

SWISS FTS · WHITE PAPER

Connecting **the Dots**

A visual approach to investigations using graphs

SWISS FTS
Trusted, to get you there

IN THIS PAPER

Contents

01 The Challenge →

02 A New Perspective: Relationships, Not Records →

03 Leveraging Our Nature: A Human Approach to a Complex Problem →

04 Connecting the Dots: More Than a Metaphor →

05 Contacts →

01

THE CHALLENGE

Investigations in an increasingly connected world

How has the way we find and interpret evidence in an investigation changed over time?

01 THE SMOKING GUN

All investigators hope to find the smoking gun, the one irrefutable piece of evidence, that proves a suspicion of fraud, intellectual property theft, or non-compliance with industry rules and regulations. This used to seem achievable when we were searching one source for a specific record, but as the volumes and complexities of data grew, this scenario became increasingly elusive.

02 A WALL OF EVIDENCE

As investigations grew in volume and incorporated multiple sources, and bad actors become more technologically sophisticated, investigations became about piecing together multiple items of evidence from multiple sources to build a wall of evidence that could withstand scrutiny. This worked for a while, but traditional approaches can struggle to surface the relationships floating beneath increasingly complex cases.

03 TODAY'S REALITY

This leads us to today's reality, where we are increasingly looking at complex networks of people, companies, transactions, and assets spanning multiple physical and logical domains. Cases of suspected fraud, data manipulation, or even the consequences of an honest mistake are rarely contained within a single record or source. Instead, investigators must piece together transaction histories, corporate records, account information, and other evidence to establish what happened, who was involved, how events are connected, and where assets may have gone.

A HYPOTHETICAL CASE

Consider a hypothetical financial fraud investigation within a company, where multiple payments have been flagged as being anomalous and require further investigation. This was reported during an audit and after a brief review of the records, there appears to be some similarities in the payments.

Where do we start the investigation, and how do we identify the people, accounts, companies, actions, and timings involved?

THE QUESTIONS THAT FOLLOW

? Which transactions matter, and how do they relate to one another?

? Which companies are connected?

? Where did the money ultimately go?

? Which connections could help identify assets for potential recovery?

? Once we identify something potentially anomalous, how do we follow that thread to discover what else may be connected to it?



02 Relationships, Not Records

A NEW PERSPECTIVE

Traditional investigations have been bolstered by technology, allowing investigators to search vast data sets for keywords, values, and patterns, ultimately creating a set of data points which can be used as the base of a bottom-up investigation. This provides a valuable baseline for building a case, but the high-level perspective and whole-case understanding required for a complementary, top-down view is hard to weave into the investigation. While simple cases may be possible to follow using the investigator's intuition, we need something more for the increasingly complex reality of modern investigations.

GRAPH TECHNOLOGY

Graph technology enables investigators to supplement this record-focused view with a relationship-centric perspective. In a graph, entities are represented as nodes or circles, and the relationships between them are represented as edges or lines.

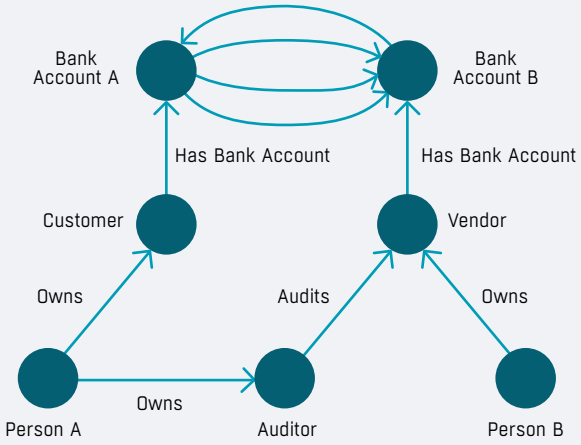
- Nodes represent people, companies, bank accounts or assets and can hold associated details.
- Edges represent payment transactions, ownership, information flows, and other relationships.

TABLE 1

Entity	Owner	Bank Acc
Customer	Person A	A
Vendor	Person B	B
Auditor	Person A	-

TABLE 2

Transaction	Source	Dest	Amount
1	A	B	10.000
2	A	B	12.000
3	B	A	9.000
4	A	B	5.500



EXPLORING THE NETWORK

Rather than viewing records in isolation, investigators can explore the connected network, starting with an overview of the entire case and progressively examining areas of interest. In our hypothetical investigation, the payments can be followed through intermediary steps and entities, revealing how funds flowed and which parties were involved. Entities that initially appear unrelated may be connected through a common factor, such as a single person executing multiple payments, reused account numbers, collusion amongst multiple individuals, or recurring patterns in the timing of unusual transactions.

Visualisation makes these relationships easier to identify and follow.



Directional arrows can show where money moves



Edge thickness can represent the value or volume of transactions



Node sizes can indicate the value of assets or the number of transactions associated with an entity



Colours and groupings can match similar entities by department, type, or geographic location

A SINGLE COHERENT VIEW

These visual attributes act like a lens to bring the multiple dimensions of an investigation into a single coherent and interactive view. Potentially significant patterns, such as circular connections linking entities that might otherwise be expected to be unrelated, clusters of entities, conflicts of interest, or unusual volumes of transactions become easier to identify. Investigators can see the broader structure while retaining the ability to drill down into individual transactions, relationships, and underlying records.

A graphical approach does not replace detailed analysis with a pleasing view. It complements the detailed, record-based investigation with a visual, top-down perspective that makes the connections between records easier to explore and helps investigators determine where to look next.

03

LEVERAGING OUR NATURE

A human approach to a complex problem

The TV stereotype of an investigation has been to pin newspaper articles to a corkboard and link them together into a networked web of red string, but modern volumes of data have forced us to move away from this natural approach and adapt our methods to the limitations of our tools.

Investigators naturally think in terms of relationships.

- ? Who is connected to whom?
- ? Who controls which company?
- ? Which intermediary links two transactions?
- ? How did the money move from its original source to its eventual destination?

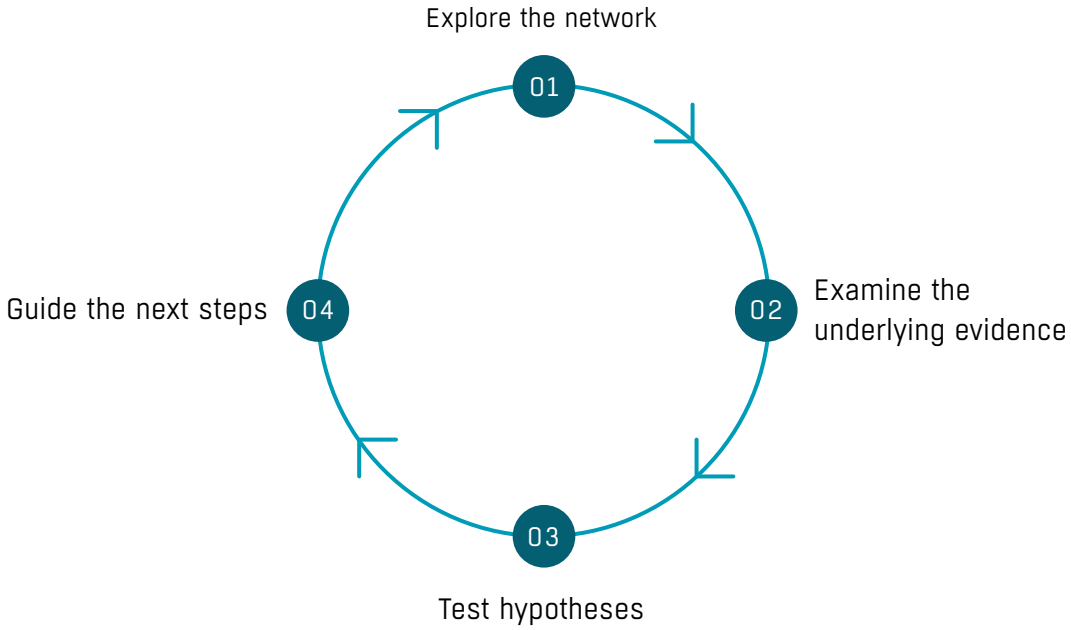
NETWORK, NOT ISOLATED EVENTS

These questions are central to understanding complex fraud and financial crime. Sophisticated schemes often involve networks of people, companies, and transactions rather than a single isolated event. Understanding the structure of those networks can be as important as understanding the individual actions within them, yet those relationships may be difficult to recognise when reviewing a list of records returned by a search.

A visual graph supports this way of thinking by making relationships explicit and explorable. Instead of reconstructing connections mentally from separate and apparently unrelated records, investigators can explore the network directly, follow paths between entities, and examine how different parts of the investigation relate to one another.

AN INTERACTIVE PROCESS

This can also change the way an investigation develops. Identifying one connection may prompt questions about another company, account, or transaction. A previously overlooked relationship may provide a new lead, while the visual representation may suggest a pattern for further investigation. The process changes from a filtering exercise to an iterative process, where investigators explore the network, examine the underlying evidence, test hypotheses, and use what they learn to guide the next steps.



A SHARED VIEW

The visual approach can also make complex information more accessible to people with different technical backgrounds. Legal representatives, forensic analysts, investigators, and compliance teams can discuss the same visual representation of the evidence without everyone needing to understand the underlying technical components, database structures, or analytical scripts. This shared view can support collaboration, challenge assumptions, and help communicate findings to decision-makers regardless of each person's technical knowledge.

Legal representatives	Forensic analysts	Investigators	Compliance teams

IN CONTEXT

This does not mean that a graph automatically reveals the truth, or that every visible connection is meaningful. Relationships must be understood in context, and anomalies must still be assessed against the underlying evidence. The advantage is that the visual representation helps people identify which relationships deserve attention and formulate better questions about what they see and why it matters.

Graph technology doesn't just offer a different way to display information. It enables a relationship-centric mindset and an understanding of the big picture, complementing the traditional focus on details found in individual records.

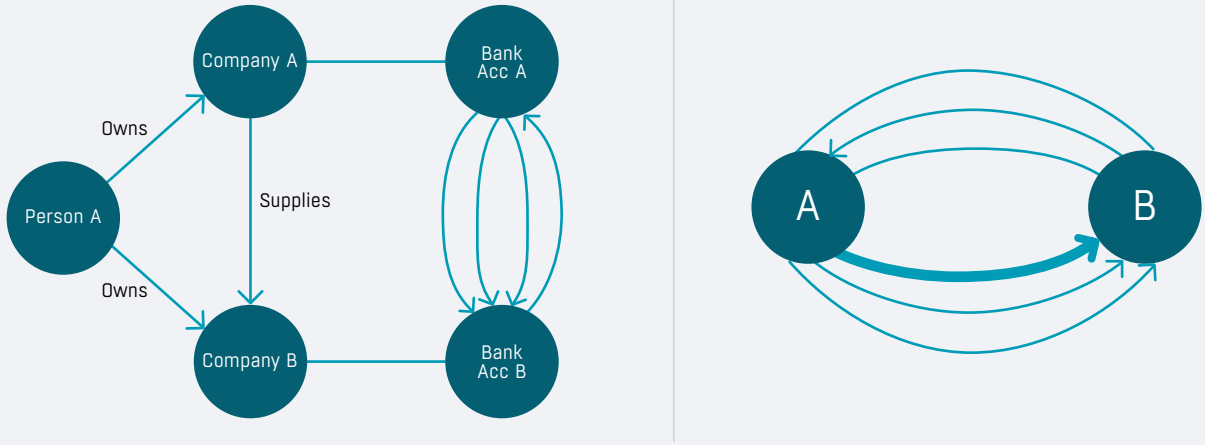


04

CONNECTING THE DOTS

More Than a Metaphor

We have all heard the phrase "connecting the dots" in relation to investigations, which describes the process of identifying individual facts and establishing how they relate to one another. Graph technology puts this principle into practice by making relationships a central part of how evidence is explored and understood.



THE HYPOTHETICAL CASE, CONTINUED

In the hypothetical investigation, a connected view could reveal a potential fraud ring consisting of multiple individuals within the company, with identified conflicts of interest related to company control, abuse of approval processes, or shared bank accounts. Further investigation could show that this fraud ring is potentially connected to other offices in the company through indirect links, such as umbrella companies for suppliers and family relationships.

These connections provide leads for further investigation, rather than direct proof of wrongdoing. Investigators could examine corroborating data sources such as access logs, modification histories, payment records, and documents to establish what happened, whether the changes were authorised, and whether funds were diverted.

CORROBORATING DATA SOURCES



CONTEXT FOR THE DETAILS

The value lies in adding context to the details.

The value lies in adding context to the details. A transaction record establishes that a payment occurred, and the wider network helps to explain how that payment relates to other transactions, entities, and events. In another example, a set of records may identify multiple unrelated individuals creating transactions, while a connected view can help investigators see whether a single person, account, or intermediary links them together.

ACROSS BORDERS

With multinational companies, cross-border investigations, or when linking seemingly unrelated events, this broader perspective can be particularly useful. Tracing assets may require investigators to understand the movement of funds through multiple entities, identify intermediaries, examine ownership structures, and determine which connections warrant further investigation. A visual network can help organise these relationships into a coherent picture, helping with prioritisation, and supporting the communication of findings and hypotheses between the parties involved in the investigation.

A COMPLEMENTARY APPROACH

Graph technology is a complementary approach, not a replacement for traditional investigative methods, and transaction analysis, document review, and legal assessment remain essential. A visible connection or outlier does not by itself establish control, intent, or wrongdoing. Investigators must validate important relationships and corroborate their suspicions with traditional evidence.

By making relationships easier to see and explore, graph technology can help investigators focus on the questions that matter, and identify relevant leads more efficiently. Graph structures can show the information flows, control, transactions, and intermediary steps between entities, making complex relationships easier to explore than relying on traditional records alone.

In an increasingly connected world, investigations must account for the networks connecting people, companies, transactions, and assets. Examining individual records remains essential, but understanding the relationships between them can provide a more complete perspective.

The dots have always been there.
Graph technology helps investigators see how they connect.

GET IN TOUCH

Let’s connect the dots in your next matter

AUTHOR

Gareth Wilson

Gareth is a Senior Consultant at Swiss FTS with over 15 years of experience in IT Forensics, eDiscovery and Information Security. He advises clients on digital investigations, eDiscovery matters, and information governance. Gareth is particularly experienced in bridging the gap between technical and legal teams, helping clients navigate complex investigations and digital evidence challenges.

SWISS FTS

Trusted, to get you there

SWISS FTS

info@swiss-fts.com

+41 43 266 78 50

www.swiss-fts.com