

**Abstract for  
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**Title: Oak Ridge National Laboratory's Weigh-in-Motion (WIM) Experiences with Multiple Uses of WIM Data<sup>1</sup>**

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The Oak Ridge National Laboratory (ORNL) involvement in the Weigh-in-Motion (WIM) research with both government agencies and private companies dates back to 1989. The discussion here will focus on the US Army's current need for an automated WIM system to weigh and determine the center-of-balance for military wheeled vehicles and cargo and the expanded uses of WIM data with Federal Agencies and State Safety and Enforcement agencies. ORNL is addressing not only configuration and data management issues as they relate multiple uses of WIM data, but also its dissemination of this information related to the collection, management, and use of monitored traffic data.

Currently, Army units use portable and fixed scales, tape measures, and calculators to determine vehicle axle, total weights and center of balance for vehicles prior to being transshipped via railcar, ship, or airlifted. Manually weighing and measuring all vehicles subject to these transshipment operations is time-consuming, labor-intensive, hazardous and is prone to human errors (e.g., misreading scales and tape measures, calculating centers of balance and wheel, axle, and vehicle weights, recording data, and transferring data from manually prepared work sheets into an electronic data base and aggravated by adverse weather conditions). Additionally, in the context of the military, the timeliness, safety, success, and effectiveness of airborne heavy-drop operations can be significantly improved by the use of an automated system to weigh and determine center of balance of vehicles while they are in motion. The lack of a standardized airlift-weighing system for joint service use also creates redundant weighing requirements at the cost of scarce resources and time.

The above case study is being judiciously expanded into commercial operations as it relates to safety and enforcement. State safety and enforcement officials are primarily interested in vehicle axle and total weights at fixed inspections stations and at temporary inspection setup points. These experiences, via case studies and examples, will be presented.

**Keywords:** Weigh-in-Motion, WIM, center-of-balance, defense deployments, virtual weigh stations, logistics automation, data integrity, information infrastructure security

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<sup>1</sup> <http://www.trb.org/conferences/programs/session.asp?event=294&session=10628&viewabstracts=false>