French National Project : WIM for Direct Enforcement of Overloading

French General Directorate for Infrastructure, Transport and the Maritime Affairs

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ISWIM

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Presentation Plan

- Context
- Static weighing enforcement
- The National WIM network (preselection)
- Direct enforcement WIM project
- Blank test, call for participation of manufacturers

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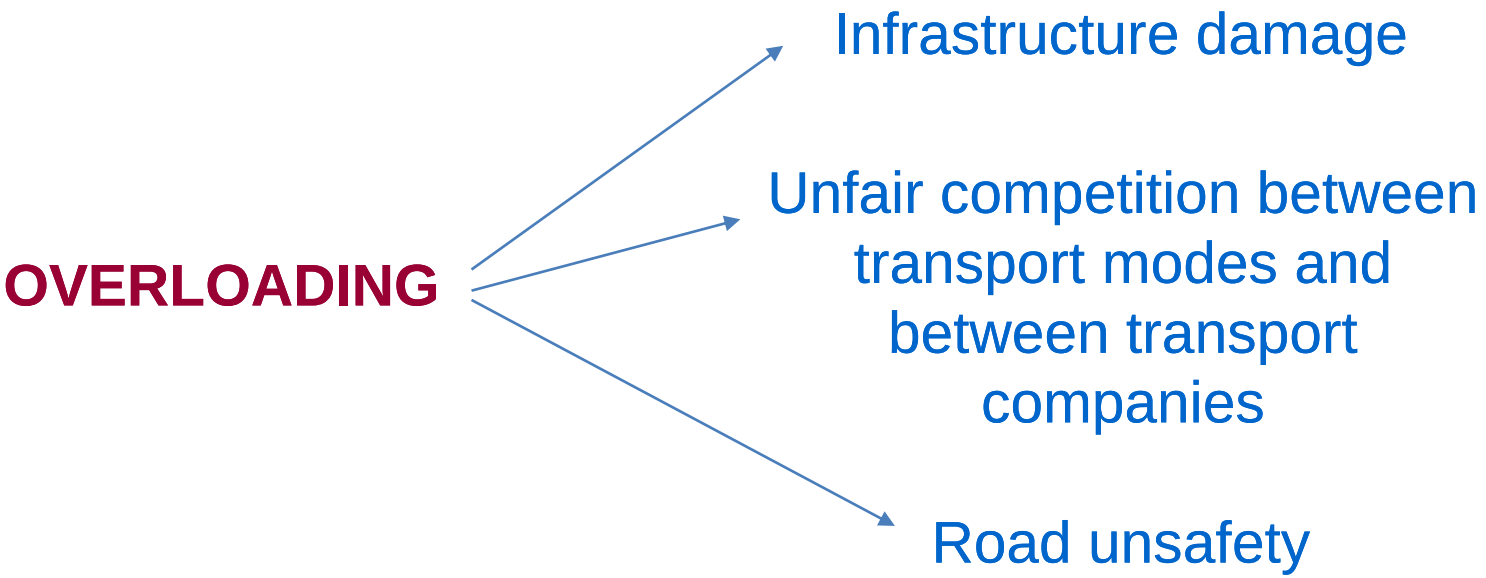
Context

- 8-12 % of the trucks are overloaded, mostly by max. 10%, but up to 20%
- Since several years, focus on light commercial vehicle overloading
- Political support for direct enforcement tool to prevent truck overloading



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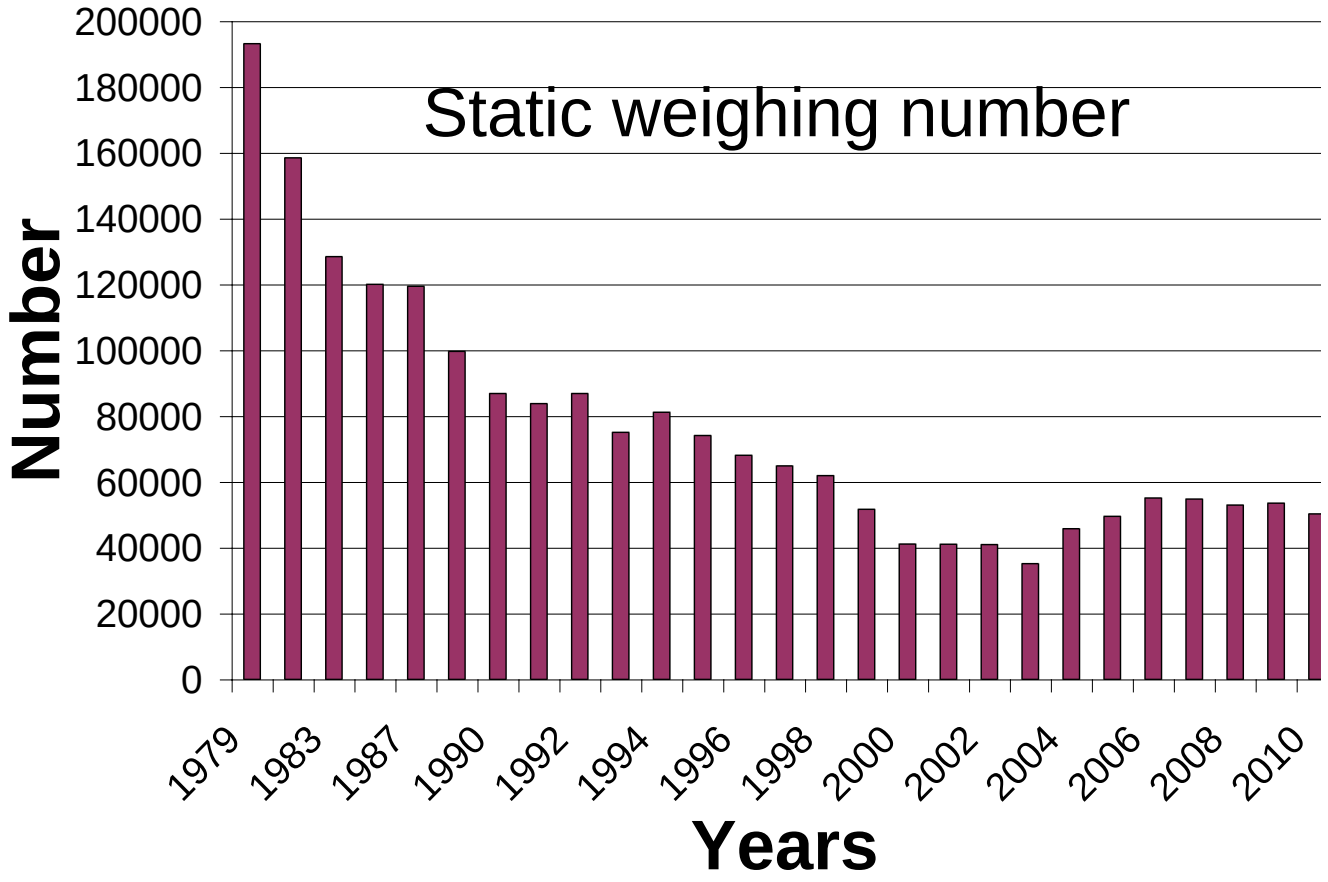
Yearly static controls : French case



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Overloading enforcement using static scale : drawbacks and advantages

- Need human ressources (weighing officers, policemen...)
- Need a static weighing area
- Need static scales (risk of vandalism...)
- Capacity to control only a small percentage of the truck traffic flow
- Increase of the truck traffic flow and the average level of truck overloading
- → not efficient
- → but In **France**, static weighing or low speed WIM are the ONLY devices legally approved for weight enforcement (by OIML recommendation)

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National WIM network – pre-selection of overloaded vehicles

A political decision

- Announcement of the **Minister** of September 8th, 2004
- Creation of a new preselection network of **overload HGVs**

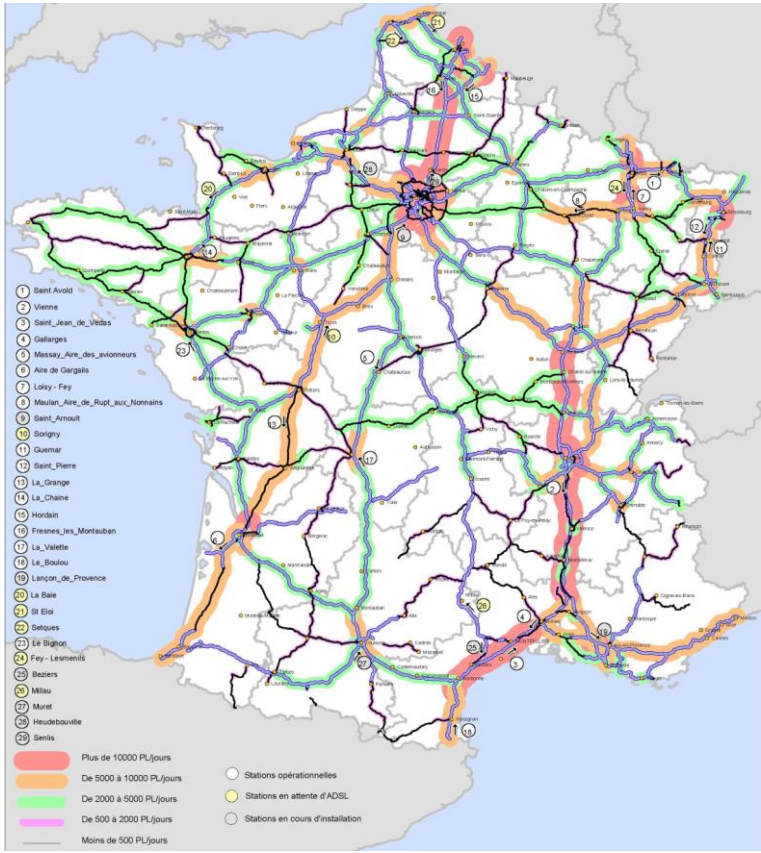
Aims of the WIM network

- **On-road** high speed detection of **Overload** HGVs (axle and GW)
- **Select** companies for **inspections**
- Statistical study of the HGVs traffic
- the **Sterela** company

The network

29 operational sites

Mainly on the long-distance **corridors** and at the **borders**



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Description of the WIM project on direct enforcement

- Cooperative project lead by IFSTTAR, carried out with Cerema
- Objective: implementation of HS-WIM for direct enforcement of overloading
- 2 phases :
  - Phase 1 : feasibility study for marketed HS-WIM systems to meet the OIML requirements for a type approval
  - Phase 2 : Preparation of a type approval procedure and feasibility study of enforcement procedure (blank test)

OIML class 5 tolerances

- OIML Class 5, for 100 % of the validated measurements, after sorting:

	GW	SA	GoA
Accuracy (±)	5 %	8%-10 %	7%-8 %

Phase 1 : Feasibility study for marketed HS-WIM systems to meet the required tolerances

- sensors response and external factor effects

- developing built-in sorting algorithms to meet the required tolerances of the OIML class 5

- pre-qualifying two commercial road sensor WIM systems and a B-WIM system on concrete integral bridge eligible for direct enforcement

Phase 1 : Results

- Behaviour of road sensor response
  - influence of the lateral position of the truck ⇒ correction law or elimination
  - piezo-quartz sensor = the most suitable current WIM sensor for direct enforcement
- B-WIM (SiWIM)
  - eligible on integral bridge, but still requires a sorting algorithm
  - not yet adapted on steel orthotropic decks (weighing algorithm not fully optimized)

Test site overview

- Test site located on A4 motorway in Eastern France (SANEF) between Paris and Strasbourg
- 35 km loop between 2 interchanges = 30’ rotation time to collect {dynamic + static weighing}

Test site overview


On-road test site


Off-road static weighing system

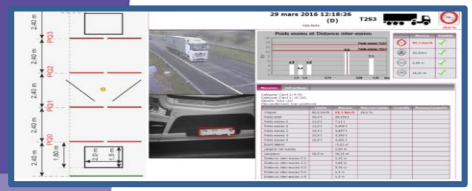
- **2x2 lanes highway** ; **mean HGV rate**, HS WIM-E for screening overloaded
- Site **class (III)** according to COST323 → most prevalent in France
- WIM systems provided by **industrial partners**
- 5 km downstream: **control area** fitted with an approval static weighing system : **Precia Molen Onyx 3** – 20t /100 kg
- **Periodical static weighing operations** on this site with the police

Industrial partnership

- Call for participation (ISWIM): accuracy ≥ C(15) COST323
- Convention and Non Disclosure Agreements.
- Suppliers install, calibrate and maintain their devices

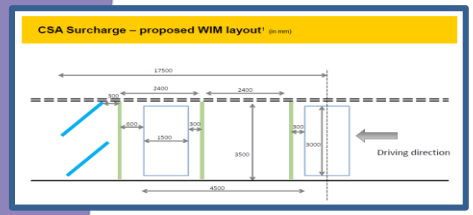
- Slovenian company
- B-WIM

1 | sterela ADVANCED SOLUTION MAKER



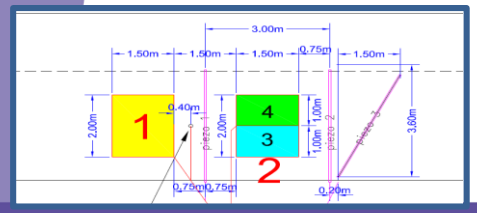
- French company ; leader in France
- 4 piezo-quartz lines
- V-shape dual tires & pos. sensor

2 | kapsch



- Austrian company
- 3 piezo-quartz lines
- Bias dual tires & pos. sensors

3 | FARECO FAYAT



- French company
- 2 piezo-ceramic lines
- Bias position sensors

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Phase 1 : Test Results (GW)

- 25 days of testing from 2015 to 2018
- 1,161 vehicles weighted both in static and in motion

- Best results obtained
  - Without sorting algorithm : 96.6 % of all the GVW measurements are in OIML 5
  - Using a sorting algorithm : 97.5 % of GVW measurements in OIML 5

Phase 2 : Preparation of type approval procedure and feasibility of direct enforcement procedure

About to begin, on going work

-type approval and **certification procedure** according to the defined specifications

- features specifications and **test continuation**

Several French ministries involved in phase 2:

- Economy and Finance: French Legal Metrology bureau

- Interior: integration of WIM in the direct enforcement frame (as for speed radars)

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Blank test - Participation of manufacturers

- Additional manufacturers are welcomed to take part in the phase 2
- If they can prove that a marketed system meets the tolerances of the OIML class 5 for at least 95% of the measurements before sorting or 98% after sorting
- Objective of the blank test : to assess the *false positive* rate (wrong detection of overload) and to simulate the due fines, to assess the efficiency of the system (non detection rate)
- IFSTTAR/CEREMA will issue the specifications to take part in this project (participation agreement) + organize meetings
- Contact person:

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The End