



SHIELD 1.0

SMART HACKATHON FOR INTELLIGENCE, ENFORCEMENT,
LAW & DEFENSE



SHADOWTRACE - TRACING SHADOWS, FIGHTING DRUGS

Problem Statement- “Software Solutions to Identify Users Behind Social Media Drug Trafficking”

Team: Shadow Corps





THE CORE IDEA: INTELLIGENT DETECTION

Current Detection Problem

Keyword Search
"Cocaine",
"Heroin"

Coded Language
"snow", "molly",
emojis

False Positives

**Can't tell
selling vs
talking**

From Keywords → Intelligence
Intent • Behaviour • Patterns

How ShadowTrace Works

OSINT Data Collection

Telegram | Instagram | Web | Dark Web

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Drug Marketplace & Domain Mining

DrugMiner | Onion Domains | Vendor Data

NLP-Based Intent Detection

Coded Language | Sales vs Discussion | Reviews

Weak-Signal Aggregation

Cross-Platform Linking | Risk Scoring

Structured Intelligence Report

Police Investigation Support

ML-Based Behavioral Analysis

Posting Rhythm | Pricing | Activity Patterns

Human Analyst Validation

Why Flagged? Evidence & Reasoning

Outcome: Identify real drug sellers, not just suspicious words





WHAT SHADOWTRACE WILL DO

Primary Goals (What we want to achieve)

Detect Real Drug Selling
using behavior based analysis, not just keywords

Understand Intent

Telegram + Instagram + Dark Web = ONE picture

Defeat coded language

Recognize slang (snow, molly, zaza, etc.)
Understand context (pricing, delivery terms)

Support investigations

Generate intelligence reports and ensure trust & transparency

Expected Functionality and system workflow

OSINT data collection and Continuous Monitoring

Track Telegram, forums & dark web
Monitor channels, markets & domains

Marketplace & Infrastructure Analysis

Identify slang, emojis & listings
Analyze vendors, prices & activity

AI- Based Intent & Behavioral Analysis

NLP for decoding hidden language
ML to detect suspicious behavior patterns

Cross Platform Linking & Explainable Risk Assessment

Link users, platforms & infrastructure
Explainable risk scoring

Human validated Intelligence Reporting

Analyst-validated insights
Actionable law-enforcement reports

**ShadowTrace
Intelligence
Engine**

Designed to assist
investigations, not
replace human
judgment.



Shadow Corps

TECHNOLOGY STACK & TECHNICAL ARCHITECTURE



System Architecture Flow



SYSTEM LAYERS	TECHNOLOGIES
Data Collection	Python, Telethon, Scrapy, Tor + DurgMiner
Storage	PostgreSQL
Analysis	BERT (HuggingFace), spaCy, Scikit-learn, Pytorch
Network Intelligence	XAI Logic, NetworkX
Reporting	PDF/CSV, Graph visuals

Why these tools?

- Open-source & auditable
- Explainable (court & police friendly)
- Scalable for large datasets

Not Used!

- Black-box LLMs (no transparency)
- Regex-only detection
- Manual monitoring



REAL WORLD IMPACT

**Who needs
ShadowTrace**



NCB
National

CID
State

STATE POLICE
Field

CUSTOMS
Border

TRADITIONAL MONITORING

Keyword-based
detection

Black-box alert
systems

Limited context
understanding

Platform-isolated
analysis

High false positive
rates

Intent & behavior-
based analysis

Explainable,
transparent outputs

Generates
intelligence report
with evidence

Cross-platform
intelligence linking

Shows network: Supplier
-> Dealer -> Buyer

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PROPOSED SYSTEM

- Time**
80% faster
Weeks → Days
- Accuracy**
Fewer false leads
Higher conviction support
- Scale**
100s → 10,000s channels
Parallel monitoring
- Value**
Better use of manpower
Stronger cases