

# Linkurious: using graphs to fight financial crime.

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- Graph analytics and graph visualization
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- Demo technical overview (ogma)





## Introduction.

Graph visualization startup.

200+ customers.

AML, intelligence, cyber-security,  
medical research.

Ogma.js, graph visualization library  
helps build interactive graph  
interfaces.







# PANAMA PAPERS



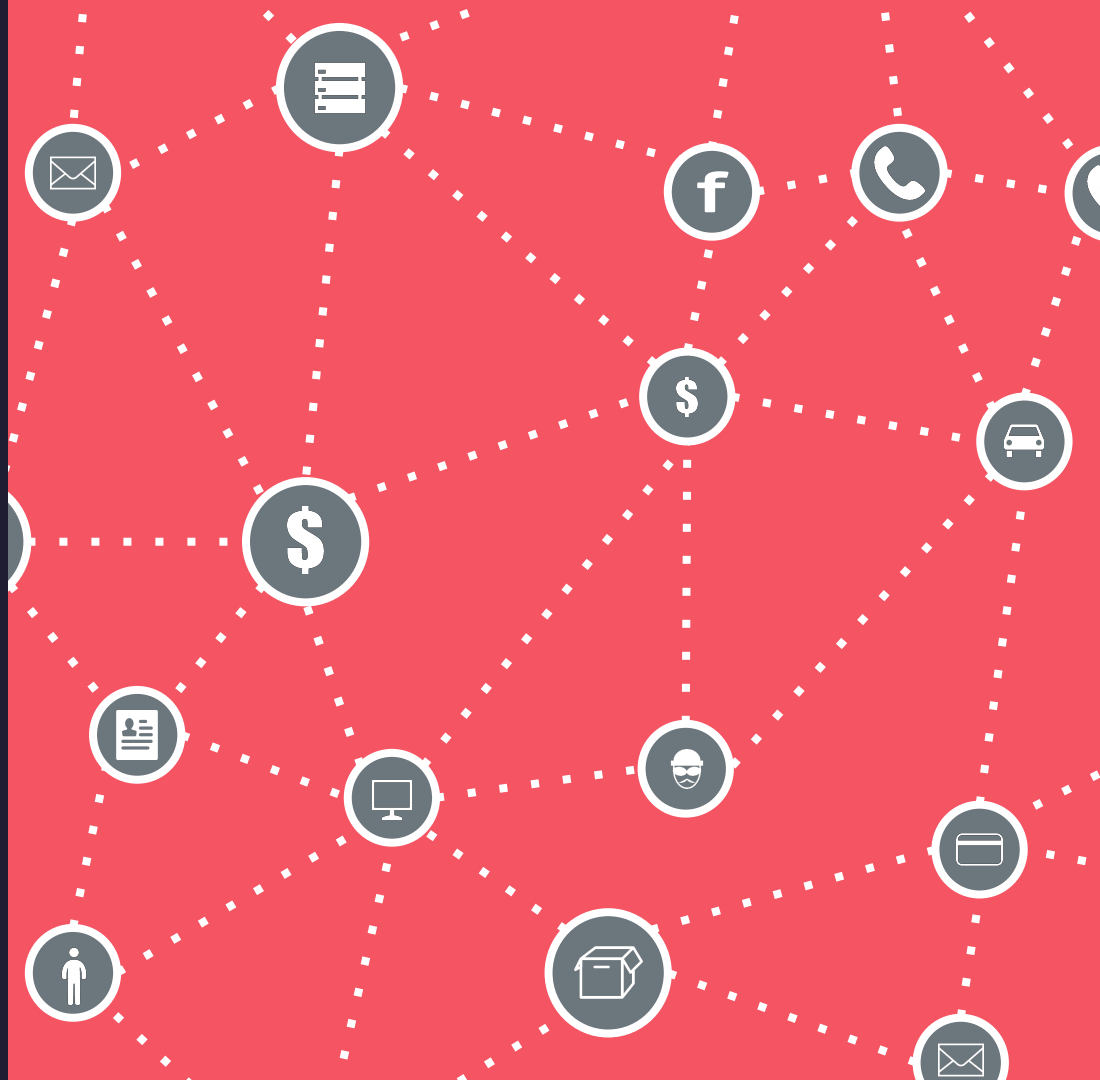


The graph approach unearths connections.

Fraud is about deception for financial gains.

Graphs offer complete picture of key entities of interest and how they are connected (people, IP addresses, phone #, credit card).

Well suited to fight criminal networks or sophisticated individuals (hidden links, complex patterns).





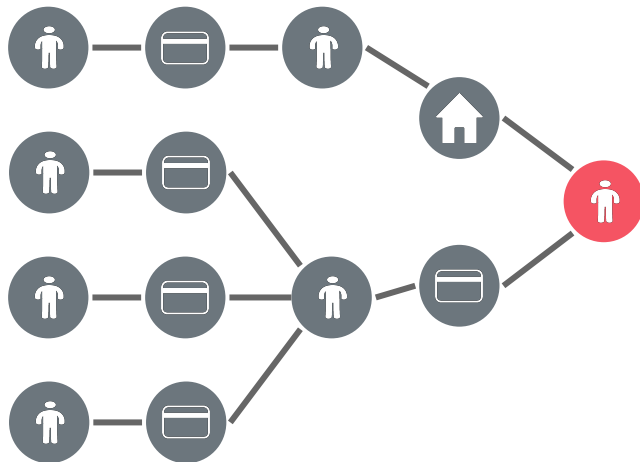
AML.

### Typical data.

Payments, customer data, third party data (blacklists, social media).

### Typical questions.

Are my customers linked to known criminals? Are there suspicious money flows (smurfing)?





## Third party fraud.

### Typical data.

Customer data (email, SSN, IP, address), black-list.

### Typical questions.

Do I have unusually large groups of customers? Who are the individuals connected to known fraudsters?





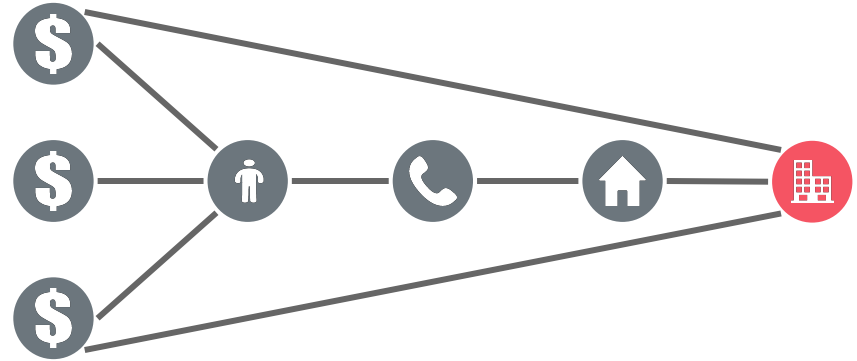
Internal fraud (conflict of interest).

### Typical data.

Employee master list, vendor master list, third party data (social media, company registries).

### Typical questions.

Are my employees linked to current vendors?





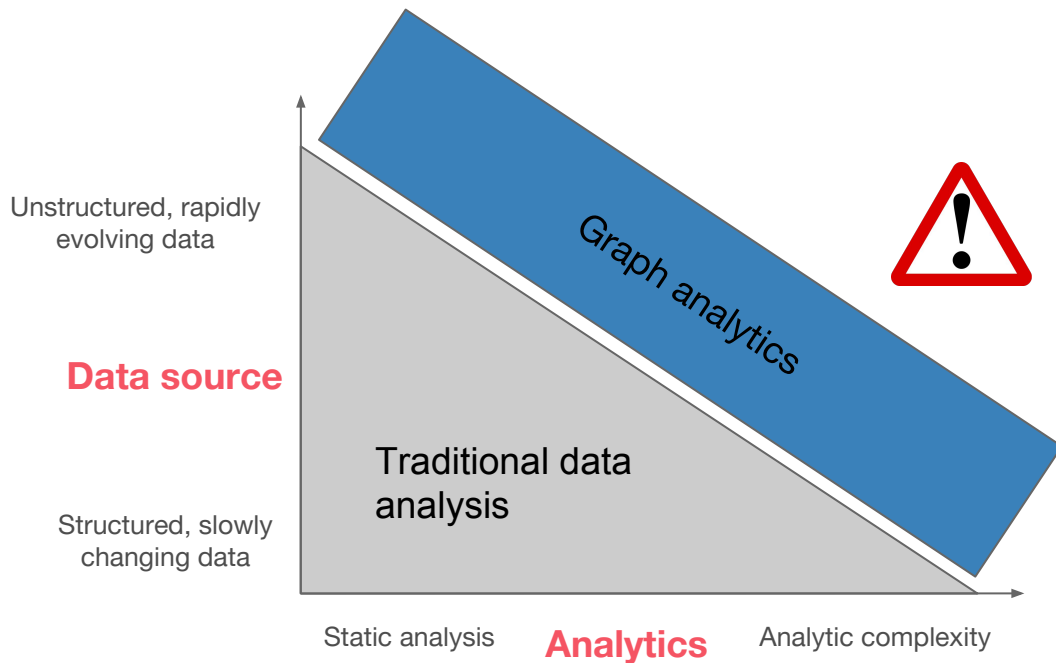


Why isn't everyone doing it?

RDMBS are not optimized for graph workloads (complexity and performances).

New type of data, new type of questions (graph pattern matching, impact analysis, etc).

Oracle Big Data Spatial and Graph helps store and query large graphs.





## Why graph visualization?

Better understand the relationships in your data.

Review alerts (false positives), advanced investigation (collect proofs, identify accomplices or beneficiaries).

Faster and more effective analysis.

	A	B	C	D	E	F	G
1	Transaction	CustID	AcctNo	CustomerName	Product	TranDateTime	TranAm
918	922	2E+10	2E+10	CARDHOLDER	Bank	#####	148
919	923	2E+10	2E+10	YOUNG	Card	#####	862
920	924	2E+10	2E+10	PERDUE	Card	#####	194
921	925	2E+10	2E+10	ALLEN	Bank	#####	3803
922	926	2E+10	2E+10	PERDUE	Bank	#####	-2915
923	927	2E+10	2E+10	DOUGLAS	Bank	#####	-282
924	928	2E+10	2E+10	JORDAN	Card	#####	55
925	929	2E+10	2E+10	ALLEN	Bank	#####	-2574
926	930	2E+10	2E+10	SIMPSON	Card	#####	851
927	931	2E+10	2E+10	BRIDGES	Bank	#####	2497
928	932	2E+10	2E+10	BRIDGES	Bank	#####	1501
929	933	2E+10	2E+10	BRIDGES	Bank	#####	340
930	934	2E+10	2E+10	BRIDGES	Bank	#####	-3568
931	935	2E+10	2E+10	ALLEN	Card	#####	1
932	936	2E+10	2E+10	ALLEN	Bank	#####	638
933	937	2E+10	2E+10	BRIDGES	Bank	#####	577
934	939	2E+10	2E+10	JORDAN	Bank	#####	367
935	940	2E+10	2E+10	BRIDGES	Card	#####	105
936	941	2E+10	2E+10	BRIDGES	Bank	#####	-794
937	942	2E+10	2E+10	BRIDGES	Bank	#####	-2136
938	943	2E+10	2E+10	DEAN	Bank	#####	78
939	944	2E+10	2E+10	NANCY	Bank	#####	3834
940	945	2E+10	2E+10	MC	Bank	#####	-1710



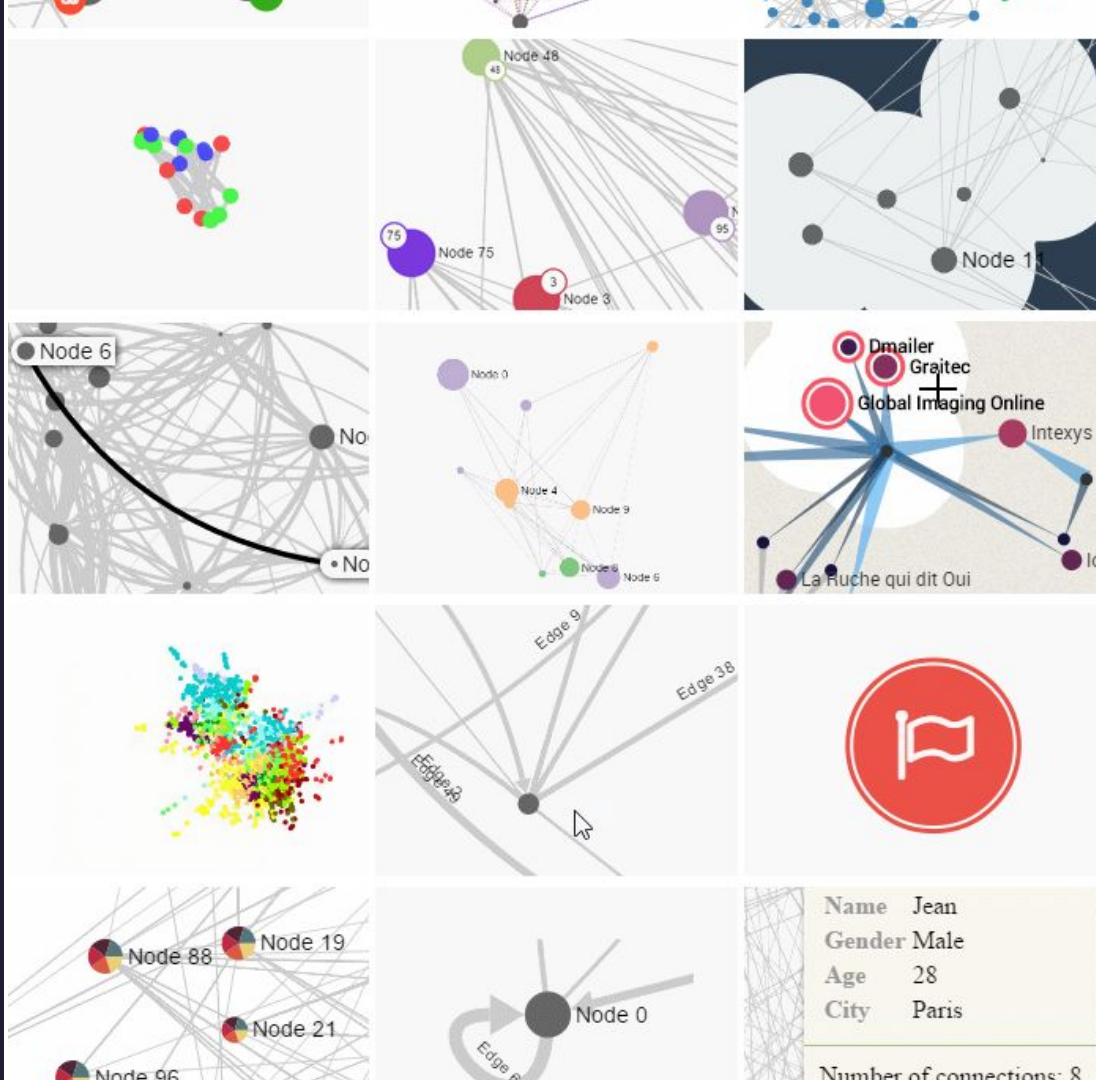
## Ogma and Oracle Big Data Spatial and Graph.

Ogma is a JS graph visualization library.

Visualize and interact with large graphs (>100 000 nodes).

Customized style (icons, colors, font, size, etc) and interactions (geo, filters, hover, select, drag, group, etc).

Compatible with Oracle Big Data Spatial and Graph.



# Demo: Oracle + Ogma.

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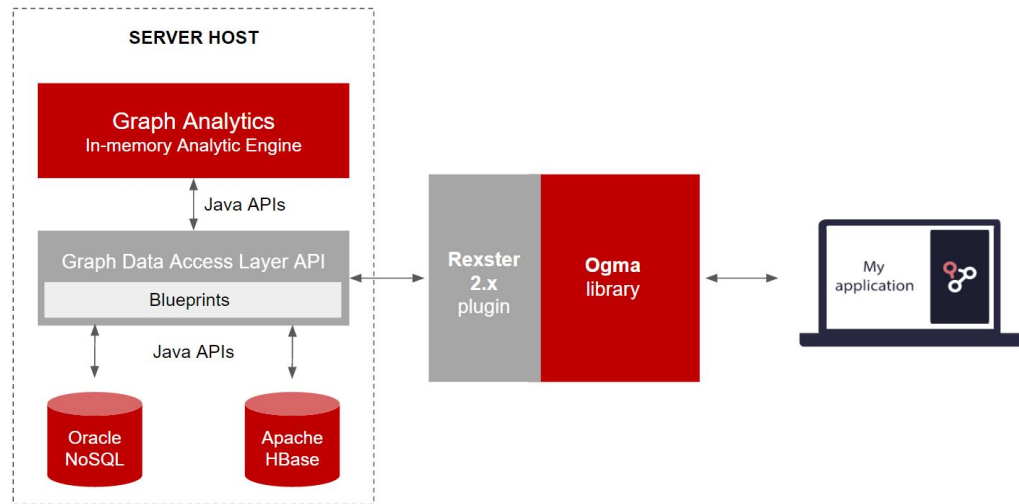


## Ogma / Oracle integration tech overview.

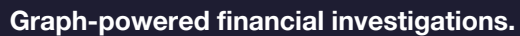
Embed graph visualizations tailored for your users into your web applications.

Connect to Oracle BDSG with Ogma's plugin and import graph data into your web application.

Leverages Oracle BDSG Blueprints API.

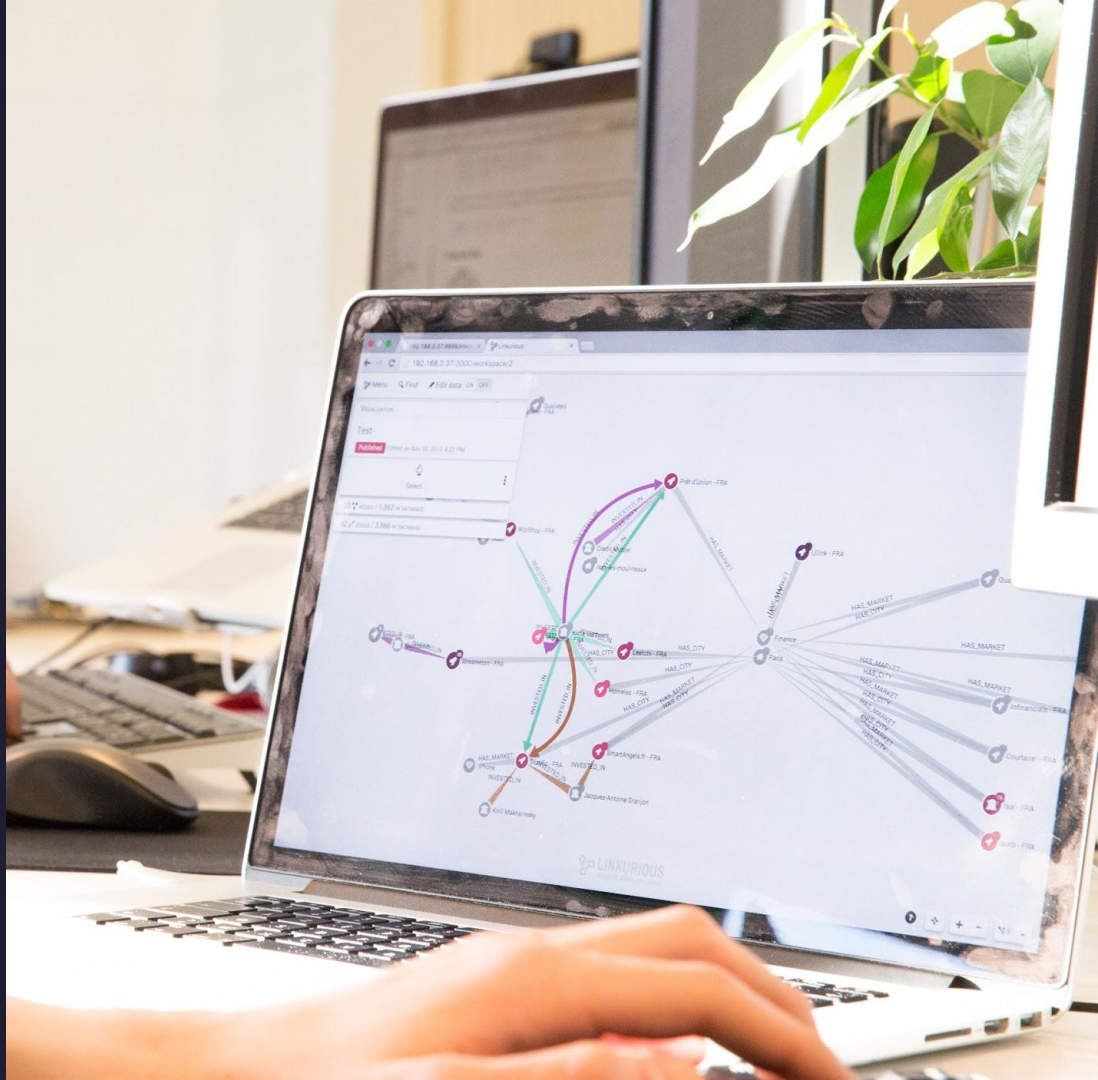






Add extra layer of protection (discovery of new cases, enhance review of existing cases).

Ogma helps build interactive graph UI that empowers people.





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**DATA**   
**TO VALUE**