

# REQUIREMENTS FOR UPDATING OF THE TRUCK TRACTOR (TT) WIM CALIBRATION METHOD

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## **ABSTRACT**

The Truck Tractor (TT) Method has been used for the routine post-calibration and quality management of weigh-in-motion (WIM) data in South Africa for more than ten years. In its initial form it was called the FTR (Front-axle Truck-tractor Ratio) Method, and was first presented at the International Conference on WIM in Paris in 2008. The quality and stability of reported axle loading and overloading information on the major toll routes in the country improved significantly since the TT Method was introduced.

The TT Method uses the truck tractors of a sub-population of articulated 6- and 7-axle trucks in its data-based calibration process. The default target weight for these truck tractors is 21.8 t. Initially the calibration factors produced by the TT Method were remarkably accurate (typically to within  $\pm 3\%$ ) despite the method being very simple.

The TT Method did not maintain its original level of accuracy over the past decade because of gradual changes in the South African vehicle fleet. Indications are that the default target value of 21.8 t for truck tractors is currently about 5% too low. It needs to be replaced with a variable calibration target that takes cognizance of the unique characteristics of each WIM location. The new target should among other things account for the split between short and long wheelbase trucks, the proportion of 6- vs 7-axle trucks and the general degree of vehicle loading. The method needs to maintain a balance between accuracy and complexity. A first prototype of the enhanced TT Method has been developed and the results look promising. Once proven successful the method will be integrated into the smGolem software that is used for the routine processing, calibration and quality management of WIM data on the major toll concession projects in South Africa.