



# Money Laundering and Uncovering Suspicious Links Quickly to Spot Fraud

Emil Eifrem



## Biography

Emil Eifrem is CEO and co-founder of Neo4j (<https://neo4j.com/>). Previously CTO of Sweden's Windh AB, where he headed up the development of highly complex information architectures for Enterprise Content Management Systems. Emil famously sketched out what today is known as the property graph model on a flight to Mumbai in 2000. Since then Emil has devoted his professional life to building and evangelising graph databases.

Emil is a frequent conference speaker and a well-known author and blogger on NoSQL and graph databases, as well as co-author of the agreed Bible on graph databases, O'Reilly's Graph Databases (<https://graphdatabases.com/>).

**Keywords** Graphs, graph databases, Money Laundering (ML)

**Paper type** Research

## Abstract

*Money laundering is on the rise. The faster you can pinpoint questionable behaviours, the faster you can tackle the issue. This has historically been a challenge, but as the author of this article explains, graph technology might just hold the answer.*

## Introduction

Last year the UK's National Crime Agency received a record number of allegations of suspicious activities linked to money laundering – and the problem is only getting bigger as the digital economy grows.

Everyone it seems is trying to come up with a way to solve the issue. According to Statistics MRC, the global fraud detection and prevention market was valued at \$17.5 billion in 2017 and is expected to grow to \$120 billion by 2026. There has also been over 48,000 U.S. patents for fraud and anomaly detection issued in the last ten years, a fact which underscores how critical the matter has become.

Money laundering has discredited many financial organizations recently. Notably the Baltic money laundering scandal, which destroyed belief in business culture in the region. Such stories continue to shroud the financial sector across the globe.

The fact is that money laundering enables criminals to harvest the financial benefits of their crimes, be it tax evasion, corruption, drug trafficking or theft, amongst



---

**Analysis**

others. Criminals are also getting far more sophisticated at money laundering activities making it more difficult and time consuming to isolate their trail amidst the gargantuan number of legitimate banking transactions that flow through the banking sector 24/7.

### Catching criminals with graphs

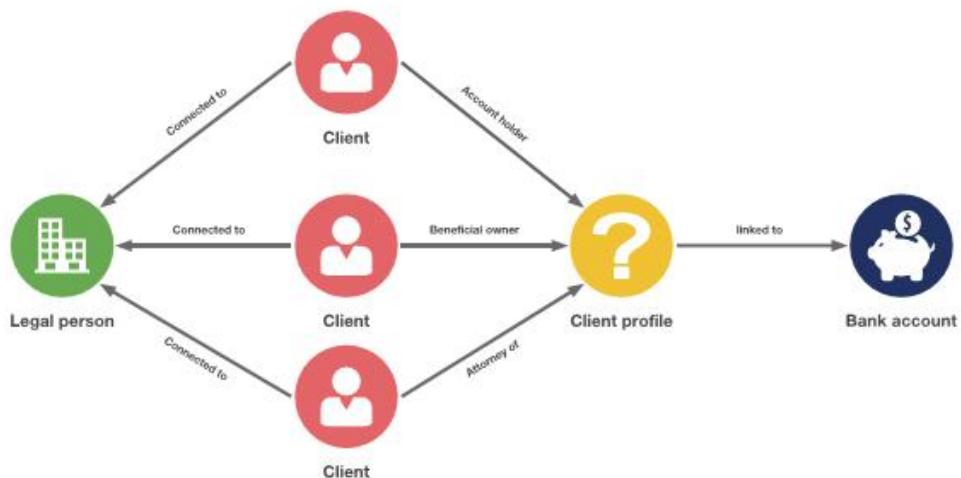
The problem is that the majority of banking tools that handle money laundering, such as monitoring software, concentrate on discrete data. This approach makes it extremely arduous to find shared characteristics that are typical of money laundering networks. They also tend to throw up false positives<sup>1</sup>, which can be as high as 95%, and which do not make for good customer relations.

This in reality makes battling money laundering networks expensive, time consuming and unproductive. While there is no silver bullet to detecting money laundering rings, dramatic improvements can be made by using graph technology to join the dots and uncover discrepancies.

Graph technology is a dynamic addition to any chief security officer's weaponry and can also be highly useful to forensic accountants and regulators working in the field. Graphs have the power to serve up a holistic view of various entities involved in money laundering rings and the relationship between them, which nine times out of ten exposes hidden, fraudulent connections.

An example of the scope of graph technology can be seen in its use by the International Consortium of Investigative Journalists, the group behind the Panama and Paradise Papers tax evasion expose<sup>2</sup>. Here, graph technology showed its strength in helping to recoup more than \$1.2 billion in resulting fines and back taxes<sup>3</sup>.

**Figure 1: Example of graph relationships**



Schema representing the entities and connections within the Swiss Leaks dataset.



---

*Analysis*

Current anti-money laundering compliance systems are for the most part built on relational databases which store data in separate tables and columns that necessitate complex code to join up the relationships. The beauty of graph technology, however, is that it stores the data as relationships which can be very easily linked.

In addition, money laundering in cyberspace is becoming increasingly attractive to money laundering criminals. It is therefore critical that financial institutions can track where funds are going to and coming from at all times. Using a graph database, financial institutions can model companies' accounts and transactions much more efficiently to spot money laundering behaviours.

Graph technology is extremely difficult to beat when it comes to mining connections in complex data sets – it is also ultra-fast at exposing patterns, giving financial institutions the real-time insight they need to stay ahead of money laundering criminals.

Fighting crime is a huge challenge for the financial industry. Graph technology can join the dots and read relationships in data faster and more skillfully than ever before. Finally, financial institutions have a tool which they can use to seriously fight back against financial crime.

**Reference**

- <sup>1</sup> <https://citywireselector.com/news/dirty-money-nordea-am-puts-money-laundering-on-esg-watch/a1222185>
- <sup>2</sup> <https://www.icij.org/blog/2018/07/how-icij-deals-with-massive-data-leaks-like-the Panama-papers-and-paradise-papers/>
- <sup>3</sup> [https://www.icij.org/investigations/panama-papers/panama-papers-helps-recover-more-than-1-2-billion-around-the-world/?utm\\_source=ICIJ&utm\\_campaign=11e3c89505-0403\\_WeeklyEmail&utm\\_medium=email&utm\\_term=0\\_992ecfdbb2-11e3c89505-82515213](https://www.icij.org/investigations/panama-papers/panama-papers-helps-recover-more-than-1-2-billion-around-the-world/?utm_source=ICIJ&utm_campaign=11e3c89505-0403_WeeklyEmail&utm_medium=email&utm_term=0_992ecfdbb2-11e3c89505-82515213)