



Ministry/ Organisation Name : Narcotics Control Bureau (NCB)

PS Code : 1674

Problem Statement Title : Software solutions to identify users behind Telegram, WhatsApp and Instagram based drug trafficking.

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Theme Name : Blockchain and Cybersecurity

Problem Statement Description:

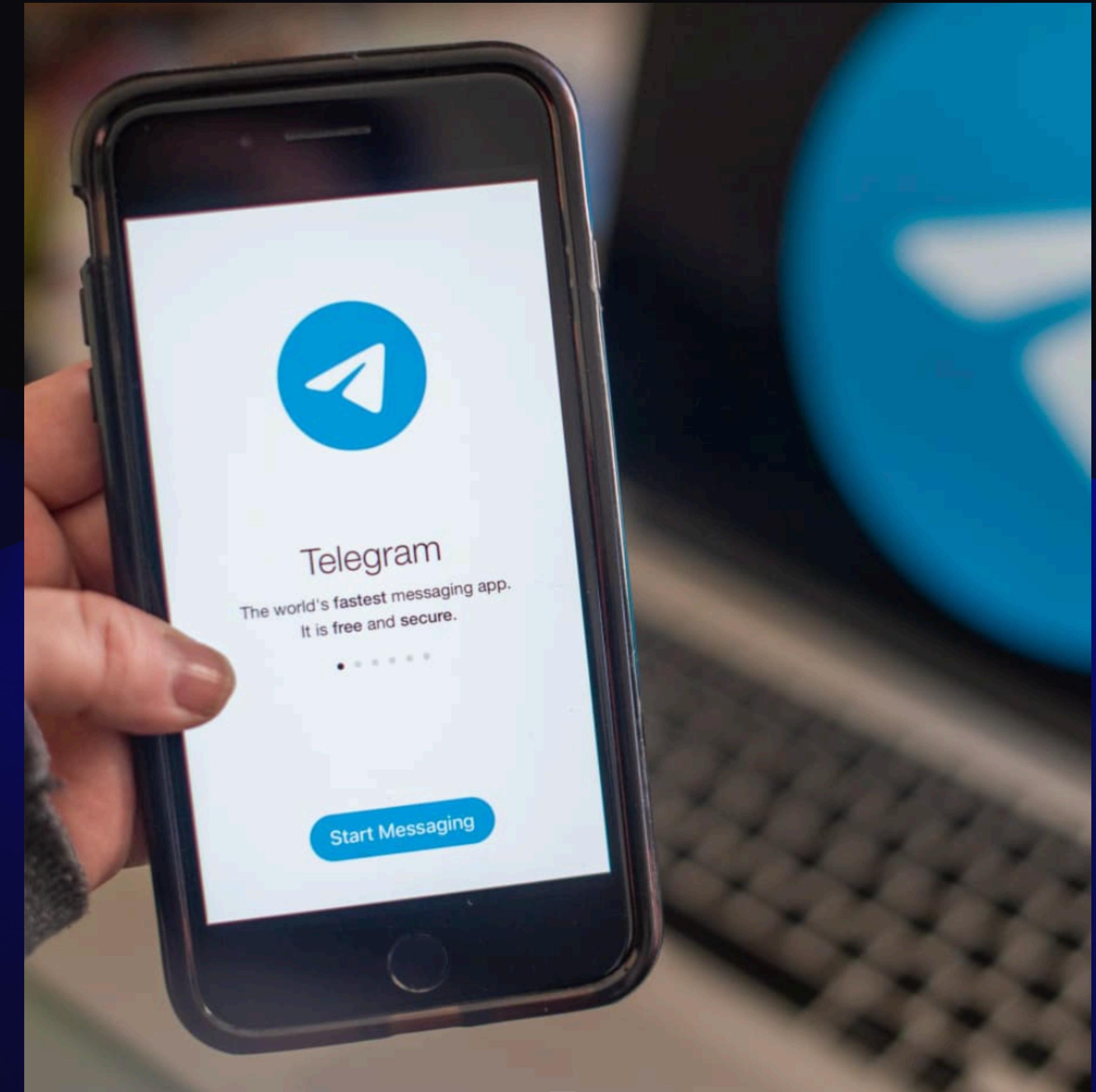
Background: Use of encrypted messaging/social media apps like Telegram, WhatsApp and Instagram for drug trafficking are on the rise. Channels operating on Telegram and WhatsApp and Instagram handles are blatantly being misused by drug traffickers for offering various narcotic drugs and Psychotropic substances for sale.

Description: WhatsApp and Telegram channels and Instagram handles are created by drug traffickers to offer various drugs for sale to their subscribers. Customized Telegram bots are also created by some of the drug traffickers to sell drugs. It is most worrisome that majority of the drugs which are being offered on sale through Telegram, WhatsApp and Instagram are dangerous synthetic drugs like MDMA, LSD, Mephedrone etc. The above three apps are also used by drug traffickers for drug communication.

Expected Solution: Development of a software solution to identify live Telegram and WhatsApp channels/bots and Instagram handles that are offering drugs for sale in India. Solution also should focus on triangulating identifiable parameters like IP address, mobile number, email id etc of the users behind the channel/bot/handle.

Outline

- Introduction to the Digital Underworld
- Understanding the Platforms: Telegram, WhatsApp, and Instagram
- The Mechanics of Drug Trafficking Online
- Challenges in Identifying and Tracking Traffickers
- Software Solutions for Detection
- Business Model
- Summary



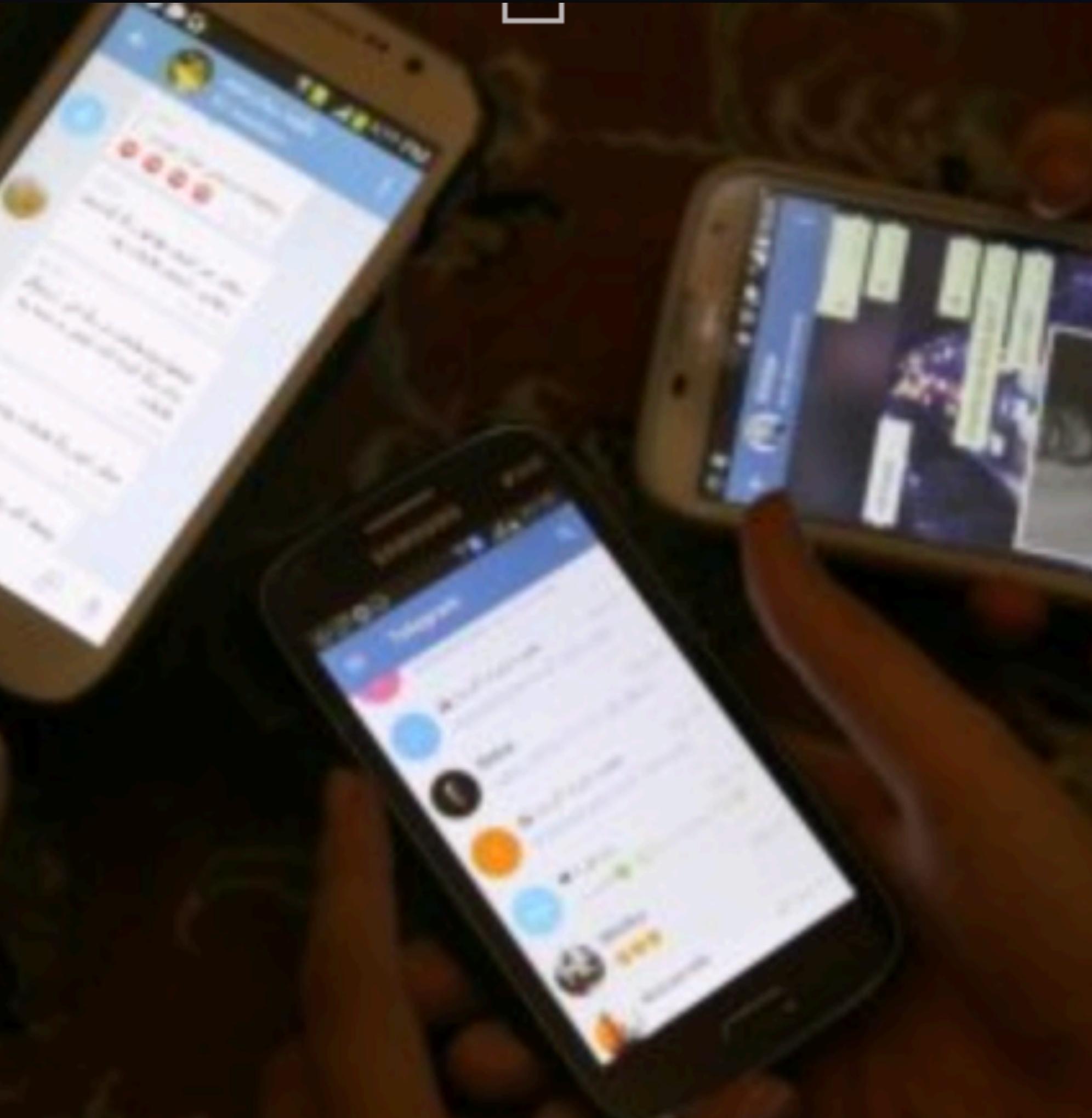
Introduction to the Digital Underworld

- Overview of Drug Trafficking in the Digital Age : The digital landscape has transformed drug trafficking, allowing for anonymity and global reach. Traffickers leverage online platforms to connect with buyers, circumventing traditional law enforcement methods. The ease of access to illicit goods is alarming, necessitating urgent attention from authorities and society alike.
- Importance of Social Media and Messaging Apps : Social media and messaging apps serve as modern marketplaces for drug transactions, providing traffickers with tools to communicate discreetly. Their user-friendly interfaces and vast user bases facilitate the rapid exchange of information and goods, posing significant challenges for regulation and monitoring.
- Current Trends in Drug Trafficking Online : Current trends indicate a shift towards decentralised networks, where traffickers utilise encrypted channels to evade detection. The rise of cryptocurrency as a payment method further complicates enforcement efforts, demonstrating the evolving nature of drug trafficking in the digital realm.
- Objectives of the Presentation : This presentation aims to explore the intersection of technology and drug trafficking, highlighting the challenges and opportunities in combating this issue. By understanding the digital underworld, we can develop effective strategies to mitigate the impact of drug trafficking on society.



Understanding the Platforms: Telegram, WhatsApp, and Instagram

- Features of Encrypted Messaging Apps : Encrypted messaging apps like Telegram and WhatsApp offer end-to-end encryption, providing users with a high level of privacy. This feature, while beneficial for legitimate users, creates a safe haven for traffickers to communicate without fear of interception.
- User Demographics and Engagement Patterns : User demographics reveal a younger audience on platforms like Instagram, where visual content attracts engagement. This demographic is particularly vulnerable to drug promotion, making it essential for stakeholders to understand how these platforms are exploited.
- Case Studies of Drug Trafficking on Each Platform : Case studies, such as the use of Telegram channels for large-scale drug distribution, demonstrate the effectiveness of these platforms in facilitating illegal activities. Analyzing these instances offers insights into the tactics employed by traffickers and the need for targeted interventions.
- Legal and Ethical Considerations : Legal and ethical considerations are paramount, as law enforcement must balance the need for surveillance with respect for user privacy. Understanding the legal frameworks governing these platforms is crucial for developing effective and lawful strategies to combat drug trafficking.



The Mechanics of Drug Trafficking Online

- **How Traffickers Operate on These Platforms :** Traffickers utilise various strategies on these platforms, including coded language and ephemeral messaging to evade detection. Understanding these operational tactics is vital for law enforcement agencies aiming to disrupt their activities.
- **Types of Drugs Commonly Sold :** The types of drugs sold online range from marijuana to synthetic opioids, reflecting market demands. The accessibility of these substances online has led to an increase in overdose cases, underscoring the public health implications of digital drug trafficking.
- **Role of Bots and Automated Accounts :** Bots and automated accounts play a significant role in drug trafficking by facilitating bulk messaging and product listings. These tools enable traffickers to reach a wider audience while minimising personal risk, complicating detection efforts.
- **Communication Strategies Used by Traffickers :** Communication strategies employed by traffickers often involve the use of pseudonyms and coded references to obscure their activities. This layer of complexity necessitates advanced analytical techniques to decipher and track illicit communications.

Challenges

What are the technical limitations and challenges in identifying users behind Telegram, WhatsApp, and Instagram for drug trafficking investigations?

Identifying users behind Telegram, WhatsApp, and Instagram for drug trafficking investigations presents significant technical limitations and challenges. These challenges stem from data privacy, the complexity of user behavior, and forensic analysis difficulties.

Data Privacy and Access Limitations

- Social media platforms enforce strict privacy policies, limiting the data available for law enforcement. This makes it challenging to crawl and analyze user data effectively.
- The use of Carrier-Grade Network Address Translation (CGNAT) complicates user identification, as multiple users may share the same IP address, leading to increased false positives in investigations.

Complexity of User Behaviour

- Drug dealers often employ deceptive language and euphemisms to evade detection, complicating the identification process.
- The diversity of drug dealing patterns makes it difficult to distinguish between drug dealers and regular users, necessitating advanced analytical methods.

Forensic Analysis Challenges

- Forensic investigations on platforms like WhatsApp and Telegram face limitations in data recovery, particularly with deleted messages and linked devices, which can obscure the source of communications.
- The effectiveness of forensic tools varies, with some applications unable to recover specific types of data, further hindering investigation.



Software Solution

1. Metadata Analysis

- **Network Traffic Analysis:** Tools like Wireshark or specialised network analysis platforms can monitor and analyse network traffic for suspicious patterns. Although end-to-end encryption prevents content from being intercepted, metadata (e.g., IP addresses, times of communication) can be analysed.
- **OSINT (Open-Source Intelligence):** Tools like Maltego, SpiderFoot, and others can be used to gather publicly available data on social media platforms. They can help track user activity, connections, and patterns that might reveal identities.

2. Machine Learning and AI

- **Behavioural Analysis:** AI models can be trained to detect suspicious behaviour based on message patterns, frequency, and content even when the content is encrypted. Tools like IBM Watson, H2O.ai, and custom-built machine learning models can be applied.
- **Image Recognition:** AI-based image recognition tools like Google Vision AI or Amazon Recognition can be used to scan images shared on these platforms for drug paraphernalia or other illicit materials.

3. Dark Web Monitoring

- **Deep Web and Dark Web Crawlers:** Tools like DarkOwl Vision or Recorded Future monitor the dark web for any mention of social media accounts involved in drug trafficking, potentially leading to identification.



4. Data Correlation

- **Cross-Platform Identity Correlation:** Tools that aggregate data across multiple platforms can correlate identities based on shared information (e.g., usernames, email addresses, phone numbers). Solutions like Palantir or i2 Analyst's Notebook are commonly used in law enforcement.
- **SIM Card and Device Fingerprinting:** Tools like Cellebrite or Oxygen Forensics can extract data from devices or SIM cards, which might help in identifying individuals based on unique device IDs or SIM information.

5. Social Media Monitoring

- **Specialised Monitoring Tools:** Tools like Social Mention or Mentionlytics can track mentions of specific keywords or hashtags related to drug trafficking, helping to identify accounts or groups involved.

6. User Profiling

- **Natural Language Processing (NLP):** NLP tools like SpaCy or NLTK can analyse text for specific language patterns indicative of drug-related activity. This can help in profiling users based on their language usage.

Business Model

1. Solution Overview

The solution is a software platform designed to monitor and identify live drug-related activities on Telegram, WhatsApp, and Instagram. It uses AI and metadata analysis to triangulate identifiable information like IP addresses and mobile numbers, helping law enforcement pinpoint and dismantle drug trafficking operations.

2. Key Features

The platform features real-time monitoring and detection, AI-powered behavioural analysis, and NLP to identify drug-related content. Metadata analysis and cross-platform identity correlation link users across platforms, while image recognition detects drug-related media. The platform ensures legal compliance, providing actionable intelligence for law enforcement.

3. Revenue Model

Revenue is generated through subscriptions for law enforcement agencies and private security firms. Additional income streams include licensing fees, predictive analytics services, and consulting. A freemium model offers basic features with an upgrade option for advanced capabilities, ensuring broad market reach.

4. Market Strategy

The target market includes law enforcement, narcotics boards, and cybersecurity firms. The platform is marketed through direct sales, industry events, and digital campaigns. Strategic partnerships with tech companies and government agencies ensure the platform meets legal standards and gains widespread adoption.



7. Technology Stack

The platform utilizes React.js for the frontend, Node.js/Django for the backend, and TensorFlow for AI/ML models. PostgreSQL and MongoDB manage data storage, while Hadoop/Apache Spark handles big data processing. The solution is hosted on scalable cloud infrastructure like AWS or Google Cloud.

8. Risk Management

Data privacy is ensured through compliance with GDPR and CCPA, with encryption for sensitive information. Legal risks are mitigated by aligning the platform's operations with legal standards, and the technology is regularly updated to maintain effectiveness against evolving threats.

9. Social Impact

The platform helps reduce drug-related crimes by enabling law enforcement to track and dismantle trafficking networks. It also raises public awareness of synthetic drug dangers through partnerships with NGOs and community organizations, contributing to overall public safety.

Summary

- Rising Threat:** Encrypted messaging apps like Telegram, WhatsApp, and Instagram are increasingly exploited for drug trafficking, with traffickers using these platforms to sell synthetic drugs and communicate illicitly.
- Tactics Used:** Traffickers create dedicated channels, bots, and handles to market drugs such as MDMA, LSD, and Mephedrone, using these platforms to reach buyers and facilitate transactions.
- Solution Goal:** Develop a software solution to detect active drug-selling channels and bots on Telegram and WhatsApp, as well as handles on Instagram, specifically targeting the Indian market.
- Identification Focus:** The solution should triangulate key user parameters, such as IP addresses, mobile numbers, and email IDs, to trace and identify the individuals behind these illicit activities.
- Comprehensive Approach:** The software must integrate real-time monitoring with advanced analytical tools to effectively disrupt drug trafficking networks operating through these encrypted platforms.



Best Practices to Rid Social Media of Drug Trafficking





A dark blue background featuring three horizontal wavy layers. The top layer is a solid dark blue. The middle layer is a lighter shade of blue and contains the text 'THANK YOU!'. The bottom layer is the darkest blue.

THANK YOU!