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Leveraging Cutting-Edge Tech to Mitigate and Manage Risk in Your Organization

I. The State of Construction Safety

As you all may be experiencing, the changing dynamics of the construction workforce – labor shortage, lack of skilled labor, and aging workforce – are having a significant impact on a company’s risk profile. According to the Associated General Contractors, 78% of contractors are having a hard time finding qualified workers. And, even though construction accounts for only 4% of the U.S. workforce, it makes up over 21% of private industry fatalities. Of those fatalities, most of these result from a fall or struck by equipment.

In an industry defined by tight margins and an even tighter labor market, contractors are turning to innovative technology to build smarter and safer. New and relatively inexperienced workers are more likely to put themselves and others in harm’s way, especially within the first 90 days. Another significant data point that speaks to this is from Travelers’ construction claim data. 52% of all injuries occur within the first year of employment regardless of industry experience. This jumps to 69% within the first three years. Finally, 44% of employer insurance costs in construction are spent on workers’ compensation insurance alone, which is more than three times the average cost for employers in all industries.

Simply put, as projects grow increasingly complex, and the workforce more diverse, manual identification, documentation, and response to worker safety can’t keep up with the demands of the modern construction industry. That’s why you may be seeing a shift in investment in construction technology without your own company.

Technology and its potential impact on loss mitigation

Contractors are adopting IoT-enabled solutions like wearables and sensors to capture information from the jobsite to monitor and measure progress, detect and record hazards, and improve site and worker safety.

The Internet of Things (IoT) refers to the network of connected devices that automatically collect data and feed it to the Cloud where it can be accessed, analyzed, and acted upon. Contractors are embracing IoT-enabled solutions because of their ability to record information more affordably, efficiently and effectively than is possible manually. With drones, for example, contractors can see what's happening on their jobsite from above. This generates a wealth of new visual data that can be combined with intelligent software and data analytics to monitor projects, identify and tag hazards and proactively manage projects. Wearable technology, as another example, can automatically collect information from workers on site, recording time & attendance and real-time location. Wearable devices like Spot-r also detect falls on the jobsite, triggering a real-time alert to designated personnel, and telling them when and where an incident occurs.

Getting to this pivotal point in the industry has required work and collaboration from general contractors, tech providers, and insurers. This wealth of new information, particularly safety-related information, allows the industry to document and respond to injuries or hazards, better investigate claims, and identify risks/trends to prevent future incidents. By actively exploring tech solutions, and working alongside technology providers, and insurance partners, the industry is learning how to leverage this data now and developing practices to manage and maximize it in the future.

Developing an innovation strategy

There's no shortage of solutions in the marketplace today promising to prevent accidents, reduce rework and boost profitability. A successful IT strategy involves learning to cut through the clutter to deploy tools that add value across departments and stakeholders. To move from "pilot" to large-scale adoption, contractors need to look for multiple use cases across their organization. Are there compelling enough "what's in it for me" cases to justify investment? Is it secure, scalable, and compatible with the rest of your business architecture?

With its emphasis on worker safety and "Gilbane Cares" culture, Gilbane not only recognized the immediate value of tech like Spot-r to improve injury detection and response and engage workers in site safety and hazard reporting, but also the long-term value of robust safety and risk data.

One thing that makes Gilbane so successful is that they incorporate multiple functions and departments when evaluating a tech solution. Right away, their risk management and safety leadership brought in their CIO and project teams to determine the best way to roll the Spot-r system out at the jobsite. How did the solution need to work for Gilbane? How would it affect project managers and workers at the jobsite? By treating every person on site as an extension of the Gilbane family, they prioritize tools that add value at all levels of a project.

Gilbane and other leading contractors are taking a strategic, focused approach to innovation and technology adoption. What problem can this tech solve? What are the expected results or use cases? Gilbane has beta tested solutions in the field, analyzed results, and applied findings with the goal of continuously improving processes and outcomes. And of course, communication and collaboration between tech providers, contractors, and industry partners is crucial. We're fortunate to have a great relationship with Gilbane, where we listen to their feedback and try to solve – and anticipate – their challenges and pain points.

Gilbane has embraced technology to better understand and monitor exposures on site. Their Gilbane Cares philosophy in creating safe projects so that all workers go home safely each day is supported through technology advancement. Gilbane uses technology tools which identify site temperature changes, moisture, locations of workers on-site, where and when large equipment is in use, when and if on-site workers fall, etc. This technology are tremendous tools in changing behavior in allowing site workers and site management to be more aware of what is happening and when. It allows the team to better focus on changing exposures and communicating the exopause changes in real time.

II. Real-world implementations and use cases

Travelers scale across the construction industry involves multiple SIC Codes (15, 16 & 1700) enables us to see loss trends early such as falls and struck by injuries and fatalities, to name a few. As we investigate losses, we learn from what happened and put that information back in the hands of our customers to prevent and mitigate loss. While this approach helps customers employ different risk mitigation strategies, technology is another tool to further these efforts. So, in recent years, we have been working on digital and mobile solutions of our own as well as working with various technology companies and contractors to share information, test and adjust a variety of technologies to help further risk management strategies in the industry.

One use case is a vibration app called ZoneCheck. Now even though this is property damage-related vs. worker safety, it's a powerful example of how mobile technology and data helps manage a customer's total cost of risk. Some contractor work, such as pile driving and vibratory rollers, can generate ground vibrations. As we investigated hundreds of claims made for damages arising from vibration generating work, we noticed a couple of trends: 1) pre-construction surveys were not completed, which hindered our ability to mitigate allegations and 2) there were common elements that we were consistently seeking in these investigations, such as distance from the loss location to the area where work was being performed, the type of soil and the equipment being used. This app helps customers identify two potential zones of influence, one where vibrations may be felt versus cause damage (human perception zone) and the second zone where damage is likely to occur (alert zone). Identifying these zones helps facilitate a plan to conduct pre-construction surveys as well as develop plans to communicate with local property owners. The app helps develop surveys that can be shared as well.

Struck-by and caught-in/between type injuries and fatalities are far too common in construction. In our work with contractor customers, we also have loss data to learn from and as such, one of the pilots we have undertaken involves the use of proximity sensors on heavy equipment and workers on both a roadway project and a quarry. Both of these areas have a high concentration of heavy equipment and workers that are constantly working in close proximity to one another. Could such devices warn both the operator and the workers in the area when they are getting too close to one another? And would those warnings result in different behaviors and less incidents? What type of data will be gathered and what are the best ways to use the data?

Wearable Safety Technology

The Spot-r system combines a mesh network, compact sensors, and a dashboard to provide real-time worker and equipment location, activity, and safety. This starts with our proprietary network, which connects a specific jobsite and is designed specifically to penetrate tough building materials like steel and concrete and scale as a project structures go up. The Spot-r Clip, worn on the waist belt of each worker, detects fall events on site and triggers an automatic notification to designated personnel that includes who, where, and height of the fall. We can customize the notifications so for example, supervisors can be notified for falls below 4' feet for workers on the roof only. If there is a safety event, designated personnel can log into the dashboard and drill into more information, including weather on site, nearby workers, worker certifications. It's a digital, objective record of site safety, which can be used to identify future risks and best practices.

Gilbane adopted the use of Spot-r roughly 18 months ago and has implemented the use of the technology on over 10 sites. Gilbane's primary reason for the implementation was based on the products ability to detect falls. Injury prevention is Gilbane's (and the industries) number one priority, but it is also critical to be able to respond to an incident as quickly as possible. Spot-r's real time technology provides immediate notice through smart-phone app alerts which identifies the location and exact time of a worker fall. The notification allows project leadership to deploy the appropriate response services. If someone is injured, the injured party is afforded the immediate and necessary medical care. The real time notification also allows for a better and more immediate investigation of the circumstance so that the project leadership can work to alleviate exposures for others. The notification process also allows the project teams to better understand and, if needed, change worker behavior and how they manage their work on-site.

The impact of real-time data and analytics

What we do with this data and how we package it is so important. On the fast-moving jobsite, custom text message, email and dashboard notifications provide our customers with the actionable insights they need to make better, more informed decisions. We did a study on a Gilbane project site comparing manual safety identification and reporting with Spot-r real-time notifications. In the test method, a "bystander" would see their fellow worker injured, go to the jobsite trailer to notify the site medic and bring them back to the location of the injured worker. This is an inefficient, there-and-back process. With Spot-r-triggered notifications, the site medic learned about the potential injury while in the jobsite trailer and with floor and zone location data, could go straight towards the injured individual to provide aid. Spot-r alerts improved response time by up to 91%.

A central, cloud-based dashboard also stores aggregate data, so it can be viewed at any time and drilled into for safety and risk management insights. Our custom reports allow you to see the number of events across a project portfolio by sub or trade or type of event, or "event rates" (number of events/hours) so we can identify risky behaviors or trends to hopefully predict and prevent accidents.

From our work on pilot projects thus far, it's important to emphasize the following:

1. Start with solving for an issue/problem vs. starting with the solution/technology
2. What agreements do you need with the technology vendor?
3. Capturing the data – Data needs might not only vary based on the issues that you are trying to solve for, but also may be limited based on the technology that you are testing. There are other implications of capturing data too, such as who will have access to the data, is there sensitive data (e.g. worker names) that need consideration, which areas of your company will you test the technology, where

will you store the data, what are the expectations for acting on the gathered data?

4. Data Interpretation – Not only may your current safety professionals be interpreting gathered data, but there may be different data elements that are new and therefore other types of expertise may be needed. How will you aggregate the data, who else will you share the data with, how will you protect the data, are there insurance implications?
5. Identifying actionable insights – Having the data and not acting on it may open up potential legal implications, just like telematics. Planning for how you will react to the data is important. For example, in a situation where a fall was occurring every day at noon time, it ended up that the individual was going to grab his lunch. If you see a recurring event, then the take away would be to investigate further.
6. Leadership must lead – As with anything new, leaders at both the corporate and jobsite levels need to encourage workers to consistently wear devices as well as develop a culture that embraces new technology.
7. Test and adjust – Don't be afraid to change course as you learn about the technology. It's essential to collaborate with your technology vendor and insurer as well.

III. Putting it all together

Use technology as a tool to take your risk management program to the next level

The inability to see what's happening at your projects - where workers are located and if a safety incident has occurred, for example, regardless of where you're located - significantly impacts worker safety and productivity. Fortunately, technology is available today to connect your jobsite and provide critical, data-driven visibility into site operations and safety. This influx of real-time data is turning traditionally lagging safety and risk indicators into leading, real-time ones, allowing supervisors to identify risky behaviors that could lead to an incident, for example. On one project, wearable and sensor technology allows supervisors to see where workers are located, respond to fall and worker-reported notifications, and upgrade existing jobsite evacuations. Across multiple sites, or an entire organization, this will unlock greater insights into when, where and how incidents occur, in hopes of minimizing loss frequency and severity.

So how do we maximize the progress we've made and the value we've seen? What is needed from tech providers, insurance partners, and contractors to make this standard at the jobsite?

The complexity of the industry we're all in is constantly changing, however sharing our collective experiences can help further worker safety as well as productivity. In addition to sharing our experiences in other ways such as shown by Zone Check, we see this "innovation" journey as one other way for us to contribute to the construction industry through testing technology.

Short and long-term considerations with input from attendees

The rate of change and innovation is only going to increase, so it's essential that we work together to develop, deliver and adopt technology now and make a plan for turning data into information into knowledge. General contractors and insurance providers need to prepare for the technology; technology providers need to deploy intelligent technology and provide the data; and most importantly, each stakeholder needs to have processes in place to understand the data. That's where each of us comes in. Data is incredibly important, but we need to be able to interpret it and act upon it, and that isn't any one organization or stakeholder's role.

Most contractors understand the importance of their carrier relationships and the cost associated with the insurance programs they purchase. Technology is becoming a critical aspect of both the relationship and the cost. Contractors are working to manage all their costs in an effort to be more competitive and insurance in many cases is an important line item for a contractor. Using technology such as Spot-r, Tattletale, Pillar, etc., is helping contractors and their carriers to better identify, monitor and manage exposure every day.