Auto Casualty

New Hazards and Opportunities for Insurers in the Internet of Things

September 11, 2018
7 MIN READ
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Insurance Risk in the Age of Automation

According to the famous futurist Ray Kurzweil, "we won't experience 100 years of progress in the 21st century—it will be more like 20,000 years of progress." We are at an incredibly important moment in time—one that I believe historians will look back on as a pivotal time in the advancement of technology and in the way humans interact with it. The world is quickly moving beyond the Age of Information, an incredibly fast-moving period marked by the rise of computing, home computers, the Internet, mobile phones, and streaming video, collectively placing mass quantities of information at our fingertips. Today, we stand on the precipice of the Age of Automation, a period that takes for granted the advancements in computing power and complexity that were previously the stuff of science fiction: artificial intelligence, virtual reality, and a world in which virtually everything in it has the potential to be connected to the internet. As we enter the Age of Automation, the nature of risk is changing, both in the world at large and within the Property & Casualty and collision repair industries. Insurance companies rely on historical records to underwrite risk. In many cases, there are things happening today that we have never seen before: a tightly connected world, new industries, new business models and new ways of reaching underserved people. In cases where there is insufficient data describing the recent history, it's difficult to statistically model the risks. In this series, I explore how technology is changing the nature of insurance risk in the Age of Automation.

The Internet of Things Offers New Risks and Opportunities

One of the most powerful drivers behind the changing nature of risk is the Internet of Things (IoT). First, IoT is creating new types of risks that have no historical precedence—smart cities, smart utilities, smart homes, autonomous vehicles and connected medical devices among them. Second, because we live in a world where

almost everything can have a sensor embedded in or associated with it that collects data about the activities and environment around it, there is much more data available for actuaries and risk managers to analyze and provide surety against. With the capability we have today to measure practically anything, the universe of transactions to insure is much larger. In some cases it's even possible to reduce the cost of insurance while proactively mitigating risk.

New Technology Results in New Risks

While autonomous vehicles continue to dominate the news, recent setbacks in their development and accidents point to a delay in how quickly they may become a common sight on the roads. That said, they are undoubtedly coming, and one of the first verticals likely to experience their impact is the transportation sector. One aspect of the industry ripe for disruption is long-haul trucking. It is suffering from a significant driver shortage. The American Trucking Association puts the shortfall at about 50,000, driven in part by the demands of the job, along with long periods of time spent away from home and family. Between driver shortages, safety concerns, regulatory issues, and rising costs, trucking is eligible for disruption, and autonomous vehicles could be the answer. Starsky Robotics envisions a future where distance will no longer separate driver and family, and fatigue from long hours will no longer result in accidents. In recent trials of Starsky's autonomous trucking technology, a safety driver sat behind the wheel, prepared to step in if things went awry. The company's long-term vision is a bit different, though. Starsky anticipates that their vehicles will be fully autonomous on the highway while being piloted by remote drivers who log in from a centralized location similar to a call center. The remote drivers would support the handling of challenging maneuvers and pilot the truck through the "last mile" from highway to destination.

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The model brings new risks: what if the remote driver makes a bad call and chooses not to step in when needed? Alternatively, what if a remote driver steps in when he or she shouldn't? How are such setups vulnerable to hacking? What new possibilities would this open up in terms of theft? There are implications from a workers' compensation standpoint as well. The driver hasn't entirely been replaced, just relocated from behind the wheel on the road to behind the wheel at a workstation. Further, while he may have been an independent contractor before, a remote driver operating from a data center would most certainly be an employee. Or would this insert itself into the gig economy, with freelance drivers who work for a number of companies logging in from home computers that meet predetermined performance criteria? While this particular example is anecdotal, the lesson is universal: activities that have been routinely insured for many decades are likely to look completely different in the next ten to twenty years, along with the new risks associated with them.

A Greater Universe of Transactions to Insure

When we think about embedded sensors, some obvious examples come to mind: security systems, thermostats, activity trackers, and of course vehicle sensors. Companies such as Metromile, that offer usage-based insurance, are a good example of how IoT is creating an ever-growing universe of insurable transactions for actuaries to assess. But as IOT increases in scale and scope, its healthcare-focused subset, the Internet of Medical Things, provides another way of looking at it. Prescription non-compliance is one of the most pervasive public health issues of our time, one that is completely preventable. The statistics are alarming: 20 to 30 percent of prescriptions are never filled. 50 percent of prescriptions for chronic diseases are not taken as prescribed. Prescription non-compliance accounts for more than 125,000 deaths annually and 10 percent of all hospitalizations. The total cost to the U.S. healthcare system is estimated to be between $100 - $289 billion per

year. As former surgeon general, C. Everett Koop, put it, “drugs don’t work if people don’t take them.” Now, the first FDA-approved, sensor-enabled pill is changing that. Abilify MyCite features a tiny embedded sensor, about the size of grain of sand. When swallowed, it interacts with stomach acid and sends an electrical signal to a patch worn by the patient. The patch then communicates with an app via Bluetooth that records the time the pill was taken and the dose. The patient can opt to share the information with up to five people, including his or her doctor.

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Could better compliance result in lower risk and therefore lower insurance rates? Could gentle reminders keep people on track: imagine receiving a notification on your smartphone reminding you to take the pill or reminding you that you’ve missed a dose. Further, could the timing between doses of pain medication provide information to your healthcare provider about how well you’re responding to it? Perhaps smart pills could signal behavior that is indicative of a developing dependency and provide another tool for combatting opioid addiction. What might monitoring and measuring of micro-transactions mean in other lines of insurance? Thinking again about usage-based insurance, sensors measure both miles driven and tire pressure. Could the combined information—a person driving long distances on low tire pressure—be interpreted as risky behavior? The takeaway is this: what used to be only broadly insurable is now insurable as micro-transactions, steps within a larger insurable set of activities. This situation prompts the question, if everything can have a sensor embedded in it, then how granular can we get, especially in terms of matching rate to risk? And while opportunities to measure these micro-transactions become more widely available, it may not be necessary or beneficial to use them in all instances.

Reinventing Risk

As the Internet of Things becomes more fully realized, there are new possibilities for insurable transactions, large and small. Many lines of insurance will be completely reinvented in the coming years, and within the many segments that we now consider insurable activities, hundreds, if not thousands, of insurable micro-transactions will proliferate. The field is wide open—it’s up to each insurer to determine how it will participate in the new world of risk.



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