

Looksy

# Looksy: An Early Warning System to Detect Organized Crime from Suspicious Transactions

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# Problem: Organized Financial Crime is Hard to Detect



Criminals are **strategic**:

- Smurfing
- Money mules
- Shell companies
- Falsified invoices
- And many more strategies...



Detection techniques can be **flawed**:

- Slow statistical hypothesis tests
- Inefficient sampling for rare events
- Human bias in target selection (ethnic or income marginalized neighbourhoods)

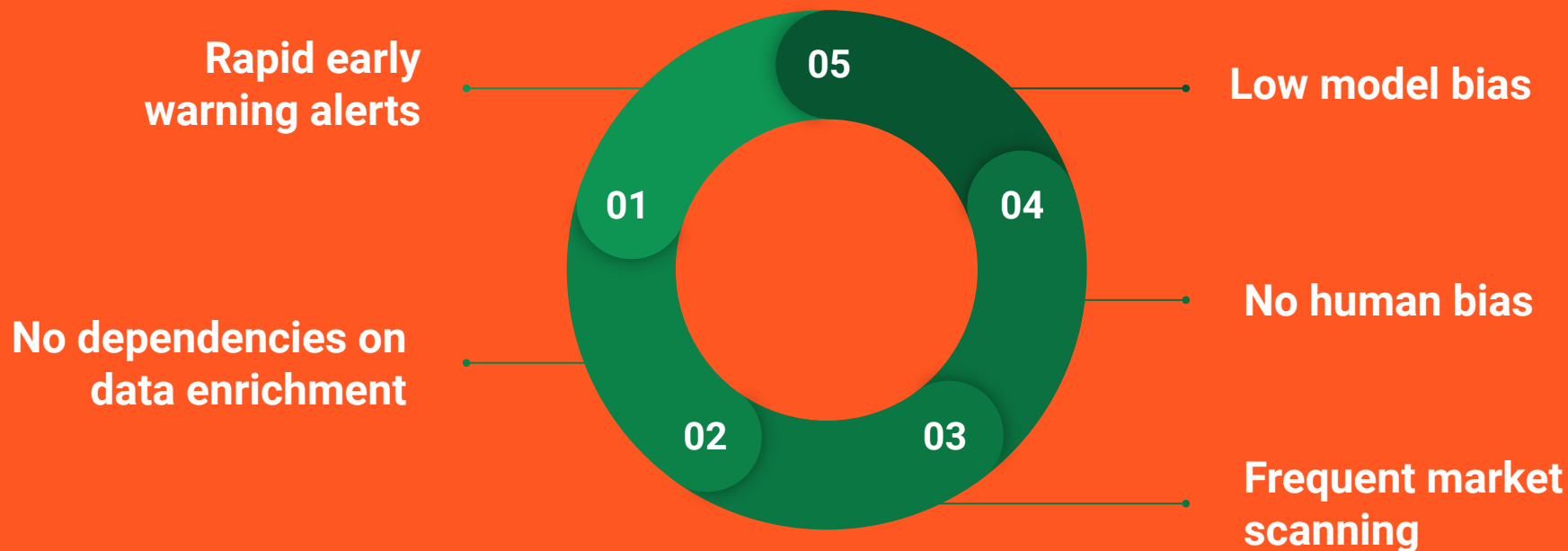


Social costs are **enormous**:

- Regulatory fines and other punishments
- Harm to financial systems including contagion
- Reputational damage to Canada and its companies
- Funding to perpetuate other forms of crime, such as human trafficking and terrorist financing

# Solution: Implement a New Change Detection Model

## Five Critical Success Factors



# **Concept Validation**

# Ex-Chadian diplomats to Canada face bribery charges in the States

Canada is seeing a spike in behind-the-scenes funding for terrorists, finance minister's office says

## Ottawa's secret report on money-laundering points finger at Canada's banks

The report tabled in Parliament calls banks good citizens. The internal report tells a different story.



Home → [Financial Intelligence](#) → [Strategic Intelligence](#) → Indicators: The laundering of illicit proceeds from human trafficking for sexual exploitation

## Indicators: The laundering of illicit proceeds from human trafficking for sexual exploitation

FINTRAC-2016-OA003  
December 15, 2016

## Manulife admits it was the bank fined \$1.2 million by Canada's money-laundering watchdog

## SNC-Lavalin bribery case threatens billions in federal contracts

'Integrity' rules could cost company some current contracts, jeopardize future deals

Dave Seglins · CBC News · Posted: Feb 20, 2015 5:00 AM ET | Last Updated: February 20, 2015

## **Size of Target Transaction Population**

**Up to 50,000+**

## **Suspicious Transaction Reports (STRs) Submitted Monthly**

- Dramatic increase after 2014's international high profile money laundering case involving Manulife
- Many false positives lead to wasted public resources, and many false negatives lead to high societal costs

# **Introducing...**

# **Looksy**

# How Looksy Works

## Data

STR volumes by neighbourhood are fed into Looksy; this can be enriched with various dimensions (e.g., specific banks, instruments)

## Model

Change detection algorithm (CUSUM) is used to score the STR data to detect significant changes quickly, such as an intra-day cadence

## Ensemble

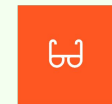
Many combinations of model hyperparameters (random noise buffer, change threshold) are scored over the entire search space, eliminating human bias and minimizing model bias

## Rapid Iteration

Fast processing means Looksy can iterate the process very frequently, allowing you to scan the environment without delay (and not allowing organized crime to gain momentum)



# Looksy's Key Differentiators and Advantages



Looksy

## FAST

Early warning alert system that's much faster than statistical hypothesis testing

## ACCURATE

Far lower false positive cases relative to traditional sampling techniques

## NO HUMAN BIAS

Elimination of human biases towards marginalized racial or income neighbourhoods

## LOW MODEL BIAS

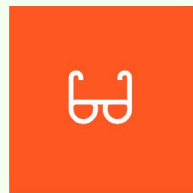
Ensemble grid search over entire hyperparameter search space

## NO NEED FOR DATA ENRICHMENT

Very low data requirements with option for improved performance with enrichment

## EFFICIENT

Fast processing enables frequent scoring, further improving response speed



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[https://github.com/WilliamAu1/William-Au-Portfolio/blob/main/Change%20Detection%20in%20FINTRAC%20Reporting/detect\\_str\\_chg.md](https://github.com/WilliamAu1/William-Au-Portfolio/blob/main/Change%20Detection%20in%20FINTRAC%20Reporting/detect_str_chg.md)