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Collective Intelligence: Filling the Insurance Talent Gap

By combining the skills of full-time employees, intelligent machines and specialized external resources, carriers can overcome talent deficits, reduce overhead, maintain compliance, and bolster overall performance.



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Executive Summary

According to the Freelancers Union,¹ nearly 54 million Americans – 34% of the country's total workforce – work independently. This number is expected to increase, compelling employers across industries to source specialized skills from virtually anywhere without expanding their full-time staff. Along with this trend, the use of robots – though not new to workplace environments – is predicted to grow exponentially, and have a greater impact on how businesses operate and compete.

Combining the talent of in-house personnel, intelligent machines, and external resources can close skills gaps and reduce overhead. This is especially relevant in the insurance industry, where 25% of employees are expected to retire by 2018.²

By utilizing the collective intelligence of in-house workers, independent contractors, consortiums, and internal robots (bots), insurers can resolve complex business challenges, perform specialized functions in less time, and create predictive models that precisely classify risks. Assigning machines to handle repetitive, high-volume tasks can heighten overall productivity while accommodating heavier workloads – all at a fraction of the cost (and time) it would take full-time employees to perform these functions.

This white paper discusses how collective intelligence can help insurers optimize the knowledge and capabilities of employees, machines, and external talent; assure that standards and practices remain consistent; improve decision making, and distinguish their brand.

What is Collective Intelligence?

Collective intelligence combines the power of human and automated capabilities (see Figure 1). In this paper, human intelligence refers to the knowledge and skills of in-house salaried employees and specialized resources outside the company. Automated intelligence pertains to artificial intelligence software that replicates some functions that humans perform.

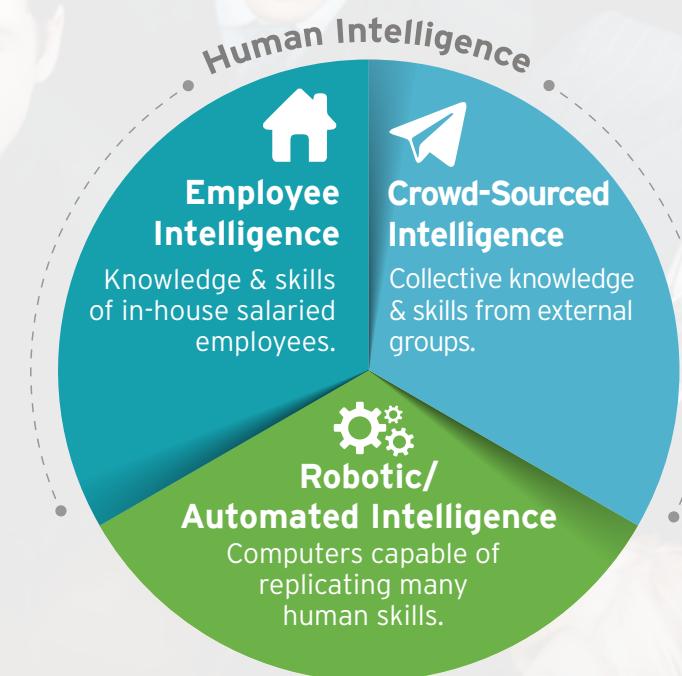


Figure 1

Collective intelligence tasks are designated as follows:

- **Humans primary, bots secondary:** The human is the primary owner of a process-related task, and delegates the sub-tasks with scope for robotic process automation.
- **Robots primary, humans secondary:** The robot is the principal owner of a process/task; refers sub-tasks that require advanced cognitive abilities to a human.
- **Humans and bots work in distinct roles:** A task requires both artificial intelligence (machine or software automation handled by the bot) and human intelligence.
- **Human and bot work in tandem:** The task requires a person and a bot to share the workload. They work in concert to deliver consistent results that make it difficult to distinguish their roles.

Crowdsourcing

The Oxford Economics Workforce 2020 Report³ found that a hefty 83% of executives increasingly rely on consultants, intermittent employees, or contingent workers. (For more on this topic, read “Jumping on the Gig Economy” in the Cognizanti journal.) This “crowd” can perform a variety of tasks, with incentives that can vary depending on the nature of the work.

For insurers, crowdsourcing talent is primarily driven by four objectives:

- **Overcome skill shortages.** A large percentage of the insurance workforce will begin to reach retirement age over the next few years. McKinsey & Company reports that by 2018, more than a quarter of the insurance workforce will be nearing retirement, while according to the Bureau of Labor Statistics, less than a third of insurance employees are under the age of 35.⁴ The Insurance Information Institute (The III) projects there will be at least 400,000 open positions in insurance by the year 2020,⁵ and there are fewer takers. Crowdsourcing can help resolve this dilemma.
- **Develop innovative products and services.** Crowdsourcing can be extremely effective in identifying business/technology issues and for experimenting with new solutions. For instance, Monetary Authority of Singapore⁶ (MAS), which provides regulatory oversight across the country’s financial services industry, has invited fintech firms worldwide to submit ideas and design solutions for 100 problem statements that were originally crowdsourced from the industry and the public. Participants will be able to try out cutting-edge fintech solutions in a regulatory sandbox environment⁷ and relax specific regulatory requirements within a stipulated time frame.

As insurers grapple with disruptions to their business model, those that successfully employ crowdsourcing and other flexible working models can position themselves at the forefront of innovation.

- **Solve complex challenges at a lower cost.** Insurers can access their collective resources online or through local channels. Members of the crowd perform non-core or specialized tasks, such as predicting the factors that influence policyholders’ decisions, or identifying and classifying risk. Those that successfully employ crowdsourcing and other flexible working models can position themselves at the forefront of innovation. For example, Kaggle,⁸ a platform for predictive modeling and analytics, conducts contests to source predictive models from data scientists worldwide. Insurers such as Allstate, State Farm, Liberty Mutual and Prudential have utilized crowdsourcing to develop predictive models for accurately classifying risk, tailoring coverage accordingly, or predicting a customer’s purchase patterns.
- **Create a better value proposition.** Crowdsourcing can rapidly generate real-time data that can be shared across the crowd. The data can concern the crowd itself, or pertain to business initiatives/processes. Insurers can analyze and process it quickly, enabling them to provide timely, highly accurate information that can help avoid hazards, prevent accidents, manage crises, and reduce insurance costs across the value chain.

Crowdsourced data can prove effective in the following scenarios:

- **Disaster preparedness:** A crowdsourced seismic network can be a great option for earthquake-prone countries that have little or no ground-based seismic set-up or early-warning system, but do have millions of smartphone users.
- **Disaster recovery:** The crowd can use smartphones to capture and upload photos, and create street-level views of affected areas following catastrophic events.
- **Accident alerts and assistance:** Applications are available to source real-time traffic and accident data and send location-specific alerts from the crowd. Gaming techniques can motivate users to accelerate emergency assistance and claims investigation.

Robotic Processes/Automated Intelligence

Automated intelligence refers to machines that perform simple jobs; those that “think” and handle judgment-oriented tasks; and those that “learn” the context and adapt. (For more on this topic, see our Cognizanti journal article, “[Intelligent Automation: Where We Stand and Where We’re Going.](#)”)

To get the most out of automated intelligence, insurers should ask themselves the following questions:

- **Can bottom-line improvements result from automating rules-driven business processes?** Robotic process automation (RPA) works best for insurance processes that are repetitive and rules-driven. FTE units (equivalent employees working full-time) can be reduced significantly, and savings realized across front and back-office functions. For instance, our OptimaWrite|Intake⁹ automates the task of extracting and validating data. This eliminates cumbersome manual processes, streamlines the submission intake process from all document types and formats, and automatically prioritizes (triages) insurance-related tasks. In fact, users have reported 50% to 80% reductions in turnaround time, 60% reductions in costs, and 92% accuracy in data extraction.
- **Can automation generate more value by applying advanced cognitive capabilities?** The potential benefits of using artificial intelligence and cognitive computing for insurers extend far beyond cost reduction through automation. These capabilities can streamline risk selection, improve decision making, drive better outcomes, and provide a platform for developing innovative offerings that can increase market share and add more value to the brand. For example, Swiss Re¹⁰ is working to improve how it assesses life insurance risk by engaging IBM’s artificial intelligence system, Watson – a move that could have a positive impact on the group’s Australian profit margins amid tough business conditions. The initiative will require Swiss Re to feed an enormous amount of medical data into Watson’s cognitive computing system. Watson will then extract the company’s data and underwriting platforms to generate highly accurate, risk-related data and inform underwriters’ decisions.
- **Can automation improve customer engagement through chatbots and robo advisors?** Having taken the wealth management industry by storm, robo advisors have now staked their claim in the insurance field. These smart machines can simulate human behavior to attract customers, or function as an automated advisor to appropriately guide a client. Another trend is to engage customers via chatbots, which provide a digital chat experience that replicates a human conversation. Insurers now sell policies through mobile chat applications –

eliminating the need for associates to fill in long forms, and providing customers with contextual advice on products and services. Alternately, companies can use customer service bots as an additional “friend” on one of many messaging platforms, such as WhatsApp, without the need to download another app. (For more on this trend, read, “[WhatsApp Insurance? Shouldn’t WeChat?](#)”.)

Productivity Enhancements, Compliments of Robo Employees

Robo employees can augment the talent of in-house personnel, and increase their productivity significantly. Figure 2 summarizes likely roles for robo employees in the future workplace.

Robos on the Horizon

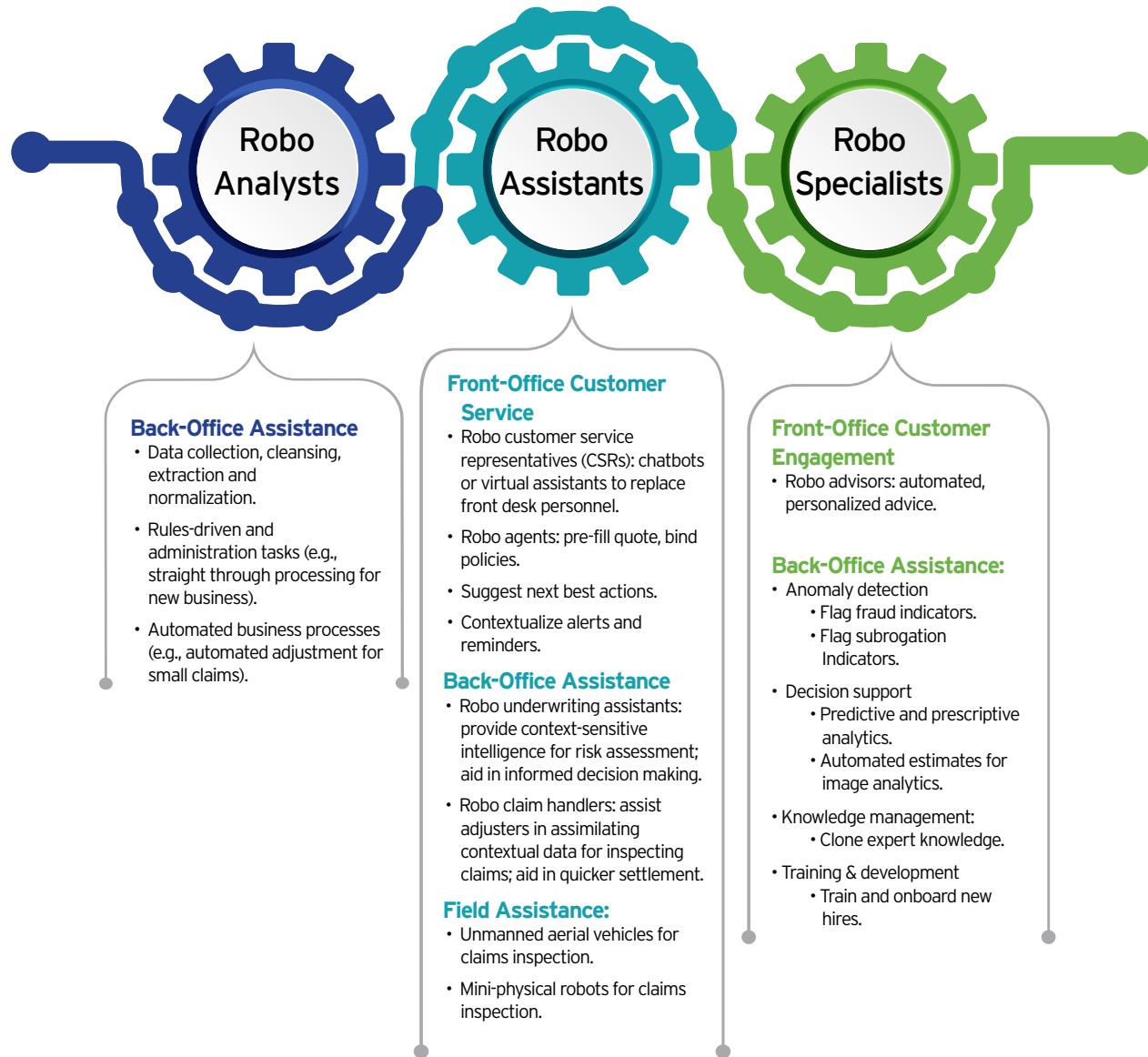


Figure 2

Consider this: A British teenager recently created a robo lawyer¹¹ to help individuals seeking legal advice. The robot, which works in chat mode, can handle parking ticket appeals, payment protection insurance (PPI) claims, and claims related to delayed flights or trains. Legal and arbitrator bots could prove transformational in addressing concrete queries (clarifying state laws, calculating accident compensations, handling coverage disputes, for example) and expediting claims settlement. Likewise, a robo doctor could be valuable in providing medical assistance during emergency situations and rehabilitation, especially for workers' compensation or disability claims.

Leveraging Collective Intelligence

Instead of viewing the crowd and robotic intelligence as separate entities, companies should keep in mind Aristotle's saying, "The sum is greater than the whole of its parts." Following are some scenarios where the crowd and robots can combine forces to yield better business results for insurers.

Screening New Applications

It takes a lot of time to screen new business applications, particularly in the life insurance and annuities industry, where policy application forms are typically handwritten. Bots lack accuracy when it comes to extracting data from these formats, something at which humans excel. To increase overall process efficiency, bots rely on machine-learning algorithms to conduct a first pass on handwritten forms. Data is divided into discrete chunks so that individual elements do not reveal meaning without the overall context. A handful of crowdsourced workers can then verify every single piece of data. The bot reassembles the pieces into a complete data set, which is fed into the core system for further processing. This accelerates turnaround time, reduces labor cost, and helps ensure that the information is accurate.



Assessing Property Damage

In the wake of natural calamities such as floods and earthquakes, property damages must be accurately assessed by claims adjusters prior to bringing in emergency assistance services. Robots can be invaluable in these situations, due to their ability to process large volumes of data. At the same time, their image-recognition capabilities are limited. Robots with deep learning abilities can take the first step in capturing aerial or satellite imagery, then slice the images into discrete data chunks. During an event, crowdsourced volunteers can analyze the image chunks and annotate the nature of damages. As more data sets are fed back to them, bots can learn to better identify significant patterns. Apart from image analytics, the crowd can help with translating, geocoding and categorizing emergency text messages or tweets. This can dramatically improve crisis management and expedite claims settlement.

Detecting Fraudulent Claims

Some employees fake injuries when claiming workers' compensation. Bots can do a fair job in flagging fraudulent patterns by scanning text data captured from claim forms, witness comments, and adjuster notes. Images and videos posted by claimants on social media can be an additional source for identifying fraud. Given bots' limitations in analyzing images, the crowd can help decipher conflicting patterns that could indicate a claimant might be indulging in risky activities while undergoing rehabilitation for a work-related injury or illness. This can help carriers detect fraud earlier in the process and minimize unnecessary claims payouts.

Shifting from Static to Dynamic Pricing

Data is fundamental to developing actuarial tables. Here, insurance companies have traditionally relied on historical data. Predictive models that actuaries use to gauge rates can fall short when assessing newer types of risk exposures (lifestyles, cyber risks) brought about by an increasingly connected world. Real-time data captured by crowd sources via wearables, mobile devices and social apps can provide valuable insight into consumers' purchase behaviors, spending patterns, life events, lifestyles, and other risk factors. These massive data sets can "train" bots to update their models (i.e., systems that learn) on an ongoing basis - resulting in fine-grained segmentation and dynamic, non-linear models for predictive analytics. This training model can help improve pricing accuracy and loss predictions while increasing profitability.

Tracking Customer Sentiments

Social media and other public forums where consumers can express their satisfaction or grievances with insurance services offer a treasure trove of data. Bots use advanced data mining and analytics to gauge customer sentiments on a vast scale. Nonetheless, their accuracy is typically far below that of trained humans, particularly in analyzing opinions and understanding the ever-evolving catch phrases on social media. Bots can distribute these large data sets to crowdsourced resources to help remove "noise" and facilitate further analysis. Alternatively, if accuracy levels are low, bots can do a first pass, then turn to crowd services to add the metadata (labeling and prioritizing messages and understanding their innate sentiment). This helps improve sentiment tracking, and provides important input for devising strategies to engage and retain customers.

Quick Take

Collective Intelligence: A Look Over the Not-Too-Distant Horizon

Jim is an auto insurance customer. His car has a minor collision with another vehicle. Jim chats with the adjuster bot installed in his messenger app. The bot offers Jim accident assistance and registers the first notice of loss. Jim then shares the images of the damaged parts from his smartphone.

The bot requests that Jim voice-record his account of the entire incident. Once Jim obliges, the bot transcribes the audio file and flags the case for subrogation. The bot uses image analytics to comprehend the nature and extent of damages, but faces a challenge in deciphering whether the damages occurred at the rear or front angle. It posts the images to the crowd, which is invited to participate in a gamification-based

exercise to help in the damage-assessment process.

In the first lap of the game, the crowd identifies and makes note of the damaged parts of the vehicle. During the next lap, they assess whether the damages are consistent with the report. In the final lap, the crowd decides if the impact of the collision caused the damage. Gamification techniques assure that the crowd is unaware of the identities of the individuals involved in the accident, and that the confidentiality of information is preserved. The bot learns from this process, and fine-tunes its image analytics skills so it can continually increase its accuracy in evaluating the cause and nature of vehicle-related damages.

Reimagining the Insurance Workforce

By the end of this decade, the insurance industry will likely face a talent crisis fueled by retiring baby boomers and millennials' perception that insurance is not an attractive career option. Using collective intelligence, insurers can address the skills deficit while increasing workforce productivity. For example, underwriters can dip into this resource pool to better assess risks. Likewise, adjusters can better evaluate loss information to settle claims earlier and use retiring professionals' knowledge bank to train new hires. These capabilities allow personnel to focus on tasks that involve intuitive, strategic decision making and innovative thinking that are beyond the scope of bots and most crowdsourced resources.

The key lies in dividing larger, complex tasks into simpler chunks of work that can be routed on demand to the crowd and robots, which work in tandem with in-house employees in ways that are imperceptible to customers.

Barriers to Adoption

Quality Considerations

- **Assigning Work:** It can be challenging to identify the best source – in-house employees, crowdsourced resources, or bots – to handle a specific task and deliver consistent output. This can become even more complex when they work in parallel, or combine their individual results. In addition, if a large volume of work is divided into smaller chunks for crowdsourcing, it could become extremely difficult to manage the process. While artificial intelligence and cognitive technologies have enabled bots to shift from rules-driven interactions to conversational interactions in natural language, challenges remain as far as interpreting images with accuracy.
- **Mitigating Risk:** Not all tasks are suited to collective intelligence. It's important to analyze the merit of the work and route individual work to the right source. For instance, crowdsourced tasks should be less business-critical and executed without impacting expected outcomes. For advanced cognitive tasks, manual intervention is preferred, since it allows machines to continually learn from humans and improve the accuracy of their work.

Behavioral Considerations

- **The Human Touch:** Although technology is maturing by the day, bots still lack the human touch in sensitive situations involving loss of life or property. An indifferent or awkward response could have serious repercussions, and severely impact a customers' perception of the insurer. Likewise, a crowdsourced resource might lack the skills to handle delicate situations.
- **Understanding Context:** In addition to teaching bots functional tasks, it is critical that they understand context and respond accordingly. The bots must adapt to geographical and cultural settings while simulating the responses of a human. Likewise, the crowd should be motivated by incentives to complete tasks on time.

Compliance, Legal & Ethical Considerations

- **Assuring Appropriate Actions:** Insurance organizations are subject to stringent regulatory requirements. They are largely averse to involving crowdsourced resources in core tasks that require a high degree of specialization, such as recommending appropriate coverages or investigating claims. Data security and privacy are also concern.

Carriers must continuously evaluate the quality of services provided by robo employees to ensure that these systems learn, adapt, and interact with humans appropriately.

- **Mitigation:** Organizations can involve the crowd in activities that do not require specialized skills or regulatory controls. Independent contractors/freelancers can be a viable alternative for tasks requiring specific abilities, such as appraisal or estimation. Businesses should train their robo employees on their code of ethics and laws of the land. Carriers must continuously evaluate the quality of services provided by robo employees to ensure that these systems learn, adapt, and interact with humans appropriately.

Looking Ahead

Collective intelligence that combines the skills and efforts of in-house employees, the crowd and robots can help insurance organizations improve overall performance at less cost, and remain ready to meet the changing demands of consumers. Applying collective intelligence in the future workplace will no doubt present insurance companies with significant challenges in respect to acceptance, adoption, and compliance. We thus advise insurers to take the following actions:



- **Identify low-hanging fruit.** While collective intelligence might not be suited to all business processes, insurers can get a head start by focusing on tasks where humans are the primary agent and the robot supports or augments them. The crowd and bots can help primary stakeholders, such as insurance advisors or underwriters, carry out non-critical tasks that are part of their day-to-day job and that tend to be monotonous, rules-driven, and repetitive. (i.e., information gathering, data validation, data extraction, data consolidation and report generation). This enables advisors and underwriters to direct their efforts on areas that will bring the most value to the company and its customers (advising customers on coverage options that best suit their needs; making informed decisions when dealing with complex applications).
- **Experiment with small pilots in-house.** Integrating collective intelligence into the enterprise requires gaining the acceptance key stakeholders within and outside the company. Insurance organizations should start small - conducting pilots to increase the effectiveness of existing business processes without disrupting or transforming them completely. For example, outside data scientists can be useful in developing predictive models to analyze the patterns of historical data, better match price to exposure, or tailor coverages. This can improve the decision-making process without disrupting existing models used in day-to-day business. Down the road, these insights can help train systems to adjust as the

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variables change, and provide recommendations that are prescriptive in nature. We suggest that carriers conduct trials that involve new business models or process transformation, with the crowd and bots working in tandem (launching lines of business or products in a new geography on a small scale, with no effect on the larger scheme of operations). Insurers can also start with employee-facing initiatives that act as productivity enhancers, then repurpose and extend proven capabilities for customer-facing initiatives.

- **Fail fast and learn quickly.** Work sourced from the crowd can be a double-edged sword, equally capable of diminishing the quality of the output or failing to adhere to compliance requirements. Because most algorithms are for general purposes, bots must be trained to apply extensive, domain-specific knowledge and contextual data that a carrier has assembled over time to produce positive business outcomes. This can help insurers assess if collective intelligence serves the intended purpose; for example, increasing the throughput or efficiency of an overall business process while remaining compliant with industry regulations. The success of these “trial runs” can also help garner the support needed for wider adoption.



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- **Repurpose talent.** While there are concerns that bots could soon displace human talent, technological advancements have helped humans work more effectively and create demand for their unique skillsets. By embracing collective intelligence, insurers can enable in-house employees to focus more on creating business value in the roles they perform, which can lead to higher job satisfaction. Using the crowd and bots' artificial intelligence can also help overcome severe talent shortages, augment in-house capabilities, heighten productivity, keep margins slim, and drive profitable growth.

As the insurance industry works to address its significant talent gap during the next three to five years, collective intelligence is the way forward – particularly for companies looking to attract and retain a fully engaged, future-ready workforce.

Footnotes

- 1 [https://www.upwork.com/press/2015/10/01/freelancers-union-and-upwork-release-new-study-revealing-insights-into-the-almost-54-million-people-freelancing-in-america/.](https://www.upwork.com/press/2015/10/01/freelancers-union-and-upwork-release-new-study-revealing-insights-into-the-almost-54-million-people-freelancing-in-america/)
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- 3 <http://www.oxfordeconomics.com/publication/open/250945>.
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- 5 *Ibid.*
- 6 <http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/Inaugural-Singapore-FinTech-Festival-to-be-held-in-November-2016.aspx>.
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