## SCAN TOUR PARTICIPANTS

<table>
<thead>
<tr>
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<th>Participants</th>
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<tbody>
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<td>U.S. Department of Transportation,</td>
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<td>Jodi Carson (Report Facilitator), Texas Transportation Institute</td>
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Significant commercial motor vehicle growth in the U.S. has resulted in:

- Increased congestion and delay
- Demand for larger and heavier vehicles
- Mounting stress on infrastructure
- Greater need for effective and efficient enforcement
SCAN TOUR SITES

- THE NETHERLANDS
- BELGIUM
- GERMANY
- FRANCE
- SWITZERLAND
- SLOVENIA
SCAN TOUR OUTCOMES

General Findings

- Enforcement Technologies
- Enforcement Procedures
- Unique Data Applications
- Public/Private Funding
- Harmonization Approaches

Implementation Recommendations
ENFORCEMENT TECHNOLOGIES

Current Technologies

- Vehicle profile scanner
- WIM systems
  - Piezo quartz/ceramic
  - Bridge
- Unlike U.S., Europeans opt for low cost, lower accuracy, more frequent systems
  - Additional deployments more beneficial than incremental accuracy gains

Emerging Technologies

- WIM systems for direct enforcement
  - Low-speed
  - Multiple-sensor, high-speed
ENFORCEMENT TECHNOLOGIES

- As compared to U.S., Europeans are more willing to deploy “imperfect” technology as long as incremental benefit over existing procedures is achieved.

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<tr>
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<th>Low Speed</th>
<th>High Speed</th>
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<tr>
<td>Vehicle profile scanner</td>
<td>direct enforcement</td>
<td>pre-selection</td>
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<tr>
<td>WIM systems</td>
<td>direct enforcement</td>
<td>pre-selection</td>
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<td></td>
<td>• approved by National (France)</td>
<td>NOT direct enforcement</td>
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<td></td>
<td>metrology authority</td>
<td>• multiple sensor systems show promise for obtaining sufficient per truck accuracies</td>
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<td>• legal (statutory) authority pending</td>
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ENFORCEMENT TECHNOLOGIES

- As compared to U.S., Europeans have more effective and efficient processes for WIM system calibration and maintenance
  - Continuous, on-going calibration during enforcement efforts
  - Newly-developed, dynamic calibration vehicle
ENFORCEMENT PROCEDURES

- As compared to U.S., technology supports a broader set of enforcement activities in Europe
  - Real-time pre-selection
  - Mobile patrol scheduling (e.g., time, location)
  - Carrier advisory notices and/or preventative visits
  - Special transport monitoring
ENFORCEMENT PROCEDURES

As compared to U.S., Europeans achieve a higher efficiency and effectiveness of enforcement actions through:

- Mobile enforcement with few fixed weigh facilities
- WIM and video capture technologies (WIM+VID systems)
- Limited authority size/weight enforcement personnel
- High levels of collaboration
- Sufficient citation amounts for driver and/or carrier
• As compared to U.S., Europeans are effectively using data but recognize continued underutilization

• Data quality is largely sufficient
  – Most common shortcoming related to geographic coverage (e.g., too few sites)

• Data exchange/sharing
  – Variable within countries
  – Limited with the EU
PUBLIC/PRIVATE FUNDING

- As compared to U.S., Europeans involve private industry more in a “service” capacity (e.g., installing equipment, processing data, etc.) than a “supply” capacity
- Unlike U.S., Europeans rank safety impacts of enforcement, in addition to infrastructure/environmental impacts
- Tolling is widely used
  - Fixed registered weight capacity not actual, real-time weights
  - No distinction between fully loaded or empty transports
PUBLIC/PRIVATE FUNDING

• Emerging user fees focus on road and rail
  – Environmental impacts
  – Infrastructure impacts

• Unlike U.S., Europeans focused on modal shift to rail
  – Rail industry has more equal “voice” than trucking industry
  – European infrastructure largely government-owned and operated

• Noted sensitivity for fair competition in both industry and government
  – Despite sensitivity, productive participation from trucking industry is minimal
HARMONIZATION APPROACHES

- EU consistency common decision-making priority; while maintaining each individual country’s interests
- Similar to State/Federal limits in U.S., commercial vehicle size and weight limits:
  - Largely harmonized between countries for cross-border travel
  - Country-imposed limits cannot be lower than EU requirements except where infrastructure cannot support
- EU and FEHRL provide framework for administration of large-scale, multi-year coordinated research efforts
IMPLEMENTATION

- Slovenia Bridge Weigh-in-motion (B-WIM)
- Swiss Heavy Goods Vehicle Control Facility
- Prescreening for Mobile Enforcement
- Applying WIM for Direct Enforcement: A Template for Implementation and Certification
- Implement “Behavior-based” Enforcement Activities
- Synthesis of Safety Implications of Oversize/Overweight Commercial Vehicles
- Effective Use of WIM Data: The Netherlands Case Study
Slovenia Bridge Weigh-in-motion

- Primary applications:
  - Pre-selection for mobile enforcement
  - Data for planning, design, structure analysis
  - Overweight permit verification
  - Alternate route/bypass monitoring
- Portable and permanent installations
- Application to non-tested, alternative structure types

Action: Build and evaluate in U.S.
Swiss Heavy Goods Vehicle Control Facility

- **Vehicle profile scanner**
  - Complete/accurate dimensional data
  - Enforcement officials can focus on other aspects of inspection
- **Full GVW static scale system**
  - Efficiently captures GVW and individual axle weights
- **Automatic citation generation with electronic court transmittal**
- **Full inspection capabilities**

*Action: Build and evaluate in U.S.*
IMPLEMENTATION

Prescreening for Mobile Enforcement

- High-speed WIM system (portable or permanent)
- Video/photograph capture
- Handheld/portable computer to receive data
- Enforcement officers to escort suspected non-compliant vehicles for static weighing

*Action: Document European/U.S. best and future practices*
IMPLEMENTATION

Applying WIM for Direct Enforcement: A Template for Implementation and Certification

- characterize U.S. climate
- review European practices towards direct enforcement
- establish legal basis for citing directly from:
  - Low-speed WIM
  - High-speed WIM

Action: Describe evolution based on U.S./French experiences
IMPLEMENTATION

Implement “Behavior-based” Enforcement Activities

- WIM/photo data reviewed to determine commonly non-compliant carriers
- On-site visits occur with agreement to cooperatively prevent future overloading
- Transport company begins monitoring period
  - If no positive change is observed, additional enforcement actions may be taken

Action: Document European experiences
Synthesis of Safety Implications of Oversize/Overweight Commercial Vehicles

- In U.S., size and weight enforcement primarily motivated by infrastructure preservation
- Safety benefits attributable to size and weight enforcement not well defined
  - Intuitive relationship exists between safety and commercial vehicle size/loading (i.e., braking/stopping distances)

*Action: Assimilate safety-related research (UTC)*
Effective Use of WIM Data: The Netherlands Case Study

- Supports enforcement activities
  - Pre-selection
  - Scheduling enforcement activities
  - Directing preventative carrier contacts
  - Monitoring special transports

- Weekly data quality reports
  - Ongoing WIM system calibration using statically-weighed vehicles from enforcement effort

- Business Intelligence Monitoring WIM (MoWIM) Project
  - Utilizing WIM data to achieve 20% per year overload reduction objectives

**Action:** Document case study
NEXT STEPS

To share and apply what is learned on the Commercial Motor Vehicle Size and Weight Enforcement Scan Tour with the rest of the country

- Execute the Scan Technology Implementation Plan (STIP)
- Encourage effective and efficient enforcement of commercial motor vehicle size and weight