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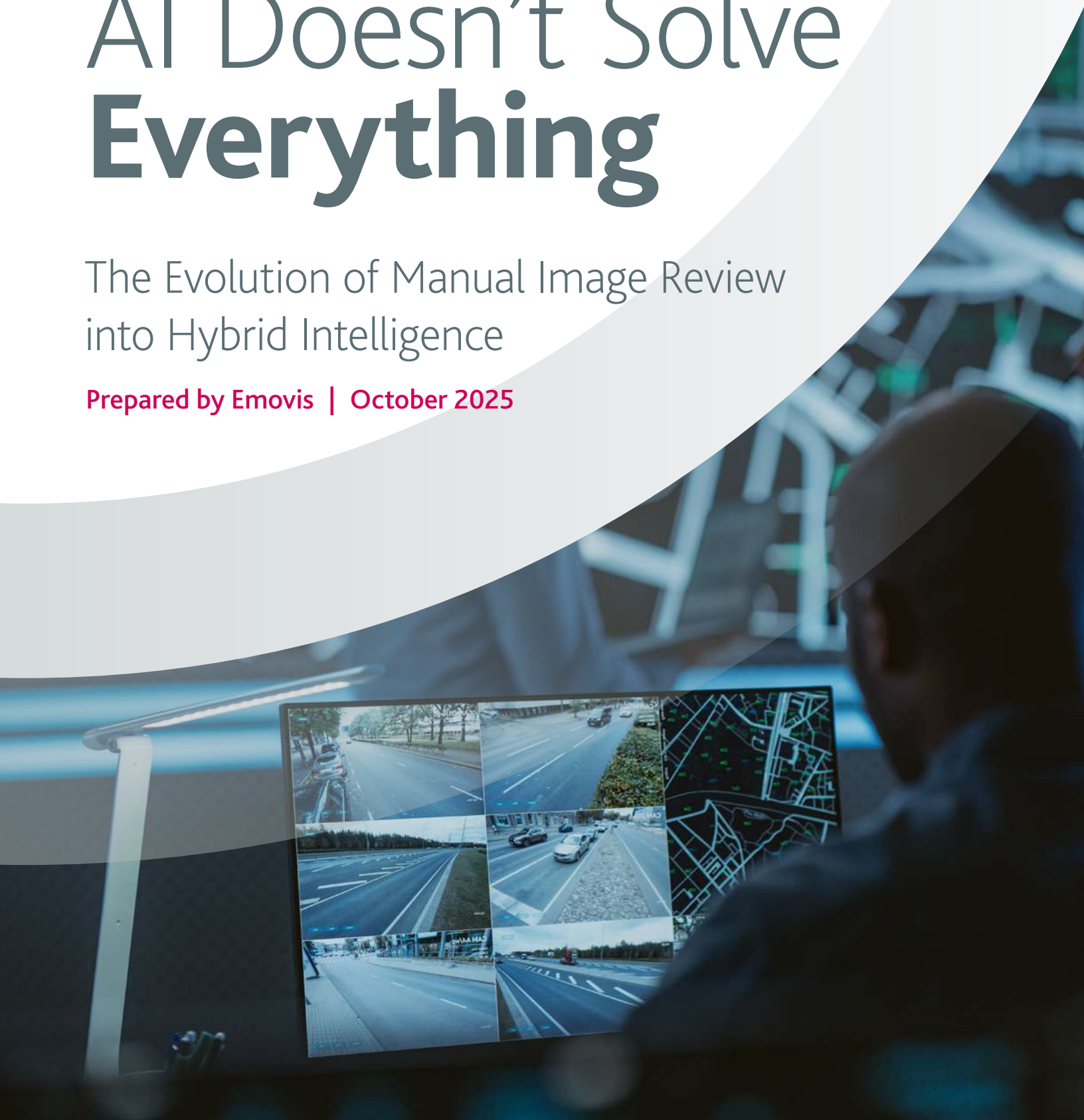
Abertis Mobility Services

AI Doesn't Solve **Everything**

The Evolution of Manual Image Review into Hybrid Intelligence

Prepared by Emovis | October 2025



Executive **Summary**

Artificial intelligence (AI) has transformed tolling, delivering speed, scalability, and cost savings through automation. Yet technology alone is not enough. Free-flow systems still face challenges that demand a human touch.

The future of image review is hybrid: combining advanced automation with trained human oversight. Emovis Verify embodies this future. By pairing scalable AI with expert manual review, tolling agencies gain accuracy, compliance, and efficiency—protecting revenue, supporting enforcement, and building public trust.

01

INTRODUCTION

The Case for Accuracy and Trust in Tolling Imaging

For tolling agencies and their partners, precision is more than a performance metric. It's the foundation of effective operations. Every transaction represents revenue, compliance, and public trust. As traffic volumes rise and regulations grow more complex, agencies must ask: **can artificial intelligence (AI) alone deliver the accuracy required?**

Automated license plate recognition has transformed tolling by processing millions of transactions quickly and efficiently. These advances have allowed agencies to scale operations and reduce costs while offering drivers more seamless travel experiences. Yet even with this progress, gaps remain that automation cannot bridge on its own.

Hybrid intelligence, the integration of automation and human expertise, is emerging as the model that can deliver both scale and accuracy. In this new paradigm, operators play a dual role: ensuring accuracy today and enabling smarter automation for tomorrow.

Every transaction represents revenue, compliance, and public trust.

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The Growth **of AI in Tolling**

The tolling industry has embraced automation as a way to modernize operations and manage increasing demand. AI-driven license plate recognition now handles millions of vehicle passages daily, enabling free-flow systems to expand without reliance on traditional toll booths. The results have been measurable: reduced congestion, lower operational costs, and a smoother customer experience.

For many agencies, automation has become a cornerstone of strategy, providing a scalable foundation for future mobility solutions. Its role in reshaping tolling is undeniable. Still, experience has shown that automation is not infallible; understanding those limitations is critical to sustaining accuracy, compliance, and public trust.

03

Why Fully Automated AI **is Not the Answer**

AI has undeniably advanced the tolling industry, delivering speed, scalability, and cost savings through automation. However, the promise of fully automated systems often overshadows the operational and regulatory realities agencies face.

Automation alone cannot guarantee flawless billing accuracy. False positives and false negatives still occur, leading to revenue leakage, customer dissatisfaction, and potential disputes. These risks are magnified in complex environments with cross-border traffic, specialty plates, and non-standard vehicle types.

Regulatory requirements also demand precision and accountability that AI cannot meet on its own. From HOV lane enforcement to hazardous goods transport, oversight and verification remain essential to ensure compliance and public trust.

The U.S. Department of Homeland Security's ALPR market survey explicitly notes that manual intervention is needed "for quality control: Operators should routinely review ALPR results, ensuring accuracy and identifying any false positives or negatives."[1]

[1] U.S. Department of Homeland Security, 2020.

04
Tolling Statistics:
Why AI Needs Human Oversight

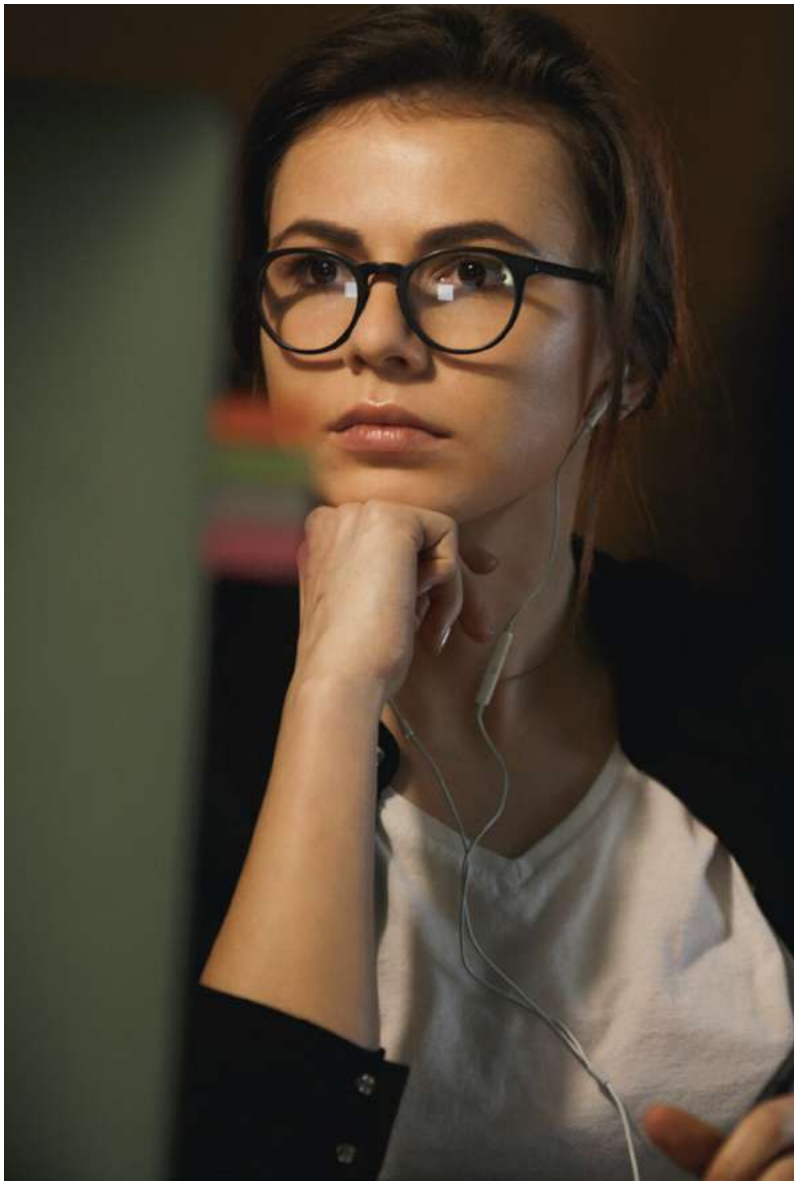
Even in the most advanced tolling systems, automation alone cannot capture every transaction. Data from across the U.S. shows why manual image review remains essential.

In Maryland's toll-by-plate system, low-confidence ALPR images are manually reviewed before billing. This step routinely catches misreads from damaged, specialty, or obscured plates, improving accuracy and reducing disputes.[2]

A U.S. Federal Highway Administration study found that many all-electronic tolling (AET) facilities face "revenue leakage" from unreadable or unfamiliar plate formats, which must be resolved through manual review.[3]

In Florida, a study estimated that video-billed transactions can cost up to $0.75 each, compared with about $0.15 for transponder-based tolls. While toll-by-plate may account for less than a quarter of total traffic, it contributes disproportionately to processing costs and lost revenue.[4]

Taken together, these findings underscore a simple reality: automation improves efficiency, but only human oversight ensures accuracy, compliance, and revenue protection.



[2] Maryland Department of Legislative Services, 2023.
[3] U.S. Federal Highway Administration, 2021.
[4] Florida Department of Transportation, 2019.

05
AI and Human Intervention: Striking the Balance

The evolution of tolling technology has shown that a hybrid approach, pairing automation with human oversight, delivers the most reliable results. As automation advances, the focus of human intervention moves from routine validation to handling edge cases and supporting the continuous adaptation of AI to new scenarios.

Emovis Verify embodies this principle by supporting ALPR systems with a scalable, web-based manual image review service. The result is a process that is accurate, efficient, and compliant. Emovis Verify is fully aligned with the vision of MIR Operators as trainers of AI. The platform enables certain operator profiles to select which validations or corrections are used for AI training, and for which specific purposes. This ensures that human expertise is not only correcting errors, but is also strategically guiding the evolution of automated systems.

In effect, the role of manual image review operators is shifting—from safeguarding revenue in the moment to actively training the AI for greater accuracy and reliability.

AI INCREASES EFFICIENCY

AI-powered image recognition processes the vast majority of toll transactions quickly and accurately. By allowing automation to handle high-confidence cases, Emovis Verify reduces manual workload, speeds billing cycles, and lowers operational costs without sacrificing quality.

SCALABLE PROCESSING WITH HUMAN OVERSIGHT

When automated recognition encounters poor image quality, occlusions, or environmental challenges, Emovis Verify routes those transactions to trained reviewers. This ensures revenue capture and enforcement integrity even under complex traffic conditions, while enabling operators to scale without proportionally increasing staff. Operators thus become mentors for the AI, ensuring it evolves with real-world complexity and regulatory requirements.

CONTINUOUS LEARNING FROM HUMAN-REVIEWED CORRECTIONS

Corrections made by reviewers strengthen overall system performance. Over time, this process allows Verify to adapt to evolving license plate formats, new vehicle types, and changing roadway conditions—steadily improving automation accuracy and reducing reliance on manual intervention.

ENSURING TRACEABLE DECISION-MAKING FOR COMPLIANCE

Regulatory compliance and public trust require transparent, verifiable processes. Emovis Verify provides a clear audit trail by documenting both automated decisions and human interventions. This ensures that enforcement actions are defensible, billing accuracy is demonstrable, and agencies can meet strict regulatory requirements.

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CONCLUSION

The Key to Success

AI has transformed tolling operations, but the industry's realities prove that technology alone cannot guarantee accuracy, compliance, or revenue protection. The future lies in hybrid intelligence, where automation is amplified by human expertise.

With Emovis Verify, tolling agencies gain a scalable, web-based manual image review service backed by award-winning expertise. This combination ensures every transaction is processed with the highest possible accuracy, preventing revenue leakage, strengthening compliance, and supporting enforcement.

As traffic volumes grow and regulatory expectations rise, agencies need a partner who not only delivers proven technology but also understands the critical role of human oversight. Emovis brings decades of experience in free-flow tolling, paired with innovative solutions designed to evolve with tomorrow's challenges.

The message is clear: Hybrid intelligence is not a compromise; it's the future of tolling. **Emovis Verify makes that future possible today.**

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