INTRADA®
INSIGHT

Vendor agnostic turnkey video based tolling software with lowest operational cost

INTRODUCTION

Intrada® Insight is a scalable high-performance end-to-end video toll transaction processing and review solution for video-based electronic toll collection (ETC). A turnkey solution that enables toll road operators and system integrators to achieve significant operational cost reductions and maximizing tolling revenues. Intrada Insight is camera and back office supplier agnostic providing flexibility to work with any existing or new toll system.

Intrada Insight intelligent processing tightly integrates advanced self-learning video analytics with project optimized image processing, efficient, innovative Manual Image Review (MIR) subsystem, and comprehensive status reporting. Intrada Insight deployments process millions of passages per day at unparalleled performance. Intrada Insight saves millions of dollars per year over the traditional image review systems currently deployed by many toll agencies.

A NEW VIDEO TOLLING PARADIGM

Q-Free is raising the bar with Intrada Insight by offering a new paradigm in video tolling systems to deliver unprecedented levels of performance. Intrada® Insight provides an accurate, reliable, and predictable system that helps to avoid billing errors, leakage, and manual review loads, all of which are essential for smooth and cost efficient tolling operations. Q-Free introduces new concepts to define the performance of a system for an operator and integrator more accurately and continuously pushes the bar.

Video tolling requirements are typically based on a single value confidence or accuracy level. Using these technical concepts to define overall system performance is inherently risky for a tolling operator and back office integrator. Most importantly: they fail to capture the predictability and reliability of the system. Intrada Insight combines several automation techniques combined with business logic, manual review, and self-learning feedback loops and advances beyond the traditional video tolling concept to achieve this predictability and reliability.

The primary performance measures for Intrada Insight are automation rate and error rate (or alternatively read accuracy). Automation rate is a measure of all passages that are human readable and automatable, and not excluded due to business logic (e.g. validating emergency vehicle exemptions). Error rate specifies the percentage of correctly read automated passages and defines the (un)certainty of the automated results. Together they define the service level or performance of the video tolling system and allow reliable calculation of operating income and expenses.

Reducing uncertainty in the automated and manual results of a video processing system is pivotal for cost reduction and the only honest way to measure its value. This holistic across-the-tolling enterprise approach has been proven to yield significantly greater performance than just in-lane OCR techniques. Intrada Insight has yielded operational cost savings of several million dollars per year compared to their existing image review system.

LOWEST OPERATIONAL COST

Q-Free Intrada Insight excels in delivering video tolling solutions with the lowest operational cost in the market. It combines superior predictable system performance with a novel manual review process that greatly increases operator efficiency. After a short tuning period to optimize for local conditions and customer requirements, Intrada Insight can reach ≥ 99% automation rate with ≤ 0.05% error rate / ≥ 99.95% read accuracy.

Reliable automation rates and error rates have proven to help reduce uncertainty in manual review resource planning and significantly reduce billing errors and leakage. Based on traffic volume history it makes make fine grained resource planning and operational budgeting possible.

Intrada Insight comes with an advanced web-based Manual Image Review (MIR) sub-system that reduces throughput review time and operator errors over traditional MIR systems. By understanding what part of the license plate syntax read is correct MIR helps pin point issues, such as state, pre- and post-fix, or character misreads, before sending it to the operator. The operator can complete their tasks on images in less time with less specific knowledge about the license plate syntax. Not only does this reduce manual review operating expense, but all operator inputs are fed back into Intrada Insight processing intelligence so that the system can achieve higher levels of performance over time.

ACTIONABLE REPORTING

Real-time reporting is an integral part of the Intrada Insight solution. It provides all the necessary information for operators, integrators, toll agency personnel, and Q-Free to monitor the health and service level of all facets of the operation. This makes it a valuable tool in identifying issues in the tolling infrastructure and whether contractual obligations are being met for proper video toll collection operation. In addition, it provides real-time insights into traffic flow and toll usage.

Manual review performance reporting is another important asset in the monitoring and reporting cycle. The costs of manual processing, including accuracy, is the major portion of operations expenses. With MIR, operators can analyze both accuracy and efficiency of manual review staff and get feedback on the quality and errors in passages sent for review. Its built-in quality assurance capability continuously monitors individual reviewers' performance supporting resource planning and training.

Lastly, the technical status of the system is closely watched to identify potential bottlenecks or opportunities for further performance improvements. Intrada Insight provides the means for system integrators and Q-Free to both closely monitor and tune their respective parts of the video toll system for maximum stability and throughput without hindering live toll system operation.

SCALABLE PERFORMANCE

Q-Free Intrada® ALPR (Automatic License Plate Recognition) is a core technology for Intrada Insight and used worldwide in traffic cameras, parking systems, low-emission zones, congestion charging schemes, among many others. It has leading accuracy, worldwide support and proprietary character recognition filters and processing for use in many adverse conditions.

Another core technology is Intrada® VSR (Vehicle Signature Recognition).

Intrada VSR creates a unique vehicle signature or fingerprint that allows storing and re-recognizing vehicles that were previously manually reviewed. A second application is grouping passages (patented) without necessarily recognizing the license plate. Grouping also allows different images and manual input to be used for final recognition of a vehicle.

Intrada Insight can be scaled to any tolling project size. Traffic volume increases, intermittent backlogs, as well as toll road extension can be comfortably accommodated. Q-Free Intrada Insight can be readily updated when new technology improvements are developed. It allows operators to extends the useful life of the system and further increase their operational excellence. Intrada® Insight always produces the highest read accuracy rates, or lowest error rates, and leading automation rates.

BENEFITS

- Lowest operational cost.

- Reliable and predictable automation of video based tolling solutions enables operational cost reductions and tolling revenue maximization.

- Intelligent manual review reduces human operator errors and enables system automation improvements.

- Guaranteed low error rates minimize erroneous billing and enhances the customer experience.

- Reduced solution complexity through seamless and transparent integration with any camera, back office, and vehicle registration system.

- Proven technology used around the world in large scale tolling and charging applications by industry-leading operators and integrators.

FEATURES

- Automation rates up 99% with a read accuracy of up to 99.95% / 0.05% error rate.

- Supports over 160 states and countries worldwide including new plate styles and all plate types issued in North America.

- Customizable business rules and business logic to integrate with existing business systems, processes and 3rd party interfaces.

- Video tolling performance and system reports provided out of the box.

- Supports any lane image capture system and all major back office platforms.

- Accurate self-learning automation enabled by intelligent manual review.

- Completely web-based deployment with interactive and responsive user feedback.

- Can support over 300 concurrent manual reviewer operators at once to quickly reduce transaction backlogs.

REFERENCES

- Norwegian Public Roads Administration, Norway

- North Carolina Turnpike Authority, United States

- Massachusetts Department of Transportation AETS, United States

- Washington Department of Transportation

- Central Florida Expressway (CFX), United States

- Tunnil, Faroe Islands

- Queensland of Transurban, Australia

- Miami-Dade Expressway Authority (MDX), United States

Q FREE