

PROJECT PROFILE

Title	Procurement of Weigh-in-Motion network and development of techniques to exploit resulting data
Contractor	University College Dublin
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Start date	Dec-10
End date	Nov-13
Status	Completed
Type of project	Fellowship project - 3-year PhD project (Cathal Leahy)
Project reference	NR/250/04 RFP017

Description	<p>Weigh-in-motion (WIM) is a method for weighing vehicles without having to stop them on a static weigh-station. There are various technologies used: conventional WIM systems are based on some form of piezo-electric sensor embedded in the road surface while others use a small bridge which is instrumented and calibrated against known vehicle configurations. WIM is used all over the world to collect statistics on vehicle and axle weights. The information can be used to obtain information on:</p> <ul style="list-style-type: none"> - General vehicle movements - Vehicle overloading and enforcement - Pavement design and assessment - Bridge loading and assessment. <p>The project focused on currently available systems and how the data can be used to provide information the asset management systems being devised at the time by TII. The research included the identification of an appropriate system for use on the Irish Road network, providing advice and assistance in setting up and commissioning six WIM systems (procured by TII under a separate contract).</p> <p>At the time, the only information available on the traffic using the national road system came from counters which provided only numbers of vehicles: no information on axle or vehicle weights was generated. To effectively manage the road system, it is important that the traffic using the roads is correctly characterised. For example, the level of vehicle overloading in Ireland was not known. This has a particular relevance to road maintenance since pavement wear is proportion to the fourth power (or higher) of wheel loading. This traffic characterisation is also relevant to bridge loading, road safety and the setting of appropriate tolling levels.</p>
Objectives	The objectives of the project were to review the weigh-in-motion (WIM) technology available, to identify appropriate systems for use on Irish roads, and to provide guidance on how best to manage and use the information obtained. The WIM data will be used to characterise the traffic on the Irish national road network and provide information for TII's asset management system. The project will run in conjunction with the installation and commissioning of six WIM systems (procured by TII under a separate contract).
Benefits	An effective weigh-in-motion system would provide TII with accurate up-to-date information on axle and vehicle weights currently using the road system. This information would be used to: <ul style="list-style-type: none"> - provide reliable information on wheel loading for TII's asset management system currently being developed - provide information on bridge loading for more accurate assessment - provide accurate information on overloading - assist in enforcing legal weight limits and thus improve road safety.
Outputs	Project outputs included: <ul style="list-style-type: none"> - Guidance on establishing an effective weigh-in-motion system - Procurement and installation of at least a WIM station - Advice on data collection, management and utilisation.

