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The French « modern streetcar Experience »

Success stories

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Date : 3 November 2016

Cerema *(Centre for Studies and Expertise on Risks, Mobility, Land Planning and the Environment)*

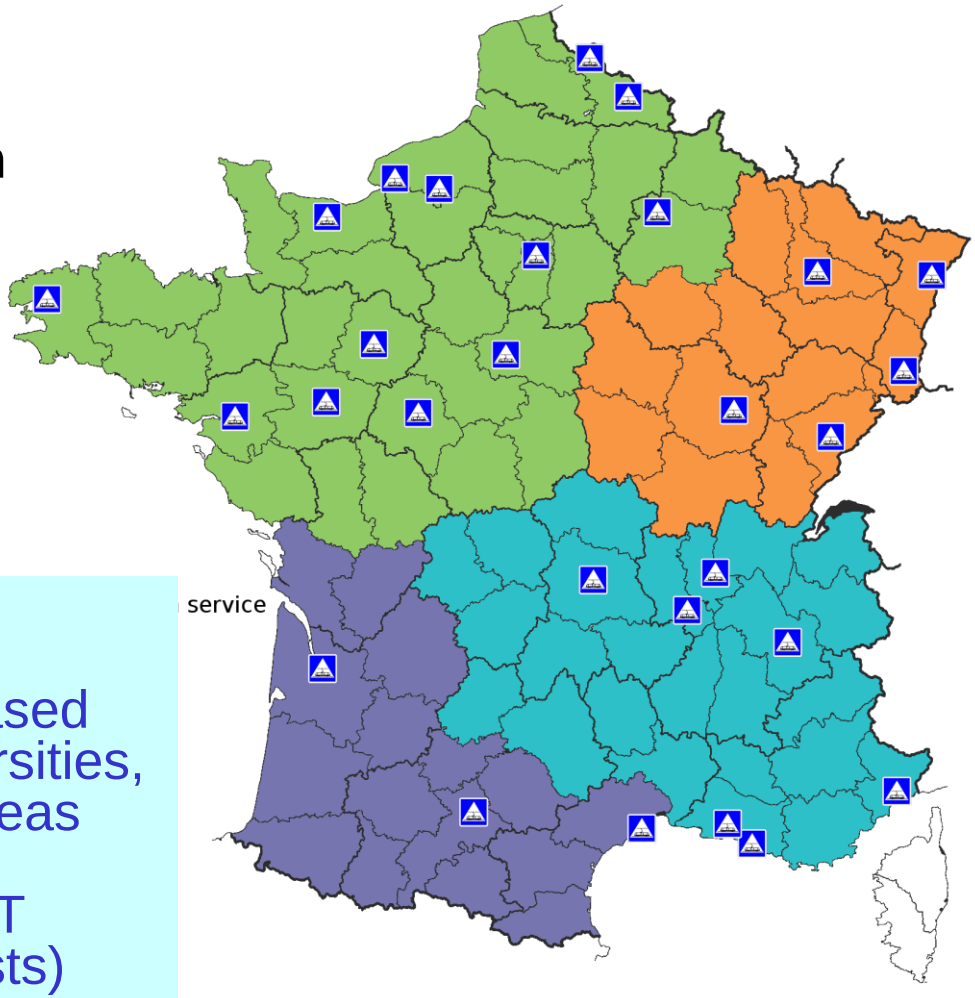
- a State agency of scientific and technical expertise, in support of the definition, implementation and evaluation of public policies, on both national and local levels
- placed under the supervision of the French Departments for sustainable development, town planning and transportation
- **9 fields of operation**

French tramways : the current situation

28 networks, 69 lines, near 500 miles

Various size of town and networks, from 1 to 6 lines

Rolling stock :
1350 cars from 22 to 44 meters long



Basically,

- Radial lines through city centres, based on traffic generation hotspots (universities, hospitals) et high density housing areas
- Tram lines = base of re-structured PT networks (2nd level when metro exists)

*** Till now, French LRT are mostly urban tramways**

The tram, a tool for High Level of Service

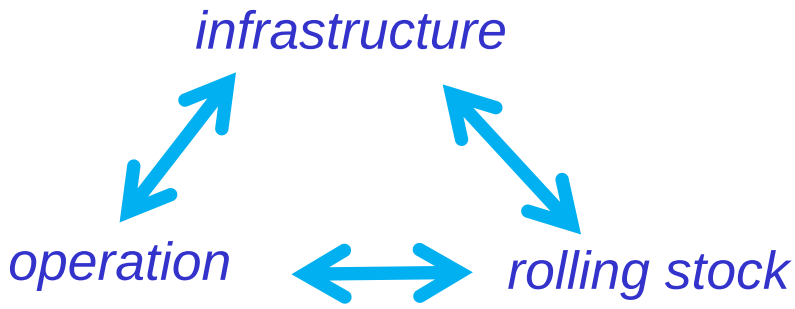
Main indicators for H L S :

- capacity, with a sufficient comfort
- **frequency (<10 mn)**
- commercial speed (>11 miles/h)

+ 2 fundamental indicators for quality:

- **regularity** / ponctuality
- reliability / availability

=> a systemic approach :

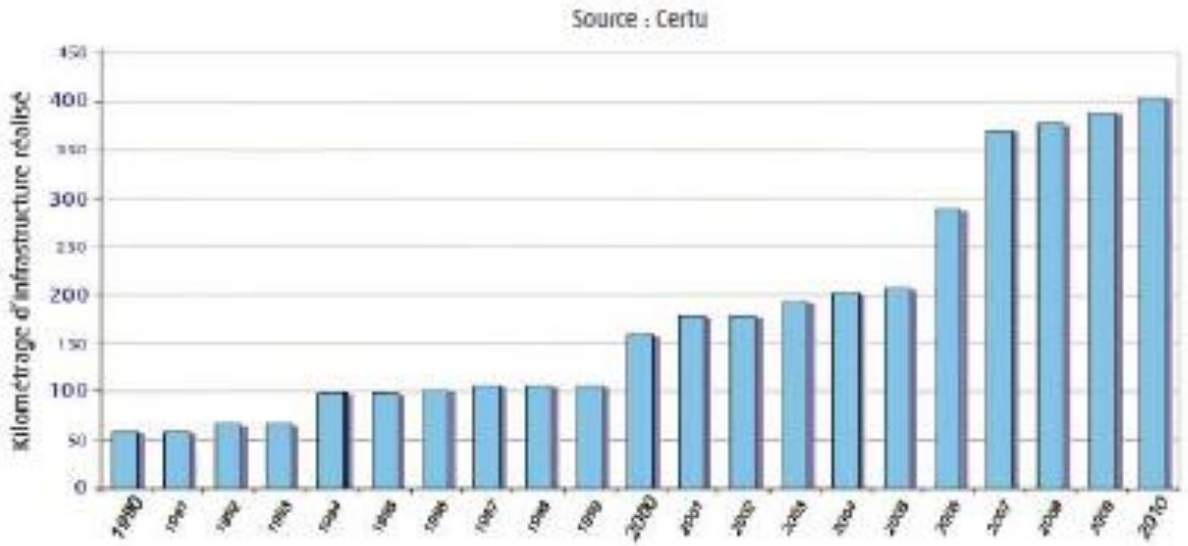


The French tramway revival

a few historical networks

- 2 surviving lines
- a few renewal pioneers (*Rouen, Nantes, Strasbourg, Grenoble, Paris*)

Then a great increase over last 20 years...



Total length of streetcars lines from 1990 to 2010

Between 2000 & 2010

Networks with LRT **X2**

Number of Km **X 3**

LRT's Ridership **X 4**

Still going on last years…

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to let streetcars run (back) in streets …
we had to take the cars' place !

Some favourable elements of context

Accessibility rules

("handicap" law, Feb. 2005)

Promotion of active modes

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Key factors for success

- *Mainly exclusive right of way*

  => *2% of total length in mixed traffic*

- *High priority in junctions*


Nantes


Lyon


Nantes

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- *Mainly exclusive right of way*
- *High priority in junctions*
- *Large capacity vehicles, fully accessible to disabled people*
- *Systemic approach :*
    - *re-structured PT networks*
    - *Park & ride*
- *Urban insertion : public space design, traffic management*

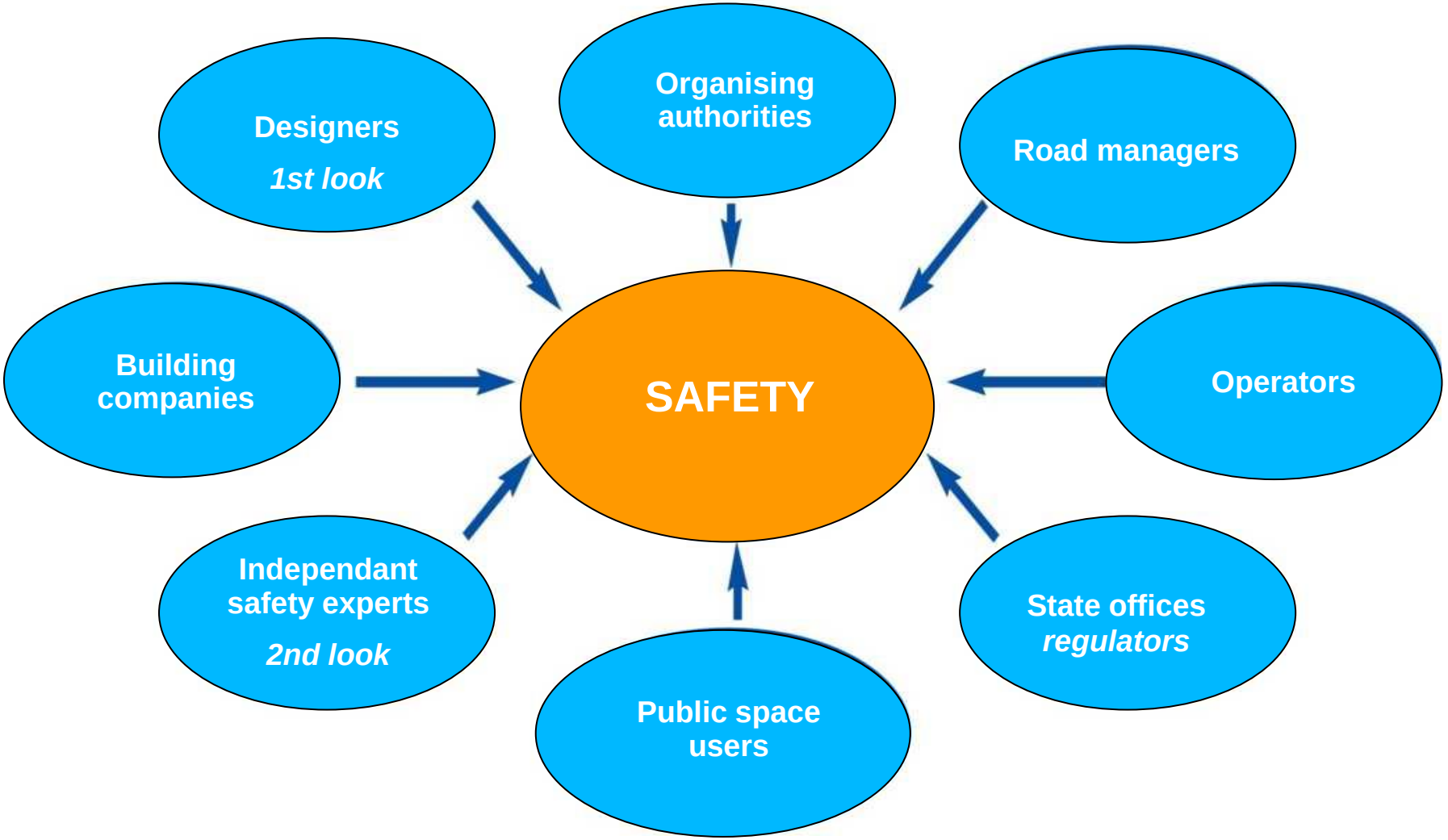
What « urban insertion of tram » means

= the physical integration of a transport system into the public space, and its interaction with other users and activities

- pedestrians
- bicycles
- motorized vehicles
- parking and deliveries
- residents' activities
- *urban services*
- *maintenance actions*

with **safety** as a way to get in!

Safety, a federating issue around LRT…



Safety, an essential stake for HLS

a direct stake …

but also an **indirect** one,

because of

impact on productivity :

- **regularity**
- **availability**
- **commercial speed**
- **corporate image**
- **operation costs**

disruptions due to accidents

immobilized vehicles

damaged facilities

services breaks

prevention methods

restrictives orders

distrusting driving

drivers' stress

An adapted speed, related to contexts

From…

- pedestrian areas *(5 to 10 mph)*

- mixed traffic zones *(20 mph)*

To …

- fully segregated (and level crossings) *(30 to 45 mph)*

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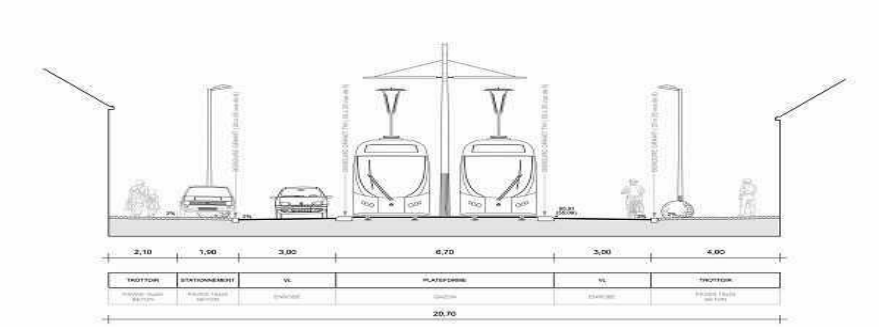
An opportunity to reshape public space

- full revision of cross-sections (frontage to frontage)



- introduction of singular points :

the stops

using quality materials

Image & design, key facts for success

Rolling stock :

- **customised** (head of) vehicles
- “clean” mode
- silent, “friendly” vehicle

Infrastructure and layouts

- high quality materials
- “green tracks” (grass, plants)
- urban furniture
- artistic acts

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Image & design, key facts for success

- Ground level power supply : an interesting tool for urban insertion

- aerial wires = difficulties for
  - rescue services
  - trees along tracks
  - strong wind conditions
  - bad visual impact
- removing poles may have a positive impact on
  - accidents' consequences
  - pedestrians paths

Efficiency and impacts of tramways

- Benefits on the transit system

Streetcars' operation (total for 22 networks, 2013)

Total of commercial kilometers run : 50 932 000

Total of travels : 613 133 000

Total ok seats X km : 12 861 441 000

Travel per km : average 11,7 (from 5,1 to 22,6)

Streetcars' part in PT system operation (average for all 22 networks, 2013)

Total of commercial kilometers run :15% (from 2,3 to 43%)

Total of travels : 43% (from3,1 to 80,7%)

PLaces X km : 30% (from 5,8 to 60,5%)

Daily traffic on most busy lines : 130 000 pass/day (Montpellier) 120 500 pass/day (Nantes)

Efficiency and impacts of tramways

- Benefits on environment, urbanisation and activity

- public space renovation operations beyond tram lines
- traffic calming areas, noise reduction
- reintroducing nature in towns
- housing density is increasing around tram lines
- presence of streetcars is an accelerator of trends for commercial evolution

Tours, *National St.*.

Thanks for your attention

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