



## SAS® Social Network Analysis

An integral component of the SAS® Fraud Framework for Banking

### Overview

First-party fraud is a growing problem for banks, in large part because it is so hard to detect. Part of the reason for this is that such fraudsters act much like legitimate customers. Alternative banking channels and increasingly sophisticated fraud techniques have also contributed to the problem.

To detect fraudulent activity, many banks use transaction monitoring systems, which work very well for individual real-time, point-of-sale fraud. However, a different approach is needed for monitoring customer behavior across multiple accounts and systems in order to identify those that may appear normal, yet operate “below the radar” – such as sleeper accounts that suddenly bust out, leaving large losses in their wake.

Unfortunately, few banks have a good understanding of customer behavior across multiple accounts and channels. Often this is due to the lack of analytical tools that could be used to analyze customer data to spot trends and suspicious behavior.

The current economic climate has also forced most banks to reduce spending and get by on fewer resources. And the manual processes currently used to look for fraudulent activity are inefficient and waste valuable time and resources – something banks today simply can’t afford. But that can change with SAS® Social Network Analysis.



### Challenges

- **Evolving fraud trends.** Increasingly sophisticated criminal tactics and the proliferation of alternative banking channels make detecting fraud difficult and preventing it even more challenging.
- **Growing complexity.** Increased globalization and growth through mergers and acquisitions make it harder to monitor multiple portfolios and business lines effectively.
- **System limitations.** Current systems don’t support robust analytical modeling, and there’s no intuitive interface to navigate customer relationships.
- **Data management issues.** Siloed business units and geographically dispersed customers make it hard to access the right information in the right format and cleanse it without jeopardizing the important anomalies that can prove to be “golden nuggets.”
- **Impact on risk profile.** First-party fraud is often confused with credit loss, which often leads to inaccurate credit-loss reporting and misrepresentation of actual fraud losses.



# Unrivaled detection rates. Fewer false positives. Reduced fraud losses.

## The solution

SAS Social Network Analysis helps banks and other financial institutions detect and prevent first-party fraud by going beyond transaction and account views to analyze all related activities and relationships at a network dimension. The solution:

- **Gives investigators the ability to uncover previously unknown relationships** and conduct more efficient investigations using a unique network visualization interface that lets them actually see network connections.
- **Can ingest existing risk scores or red flags** and provide an aggregated score at the network level to identify subtle or hidden relationships that may indicate account bust-out or associate collusion.
- **Produce independent and combined scores to assess overall risk** on a customer, product and network basis, then generate alerts that are automatically routed to the appropriate resources.
- **Lets investigators produce complete dossiers of networks surrounding a case** using an intuitive interface that provides fast access to full customer details and all related parties and networks.

## Why SAS®?

SAS offers a complete enterprise fraud framework for banking that helps you prevent, detect and manage financial crimes across all lines of business. This framework merges capabilities for detection, alert management and case management with a category-specific workflow, content management and advanced analytics.

The solution's fully integrated components offer both top-down and bottom-up functionality for making hidden and risky networks visible.

This approach gives you enhanced fraud detection, greater insight into case management and improved operational efficiency while decreasing your overall cost of ownership.

- **Advanced, large-scale network analytics** work across internal and external data sources to link customers and accounts based on common attributes or more subtle patterns of behavior.
- **A unique network visualization interface** lets investigators actually see network connections so they can uncover previously unknown relationships and conduct more effective and efficient investigations.
- **An advanced profiling engine** scores individuals, accounts, products and networks based on rules, fraud scores and links to known fraudulent individuals or networks.

- Alerts from multiple systems are consolidated into **a true enterprisewide view of fraud**.
- **The solution can be customized as needed** (e.g., you can develop fraud models unique to your institution).

## Benefits

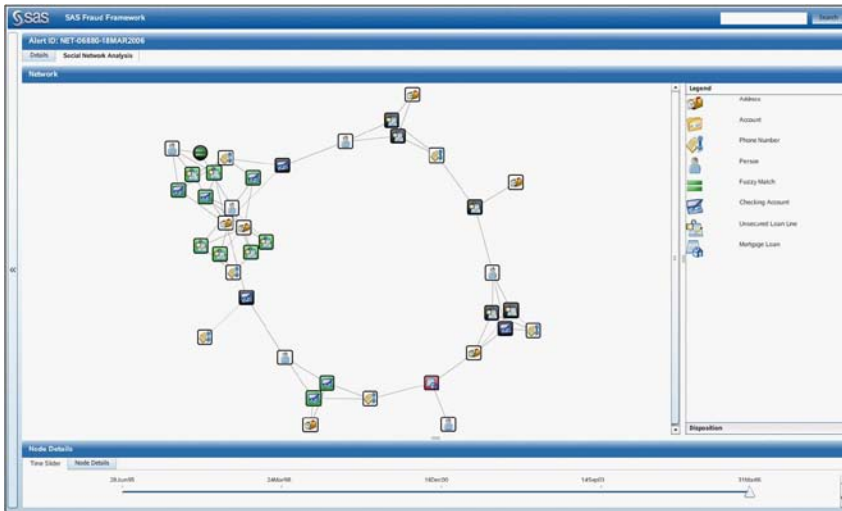
SAS Social Network Analysis enables institutions to achieve unrivaled detection rates, more accurately identify compliance risks and reduce fraud losses.

### Gain a holistic view of fraud

The SAS solution goes beyond the typical customer view to provide a holistic view of fraudulent activity – including related perpetrators – and a much clearer understanding of customer behavior. This flexible solution:

- Draws in data from all relevant sources – including third-party – from multiple product lines.
- Parses the data and creates a complete data model of all entities and their key linking attributes.
- Can ingest existing risk scores or red flags and provide an aggregated score at network levels.

Driven by a metadata configuration, all records are linked exhaustively based on combinations of attributes within the data. Then, using statistical techniques, common entities are identified and collapsed to produce single views of entities within networks.



*The diagram shows the drill-down capabilities of the SAS Social Network Analysis solution's visualization interface in a suspicious network.*

Discrete bounded networks within the data are also generated, representing statistically relevant groups of activities and relationships. The solution also:

- Overcomes poor data quality issues associated with imperfect matching and highly linked entities.
- Can operate on billions of records and is fully scalable in real time or in batch.
- Supports incremental updating of networks as new data is added.
- Accepts staff data and audit records for easier detection of insider or collusive fraud.

### Identify more fraud while reducing false positives

False positive rates for banks are often as high as one in 100. SAS, however, greatly reduces false positives, which increases your overall capture rate and decreases the solution's total cost.

To accomplish this, an advanced scoring engine uses independent and combined scores based on three core paradigms:

- Application scoring based on score-card-driven models and text analysis.
- Scoring of individual customers and their full histories.
- Scoring of associated networks, including behavioral data (transaction patterns, network growth rates, activity levels) and other data provided (current/previous addresses, contact numbers, employers).

Batch processing of existing customer accounts and real-time application scoring lets you detect and investigate existing fraud as well as prevent new fraud. Once networks have been scored and ranked according to severity, investigators can perform more in-depth reviews and close down existing credit lines, accounts or contracts as needed.

## The SAS® difference

No other fraud solution provides the same level of detection, automation, ease of use and ROI for first-party fraud, including the ability to:

- **Visualize social networks** and see previously hidden connections and relationships in a highly intuitive manner.
- **Achieve unrivaled detection rates** using advanced data network building and analytic techniques.
- **Maintain extremely low false positive rates** with true, large-scale network analytics that deliver more actionable alerts.
- **Evolve from parameter-driven, rules-based systems** to dollar-amount-agnostic neural network and modeling approaches.
- **Perform supervised and unsupervised scoring**, using predictive analytics to spot anomalies in the data.
- **Gain a true enterprise view of fraud** by aggregating alerts from multiple systems into a single environment.
- **Take full advantage of external data sources** (e.g., fraud consortium databases).
- **Customize the solution as needed** (e.g., develop fraud models unique to your institution).
- **Increase ROI per investigator tenfold** with fewer false positives, prioritization of higher-value networks and more accurate, efficient investigations.

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## Double or triple investigator efficiency

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The SAS solution significantly reduces the effort normally associated with investigating first-party fraud, with each referred case taking only one-half to one-third of the time usually required for investigation.

Once a network is scored and prioritized, it is flagged automatically and routed to a special investigation unit. There, investigators can quickly and efficiently review automatically generated network diagrams in depth to determine if any account or transaction is fraudulent.

Unique network visualization, data drill-down capabilities and other tools let investigators:

- See a complete picture of individual customers, their products, transactions and networks at the click of a button.
- Explore entire networks of identities, accounts and applications in minutes rather than hours.
- Drill down further into underlying data for full customer details, including other linked customers and networks.

A full Web-based environment lets you:

- Manage the routing and processing of potentially fraudulent applications and proactive investigations within special investigation units.
- Measure productivity and obtain other information to help manage the unit efficiently and effectively.

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## Prevent future fraud

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SAS helps you better understand emerging threats so you can take action to prevent substantial losses before they happen. For example, the solution:

- Captures investigation outcomes automatically and reuses those outcomes in future scoring.
- Applies automated risk scoring against known fraudulent networks to prevent criminals from masking their previous identities and repeatedly opening accounts.
- Generates network diagrams automatically, enabling strategists to see patterns and symptoms that can lead to the implementation of improved controls and new monitoring techniques.

## About SAS

SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions delivered within an integrated framework, SAS helps customers at more than 45,000 sites improve performance and deliver value by making better decisions faster. Since 1976, SAS has been giving customers around the world THE POWER TO KNOW®.

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