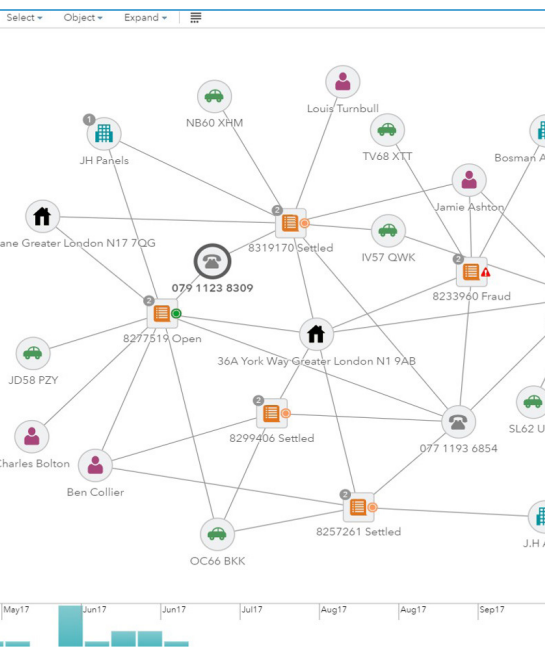# SAS® Detection and Investigation for Insurance

Fraud is a growing problem for the insurance industry, contributing to 10 to 15 percent of all claims. The total cost of P&C insurance fraud is more than US$80 billion per year in the US alone, according to the Coalition Against Insurance Fraud. That means insurance fraud costs the average US family between $400 and $700 per year in the form of increased premiums.

Today's fraudsters use highly sophisticated criminal tactics and masterful exploitation of organizational vulnerabilities. To detect fraudulent activity, many insurers use simple transactional monitoring systems, which can work very well for individual claims fraud. However, with the increasing sophistication of insurance fraud, it's important for insurers to go further in their strategy and apply advanced analytics. Looking for the potential of fraud in key entities (not just individuals) and examining social networks for unique and unexplained relationships between entities can help address the growing issue of organized fraud.

And now much claims processing happens digitally, without the checks and balances that come with human interaction. Here, fraud analytics can act as a solid wall of defense to keep organized gangs from targeting this service of convenience.

SAS® Detection and Investigation for Insurance provides an end-to-end solution for detecting, preventing and managing both opportunistic and organized fraud across multiple lines of business. The solution includes components for fraud detection using advanced analytics and machine learning, advanced searching, alert management and case handling, along with the unique ability to uncover hidden relationships among fraudsters, enabling you to focus on stopping the highest-value fraud networks. It's designed specifically for special investigation units, fraud analysts and claims managers in insurance companies.

The Solution

SAS Detection and Investigation for Insurance uses advanced analytics to identify the likelihood for fraud at each stage of the claims process. An insurance fraud analytical engine applies multiple techniques (automated business rules, machine learning, artificial intelligence, text mining, database searches, anomaly detection and network link analysis) to automatically score claims, associated entities and any corresponding social networks.

The solution then helps your SIU triage the analytical alerts (and alerts that come from other parts of the business) to make a swift decision whether to investigate further. Basically, it consolidates all the evidence an investigator needs to make fast decisions.

For alerts that warrant investigation, cases can be generated through a flexible workflow that ensures correct procedures are followed across the investigative life cycle.

The solution supports targeted searches across the underlying data for quick identification of entities that already exist (such as individuals, addresses, telephone numbers and IP addresses). This produces a full description of the entity and critically shows which other entities it is linked to. Then, from this same page, you can open and view the linked entities and repeat the process, allowing rapid evaluation of the likelihood of fraud.

At the end of an investigation, your SIU team can output a full report and set up watchlists against found fraud entities. All of this is performed on an open platform that includes an insurance-specific fraud data model, data management capabilities and reporting.

Benefits

Detect more fraudulent activity

- Insert analytical models into the process, in addition to rules engines.
- Leverage advanced data mining and machine learning algorithms, as well as open source models.
- Analyze millions of claims records and scale both in real time and in batch to gain scores where you need them in the claims process.
- Use customized anomaly detection methods to detect previously unknown schemes.
- Automatically spot linked entities and crime rings, which can help stem larger losses.
- Overcome poor data quality issues associated with imperfect matching and highly linked entities.

Lower loss adjustment expenses

- Greatly reduce false positives.
- Improve investigator efficiency with advanced case handling tools.
- Increase ROI per investigator by prioritizing higher-value claims, entities and networks and conducting more efficient and accurate investigations.
- Capture all claim settlement amounts within the system for reuse with similar claims in the future.

Gain a greater competitive advantage

- By quickly deciding which claims require further scrutiny and allowing the rest to pass, receive fewer false positives to reach greater customer satisfaction for legitimate customers.
- Satisfy regulatory compliance mandates through enhanced fraud management.

Prevent fraud losses before settlement

- Prevent payment on fraudulent claims using online, real-time scoring or daily or intraday batch scoring.
- Detect loss padding in similar insurance claims with anomaly and loss comparisons.
- Detect repeat offenders and more accurately score incoming claims by searching databases and watchlists of known fraudsters and other key entities (physical addresses, phone number, IP address, etc.) and capturing all fraud outcomes, referrals and suspects within the system for reuse.
- Apply risk- and value-based scoring models to output before presenting to investigators.
- Detect insider or collusive fraud by integrating staff data and audit records that show who handled which claims.

Gain a consolidated view of fraud risk

- Identify cross-product fraud by seeing customer claims for all lines of business.
- Move analytics into new business processes to prevent and detect fraud.

- Continually improve models and adapt the system to address changes in insurance fraud trends.
- Better understand new claim threats and prevent big losses early using social networks and sophisticated data mining capabilities.
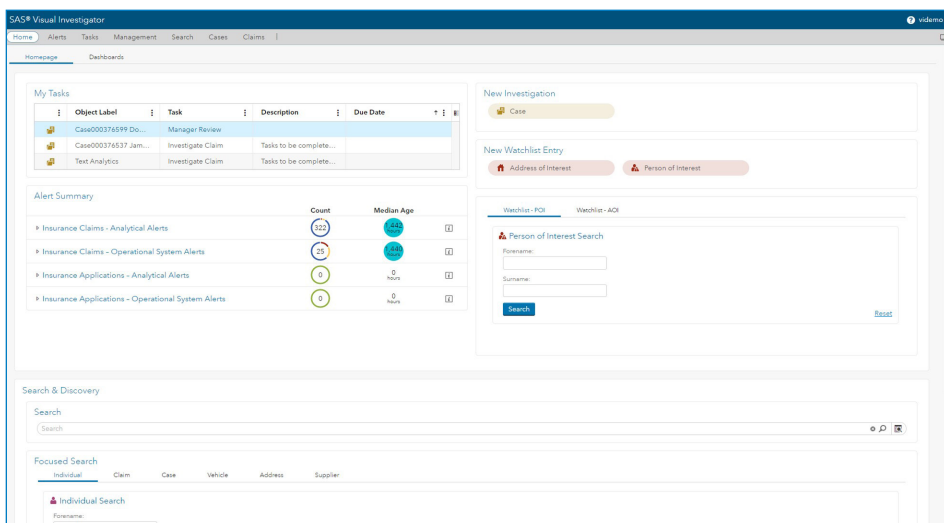
Apply machine learning and artificial intelligence

- As a SAS Viya product, gain enhanced AI capabilities like automation for built-in intelligence, simplicity, collaboration and transparency.
- Embedded machine learning attributes make predictions more explainable, transparent and accountable.
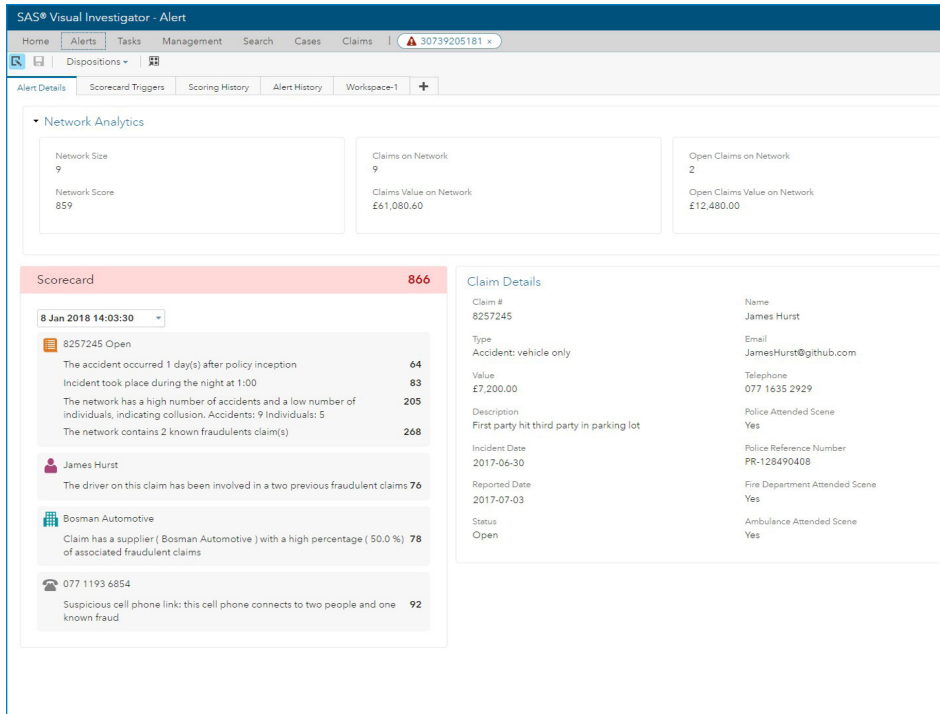
Capabilities

Data management

Enables insurers to consolidate historical data from internal and external sources for fraud analysis and investigation.

- Data quality tools help eliminate or reduce data inconsistencies.
- Supports integration with third-party fraud applications and data.
- Create entities and networks using hard and soft matches.

Insurance claims fraud home screen.

Summary of alerts through automated analytic scoring.

- Provides an interactive, self-service environment for users who need to access, blend, shape and cleanse data to prepare it for reporting or analytics.
- Designed for business analysts, citizen data scientists and other nontechnical users.

Rule and model management

Enables business users to logically manage rules, models and alerts for investigators.

- Creates and manages business rules, analytical models and known fraudster lists.
- Maintains simple or complex routing and suppression rules.

Machine learning and artificial intelligence

- A broad set of modern statistical, machine learning, artificial intelligence, deep learning and text analytics algorithms are all accessible within a single environment.
- To reduce false positives, improve fraud models by testing different approaches in a single run and compare results of multiple supervised learning algorithms with standardized tests.
- Analytical capabilities include clustering, several types of regression, random forests, gradient boosting models, support vector machines, natural language processing, topic detection and more.
- Using contextual analysis, define text models to categorize documents, structure previously unusable information and speed the time to greater insights, prescribed actions and better results.

Detection and alert generation

Enables the systematic detection of suspicious activity using a combination of analytical techniques to determine the likelihood of claims fraud.

- Score claims with an online scoring engine that uses a combination of business rules, anomaly detection and advanced analytic techniques.
- Calculate the propensity for fraud at first notice of loss, then rescore claims at each stage as new claims data is captured.

The SAS® Difference

- **A hybrid approach to fraud detection.** SAS offers a combination of several approaches to fraud analytics: rules, anomaly detection, predictive models and machine learning/artificial intelligence/network analytics. Up to 75 percent of claims data is unstructured, including adjuster notes, customer service logs, police reports and medical records. SAS Text Analytics helps insurers analyze this data to increase fraud detection rates. Social network analysis lets you automatically discover organized fraud rings that might otherwise take months to identify.

- **Domain expertise.** SAS has more than 40 years of experience delivering solutions based on the knowledge of industry professionals from across our global customer base. We employ subject-matter experts experienced with SIUs, and they work closely with SAS R&D so our software is current, intuitive and relevant for the insurance industry's real-life challenges in fighting fraud.

- **Intelligent case handling.** Accelerate your fraud prevention capabilities with workflow that helps triage alerts and makes the investigation process much more efficient. Continuous feedback of outcomes also helps with the reduction of false positives.

- **Flexible and configurable.** The SAS solution is not a black box. Instead, it gives you the flexibility to configure the system based on your organizational or geographical needs, as well as to continually improve models and adapt the system to address changes in insurance fraud trends.

- Go beyond claims fraud detection by deploying at policy inception to prevent fraudsters from taking out policies in the first place.

Search and discovery

Perform free-text, field-based or geospatial searches across all data, internal and external.

- Refine searches using interactive filters and facets that are customized for the claims and SIU teams.
- Receive a full entity description and what other entities it's linked to. Then, from the same page, open and view the entities and explore to rapidly evaluate the likelihood of fraud.
- Build complex queries using an intuitive interface, without needing to understand specific syntax. For example, use fuzzy searching, proximity searching and field boosting while restricting searches to specific entity types, fields, comments or insights.

Access on the go

SAS® Mobile Investigator is an app to access SAS® Visual Investigator on the go. Users can search data, receive and process tasks, create new content and manage investigations from mobile devices with the added capability of GPS location services. The app is available at an additional cost.

Alert management

Assembles alerts from multiple monitoring systems, associates them with similar claimants, and provides investigators with a more complete perspective on the risk of a particular claimant or other entity.

- Calculates risk scores based on specific characteristics of the activity, with transparent reason codes.
- Prioritizes alerts and routes potentially fraudulent claims to appropriate team members.
- Work assignment is automated and can be appointed to various investigators or analysts based on user-set rules and requirements.

Social network analysis

A unique network visualization interface helps insurers detect and prevent organized claims fraud by going beyond transaction and detail claim views to analyze all related activities and relationships at a network dimension.

- Automatically identifies suspicious networked behavior in the data and provides investigators with an easy-to-understand visualization interface.
- Uncovers previously unknown relations, giving investigators the ability to identify linkages among seemingly unrelated claims.

- Improves investigator efficiency by providing investigators with fast access to full claims details and all related entities and networks.
- Increases effectiveness by enabling investigators to merge and delete network entities and add annotations (text and images) to specific entities in a network.

Case handling

Provides a systematic means for facilitating the investigation and capturing and displaying all information pertinent to the case.

- Stores detailed investigation activity information (e.g., interview notes and evidence for criminal or civil prosecution; medical, police or loss adjuster reports; restitution and collections).
- Assesses overall fraud exposure, including losses due to fraud, as well as fraud detected or prevented, providing reports to document.
- Uses a configurable workflow for the handling and resolution of cases.

To learn more about SAS Detection and Investigation for Insurance, download white papers, view screenshots and see other related material, please visit sas.com/detect-investigate-insurance.