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Graph + AI in Anti-Financial Crime

The Art of the Possible

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Anti-Financial Crime in Financial Services

2-5%

Of World GDP laundered globally

95%

False Positive Rate of AML systems

1%

Proceeds of Anti-Financial Crime Seized

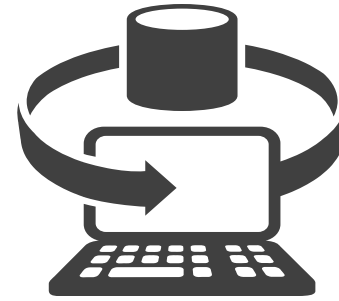
60%

Regulatory fines because crooks outwitted FS firms defences

Current ways of monitoring red flags is inadequate!

Structural Issues in Anti-Financial Crime

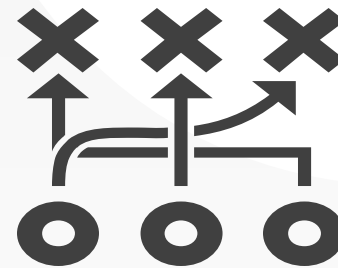
Red flags are conceptually sound. But translation to analytics allows gaps



Systemic Constraints prevent broad based red-flags

Most Anti-Financial Crime systems are built on relational databases

Relational datastores cannot flag relationships few hops away



Data Quality

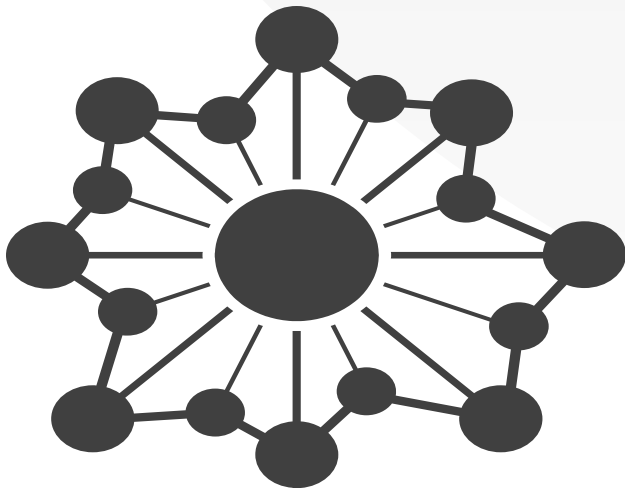
It is common among financial institutions to have data issues in Anti-Financial Crime processes

Traditional Anti-Financial Crime systems are too sensitive to data quality. Many firms got into trouble with regulators for this issue

This calls for a new

new data paradigm

Graph databases have shown the potential to rewrite the approach to Anti-Financial Crime



● Represent data without constraints, naturally

No constraints of primary key and foreign key
Represent data naturally as it occurs.

● Insights from connectedness

Who is the customer connected to immediately?
Do customer connections few hops away pose a financial crime risk?

● Flexible and powerful analytics

Every customer, party and transaction can now be modeled close to the actual risk
Accurate analytics lowers risk exposure and increases the opportunity to do more business with lower risk clients

Graph in Anti-Financial Crime

Elevate the effectiveness and efficiency across FinCrime areas



KYC

- Dismantle islands of customer data by taking a network-centric approach to KYC
- Enhance network with publicly available data
- Uncover hidden risks, arrive at appropriate risk rating for the customer



Transactions Monitoring

- Improve accuracy of detection by identifying previously undetected cases
- Reduce false positives significantly with insights from connectedness and graph analytics
- Crash investigations time with powerful visualizations and insights



Screening

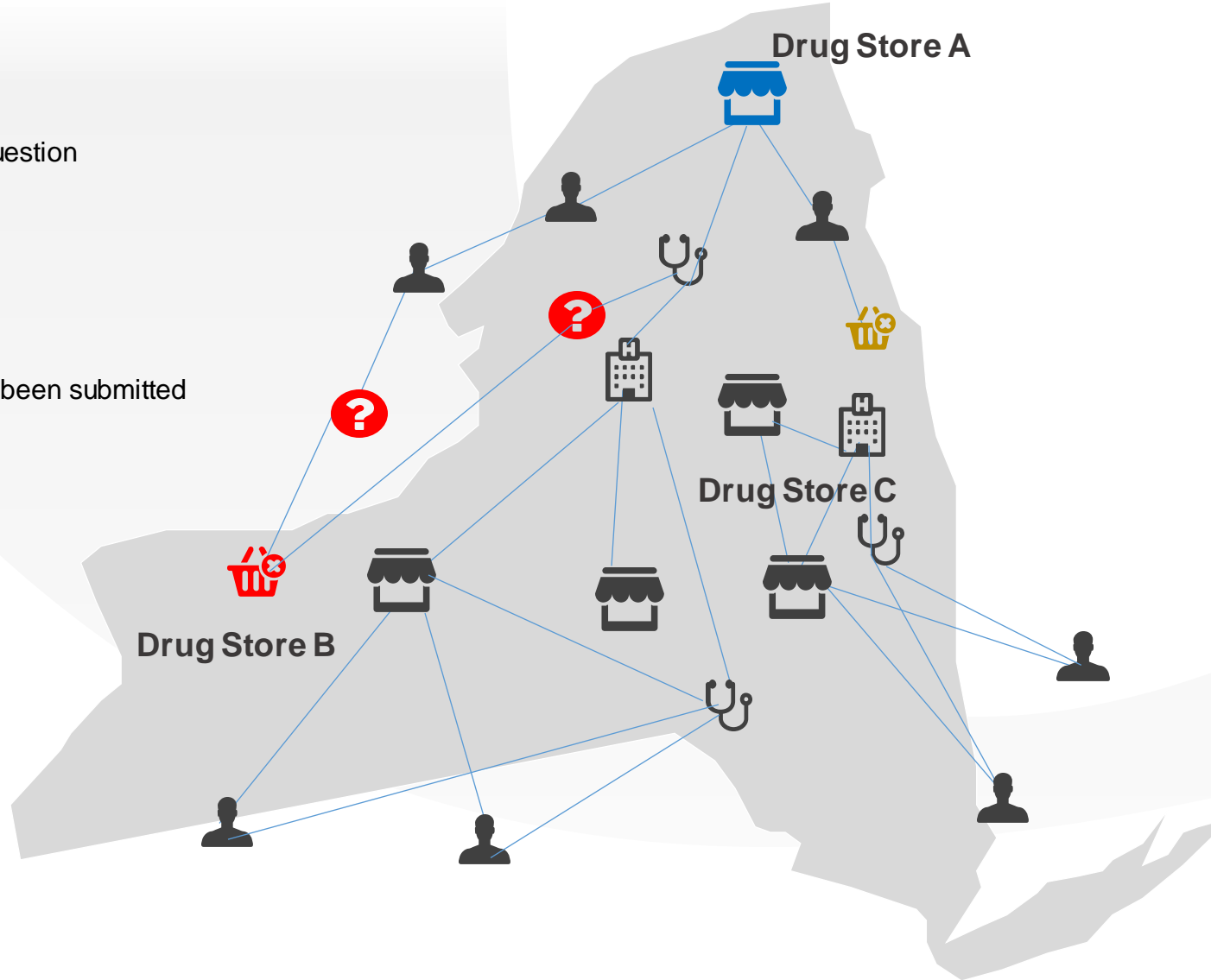
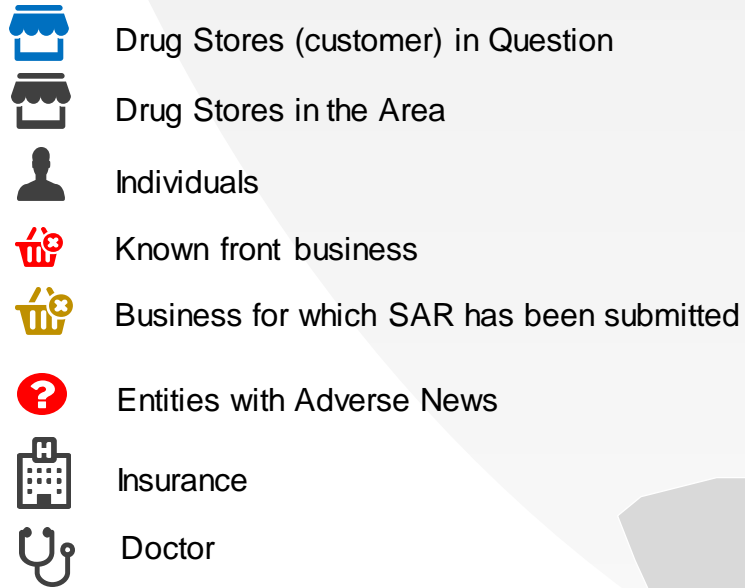
- Reduce false positives through Entity Resolution in Customer and Transactions screening
- Find relevant adverse media on customers or entities related to customers quickly and accurately



Anti-Fraud

- Find bad actors within the transactions ecosystem rapidly and ring-fence customers from fraud risk exposure
- Allow contact centers / dispute managers to rapidly cut down the time for fraud diagnostics and provide better customer experience

CDD/KYC Risk Rating can be significantly improved through Graph+AI



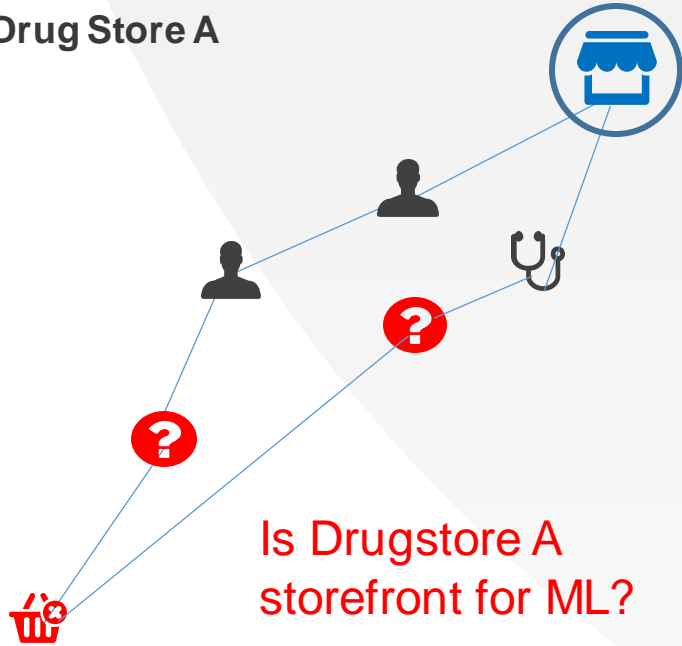
Use Case

- > Customer opens a drug store.
- > Customer was approved with a medium risk rating as the customer profile looked similar to other drug stores on paper
- > One hop away, customer has relationship with doctors which gives it a sense of genuineness

Graph Analytics to help spot the difference

Two or three hops away, things look much different

Drug Store A



- No transactions with Insurance and fewer customers
- Network with multiple hops connected to store front known to be penalized for laundering
- Shape of the network much different from peer stores

Drug Store B

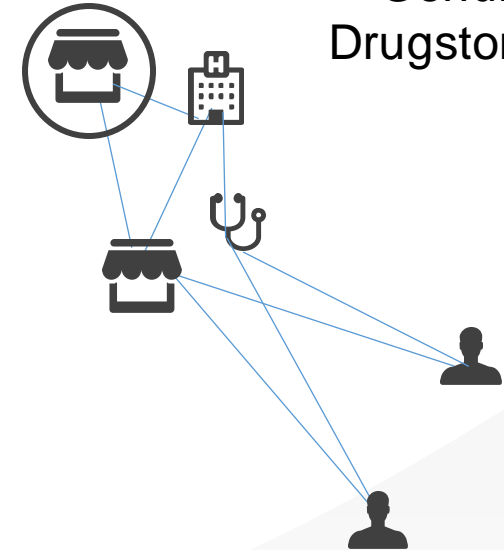
✓ Genuine Drugstore



- Transactions with Insurance and wider customer base
- Compact network with no known store fronts or entities with adverse news
- Shape of the network similar to other drug stores in the area

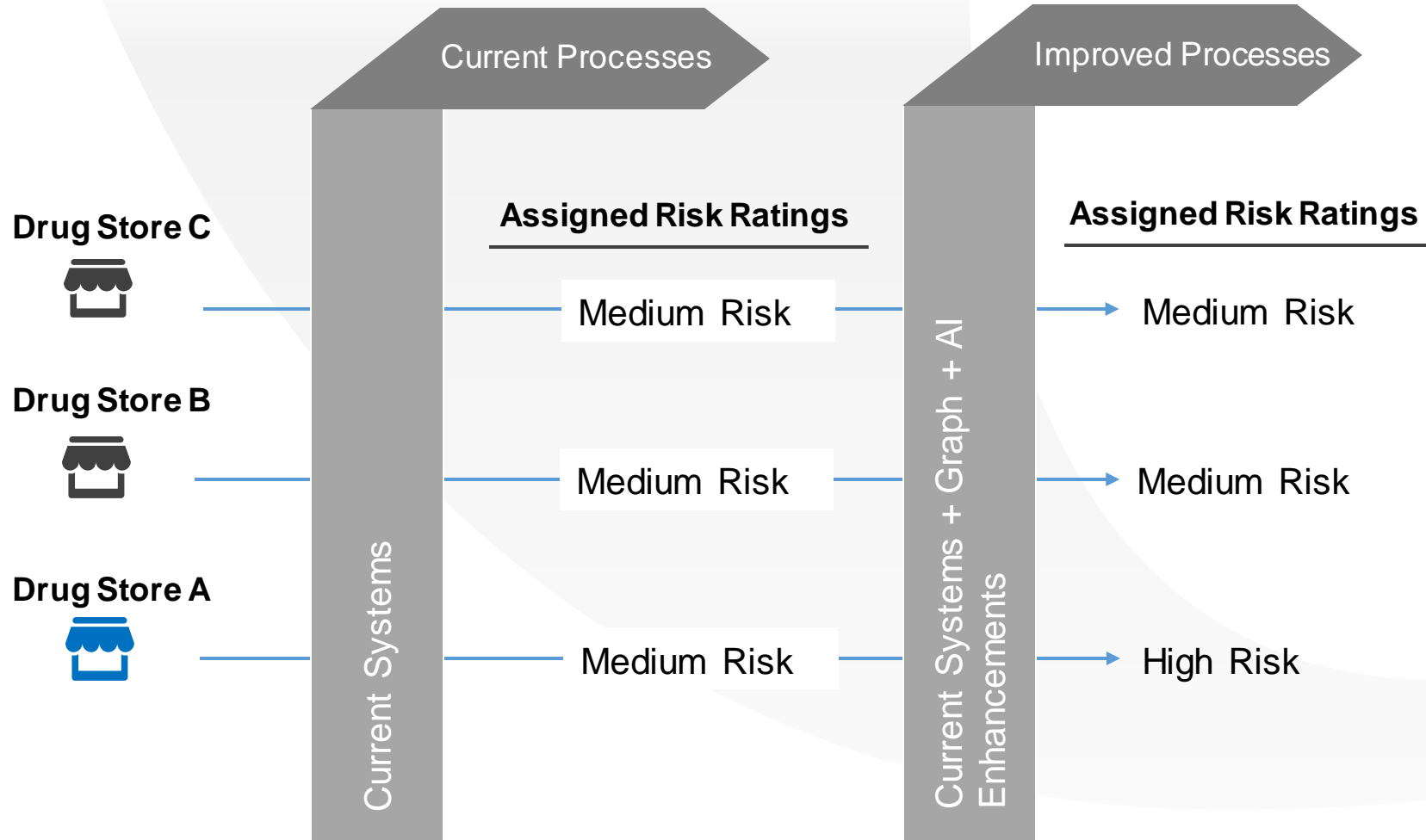
Drug Store C

✓ Genuine Drugstore



- Transactions with Insurance and wider customer base
- Compact network with no known store fronts or adverse news
- Shape of the network similar to other drug stores in the area

AI on graph data can help calculate accurate KYC rating



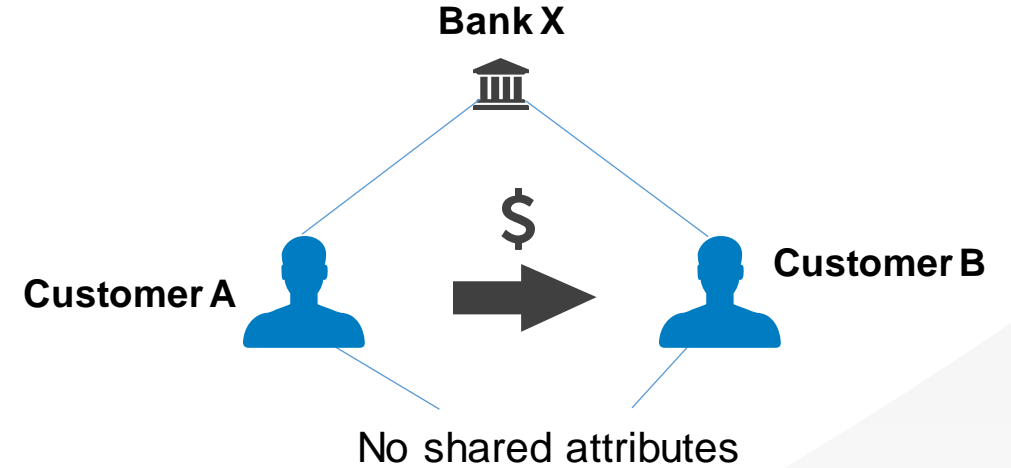
Analytics to derive Risk

- > Simple to complex analytics can be run on top of graph to arrive at the accurate risk rating
- > Deep Link Analysis
Pattern Matching
Hub and Community Detection
Prediction Models
Time Series Graph Analysis
.. Many more
- > Models are explainable, accurate and easy to use

Graph+AI can significantly improve transactions monitoring

- > Red-flags are monitoring with models**
Multiple models are used by Financial Services firms to monitor red flags
- > Produce too many alerts**
Alert productivity ratio of 2% to 4% - high operational burden; some of the red flags also go undetected
- > Miss the big-picture with complex transaction patterns**
Complex money laundering schemes are not treated as such as focus is only on originator and beneficiary
- > Investigations are painfully long**
When data points are not connected to each other beyond a single hop, compelling visualization is challenging

ALERT ILLUSTRATION



- Customer A transferred funds to Customer B
- Alert generated when Customer A transferred funds to Customer B as transactions monitoring system determined that the two of them are unrelated

Is this a productive alert?

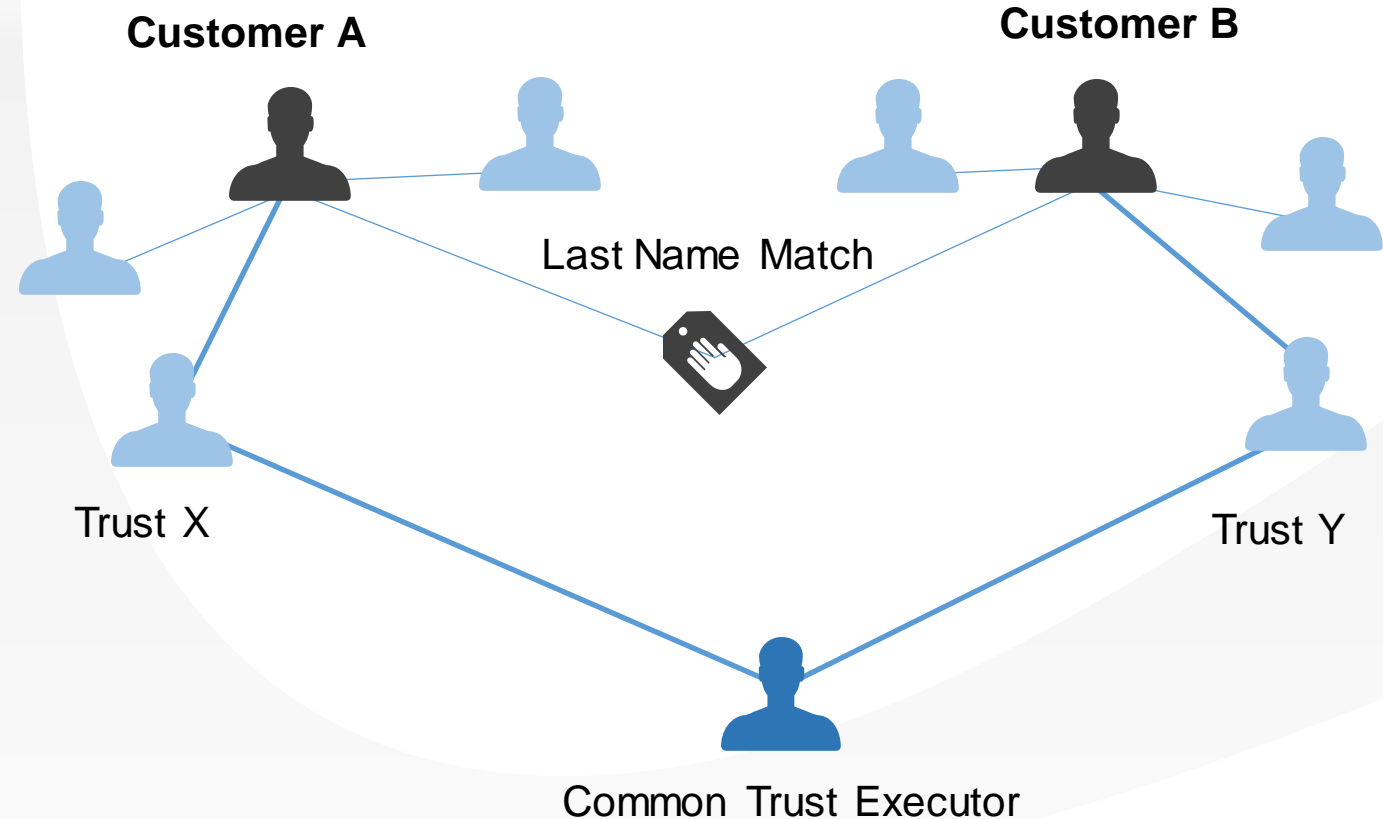
Graph+AI can accurately determine the risk and generate only the productive alerts

Graph based approach can look at the network beyond the single hop.

On expanding the network,

- A relationship was discovered between customer A and customer B. Both share a common trust executioner
- Customer A and Customer B also share the same last name.





Analytics run based on historical data determined that this pattern is genuine and has no money laundering risk



AI models with rich insights on transactions, connected relationships and historical patterns determined that this does not qualify as a productive alert

Roadmap

Adopting a Graph-based approach for Anti-Financial Crime is a journey

-  **Pilot**
Like all innovative ideas, conduct a pilot targeting a specific area e.g. couple of Anti-Financial Crime typologies
-  **Scale**
Extend the graph logical model can cater to meet enterprise needs of the Anti-Financial Crime use cases. Build pipelines to bring enterprise graph to life
-  **Graph Algorithms**
Rethink red-flags design that can be implemented on graph. New approaches need to be discovered to detect behavior defined in red-flags. Build compelling user experience to drive adoption by investigators
-  **Change Management and Training**
Manage change with Anti-Financial Crime stakeholders, Operations teams, Auditors and Regulators on the enhanced effectiveness of the Graph+AI based monitoring and investigations system

Realize measurable benefits with Graph+AI

25%

Optimization of KYC-AML processes

70%

Reduction in False Positives

10%

Previously undetected risks now detected

50%

Improvement in Operations productivity

Q&A