

Altosoft White Paper

Executive Summary

Business intelligence (BI) is a necessary tool in today's complex business environment. However, conventional business intelligence tools focus on discrete metric reporting, basic data exploration and trend analysis. While these capabilities are essential components of operational management reporting, they are no longer sufficient. With the process-centric nature of all facets of insurance operations, conventional BI provides limited insight into an insurer's critical business processes.

Process intelligence (PI) is the next major evolutionary step for BI that allows you to expose, visualize and quantify the critical operational business processes that drive your organization. This business process context gives you a comprehensive understanding of all your business process steps, from underwriting to claims to finance. And it provides the necessary insight to understand how processes and the operations they represent are working, where bottlenecks may exist and what types of exceptions could adversely impact performance, compliance and risk exposure.

Process Intelligence: Improving Operational Performance in the Insurance Industry

Today's Business Environment Requires New, Optimized Business

Everything executed in a business is a process – from simple activities that can be accomplished in two or three steps to complex processes that may branch conditionally or even loop back on themselves. Achieving operational excellence requires that you define and evolve your processes to maximize efforts on the most lucrative opportunities, manage time and costs and mitigate risk.

Insurance companies are possibly the best example of highly process-intensive and highly regulated environments. It is not unusual for underwriting and claims processes to be based on core processing or high-level workflow systems that have remained largely the same for many years. In an effort to keep systems current, insurance companies often graft on new logic to address business process changes (for example, agent and customer portals, internet lookups, web reports, spreadsheets and external models). This increases the complexity of existing processes. Underwriting and claims teams are often forced to deal with these unwieldy core systems, as well as a variety of satellite systems and processes, in order to handle work that falls outside the policy or claims administration systems (PAS/CAS).

This complexity has resulted in processes that may no longer meet your customers' expectations for timeliness, personalized

attention and service. Overly complex processes have also pushed the limits of conventional business intelligence, business process management (BPM) and workflow systems already in use, because they were not designed to provide actionable insight into how the business processes are being executed at various points in time and under different operating conditions.

This paper introduces you to process intelligence: a new technology approach that provides actionable, advanced business process analytics beyond the capabilities of BI, BPM or process analysis tools.

You will discover why only process intelligence provides a complete picture of your organization's operations and actionable insights to quickly respond to new opportunities before they are lost and to resolve new business issues before they become critical issues.

While process intelligence provides significant competitive advantages for all industries, this paper presents process intelligence business benefits and examples for the insurance industry.

Only Process Intelligence Answers Key C-Level Executive Questions

Process intelligence represents the next evolutionary step forward in business intelligence, infusing the power of self-service BI with a built-in understanding of business logic to provide a rapidly deployed, process-aware BI platform that is capable of providing new analytics of your key business processes—step-by-step, start-to-finish.

Armed with this new level of process intelligence-enabled insight, insurance executives can finally answer critical, transformative business questions, such as:

CEO:

- Our underwriters have so many submissions coming in. How do I know we aren't working on the wrong business and leaving some good business on the table?
- How do I get a real picture of how well we are performing across all the different product line platforms and tools we use?

CUO:

- How long does it take to get a quote out on a "vanilla" piece of business? My current reports put everything into one metric, and I can't separate the easy accounts from the complex ones.
- I want to reorganize and optimize our new business underwriting teams and processes. How can I measure whether our new processes are working and quantify the improvements in throughput and error rates?

COO:

- Our workflow system controls the flow from person-to-person, but I can't see what each person is actually doing, how long it takes them and their error rates. How can I get visibility into their work without having to redo the whole workflow?
- My team tells me they spend too much time on exceptions. How can I identify the exceptions and measure their frequency to determine root cause?

CCO:

- With separation of duties, we have lots of handoffs in our process. How can I verify that the whole process works and is flowing properly? How can I assess that the handoffs work without kicking back and whether or not we have bottlenecks?
- With so many manual steps, how can we really know our error rates and rework time stats?

Answering these questions requires the insight provided by process intelligence. Process intelligence lets you know how key processes and the operations they represent are working, where bottlenecks exist and what types of exceptions adversely impact performance, compliance and risk exposure.

Why BI, BPM and Process Analysis Tools Fall Short

Process intelligence provides a comprehensive understanding in ways BI, BPM and process analysis tools cannot match.

Conventional BI tools provide basic information about business processes. For example, they can answer discrete questions about how many new policies were underwritten last week, by insurance type and by region. While a business can determine the metrics around different tasks performed as part of the process, to intelligently understand those methods the organization needs to look inside the flow to understand the process at its fundamental level and answer key questions such as:

- How long was each item in each step of the process?
- How many items actually followed or deviated from the process?
- What are the details on process exceptions and other information tightly tied to process flow?

This deeper understanding of business processes is beyond the scope of BI.

BPM systems, while more attuned to the concepts of process steps, only track and analyze those steps in the process that are defined and under the direct control of the BPM system. As a result, the BPM system might track a high-level set of process steps involved with new business underwriting, but it has no visibility into the sub-steps that are embedded inside them. For example, BPM systems were often implemented

to automate the paper flow from person-to-person and system-to-system, but they lack the awareness of the various tasks performed by each individual or system. This is especially true when a new procedure is added to a team member's job and incorporates new technologies that were never integrated into the BPM workflow. As a result, the BPM system does not know if underwriters are gathering complete information (loss runs, geo codes, financials, credit reports, facility inspections, etc.), or if they are following new pricing models. The BPM system also doesn't know if claims handlers consulted with loss control or underwriting through chat or email or checked web-based fraud protection services. To truly understand processes on an end-to-end basis, a solution is needed that can integrate and analyze information across all the systems involved in or supporting the process.

Process analysis tools allow users to create a lab simulation of their processes. They manually define models of their end-to-end processes and then analyze the process models based on estimated or simulated data. Once defined, they run the mathematical models in order to simulate how the processes might act under different scenarios. While this type of analysis can help you gain an understanding of how general process flows may behave under certain circumstances, they are of little value when attempting to understand operational environments.

Key Process Intelligence Terms

A process is a specific set of steps required to accomplish a task. A process instance is the unique performance of a specific process. At any point in time, there may be many process instances underway, each at different points of completion.

Understanding the difference between processes and process instances is important, because the process defines the expected path, while the data for each process instance defines exactly what occurred in the execution of that specific instance and provides insight into whether or not the expected path is being followed.

Gaining Deeper Insight and Greater Success with Process Intelligence

Process intelligence is the most comprehensive, proven way to understand and provide analysis for your operational environments. It is an extension of BI that provides an understanding of your operational performance within the context of your business processes and lets you know exactly how your processes are performing. This allows for easy access to process-specific metrics, such as turnaround time, process execution consistency and compliance, work queue aging and more. To provide full value, it's critical that process intelligence is seamlessly integrated with core BI functionality to allow you to break down these new metrics to discover root cause and other patterns.

Many C-level questions can best be addressed using an overview of the entire process. In other cases, understanding the behavior of subsets of process instances provides better insight into how well processes are being executed and where opportunities for improvement exist.

Process intelligence solutions must meet four key requirements that BI, BPM and process analysis technologies cannot address:

1. Discovers operational processes where individual process steps are executed on multiple, back-end

systems of record, including those executed outside a system of record, to provide central orchestration of the process.

2. Continuously accesses and processes operational (transactional) data to calculate operational performance metrics and verify execution integrity of each process instance.
3. Seamlessly links the in-depth analysis of operational data behind a process to the logical process context, using the full power of business intelligence tools and advanced process intelligence visualization extensions.
4. Delivers automated business alerts by email or IM before process issues incur loss; for example, when a process queue is backing up or process completion time is nearing a service level agreement threshold.

The first step on the path to process intelligence is to identify the individual tasks underlying the process. It's important to cover the end-to-end process, including all the tasks that are executed on one or more systems of record. Sometimes, the business logic in an automated sequence of steps inside a system of record is not properly documented. In other cases, specific process logic may be determined in a seemingly ad hoc manner by human operators based on their common practice. Even given these practical scenarios, a good process

intelligence solution should help you uncover any missed steps or inaccurate business logic in the process you've identified.

Once the process steps are known, the next step is to identify and extract the data that defines the state (or status) of each process step. For the completion of standard units of work this is often easily found in the system of record and the business intelligence data. However, for the process steps that are internal to the core system unit of work, performed across multiple systems or outside the core system (for example, web lookups, spreadsheets, third-party and internal models, correspondence, etc.), this data may be hidden in systems, buried in network logs or tracked in spreadsheets. In addition, at any point in time there may be hundreds or thousands of process instances in flight, each at a different step in the process.

Capturing and representing process intelligence data requires a powerful data integration platform and a sophisticated state engine. This combination enables the discovery and harvesting of data artifacts left behind in the multiple systems of record and data sources when any process is executed. It also allows for the correlation of this data to specific processes and to the unique process instance to which it is associated.

Once the process data is gathered and represented in the context of the process steps, two new types of analysis are possible: process analytics and process quality. Process analytics is generally associated with the mathematical analysis of processes, most commonly as the process relates to time. Typical examples include the calculation of turnaround time between any adjacent or distant process steps (for instance, total, minimum, maximum, mean and median) and the frequency with which certain process paths are favored over others.

Process quality, also known as process compliance, deals with how well processes comply with expected behaviors. For instance, if a particular process is expected to follow a rigid sequence of steps, process quality analysis can detect a deviation from the prescribed process path. In addition, it may be important to understand when process steps are skipped, repeated or otherwise done out of sequence. This analysis is taken even further when combined with the ability to look at a population of process instances to determine execution patterns that may be beneficial for process improvement and performance optimization (for example, number or percentage of exceptions, individuals involved, product characteristics, etc.).

The final aspect in achieving true process intelligence is the ability to exploit these new and powerful process insights as an integrated part of their core operational dashboards and reports. Process intelligence is not a standalone discipline separate from business intelligence. Rather, it is the next evolutionary step in analytics and a crucial extension of business intelligence. The synthesis of process intelligence insights into business intelligence dashboards, reports and tools enables managers and end-users to extend their awareness, control and ability to optimize business processes.

Process Flow Analysis

Process flow analysis provides an overarching understanding of the business process. It lets you view critical process milestones, link detailed information to them and track the flow of both individual process instances and the overall aggregate process performance. This perspective allows organizations to understand the "big picture" of their real-world processes.

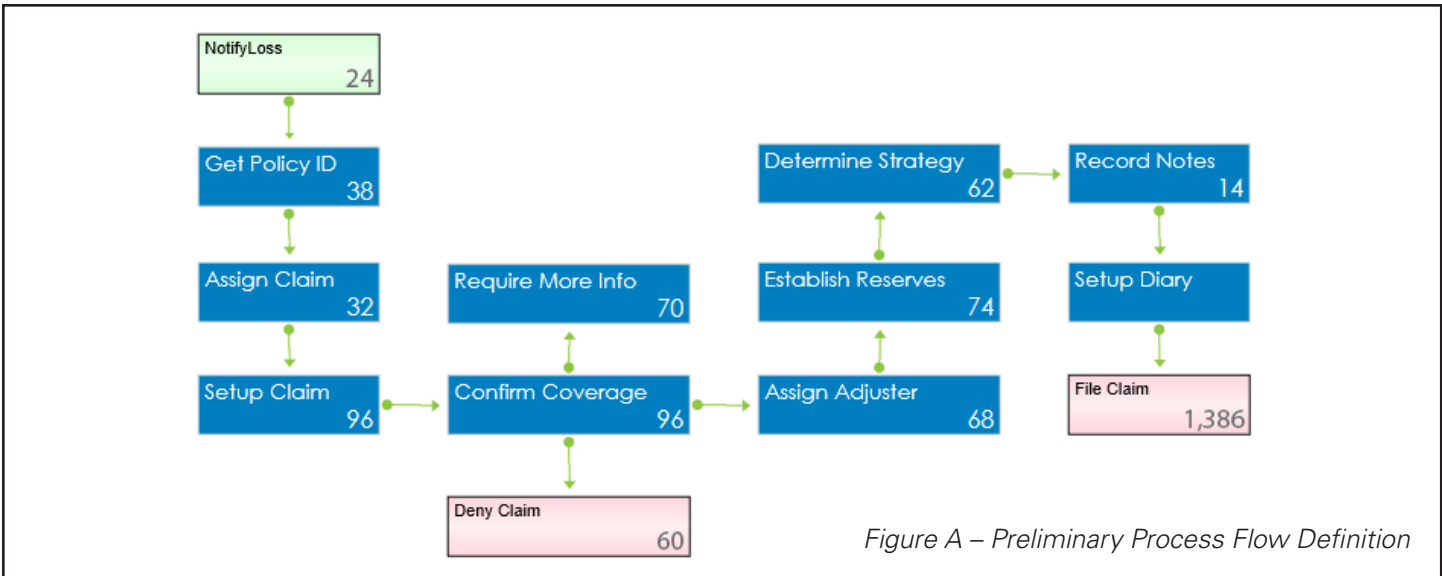


Figure A – Preliminary Process Flow Definition

Using the example of an insurance company’s new business underwriting process, we can demonstrate the power of process flow analysis. The process begins with a business analyst constructing a basic process flow diagram, which they believe represents the expected process execution sequence. As shown in Figure A, the process flow for an insurance application goes through a series of steps, from receipt of a loss notification through to a claim being filed. As the business analyst constructs

the process flow, they also indicate which data artifacts in disparate systems of record are associated with each process step.

Once the basic process flow is defined, along with the underlying data artifacts associated with it, the user can get immediate feedback on the process execution using process flow analysis (see Figure B). This includes immediate availability of performance statistics related

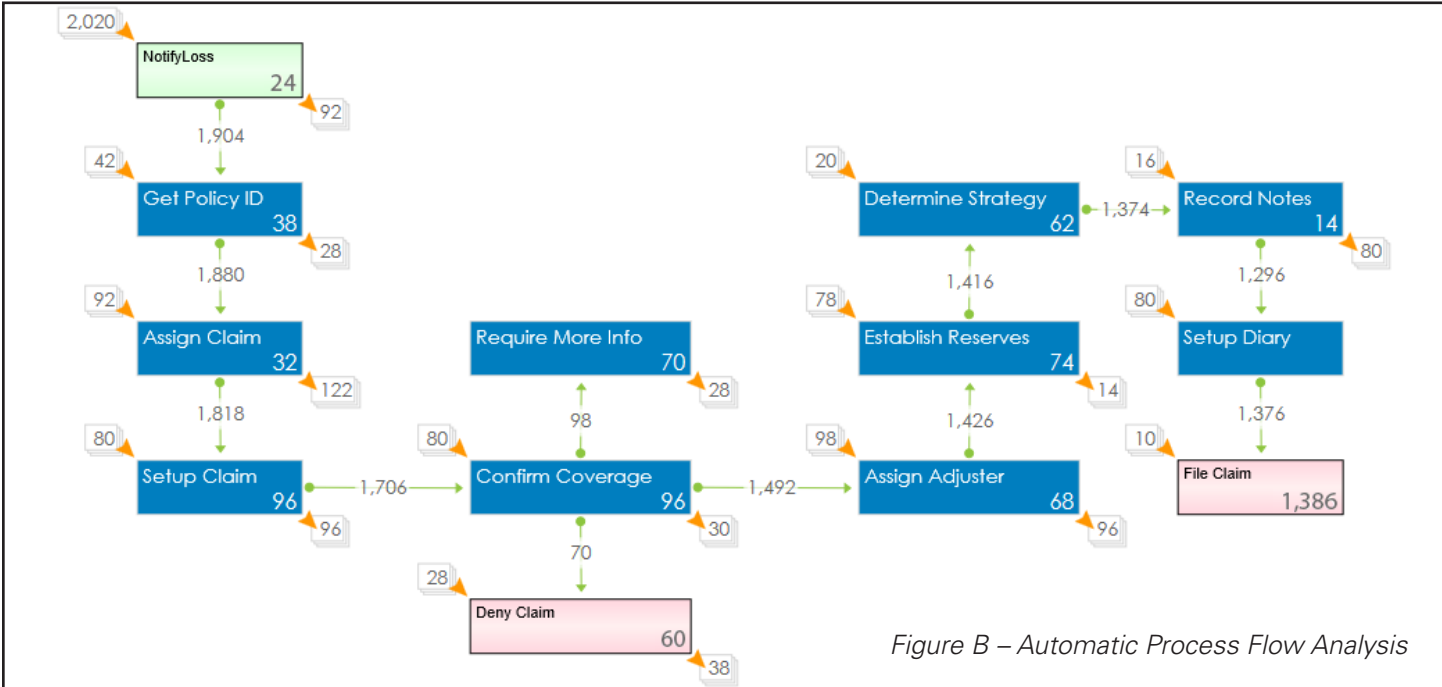


Figure B – Automatic Process Flow Analysis

to turnaround time between steps, volumes associated with different process routing options and a continuously updated status of current work in the queue at each process step.

When reviewing the process flow, analysis may uncover certain assumptions that are incomplete or otherwise incorrect. Immediately upon discovering this, the definition of new or revised steps can quickly be incorporated and the analysis can be run again using concrete data. As your organization’s needs change, the diagrams can be extended or more detail can be added. In contrast to BPM-based solutions, it’s not necessary to define every business process detail for the analysis to work.

Inspecting the process diagram more carefully, you can see blocks corresponding to each key milestone. Processes can be simple or complex. Process branching is also supported as very few processes are truly linear. The numbers show the paths and states of each process instance in the defined process.

Figure C depicts the portion of the process that deals with waiting for requested information before the submission can be turned over to underwriting.

- **Process milestone:** The blue center block indicates the process step being analyzed, which in this example is ‘Assign Claim.’
- **Process backlog:** The number in the lower right corner of each block indicates the number of process instances currently in this step, waiting to move on to the next defined step. In this example, there are currently 32 claims waiting to be assigned.
- **Expected path compliance:** Numbers on the green lines represent the process instances that arrive at a step by the expected input path (1,880 compliant inputs in this example) and those that proceed to the next step by the expected path (1,818 compliant outputs in this example).
- **Input exceptions:** The number in the upper left corner of the milestone block indicates the number of process instances that arrived from a milestone outside of the defined path (92 input exceptions in this example).

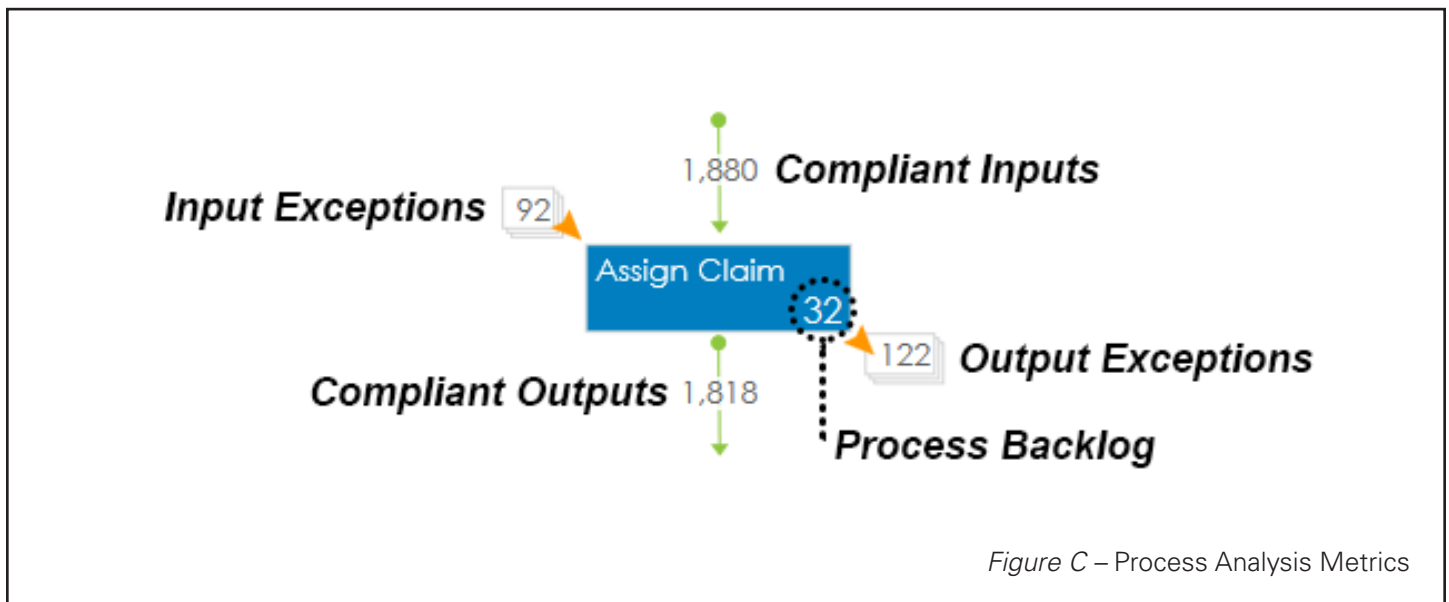
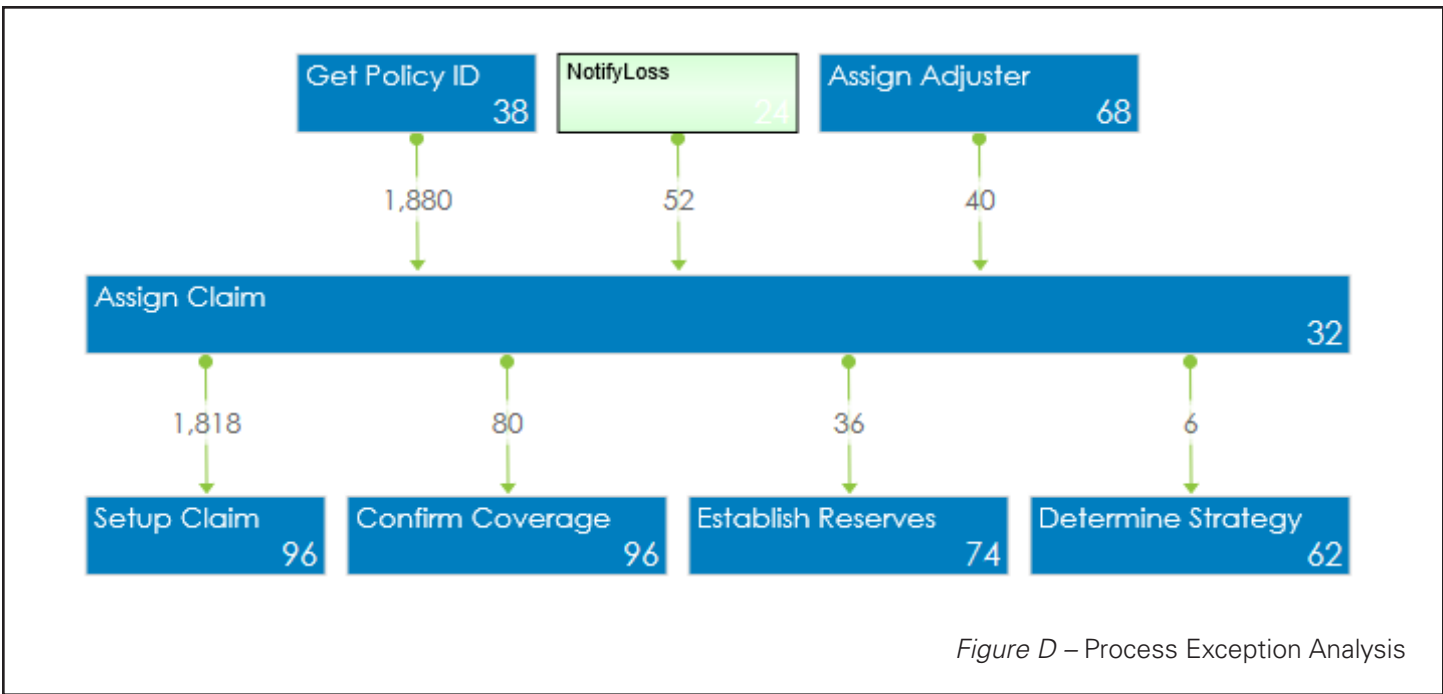


Figure C – Process Analysis Metrics



- **Output exceptions:** The number in the bottom right corner indicates the number of process instances that proceeded to a different step than the one in the defined process path (122 output exceptions in this example).

As with any productive BI environment, the information presented needs to be highly interactive, including the process analysis components discussed here. This allows the user to drill down to gain a deeper understanding of the operation. For instance, in conventional BI tools drill downs are typically available with each block or input/output number to show specific entity details within the process flow. As can be seen in Figure D, clicking on any process milestone block provides a detailed view of all process flow inputs and outputs for this milestone, including those that are expected and exceptions.

Understanding how many exceptions occur at each step lets analysts better determine the areas that require their focus. The ability to drill down into specific entities

means information can be gleaned in order to better understand the context for the exceptions. Looking at the insurance 'Assign Claim' process example in Figure C, while 1,880 claims arrived at this process step from the expected previous step (Get Policy ID), 92 claims entered this process step from an unexpected path.

Drilling down into the 'Assign Claim' node provides exception details (see Figure D), which reveals 52 exceptions from the 'Notify Loss' step and 40 exceptions from the 'Assign Adjuster' step. These exceptions may indicate that certain tasks are being done out of order, and in some cases, they may introduce risk. Fortunately, this visual process intelligence analysis allows a user to quickly identify an issue, enabling management to take corrective action to ensure every incoming new claim follows the appropriate process flow.

When a user sees something unusual and wants to know more, they can simply click on the number and immediately drill down and see all the process

Process instances					
Violator	IsFinished	CreationTime	LastModificationTime	CurrentStep	ProcessID
True	False	09/12/2014	09/15/2014	Assign Claim	2,007.00
True	False	09/12/2014	09/15/2014	Assign Claim	2,009.00
True	False	09/12/2014	09/15/2014	Assign Claim	2,011.00
True	False	09/12/2014	09/15/2014	Assign Claim	2,013.00
True	False	09/12/2014	09/15/2014	Assign Claim	997.00
True	False	09/12/2014	09/15/2014	Assign Claim	999.00
True	False	09/12/2014	09/15/2014	Assign Claim	1,001.00
True	False	09/12/2014	09/15/2014	Assign Claim	1,003.00
True	False	09/12/2014	09/17/2014	Establish Reserves	1,005.00
True	False	09/12/2014	09/17/2014	Establish Reserves	1,007.00
True	False	09/12/2014	09/17/2014	Establish Reserves	993.00
True	False	09/12/2014	09/17/2014	Establish Reserves	995.00
True	False	09/12/2014	09/17/2014	Establish Reserves	2,015.00
True	False	09/12/2014	09/17/2014	Establish Reserves	2,017.00
True	False	09/12/2014	09/17/2014	Establish Reserves	2,019.00
True	False	09/12/2014	09/17/2014	Establish Reserves	2,021.00
True	False	09/12/2014	09/17/2014	Establish Reserves	1,009.00
True	False	09/12/2014	09/17/2014	Establish Reserves	1,011.00
True	False	09/12/2014	09/17/2014	Establish Reserves	2,003.00
True	False	09/12/2014	09/17/2014	Establish Reserves	2,005.00

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Figure E – Process Instance Grid

instances that exhibit this specific behavior (see Figure E). Selecting any individual instance presents the exact sequence of steps the process instance went through (see Figure F). This provides close inspection of the exact conditions pertaining to the process instance.

By understanding the real process instances through which every claim moves, you can more clearly

understand the process effectiveness, visualize bind points and drill down from aggregate to specific information about the status of claims, regardless of where they are within their own process instances.

Process flow diagrams can quickly show management a high level overview of critical processes that cross multiple systems without the need to have a full BPM

Process steps for 2,015.00	
LastModificationTime	CurrentStep
09/12/2014	NotifyLoss
09/15/2014	Assign Adjuster
09/15/2014	Assign Claim
09/17/2014	Establish Reserves

Export to Excel Wrap Total amount: 4

Figure F – Process Instance History Grid

system installed across an entire organization. In short, process flow analysis extends BI to quickly understand your process quality and compliance.

Process Instance Frequency Analysis

It is necessary to look at the frequency with which certain patterns of execution occur in order to more deeply understand how individual process instances are performed. Process instance frequency analysis, also called swim lane analysis, provides immediate visualization of the unique variations of how processes are performed.

A swim lane visualization style of process instance frequency analysis (see Figure G) provides a clean, graphical representation of the real paths taken through

process instances and the relative frequency of each variation. The diagram is a display of how every process instance proceeded through the process. It is the aggregation of real process information from actual systems of record data. Using this approach, you can see all variations in how any monitored business process is performed.

Looking closely at the example in Figure G, the left-hand lane shows the expected process path, and the insurance claims data shows that approximately 85% of claims moved through the process as expected. The next swim lane shows that 5.5% of claims proceeded all the way to the 'Record Notes' step and were then returned to the 'Setup Claim' step to perform a missed operation. Although this is not a large percentage of

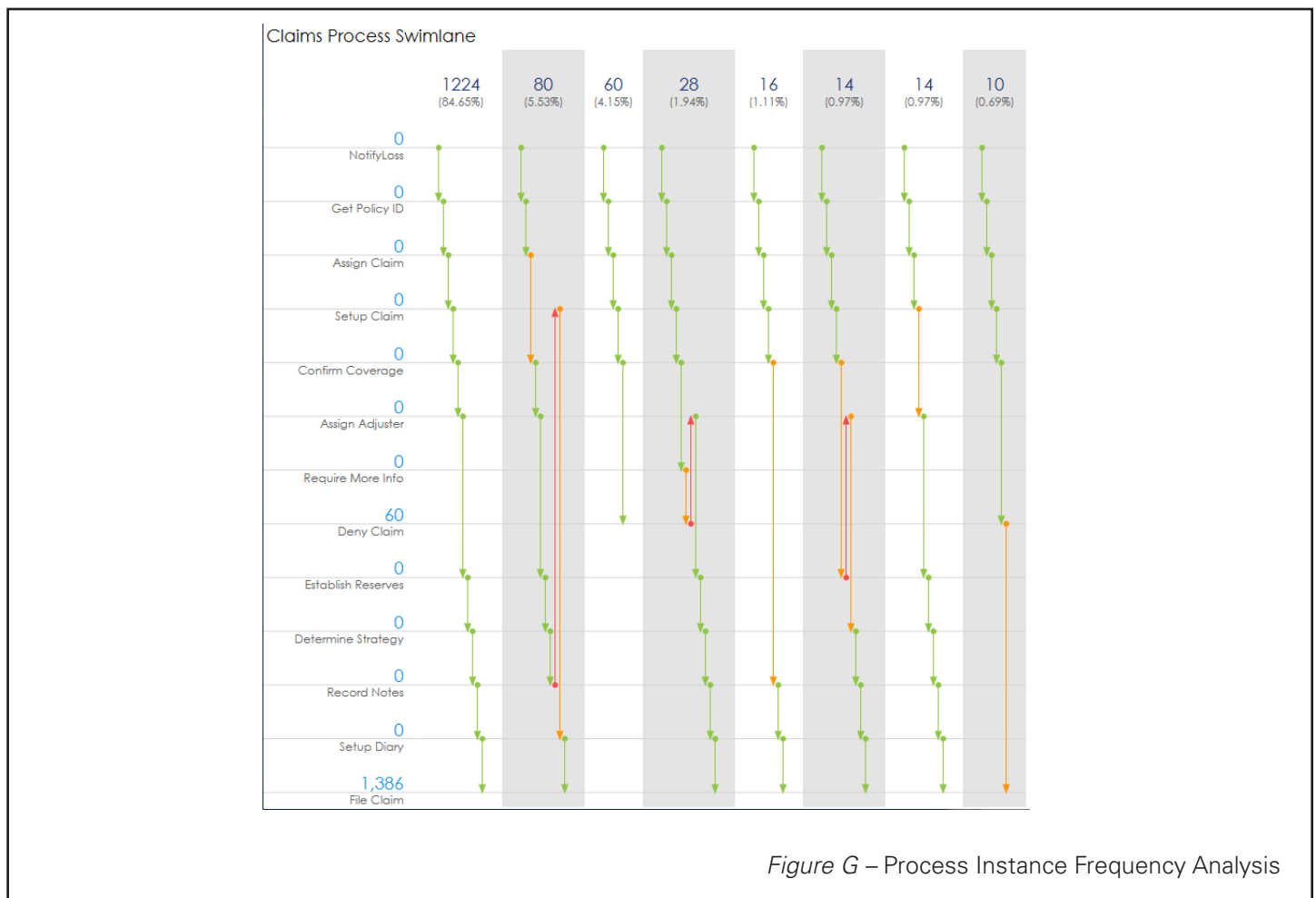


Figure G – Process Instance Frequency Analysis

process exceptions, no insurer wants to waste time and resources fixing missed steps and potentially exposing themselves to more serious process violations.

Just as in traditional BI reports, analysts can filter for specific information. In this case, users can click through any swim lane process arrow to drill into the related individual process instances to see how often incomplete information was used and what specific information was omitted, such as loss runs, geo code results, financials, credit reports and more.

Analyzing process instances allows you to identify behavior patterns that may be indicators of more chronic problems. For example, you can quickly see if underwriters are consistently failing to record the receipt of a loss run for certain submissions. Likewise, you can determine if they are working with incomplete information when analyzing potentially lucrative new submissions, which is creating process delays and increasing the risk of another insurer winning the business. Given that such failures could result in lost business and needless cost, even a small percentage of submission failures within these swim lanes could be considered a major concern.

Swim lane analysis helps you better understand process exceptions—which exceptions have the most risk and which process steps have the most problems—and improves your ability to respond appropriately. Quality and quantity of exceptions have different weights for every process, and process intelligence helps you understand exceptions in order to prioritize your investigation according to your specific business needs.

About Altosoft Insight

Altosoft Insight™ is the only business intelligence platform providing process intelligence to help organizations understand and optimize their business performance. Altosoft Insight process intelligence links business intelligence to an organization's current operational processes in order to provide a clear understanding of business operations.

About Altosoft, a Kofax Company

Altosoft, a Kofax Company, takes business intelligence (BI) to a higher level. Altosoft delivers advanced BI capabilities and analytics, including process intelligence. Process intelligence enables organizations to discover new insights hidden within organizational processes and identifies strategic business opportunities and risks. Altosoft delivers 100% codeless solutions, which eliminates the cost and complexity of conventional BI while improving operational performance and insight.

Altosoft products feature ultralow-latency data monitoring and analysis across operational databases, warehouses and other data sources. The products integrate real-time event monitoring and business process optimization, and enable dashboard development in minutes with a unique browser-based, drag-and-drop interface.

For more information, visit www.altosoft.com.