

▶ THE
FUTURE
OF RISK

From wearable sensors to virtual reality, technology is set to revolutionise the risk management profession as we know it today

In association with



You wear it well (and safely)

From the hard hat to the steel-toed boot, there's always been a safety aspect to what workers wear. Wearable technology is about to take that to the next level

Workplace injuries can change people's lives forever. Workers can see their careers end and their families' lives destroyed. People should always return home in good health.

As such, worker safety resonates as one of the most tangible and vital areas of risk management.

From Google Glass to Apple's iWatch, wearable technology has garnered headlines for its consumer appeal. However, its utilisation in the corporate world is cause for considerably greater elation.

"Innovative technologies, like wearable devices, have the potential to improve worker safety," says Sheri Wilbanks, head of casualty risk consulting for AIG Asia-Pacific. "That's why we invested in Human Condition Safety, a start-up that uses wearables, artificial intelligence and building information modelling to create a safety ecosystem that enables workers to reduce injuries and employers to improve operational efficiency."

The technology from Human Condition Safety can detect when workers carry too much weight, make a 'bad bend', or enter an area that puts them at risk of injury because of environmental conditions or getting too close to dangerous equipment. As such developments unfold, it is incumbent on the risk manager community to understand the powerful capabilities on offer. So, what do risk managers need to know about wearables and worker safety?

"Wearable technologies will enable risk managers to gain a more complete understanding of their company's risk profile," says Human Condition Safety chief executive Peter Raymond. "Sensors embedded in wearable devices will provide them with actionable intelligence that can assist them in preventing and mitigating risks more effectively than ever before.

"More importantly, wearables could help risk managers predict and avoid dangerous situations by correlating risks with observed behaviours."

The International Labour Organization says every 15 seconds a person is killed, and 153 are injured,



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Human Condition Safety
chief executive
Peter Raymond

in a workplace accident. "That's not acceptable," Raymond says. "Wearables hold the promise of making every industry safer by helping workers and employers identify risks more quickly and providing insights that can help prevent accidents from happening in the first place."

The benefits are particularly acute in construction, which accounted for more than 20% of worker fatalities in 2014, according to the Occupational Health and Safety Administration (OSHA).

"For example, if a worker using Human Condition Safety's technology enters a blind spot around a piece of heavy machinery, the system can warn the worker to move to a safer location or automatically shut down the machine," Raymond adds.

Goodman Group head of risk Tony Sothmann agrees that wearables may help risk managers measure employee performance and trends to identify areas where training or remediation is needed: "Wearables would provide an additional layer of support to those workers wearing it, but it won't

replace the need for workers to exercise judgement and apply training in situations,” he says.

“Will the use of wearables increase privacy issues and the threat of ‘Big Brother’ watching staff? The use of GPS, for example, or other data collection may create trust issues with staff, who could be sceptical about how an employer would use the device and the data collected.”

Lazada Group head of group risk and internal audit Gordon Song is also concerned about the data implications. “Risk managers will need to deploy analytical tools, and learn new skills, to be able to competently and efficiently analyse and make sense of this ‘Big Data’. To do this effectively also requires some amount of medical knowledge or at least a very good medical partner,” he says.

But Nick Blismas, a professor at RMIT University’s Centre for Construction Work Health & Safety Research, says the university is excited. “The wearable technology is both powerful and strangely seductive. Some work has commenced in intelligent fabrics that can incorporate sensors into textiles, making the technology less intrusive,” he says.

“The current ‘obvious’ and sometimes large sensors [on the wearable technology] will need a little more development for easier adoption. However, I don’t believe the technology is going to be the challenge. The two main challenges as I see them are resistance by workers and Big Data, plus making sense of it for safety,” he says.

Blismas points to three types of safety-related sensing: “Firstly, physiological monitoring, which are sensors to monitor basic physiological indicators such as blood pressure, heart rate, temperature, alertness and fatigue. Secondly, ergonomic monitoring, which involves monitoring the movement of the spine, limbs and joints, stress of joints and lifting. Thirdly, behavioural monitoring and geo-positioning, which involves monitoring movement on site, type of activity, such as sitting, standing, walking, driving, performance in activities such as speed of driving, erratic driving, efficiency and productivity, location on site and proximity to hazards.”

He says the monitoring will create two challenges in particular. “It is important to understand the safety implications from this massive stream of data, particularly if we add the Internet of Things, in which objects are sensed and connected, into the mix. Then there are personal privacy concerns. The idea of this level of monitoring will be a great challenge. Resistance from workers will be significant.”

“WILL THE USE OF WEARABLES INCREASE PRIVACY ISSUES AND THE THREAT OF ‘BIG BROTHER’ WATCHING STAFF?”

Goodman Group
head of risk
Tony Sothmann

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HOW THE INTERNET OF THINGS IS RESHAPING INSURANCE



ROY WILMOTH

Head of casualty, Asia Pacific, AIG

There has never been a more exciting time to be in the insurance industry. New innovative technologies, including the Internet of Things (IoT), hold the promise of making the world a safer place. We believe that they have the power to help insurers improve the safety of our policyholders and their employees. This is why we are optimistic that these technologies could help decrease the frequency and severity of accidents.

How could these technologies make the world a safer place?

By 2020, there will be 40-50 billion connected devices, up from 10-20 billion today. Due to the proliferation of these objects, insurers will be able to measure an infinite number of data points to paint a more complete risk profile of their clients.

The use of IoT devices and other technologies will generate data-driven insights that will help insurers tailor unique safety solutions. In addition, the information collected by these sensors could enable insurers to more accurately price risk and further incentivise policyholders to adopt safer behaviours or practices.

What is the role of risk managers?

Risk managers are crucial to the implementation of these technologies. We believe they will further strengthen our ability to partner with risk managers to prevent and mitigate risk. Moreover, they will enable risk managers to better understand the leading and lagging indicators that could lower their cost of risk. Innovative technologies will help risk managers strengthen the importance of their role as leaders in safety, efficiency and cost savings within their organisations.

As with any technology there will be risks to mitigate and prevent. But we shouldn’t be fearful. By working together, insurers and risk managers can maximise the benefits to improve safety.

➤ **For more information please visit www.AIG.com**

The new vision of risk

Virtual reality's forecasting abilities could change our perspective of risk forever



The visualisation of exposures plays a pivotal role in risk mitigation. Now virtual reality (VR) is promising to bring new detail and precision to risk forecasting.

"The use of virtual reality will help underwriters and risk managers visualise risk in new ways by enabling them to experience risk scenarios that can't be recreated in the real world because they are too dangerous or too expensive," says Dan Cunningham, regional account engineer of AIG, who partnered with research and engineering institution Clemson University on this area.

"Virtual reality will also help improve risk prevention. Imagine being able to visualise a building or product before it is created and identifying elements that, if left unchanged, could cause bodily harm."

Cunningham says risk managers will better understand risks by experiencing them in a safe environment. "These insights will make them more aware of risk factors and enable them to address them before they can become an issue. For example, in a training environment, like at Clemson University, virtual reality can be used to educate engineers and underwriters about fire risks without exposing them to hazardous situation or materials."

Innovative technologies such as wearables, virtual reality and drones will become an indispensable part of a risk manager's toolkit, he says.

Jeremy Bailenson, a founding director of Stanford University's Virtual Human Interaction Lab, is just as enthusiastic. "VR is an amazing tool for visualising crisis," he says. "For risk forecasting, the magic of course lies in setting the modelling parameters to generate scenarios which are most likely to be valid, which largely occur outside of VR. Where VR comes in is to transport the forecaster into a visceral experience of the future, so that he or she can perceptually experience future scenarios to make the outcomes less abstract."

Harald Scheule, associate professor at UTS Business School, says: "I believe simulation-based forecasting is very valuable in risk forecasting. Simulations are able to provide scenarios based on model parameters estimated with historic data, but result in different, possibly more adverse realisations than those actually observed."

Bob Stone, director of Birmingham University's Human Interface Technologies Team, says that, as with all things implemented using VR, augmented reality or mixed reality technologies, it all depends on how well the content and interactivity is designed and how well the end users' needs are taken into account.

Lazada Group head of group risk and internal audit Gordon Song agrees. He says: "VR, like any form of analytical tool or technique developed in the last two decades, will certainly be useful – but, as with all tools, they will only be as useful as the people who created them. To be more precise, all models and tools require assumptions and variables, and these have proven to be limited in the complex world we live in. The 'risk' lies in over-relying on these tech-enabled tools and moving too far away from human judgement, which, in my opinion, is not replaceable."

But Stone says VR will be useful in risk forecasting for 'what-if' scenarios: "We have been using what is referred to as mixed reality, where we can develop future interactive command stations which present the end user with a range of carefully formatted and selectable media sources – social network feeds, live video streaming from the BBC, Sky News, and so on, live video from remote systems, such as drones and related technologies, weather predictions – all supplementing a central interactive 3D representation of an emerging scenario. In our case, the scenarios are very much based on insurgent activities, but others could be modelled."

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Lazada Group
Gordon Song

Autonomous vehicles: when risk gets out of hand



Globally, nearly 1.3 million people die in road crashes each year; on average, 3,287 deaths a day. Another 20-50 million are injured or disabled, according to the Association for Safe International Road Travel.

Despite efforts to reduce these figures, such devastation has become a regular part of life.

But by sensing their environment and navigating without human input, autonomous cars, planes and ships could neutralise the danger.

“Autonomous vehicles have the potential to make transportation safer, faster and more efficient,” says Roy Wilmoth, AIG’s head of casualty, Asia-Pacific.

“While the benefits outweigh the risks, risk managers need to be asking how autonomous vehicles will impact cyber, liability and privacy risks.”

Wilmoth says at this stage, autonomous vehicles raise more questions than answers. “Regulators and the courts have yet to weigh in, but it’s not unreasonable to assume that liability may eventually shift from vehicle operators to manufacturers.”

The most effective way for risk managers to mitigate the risks created by new technologies such as these, says Wilmoth, is for them to connect with their R&D departments early in the development process.

“As a result, risk managers will be able to address risks in the design phase and possess enough information to ensure that they purchase adequate insurance coverage,” he says.

Peter Jackson, chief executive of Lockton in Singapore, says: “As the vehicles are totally computer-controlled, with no local manual intervention, you’re completely in the hands of the software.”

“Cyber risk prevention is critical so that these cars, planes, ships and their contents arrive safely where you want them to.”

It’s difficult to plan for what could go wrong, he adds, as the technology is not fully tested. “Malware could be embedded and theft going on for months before it’s noticed.”

Wilmoth agrees that modern vehicles are already increasingly vulnerable to cyber attacks, from tracking their location to disabling steering and braking. “Cyber risks will grow exponentially as vehicles rely more on connected technologies to operate autonomously,” he says. “Risk managers will need to help vehicle manufacturers design vehicles that are not only safe in a collision, but are secure from hackers too.”

Liability issues will become increasingly important, he says. “Risk managers should be asking questions like: ‘Who is responsible if an autonomous vehicle injures a pedestrian while avoiding another vehicle?’

The future of many vehicles is driverless. While the safety advantages are vast, so are the risk concerns

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AIG head of casualty,
Asia-Pacific
Roy Wilmoth

or ‘Who is to blame if a proximity sensor fails, causing an accident?’”

Wilmoth notes the issues manufacturers have to contend with. “Two liability scenarios are currently playing out. For example, Tesla states that the drivers of its vehicles are responsible for accidents while using autonomous features. On the other hand, Volvo has stated that it will take full responsibility for accidents involving its autonomous vehicles.”

Ryan Tan, head of strategy and enterprise risk management at Singaporean public transport operator SMRT Corporation, says a key risk is around introducing autonomous vehicles into the regular vehicle environment. “These [risks] could of course be mitigated through the right measures,” he says, “such as dedicated lanes, adequate education of all stakeholders, including the public, plus pilot periods to socialise all actors to autonomous vehicles-related variables before full implementation.”

Tan says risk managers need to understand current and future technology, looking at projects in the pipeline and how quickly they will come to market. “This would allow for an adequate assessment of the velocity of disruption.” Regulatory bodies that govern autonomous vehicles will play a key role in mitigating risks, he adds. “What sort of policies are they going to set up, and when are they going to do so in relation to the fast-evolving technology curve?”

Jackson says risk managers will need to look at business continuity planning in a different way. “What happens if the autonomous system fails, can you revert to manually operated? Risk managers will need to map the supply chain of hardware and software to manage the autonomous vehicles to understand each party’s role and how they manage risk.”

He adds that it will be important to learn from previous experiences, both in the automation sphere and in terms of taking business activities online or becoming internet and cloud-enabled.

“We must also learn from other industries, such as how the military manage drones and how metro networks manage driverless trains. Close liaison with insurers will be needed to help them understand the risks and how they are being managed.”

Insuring the impossible.

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