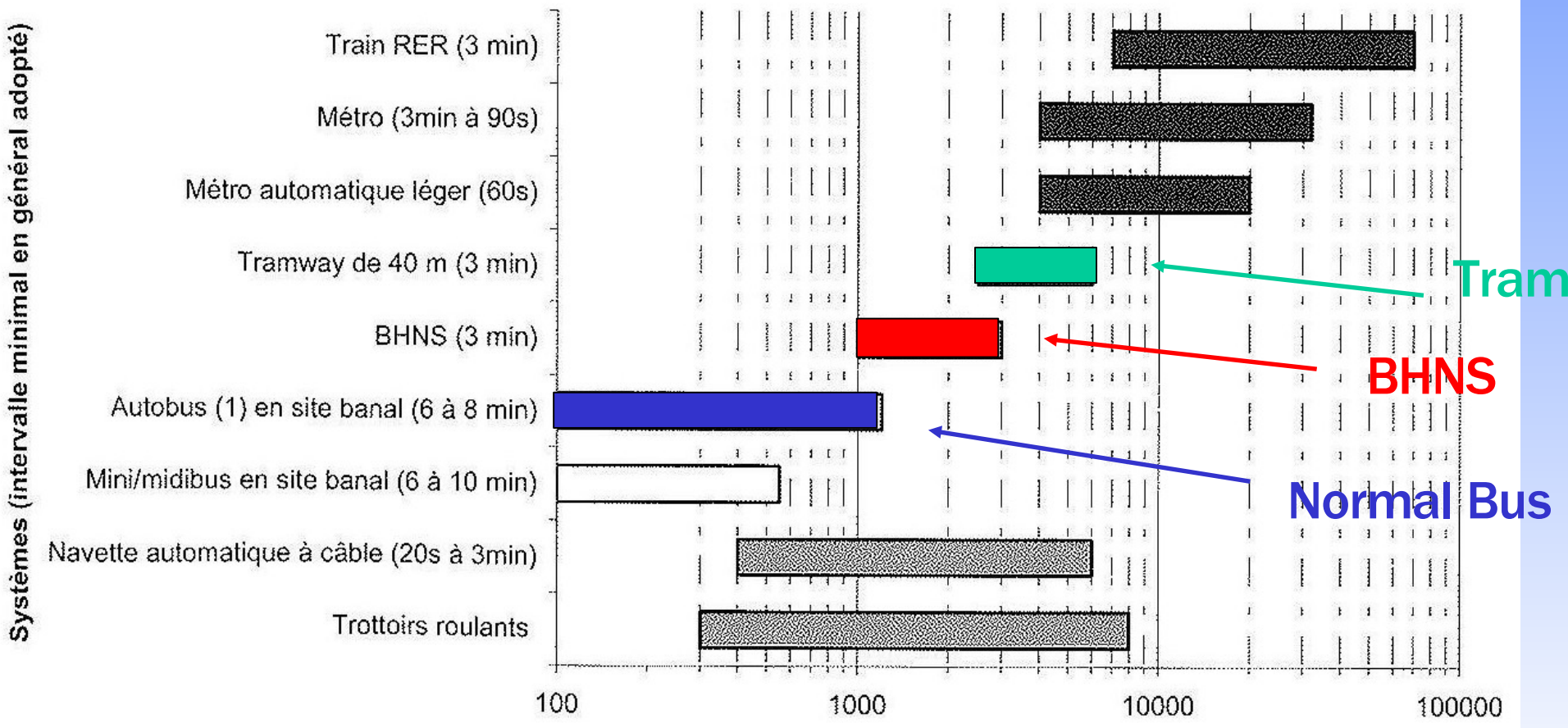
Modes relevance

Usual hourly flows, with a density of 4 passengers/m²



Passengers/hour/direction (logarithmic scale)

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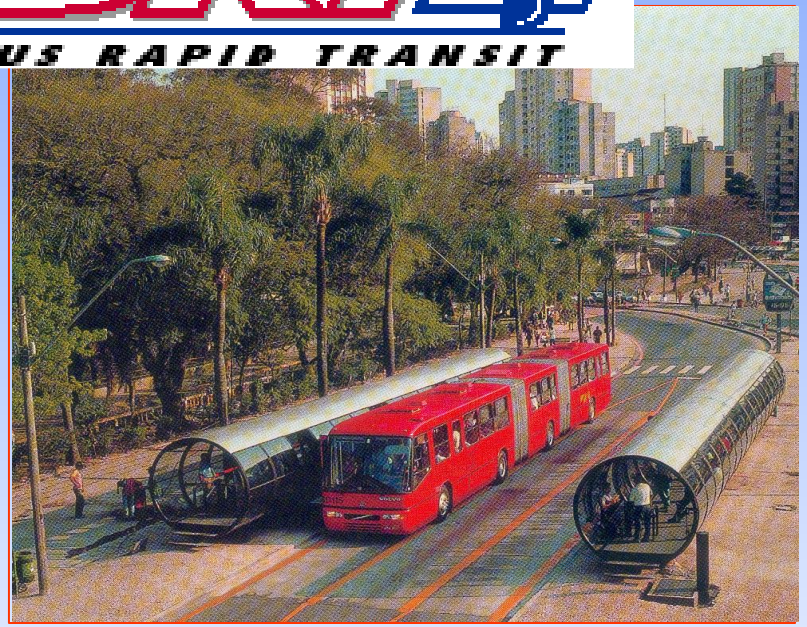
For knowing more...

BRT
BUS RAPID TRANSIT



www.bhns.fr

BHNS
Bus à Haut Niveau de Service

www.weststart.org
ou
www.calstart.org

CERTU documents

- Certu: **BHNS – Concept and recommendations (F)**
- Certu: **4-page leaflet "BHNS, an opportunity for mobility in the city" (F/EN)**
- Certu: Urban transit modes: guidance for a global system approach (F)
- Certu: The urban mobility in France, the 90ties (F)
- Certu: Urban Public Transport in France (EN)
- Certu: CD-ROM on Intelligent Transport (F/EN/CN)

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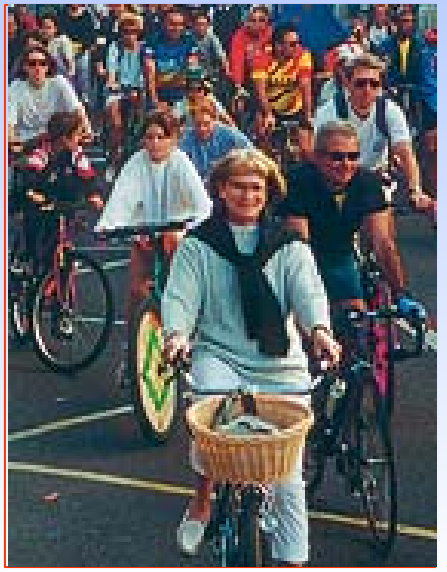
Some conclusions

- The two technologies, BHNS and tramways, have intrinsically different technical potentialities, particularly in term of capacity within the same space
- Surface projects provide new opportunities for redesign urban sectors, and to enhance the part of PT
- Following our tram re-birth, the same success is expected with our BHNS concept
- Complementarities with “soft” modes to be considered



Thank you for your attention

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