Leverage big data to fight claims fraud

How big data supports smarter approaches to addressing claims fraud

In today’s highly competitive marketplace, most insurance companies have already streamlined their operations to optimize cost structures. Commoditization of markets and lower investment returns are keeping pressure on insurers to tightly manage expense ratios.

Historically, the insurance industry has accepted some level of incurred losses as a cost of doing business—10 percent is the industry average. As reported in recent headlines, fraud is on the rise as organized crime rings take advantage of regulation loopholes, overworked adjusters and investigators, easier access to information and a clogged court system. In addition to suffering losses due to fraudulent claims, insurance companies have to divert precious resources to identify, investigate and prosecute fraud at a time when they have little to spare.

With a turbulent economy, increasing financial pressures and rising fraud threat levels from ever-more sophisticated criminals, insurance fraud costs are on the rise. What if your company could take a smarter approach to fraud, one that helps prevent dishonest policies from being issued and fraudulent claims from being paid? What if new technologies could help your organization better identify questionable parties and anomalous behavior? What if you could harness information sources that currently remain untapped? What if you could leverage a broad range of information sources to discover emerging trends in fraud? What if you could adopt a single, comprehensive solution with capabilities for preventing, detecting and investigating fraud at each step in the claim lifecycle? What if you had the choice to implement those capabilities as a holistic solution, or as your organizational capacity allowed over time?
The IBM claims fraud solution draws on a proven portfolio of IBM software that has been helping companies catch fraudsters, reduce overpayments and investigate crimes around the world for years. Unlike point solutions that address only a single step in the process or provide a simple score, the IBM solution integrates multiple capabilities to help take on fraud across the entire claim lifecycle (see Figure 1).

The IBM claims fraud solution combines a range of world-class analytical technologies and tools that enable organizations to:

- **Anticipate** emerging trends and hotspots to both jump-start antifraud efforts and to support continuous improvement
- **Prevent** fraud at the time of policy submission
- **Predict** fraud at the intake of claims
- **Identify** fraud during adjudication
- **Discover** fraud by quickly examining patterns in all types of information
- **Investigate** fraud more efficiently by reducing false positives and accelerating the investigation process

The IBM solution provides a flexible approach that:

- Analyzes both trusted and suspect information across structured and unstructured data to spot trends and patterns as fraudsters adapt their approaches
- Enables insurers to predict when a claim or policy is likely to be fraudulent by examining behaviors and comparing normal actions to abnormal ones
- Incorporates smart capabilities that discover, learn and predict fraud indicators
- Enables companies to determine who is who, who is related to whom, and who is doing what across the entire portfolio of claims and policies
- Enables agents and investigators to visualize relationships between people, policies, claims, vehicles and any other entities in order to trace relationships and build a case for fraud
- Works transparently for users receiving alerts
- Drives the investigative process, enabling investigators to effectively collaborate with other members of the team and take the actions necessary to efficiently process the investigation
- Can be implemented in its entirety, incrementally or used to enhance a current claims fraud solution
- Can provide an end-to-end solution or can easily supplement or fill gaps in an existing solution

**Analyzing emerging trends by leveraging big data**

Many insurers have recently implemented or are implementing advanced claims processing solutions to support interaction with policyholders, producers, adjusters and others in the claims process. Some are wondering if incremental fraud detection capabilities are needed. Others have implemented claims fraud solutions and have achieved a level of maturity in minimizing fraud exposure. In both cases, insurers are wondering if they have fully explored the range of potential fraud.

As insurers increasingly digitize their interaction processes with policyholders and agents, they are supporting emerging

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**Figure 1.** The IBM claims fraud solution takes a comprehensive approach that addresses fraud at every stage of the claim lifecycle both on a right-time and inline basis.
capabilities, including the ability to submit and update claims information through smart devices, GPS or telematic devices, laptops, voice and publicly sourced information. To fully benefit from the wealth of information contained in this structured and unstructured information—including free and for-purchase public information sources—insurers are developing big data capabilities to support deeper analysis of emerging fraud or claims overpayment patterns. These capabilities also address the growing demand for increased interactions with producers to support their book of business, including the claims process.

To optimize claims processing in this environment, insurers need to consider the four Vs of big data:

1. **Volume** of available information about all parties related to a claim and an insured. This includes information available within an insurance company and from external sources.

2. **Variety** of available information, including GPS and geospatial information, photographs and videos, social media and sentiment about an event (for example, CAT), as well as structured and unstructured information readily accessible online or submitted by the parties to the claim.

3. **Velocity** to absorb both data in motion as well as changing data inputs from a range of digital, external and internal sources.

4. **Veracity** of information; understanding when information is good enough and when it needs to be further governed and analyzed.

IBM big data capabilities—including IBM® InfoSphere® BigInsights™, IBM InfoSphere Streams and IBM PureData™ System for Analytics—can deliver analyses that are completed on an ad hoc basis to spot emerging patterns or on a regular basis to monitor changes throughout the

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**Figure 2.** The IBM big data platform helps insurance companies address a variety of data-driven processes, improve efficiency and deliver deep, timely insights.
claims lifecycle. The findings can then be used to support a closed-loop process whereby findings are incorporated into predictive models for automated ongoing and right-time analysis. Figure 2 shows examples of how big data capabilities support the claims process.

**Preventing fraud at the underwriting stage**

Fraud prevention should start during underwriting. By analyzing the names, roles and relationships on the application, as well as considering the behavior of the applicant and known history, the IBM solution can evaluate the likelihood that the policy is being purchased for fraudulent purposes in right time. Also, it can generate warnings to agents, underwriters or automated processes.

Underwriters need ways to determine whether policy applicants, as well as people associated with those applicants, are linked to fraudulent activity. They also need to scrutinize the circumstances of the policy purchase since fraudsters might select agents who are least likely to identify them as suspicious.

The IBM claims fraud solution draws on capabilities from IBM InfoSphere Identity Insight, IBM SPSS® and IBM big data capabilities to help insurers:

- Accurately identify individuals, even when they are attempting to obfuscate their true identity, and discover complex relationships—including historical involvement in claims
- Determine whether any associated individuals or entities are linked to fraudulent or criminal activities
- Identify behavior patterns and combinations that are anomalous when compared with normal claims
- Search across multiple sources of information to identify patterns or risks to supplement existing underwriting models

**Predicting fraud at the claims intake stage**

Intake specialists need tools that help them detect and predict fraud from the moment losses are first identified. The ability to examine potential relationships and interaction/transaction history among claimants, healthcare providers, repair shops, witnesses and other participants in right time is essential for helping specialists identify potentially fraudulent claims.

Insurers need to execute analyses that incorporate all available information sources, including video, voice and social media, along with more traditional First Notice of Loss (FNOL) intake processes.

The same technology used at the underwriting stage can be applied at the claim intake stage to identify who is who in the claim report, as well as predict fraud based on analytic models working across a broad range of data sources.

Automated alerts to intake specialists and automated processes facilitate the ability to pose additional, targeted questions to suspicious claimants, which could dissuade them from filing their claim. With insights into fraud risk, specialists (or digitally based processes) can quickly implement the next-best action, including the ability to route suspicious claims to investigators. These alerts and rules can be part of the claims intake process at one or multiple points, supporting responses as new information is gathered and enters the system.

**Identifying fraud during adjudication**

Many adjusters are able to spot fraud based on known practices or previous experience. However, heavy caseloads and expectations for fast claim processing often reduce the time adjusters can spend with each claim. By examining all emerging and traditional information sources, including digital information, public and internal data, the IBM solution can provide real-time alerts across the intake and claims processes when it detects questionable behavior, communications or relationships. The IBM solution uses a wide array of analytical tools to:

- Validate the identities of all parties involved
- Analyze relationships among parties, including parties involved in other claims
- Scrutinize structured and unstructured data associated with the event or participants in the event
- Monitor social media to identify inconsistencies compared with claim details reported to the carrier
- Combine traditional and nontraditional sources of information to identify new and emerging patterns relevant to a specific claim, or a cluster of claims
Discovering fraud within current claims

Once claims are confirmed as fraudulent, it is possible to examine all data associated with these claims to discover common patterns in content and relationships. By leveraging the IBM Loss Analysis and Warning System (LAWS), SPSS predictive analytics software and big data analytics solutions, insurance companies can discover these patterns, apply them to the entire population of claims, and identify emerging trends and patterns. The claims can then be scored on the likelihood of being fraudulent on a scale from 1 to 100. This early identification supports a better customer experience by reducing false positives and enabling straight-through processing of low-risk claims.

New fraudulent claims are discovered each day, so the process can be repeated as often as needed (for example, in a nightly batch) to update predictive models. Based on the scoring, companies can decide to ignore the alerts, notify the adjuster, make adjustments to the claims review process or route the claim directly to investigation. Each time a new business rule is created, it can be applied to the underwriting, intake and claims review processes.

Investigating, validating and prosecuting fraud

Today’s special investigation units (SIUs) are overwhelmed with new cases—and they are finding only 1 to 3 percent of the 10 percent of claims that are likely to be fraudulent. The IBM solution brings together IBM Case Manager and IBM i2® Fraud Intelligence Analysis to optimize an environment for efficient investigative case processing.

Fraud investigations are typically long-running, content-centric cases where the processing and outcomes are driven by the activities of the investigative team. The investigative team’s ability to collaborate around a complete, consistent view of a case is critical to effective, streamlined decision making. IBM Case Manager persists all of the relevant details of the case and presents them to each member of the investigative team in a view that is tailored to their specific role. It also supports collaboration and communication between team members directly in the context of the case. A flexible task model combines rules-driven orchestration with support for dynamic, ad hoc tasks that can be launched by an investigator as required.

Case study: Improving the efficiency of fraud investigations with IBM

At the Insurance Bureau of Canada (IBC), a national industry association representing Canada’s private insurers, investigators can spend several years evaluating each suspected case of auto insurance fraud. The organization asked IBM to work on a proof of concept to identify and size potential insurance fraud using historical industry claims data.

The IBM team used advanced analytics software and capabilities from the IBM claims fraud solution to identify known fraud and demonstrate how the IBM solution can quickly detect potential fraud. The IBM analysis determined possible associations between claimants who had similar aberrant behavior. By applying predictive analytics and visualization capabilities, the IBM team found linkages with known fraud rings. The proof of concept highlighted the ability of IBM fraud-detection capabilities to provide unique lift by finding both criminals and suspect claims. The IBM claims fraud solution made detection efforts smarter and accurately estimated the financial impact of fraud in the industry.

All activity is tracked with the case, which enables auditing of case activity and reporting and analytics on the effectiveness of case processing. Through integration with IBM Cognos®, supervisors can view dashboards showing key business metrics around investigative cases and assess operational efficiency.

Processing an investigation requires generating leads and gathering evidence. To assist in these efforts, IBM Case Manager is integrated with i2 Fraud Intelligence Analysis, which enables visualizations that enable investigators to see the scope of the fraud, create leads and prepare evidence. IBM Case Manager is also integrated with IBM Content Analytics so that investigators can quickly incorporate information from unstructured content directly into the investigation. With IBM Case Manager coordinating and driving the investigation, and IBM Fraud Intelligence Analysis and IBM Content Analytics providing analytic insights, investigators can move through an investigation capably and economically.
Reporting and visualizing
To continuously improve fraud prevention and detection, insurers need advanced tools to analyze and report fraud outcomes. The IBM insurance claims fraud solution uses Cognos business intelligence and financial performance management capabilities to facilitate effective analysis, reporting and visualization of outcomes. Scorecard functions allow users to monitor and measure performance against specific goals. Dashboard capabilities provide a deeper understanding of trends in a consolidated view. With these interfaces, managers can quickly see fraud ratios, frequencies and values, and they can drill down into categories for detailed information.

Stopping fraud in its tracks
Stopping insurance fraud requires an aggressive, comprehensive approach that combats fraudsters at each stage of the claim lifecycle. The IBM claims fraud solution allows companies to go on the offensive with a robust set of capabilities drawn from a broad range of industry-leading IBM software. It gives underwriters, adjusters, investigators and managers the tools they need to stay several steps ahead of fraudsters while enabling the company to reduce the tremendous financial impact that fraud can have on business results.

For more information
To learn more about the IBM solutions for fighting insurance claims fraud, please contact your IBM representative or IBM Business Partner, or visit: ibm.com/software/data/industry/insurance.html

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Andrea Eichhorn is an executive consultant for the IBM Insurance Industry Big Data Team.