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Unlocking the value of connected data with Linkurious Enterprise

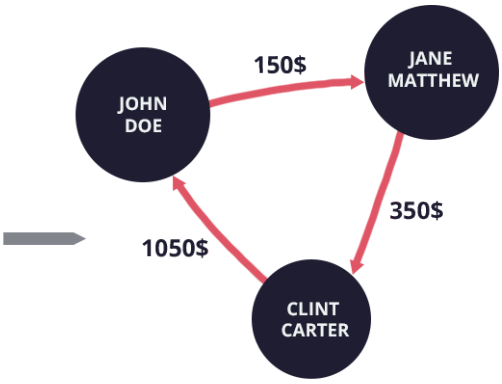
Combating money-laundering, fraud or cyber-crime is now a data-driven job. As we gather and analyze more and more data, the opportunity to find evidence of wrongdoings increases. But with large, inconsistent and scattered data sources, extracting insights is a challenge for many organizations.

To help analysts follow a trail, uncover fraud networks or identify organized crime activities, new tools emerged. Among them, graph technology is offering a valuable way to find insights in large amounts of data. Discover the nature and benefits of this new paradigm and see how to unlock the value of your connected data with Linkurious Enterprise

What is a graph

A graph is a data structure that consists of a set of nodes, and edges (or relationships). Each node represents an entity, such as a person, a bank account or any piece of data. Each edge represents how two nodes are linked to each other, for example person «a» owns bank account «b». Nodes and edges can have properties, additional information associated with them. For instance, the name of the person «a» is «John».

ID	Date	Sender	Amount	Receiver
#1	05/12/18	John Doe	150$	Jane Matthew
#2	06/24/18	Jane Matthew	350$	Clint Carter
#3	04/28/18	Clint Carter	1050$	John Doe



The same data sample represented as a table (left) and as a graph of nodes and edges (right).

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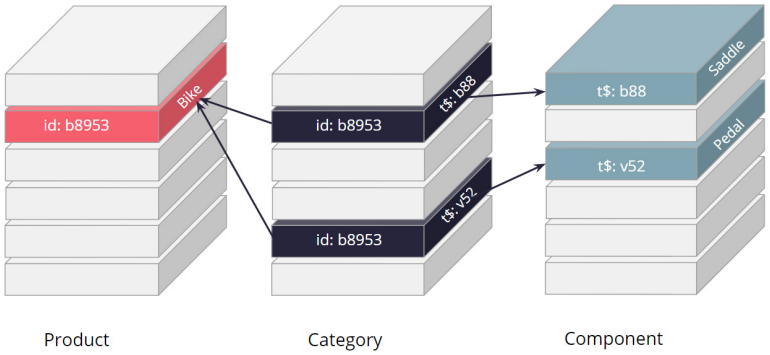
From relational to graph

The graph approach emerged to address some of the shortcomings of the relational databases management systems (RDBMS) that have powered software applications since the 80's. RDBMS are structured in tables with rows and columns. They are well suited for many use cases where data is consistent and not highly connected. They are very good for instance for routine analysis of data, or fast operations at scale such as verifying that a transaction belongs to a valid customer. But they also have their drawbacks:

- poor performances for querying relationships: retrieving the relationships of a row requires going from table to table via "joins". These joins have an exponential computational cost. As a result, queries that require going through a high number of joins are oftentimes unpractical for performance reasons;

- low flexibility: tables are hard to evolve and relationships across tables are complex to manage. As a result RDBMS tend to struggle to adapt to domains with complex connected data.



A tabular data model requieres complex sets of joins accross tables to model relationships.

Graph databases emerged to address these problems by storing information as a graph. Querying relationships is blazing-fast, even in a graphs of billions of nodes and relationships. Furthermore, they provide an intuitive way to represent naturally connected data.

Linkurious Enterprise supports the following popular graph (or RDF) database vendors:

- AllegroGraph
- Cosmos DB
- Datastax Enterprise Graph
- JanusGraph
- Neo4j
- Stardog

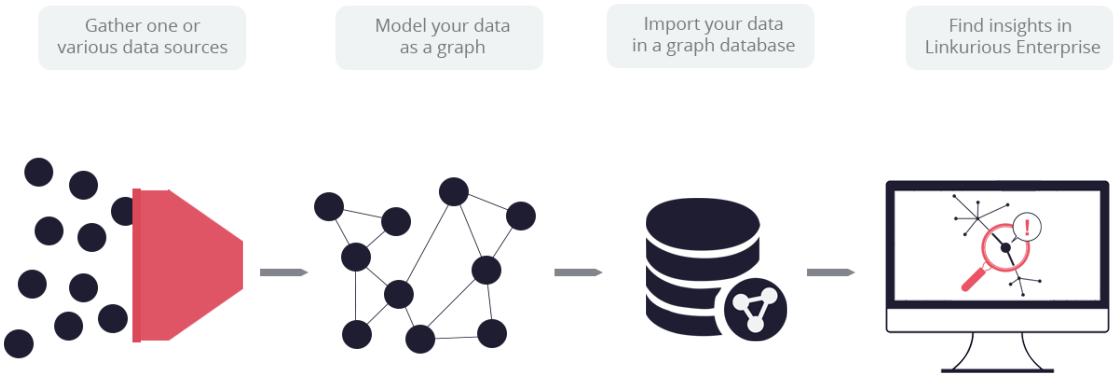
When it's relevant

Using a graph approach makes sense when your data and your questions involve connections. In some datasets, the connections are as important as the individual entities. In a money laundering investigation for example, it is crucial to capture how money flows between individuals and companies. Similarly, some questions are particularly well suited for graphs: "how X and Y are connected", "what is X connected to", "what's the role of X in the network". The world biggest companies have been relying on graphs for years now with systems such as the Google's "Knowledge Graph" or Linkedin's "Enterprise Graph".

Among the use cases in which the graph approach is the most popular are cybersecurity, anti-financial crime or intelligence analysis. In these domains, the organisations switching from tables to graph benefit from:

- a unified view of their data instead of blindspots and silos;
- the ability to run complex queries without hitting performance bottlenecks.

A more complete data picture and the ability to detect complex patterns are invaluable assets to identify cases of fraud or other threats in large volumes of data. For the banks, government agencies and other organisation turning to a graph approach, it leads to the discovery of new threats and faster investigations.



The graph journey

Using Linkurious Enterprise to leverage the graph approach

At Linkurious we help organizations move from tables to graph to detect and investigate threats hidden in complex connected datasets. In order to do that, we have developed Linkurious Enterprise, a graph visualization and analysis platform. Our product is used by teams of analysts to fight terrorism, money-laundering, cyber attacks and fraud.

Linkurious Enterprise lets you visualize and analyze graph data. It connects to a graph database and provides a real-time access to the data. If your organization deals with massive volumes of connected data, it will help you:

- detect sophisticated threats: the unified graph view of your data reveals suspicious connections and patterns otherwise hidden in silos;

- accelerate investigations: graph visualization removes the difficulty of tracking information scattered across tools and tables, letting you find hidden insights faster.

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