

**AEAMESP SAO PAULO AUGUST 07**

**RE-SIGNALING THE PARIS LINE 1 :  
FROM DRIVER OPERATED LINE TO DRIVERLESS LINE**

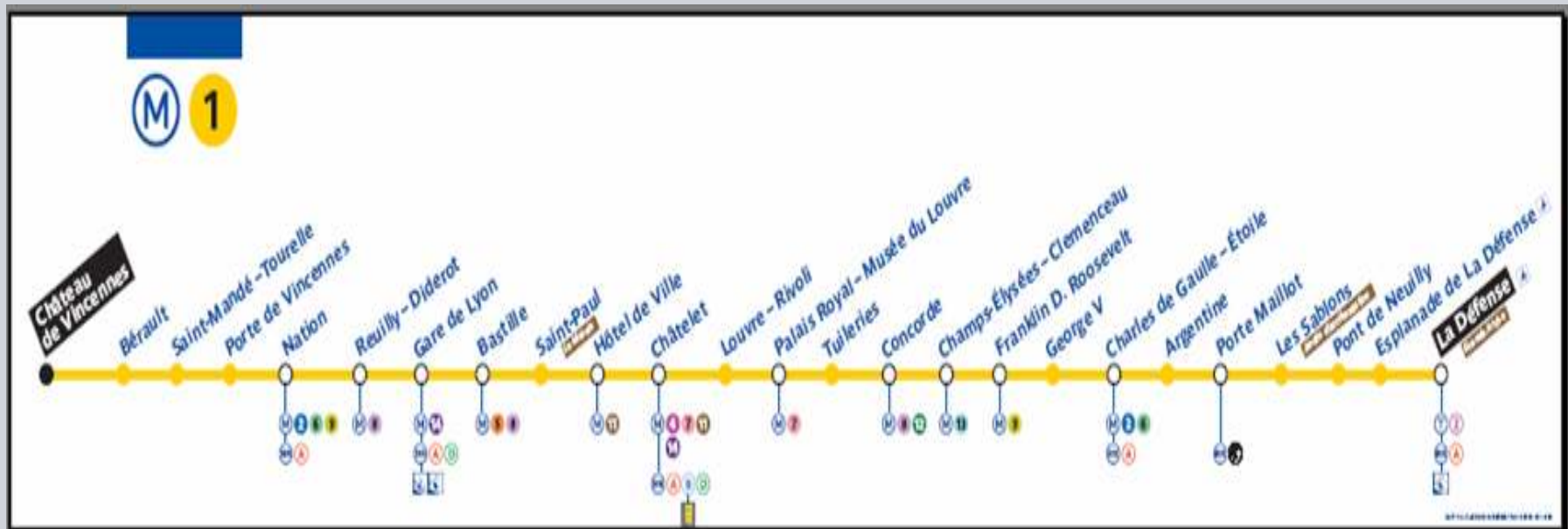
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**Siemens Transportation Systems**

## AEAMESP Sao Paulo august 2007

### RESIGNALING PARIS LINE 1 IN UNATTENDED DRIVERLESS OPERATION

A very loaded line at any time, during week end and during summer time too. A lot of multimodal modes interchanges stations with buses, tramways, suburb and railways lines.



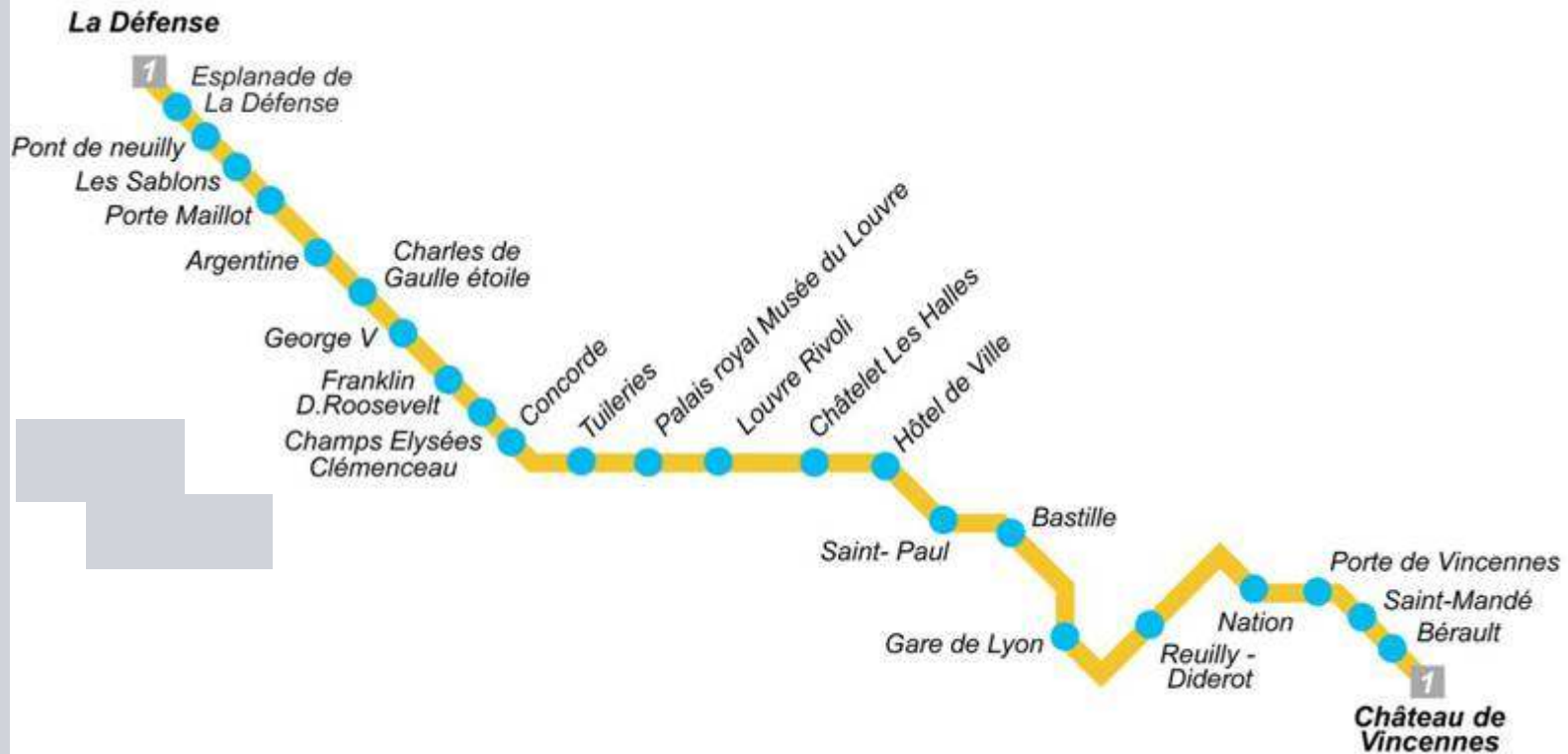
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SIEMENS

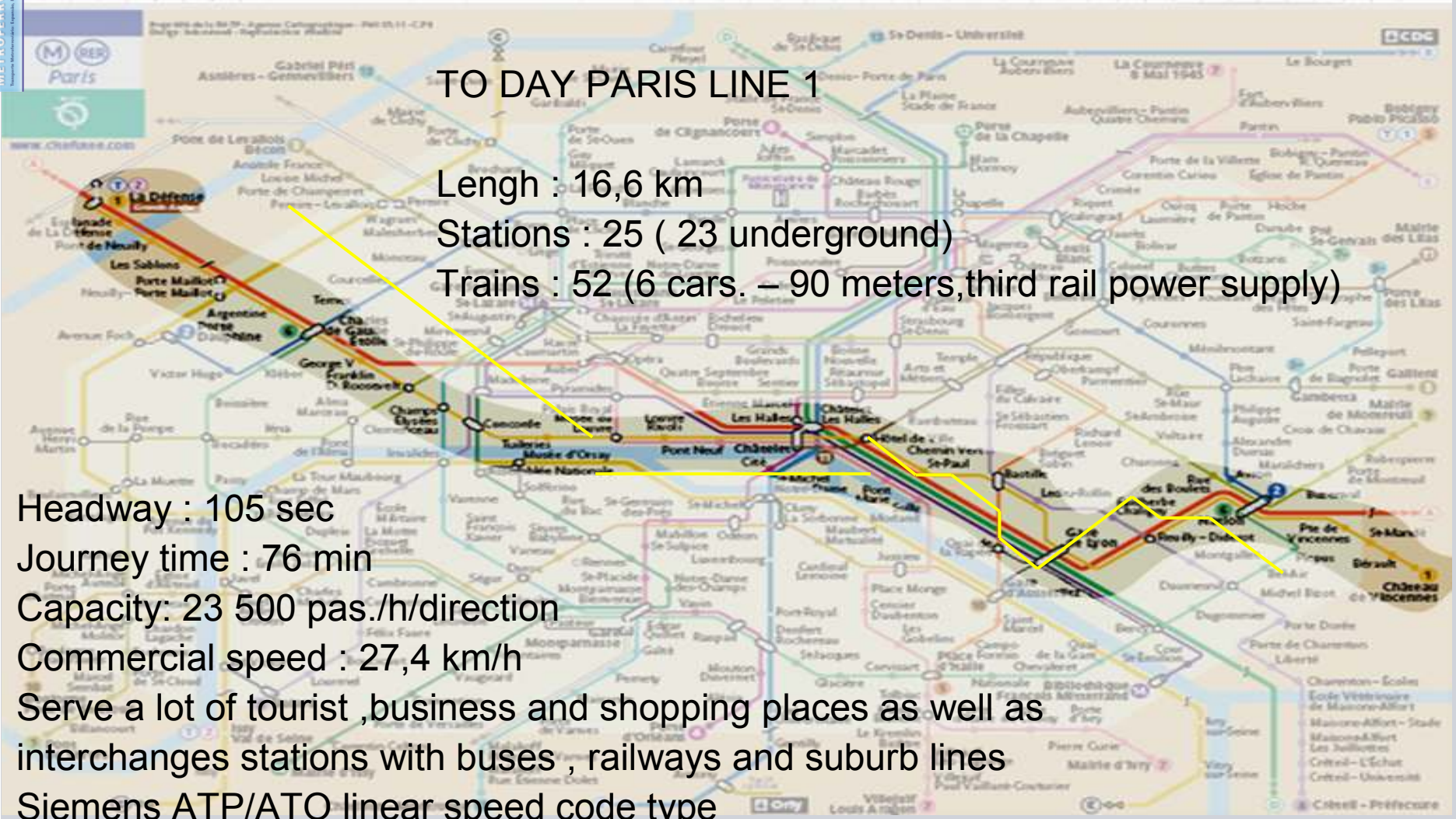
A line to satisfy passenger ( customer ) expectations.

A 4,5 years project.

## PARIS Line 1



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TO DAY PARIS LINE 1

Length : 16,6 km  
 Stations : 25 ( 23 underground)  
 Trains : 52 (6 cars. – 90 meters, third rail power supply)

Headway : 105 sec  
 Journey time : 76 min  
 Capacity: 23 500 pas./h/direction  
 Commercial speed : 27,4 km/h  
 Serve a lot of tourist ,business and shopping places as well as  
 interchanges stations with buses , railways and suburb lines  
 Siemens ATP/ATO linear speed code type

# Needs and choice for driverless operation



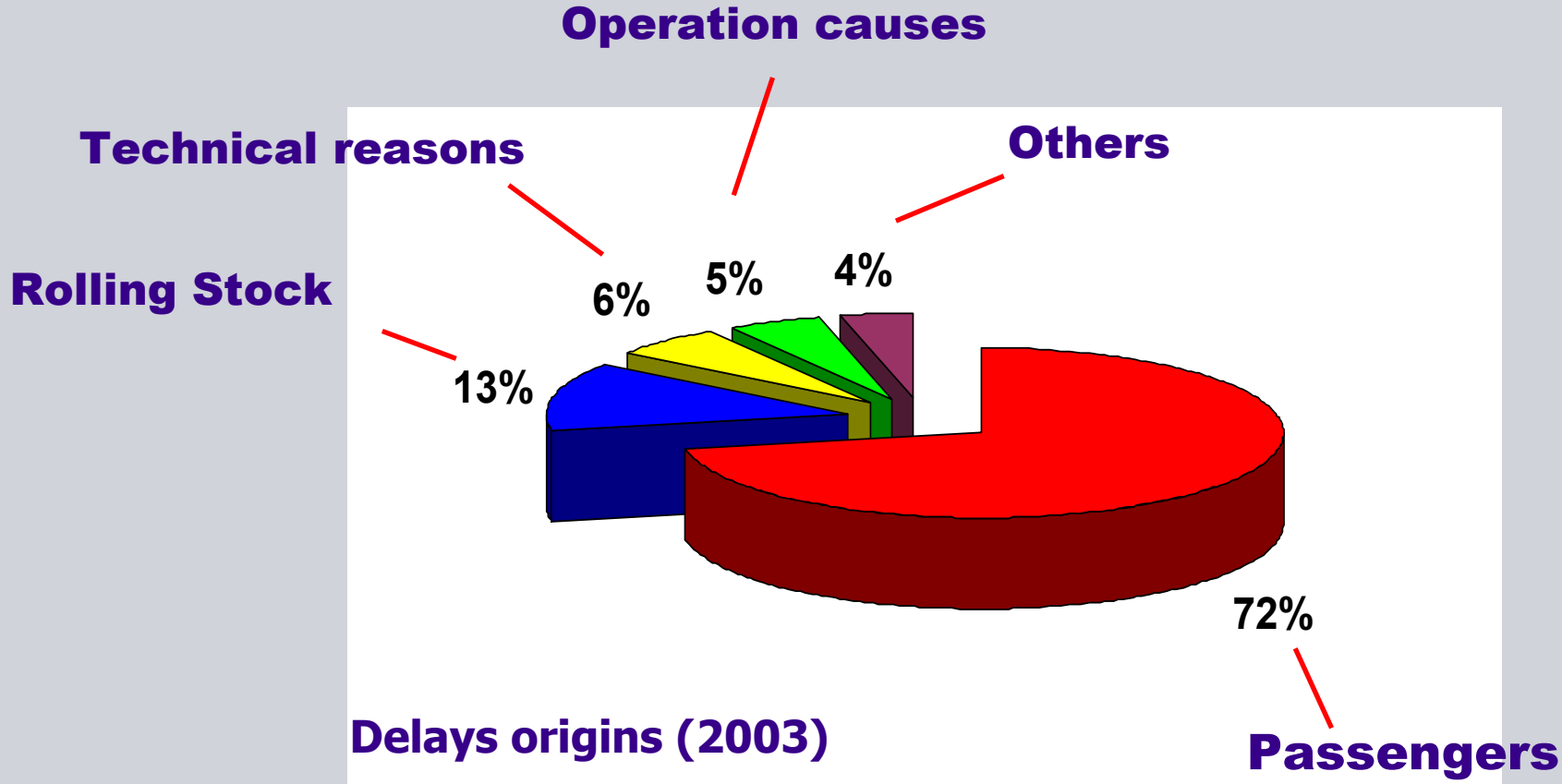
- Wet / dry track operation
- Parking anywhere on the line
- New jobs for passenger services
- Redefinition of operation staff jobs
- Fast adaptation, reactivity and flexibility to any event or transport demand on the line
- Positive feedback from Line 14

## *Why upgrading Paris Line 1 to driverless operation ?*

- **Improve the quality of service**
    - Increase throughput (85 s)
    - Reduce delays due to passengers
  - **Decrease LCC** by reducing both operation and maintenance costs
- without service disruption**

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What's where the origin of the operationnal delay ?

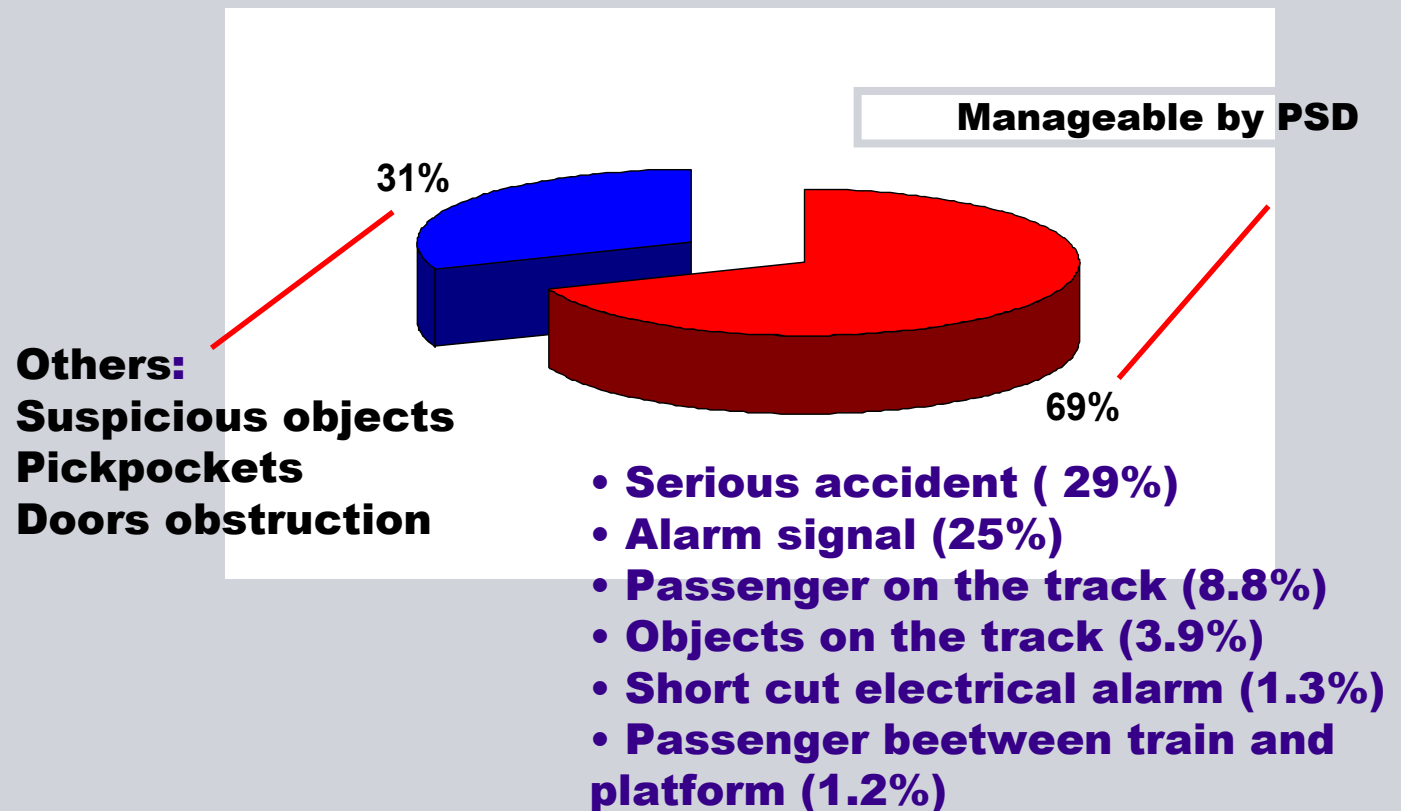


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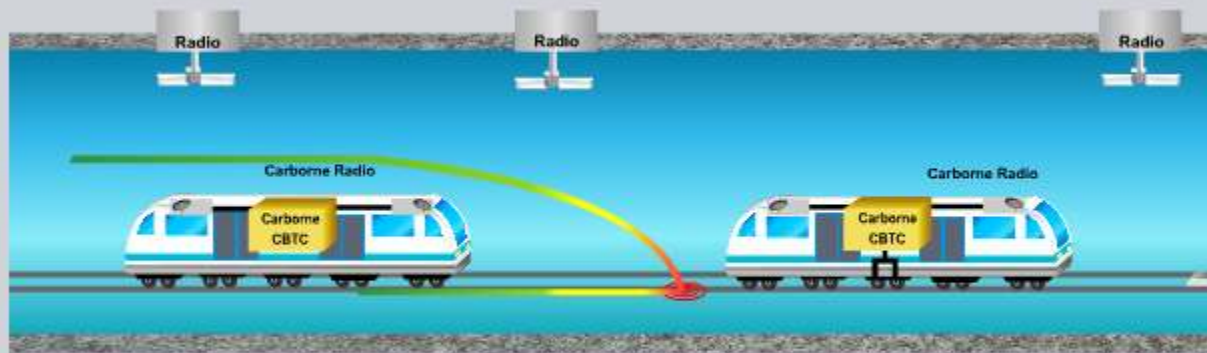


## ORIGIN OF PASSENGERS DELAYS

### Delays distribution (2003)



# Trainguard MT CBTC : A proven solution



1. Moving Block CBTC for driver-based and driverless train operation
2. Data Communication System based on free-propagation radio, operating at 2.4 Ghz and 5.9 GHz
3. Automatic Train Supervision for driver-based and driverless train operation

Other references: Lyons (Line D in 1992), Paris (Line 14 in 1998), New York City Canarsie in 2006, Budapest lines M2 & M4, Barcelona Line 9, Paris Line 1, Algiers Line 1