MYKEI SECURITIES LTD

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Economic Sterilisation: A New Doctrine for Eliminating the Commercial Incentive for Retail Theft

Why conventional retail security fails — and how removing resale value solves what £1.8 billion in annual security spend cannot.

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ABSTRACT

UK retail loses **£4.2 billion** *to theft annually. Over two decades, the industry has invested heavily in deterrence and detection — CCTV, electronic article surveillance, security personnel — yet losses continue to rise. This paper argues that conventional retail security fails because it addresses the* **act** *of theft without addressing its* **commercial logic.**

So long as stolen goods retain resale value, theft remains a financially rational behaviour for organised criminal networks. This paper introduces **Economic Sterilisation:** *the systematic removal of resale value from stolen goods through forensic marking and real-time marketplace flagging, applied at the moment of theft. We present the theoretical basis for the doctrine, the mechanism of implementation, comparative analysis against existing security methods, and the case for Economic Sterilisation as the necessary evolution of retail security strategy.*

Term Coined
Michael Esema, 2025

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MYK-PAT-001 · Pending (17 claims)

SECTION 01

The Problem: Why Retail Theft Keeps Rising

£4.2bn	20M+	£1.8bn	↑
Annual retail theft losses, UK	Recorded incidents per year	Annual security spend	Losses trending up despite spend

The UK retail sector spends £1.8 billion on security annually. Yet in 2024, recorded theft incidents exceeded 20 million — the highest figure in a decade. This is not a failure of effort. It is a failure of doctrine.

Existing security infrastructure is built around two assumptions: that the *threat of detection* deters theft, and that *post-event evidence* enables prosecution. Both assumptions are functionally broken in the context of modern organised retail crime.

1.1 — The Limits of Deterrence

EAS (Electronic Article Surveillance) tags require deactivation at point of sale — a friction that affects every legitimate customer while providing minimal resistance to organised teams who carry detachment tools. CCTV records theft for review but does not prevent it. Security personnel are a fixed-cost response to a variable-velocity threat: a bulk-sweep team operating across 40 stores in a single day will encounter a manned presence at perhaps three of them.

The evidence is clear: deterrence raises the *cost* of theft, but not above the *revenue* it generates.

1.2 — The Commercial Logic of Organised Retail Crime

Organised retail crime is not opportunistic. It is a supply chain. Stolen goods are transported, batched, and liquidated through secondary markets — eBay, Vinted, Facebook Marketplace, cash-in-hand networks — at 30–70% of retail value. A team that sweeps £800 of cosmetics in 90 seconds and sells them for £350 has cleared a margin most legitimate businesses cannot match.

"If stolen goods can be sold, theft makes economic sense. No amount of deterrence technology changes this arithmetic."

— Michael Esema, Founder, Mykei Securities Ltd

1.3 — The Missing Intervention

Every existing security method intervenes *after* the commercial decision to steal has been made. None intervenes at the *commercial outcome* — the resale transaction that makes the crime worthwhile. Detection without consequence does not remove the incentive. Prosecution removes individuals; it does not remove the market.

This is the gap that Economic Sterilisation addresses.

SECTION 02

The Doctrine: Economic Sterilisation

> DEFINITION · COINED: MICHAEL ESEMA, 2025
>
> **Economic Sterilisation** — *The systematic removal of resale value from stolen goods through forensic marking and real-time marketplace flagging, eliminating the commercial incentive for theft at the point it occurs. Where conventional security deters or detects, Economic Sterilisation removes the commercial outcome that makes theft worthwhile.*

The term was coined by Michael Esema, Founder of Mykei Securities Ltd, in 2025. The doctrine was first published at mykei.io and recorded in the Wiktionary entry for "economic sterilisation" on 30 March 2026.

2.1 — The Core Argument

1. **Theft is a commercial decision.**
   Organised retail crime is motivated by profit. Remove the profit and you remove the decision.

2. **The commercial outcome of theft is resale.**
   A stolen item has value only when it can be converted to cash. Prevent that conversion and the theft yields nothing.

3. **Resale can be blocked at scale.**
   Forensic markers uniquely identify stolen goods. Digital registries flag those identifiers in real time across every major UK resale platform. This is operational, not theoretical.

4. **When theft stops yielding profit, theft stops being rational.**
   This is not a psychological prediction. It is arithmetic.

2.2 — The Distinction From Deterrence

Economic Sterilisation does not deter theft. It makes *successful* theft economically worthless. This is a categorical distinction:

Dimension	Deterrence	Economic Sterilisation
Primary mechanism	Raises cost of stealing	Eliminates revenue from stealing
Depends on	Threat perception	Forensic physics & registry
Visible presence required	**Yes**	**No**
Fails when criminal underestimates risk	Yes	**No**
Addresses	Behaviour	Outcome
GDPR compliant by design	Variable	**Yes**
Effective post-theft	No	**Yes — resale blocked**
Network effect at scale	No	**Yes — registry expands**

A thief who believes they will not be caught will proceed despite deterrence. A thief whose stolen goods cannot be sold has no reason to proceed regardless of their confidence in evading detection.

SECTION 03

The Mechanism: ADN-1 Active Forensic Defence

The ADN-1 is the first commercial hardware implementation of Economic Sterilisation. It is a shelf-mounted device designed for independent and mid-market retail environments.

SENSORS **Dual VL53L0X ToF Laser** 30 readings/second · 940nm VCSEL · No camera	PROCESSOR **ESP32-S3 Dual-Core** On-device kinetic classification
RESPONSE TIME **< 50 milliseconds** Detection to deployment	FORENSIC COMPOUND **Synthetic DNA Mist** SelectaDNA-class · COSHH-compliant · UV-detectable
ENCRYPTION **AES-256-GCM (edge)** TLS 1.3 in transit · AWS IoT Core	DATA CAPTURED **Zero personal data** GDPR compliant by architecture

3.1 — Detection: Kinetic Signature Analysis

Two VL53L0X Time-of-Flight laser sensors fire 30 times per second, measuring the distance, velocity, and trajectory of objects leaving the shelf face. The ADN-1 does not use cameras. It does not use AI inference. It uses forensic physics: the kinetic signature of a bulk-sweep theft event — multiple items cleared rapidly in a single lateral movement — is categorically distinguishable from normal browsing or staff restocking.

This classification, which Mykei terms Kinetic Signature Analysis, occurs entirely on-device in under 50 milliseconds. No personal data is captured. No image is stored. GDPR compliance is structural, not procedural.

3.2 — Marking: Synthetic DNA Forensics

On confirmed detection, the ADN-1 discharges a fine mist of synthetic DNA compound — a SelectaDNA-class aqueous forensic marker. The compound bonds irreversibly to fabric, skin, and packaging. It is invisible under normal light and fluoresces under UV at 365nm. It is COSHH-compliant and safe for use in food retail environments.

This class of synthetic DNA marker has been used in over 3,000 UK prosecutions. Its evidential status is established. What is new is its deployment as an *automated, triggered*

response rather than a passive ambient system.

3.3 — Flagging: The Toxic Inventory Registry

The ADN-1 generates a cryptographically signed Forensic Event Package and transmits it via encrypted MQTT/TLS 1.3 to AWS IoT Core. The event is logged in the Toxic Inventory Registry — Mykei's cloud database — with timestamp, batch code, location, and kinetic data.

The batch code is cross-referenced in real time against listings on eBay, Vinted, and Facebook Marketplace. Matching listings are flagged or removed. The Forensic Event Package is AES-256-GCM encrypted, row-level secured per retailer, and legally admissible in UK courts as an immutable audit record.

3.4 — Inhibit Mode

Staff can authenticate with a PIN to enter Inhibit Mode during authorised shelf restocking, suppressing detection. Every inhibit event is logged with staff code, time, and duration. The audit trail is complete and tamper-proof.

SECTION 04

Comparative Analysis

Security Method	Prevents Theft	Removes Resale Value	GDPR Safe	Cost Model
CCTV	No	No	Risk (biometric)	High capex
EAS Tags	Partially	No	**Yes**	Per-unit ongoing
Security Personnel	Partially	No	**Yes**	High ongoing
DNA Spray (ambient)	No	Partially	**Yes**	Per-refill
ADN-1 + Economic Sterilisation	By design*	**Yes**	**Yes (structural)**	£149 setup + £40/mo

*The ADN-1 does not aim to prevent the act of theft. It aims to make the act commercially worthless. This is a deliberate architectural choice: prevention systems fail when the criminal is determined. Economic Sterilisation succeeds regardless of determination because it operates on the outcome, not the intent.

SECTION 05

Economic Case for Independent Retailers

The ADN-1 is designed specifically for the segment most exposed to retail theft and least served by existing security technology: independent retailers operating on net margins of 2–5% under UK minimum wage cost pressures.

A single bulk-sweep event — 30 items of cosmetics or OTC pharmaceuticals swept in under two minutes — can represent 15–40% of a small store's daily net margin. At current theft rates, repeat targeting of independent stores is common. EAS infrastructure requires per-unit tagging labour. Security personnel are unaffordable. CCTV provides evidence but no financial recovery.

> BREAK-EVEN ANALYSIS
>
> *At* **£40/month**, *the ADN-1 is economically viable if it prevents or sterilises* **one bulk-sweep event per month.** *A single prevented event typically represents £200–£800 in retail value — a 5–20× return on monthly cost.*

5.1 — Network Effects

Economic Sterilisation becomes exponentially more effective at scale. As more retailers deploy ADN-1 units, the Toxic Inventory Registry expands. Criminals selling on secondary markets encounter increasing friction. The secondary market for goods stolen from ADN-1 protected stores collapses.

Organised networks route around protected stores and eventually find the entire UK market for certain goods categories flagged. This is the long-term vision: not one store's security problem solved, but an industry-wide shift in the economics of retail crime.

SECTION 06

Intellectual Property & Legal Status

The ADN-1 system is protected under patent application MYK-PAT-001, a 17-claim application covering the kinetic signature detection methodology, triggered forensic deployment mechanism, and integrated marketplace flagging system.

The term "Economic Sterilisation" as applied to retail security was coined by Michael Esema in 2025 and first published in this context at mykei.io. The Wiktionary entry (published 30 March 2026) establishes the dated public record of the term's coinage and definition.

Mykei Securities Ltd (Company No. 16984969, registered in England and Wales) holds all intellectual property rights to the ADN-1 system, the Toxic Inventory Registry infrastructure, and the Kinetic Signature Analysis methodology.

CONCLUSION

The Wrong Problem, Finally Solved

Retail theft is not a security problem. It is an economics problem. Every £1 stolen from a UK retailer represents a commercial transaction: the thief converted goods to cash. Conventional security disrupts the act. Economic Sterilisation disrupts the transaction.

The ADN-1 is the first system built around this principle. It does not record crime. It does not deter crime. It removes the commercial outcome that makes crime worthwhile.

"The definitive response to theft-as-commerce is the systematic destruction of its commercial return."

— Michael Esema · Economic Sterilisation · 2025

Manchester Alpha Pilot opens Q2 2026. Independent retailers in Greater Manchester may apply at mykei.io/pilot.

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"Theft stops making financial sense."

— The ADN-1 promise. Backed by forensic physics.

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