Employing Telematics to Transform Workers’ Compensation

Rising competition and claims costs, tougher regulatory demands and pressure to more effectively manage risk and prevent loss are compelling workers’ compensation insurers to embrace more automated and connected ways of working, and to distill more meaning from the digital data that encircles people, processes, organizations and devices.

Executive Summary

We are witnessing a transformation of the auto insurance industry that is turning decades-old underwriting practices upside down. Fueling this shift is telematics – technologies that integrate telecommunications and information across a variety of networks and devices. The traditional approach of setting premiums based on proxy variables is now challenged by the steady flow of real-time telematic data, and the ability to perform loss-prevention processes at virtually any time, from almost anywhere.

Given the current maturity of the telematics industry and the ubiquity of the Internet of Things (IoT), the sea change affecting the auto insurance space is a harbinger of opportunities to radically transform several other insurance lines of business (LOBs). One area that lends itself to a broad spectrum of telematics applications is workers’ compensation. Pushed by external and internal challenges – increasing competition, rising claims costs and heightened regulatory pressures – the workers’ comp industry has reached a tipping point that obliges companies to continually improve operational performance, enhance risk assessment, prevent loss and conquer critical issues around profitability.

In our view, telematics can be employed by the workers’ comp sector to achieve significant profit improvements. The application of these technologies can prevent losses/accidents in real time – vastly improving carriers’ loss ratio. The positive impact of loss prevention is higher in this industry, since there are significant indirect losses related to productivity.

In the following pages, we discuss the elements of this strategic opportunity and lay out foundational insights that clarify how telematics can help the workers’ comp industry create a smarter and more connected ecosystem. We then detail how insurers can employ wireless sensor networks, mobile devices, gamification, social networking, Google Glass and other IoT platforms to create such an environment. Finally, we reveal how this transformational ecosystem can bring about a win-win-win situation for insurers, employers and workers alike.
Telematics and Disruption in the Insurance Industry

The insurance industry learned about the potential of telematics when it witnessed the radical change the technology brought to auto insurance. For years, auto insurers had underwritten policies by assessing academic actuarial tables combined with data on a customer's driving history, prior claims and other proxy variables. But the rise of telematics and the resulting ability to collect real-time, individualized driving data is changing this process. On the whole, telematics is enabling a smarter (more data), more connected (collaborative) ecosystem for insurers and their customers. This has resulted in visible positive outcomes for those insurers that employ telematics — resulting in improvements in underwriting (UW) profits of about 4%.2

These factors pose the question: Can the auto insurance telematics ecosystems created through “smart cars” and “connected cars” be replicated in the workers’ compensation industry as “smart factories” and “connected workforces?”

The Growth of Wireless Sensor Technologies Across Entities

How Telematics Powers the Smart Factory

According to industry experts, the smart factory3 industry will rapidly expand in terms of demands and advancements over the next few years. The market is expected to reach a compound annual growth rate (CAGR) of over 8% from 2013 to 2018. The business is motorized by the growth of wireless sensor technologies. Figure 1 depicts the growth of these devices across various entities.

Industry sectors, be they automotive, utilities, FMCGs, medical or otherwise, have shown a voracious appetite for building “smart” factories, which should drive significant time and cost savings for insurers looking to create a viable workers’ comp ecosystem. To facilitate this, insurers must seamlessly integrate with these telematics devices, capture and make meaning from the resulting data. If the employer has not yet invested in these devices, the insurer should approach them on a case-by-case basis, where the cost can be borne fully by the employer, by the insurer or on a shared basis.
Creating a Smarter, More Connected Workers’ Comp Ecosystem

Workers’ comp insurers face several roadblocks when it comes to risk-assessment and loss-prevention processes. Among these:

• The traditional mode of risk assessment. This issue must be examined from three perspectives:
  > Frequency of data. Typically, underwriters analyze an insured’s loss exposure a few days a year prior to issuing a policy and during renewal time. Insurers do not receive real-time workplace data throughout the year.
  > Amount of data. Traditionally, loss-control surveys take place over only a few days. Loss-exposure events can occur on any other day – leaving insurers without key information.
  > Quality of data. Typically, underwriters prepare a standard loss survey questionnaire comprising 30-40 questions. The quality of the data captured depends on the loss survey undertaken by the loss control consultant. Data quality can be undercut if pertinent questions are omitted.

• Fragmented approaches for loss-prevention. Workers’ comp insurers focus on assuring safety by preventing losses in the work environment. The most common method is to employ the services of a loss control consultant or industrial hygiene service manager who surveys the workplace and provides recommendations. Some insurers also utilize safety training, workshops, videos and documentation accessed online or provided by internal staff or external vendors. (For example, a leading commercial insurer recently launched an online toolkit that delivers risk-management information directly to its construction client’s desktops). Nonetheless, incident rates among employers continue to increase – rising by roughly 14% in the first quarter of 2014.4

There are several key reasons why insurers’ loss-prevention measures remain ineffective:

  > No mechanism for delivering safety products and tools from the insurer’s Web site to the worker “right here, right now.”
  > Safety training only happens a few times a year; sustaining a viable safety culture is the biggest challenge.
  > Lack of reinforcement or real-time knowledge of workplace safety.
  > No mechanism for capturing data and performing analytics based on “a day in the life of a worker.” Insurers examine workers’ data only during premium audit.
  > Lack of awareness among employers on how safety can reduce their workers’ comp costs.
  > Inadequate efforts to motivate/reward workers who follow safety best practices in the workplace.
  > Low productivity of loss-control consultants.

As mentioned above, the imperative for workers’ compensation insurers is to bolster their risk-assessment and loss-prevention practices through the creation of a smarter, more connected environment (see Figure 2 below).

Creating a Smarter, More Connected Environment

<table>
<thead>
<tr>
<th>Mobile App</th>
<th>Gamification &amp; Reward Schemes</th>
<th>Wearables</th>
<th>Social Community</th>
<th>Smart Factory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration through individual apps among all stakeholders – workers, safety managers, line supervisors, loss-control consultants and underwriters.</td>
<td>Motivation and active reinforcement of safety among workers/employees.</td>
<td>An additional platform for enabling enhanced loss prevention among workers.</td>
<td>Safety community, safety champions, blogs to increase collaboration on preventing loss in the workplace.</td>
<td>Sensors (temperature, gas, pressure, speed), cameras and iBeacons emit real-time and continuous risk information.</td>
</tr>
</tbody>
</table>

Figure 2
The concept of Smart Factories, powered by mobile, social and wearable technologies, has the potential to achieve this kind of telematics ecosystem.

This “smart” environment would help generate a blanket of digital information (what we call Code Halos) across all stakeholders in the workplace – workers, safety managers, line supervisors, loss control consultants and insurers.

By decoding this digital information (or Code Halo™), the workers’ comp industry can effectively deconstruct and then enhance its critical business functions, including risk assessment and loss prevention.

How Code Halo Thinking Can Reinvigorate the Workers’ Comp Ecosystem

With wireless sensor networks and mobile technologies capturing a plethora of data, underwriters can now gain access to more real-time, high-volume and high-quality insights. We refer to the data fields that surround people, equipment, vehicles and the environment Code Halos. Figure 3 highlights data points that can be collected through Code Halos.

Types of Data Captured Through Code Halos

**People**
- Daily work patterns
- Claim history
- Repeaters
- Previous injuries
- Safety certifications
- Ergonomics
- Risk locations

**Equipment**
- Usage patterns
- Locations
- Maintenance inputs
- Intrinsic hazardous nature of the equipment – hot, sharp, noisy, imbalanced, vibrating
- Safety breaches
- Energy issues like pressure, temperature

**Vehicles**
- Speed
- Acceleration
- Sudden brakes
- Risk locations
- Weight limits
- Safety breaches

**Material/Environment**
- Hazardous nature
- Exposure limits
- Lighting, heating and ventilation
- Weather conditions
- Means of access/egress
- Slopes, ramps and steps
- Slippery or damaged underfoot conditions
- Obstructions

Figure 3
Transforming Workers’ Comp Processes

With this ecosystem available to all entities, insurers can access a larger pool of data and distill meaning from Code Halo intersections to achieve their workers’ comp objectives:

- Improve underwriting efficiencies during new business or renewal risk assessment.
- Foster better collaboration and reduce incidents/losses.
- Enhance claims management and fraud detection processes

Improving Risk Assessment

Insurers can combine insights derived from Code Halos or other IoT-generated information to better classify a particular risk during new-business underwriting or renewals.

Concerning new business, the insurer may not have all the loss-exposure information to which the client is exposed, other than insights presented by the producer. But with the help of big data drawn from similar/matching clients, insurers can draw parallel insights and develop more accurate estimates for pricing insurance premiums. They can also use this data to fine-tune policy definitions related to coverages, conditions, exclusions, etc.

Similarly, with access to continuous real-time data on the risks that a particular insured faces during the policy term, the underwriter can make better decisions regarding renewal or midterm adjustment pricing.

Improving Risk Monitoring and Loss Prevention

Equipped with a telematics ecosystem, an insurer can take several measures to improve safety management and avert loss in the workplace:

- **Proactively monitor and manage safety concerns.** With access to more continuous, real-time sensing data, the insurer can proactively

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**Making Workers’ Comp Smarter and More Connected**

More data leads to more effective risk assessment. More data and more collaboration leads to more effective loss prevention.

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**Figure 4**

1. **Create More Real-Time, Continuous Risk Data**
   - Risk data is generated through people, equipment, material and the environment (PEME) via:
     - Wireless sensors and networks
     - iBeacons
     - Cameras
     - Mobile apps

2. **Collect Data from Every Nook and Corner of the Workplace**
   - Insurers interface with and collect data (Code Halos) that is generated across stakeholders.

3. **Store the Data and Identify Actionable Insights**
   - Insurer stores all data collected by employers on cloud platform and leverages it to derive actionable insights and foresights using analytics.

4. **Improve Efficiency of Risk Assessment**
   - Incorporate data collected into the risk-assessment process during new business and renewals.

5. **Minimize Loss**
   - Support collaboration among stakeholders (workers, safety managers, line supervisors, loss control consultants and underwriters) in real time, with monitoring using wireless sensor networks, and prescriptive safety using mobile app and social communities.
   - Better monitor compliance with loss-control recommendations through technology.
   - Proactively reinforce safety among employees through gamification and reward programs.

6. **Improve Claims Management and Fraud Detection**
   - Improve claims triaging, reserving, etc.
   - Initiate automated claims.
   - Improve fraud detection.

7. **Monitor Continuously and Report Across Functions**
   - Insurer monitors these functions (UW, claims) based on leading indices, and devises required actions.

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cognizant 20-20 insights

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detect safety issues/breaches and take appropriate preventive measures (see Figure 5).

- **Utilize prescriptive management of incidents.** Based on data collected among various client profiles, insurers can analytically derive predictive and prescriptive insights on safety for employers to implement (see Figure 6). In a smart factory, for instance, the employer uses leading indices to prevent incidents, compared with lagging indices. In this highly connected environment, incidents can be prevented both manually and automatically. We believe that employers need to proactively monitor all events that are prevented, what we refer to as TIP (total incidents prevented) and AIP (automated incidents prevented) rates. A low AIP means that the employer needs to find areas where loss preventions can be automated and manual interventions can be avoided.

- **Extend the reach and effectiveness of insurers’ safety training, tools and material.** Through this ecosystem, insurers can identify exactly what type of safety collateral a worker needs at any given time and place. Based on the data collected, the insurer can correctly target safety tools and collateral and design them accordingly. Safety videos will be most effective if a worker watches them shortly before they embark on a job. Insurers could possibly leverage technologies such as Apple’s cognizant 20-20 insights.
Delivering Just-In-Time Safety Collateral

A lab assistant walks into the supply room that stores hazardous chemicals. The iBeacon detects his presence and his proximity to the shelf that stores formaldehyde bottles. A safety video on OSHA standards for handling formaldehyde is displayed on a nearby monitor or on the employee’s mobile device. The employee sees the micro video, and has the safety message reinforced. The employee also accesses MSDS information on his mobile device.

A forklift operator logs in and walks towards the vehicle. RFID and sensors work to identify that he is a forklift operator and he is about to use the vehicle. The OSHA forklift safety checklist is displayed on the operator’s mobile device. The operator ensures implementation of all line items; makes modifications if required.

Figure 7

Enabling More Effective Loss Control Consultants

Become more knowledgeable about successful safety measures taken by other employers.

Ratify the implementation of recommendations without having to visit the site.

Monitor how the recommendations are being implemented by the clients.

Better manage daily tasks, surveys.

Compare performance vis-à-vis other LCCs.

Receive analytical inputs on safety/loss-related industry trends.

Collaborate with underwriters in real time.

iBeacon and proximity sensors to detect an intersection between the worker’s task, gauge the applicability of safety collateral, and deliver it in the “here and now” (see Figure 7).

• **Enhance the productivity of the loss-control organization.** One of the challenges loss-control organizations face is assuring the productivity of their consultants (LCCs). Through a telematics ecosystem, LCCs are better equipped to effectively manage their clients and perform their daily tasks through a mobile app. They can also monitor and ensure the implementation and closure of their recommendations from a remote office using technologies such as Google Glass. Furthermore, this allows insurers to exercise more control over LCCs’ daily activities, heighten their efficiencies, and reduce travel expenses and operational costs.

Figures 8 and 9 illustrate how a LCC is better equipped to manage his recommendations.

A Day in the Life of the Connected LCC

In the morning, the LCC looks at his mobile app.

He discovers that his LC survey recommendation score is low.

He drills further and sees that company XYZ’s score is low.

He calls the safety manager of company XYZ and connects with him.

Using his mobile app, the LCC marks the task completed.

The LCC views the implementation on his mobile app or desktop and collaborates with the SM on the same.

The safety manager wears Google Glass and shows the implementation.

Safety manager confirms completion of the particular recommendation.

Figure 8

Figure 9
• **Employ safety-related gamification.** Within this environment, insurers can offer mobile-based, safety-related gaming apps for workers, with the main objective of reinforcing safety through enjoyable, game-based challenges. (These apps would only be used during non-productive hours). The games can be based on safety concepts using entertaining learning methods such as quizzes (e.g., Quizup), or real-time motion games (e.g., Sims). In our experience, gamification can be even more engaging using reward points and leaderboards.

• **Support community-based safety collaboration.** The insurer can also offer community-based safety education through social media, blogs and online forums. Mentoring on safety can be provided through collaboration with safety advocates or “coaches”. Blogging and other community discussions can also be facilitated — resulting in active reinforcement of safety among the workforce. Apart from these applications, this type of connected ecosystem also acts as a great platform for employees to collaborate among themselves and take preventive actions (see Figure 10).

Some workers may not be willing to proactively collaborate to prevent a safety breach. Or a forklift operator may not choose to comply with a check list. Likewise, employees may not have any interest in taking part in safety “games.”

To counteract these possibilities, employers must find other ways to motivate employees — a goal that can be achieved through reward schemes or “safety” points (see sidebar).

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**Quick Take**

**Ensuring the Sustenance of a Loss-Prevention Culture Through Reward Mechanisms**

Sustaining safety in the workplace is the biggest challenge for both employers and insurers. Successful collaboration in preventing loss depends on the levels of motivation and participation among workers. Reward schemes (e.g., “safety points”) can motivate workers to take part in these programs, and earn rewards when they:

- Help the company to implement recommendations made by loss control consultants.
- Attend safety trainings proposed by the company.
- Receive certification in recommended safety courses.
- Mentor co-workers/new colleagues on safety.
- Contribute to safety blogs.
- Watch the micro safety videos or read the material recommended by company.
- Unearth and report safety risks in the workplace.
- Make safety modifications where work-arounds are possible.
- Play safety games during lunch/break time to learn more about workplace safety.
- Motivate employees.

The mobile app enables supervisors to approve these safety points prior to rewarding workers. Points can be redeemed by employees for days off, break time or vouchers. The employer can also look to return the savings attained in their workers’ compensation costs with annual bonuses.

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**Better Loss Prevention Through Collaboration**

![Figure 10](image_url)

- A worker logs in to work at 9 a.m.
- He picks up his work items and walks toward his work station.
- The worker notices hazardous material leaking in a particular area. He cordons the area with barricades and alerts his supervisor.
- He takes a picture on his mobile device, then sends an alert to everyone in the building through the app.
- A forklift operator places a load on a shelf.
- A pressure sensor detects overload and raises an audible alarm.
- The operator scans the QR Code on the box using his mobile device.
- He identifies the box’s content as heavy materials belonging to another zone — preventing a shelf from caving in.

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Enhancing Claims Processes and Fraud Detection

The telematics ecosystem we describe also allows insurers to transform their claims operations and better detect fraud. Fraudulent claims are a significant and historical problem for workers’ compensation systems — commandeering billions of dollars. Now, with more accurate accident data available in real time, insurers can triage claim information more easily, calculate reserves correctly, detect frauds quickly, and settle claims more accurately. They can also automate the claims FNOL process. In cases of incidents, workplace sensors can detect damage and alert insurers. Insurers can confirm with workers or safety managers whether or not any workers have been injured. If so, a claim can be initiated automatically and reserves set aside.

Delivering Profits to Workers’ Comp Insurers

We anticipate that the disruptive, transformational technologies of telematics and mobility will gain momentum – empowering insurance carriers to reshape the global workers’ compensation environment. Through this ecosystem, insurers can improve their profitability through process and efficiency enhancements that drive the top and bottom lines, enrich the customer experience and secure customer loyalty (see Figure 11 below and Quick Take, page 10).

Apart from these benefits, insurers can look forward to other direct and indirect advantages:

- Fewer cancellations and non-renewals due to improved customer/client satisfaction.
- Increased satisfaction among agents selling workers’ comp.

Driving Operational Performance Improvements that Benefit Both the Top and Bottom Lines

From Standard Risk Assessment to Big-Data Thinking

- Reduce premium leakage
- Improve pricing strategies
- Expand into non-standard markets
- Improve cross-sell opportunities

From Risk Management to Managing Losses

- Reduce claims
- Improve customer satisfaction and retention
- Improve loss-control consultant productivity
- Reduce operational expenses
- Make more effective use of safety collaterals

From Reactive to Proactive Claims Management

- Reduce claims operation costs
- Reduce claims fraud leakage

Top-Line Benefits

- Increase Premium Revenue

Bottom-Line Benefits

- Reduce Losses

Bottom-Line Benefits

- Reduce Expenses

Figure 11
Quick Take

How Workers’ Comp Insurers can use Telematics to Enhance Customer Satisfaction

In addition to supporting better safety-management practices within an employer organization, telematics offers several downstream benefits, including cost savings and heightened workforce productivity.

The Benefits of a Superior Workplace Safety Culture

- Reduce incident frequency and severity.
- Develop an efficient and effective workforce.
- Improve the productivity of individual workers.
- Create a sustainable safety culture.
- Support an able, healthy and happy work environment.
- Reduce worker comp costs.
- Reduce experience modifications (eMods).
- Realize medical cost savings.
- Avoid litigation.
- Strive to make the workplace OSHA VPP star-certified.
- Enable root-cause identification and analysis.
- Perform industry benchmarking.
- Support more timely loss reporting.
- Increase closure rates of loss-control recommendations.

- More effective use of costs related to customer acquisition and retention.
- More opportunity to expand into non-traditional markets.
- A stronger competitive position.
- More opportunities to cross-sell.
- Less litigation and employer liability payments due to fewer loss incidents.

Forward-looking insurers can draw additional value from this emerging ecosystem by extending using their telematics data for other downstream processes, such as claims and policy servicing – extending the reach and the potential of telematics within the organization.

Looking Ahead

Sooner or later, the workers’ comp industry will approach a moment of truth: Either optimize how business-critical data is captured, organized, analyzed and applied to improve operational efficiency, sustainability and profitability, or face irrelevancy. Telematics holds substantial promise for those insurers aiming to transform their risk-assessment and loss-prevention processes, and can be the key to securing their future.

We are seeing a rapid advancement in telematics’ capabilities – from data-monitoring to prescriptive applications of the insights and foresights derived. Keeping this in mind, workers’ comp insurers need to take advantage of telematics, and leverage this game-changing technology platform to get and stay ahead of competitors, better serve customers and improve top- and bottom-line numbers.

To unlock the power of telematics and deliver tangible value to customers, workers’ comp insurers must consider how new and innovative products, improved services and a safer workplace can truly transform their clients’ workplaces. Early adopters that embrace telematics-enabled Code Halo thinking will gain first-mover advantages and a sustainable competitive edge.
Footnotes

1 The Internet of Things (IoT) is a fast-emerging ecosystem of IP-connected devices with the potential to deliver significant business benefits valued at trillions of dollars in the coming decade, across industries.


Code Halo™ is a pending trademark of Cognizant Technology Solutions.

Note: The company names presented throughout this white paper are the property of their respective trademark owners, and are not affiliated with Cognizant Technology Solutions, and are displayed for illustrative purposes only. Use of the logo does not imply endorsement of the organization by Cognizant, nor vice versa.

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