

APPLICATION OF WEIGH-IN-MOTION (WIM) TECHNOLOGIES IN OVERWEIGHT VEHICLE ENFORCEMENT

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Weigh-In-Motion

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Purpose

- This presentation examines the feasibility and applications of weigh-in-motion systems in overweight vehicle enforcement in today's 24-hour per day environment.



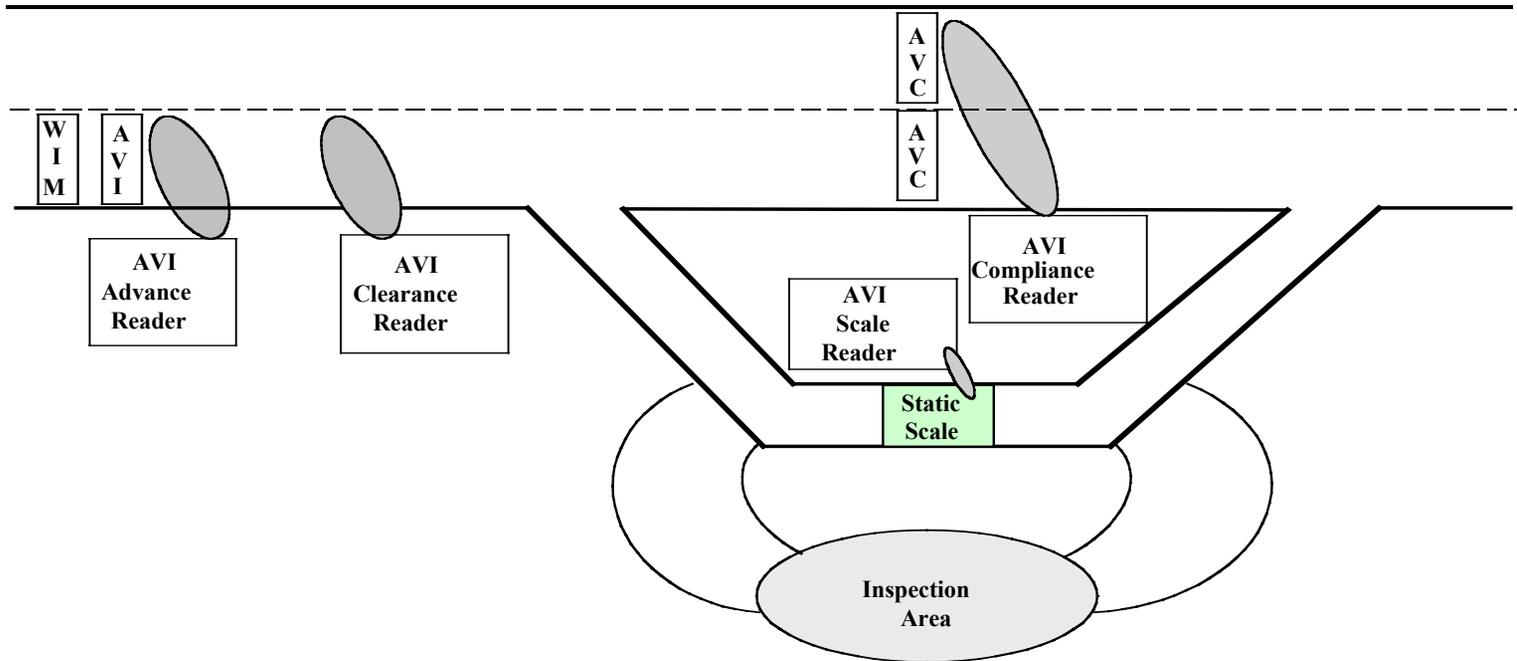
Organization

- Strategies
- Electronic Screening
- AVI
- WIM
 - Calibration
 - Feedback Loop
- Legal Issues



Electronic Screening

Typical Electronic Screening Configuration



Configuration may vary based on site requirements and layout



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AVI

- **Automated Vehicle Identification**
- **An AVI system consists of transponder, antennas, and readers. The reader transmits Radio Frequency (RF) energy over an adjustable area called the read zone or reader footprint. The transponder on the vehicle responds to the reader interrogation by sending the vehicle ID to the reader receiver. This process is called dedicated short-range communication (DSRC).**



WIM

- Weigh-in-motion (WIM) is the process of measuring the dynamic tire forces of a moving vehicle and estimating the corresponding tire loads of the static vehicle.



Calibration

- Calibration is necessary to ensure that the static weight estimates are accurate within an acceptable tolerance.



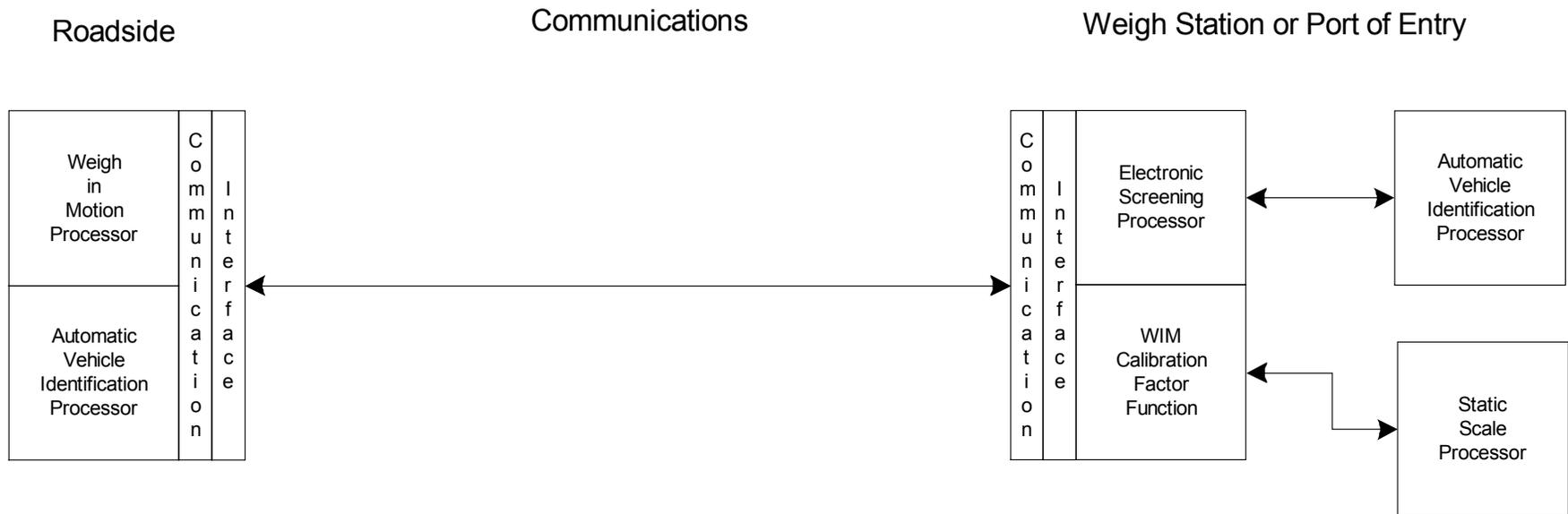
Calibration (continued)

- USA v. European Methods
- ASTM Standards
- Manual v. Automatic



Feedback Loop

Electronic Screening Weigh in Motion Calibration System



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Accuracy of Feedback Loop

Axles	ASTM III	Feedback Loop Feature
Gross	6%	3.5%
Drive Tandem	10%	4.5%
Trailer Tandem	10%	6.5%
Steering	15%	7%



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Legal Issues for 24/7

- WIM sites have not proven accurate enough to support automatically issuing weight citations
- No provisions for automatically issuing citations based on current electronic screening technologies.



Conclusions

- 24/7 Automated enforcement is necessary in today's environment.
- Automated WIM Calibration is vital to successful deployment of around the clock enforcement.
- “Feedback Loop” calibration shows promise.
- Current laws must be modified to accommodate 24/7 enforcement.

