

## Implementation of Smart Card Automatic Fare Collection Technology in Small Transit Agencies for Standards Development

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**Abstract :** Many large transit agencies have adopted RFID technology and electronic automatic fare collection (AFC) or smart card systems, but small and rural agencies remain tied to obsolete manual, cash-based fare collection. Small countries or transit agencies can benefit from the implementation of smart card AFC technology with the promise of increased passenger convenience, added passenger satisfaction and improved agency efficiency. For transit agencies, it reduces revenue loss, improves passenger flow and bus stop data. For countries, further implementation into security, distribution of social services or currency transactions can provide greater benefits. However, small countries or transit agencies cannot afford expensive proprietary smart card solutions typically offered by the major system suppliers. Deployment of Contactless Fare Media System (CFMS) Standard eliminates the proprietary solution, ultimately lowering the cost of implementation. Acumen Building Enterprise, Inc. chose the Yuma County Intergovernmental Public Transportation Authority (YCIPTA) existing proprietary YCAT smart card system to implement CFMS. The revised system enables the purchase of fare product online with prepaid debit or credit cards using the Payment Gateway Processor. Open and interoperable smart card standards for transit have been developed. During the 90-day Pilot Operation conducted, the transit agency gathered the data from the bus AcuFare 200 Card Reader, loads (copies) the data to a USB Thumb Drive and uploads the data to the Acumen Host Processing Center for consolidation of the data into the transit agency master data file. The transition from the existing proprietary smart card data format to the new CFMS smart card data format was transparent to the transit agency cardholders. It was proven that open standards and interoperability design can work and reduce both implementation and operational costs for small transit agencies or countries looking to expand smart card technology. Acumen was able to avoid the implementation of the Payment Card Industry (PCI) Data Security Standards (DSS) which is expensive to develop and costly to operate on a continuing basis. Due to the substantial additional complexities of implementation and the variety of options presented to the transit agency cardholder, Acumen chose to implement only the Directed Autoload. To improve the implementation efficiency and the results for a similar undertaking, it should be considered that some passengers lack credit cards and are averse to technology. There are more than 1,300 small and rural agencies in the United States. This grows by 10 fold when considering small countries or rural locations throughout Latin American and the world. Acumen is evaluating additional countries, sites or transit agency that can benefit from the smart card systems. Frequently, payment card systems require extensive security procedures for implementation. The Project demonstrated the ability to purchase fare value, rides and passes with credit cards on the internet at a reasonable cost without highly complex security requirements.

**Keywords :** automatic fare collection, near field communication, small transit agencies, smart cards

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