

Detecting Organised Fraud via Social Network Analysis

FRAUD

Vedat Güneş
Lead Data Architect

Emin Ayık
Head of Claims Management



Vedat Güneş

17 Years Experience

- FMG, Telco, Insurance

 vgunes@anadolusigorta.com.tr

 [vgunes](https://twitter.com/vgunes)

 <https://linkedin.com/vedatgunes>



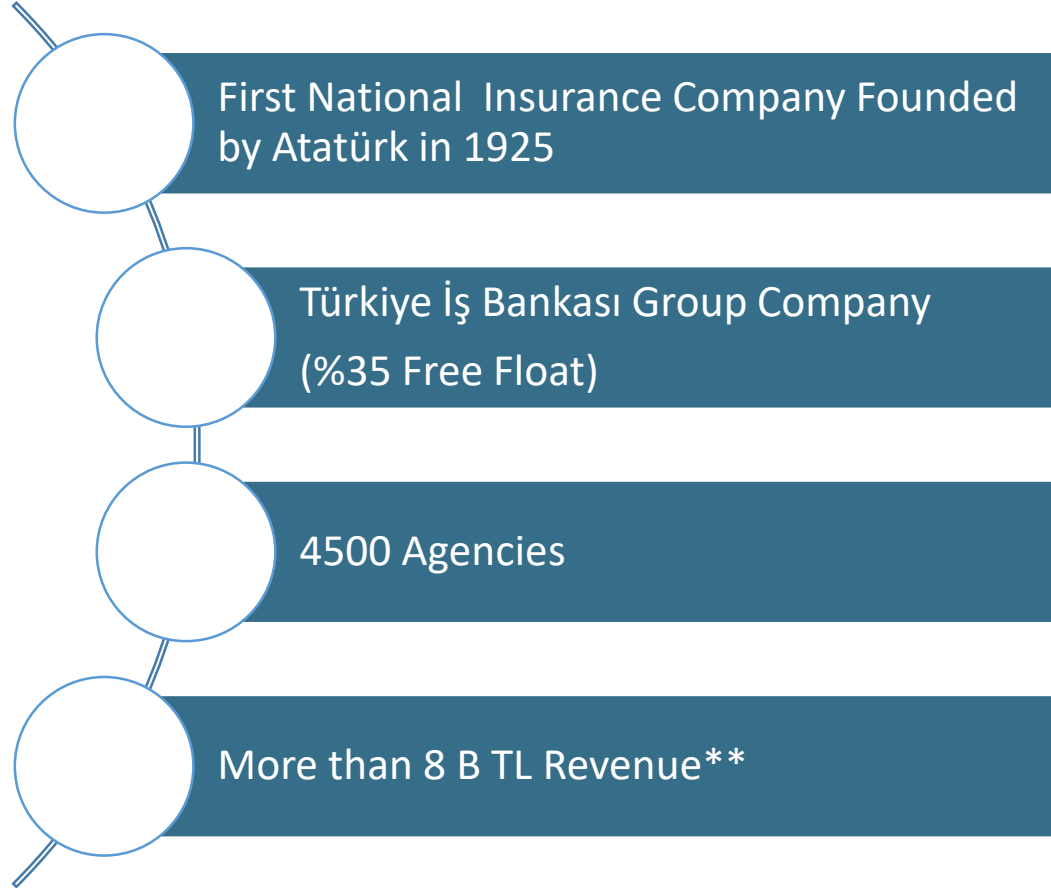
Emin Ayık

16 years of experience

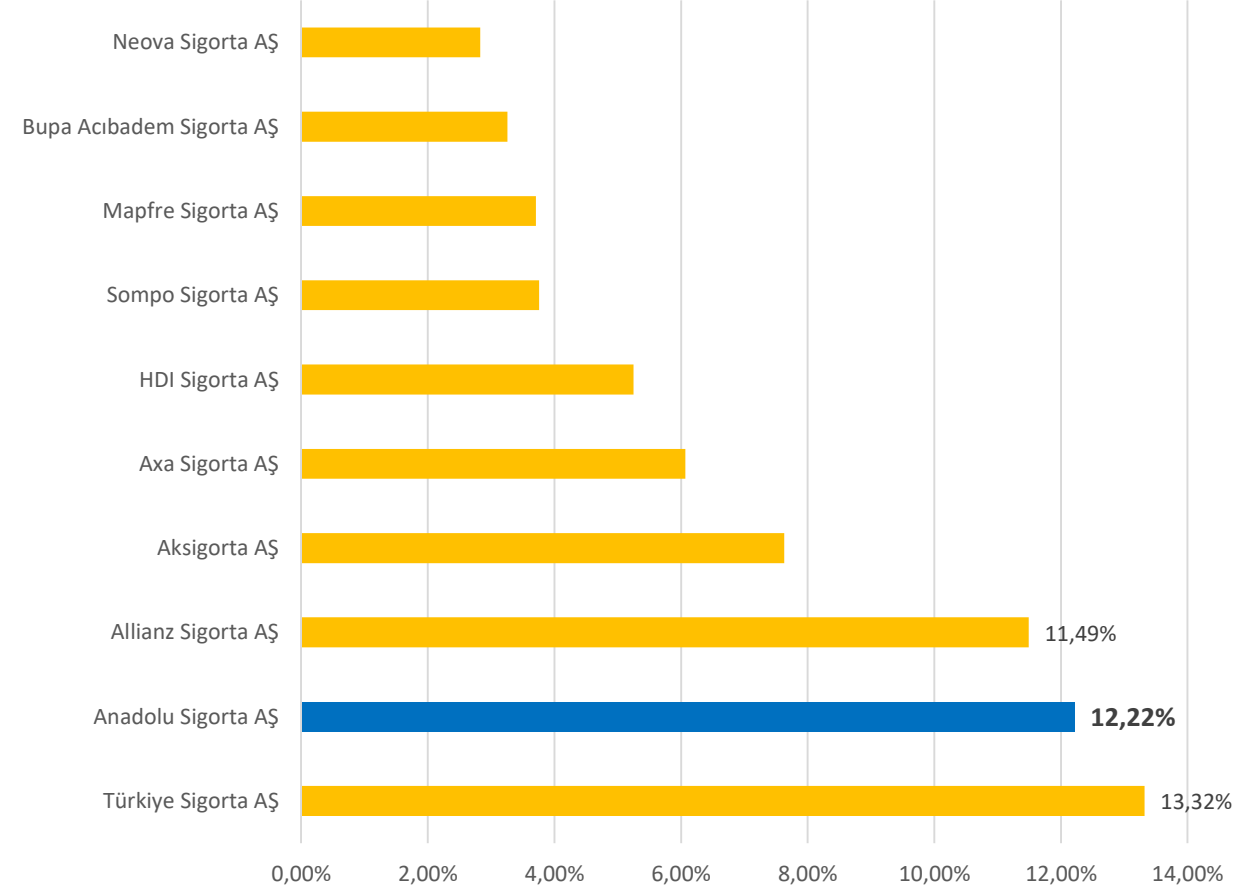
- Budget & Planning, Internal Audit and Claims Management

 eayik@anadolusigorta.com.tr

 <https://www.linkedin.com/in/eminayik>



Market Share*



Cost of Insurance Fraud (Global)

Country	Classes of business	Amount
Germany	All classes of business	10% of losses' cost
Australia	All classes of business	10% of losses' cost
Canada	All classes of business	10% to 15% of losses' cost
Spain	Motor	22% of losses' cost
Great Britain	Personal lines	7% of losses' cost
Scandinavia	All classes of business	5% to 10% of losses' cost
United States	Motor	11% to 15% of losses' cost
United States	All classes of business	10% of losses' cost

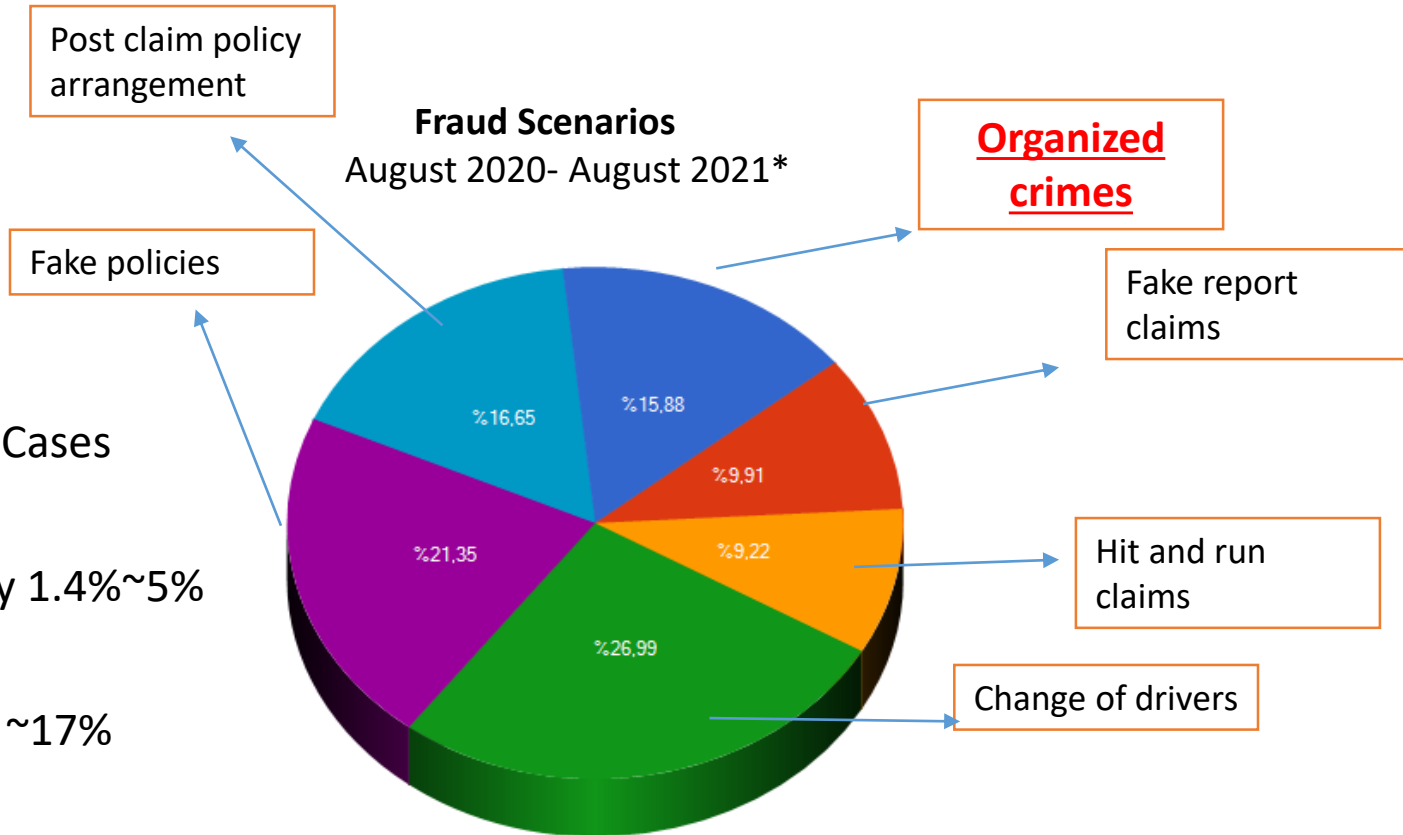
- In UK cost of fraud in insurance market
~2.2 Billion Euros per year

Fraud Increase accounted by the following list;

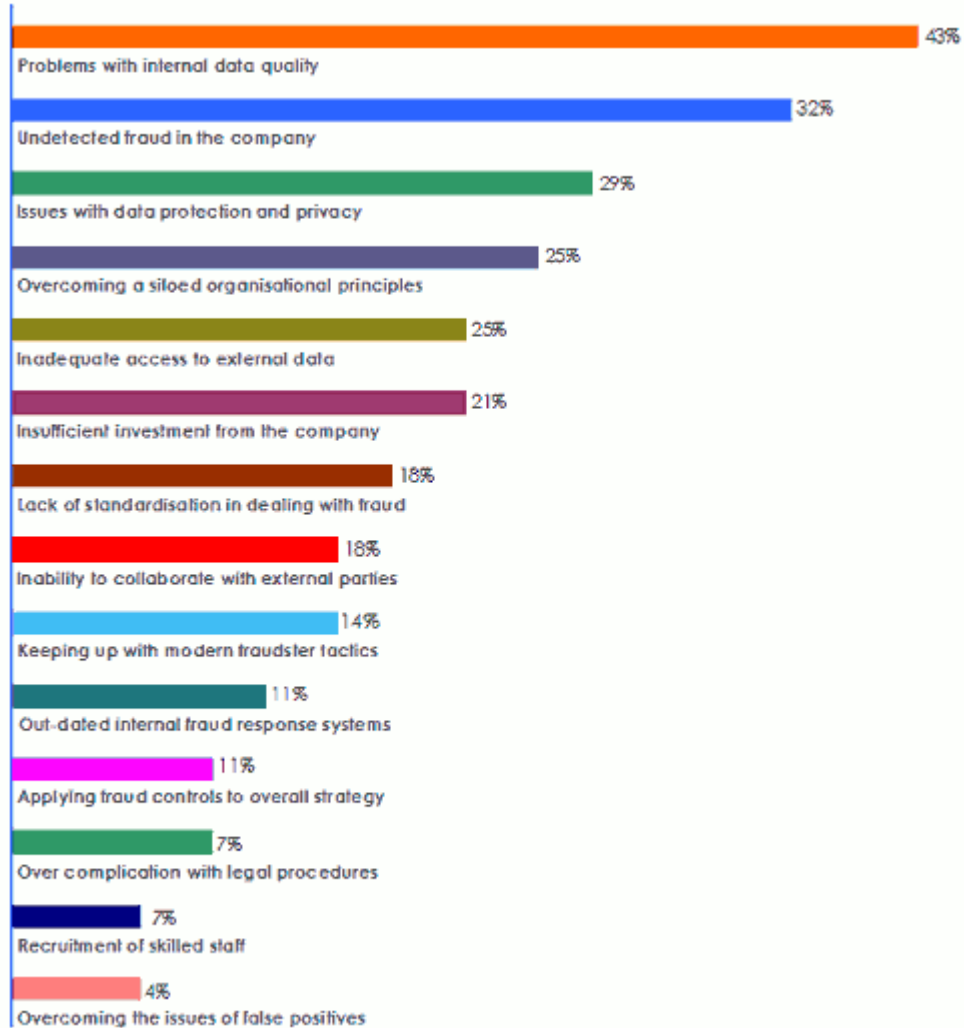
- Rising cyber criminality,
- Rising fraud due to duplication of false documents,
- Growing professionalization and internationalization of malicious acts,
- **The growth of fraud into organized gangs which are multiplying and getting internationalized through:**
 - **Repeated false claims or/and abroad in pension insurance,**
 - **Identity theft in life insurance,**
 - **Occurrence of serial claims or robberies disguised in motor insurance: sectors specialized in car robbery destined for export.**

Cost of Insurance Fraud (Turkey)

- Fraud Claim Payment Ratio 10%~30%
- Annual Fraud Cost 200 ~300M \$
- 30M – 45M \$ Comes From Organized Fraud Cases
- Detection Success Rate with Individual Study 1.4%~5%
- Detection Success Ratio with Sectoral Study ~17%



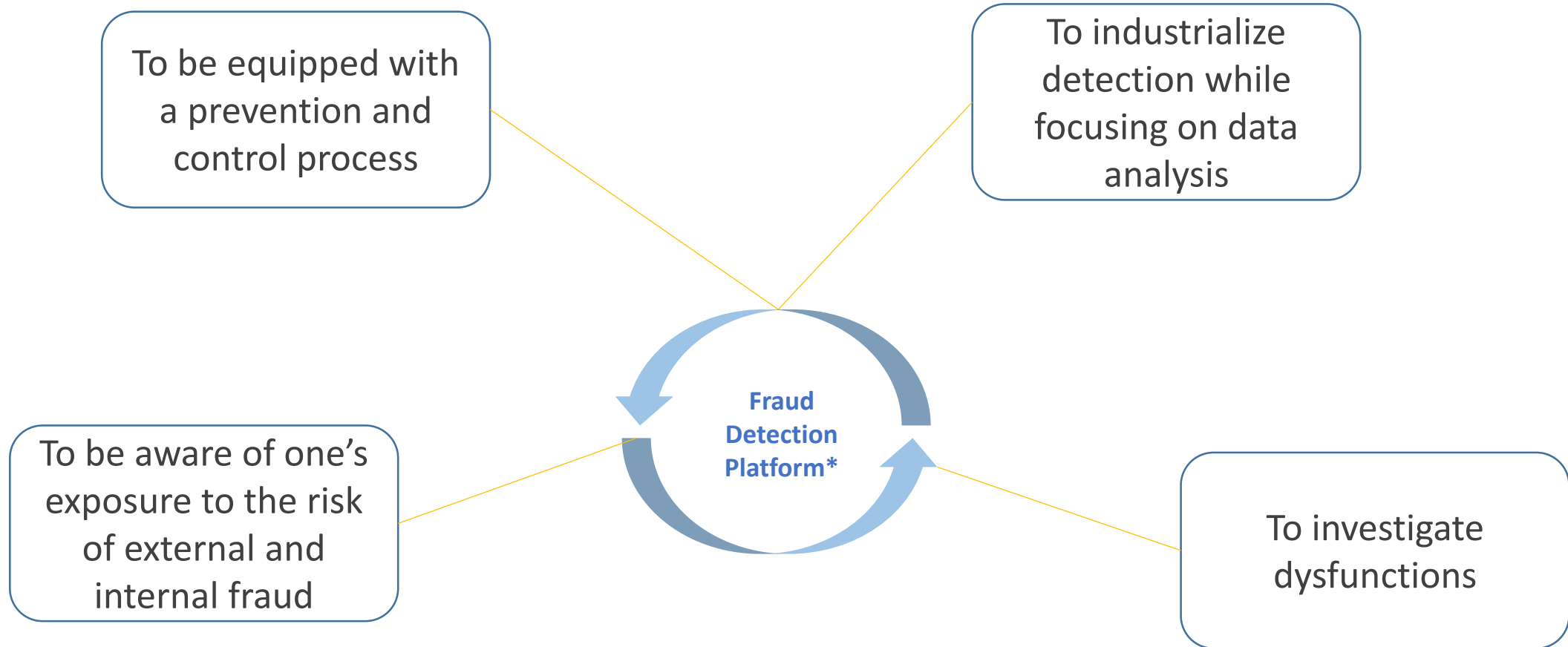
Insurance Fraud : Issues and Challenges



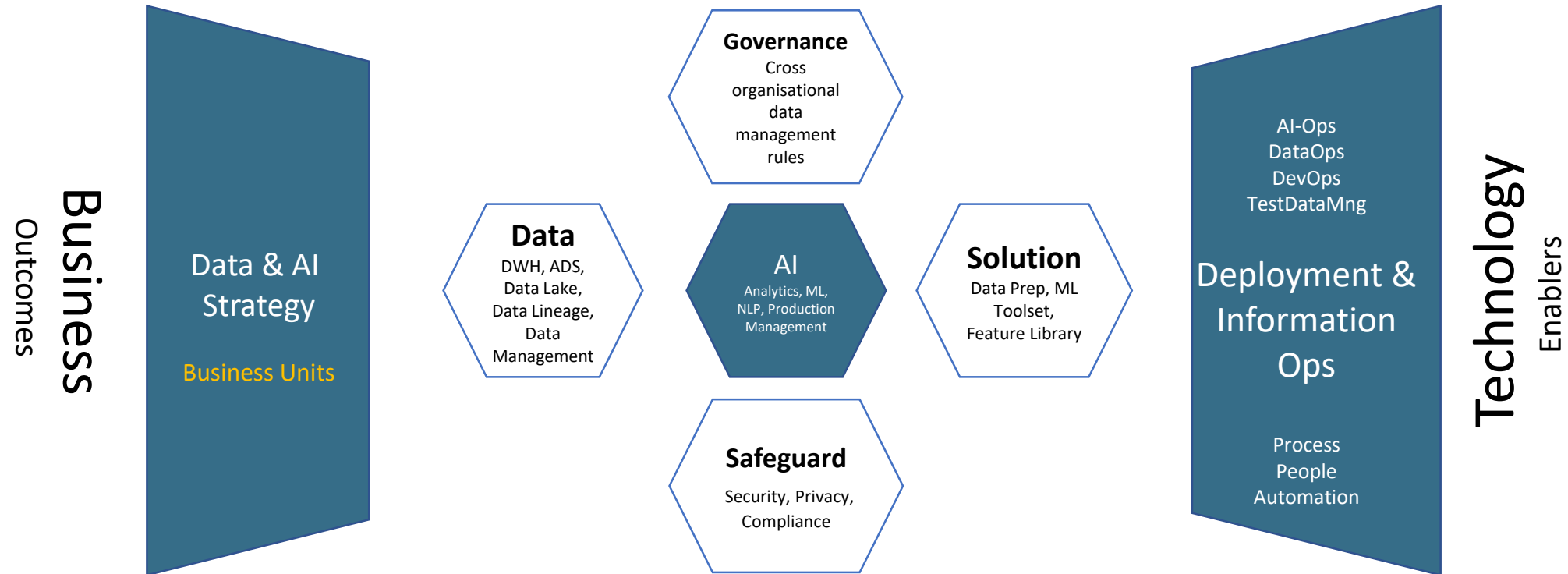
Anti-fraud effort must necessarily target the following activities:

- Underwriting and claims
- The forms for risk declaration and claim notification
- The sale of insurance products
- Digital transformation
- Consumer services
- Marketing
- Corporate risks
- Pricing

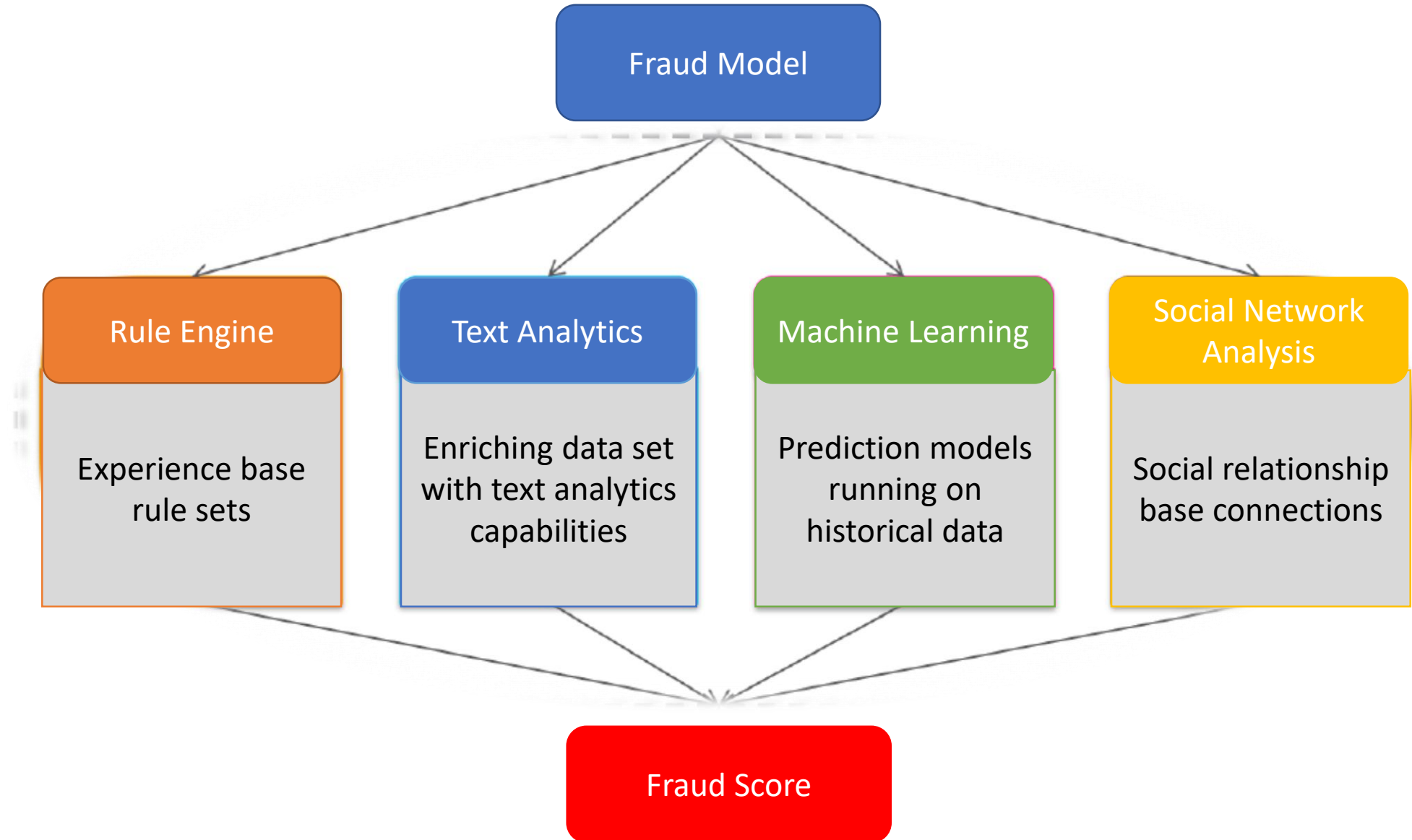
Fraud Prevention Dynamics



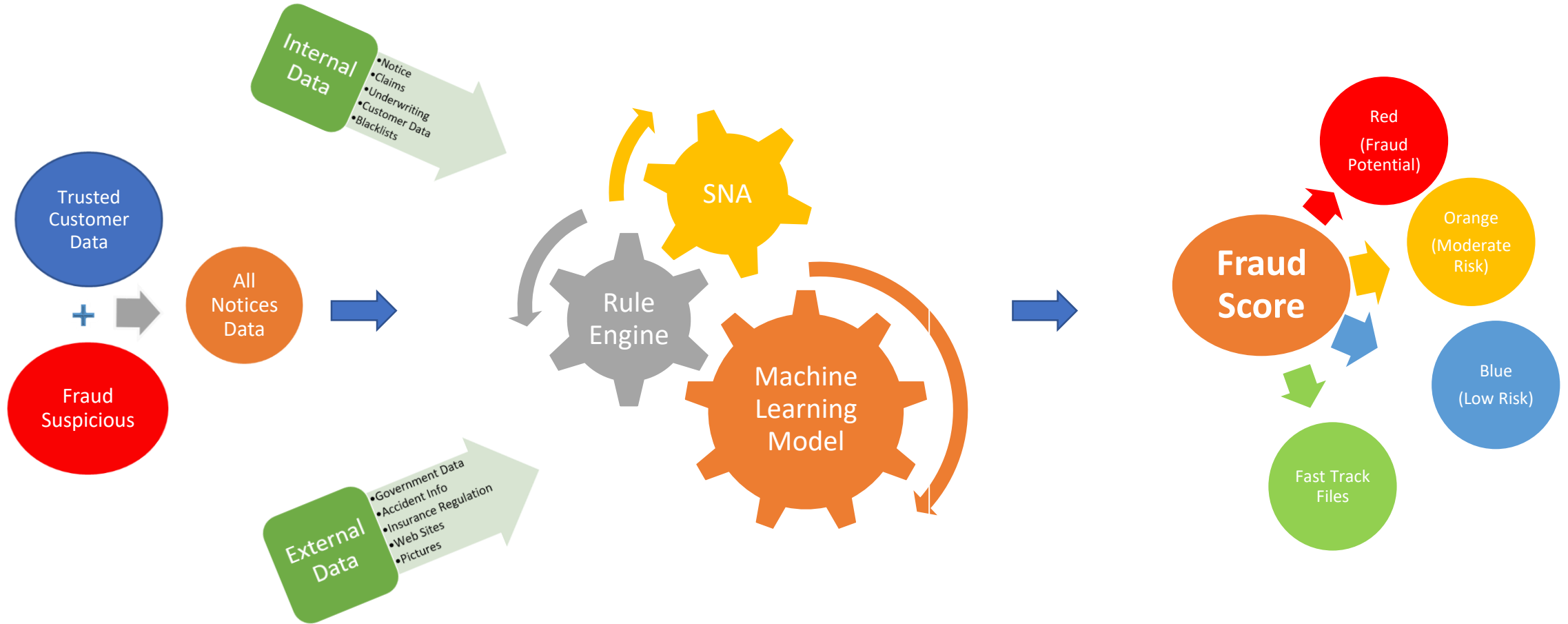
Anadolu Sigorta AI Strategy



Fraud Platform Components

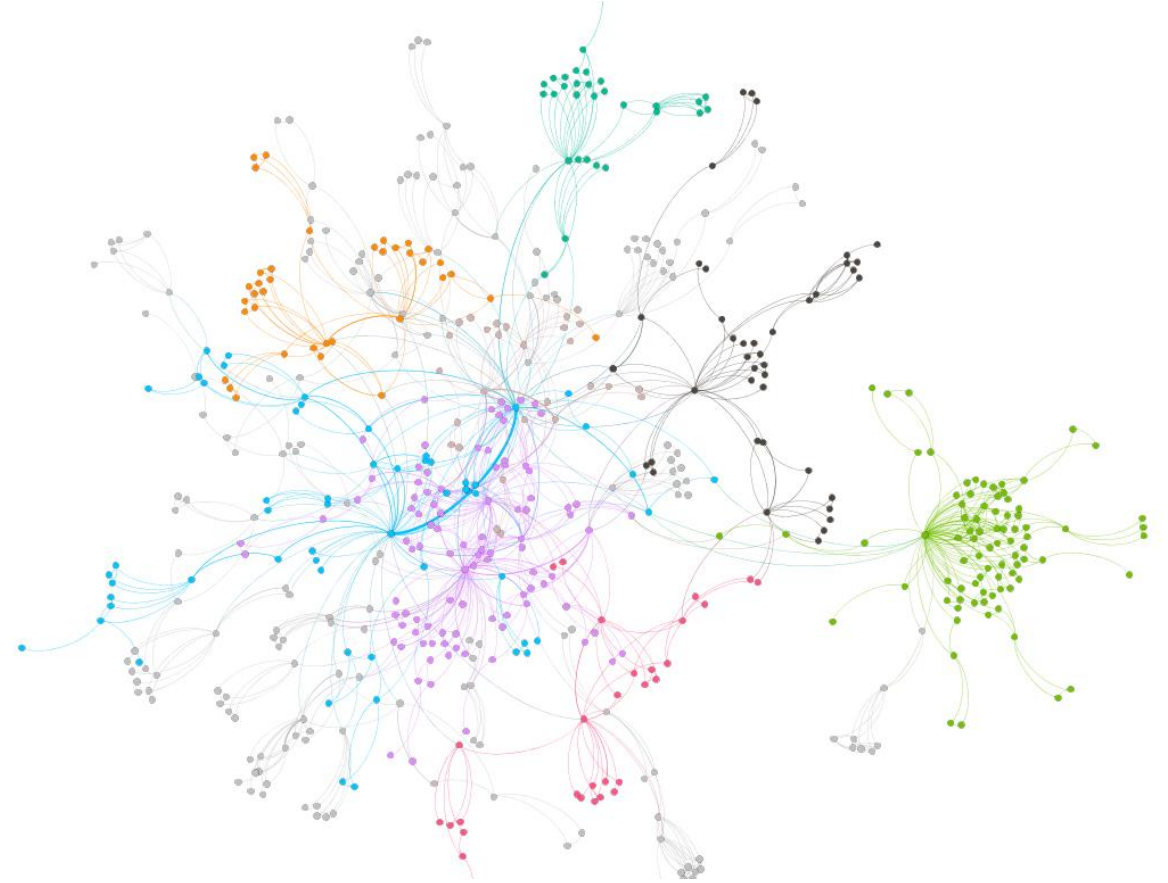


Fraud Detection Process

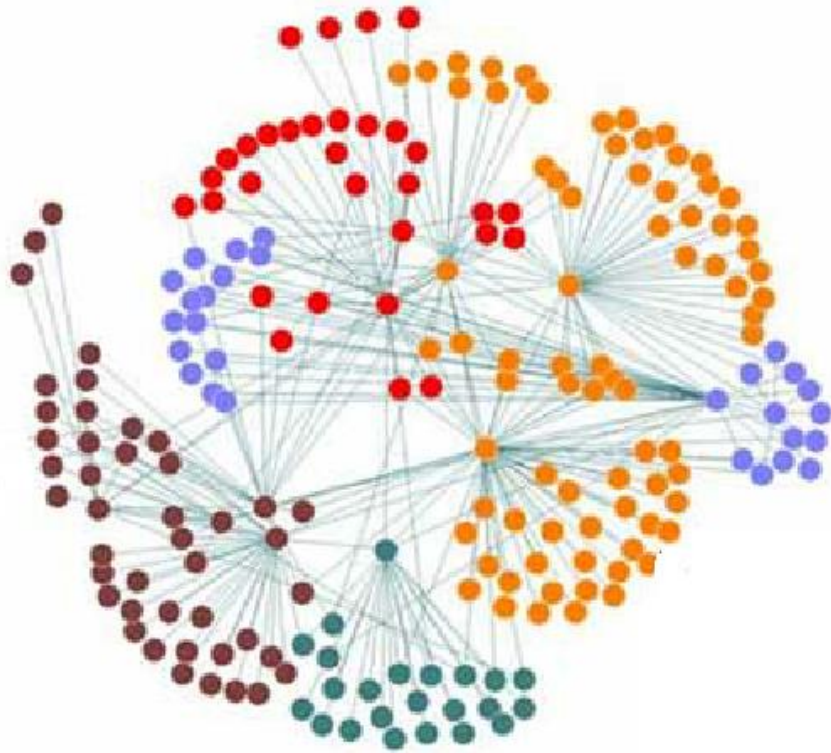


The Detection of Organized Fraud via SNA

- ✓ Social Network Analysis(SNA) is the study of patterns of relationships , network structures and interactions between entities by means of graph theory
- ✓ It characterizes networked structures in terms of *nodes* (individual actors, people, or things within the network) and the *ties, edges, or links* (relationships or interactions) that connect them



Data Integration & Technology



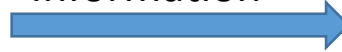
IIC Integration



Insurance Information Center → Querying Insurance Information based on Chassis No

- Historical Claim Information
- Vehicle Shopping Information

Claim System
Accident
Information



Claim Platform – Querying Accident Stakeholder based on Chassis No

- Different Stakeholder Roles
- Jockey Driver Detection

Technology
Used



KNIME Analytical Platform is the main component for the platform

- Graph DB to Create Relations
- KNIME Visual Nodes & Gephi to Visualize Relations

Effects of Organized Fraud

Effects of Organized Insurance Fraud

1. Decrease in company profit.
2. Financial loss for insurance companies, due to increase in number and amount of claims
3. Increase in premiums and decay in financial balance, based on increase in costs of claim
4. Narrowing in liquidity.
5. Decline in credit scores of companies.

Effects of Insurance Fraud on Insured People

1. Being exposed to higher premium prices.
2. Distrust towards insurance companies.

Results of Organized Claim Detections

1. Rejection of payments.
2. Cancellation of policies.
3. Reporting of detected organized cases to The Insurance Fraud Bureau (SİSEB).
4. Uploading information of people, who took place in proven fraud cases, to data base of The Insurance Fraud Information Sharing System (SİSBİS).
5. Formation of our internal black list.

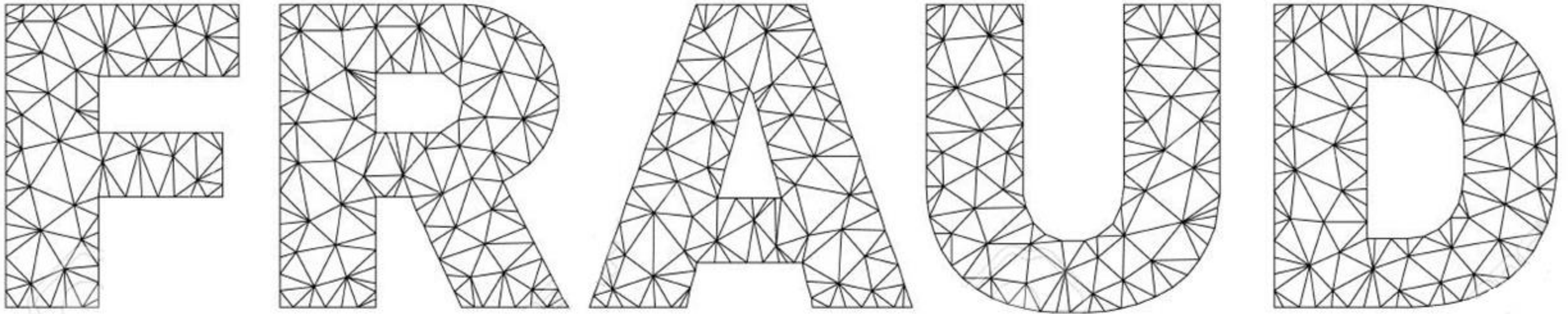


Savings & Results

- 32 million TL of financial advantage per year from fraud prevention activities.
 - This amount corresponds to almost 2 % of all motor insurance payments
- SNA Platform identified 3 gangs within 6 months. These cases saved 1.7 M TL of additional saving and increasing!
- Shorten 3 months process to 4 hours
- Created new integrations;
 - Underwriting integration
 - Gray/Black list enrichment
 - Shortest path scoring



Thank You!!



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