

A system to automate traffic fines designed

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Researchers at Universidad Carlos III in Madrid have designed a system that automates the administrative sanctioning process by applying communication and information technologies to traffic flow and using sensors built into vehicles.

The goal of the scientists in the [Information](#) and [Communications Technology](#) Security Group (Seguridad de las Tecnologías de la Información y las Comunicaciones - SeTI) at UC3M who are working on the E-SAVE project is to use information technologies (ITs) to improve the enforcement of certain traffic regulations. Specifically, they propose a set of systems for the automated, immediate and telematic supervision and management of the administrative sanctioning process. The purpose is to reduce highway accidents, given that one of the critical factors in doing so consists in improving the enforcement of traffic regulations.

The basis on which the researchers have designed their proposal lies within the area known as "Intelligent Transport Systems". These include the recent advances in the area of processing and transmitting information, as well as in the perception capabilities of motor vehicles, which come equipped with an ever-increasing number of [sensors](#). Along these lines, they have developed various protocols and mechanisms where [information security](#) and the protection of privacy are critical, indispensable elements. This research has been published in *Intelligent Transport Systems*.

First, they have designed a mechanism that allows victims to report offenders, while guaranteeing the [authenticity](#), confidentiality and

integrity of the information. Second, they have proposed a mechanism for sending the notification of a fine directly to the offending vehicle, with the intention of increasing the immediacy of the process (because the sanction can be presented to the offender while s/he is still driving), thus increasing its educational effectiveness. In the third place, in order to insure the driver's right to adequate means of defending her/himself when faced with supposedly unfair sanctions, a protocol for creating evidence that describes recent driving behavior has been proposed. In this way, the driver would increase her/his ability to defend her/himself if s/he receives a fine s/he does not agree with. "The supposed offender would have a mechanism to create electronic evidence of her/his driving behavior. How? Basically, by asking the surrounding vehicles to act as electronic witnesses," explains José María de Fuentes, of UC3M's Computer Science Department.

Experimental evaluation

In the coming months, the researchers plan to begin the experimental evaluation of the proposed mechanisms, for which they will use communication devices that are specifically designed for communication between vehicles and infrastructure. Thanks to this capability, they plan to test a secure means of providing information to the driver. To do this, they are proposing a mechanism that would avoid the distribution of false information regarding traffic events and incidents via the vehicular communication network.

The [SeTI](#) group at UC3M is also working on improving the automatic verification of the vehicle and driver's documentation as part of the project known as PRECIOUS. "It is important that verification does not allow us to be traced, that is to say, that we cannot be followed; therefore our approach is based on the use of cryptographic techniques of anonymous authentication, zero knowledge tests, etc.," says the researcher. To do this, they have proposed a model of credentials that

are electronically implemented, eliminating the redundancy and duplication of information that exist with current systems. In this way, it will be possible to authenticate credentials in a much more efficient manner.

More information: Towards an automatic enforcement for speeding: enhanced model and intelligent transportation systems realisation, *INTELLIGENT TRANSPORT SYSTEMS*. Volume: 6. Number: 3. Page: 270-281. Published in September 2012. ISSN: 1751-956X

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