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How Technology is Redefining the Claims World

I. The Emerging use of artificial intelligence in the claims management lifecycle

What is meant by Artificial Intelligence (AI) and how can it apply to the insurance industry?

Artificial intelligence (AI) is a term thrown out liberally in the insurance industry today, for the potential efficiencies and increased accuracy that it could bring to the claims management process. However, there are many types of artificial intelligence that may or may not be of practical or useful application in our workflows. Facets of AI include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions) and capacity for self-correction. The broad definition of what counts as "AI" runs the gamut of simple automation that carries out a single job, to complicated systems that strive for human-like reasoning, behavior, and problem-solving capabilities.

What are examples of current applications of AI within our organizations?

Robotic Process Automation (RPA)

In claims management, RPA software typically leverages a narrow scope to mimic human activity against a software application. In layman's terms, the RPA "bot" (a software application itself) seeks to replace multiple, repetitive keystrokes and mouse functions with the click of a single button. By taking away repetitive and often-used motions, RPA tools can introduce new efficiency and accuracy into a user's daily routine. For example, let's say that one function of a workers' compensation process is to notify an employee's supervisor when they have been cleared for work. Many TPAs will generate automatic text or email messages to the employee to confirm that, and upon confirmation, the examiner will go through a series of steps to complete the return-to-work process. But what if a bot could review the log of inbound confirmations, open a claim based upon the record to which the confirmation is tied, enter a confirmed return to work date, and automatically fire off a corresponding email notice to that supervisor? This eliminates one set of busy work that the examiner conducts every day, which requires very little human / analytical decision-making to complete.

However, one of the largest challenges to implementing RPA tools successfully is identifying those motions. "Business process discovery" is another RPA-related tool that is installed within an organization and observes the actions taken by an administrative team. Then utilizing AI, it conducts a series of hypothetical scenarios leveraging automation to determine which series of actions may benefit from an RPA wizard. Utilizing such tools will ensure that claims management processes flow smoothly and proficiently for all work streams.

Rules-based decision engines

In the claims management process, examiners make thousands of decisions a day using logic based on relevant claim data. The use of rules-based engines is a step towards automating that kind of activity. By assessing all possible inputs and circumstances (conditions), these "expert systems" can come to conclusions about what tasks need to be performed. Typically these are classified into 2 segments:

- The knowledge base, which represents facts and rules, and
- The inference engine, which applies if-then rules to those known facts to deduce new values or next steps within a larger process

Classic examples of decisions engines include selecting tactical moves to play a game, such as when Deep Blue became the first computer system to win at chess against the reigning world champion. Similarly, companies who have a vast experience with claims management have a wealth of history to draw upon when designing rules engines that facilitate or automate the handling process. Practical applications within modern claim management include selecting recipients of new claim notification, triaging claims based upon anticipated severity, and even evaluating low-dollar / low-severity claims for potential automation.

Machine Learning

At its core, Machine Learning (ML) refers to the study of training a computer to learn and respond like a human does. There are hundreds of modern examples of this: self-driving cars, email spam filtering, targeted online shopping suggestions, and image recognition and analysis. ML uses a series of equations (algorithms) to parse through billions of pieces of data, and then it draws conclusions using decision trees and statistics about how to get to a desired end result. But where are the practical applications in the insurance industry?

- Chatbots: Most customer service-related functions these days set an expectation of 24/7 availability, but how can organizations provide that without significant staffing around the clock? Virtual customer service tools such as chatbots, in which a user carries on a conversation with a computer, leverage an AI concept called natural language processing (NLP). This linguistic-based technology attempts to mine an ever-expanding amount of data to answer the question, "what does this user want?" A chatbot must understand and recognize that the question "What is my claim status?" may actually mean something similar to "Has my claim been approved?", and it must do so in dozens of different languages. A chatbot can then guide these users to helpful responses or links based on the information within a chat session. Thanks to AI's machine learning capability, the more a chatbot is used, the "smarter" it becomes in identifying and solving problems.

- Digital image recognition: AI has made tremendous strides over the past few years in being able to mimic a human's visual cortex in order to recognize objects, motion, or characters within a picture. Referring back to the latest technology in self-driving vehicles, AI software must be able to recognize and classify the components of an image such as lines on a road, obstacles, and pedestrians. However to apply this kind of AI to the claims space, carriers are now able to utilize AI to conduct real-time automotive damage assessments or estimate damage to roofs or buildings after catastrophic storms. In the medical industry, AI is now being applied to radiological images to detect bone fractures, lesions, and other types of medical anomalies that require treatment. There will always be concern from the carrier perspective about inaccuracy, but increased computing capacity and quantity of available data records increase the likelihood that this technology will continue to spread throughout the industry.

- Predictive modeling: Often referred to as "decision optimization", predictive modeling software analyzes past claim experience to determine patterns that will predict the outcome of a claim. When run continuously against an examiner's daily claim activity, it can evaluate the attributes and dollar amounts within a claim to trigger a deeper dive. Early intervention models are meant to change the outcomes of high-severity claims, which might have long durations and could create a challenge in determining costs at the beginning of the claim lifecycle. Flags may be set that alert examiners to the possibility of large loss, litigation, high complexity, or need for intervention when combinations of prescription drugs may be problematic or dangerous. This allows program administrators and risk managers to focus on specific at-risk claims in order to apply appropriate resources early on, making an impact in key areas like return to work and getting the best healthcare for injured employees or claimants.

- Cutting-edge security tools: The latest AI network security tools can monitor, classify and visualize cyber-threats by ingesting all data sources within a company's wide area network (WAN), including egress and ingress points. This type of software will baseline an understanding of what "normal behavior" is for that enterprise, and can then detect anomalous and malicious activity as well as other emerging threats in real time. This includes insider threats, low-and-slow attacks, and automated viruses, such as ransomware.

What are examples of future applications of AI within our organizations?

Many discussions these days around AI will hypothesize about the expanded use of software to replace human activity. But at the end of the day, AI without some form of Emotional Intelligence (EI) cannot begin to juxtapose an examiner for a system. New telephonic technology used in call centers seeks to detect stress levels or dissatisfaction based on a voice interaction. AI software is now being adopted to identify trends within phone interactions that may lead to a positive outcome, or customer frustration and dissatisfaction. The system analyzes changes in speaking pattern, agitation or tension in a voice, or other sounds made by a caller that alert agents to an unhappy customer. The science of improving EI across insurance organizations will lead enable providers to build stronger bonds and excellent communication practices with their claimants.

Additionally, as trusted connections between entities becomes strong, data will become "federated" across organizations in a way that has not been seen before. Data federation is the practice of pulling together and aggregating data from many separate remote data sources into a single model. Assembling relevant (or seemingly irrelevant) data from different enterprises allows for new approaches to data mining: cluster analysis & anomaly detection allow organizations to recognize correlations and outliers in sets of data.

However, our ability to predict where AI will go next is next to impossible as technology evolves that can process infinitely more data than ever before. Ten years ago, nobody could have guessed that chatbots would work to discern a sentiment, detect frustration, and interact with remote databases to provide relevant, real-time responses to claimants. But while the examples above are practicable today, and the future applications of AI seem endless, it's important to realize that machines still have limitations. Computers can analyze patterns and tell us the best way to get from point A to B, but they cannot tell us the *context that informs its decisions.* As Henry Kissinger stated in his June 2018 article in *The Atlantic*: "Ultimately, the term artificial intelligence may be a misnomer. To be sure, these machines can solve complex, seemingly abstract problems that had previously yielded only to human cognition. But what they do uniquely is not thinking as heretofore conceived and experienced. Rather, it is unprecedented memorization and computation. Because of its inherent superiority in

these fields, AI is likely to win any game assigned to it. But for our purposes as humans, the games are not only about winning; they are about thinking."

II. Data science & advanced analytics

The end goal of data science is to discover hidden patterns from raw data. It shares that goal with AI but is used more frequently to enlighten decision-makers, such as risk managers, within an organization. Data analysts have worked for years to explain trends and phenomena of data using spreadsheets and visualization tools. They strive to balance exposure data against historic loss trends for claimants or companies. The term "advanced analytics" has been used to describe many types of data analysis including claim incident trending, projection of near-term future claims, and drill down into cause-of-cost factors.

Actuaries have used financial theory to understand the cost of risk and establish pricing for insurance programs for years. However, the advancement of technology to aggregate and integrate data sources is transforming the discipline of risk assessment. Rather than looking only at loss experience, underwriters may now incorporate demographic data and behavioral analytics from sources such as credit bureaus or other third parties to assess the risk of an individual policyholder. Another source that will be utilized more frequently in the future is data mining of consumer devices: telematics information from a driver's cell phone or vehicle tracking devices provide deep insight into a driver's behavior behind the wheel. Insurance programs may incorporate fitness information from "wearables" in order to look at sedentary versus active lifestyles when pricing healthcare insurance. These new types of risk assessments will keep coming, but carriers will seek to expand their use of incentive-based pricing based upon data from new sources.

As devices get smarter, concern over consumer privacy grows. Will the reverse incentive occur, where carriers attempt to decline policy applicants where they refuse to share such personal information? Could employers mandate that employees who are covered by a group health policy participate in fitness tracking or face higher premiums than other employees?

III. Auto-Adjudication of simple claims

As stated above, the advent of rules-based engines and other types of AI tools that can support automation will lead us to a "no-touch" claim handling models in the next few years. Initial models point to a first adoption within the P&C space on claims that have no components of bodily injury or anticipated litigation. When combined with self-service capabilities, low severity / low cost claims will likely see no human intervention as claims come in the doors and are paid via digital financial services (ACH, e-gift cards, et al). Handing times and projected cost of this type of auto-adjudication will plummet while processing vastly greater claim volumes.

However, this approach to automation is dependent upon three very important components: claim triage, claimant eligibility confirmation, and claim validation.

- Triage: The process of determining severity and complexity of a claim is not a simple one. Claim triage requires a combined analysis on factors such as anticipated cost, existence of bodily injury or multiple parties, type of illness / diagnosis (and need for medical case management), and comparison to similar historic claims for likelihood of litigation. There are dozens of factors that could sort a claim into the "simple" versus "complex" categories, and analytics must be run against incoming claims to assign them

for appropriate handling.

- Eligibility: Administrators must be sure that claimants hold active coverage for the claim being filed, and are eligible to file the claim in question. This type of qualification may integration with policy management systems or employer databases to do so.

- Validation: Certain types of claims may require documentation in order to confirm estimates of claim cost, such as receipts or repair estimates. AI-based data extraction from uploaded images can classify a document type them digitalize these outputs, thus enabling an approval on a simple low-cost claim.

When automation removes the examiner touch, the adjudication process must increasingly depend on advanced fraud detection capabilities. Level of suspicion for fraud may look at recent history of a particular claimant, multiple submissions of similar claim data, or other behavioral aspects such as claimant credit history or social media postings to determine if a claim warrants further review. Data analytics can run the statistical probability within each of these areas as the claims are reported to carriers and TPAs, while text mining against claim inputs will allow "scoring" of a claim to trigger alerts of fraud risk.

Automated claim handling will always come with risks and confidence levels that assume a possible rate of error. What happens when the AI fails? What happens when a claimant is a true outlier and merits examiner review, but does not receive it? Keys to building a successful automation program include a trainable technology platform and transparency in logic. That is, how can a program establish confidence in its automated decisions if risk managers and other parties cannot understand how it derived those decisions? These challenges will face organizations who wish to apply technology for efficiency gains and assume the risk that accompanies such a program.