Interoperability of Tolls Is Key in Brazil

Brazil’s National Bank for Economic and Social Development (BNDES) has announced the results of technical studies conducted to evaluate the country’s Federal Highway Concessions Program. The document guides the formulation of public policies and was prepared by the nation’s BR-500

Consortium, the winner of a public call made in 2015.

The report concludes that the standardization of education and technology to ensure interoperability throughout various countries' systems will allow users to travel across different highways by utilizing a single embedded electronic device: namely, RFID. It recommends the assignment of responsibility for the monitoring and definition of technological standards applicable to an electronic billing system to a single federal government body, through the revision of competencies related to Brazil's national road system, which is part of Federal Law #12,379/11.

The BR-500 Consortium, led by Accenture, with the participation of Dynatest, Moysés & Pires Advogados, and Burson Cohn & Wolfe (formerly Burson-Marsteller), proposes the structuring of a process of collection and reprimand capable of identifying users who infringe or default, and whose sanctions are sufficiently effective to discourage such occurrences. The study considers the adoption of measures to encourage RFID tag use, with the possibility of prepayment, at a discount for users who opt for this type of purchase of credits. The discount can be calculated, for example, as the difference in the cost of processing a tagged user charge compared to the cost of processing a charge per card reading.

"The evolution of the road sector is essential to making the country more competitive and promote socioeconomic development," says Pedro dos Passos, the head of BNDES' Transport and Logistics Department. Passos suggests that in order to enable such a change, "It is necessary to overcome some obstacles and limitations, which is perfectly possible through the technical deepening, political debate and support of society. We hope this study will foster debate on improvements in the Federal Highway Concessions Program, substantiate the development of effective and fair public policies, and contribute to the evolution of the road sector."

RFID Journal Brasil spoke with Dario Thober, the president of the Wernher von Braun Advanced Research Center, about the studies, as the institute plays a crucial role in the development of an RFID-based toll-collection system in that country. According to Thober, the single, standard tag concept for multiple applications has been widely discussed since 2007.

Since then, Thober says, the concept has been tested in real-world deployments in a number of operating scenarios, covered by statistical studies based on controlled trials, and more than 4 billion pass-through data points constantly evaluated throughout six years of operation via secure tags in various contexts of use. According to Thober, projects focused on interoperability between applications, even within a particular application in different operating scenarios, "were conducted by ARTESP, commissioned by Finep and demanded by authorized services operators and concessionaires, producing a significant amount of evidence on interoperability issues."

Thober says the results regarding interoperability were the generation and management of security keys, the initialization of tags for different systems, integration with systems in which international standards are in force, and the use of a single tag and integrated system, among other relevant aspects. "These tests highlight issues related to the proposition of standardized solutions," he explains, "and indicate how, in each type of application, they can be structured—using an RFID solution with security mechanisms—modified, calibrated and integrated into the legacy systems of the main players of national transit systems."

The centralization and general standardization of automation techniques, Thober notes, may be insufficient to promote cost reductions and an expansion of the automatic-identification system, and the Brazilian government may encounter difficulties when systemic factors of interoperability are not

taken into account. If not observed in detail, he adds, this could pose an immediate risk to systems already in operation, in terms of semiconductor chips, the generation of fraudulent passwords by hackers, the loss of investments by clients of the base of private operators, road accidents, and other undesirable side effects.

Tests of the “free-flow” concept of automatic passage without barriers at toll plazas have taken place since 2011, Thober reports, and have become practical for high-volume operations on the highways of São Paulo since 2012. “The practice shows that vehicle-classification systems must be finely tuned to those of RFID,” he states, “in order to become compatible and even alternative to those of common toll plazas.”

“In addition to the technical aspect,” Thober explains, “free-flow means establishing an up-to-date national database of the Renavam database, for example, because even in countries where the evasion rate is only at 1 percent, they’ll be able to guarantee, in a sustainable way, the recovery of fraudulent or lost passages due to, among other causes, double data in the government system itself, bypassing private sector investments in this practice.”

“We at the von Braun Center believe in the initiative announced,” Thober states, “and, as we have stated in the events and official reports demanded, we consider that these studies and plans should include the results already produced, and still others of research and development that are being produced at this moment—in a number of projects—for a consolidated result that serves the coherence and perennial construction of the systems and their continuity policies. We support and applaud the work, and we wish a lot of success for the project.”

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