

TECH4RAIL

From LC to smart crossing



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AXES OF THE SMART CROSSING PROJECT

The project is based on two axes :

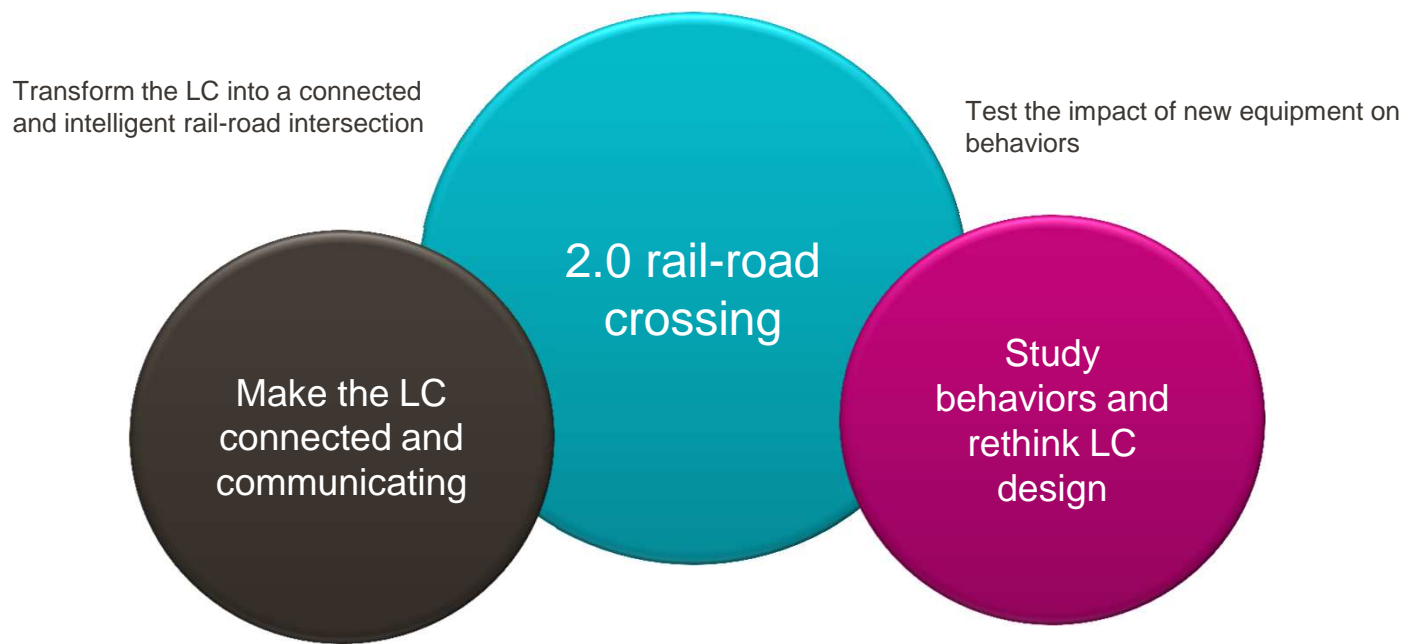
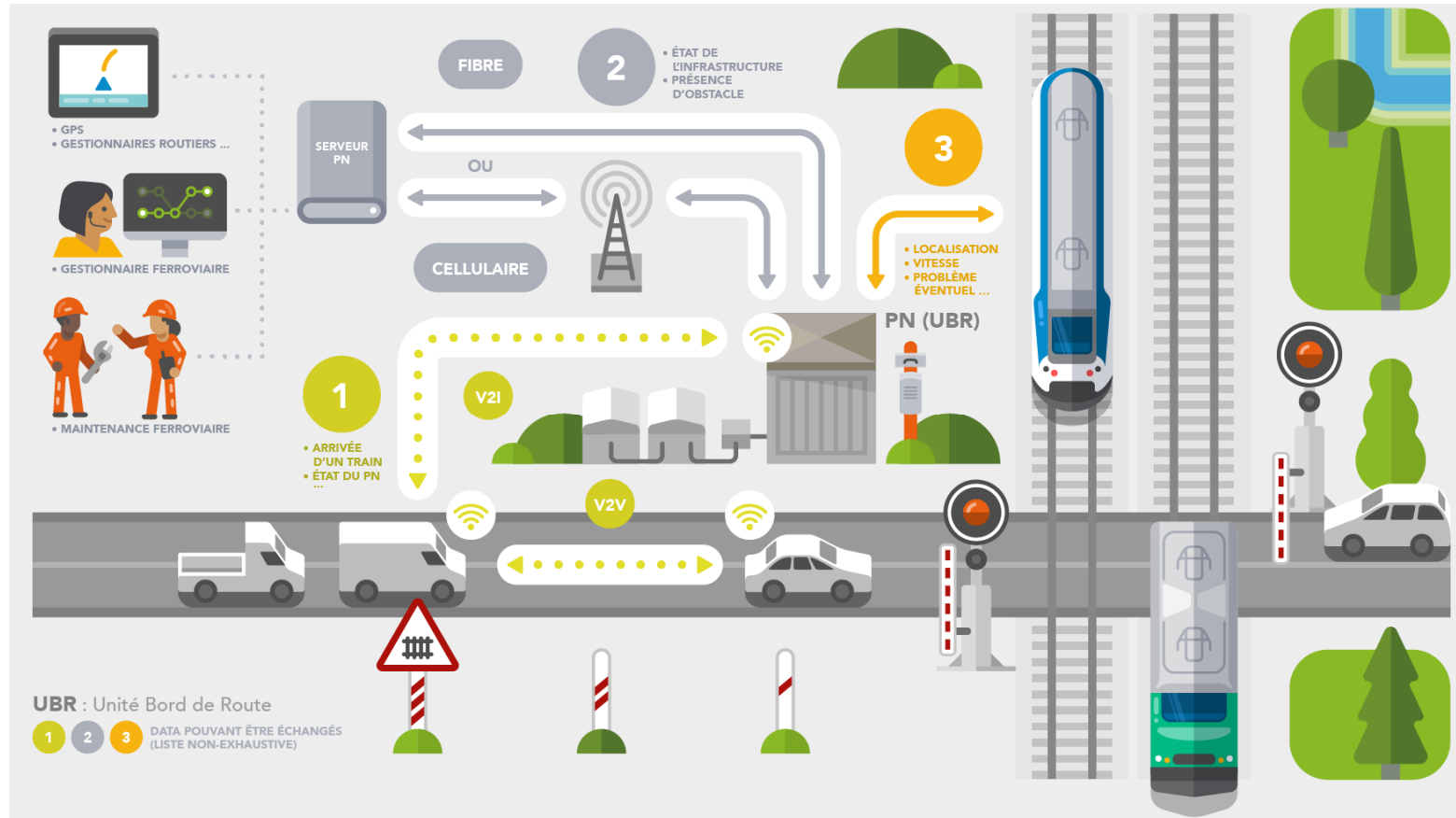


FIGURE OF V2X IEEE 802.11P (WIFI)



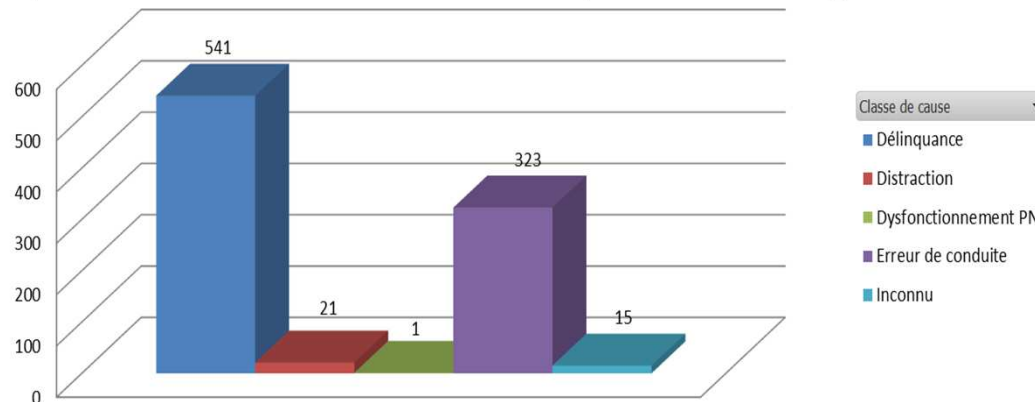
COLLISIONS AT LEVEL CROSSINGS

There is a stagnation in the number of collisions in the last 10 years with 110 to 140 collisions and 25 to 35 killed per year



99% of the causes of accidents are due to **non-compliance with the traffic regulations**, 3 main causes:

- **DELINQUENCY** (zigzagging, non-respect of road signs, queuing, excessive speed, etc.)
- **THE ERROR OF DRIVING** (commitment of the gauge, confusion between the road and the railway, dazzled by the sun, loss of control of the vehicle, manoeuvring on the LC, stalled on the LC, ...)
- **DISTRACTION**



WHAT WE LEARNED

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- NEW** 40% of accidents occur on **straight lines with 90 ° angle and good visibility**
=> Similar result to road accident analysis
Cause : overconfidence



- NEW** The knowledge of the rail traffic (train timetable, number of train, strike, ...) confuse **judgments as well pedestrian as road**
- Other road configurations already known as S-roads, curves or complex crossroads are to be taken into consideration
Cause: technical / driving error problem

The results of this study bring to light improvement such as:

- Visibility
- Readability
- Perception of risk

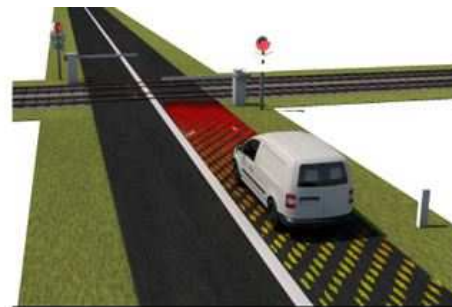
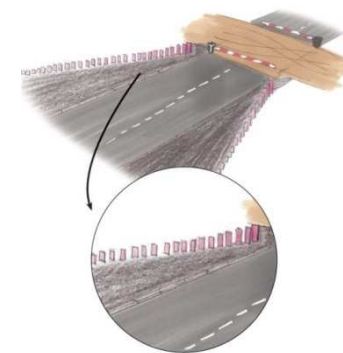
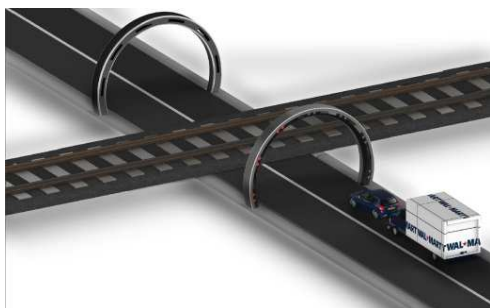
DESIGN STUDY



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The objectives of the study:

- ✓ Rethinking equipment or materials and / or proposing new ones
- ✓ Rethinking the layout / integration of the LC in the environment and interacting with new mobilities



COGNITIVE ANALYSIS



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Partnership with an expert in road and cognitive training

Objectives:

- Model the expected behaviors when approaching level crossings
- Understand the precise nature of the behaviors described as "violation" or "error" and deviations from what is expected
- Help choose the test solutions proposed through the design study and the benchmark
- Analyze simulator behaviors to evaluate the impact of these new solutions and, if necessary, adapt them

SIMULATOR



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The objective is to put in road user situation for:

- Observe and analyze dangerous behaviors that have never caused an accident
- Observe and analyze situations that caused accidents
- Evaluate the impact of new equipment on the LC on behaviors
- Evaluate the relevance of LC status message display on the vehicle dashboard (C Roads project)

THANK YOU FOR YOUR ATTENTION

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