Defeating People Trafficking and Smuggling: How Traffic Analytics Defeats Organised Crime

A DXC Technology White Paper for Public Sector Officials and Police Forces

Introduction

The Invisible Enemy of Global Society

People trafficking and smuggling represent some of the most insidious and pervasive forms of organised crime, exploiting vulnerable individuals and undermining national security and economic stability. These illicit activities are often transnational, complex, and highly adaptive, making them incredibly difficult for law enforcement and border agencies to detect and disrupt. Traditional, labour-intensive methods of interdiction, while vital, are increasingly overwhelmed by the scale and sophistication of these criminal networks. To effectively combat this global challenge, agencies require a revolutionary approach, one that leverages advanced technology to uncover the hidden patterns of illicit movement and enable proactive, intelligent interception.

At DXC Technology, we believe that the strategic application of traffic and vehicle analytics, powered by Artificial Intelligence (AI), offers a formidable weapon against people trafficking and smuggling. By transforming vast quantities of vehicle movement data into actionable intelligence, we can move beyond reactive policing to systematically identify, predict, and disrupt the operations of organised crime. This white paper explores how modern integrated solutions and partnering with industry leading ANPR technologies empower public sector officials and police forces to defeat these critical threats.

The Current Landscape

A Fragmented Defense Against an Evolving Threat

Agencies tasked with combating people trafficking and smuggling face a range of challenges in today's environment:

- **Scale and Scope**: Organised crime networks operate across vast geographical areas, utilizing complex logistics and often blending legitimate and illegitimate activities. This makes manual detection at borders or within national road networks akin to finding a needle in a haystack.
- **Adaptive Adversaries**: Traffickers and smugglers constantly evolve their methods, routes, and vehicle types to evade detection. Systems that rely on static rules or limited data quickly become obsolete against such dynamic threats.
- **Intelligence Silos**: Border agencies, domestic police forces, and other investigative bodies often operate with disparate data systems and limited interoperability. This fragmentation hinders the ability to share critical intelligence in real-time and construct a comprehensive view of suspicious activities.
- **Resource Strain**: The sheer volume of traffic necessitates a high degree of automation. Relying on human observation for continuous monitoring and pattern recognition across entire road networks is impractical and drains valuable human resources from investigative and intervention roles.
- **Lack of Predictive Capability**: Most current systems are reactive, responding to known threats or intelligence after it has been developed. A proactive stance is hampered by the inability to predict potential smuggling routes or identify suspicious vehicle movements before an incident occurs.

These limitations highlight a pressing need for integrated, intelligent solutions that can provide the necessary visibility and analytical power to unmask the hidden operations of organised crime.

The Market Shift

Traffic Analytics and AI as a Force Multiplier

The future of law enforcement and border security demands a paradigm shift towards an intelligence-led, data-driven approach. The market is increasingly demanding solutions that enable "real-time decisions across road networks and borders" by:

- **Pervasive Data Capture**: Deploying dense networks of IoT sensors, including advanced Automatic Number Plate Recognition (ANPR) systems, Weigh-in-Motion (WIM) technology, and other modular enforcement modalities, to continuously monitor vehicle movements and characteristics across critical choke points and transit corridors.
- **Centralized Intelligence Platforms**: Consolidating this vast influx of raw data into secure, centralized analytics engines capable of processing information at speed and scale.
- **AI-Driven Anomaly Detection**: Utilizing Artificial Intelligence and Machine Learning to automatically identify "anomaly detection and risk modeling" within the deluge of traffic data. This moves beyond simple watchlist matching to uncover unusual patterns that may signify illicit activity.
- **Proactive Threat Detection**: Transitioning from reactive alerts (e.g., a vehicle on a watchlist) to predictive insights (e.g., a vehicle exhibiting patterns historically associated with smuggling operations or using unusual routes).
- **Seamless Cross-Agency Collaboration**: Ensuring that collected intelligence can be securely and rapidly shared between relevant agencies, such as border control, police, and investigative units, fostering a unified response.

This shift empowers agencies with the strategic advantage needed to proactively target and disrupt organised crime, rather than merely reacting to its consequences. All of this enables enforcement departments to understanding what is going to happen before it happens and to anticipate resource deployment and take preventative actions.

DXC Technology's Approach:

Intelligent Foundations for Defeating Organised Crime

Our approach integrates multiple layers of data capture, advanced analytics, and secure information sharing to create an intelligent defense against people trafficking and smuggling. We integrate solutions using open standards, our own Sentinal Suite and we partner strategically to bring the best solutions to each geography:

- **Advanced ANPR Capabilities at Borders and Beyond**: Our ANPR systems and integrated solutions, supporting mobile, static, and moving deployments, are critical for gaining high-resolution visibility into vehicle movements. With high recognition accuracy (95-97%), they serve as the "eyes" of the network, capturing the identity and movement of every vehicle. This is paramount for identifying repeat crossers, vehicles with suspicious histories, or those deviating from expected patterns at borders and internal checkpoints.
- **Multi-Modal Data Capture for Deeper Context**: Beyond ANPR, DXC's Sentinel Suite integrates other sensors like WIM (Weigh-in-Motion) to identify potentially overloaded vehicles that could be transporting illicit goods or persons. Speed enforcement and red-light monitoring further contribute to a comprehensive profile of vehicle behavior, allowing for a more nuanced assessment of risk. Using “sensor fusion” we create virtual sensors that combine multiple separate observations into ancomplete capture of an event with multiple properties in a timeline and context. Sensor fusion can create alerts and alarms on anomalies not detected by individual sensor observations.

- **Transforming Data into Actionable Intelligence**: Our data mining and investigative analytics capabilities are designed to turn raw operational data into strategic intelligence. This includes "Advanced Pattern Recognition" across geo-temporal data. For instance, AI can analyze vehicle movement patterns (e.g., frequent crossings by certain vehicle types at unusual hours, deviations from logical routes, sudden changes in travel patterns) to flag potential smuggling or trafficking operations. Machine learning models continuously improve detection accuracy by adapting to evolving threat vectors, ensuring the system stays ahead of criminal adaptations.
- **Secure Integration and Interoperability**: Combating transnational organised crime requires seamless collaboration. DXC's architecture ensures API-driven modular integration and protocol compliance (e.g., with standards like DATEX II), allowing secure, real-time data ingestion and two-way communication between disparate systems. This means border control can share insights with domestic policing, and investigative units can leverage traffic data to support their inquiries, fostering a truly integrated response.
- **Legal Metrology and Evidential Integrity**: For intelligence to lead to successful prosecution, the data must be legally defensible. DXC's solutions include a robust "Legal Metrology and Evidence Chain." Sensor data and ANPR images undergo rigorous verification, creating legally sound case files with detailed metadata. "Automated Labeling and Auditing" ensure transparency and accountability, crucial for maintaining judicial confidence. Furthermore, "Privacy and Security" measures, including anonymization protocols and GDPR compliance, ensure ethical and legal deployment.
- **Future-Proofing Against Evolving Threats**: Our strategic roadmap anticipates further advancements in AI and edge computing for even faster, more precise real-time incident detection. Integrating enforcement into broader Smart City frameworks will encompass multimodal transport, providing even greater visibility into complex criminal logistics.

Conclusion

Empowering Agencies to Win the Fight

The fight against people trafficking and smuggling is a moral and societal imperative. By harnessing the power of advanced traffic analytics and AI, law enforcement and border agencies can gain an unprecedented advantage, transforming their capabilities from reactive to truly predictive. DXC Technology's comprehensive integrated solutions, rooted in our deep expertise, experience and partnerships, provide the critical tools to illuminate the hidden pathways of organised crime.

We empower public sector officials and police forces to leverage sophisticated pattern recognition, real-time intelligence, and secure, interoperable platforms to systematically disrupt and defeat these illicit networks. DXC Technology stands ready as your strategic partner, delivering the innovative, legally compliant, and operationally effective solutions needed to build safer borders, more secure communities, and ultimately, a world free from the scourge of people trafficking and smuggling.

William Needham FBCS • DXC ANPR Lead, UK&I

William is a senior manager in DXC's Public Sector business in the UK. His career in citizen safety includes holding responsibility for services and systems in welfare protection, border security and police.

Pim Alders • DXC CTO, IoT, Data & AI

Pim is CTO of DXC's Internet of Things and AI technologies based in the Netherlands. He has been responsible for DXC's ANPR implementations in Norway, Ireland, Belgium and in the Netherlands where DXC invented the world's first average speed camera system.

Jan Meermans • CEO Myriade NV

Jan is the CEO and owner of Myriade NV, a Belgium-based company with more than 30 years of expertise in digital asset management.

Since 2007, Myriade has been developing and operating metaBOF™, an AI-powered ANPR platform. Today, metaBOF™ has the largest customer base worldwide and is fully technology-agnostic.