Corner Stone International Sagl.

LabTrans

Strategies for Weight Enforcement using Weigh-In-Motion systems

Hans van Loo

DNIT Departamento Nacional de Infraestrutura de Transportes

Table of Content

- Introduction
  - Introduction
  - Other applications of WIM
  - Applications for weight enforcement
- Enforcement Strategy
- Conclusions

Introduction

- National Transport Police (NL, 1994 -2000)
  - WIM-VID, Pilot WIM + Video for enforcement
- Ministry of Transport (NL, 2000 – 2006)
  - WIM-Hand, WIM for direct Enforcement
  - Remove, Use of WIM for Enforcement in Europe
- Kalibra International (CH, 2006 – 2013)
  - FiWi, new EU standard for WIM
  - ISWIM, General Secretary, Information Officer
- Corner Stone Int. (CH, 2013 -)
  - Independent Consultant on WIM

Introduction

Overloading by heavy vehicles:

- Damages to roads,
  - Pavements and bridges
- Reduced traffic safety
  - More – serious - accidents
- Unfair Competition

- Benefits for a few – Costs for the whole society
- Annual Costs for Brazil calculated in Billions

Introduction

Applications of WIM:

- Statistics on Traffic Loading for:
  - Design of Roads, Pavements and Bridges
  - Planning of Road Maintenace
  - Calculation of the damage of Overloading

Only a WIM measures the real Traffic Loading!

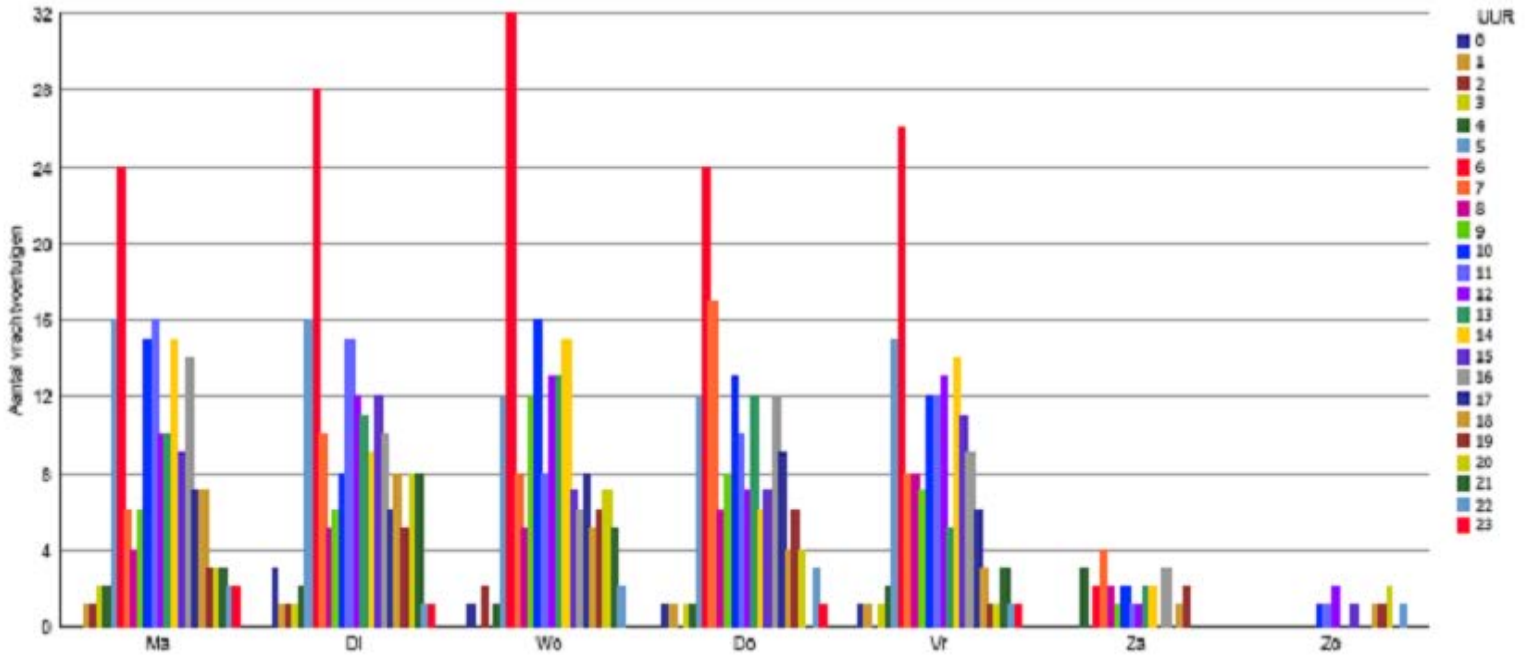
- Tolling by Weight
  - Toll fees based on actual axle loads
  - Basis for DFBM-Contracts (Private road consessions)

Applications for Enforcement

- "Manual" Selection

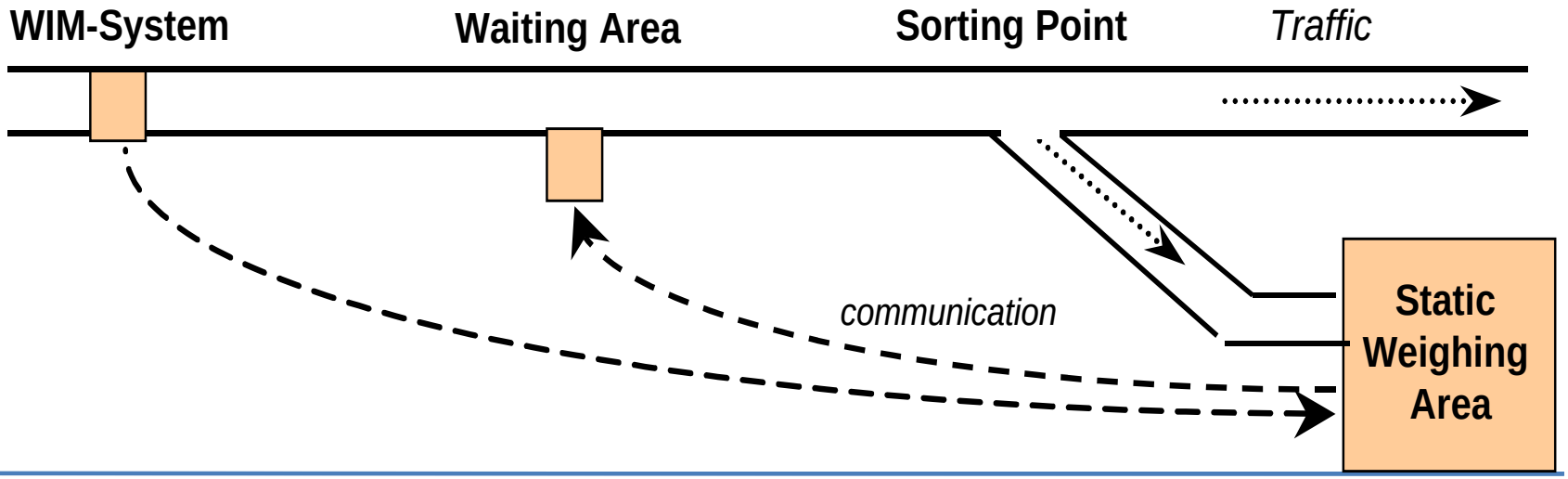
Applications for Enforcement

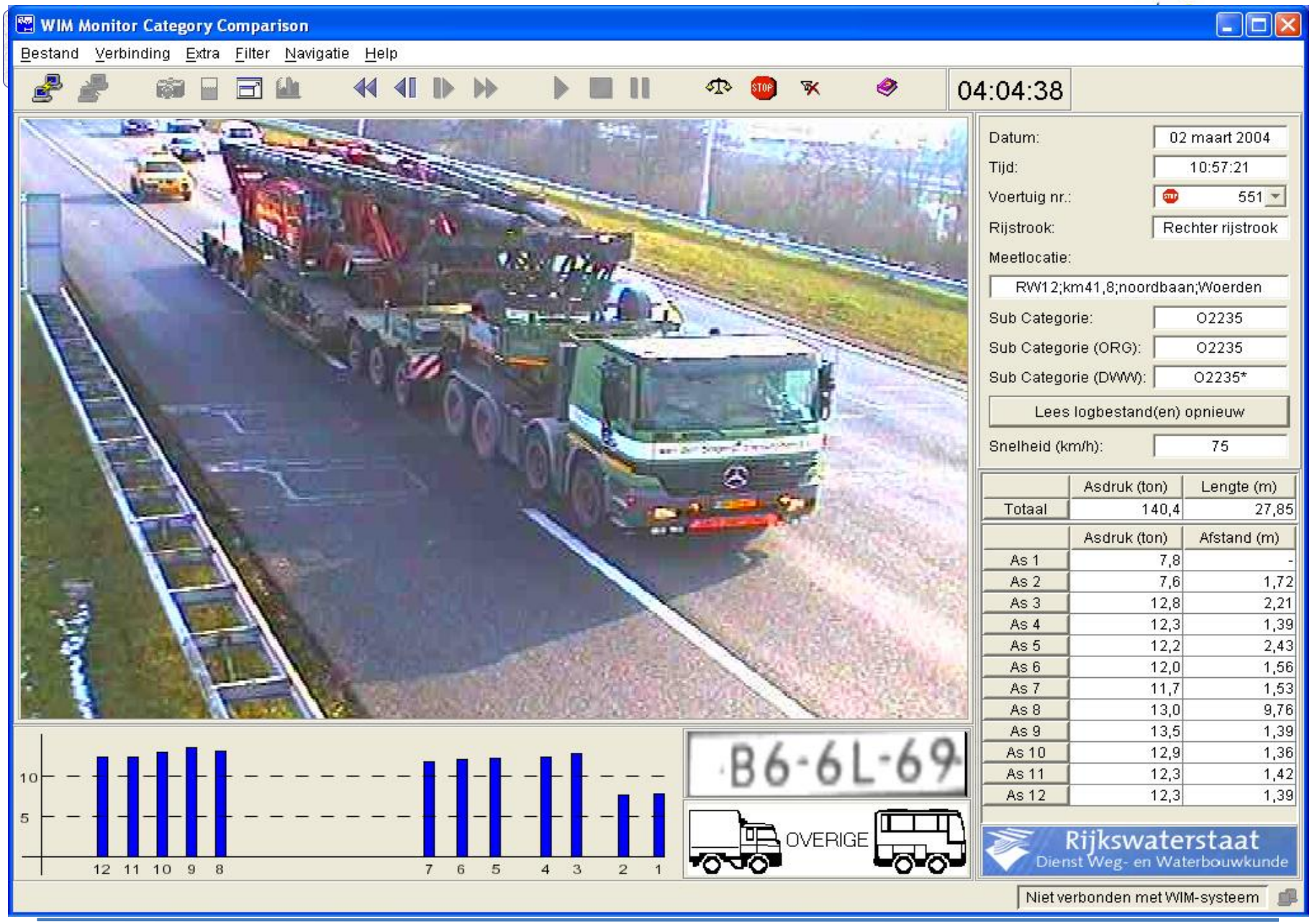
- Statistics & Planning
  - When, where, who



Applications for Enforcement

- Statistics & Planning
- Pre-selection
  - *'Virtual Weighing'*



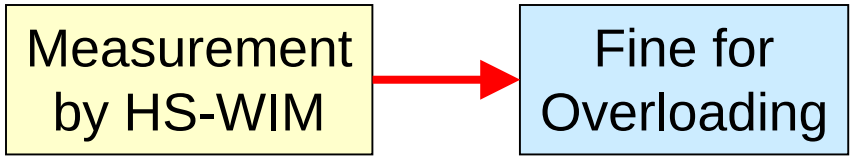

WIM Monitor Category Comparison
Bestand Verbinding Extra Filter Navigatie Help
04:04:38
Datum: 02 maart 2004
Tijd: 10:57:21
Voertuig nr.: 551
Rijstrook: Rechter rijstrook
Meetlocatie:
RW12;km41,8;noordbaan;Woerden
Sub Categorie: O2235
Sub Categorie (ORG): O2235
Sub Categorie (DWW): O2235*
Lees logbestand(en) opnieuw
Snelheid (km/h): 75
Totaal 140,4 27,85
As 1 7,8 -
As 2 7,6 1,72
As 3 12,8 2,21
As 4 12,3 1,39
As 5 12,2 2,43
As 6 12,0 1,56
As 7 11,7 1,53
As 8 13,0 9,76
As 9 13,5 1,39
As 10 12,9 1,36
As 11 12,3 1,42
As 12 12,3 1,39
10
5
12 11 10 9 8 7 6 5 4 3 2 1
B6-6L-69
OVERIGE
Rijkswaterstaat
Dienst Weg- en Waterbouwkunde
Niet verbonden met WIM-systeem

Applications for Enforcement

- Statistics & Planning
- Pre-selection
- Company Profiling
  - Truck registration
  - Black List
  - In-company controls
  - Monitoring of performance
  - Focus on Compliance

Applications for Enforcement

- Statistics & Planning
- Pre-selection
- Company Profiling
- Direct Enforcement
  - Needs top-end WIM
  - Needs certification
  - Not possible yet
    in most countries



Applications for Enforcement

Direct Enforcement	Other Applications
• Quality of each individual measurement - Max. permissible error - 100% of measurements (used)	• Quality of average measurement - Mean error - Standard deviation
• Evidence of vehicle behavior	• Indication of vehicle behavior
• Performance certified by a notified body - Type approval + Initial verif.	• Performance agreed between vendor & buyer - Acceptance test

Table of Content

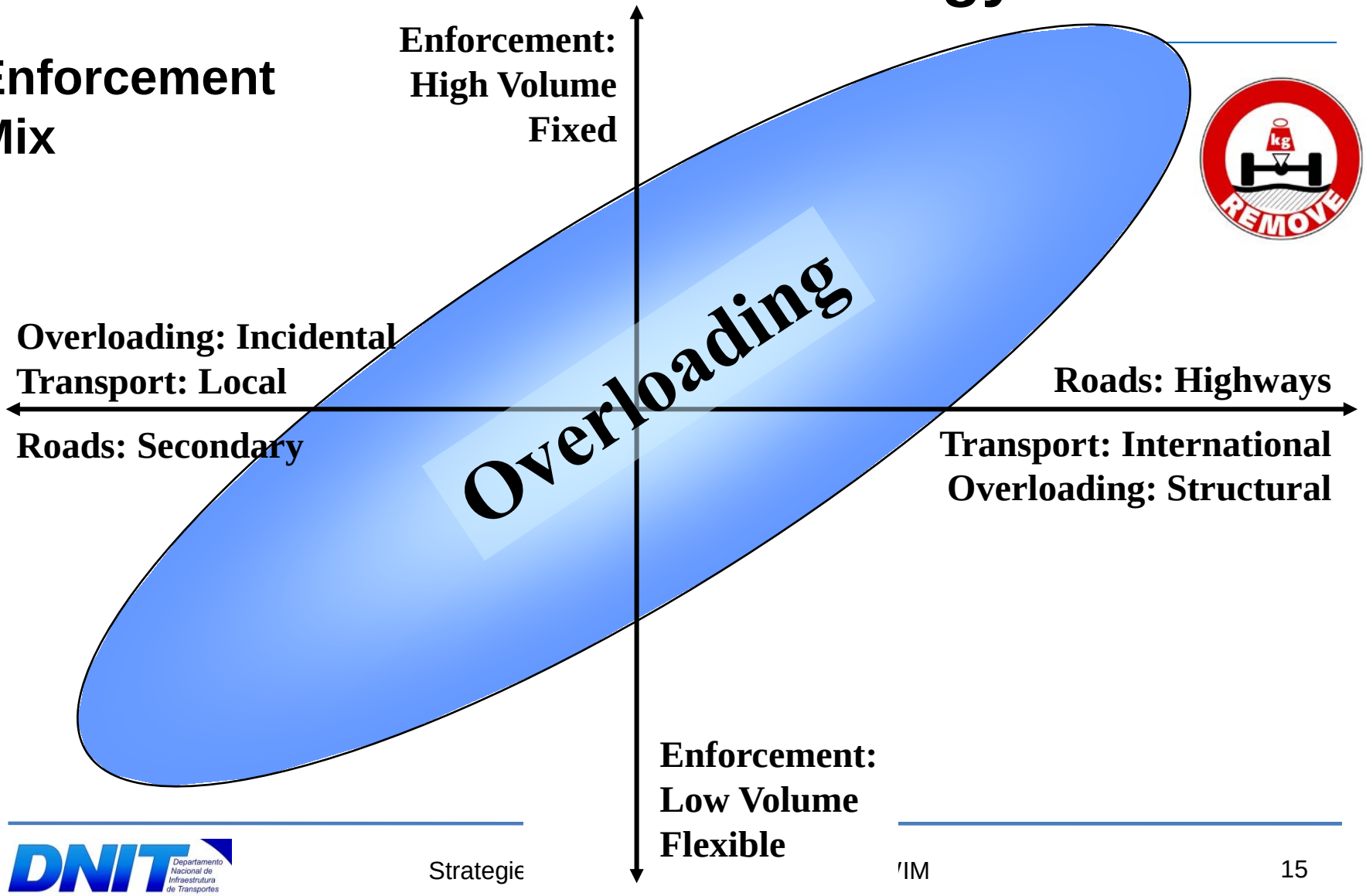
- Introduction
- Enforcement Strategy
  - What is the overloading problem?
  - What is the best soulution?
  - What is the best strategy?
- Conclusions

Enforcement Strategy

- What is the overloading problem? (axle loads / gross vehicle weights)
- Which vehicles are overloaded? (Local / international / container / bulk materials / liquid tanks / specific companies)
- Where does overloading occur? (highways / local roads)
- When are the peaks? (morning, evening, nights / week days or week-end / seasonal, harvest)
- Who is responsible? (driver / transport company / shipper)
- Why is a truck overloaded? (by accident / structural)
- Etc...

Enforcement Strategy

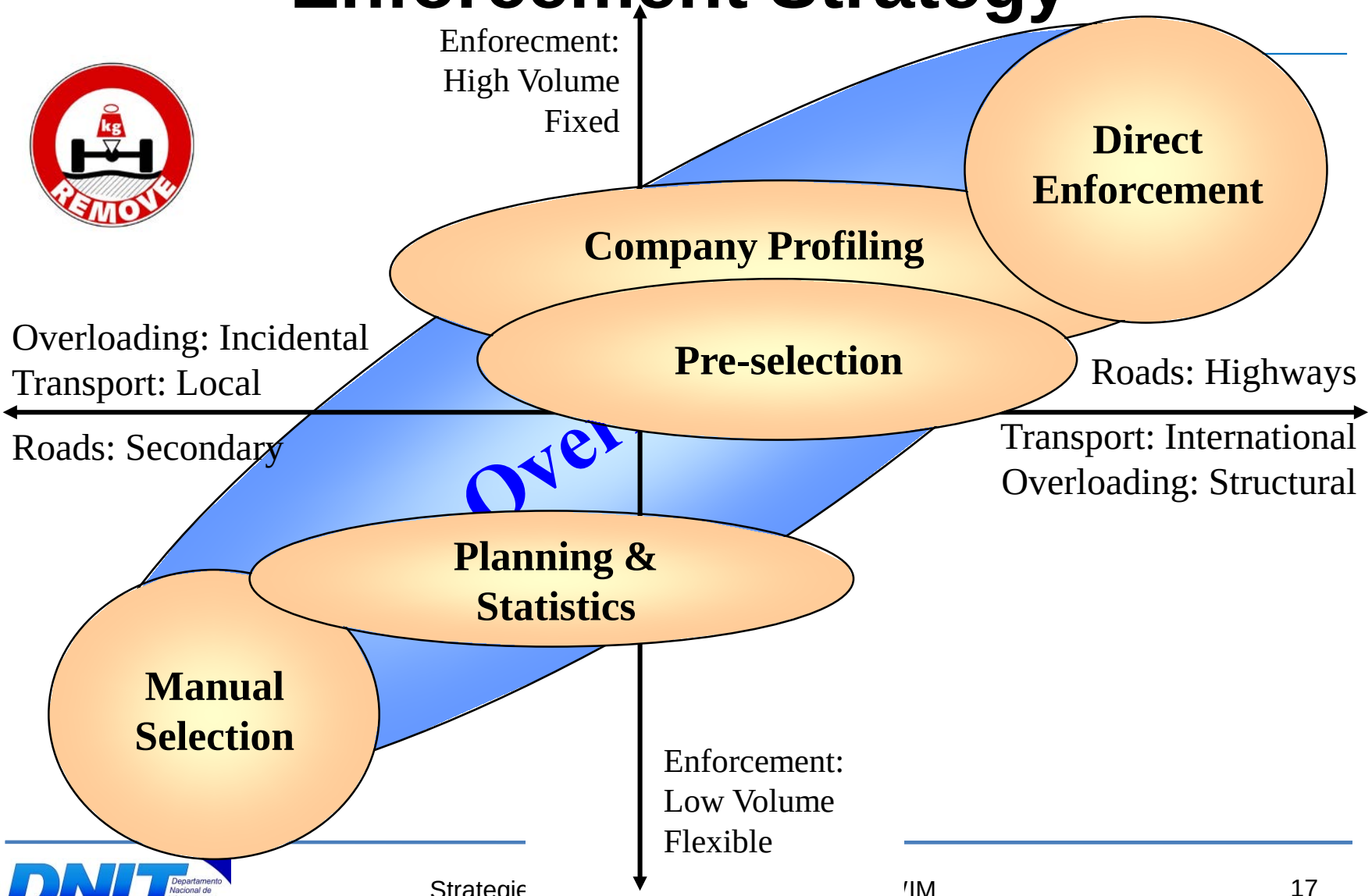
Enforcement Mix



Enforcement Strategy

Application	Pro's	Con's
Manual Selection	Flexibility for special situations	Low efficiency
Statistics & Planning	More effective controls	No identification of violators
Pre-selection	Efficient controls, Hit rate > 95%	Only local effects, Evasion possible
Company Profiling	Focus on compliance + Cheat companies	New way of working
Direct Enforcement	Highly efficient High traffic volumes	Expensive systems, Not (yet) accepted

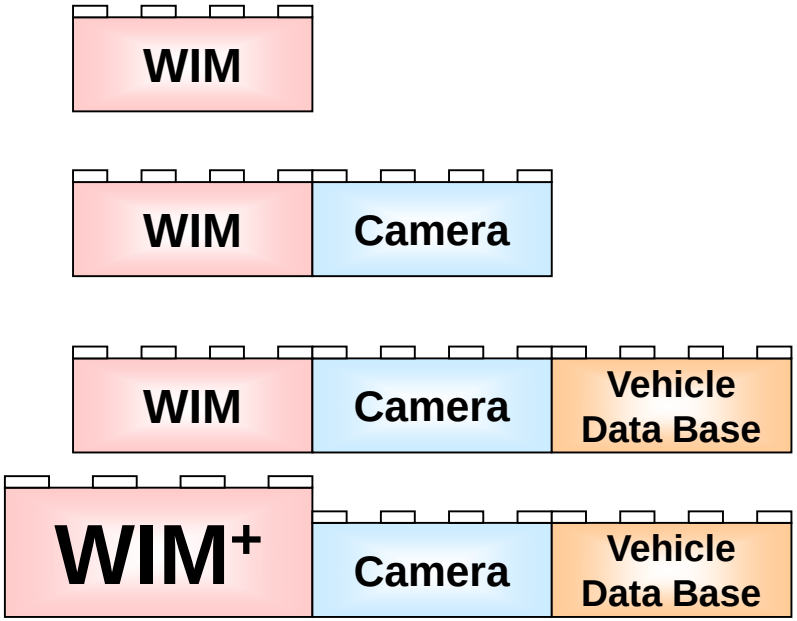
Enforcement Strategy



Enforcement Strategy

LEGO Approach

- Manual Selection + Other ----------
- Statistics & Planning
- Pre-selection
- Company Profiling
- Direct Enforcement
- Other Solutions



Conclusions

- Overloading by heavy trucks has serious social and economic consequences.
- The right mix of enforcement applications will reduce the overloading problem.
- WIM offers different applications to improve weight enforcement operation.
- Quality of WIM data is crucial
  - Technology, Installation, Maintenance,
  - Data Quality Management

Questions

Thank you for your attention

Hans van Loo

hans.vanloo.int@gmail.com