How the Internet of Things (IoT) is Adding Proactivity to Insurance

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ABSTRACT

In recent years, the insurance industry has seen a major shift in how data is used, specifically in the realm of risk prevention. Advancements in technology within the Internet of Things (IoT) have enabled more comprehensive data analysis, changing the way the industry views risk. This has led to an increased emphasis on solutions that are proactive, preventing risk as opposed to merely mitigating losses. Despite the industry being historically slow-moving and focused on response to risk, new offerings are now promoting prediction and prevention of risk. This report will explore the implementation of the Internet of Things into the insurance industry. First, the concepts of IoT and proactivity will be described. The state of the insurance industry will then be examined, followed by the culture of innovation within insurance companies and how it holds a significant role in driving the industry forward. A select overview of insurtech solutions that contribute to the theme of proactivity within IoT will be detailed. To follow, looming adoption issues will be addressed. Finally, the report will outline up-and-coming strategies in the industry, including the rising trends of integration and gamification.

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AN INTRODUCTION TO INTERNET OF THINGS (IoT)

The growth in IoT technology has enabled insurance carriers and policyholders to have more control and insight into risk management. The Internet of Things is a system of connected machines, sensors and other technologies, enabling mass data collection and sharing. Any device that transmits or receives data can be part of the Internet of Things; today, even common household appliances can be integrated into IoT. Some examples are smart ovens and garage doors, which can be controlled from phone apps. With IoT in insurance, not only is there more access to quality information when an incident occurs, but it is easier than ever to take proactive measures to lower risk and improve outcomes. With all of the technology available, it is important to prioritize investing in proactive technology.

Proactivity is current action that improves future outcomes. In insurance and risk management, proactive actions prevent and minimize losses. Proactive solutions were a part of the insurance field well before modern day insurtechs existed. For example, regular physical exams and preventative treatments or tests have benefited the health, life, worker's compensation, and employee benefits industries for decades. When it comes to choosing what tech investments to allocate dollars towards, it is important to prioritize proactive solutions that will deliver the most value. Fostering a culture of innovation and utilizing proactive technology will transform the insurance industry and reinforce a future-oriented outlook.

THE STATE OF INSURANCE

Insurance carriers are currently faced with the ever-growing challenge to either maintain outdated practices or to innovate. As the "predict and prevent" movement expands, there's a two-way profit risk: jump in and risk wasted investment, or let it pass by and be swept under by the competition. As claims risks grow, however, it is imperative that insurance companies stay on top of tech trends to avoid increased conflicts in technological and environmental incidents.

Post-Covid-19, the requirement to innovate has pushed the industry in a positive direction–and quickly¹. From drone footage instead of on-site inspectors to chatbot agents instead of on-call employees, it's undeniable that the world has moved fast in just three years. Those who refuse to innovate, therefore, are severely threatened with being left behind. It'll begin with a lack of data. While competitors are speeding up the underwriting process tenfold, the companies without the data to price accurately and efficiently will be suffering profit losses from one of two domains: a) underpricing claims, or b) losing clients to the accurately priced competitors.

In fact, the data explosion that's been taking the world by storm for the past decade is only growing exponentially. IoT plays a big part in this. With the convenience of connectivity, it's much easier to aggregate huge amounts of data and put it to use in effective ways. The insurance industry recognizes this need for data, too. In a conversation with Mark Scheve, Vice President of Business Development at Hartford Steam Boiler, he explained that commercial and personal lines are beginning the adoption of IoT into offerings, and some insurtechs are incorporating IoT devices into every policy they sell². Insurance

¹ Marria Qibtia Sikandar, The Zebra, <u>https://www.thezebra.com/resources/home/home-insurance-tech-trends/</u>

² Mark Scheve, Hartford Steam Boiler, <u>https://www.linkedin.com/in/mark-scheve-cic-40253819/</u>

carriers are in a much better spot when they utilize data, as it is becoming a necessary aspect of insurance. This is due not only to competition picking it up, but also to younger generations becoming the primary buyers of insurance policies. These customers are expecting an increase in digital adoption that will simplify their insurance experience. As the next generations become the predominant customers, this shift toward simplification is expected. Unicorn companies Hippo and Lemonade have accelerated this shift. Hippo, in fact, is combining simplification with IoT, providing fast quotes and marketing smart home technology to prevent claims³. Lemonade is known for its user-friendly process, utilizing an AI chat bot to provide instant quotes and information⁴. As incumbent carriers compete with user-friendly companies like these, there's no other option than to provide parallel simplification and personalization.

Outside of the insurance carrier space, brokers, too, are placing an emphasis on innovation. In a presentation by Chris Murphy, he stated that brokers will continue to team with technology providers⁵. Mark Scheve agrees, stating that agents and brokers, while they are still assisting customers in their carrier interactions and aiding sales, are now becoming more individual of carriers and are investing in their own products and services as well⁶.

These factors, among many others, increase the pressure to innovate. Above all else, innovation, aside from direct impacts on profitability, will define the customer experience in insurance.

WHERE INSURANCE IS MOVING

The insurance industry is rife with emerging insurtechs, new technologies, and better understandings of innovation. However, it's important to recognize the industry's innovation speed. In a conversation with Julie Pearce and Susan Kelly of American Enterprise, they discussed how the insurance industry is lagging in innovation compared to other industries⁷. Due to the slow-moving nature of such a volatile industry, it can be difficult to see much progress in a brief timeline.

Regardless, there are various trends guiding the future of insurance. Government regulation, hardware advancements, and emerging technologies are among a few of these.

Government regulation is and will continue to be a barrier to any form of innovation leveraging data. AI, for example, is a difficult tool to implement; due to varying state regulations on AI, "a product can't be easily replicated across different markets."⁸ This doesn't apply only to AI either. As a whole, "many commercial insurance players are starting to find the regulatory landscape more fractured and

³ Hippo, <u>https://www.hippo.com/</u>

⁴ Lemonade, <u>https://www.lemonade.com/</u>

⁵ Chris Murphy, Holmes and Murphy, <u>https://www.linkedin.com/in/chrismurphy79/</u>

⁶ Mark Scheve, Hartford Steam Boiler, <u>https://www.linkedin.com/in/mark-scheve-cic-40253819/</u>
⁷ Julie Pearce and Susan Kelly, American Enterprise, <u>https://www.linkedin.com/in/julie-pearce-</u>934b9323/, https://www.linkedin.com/in/kellysusan515/

⁸ Ezra Amacher, Insurance Journal,

https://www.insurancejournal.com/news/national/2022/10/13/689786.htm

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complicated than ever before."⁹ As regulation becomes more clear-cut in the years to come, the insurance industry will be able to transform much more rapidly.

Hardware advancements also play a huge role in the future of insurance, especially with regards to IoT. By Moore's Law, the cost of computers is halved every two years while the number of transistors in a microchip doubles. This means that hardware is advancing exponentially, becoming more efficient while also smaller and cheaper over time. This has been a firsthand experience of those involved in the insurance space. Perhaps the simplest example would be the transition from telematics plug-ins for vehicles to integrated telematics in cars, such as those from Tesla¹⁰. As these improvements occur on a widespread level, they will drive positive change in the industry, applicable to all insurance sectors in some regard.

These hardware advancements assist in the expansion of new technologies as well, IoT included. Sensors are becoming standard, from water leak detectors to vital-checking wearables. LoRa connectivity is on the rise, as it saves money and energy, potentially making many current technologies less expensive. Amazon Sidewalk is one example. Through the use of LoRaWAN, Amazon Sidewalk keeps devices connected to the internet even when internet connection is weak or out completely. This "[enables] IoT devices to work more efficiently and accurately over a longer distance."¹¹

Other rising trends in insurance include the use of gamification, sensor fusion, and automation. But above all, the shift toward proactivity is what will define the future of insurance. Through the adoption of these tactics, insurance companies can reach record-high customer engagement, operational efficiency, and customer satisfaction.

CULTURE OF INNOVATION

Company culture is a highly important aspect of operations in any industry. When employees share a common goal, a common set of values, and a common drive to pursue results, success can more easily be achieved. This applies to innovation on a deep level.

Insurance companies that fear change will be more wary to innovate. By resisting change, they are holding themselves back from untapped potential, taking dangerous risks in the name of comfort and convenience. This can lead to being outcompeted, profit-diminishing inconveniences, or becoming obsolete. Insurance companies that refuse to upgrade their technology due to security and tradition may run into a wall, realizing that innovating sooner would've created a much smoother transition. For instance, the use of legacy systems will inevitably lead to a talent shortage, as younger talent isn't familiar with outdated programs like older, soon-to-retire talent is. This can quickly escalate into deep profit losses, be it from attempting a speedy transition between systems or from training new talent on

⁹ KPMG, <u>https://kpmg.com/xx/en/home/insights/2022/07/future-of-large-commercial-insurance.html#6</u> ¹⁰ Tesla, <u>https://www.tesla.com/ownersmanual/model3/en_au/GUID-2E8E5E0B-DAA8-40B8-9804-45F5960538DF.html#:~:text=Tesla's%20telematics%20system%20wirelessly%20transmits.proper%20m aintenance%20of%20your%20vehicle.</u>

¹¹ Subin B, Beebom, <u>https://beebom.com/what-is-amazon-sidewalk/amp/</u>

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inefficient, outdated programs. While it is daunting to undergo the expenses of rewriting and retesting code, it may be necessary to ensure the company's own future with technological improvements.

To avoid holding themselves back, companies in the insurance industry should adopt an innovation-happy attitude. A business's internal environment is crucial to successfully innovate. In fact, innovation has to be seen as important company-wide, from the top of the ladder all the way to the bottom. In Volume 1 of Bryan Falchuk's book series, The Future of Insurance: From Disruption to Evolution, he writes that "having buy-in across all layers and levels is important," and that insurance companies should "invest in getting people aligned up front."¹² By doing this, innovation will be much easier. When there is excitement to innovate only in the C-suite or only at the bottom of the hierarchy, it will be nearly impossible to get anything done. Furthermore, Falchuk urges insurance companies to be open to change and routes that seem counterintuitive. By taking the road less traveled, there's potential to reap new benefits never seen before. Keeping an open mind toward innovation can be difficult, but it could be what makes or breaks the company's financial future. This stresses the point of company-wide support even further: "an engaged, cross-functional team" helps "tackle the change management from a more inclusive place," Falchuk writes.¹³ Consequently, it's imperative that the company instills a culture of innovation throughout. This can be done through company newsletters sharing the positive implications with employees, inclusion of innovation in company training videos, sponsored attendance to innovationcentered events, and much more.

INSURTECH OVERVIEW

Considering all of the challenges that the industry currently faces, comprehensive solutions are needed to ensure cost-efficiency, profitability, and long-term sustainability. Fortunately, scores of entrepreneurs and tech developers recognize this need. The Internet of Things within insurance is an ever-growing network, with global investment in insurtech more than doubling between the year 2020 to 2021. In fact, total investment in the insurtech industry has amounted to just under \$50 billion over the last decade¹⁴. Many insurtech products are focused on modernizing or automating the regular operations of an insurance carrier. This could be anything from using digital forms and signatures in policy creation to implementing AI-based software applications to assist with claims management¹⁵. While such products do cut costs and increase productivity, the industry needs solutions that can look forward, identifying and mitigating risks before they occur. This idea is the driving force behind developments such as auto telematics programs, which use driver behavior data to better estimate accident frequency and offer incentives to encourage safer driving. However, auto insurance is not the only area in which this idea is applicable. Numerous devices and systems incorporate this proactive model of dealing with risk, and they are being developed in all sectors of insurance. The next section of the paper will detail a selection of these systems and explain how they will help shift the industry toward a more proactive approach.

¹² Bryan Falchuk, The Future of Insurance: From Disruption to Evolution, Vol. 1, p. 48

¹³ Bryan Falchuk, The Future of Insurance: From Disruption to Evolution, Vol. 1, p. 60

¹⁴ Gallagher Re, Global Insurtech Report February 2023, p. 9

¹⁵ N26, <u>https://n26.com/en-eu/blog/insurtech</u>

Worker's Compensation and Employee Safety

When it comes to insuring manufacturers, warehouses, and other businesses that involve manual labor or potentially dangerous machinery, the safety of employees is of utmost concern. Not only do companies want to ensure the well-being of their workforce, but there are also severe costs associated with safety incidents. In fact, work injury costs in 2021 alone totaled \$167 billion in the United States. Injuries in the workplace also contributed to 70 million days of work lost from employees in recovery¹⁶. This places a large burden on the businesses and insurers involved. Luckily, however, a large number of these injuries may be avoidable through IoT. One of the main causes of workplace injuries across all industries is overexertion; in 2022, overexertion accounted for roughly 34% of costs from common workplace injuries¹⁷. IoT devices such as Kinetic's "Reflex" or the MākuSafe® workforce wearable are a solution to this issue. These devices contain a variety of features that help employees stay safe and healthy in the workplace. The Reflex analyzes the ergonomic data of the wearer to recognize overexertion or postures that are high-risk for causing injury. It alerts the wearer when they perform injury-inducing maneuvers, and it gives continuous feedback to train employees to move safely throughout the workday. This prevents workplace injuries that could occur over time due to repeated high-risk movements. So far, it seems the device has had the intended effect. A twelve-month study with Iron Mountain, in which hundreds of workers participated, saw a 64% decrease in OSHA recordable injury rates, as well as a 58% reduction in the cost of worker's compensation claims¹⁸.

Similar to Kinetic, the MākuSafe® solution also tracks the ergonomic data of the wearer. However, this device takes worker safety to the next level by also identifying possible hazards in the wearer's environment. This includes environmental aspects such as air quality, harsh light, loud noises, and unfavorable temperatures or humidities¹⁹. All of these hazards could cause an employee injury or illness, leading to claims or loss of work. Additionally, the wearable can detect its proximity to other devices, which is helpful for contract tracing or pinpointing a worker's location in the event of a slip and fall. Generally, these sensors help management identify and address safety concerns in the workplace before an injury or illness occurs. This is aided by the MākuSafe® device's ability to record and send voice memos, allowing for prompt communication between employees and management about issues that arise. For example, if a worker on a warehouse floor notices an exhaust pipe that is not properly fitted, releasing exhaust into the work area and reducing the air quality, this can be reported immediately via MākuSafe® to resolve the issue sooner. These useful features have proven successful in MākuSafe® case studies, as participating businesses saw a 50% decrease in claim frequency and a 90% decrease in average claim severity²⁰.

Aside from wearables, there are other solutions to ensure that workers are safe on the job. A prime example of a proactive approach to employee safety is AlertMeter®, a check-in system designed to test a

¹⁶ NSC Injury Facts, <u>https://injuryfacts.nsc.org/work/costs/work-injury-costs/#:~:text=The%20cost%20per%20worker%20in,cost%20per%20death%20was%20%241%2C340%</u> 2C000

 ¹⁷ Liberty Mutual Insurance, <u>https://business.libertymutual.com/insights/2022-workplace-safety-index/</u>
 ¹⁸ Iron Mountain,

https://f.hubspotusercontent00.net/hubfs/560753/Case%20Studies/Case%20Study_IronMountain.pdf ¹⁹ MākuSafe, https://makusafe.com/

²⁰ Tom West, MākuSafe, <u>https://www.linkedin.com/in/tomwesthrtraining/</u>

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person's consciousness and alertness. It includes a brain agility game that tracks the speed and accuracy with which a user completes various tasks. It also creates a personal baseline for each employee, against which their performance is measured upon every use²¹. As a result, the test is an objective measurement that cannot be cheated. As such, AlertMeter® fundamentally acts as a more effective replacement to traditional drug-testing. This type of system is crucial for mitigating safety risks, as it can stop completely avoidable incidents before they occur. Take the example of a truck driver that arrives to their shift so tired that it would be unsafe for them to be on the road. AlertMeter® would be able to recognize this, ensuring that the driver does not start their route and pose extra risk to themselves or others. Although this is a hypothetical situation, AlertMeter® has proven its effectiveness in a number of real case studies. Across multiple companies, the implementation of AlertMeter® has on average reduced worker's compensation claims by 40% and lowered costs of safety incidents by 37%²². Moreover, the system is applicable to largely any industry, including areas like commercial trucking in which wearables are not particularly relevant.

With IoT devices in the Worker's Compensation sector, there is a three-fold benefit for employees, businesses, and insurers. First, the safety of the employee is valued and prioritized at every step. Second, mitigating threats to worker safety will prevent the decreases in productivity that follow employee injury, as well as reducing turnover. Finally, insurers can avoid or lessen expensive losses coming from worker's compensation claims. Technologies and sensors like those discussed above make the essential shift from responding post-accident to taking action preemptively before the damage is done.

Property, Security, and Infrastructure Monitoring

The Internet of Things also has a number of applications in property and liability insurance. Those that stand out as more proactive have a common theme of monitoring structures to detect both internal and external issues, creating opportunities to solve potential problems before they even arise. One example of this is the security system IntelliSee. IntelliSee markets with the slogan "smarter surveillance for a safer world." When digging deep into the insurtech's accomplishments and roots, it's easy to see why. With smart AI surveillance cameras, IntelliSee can capture multiple risk factors to prevent claims, ranging anywhere in severity from drawn weapons to spills²³. On the reactive side, it also detects when someone has fallen, when people are fighting, and if someone is trespassing. Being a mission-based company inspired to help reduce gun violence, Intellisee implements active monitoring that combines ease and efficiency. In a conversation with Scott Keplinger, a member of IntelliSee's board, he walked through the before-and-after results of a stadium that installed Intellisee²⁴. Before IntelliSee's installation, the stadium had a security sweep three days before each game and continuously monitored with six or more guards. Post-IntelliSee, the stadium was monitored by IntelliSee and one guard; among huge monetary savings, IntelliSee managed to capture criminal activity, leading to the dissolution of an off-season theft ring. As seen in this example, IntelliSee holds the potential to increase surveillance efficiency while also cutting costs significantly. As an added bonus, IntelliSee also operates ethically, being a non-discriminatory and apolitical technology that doesn't use facial recognition or bias, complying with privacy acts and laws.

²¹ AlertMeter, <u>https://predictivesafety.com/alertmeter/</u>

²² Ibid.

²³ Intellisee, <u>https://intellisee.com/</u>

²⁴ Scott Keplinger, Intellisee, <u>https://www.linkedin.com/in/scottkeplinger/</u>

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Aside from external crises that can be seen by the human eye, there's also the risk of internal issues such as structural damage and infrastructural weakness. In 2021, the collapse of Champlain Towers South in Surfside, Florida left many devastated and confused²⁵. The condominium seemed to have fallen without explanation, killing 98 people in the middle of the night. As a protective measure against a catastrophe like this ever happening again, SILLE Space offers itself as a unique solution. Using satellites, SILLE Space monitors deformation and movement down to two millimeters for all kinds of infrastructure²⁶. This can point to signs of structural weakness, damage, and more faults that could potentially become a disastrous claim in the future. The system automatically updates users on the data, providing a faster response to any issues that arise. By identifying infrastructural issues early on, measures can be taken to repair or reinforce structures and prevent destruction. This technology is applicable to property and construction insurance, ensuring that structures are in good enough shape to be occupied.

Additionally, there exist IoT solutions for more common internal issues within a structure, namely fire and water damage. Property claims due to fire and water are not only extremely disruptive to an insured's life at home; they are also quite costly to insurers. In recent years, water damage and freezing claims have contributed to well over 20% of all homeowners' insurance losses²⁷. Fire damage claims are even more disastrous, with upper estimates indicating that fire is responsible for about 30% of such costs²⁸. As for commercial property insurance, the frequency of water and fire claims are about 15% and 10%, respectively²⁹.

Clearly, these two perils pose acute problems to property insurers. However, a number of insurtechs offer devices that can combat the issue. One such device is Sense, an apparatus that monitors the electricity usage of appliances in a building. The device is connected to a circuit board and collects information about which appliances are on and how much energy they are actively using. This information is then uploaded to the Sense mobile app, allowing users to keep track and be alerted when there is unusual activity³⁰. The added awareness that a property owner receives from a device like Sense could be crucial for identifying leading indicators of claims. For example, Sense can recognize if a stove is left on for longer than normal, or if a washing machine needs to be replaced because it is not running as efficiently as it should. A homeowner would then be able to address each situation before a fire hazard arises or the washing machine breaks down, causing more damage. The features that Sense provides offer reassurance to insurers and policyholders, enabling property owners to better protect their buildings and occupants within.

For water perils, there are tools that can detect or, in some cases, prevent water leaks in a structure. One is LeakBot, a device that tracks water temperatures in a structure's piping system. In doing so, it can

²⁵ Sharon Alfonsi, CBS News, <u>https://www.cbsnews.com/news/surfside-condominium-collapse-60-minutes-2022-11-13/</u>

²⁶ SILLE Space, <u>https://www.sille.space/en/</u>

²⁷ Insurance Information Institute, <u>https://www.iii.org/fact-statistic/facts-statistics-homeowners-and-renters-insurance</u>

²⁸ Maxime Croll, ValuePenguin, <u>https://www.valuepenguin.com/home-insurance-statistics</u>

²⁹ Marianne Bonner, The Balance, <u>https://www.thebalancemoney.com/most-common-insurance-claims-</u> 462673

³⁰ Sense, <u>https://sense.com/</u>

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determine when there is a prolonged or major fluctuation in the temperature, a usual sign of a leak. Users can then be alerted via the LeakBot app and attend to the issue immediately³¹. Such a device is extremely useful in the mitigation of water claims; by catching a leak early, a property owner can minimize or prevent any water damage to their building. This saves insureds the headache and substantially decreases the costs borne by insurers on the claim (often thousands upon thousands of dollars).

Now, it must be mentioned that there are still limitations on the actionability of utilities like LeakBot or Sense. There are sure to be cases in which a property owner is unable to deal with a peril even if they are aware of it, such as a homeowner being on vacation. This must be considered when weighing the costs and benefits of implementing such devices. However, there are solutions to these limitations. LeakBot's app, for example, has a feature which allows a user to easily contact a nearby professional in the event of a leak. For businesses and commercial property, it is also possible to have professionals on staff to confront the situation more quickly. Finally, there are more efficacious solutions on the market for water damage specifically, ones such as FloLogic that are able to automatically shut off the water line when they detect a leak³². These are much more expensive and difficult to install in an existing water system, so they appear largely irrelevant for existing properties. Instead, they are likely to be filtered in with new structures as they are built. Ultimately, however, utility-monitoring devices like LeakBot and Sense can create an extra level of protection for any structure and are of great benefit to the property insurance industry.

Fleet Telematics and Driver Safety

When it comes to commercial automotive insurance, no event is as regularly costly or troublesome as accidents. Each year, there are an estimated 400,000 crashes involving large commercial vehicles in the United States. Not only this, but the vast majority of such accidents are related in some way to driver behavior³³. Considering the ongoing "rate fatigue" within the commercial auto insurance sector, as well as the increasing costs of claims due to inflation and technological advancements in vehicles³⁴, the industry needs a solution that can effectively decrease vehicle accident frequency. Targeting this central issue will be essential for a carrier's profitability and longevity in the market.

Fortunately, within IoT, fleet telematics systems offer an answer to combat these challenges. There are a host of SaaS fleet management systems out there, but the most proactive of the bunch possess two key elements: driver training programs and engagement-focused user interfaces. These attributes are well-exemplified in the US-based company SafeMode. SafeMode prides itself on being a commercial fleet management system that prioritizes the driver in all respects. Drivers can view their data and safety score collected by the telematics in their vehicle, and SafeMode's gamified driver app gives easy access to safety coaching and opportunities to earn rewards³⁵. By tying incentive structures to employees' safety

³¹ LeakBot, <u>https://leakbot.io/leakbot/</u>

³² FloLogic, <u>https://www.flologic.com/shop/</u>

³³ American Team Managers Insurance Services, <u>https://www.atminsurance.com/the-most-common-</u> <u>causes-of-commercial-trucking-</u>

claims/#:~:text=Commercial%20vehicle%20claims%20are%20typically,environmental%20factors%20or %20driver%20error

³⁴ Alex Wells, Zurich, <u>https://www.zurichna.com/knowledge/articles/2021/08/commercial-auto-insurers-face-an-environment-of-continuing-challenges</u>

³⁵ SafeMode, <u>https://www.safemode.co/</u>

and fuel efficiency ratings, it encourages the development of better driving habits. For instance, case studies with Pinch Transportation³⁶ and Taavura³⁷ respectively saw a 30% decrease and a 20% decrease in accidents after the implementation of SafeMode. This design also helps align driver interests with that of their employers–because drivers are incentivized to comply with safety regulations and drive more fuel-efficiently, their goals will be in line with that of management. Also, in engaging more actively with the telematics in their vehicles, drivers play an integral role in identifying issues with the hardware itself. This can help managers discover and target any problems much quicker than they would otherwise, which was reported in multiple cases³⁸. Overall, incentive structures contribute to a more cooperative employer-employee relationship, improving driver participation and retention.

A similar success story in fleet management IoT is Bledsystem, a Spanish firm that partners with public bus companies in Europe and North Africa. Bledsystem provides a software solution that includes an AI-based training program and a gamification platform for bus drivers, with the goal of eliminating excess fuel consumption and improving operational efficiency. In fact, Bledsystem has helped their clients lower accident rates by 15%, as well as reduce energy consumption by an estimated 6-10%³⁹. The benefits of their solution are analogous to that of SafeMode, engaging drivers through incentive programs and lowering the rate of safety incidents. However, Bledsystem is a special case because their driver training program utilizes artificial intelligence, which enables more personalized recommendations for each user. This leads to even quicker improvement in driver behavior. It is already clear that AI is taking the Internet of Things in insurance by storm; core procedures like claims processing, fraud detection, and even underwriting are already starting to become automated by AI⁴⁰. Bledsystem is another example of how AI is entering the industry, and a unique one at that, as it attempts not just to help carriers run more efficiently but to decrease their claim volume as a whole.

Overall, the strengthening of engagement that comes with systems like SafeMode and Bledsystem is quite beneficial, both for firms and for the carriers that insure them. As businesses cut costs of fuel consumption and reduce the risk of driver turnover, their insurers have the assurance that their client is becoming a safer policy over time. One thing that must also be considered is the cost of implementing incentive structures. Although this poses a new expense to the business, it is likely that such costs will be at least partially offset by the savings already discussed. Additionally, the policyholder has the future opportunity to save on their insurance premium as they start to pose less of a risk to their carrier. Ultimately, proactive fleet management systems add immense value in their ability to enhance risk management.

³⁶ Pinch Transportation, <u>https://docsend.com/view/gfr2psg6ebh6bkev</u>

³⁷ Taavura, <u>https://docsend.com/view/pjwdkmje5xea7jzw</u>

³⁸ Ibid.

³⁹ Bledsystem, <u>https://bledsystem.com/</u>

⁴⁰ Insurance Europe, <u>https://www.insuranceeurope.eu/publications/2608/artificial-intelligence-ai-in-the-insurance-</u>

sector/#:~:text=AI%20solutions%20can%20be%20used,encourages%20and%20rewards%20responsible %20behaviour

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Improving Life and Health

When it comes to proactive measures in the insurance space, developments in the life and health sector are perhaps some of the most widely relevant. IoT advancements in this area are concerned with enabling individuals to play a more active role in their health, which creates much benefit for both the individuals themselves and their insurers. To do so, they integrate sensors with digital programs to help engage policyholders and give them the tools to be successful.

A great example of this is the CareFeed system from the company CareValidate. CareFeed is an app designed to aid the care teams of patients that require long-term care by improving communication between the care team, health care providers, and loved ones of the patient. The app is similar to a social media feed in which care teams can send updates about the patient's condition and well-being⁴¹. This can not only provide peace of mind to the patient's family, but it can also serve as a tool for doctors and providers to collect and organize data on the patient's health. Moreover, the app connects to multiple IoT devices that can bring even more insight. This includes wearable technology like the Apple Watch or Fitbit®, both of which collect information on the user's health. Plus, CareValidate offers two sensors they recommend for use with the CareFeed app. One is SleepSense, which is placed under a patient's mattress to track their sleep cycles and detect snoring. The other is Safelight, a lightbulb that senses movement, sounds, and the proximity of a caregiver to the room 42 . These tools help shift healthcare to a more proactive outlook, as they allow caregivers to identify potential problems in a patient's health before an issue becomes more serious. For example, the capabilities of the Safelight lightbulb could be used to discover a patient who has had a fall and quickly give them the proper help. Better monitoring of the individual's health should also assist caregivers as they respond to each client's specific needs, improving and personalizing the patient's care. It is no wonder why insurance conglomerate American Enterprise Group, Inc. recently invested in CareValidate in 2019⁴³; If implemented successfully, a system like this could save health insurers greatly on claims as patients' health improve and their care teams are more equipped to look after them.

In addition to the CareValidate system, some of the most noteworthy IoT developments in the life and health space have been health tracking and incentive programs. For health insurance, there is Attain® by Aetna, an app-based system that allows users to earn rewards when they log relevant health-improving activities⁴⁴. This includes things such as exercise, good sleep and nutrition, or even refilling a prescription and visiting a physician. Attain® uses an individual's health history, as well as data collected from a Fitbit® device, to set goals and determine rewards for its users. This helps users play a more active role in their health and create beneficial habits over time. As of now, it seems that the Attain® program has led to much more engagement in health from their policyholders. Since its inception, Attain® has brought about a 28% increase in Flu shot rates for its users, and a 14% increase in calories burned for sedentary users⁴⁵. While the carrier certainly bears costs in providing rewards (mostly gift cards for popular retailers), the long-term implications of such a program are quite favorable. If a health insurer can

⁴¹ CareValidate, <u>https://www.carevalidate.com/carefeed</u>

⁴² Ibid.

⁴³ Julie Pearce and Susan Kelly, American Enterprise, <u>https://www.linkedin.com/in/julie-pearce-</u>934b9323/, https://www.linkedin.com/in/kellysusan515/

⁴⁴ Attain by Aetna, https://www.attainbyaetna.com/index.html

⁴⁵ Attain by Aetna, https://www.attainbyaetna.com/clients.html#results-id

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encourage its policyholders to create healthier lifestyles, there is a strong potential for eliminating future claims. The system also enables the carrier to price policies more accurately, as it enhances their access to data.

A similar program has also been established in the life insurance space via the partnership between John Hancock Financial and the health rewards app Vitality⁴⁶. Any individual that holds a life insurance policy with John Hancock can enroll in the Vitality program. Additionally, they can even earn discounts on their premiums by upgrading to the Vitality Plus option. Like with Attain®, users can set personal goals and work towards various rewards by taking action to better their health. Vitality is compatible with most mainstream health wearable devices, including Fitbit® and Apple Watch (which are also listed rewards in the program). This makes for an easier integration of the program, as the app can sync to devices that policyholders already have. Again, the insurance carrier has the potential to realize much gain from this kind of program. Healthy habits generally translate to longer lives, meaning there are thousands upon thousands of dollars at stake if insureds remain on their policy for even an extra year or few years. Although the John Hancock-Vitality partnership is currently very young, only having been active since 2015^{47} , the program has seen promising levels of participation thus far. 93% of active users are achieving financial benefits from Vitality, and 80% are reporting similar or improved levels of health year after year⁴⁸. Due to the large amount of time over which life insurance policies are often held, it is currently too early to determine the long-term savings of the initiative in contrast to the more obvious short-term costs. However, a high level of engagement points toward an encouraging outlook for the future.

ADOPTION ISSUES

Many carriers are concerned about the "Big Brother" image that many policyholders and workers view insurtech as. One of the most widespread instances of this mistrust and apprehension is in telematics and fleet management technology. Bledsystem and Safemode are examples of technology in this industry that provide value, while also navigating the difficulties and the bad image present. The upfront time and cost of implementation is also an important barrier that may slow down policyholder adoption or even completely halt interest in adoption. Carriers need to put forward specific solutions, as no tech solution will ever be a one-size-fits-all solution for insureds. To remedy this issue, brokers and agents can play a significant role in the personalization of the technology for individual policy holders.

Additionally, some solutions may require too much interaction or effort to be put in during the workday. This can hurt attempts to create a more risk-aware workplace because of how intrusive or time-consuming interacting with the new technology is. One way that workplaces are helping minimize the friction of adding these safety measures is by implementing them into a part of daily routine. MākuSafe® and Alertmeter are examples of this, as they are included in the regular activity of clocking in for their shift.

⁴⁶ Angela Noble, John Hancock, <u>https://www.linkedin.com/in/angelanoble09/</u>

 ⁴⁷ CISION PR Newswire, <u>https://www.prnewswire.com/news-releases/john-hancock-introduces-a-whole-new-approach-to-life-insurance-in-the-us-that-rewards-customers-for-healthy-living-300062461.html
 ⁴⁸ John Hancock Vitality, https://www.johnhancock.com/life</u>

insurance/vitality.html#:~:text=Vitality%20is%20a%20rewards%20program,good%20for%20our%20business%20too

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When deciding what technology to invest in, it is incredibly important to be aware of the problems regarding data availability. Also, when deciding to partner with or utilize an insurtech, the technology's value and their return on investment is a highly significant issue for carriers. To determine if the technology will be worth it, carriers look not only at the cost but also at the available data.

There's one hiccup here, however. When people wait to invest because of a lack of data, but investments and utilization of the technology is what produces the data, this can lead to problems. Another difficulty with the data from these devices is that when losses are being prevented, it is hard to realize what could have been without the implementation of this technology. When this technology is working, less losses occur, but the savings can't be calculated exactly.

Despite these issues, current trends, such as gamification and integration, are becoming a major piece of insurance, assisting in the propulsion of adoption through their engaging and convenient digital offerings.

ULTIMATELY, WHAT'S NEXT?

Gamification

The abundance of data being sourced from IoT devices opens the door to a whole new world of opportunities. One of these is gamification. Gamification is the implementation of game elements into non-game activities. It is most often incorporated through the use of badges, point systems, leaderboards, challenges, and rewards or premium discounts to increase user engagement. It may be reasonably assumed that by directly integrating these gaming mechanics with the analysis of IoT-sourced data, users will be more motivated to perform at a higher level in an effort to attain these goals. In the context of insurance, this means insureds actively taking loss control measures to further their own progress and achievement within a given game.

Benefits of Gamification

Even with the shiny appeal that it brings about, one question looms large: why should the insurance industry care about gamification? To put it simply, it all comes back to customer engagement. With an increasingly competitive insurance market and new threats arising from startup insurers, insurance companies have had to double down on their efforts to create a positive customer experience to differentiate themselves from competitors. Customer engagement is a key aspect of this customer experience⁴⁹, and gamification serves as a vehicle that carriers can use to reap a variety of benefits by maximizing customer engagement.

Primarily, insurers should see noticeably higher customer loyalty and retention rates as they start to roll out policies with some element of gamification built into them. This should not come as a surprise either. After all, the main purpose of bringing gamification into the customer experience is to engage the customer through a fun, interactive activity or user interface that keeps them coming back for more. Insurers can also use this increased engagement to further a given insured's understanding of their own policy, making for a policyholder that can actively identify and avoid more risk prone behaviors. The

⁴⁹ EY, Implementing a Gamification Strategy, p. 2

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continuation of both this behavior and corresponding loss experiences would drive down risk exposure, calling for a reduction in premiums and greater levels of customer satisfaction.

Another key benefit made possible through gamification is the further identification of a given insured's behaviors and patterns. This data provides greater insight into the risk at hand, providing underwriters with more accurate and complete information to properly assess both prospective applicants and accounts seeking a renewal.

Finally, one of the biggest benefits that can be achieved is a significant increase in market penetration with younger consumers. In a 2022 study conducted by the Entertainment Software Association of the U.S. gaming community, roughly half of the 215.5 million active players fell within the 18-44 age group⁵⁰. These statistics illustrate just how prevalent games are in the lives of younger consumers, an impactful characteristic that insurers can leverage when marketing gamification to these consumers. Additionally, 24% of the US gaming community falls under the age of 18, a percentage painting a hopeful future regarding the reception of gamification by future consumers⁵¹.

Implementation is Everything

The success of gamification and its integration across the insurance industry relies heavily upon its successful implementation with the customer. None of the previously mentioned benefits can be effectively achieved if a game application is not properly rolled out and maintained to fit the needs of the target audience.

There are a few key factors that must be taken into consideration in this regard. First, there is no one-sizefits-all game that can be universally used. These experiences and interfaces must be specifically tailored to the target consumer group. By analyzing each customer on a case-by-case basis, game developers can achieve a much greater level of personalization, and subsequently, a greater level of engagement. However, the needs of the consumer are constantly evolving. Therefore, insurers must constantly evaluate consumer needs and make any necessary updates to adhere to those requests.

In addition to personalization, another critical factor to the success of gamification is the avoidance of destructive competition within team-oriented applications. While the addition of leaderboards and rankings can incorporate a sense of pride that motivates an insured, there may also be a negative side to such social comparisons. If a consumer is consistently performing just below one of their counterparts, they could conclude that attaining that higher ranking is not likely or even possible. Similarly, if an insured is consistently placing at the bottom of the leaderboard, they may doubt their ability to progress amongst their peers. An individual's perception that the "game" cannot be won may disincentivize their continued participation in the game. Fortunately, a few different solutions have been developed. Garmin, a heavyweight in the wearable technology market, implemented gamification in their fitness trackers with a feature allowing consumers to see how they compare to other users in the area⁵². Garmin addressed the issue of destructive competition by grouping individuals into classes of similarly performing users in that

⁵⁰ Entertainment Software Association, <u>https://www.theesa.com/wp-content/uploads/2022/06/2022-</u> Essential-Facts-About-the-Video-Game-Industry.pdf

⁵¹ Ibid.

⁵² Plug and Play Tech Center, <u>https://www.youtube.com/watch?v=bSGlPpOv-e0</u>

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area, creating level playing fields through competitive performance classes. Users progress through a given performance class into a higher performing group if they consistently rank at the top of their current class. This structure greatly reduced negative effects of social comparison as users found themselves on an equal playing field with their competitors in each performance class. Such reduction is a crucial factor that insurers need to key in on to maintain high levels of customer engagement, especially if they want to maintain users' motivation for extended periods of time through these applications.

The final consideration that insurers must consider in the implementation process is the handling of more risky insureds identified through gamification. Should an insured be penalized if they perform poorly in a given application, especially in a manner indicative of that insured being a greater risk? The experts suggest that the answer is no. The penalty incurred will be seen in the user's lack of progress made toward the goal. Moreover, the effects of negative punishment can be felt when a historically high achieving user starts to perform poorly. In this case, the hypothetical insured would no longer receive those benefits associated with a better score, which would motivate them to get back up to that higher performance level. All these intrinsic motivators serve to keep the insured coming back to the gaming experience, driving up long-term customer engagement and satisfaction without incurring expenses that might be needed for material rewards⁵³.

IoT-Enabled Gamification within the Workers' Compensation Sector

The influx of data made available by IoT has allowed gamification to find its way into nearly every corner of the insurance industry, save one—workers' compensation. Carriers in this line of business have shown a hesitancy to invest in IoT devices. This reluctance has been a barrier to gamification gaining traction in the workplace. However, technology is rapidly improving. More data is being produced every day, reinforcing the efficacy of IoT devices and their benefits to an organization's bottom line. This will open the door for gamification to finally make its way into the sector in a variety of ways.

For example, companies like MākuSafe® and Kinetic could implement a risk-scoring system using the data collected from their wearable devices. Through gamification, they could create a performance-based progression system to motivate workers to consistently exercise proper risk management and safety practices. Leaderboards, rankings, and other competition-driven avenues can be taken to further motivate insureds to perform these loss control measures. Gamification data can also be used to reveal productivity patterns and injury patterns within a given environment, an insight that could be pivotal in attempts to increase workplace efficiency.

Even with all these benefits, there are still challenges that need to be kept in mind. The impacts of deconstructive competition on overall team motivation still remain, but the biggest hurdle lies in effectively structuring an incentive program that doesn't induce burnout among employees. Fortunately, by listening to user feedback in the workplace, insurers can avoid the monotony of repeatedly administering the same game system every single day. In fact, both social comparison and burnout can be addressed by giving purposeful attention to the implementation process. Once again, this illustrates just how crucial implementation is to realizing the benefits of gamification.

⁵³ Mike de Waal, Majesco, <u>https://www.majesco.com/blog/gamification-in-insurance-theory-and-approaches/</u>

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In time, the growing digitalization of the insurance industry and the subsequent increase in IoT adoption will further cement the role of gamification within insurance offerings. Likewise, incumbent carriers will have to turn toward gamification to stay up to speed with startup insurers who have already been excelling on the customer experience and engagement fronts. Even with the many challenges being presented, the increased customer engagement and market penetration benefits that are realized more than make up for the entrance costs of using newer tech. However, the insurers who invest the necessary time and resources into gamification today are also going to be the ones that can control its direction going forward.

Increase in Digital Offerings

Having an increase in digital offerings is vital for insurtechs to satisfy client expectations, gain a competitive edge, enhance operational efficiency, harness data analytics, and maintain flexibility and agility in a continuously changing industry. It is very important for insurtechs to meet customer expectations. Consumers increasingly expect simple, fast, and seamless digital experiences across all industries, including insurance. Insurtech businesses can satisfy these demands and improve the client experience by expanding their digital products. This creates an advantage over traditional insurance businesses that might have less sophisticated digital capabilities. This can also help companies attract and retain clients who value digital convenience and innovation. For operational efficiency, insurtechs can cut expenses and increase operational efficiency by utilizing digital services like automated underwriting, claims processing, and customer support.⁵⁴ This may result in shorter response times, fewer mistakes, and cheaper costs for the business and its clients. Data analytics can also provide insurance tech companies with significant insights that can help them better understand client behavior, preferences, and risks. This can enable them to develop more tailored and targeted insurance products and services. Additionally, this would increase flexibility and agility. Digital products can enable insurtech companies to respond swiftly to changing client needs and industry developments. Companies can quickly alter their products and services to meet growing customer demands and stay ahead of the competition.

For example, John Hancock[®], a financial services company that offers a range of insurance and investment products, has created various brand collaborations to boost its digital products and provide its clients with more value-added services. John Hancock's brand alliances have helped the company develop its digital products, improve its customer experience, expand its product offerings, and provide consumers with access to financial education and information. There are a few ways in which John Hancock's brand collaborations have increased its digital offerings. The first is technology integration. John Hancock has partnered with various technology companies to integrate their digital tools and services into its platform. For instance, it teamed with Vitality[®] to offer its policyholders access to Vitality's wellness platform. The second way is improved customer experience. John Hancock's brand relationships have enabled it to provide its consumers with a more personalized and seamless digital experience. As an illustration, it collaborated with Roostify[®] to offer a digital mortgage application process that is quicker, safer, and simpler to use than conventional methods. They have also increased product offerings; John Hancock has been able to offer its consumers more complete financial solutions because of its brand collaborations. For instance, it collaborated with Twine[®] to provide clients with a digital investment platform that enables them to invest in a variety of portfolios in accordance with their risk appetite and objectives.⁵⁵

⁵⁴ Futran Solutions, <u>https://futransolutions.com/insurance-digital-transformation-revolutionizing-the-industry/</u>

⁵⁵ Investopedia, <u>https://www.investopedia.com/twine-review-4587930</u>

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Finally, it increased access to financial education; John Hancock has worked with organizations like Junior Achievement® to deliver financial literacy seminars to young people. Action like this creates a more positive brand image for the company and enhances its reach within the market.⁵⁶

Integration of IoT into Singular Apps

In addition, the leading supplier of equipment breakdown insurance and other specialty insurance products is Hartford Steam Boiler® (HSB). By using its IoT platform, HSB has incorporated IoT into its insurance services. In doing so, HSB is able to gather and analyze data from connected devices and sensors, giving clients real-time insights and facilitating preventative maintenance and risk management.⁵⁷

To integrate IoT into singular apps, HSB uses its HSB Connected Technologies platform, which is designed to be flexible and customizable. The platform enables HSB to connect to a range of IoT gadgets and sensors, such as flow meters, pressure sensors, and temperature sensors.⁵⁸ Once linked, the platform gathers information from these gadgets and sensors and performs real-time analysis on them.

HSB then uses this data to create singular apps that provide actionable insights and alerts to customers. For example, HSB might create a mobile application that tracks the operation of a particular piece of machinery, such a boiler or air conditioner.⁵⁹ The software would gather information from sensors on the apparatus and use that information to reveal performance details, such as energy use, temperature fluctuations, and potential maintenance concerns. As such, it can offer in-the-moment risk management and safety alerts. This is similar to interfaces discussed in prior sections, such as the Sense app.

Overall, HSB is able to offer its clients real-time insights and alerts that can enhance safety, lower risk, and maximize equipment performance. By integrating IoT into singular apps, HSB can deliver customized solutions to its customers that are tailored to their specific needs.⁶⁰ This matters because the integration of IoT into singular apps by HSB is an innovative way to use technology to improve equipment performance. Customers who engage with the technology can increase productivity, maximizing the operation of their equipment. It also enhances safety with real-time risk monitoring and safety warnings, then identifying potential dangers and offering suggestions for risk mitigation by gathering and analyzing data from linked devices. Customers benefit from this by lowering their risk exposure and avoiding expensive equipment breakdowns. Overall, IoT technology allows HSB to provide its clients with user-friendly products that give real-time insights, assisting them in making better-informed decisions to manage their assets and risks more successfully.

⁵⁶ Junior Achievement, <u>https://www.georgia.ja.org/blog/2019/1/16/introduction-john-hancock-new-president-and-ceo-of-ja-of-georgia</u>

⁵⁷ Business Wire, <u>https://www.businesswire.com/news/home/20161004006443/en/HSB-Uses-Internet-of-Things-to-Help-Insurers-Prevent-Losses</u>

⁵⁸ Steve Rogerson, IMC IoT M2M Council, <u>https://www.iotm2mcouncil.org/iot-library/news/iot-newsdesk/lora-products-announced-for-amazon-sidewalk/</u>

⁵⁹ Business Wire, <u>https://www.businesswire.com/news/home/20221206005639/en/HSB-Adds-WhiteHaX%C2%AE-App-to-Cyber-Insurance-for-Consumers</u>

⁶⁰ Hartford Steam Boiler, <u>https://www.hsb-ats.com/en/industrial-iot/relayr.html</u>

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Advancements in Integration and Connectivity Capabilities

For insurers, the costs associated with purchasing, deploying, and maintaining IoT devices throughout their lifetime have always been a major obstacle to their adoption. In an industry historically resistant to change, this is one more crutch holding back innovation. To address this issue, universal IoT compatibility standards and the acceptance of common protocols, data formats, and interfaces are needed to enable seamless collaboration between IoT devices from different manufacturers.

Implementing a universal set of protocols brings several benefits to the insurance industry. First, it ensures interoperability, allowing IoT devices from different manufacturers to communicate and share data effectively. This interoperability empowers insurers to integrate various devices into their operations and access a wider range of data sources for enhanced decision-making. Moreover, universal standards promote scalability. As more devices become compatible with the same protocols, insurers can easily expand their IoT networks without the need for significant modifications or upgrades. This flexibility enables insurers to adapt and grow their IoT infrastructure as their needs evolve.

Lastly, common protocols and standards provide a framework for robust security measures. The Connectivity Standards Alliance (CSA)⁶¹, the most prominent voice advocating for universal IoT standards, requires adherence to strict Intellectual Property (IP) policies in order to be a member of the alliance. A deep, multi-layered security protocol offers the defense needed by these IP requirements to respond to an ever-growing number of data threats. The CSA is an IoT pioneer, providing a long-awaited look at what a "connected" world can look like. More importantly, they provide this glimpse into the future while maintaining the confidentiality and integrity of the data in question, a point of immense importance in the insurance world. By adhering to these established standards, insurers can maintain the quality and privacy of data sourced from the IoT device offerings. This helps protect sensitive customer information and mitigates the risks associated with cybersecurity breaches, all the while reinforcing the insured's confidence in the insurer.

Each one of the benefits mentioned above points back to a central idea: cost reduction. By adopting universal IoT compatibility standards, insurers can capitalize on economies of scale. This enhanced interoperability and scalability would lower manufacturing costs, improve supply chain efficiency, and reduce expenses associated with device integration and maintenance. This cost-effectiveness makes IoT adoption more feasible and financially viable for insurance companies.

One notable example of a universal IoT compatibility standard is Matter. Matter⁶², a product of the CSA, aims to establish a set of standards for IoT devices in homes, enabling users to manage a wide range of devices from a singular point. For instance, a homeowner could manage their lights, thermostat, doorbell, or grill from an app on their phone. This seamless and unified environment grants consumers a simple, hassle-free experience combined with powerful data collection and oversight capabilities. Matter, and the subsequent seal of approval for participating devices known as "Matter Compatible," would provide the necessary quality and efficacy assurance that insurers seek and ensure the capability and simplicity needs that insureds desire. However, the success of Matter and other emerging compatibility standards is reliant on the approval of not only the insurance industry, but the entire tech industry as well.

⁶¹ Connectivity Standards Alliance, <u>https://csa-iot.org/resources/security/</u>

⁶² Connectivity Standards Alliance, <u>https://csa-iot.org/all-solutions/matter/</u>

While the emergence of universal standards is promising, they are still in their infancy. Without common protocols, insurers struggle with the integration of devices from different manufacturers, resulting in fragmented and siloed IoT deployments. This lack of interoperability hampers data aggregation from multiple sources and limits the industry's ability to fully leverage the benefits of the technology. To address these challenges, LoRaWAN (Long Range Wide Area Network) is emerging as a promising solution. LoRaWAN is a wireless communication technology designed specifically for connecting IoT ecosystems, a key differentiator reaping much value⁶³. One strength of the IoT network is its low power consumption, which enables LoRa hardware to have an extremely long-lasting battery life, reaching up to ten years in some instances. This feature is particularly valuable for devices installed in remote or hard-toreach locations where frequent maintenance or battery replacement is impractical. On that note, LoRaWAN also provides an ultra-long range compared to other wireless technologies. It can cover distances of up to two miles indoors and up to six miles outdoors. This quality grants a host of logistical opportunities and gives a glimpse into what "smart cities"⁶⁴ could look like in the coming years. More importantly, this extensive range opens opportunities for deploying IoT devices in rural and agricultural environments, especially given the limited cellular network infrastructure in those regions. What's more, the long-range capability of LoRaWAN reduces the need for additional infrastructure such as repeaters or access points⁶⁵. This idea, with its exceptional battery life, translates to cost savings for insurers, as they can deploy IoT devices over larger areas without requiring extensive network infrastructure investment.

By leveraging LoRaWAN and standardized IoT protocols, the insurance industry can create a more affordable and user-friendly environment for IoT adoption. These advancements will propel adoption rates forward, enabling insurers to gather more accurate data, enhance risk assessment capabilities, offer personalized insurance products, and streamline their operations. These integrations and connectivity advancements will contribute to the growth and efficiency of the insurance industry as it embraces the benefits of IoT technology.

CONCLUSION

As discussed in this report, IoT has played a significant role in propelling proactivity in the insurance industry. The increased emphasis on using data to predict and prevent is shifting the industry to a brandnew operational model, focusing on reducing risk as opposed to simply responding to it. Between advancements in technology, innovative insurtech offerings, widening thought pools, and movements into engagement-boosting strategies, the future of insurance is sure to see positive shifts toward a universally beneficial position, promoting safety, boosting health, and saving lives.

Going forward, it would be wise to dive deeper into the various barriers of IoT implementation and how to overcome them. The concepts of maintaining as much privacy as possible while still procuring

⁶³ C&T RF Antennas Inc, <u>https://ctrfantennasinc.com/lora-vs-zigbee/</u>

⁶⁴ LORIOT, <u>https://www.loriot.io/blog/LoRaWAN-in-the-IoT-</u> ecosystem.html#:~:text=Research%20estimates%20that%20LoRaWAN%C2%AE,is%20the%20most%2 <u>0popular%20technology</u>

⁶⁵ The Things Network, https://www.thethingsnetwork.org/docs/lorawan/what-is-lorawan/

adequate data, simplifying IoT set-up procedures for customers, and making the most of software and hardware capabilities are but a few examples that will assist in the propulsion of proactivity in the insurance industry.

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