Toll Backoffice Platform COTS Based Solutions

Request for Information

April 7, 2021

Responses due: April 28, 2021

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Alliance for Toll Innovation

The Alliance for Toll Interoperability is now the Alliance for Toll Innovation (ATI). The new ATI members are toll operators who are entrepreneurs, advocates and collaborators interested in sharing ideas best practices and seeking to build platforms that provide outstanding customer experience and increase payment options for its toll systems. ATI is committed to engaging with solution providers to bring new and emerging payment methods and commercial customer experience technologies to the toll market. Learn more about the new ATI at www.tollinnovation.org.

Introduction and Overview

Alliance for Toll Innovation (ATI) is seeking information from leaders in various industries of all sizes to assist in discerning future opportunities for development of next generation tolling back-office systems (BOS) with a focus on platform-based architecture. ATI welcomes information from organizations that provide solutions to telecommunications, financial services, utilities, transportation, tolling, and other relevant industries to recommend modern, scalable, flexible, and cost-effective BOS solutions. ATI is interested in leveraging BOS solutions for tolling operators that provide:

- high volume, real-time transaction and payment processing;
- implementation of commercial off-the-shelf (COTS) enterprise platforms with built in connectors for application integration;
- integration with non-toll applications;
- supporting agency data models and enterprise architectures using functional modules from ERP solutions;
- integration with multiple customer experience technologies and multiple contact centers that support a distributed workforce with on-premises and/or remote workforce;
- agile and rapidly scalable architecture capacity for fee for service and mobility payment options,
- modular integration with multiple service-providers to support and enhance operations such as third-party payment services, fulfillment and distribution, license plate certification, vehicle owner registration look-up, etc.;

- advanced data visualization/analytics, comprehensive transactional auditing, and predictive AI modeling/monitoring tools;
- platforms that support machine learning and continuous improvements of applications and predictive approaches to system maintenance;
- introduction of innovative customer-centric, value-added, and revenue enhancing program offerings; and
- integration with next generation toll collection devices and/or apps including mobile/location aware products, V2X payment and logistics services, etc..

The tolling industry is changing with the continued growth of all electronic toll operations and facilities, new customer service technologies focused on self-service capabilities, new mobile payment technologies, enhanced performance-monitoring and analytics tools, and new opportunities for outsourcing of operational functions. Tolling agencies would like to leverage these changes and find ways to seamlessly integrate new solutions and partners into the BOS that can be implemented in a phased or staged manner suitable to changes in legacy technology life-cycles. In sum, ATI is interested in obtaining information on today's leading information technology tools, trends and best practices to improve operations and Increase efficiencies.

Current and emerging industry challenges

Toll agencies are facing multiple changes and challenges, and thus searching for resolution to these issues with enterprise class platform approaches and solutions.

1. *Scalability* – The industry continues to grow the number of transactions, the size and variety of its customer base, and the increase of expanded service offerings that complement our core tolling business. Current infrastructure and architectural frameworks are often limited in capacity, agility, or functionality with single threaded processes and applications. Request: ATI seeks input from industry on how to measure scalability and performance and evaluate transition options prior to definition of and development of the RFP process.
2. *Security* – The industry seeks to address ever-growing data security threats, the need to ensure customer privacy and to protect vulnerable financial transactions. Tolling operators currently operate federated secure platforms that provide role-based access for system and non-system users and will continue to seek solutions that protect our

customers and our data. Request: ATI seeks information on how Enterprise Resource Planning (ERP) platform providers secure environments and recommendations for managing/migrating security solutions for both on-premises and cloud offerings.

3. *Analytics/data insights* – The tolling industry and its customers lack clear benchmarks and performance metrics as it has relied on traditional industry providers to provide analytics from proprietary solutions that are not comparable across the industry or to peer industries. Operations require enterprise data analytics and the necessary insight for identifying trends to enhance customer service and expand toward innovation in revenue generation. Request: ATI requests industry feedback on how to transition to data lakes and analytics offerings, and how to develop data pipelines to obtain insights from systems in a standardized, reliable and cost-effective manner.

4. *Modularity* – All toll operators typically require BOS that include product sales and fulfillment, invoice and billing, and financial processing. Beyond these base functions, the tolling industry requires integration with multiple third-party services which allows us to expand/supplement payment methods and enhance services. We seek a coherent migration strategy that will allow us to leverage current investment while adding new Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) using standardized APIs and integration techniques on ad hoc or as needed bases. Request: ATI requests information on how the toll industry shall best procure services to leverage existing ERP modules with limited configuration or customization.

5. *Business rule simplification/standardization* – While there are inescapable near-term idiosyncrasies specific to tolling (pre-paid accounts, preference for use of RF transponder-equipped vehicles, image-based capture of license plate information necessary for supplementing electronic toll collection), there are many redundancies and over-customized applications weighing on our business models and legacy BOS. Request: ATI seeks input on potential best practices that reduce inefficiencies, facilitate improved operations, and ease migration to standardized account types and billing models using ERP out of the box solutions.

6. *Transition* -Historically, the tolling industry has moved from one BOS provider to a completely new BOS provider in 5- to 10- year lifecycle replacements. This approach has proven to be very risky, expensive, and filled with inevitable scheduling delays while often inconveniencing customers and disrupting cash flows. Request: ATI seeks recommendations on how toll operators can transition to ERP platforms and build on the longevity and continuity of these with smaller incremental investments for new features, applications or data streams.

7. *Commercial Delivery:* The tolling industry has typically relied on customized toll system/product providers (system integrators) to bear responsibility and liability for delivery of BOS for meeting performance requirements that are often inconsistent and variable across operators. This lack of standards further contributes to costs and delays associated with traditional BOS implementations. Request: ATI seeks recommendations on how to allocate risk, devise standards, and avoid over-customization which can lead to more timely delivery assurance and improved performance.

Tolling industry business process background

The toll industry currently has some unique, but consistent across most operators, processes that should be considered when responding to this request for information. Process reengineering should be considered where modifications may create more efficient processing both financially and operationally. ATI is seeking feedback on BOS services and products available by COTS tools that can integrate with and perform the following functionalities:

Roadside operations and technologies

- Roadside vehicle recognition:
  - Lane vehicle recognition
  - Electronic payment recognition
  - Decision making – valid payment or violator
  - Camera image processing
  - High volume transaction processing
  - Tolling systems processing as all electronic system
  - Tolling systems processing as barrier-based systems
  - Dynamic trip-based systems
  - Customer/billing assignment prioritization

Operational back office functions

- Transaction processing:
  - Traffic transaction processing
  - Pricing rules (e.g., congestion, time of day, vehicle classification)
  - Trip-building (origin/destination determination) combinations
  - Audit trail for life of toll transactions
  - Filtering mechanisms for decision making
  - Interoperability with partner tolling agencies

Commercial back office functions

- Account management:
  - Prepaid account management
  - Invoicing and account management
  - Rental/lease program management
  - Fleet account management
- Inventory management
  - Transponder/reader inventory tracking
  - Distribution
- Image processing
  - Automated and manually certified image processing
- Third party integrations
  - Retail and virtual payment services
  - Contact/call center, IVR, chat (BOT and agent based) facilities
  - License plate look up (i.e. departments of motor vehicle)
  - Retail device distribution partner(s)
  - Fulfillment distribution partner(s)

- Printing/mailing services
- Payment processing (i.e. credit card, ACH, retail)
  - Including Payment Card Industry (PCI) Level 1 agencies
- Collection agencies
- Interagency relationships (i.e. EZIOP, CUSIOP)

❖ Financial and Reporting

- Transactional “cradle to grave” auditing
- Strong analytic capabilities
- Financial reporting
- Operational reporting
- General ledger management

❖ Customer relationship management

- Call center management
- Case management
- Telephony / Integrated Voice Response Systems
- e-commerce/Self-service web site
- BOT Integration
- SMS/text messaging

Tolling industry desires and future needs

As noted previously, the tolling industry is undergoing changes and challenges to it business model. As such, we seek information on best practices using BOS solutions for the following:

❖ Apply emerging greenfield technologies such as blockchain, machine learning (AI), autonomous vehicle protocols, newer OCR platforms, and Augmented/Extended Reality

platforms/frameworks, and IoT technologies, ODV/Permitting, moving violation payment, etc.

- An efficient back-office system and interconnectivity of its sub-components that ensures minimal development/integration efforts should one of the components need to be replaced.
- Back-office with greater scale and includes further application of COTS software for ERP (inventory, financial management systems), CRM, Middleware, Big Data Platform and analytics/decision making, Business Rules Engine/Management System, Self-Service Portals and a High Performing Data Platform Architecture.
- Streamline data processing business rules.
- Eliminate duplicate functions between components.
- Expanded business rule options for payment technologies (radio frequency ID, or RFID, and license plate video tolling).
- Greater level of flexibility in future business rules and account enhancements than that which is possible today.
- Identifying and integrating new payment methods/forms and/or source/services, and technologies.
- Integrating flexible invoicing, account management, revenue enhancement, collections, and recovery platforms.
- Advancing opportunities for partnerships and forms of interoperability with both existing/new tolling/mobility entities, non-traditional mobility service providers, and customer service models.
- Simple interfaces and configurations (modular / plug and play), changeouts and upgrades to existing in-lane technology such as RFID and video toll cameras and would also support use of non-RFID technologies such as Bluetooth or cell-phone-based, and fee-for-service platforms.
- Solutions with enhanced scalability, standardized integration methods, and real-time processing/payment functionality.
- Distributed approach to back-office services, such that a range of service providers may continue to integrate existing and new operational partners such as fulfilment services, third-

party payment providers/mechanisms, call center and alternate customer service channels, etc.

- ❖ Enhance organization operational efficiency.
- ❖ Highly scalable solutions and flexible Middleware/enterprise service bus capability based on standardized/universal integration logic (e.g., standardized APIs),
- ❖ Advanced data analytics platform with robust tool sets for data mining purposes, business analytics, customer insight, predictive modeling, and reporting,
- ❖ Ongoing support in configuration updates, system administration support and report analytics, and for staff training in ongoing operations.
- ❖ Robust and integrated self-service payment channels.
- ❖ "Best in class" components.
- ❖ Strong business intelligence capabilities, and robust Middleware and API standardization to improve the ability to replace and augment existing functions and services.
- ❖ Frictionless data access allowing toll agencies to be close to its customer data without a proprietary black box interface limiting queries, reports or results.

RFI vendor submission guidelines

The toll industry faces various challenges with an inability to scale their systems quickly to meet the continued growth it experiences. The desire to more quickly integrate 3rd parties, make process changes, and add and enhance services are inhibited by their current legacy back office solutions.

Given the background of over-customized legacy technology and the horizon of change noted above, we are seeking perspective on some core questions in addition to the ATI requests above:

- As customer preferences and road usage patterns change (e.g., smartphone-based tolling, ride sharing, emergence of subscription models which offer customers new services and products beyond tolling, non-traditional payment providers, automated vehicle and vehicle to vehicle/device (V2X) technologies), how can the tolling industry both encourage these innovations while protecting our business model?

- As interoperability among national/international facilities and across new, competitive vehicle-based services (parking, retail/curbside pick-up, municipal red light/speed/congestion controls, etc.) emerge, how can we leverage new processing platforms and cloud-based storage solutions to seamlessly and quickly expand our technology needs? What system architecture designs and decisions must we as an industry consider?

- Given the variety and size of current toll providers and the array of financial constraints we may operate under, how can we as an industry identify a path to migrate to new solutions while leveraging existing investments?

- What key practices, policies and current ways of conducting business should be changed, loosened, or eliminated to open our industry to new possibilities?

To assist the tolling industry to build a roadmap for future BOS solutions, respondents should provide a response in the form of a white -paper or presentation with information and solutions based in whole or in part of the information provided above and the key questions asked. Responses should provide solutions that not only address technological solutions, but also business process/operational efficiencies.

ATI will assemble a committee of representative toll operator business and technical SMEs (ATI BOS Task-force) to review the submissions. The ATI BOS task force will then invite select respondents to a Q&A forum for further discussion with an interested industry and ATI member audience. Any submissions are not considered a formal bid offering offer to perform services. ATI Is seeking information to engage industry, educate its members about offerings and determine more efficient methods to procure back office systems.

ATI memberships consists exclusively of public and private toll agency operators. The information shared via this RFI process and the Q&A forum will be kept confidential and not shared outside the member agencies. Proprietary information should be identified in your submission documents.

Submission process and deadlines

1. Any questions about the RFI to be submitted by April 16^{th,} 2021.

2. All submissions shall not exceed 20 pages double sided. Additional reference material is welcome, but the ATI BOS task force is seeking information about commercial ERP and back office offerings as indicated in its requests and is not interested in company

promotional materials or marketing brochure or other company materials. All submissions will be sent by email to ATIBOSTASKFORCE@tolllinnovation.org by April 28, 2021.

3. All submissions shall be electronically by email only and shall not be marked with any proprietary or confidential markings. If they exceed 20 MB in size, please email ATIBOSTASKFORCE@tolllinnovation.org by April 23rd, 2021 to make alternative arrangements.