Smarter Insurance: Embracing Industry 4.0 for Human Safety

Industries are propelled by and propel change. There's a great deal of buzz about Industry 4.0 and what the impact of the change brought about will likely look like on the ground.

Private businesses are exploring how they can incorporate it within their organizations, develop integration approaches while collaborating with others.

Here we look at the vital and compelling role of Industry 4.0 in improving the safety of individuals and the subsequent impact of these developments on the insurance sector.

Industry 4.0 – What is it?

The Industrial Revolution is a continuum of change. It has a long history starting in the early days of mechanization, through mass production and is now heading into the digital age. Industry 4.0 defines the next stage of the industry's history. It is effectively the fourth Industrial Revolution.

In Industry 4.0, the focus is on the interaction of cyber-physical systems: machine learning, the

Internet of Things (IoT), cognitive computing and more. It's about how these different facets interact and cooperate with one another, in real time, in a comprehensive manner.

There are immense possibilities for Industry 4.0, and it's fair to say that we are not yet even capable of realizing them all. **Google** (now Alphabet)'s multiple innovation strategies inter-collide into an innovation ecosystem of activities, that are of course always thrilling to watch as they inform the paths of what is going to affect many industry sectors. This knowledge acts as our wide-angle lens, giving us a view of what's happening.

However, the enormity of its possibilities poses a problem for many who are looking to benefit and be part of Industry 4.0. The question is where to start?

One important area of interest and a starting place with real impact is in how we can make people safer in the future.

How do we make people safer using Industry 4.0?

> *"Human safety matters at an impeccably high level in today's industrial world."*

This reality applies for both the worker (for example on the production line) and the consumer (who is using a product or consuming a food item).

An excellent demonstration of this is shared in the Harvard Business Review (HBR) article '**Global Supply Chains Are About to Get Better**, Thanks to Blockchain,' where blockchain is not only the underlying technology that makes working environments safer and more transparent, it is also the capability that extends to new creative horizons.

The article explains how an E.coli outbreak at restaurant Chipotle Mexican Grill made 55 people ill. The company has never really recovered from this crisis. What was notable was the inability to trace and contain the outbreak due to the complexity of the supply chain which could have been radically different if blockchain processes had been involved. Blockchain enables disclosure and transparency in real time, which can be utilized in supply chains to gain visibility over items such as food ingredients from farm to fork.

What is interesting is the potential for this approach to go further. If individuals within the chain are also given individual cryptographic permissions, then it is possible to also gain visibility (and assurance) over the actions of individuals. In Chipotle's case, HBR explains, that they "could see in real time whether a properly credentialed person in a facility owned by one of its beef suppliers is carrying out appropriate sterilization and disinfection procedures."

This same theory could be implemented in other areas of industry, specifically in additive manufacturing. Highlighted in Harvard Business Review article '**The 3D Printing Playbook**', 3D printing/additive manufacturing could be used in exceptionally high-tech processes (such as aeronautical engineering), but it would be imperative to trace the credentials of each worker that is working within a process.

The role of smart wearables

By implementing the idea of individual tracking, we can take this even further with the introduction of smart wearables in the workplace, in part to gain traceability but to also gain more insight. We are all mostly familiar, to some degree, with intelligent wearables. We're used to wearing a device that tracks and monitors everything from our heart rate to our sleep patterns and provides insight into our health patterns while sharing behavior recommendations and health benefits.

At a broader level, these are already being used within businesses to encourage employees towards paying attention to their health. However, we need to go beyond thinking of it as merely a smart bracelet measuring steps or heart rates to the technology being incorporated in things from gloves to outerwear and exoskeletons [i.e., bodily protective shells]. Their use in workplace safety improvements is only just beginning to become evident.

Smart wearables could identify that a driver is becoming sleepy at the front of the wheel, helping to avoid dangerous driving incidents. In construction, workers with GPS and sensors in their clothing could avoid entering hazardous areas. They can be considered in **occupational risk assessments** such as advising and prompting ergonomic changes. They could be used to sound alarms to react to real-time problems such as exposure to harmful gasses. They could be used to sense and respond to real-time factors in hot works where risks to worker safety are high, such as welding or cutting.

In short, using smart wearables are already being proven **to increase worker safety**. As we see the extension of Industry 4.0, there will be an increasing number of opportunities to expand their use.

How do we see Industry 4.0 in action through smart wearables?

1.4m working people in the UK are suffering from a work-related illness with £15 billion estimated costs each year of injuries and ill health from current working conditions. In the **US 5,147 workers** were killed 'on the job' in 2017. It would make sense to use our capabilities within Industry 4.0 through smart wearables to change this for the better.

Construction's "Fatal Four"

39.2%	**8.2%**	**7.3%**	**5.1%**
Falls	Struck by Objects	Electrocutions	Caught-in/ between
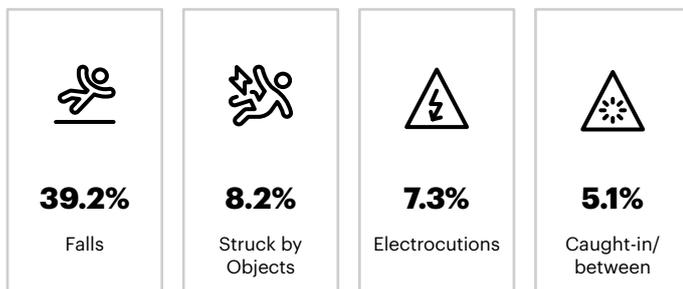
Source: United States Department of Labor

Out of 4,674 worker fatalities in private industry in calendar year 2017, 971 or 20.7% were in construction. The "Fatal Four" were responsible for more than half (59.9%) of the construction worker deaths in 2017.

Back in 2016, Gartner forecast that 2 million employees would soon be required to use smart wearables at work. It's certainly apparent that the tech is developing to enable such intelligent devices and sensors to improve health and safety at work.

There are considerable numbers of case studies out there and so much more to do to connect smart technologies and the data they produced to the insurance sector.

Here are three interesting young ventures, MākuSafe, GuardHat and REFLEX, with applicability in insurance.

MākuSafe which raised a total $4.5m as of February 2019 is a wearable armband, which captures information on near-miss activity and more by using sensors and the IoT. This InsurTech gathers real-time information about the environmental conditions around a worker that can then precipitate safety action.

Abel Travis, Vice President, Underwriting and Product Innovation of the AF Group, shared that Makusafe

> *"enables AF Group to redefine their workers' compensation offer by providing manufacturers and construction policyholders with the ability to use on-the-job wearable devices so that they can be informed of the injuries of workers while reducing costs and risks."*

Benefit estimates were several. One assessment identified a 40% reduction in the frequency of repetitive claims.

Series A British startup **GuardHat** is a wearable safety hat supported by proprietary software to improve the safety of industrial workers through sensors that can monitor in real-time the working environment, number of hours spent in that environment and physiological irregularities like an erratic pulse. It detects falls, dangerous situations and alerts those who need to know. It also tags every machine and moving objects so that users are warned when a moving object approaches very close.

REFLEX has been piloted by Crane in distribution facilities in Houston, TX, to improve the safety of manual handlers. The technology works on two levels. Firstly, employers are given real-time information about when the most significant risks are likely to occur. Secondly, individual workers are immediately alerted (through light vibration) when using a high-risk posture so that they can make a change. These indicators showed a 96% reduction in high-risk postures within one employee being tested.

How will Industry 4.0 and smart wearables change the insurance industry?

While we see an increase in the development of solutions, there is still a long way to go in terms of the acceptance in the use of smart wearables at work. Perhaps the most significant area of concern is privacy.

Research by **PWC UK** has shown that while 61% of employees are keen for their employer to take an active role in their health and wellbeing, 38% don't trust their employer with their data.

This finding is clearly a hurdle to overcome through the right level of education, hopefully gaining momentum as employees come to understand how smart wearables can improve their wellbeing.

The above also has implications for the insurance industry – for both employers and individuals. Smart wearables and IoT sensors can be used to allow insurance companies to create highly accurate insurance rates, design more relevant product offers but mostly provide bespoke services to industrial clients and their workers that show a more constant involvement in the client's risk management and prevention strategy. Preventative maintenance is an area that forces insurers to move from a passive protection state to an active prevention involvement, predicting alerts and actioning them proactively to reduce fatality and costs, while addressing societal and socially conscious objectives.

In conclusion, we can expect to see continued change throughout the insurance industry as we learn how to leverage Industry 4.0's potential to its greatest. Specifically, in the area of safety, we anticipate an increase in the use of wearable devices to both actively prevent human error, as well as help individuals, maintain a proactive awareness of their environment. The data and approaches created will provide the ability for refinement in insurance solutions and offerings.