INTELEX

CONNECTED WORK, CONNECTED WORKERS AND THE FUTURE OF WORK
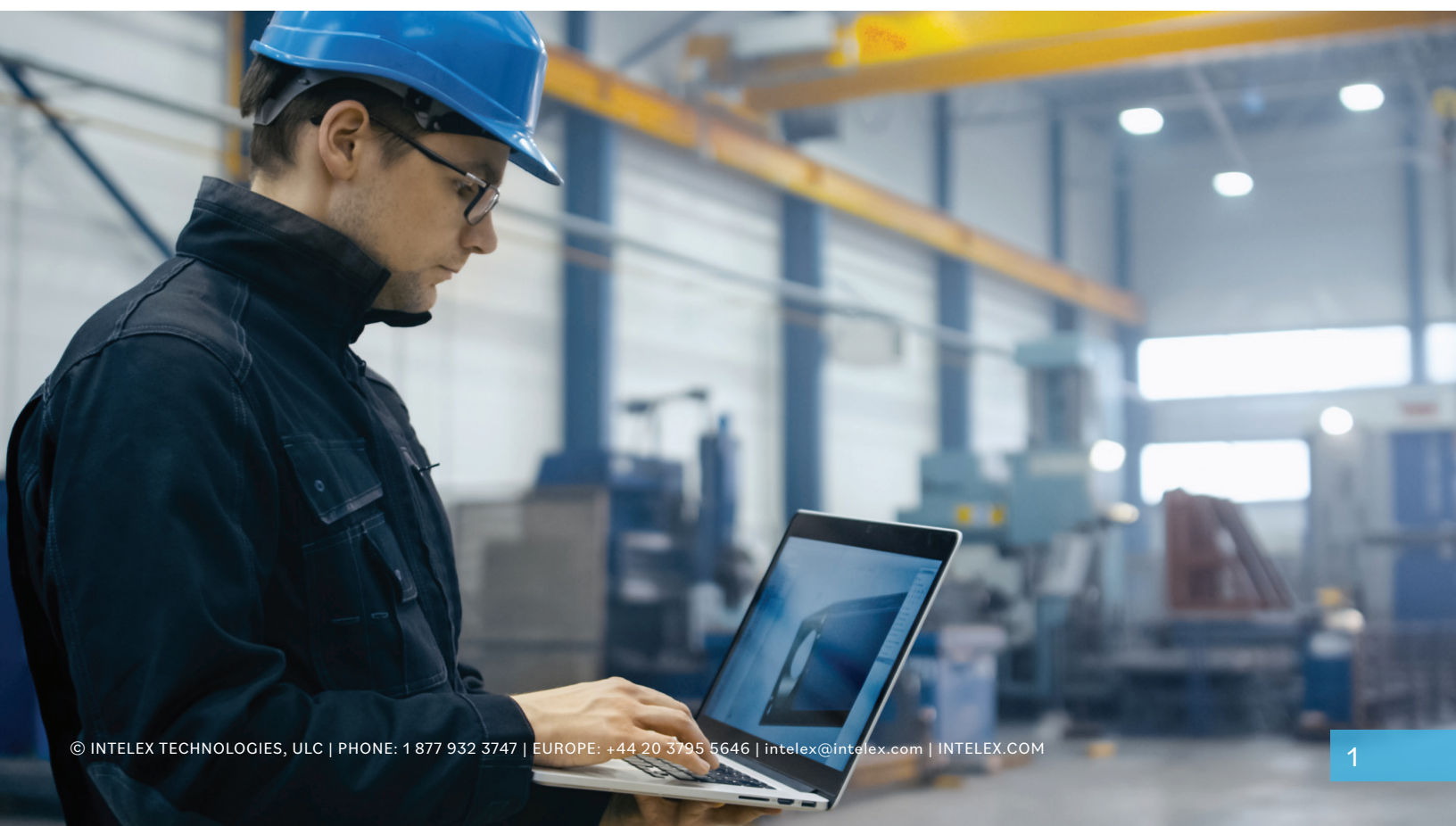
TABLE OF CONTENTS

Connected work embeds a culture of collaboration in an organization through interlocking conversations, connections, data collection and communities, helping organizations to maintain critical operations while keeping workers safe and productive.

If I say "connected work," what's the first thought that comes to mind? If you answered with any of the following, you'd be right:

- Sensors that track workers' locations, exposure to hazards or vital signs.
- Safety management systems and digital platforms that allow for robust data collection, analytics and dashboards.
- Mobile devices that can be used to collect information about incidents and near misses.
- Artificial intelligence (AI) algorithms that can do things like translate complex environmental, health and safety documents, like permits and regulations, into succinct compliance requirements.
- Monitoring systems that send readings from a variety of sensors at remote locations to the cloud, which then downloads that information automatically to dashboards on your laptop.
- Machine learning that can operate cars or tell you what movies you might want to watch next.
- Robots and drones that can perform work that is beyond the physical capabilities of humans or that is unsafe for workers.
- Labor-intensive job tasks that have become completely automated.

What once was science fiction has become reality. Workers are connecting to technology and disconnecting from traditional methods of work at a rate we've never seen before. Due to the pandemic, workers have become more mobile, in more ways than one. Stay-at-home orders and employer decisions to allow remote work for many if not all in their workforce – depending on the business – broke the proverbial chains that held many to desks in offices and facilities around the world. Workers who no longer must go into an office are realizing they can relocate for financial or personal reasons and continue to work for the same company. But they need to stay connected.

Pre-pandemic, organizations already were discovering that in order to remain profitable and resilient, they must embrace technology and new ways of working smarter, faster and with less waste.

This means that smart devices and personal sensors; control of work via automated permits for standard work practices; employee engagement and communication through tools like instant messaging and bulletin alerts; dashboards and analytics; automated solutions to populate forms, maintain compliance and update and share SDS; facility sensor technology and alarms; automation and AI and other types of technology connecting workers, machinery, processes, safety and environmental management have become crucial to create a 360-degree-view of work and workers.

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Connected Work and Workers: What's Driving It and Why?

The conversation around connected work, sensors, automation, AI and machine learning is no longer "if" or "when" but "how" and "why." How are workers and work connecting?

DeLoitte conducted a survey of 640 workers ([The Connected Worker – Charging Up the Business Services Workforce, DeLoitte](#)) and found several key trends and findings:

The majority of workers already are using smart devices: Although 13 percent of workers reported they are not using any digital devices for work purposes, the majority of workers who have not been given smart phones or tablets for work admitted they are compensating for the lack of company-issued technology by using their personal smartphones to make their jobs easier. The question for employers then becomes, do you want employees storing or collecting proprietary or sensitive data on their personal devices?

A lack of technology and support leads to lost productivity: In the past year, how much time have you spent troubleshooting the technology you use? Problems with technology waste time, and nearly half of workers (49 percent) surveyed said they waste an average of 10 minutes per hour on issues with technology. These issues range from non-working devices/apps to a lack of devices/apps that could improve productivity to performing tasks manually that could be automated via technology. This translates to a productivity loss of nearly three hours a week per worker.

Productivity equals profit: Continuing pressure on margins and delivering on KPIs, the challenges of attracting the new generation of technology-savvy workers and competitors who discover a way to disrupt the market mean organizations need to improve productivity and efficiency to be profitable in the future.

The landscape likely will be very different in a decade: Anywhere from one-quarter to one-third of the millions of business services jobs are at high risk of automation in the next 10 to 20 years.

According to the DeLoitte report, blue-collar workers are more disconnected than their white-collar counterparts, with 51 percent of blue-collar workers describing themselves as "very light" users of technology at work. However, as mentioned above, margin pressure, boosting productivity and staying ahead of competitors are driving blue-collar services businesses to adopt a more connected workforce.

The ROI of the Connected Workplace

Implementing a program that fosters connected work carries many of the same costs as any other capital improvement – equipment costs for connection-capable devices, software costs for data and EHS management systems, and the cost of training workers to effectively use the new technology.

What kind of return can you expect on that investment? According to The Connected Worker – A Roadmap for Preparing Your Organization for New Technology to Reduce Safety Risks (Intelex Technologies ULC), organizations are finding that a fully connected EHS work environment offers benefits in:

- **Regulatory and management systems compliance.** You can generate real-time reports on compliance activities like inspections, audits and training. Some technologies can use algorithms to monitor specific kinds of compliance, like whether workers are wearing their PPE, and notify safety professionals when workers are taking unnecessary risks.
- **Innovative ways to collect and utilize data.** One of the newest innovations in data collection is wearables, which can capture data about a worker's physical well-being in real time. Wearables utilize sensor technology embedded in clothing and equipment that workers physically wear or carry with them while performing their everyday tasks. (Wearables: What You Need to Know, Intelex Technologies ULC) These sensors can monitor temperature, activity level, location of workers, heartrate and a host of other data points. If you've ever worn a Fitbit or an Apple Watch, then you've experienced wearable technology.
- **Availability of personnel**. In a fully connected work environment, it doesn't matter that your industrial hygienist is in St. Louis and your worker is 500 miles away in St. Paul. They both can look at the same problem, and the same data, in real time – with no delay and no air travel costs.

When the work environment is fully connected – both machines and people – problems are identified more quickly.

- **Emergency response.** When something goes wrong, whether it's a chemical release, a fire, a medical emergency or an active shooter on-site, a faster response limits damage and saves lives. Many workplaces already are connected to the local fire department, so that when a fire alarm or sprinkler head activates, the fire department immediately responds. Connected technology provides instant notification to workers and first responders in a much greater range of emergency situations; can alert a supervisor of an emergency involving a lone worker at another location; and can alert managers of a facility when a hazardous leak or release has occurred inside the facility perimeter or if a release has escaped from the perimeter.

- **Availability of critical information.** Workers are more likely to follow operating procedures, complete lockout/tagout checklists or make use of other safety information when they can scan the QR code or RFID tag on a piece of equipment and have instant access to what they need. No more flipping through binders or even scrolling through lists on their screens.

- **Increased productivity.** Many improvements that make the workplace safer also make it more productive. For example, the scan-and-find availability of procedures and information discussed above decreases the time that workers spend finding what they need to do a job and enables them to get more done.

- **Increased quality.** When the work environment is fully connected – both machines and people – problems are identified more quickly. That means fewer mistakes, fewer issues with product and higher quality across the board.

- **Decreased operational risk.** When you increase productivity and quality and decrease hazards and safety-related incidents, you also decrease overall operational risk.

Machine Learning and AI: Creating Connections

Self-driving vehicles are thought of by many as the embodiment of machine learning, but did you also know that Amazon's recommendations and comparisons of similar products is machine learning? Those "friend" suggestions made by Facebook – also machine learning. Have you ever received a fraud alert from your bank, asking if you made a certain purchase? Those alerts are triggered by spending that does not fit your normal pattern and they are made possible by machine learning. Machine learning is a subset of AI.

Machine learning could not occur without the data that is collected, stored and analyzed every minute of every day via algorithms and statistical models. Machine learning and AI rely on patterns and inference rather than using explicit instructions. Investment in AI is predicted to become a $100 billion market by 2025. A recent survey found that 30 percent of respondents predicted that AI will be the biggest disruptor to their industry in the next five years (8 Ways Machine Learning is Improving Companies' Work Processes, Harvard Business Review).

Here are a few ways machine learning is used or will be used in the workplace:

- Drones can be programmed to enter potentially hazardous situations to perform tasks and monitor atmospheric conditions before employees are exposed.
- Automatic training updates and suggestions allow employees to be notified when training is due or can offer them further training suggestions based on the courses they've completed.
- Most of the easily preventable workplace injuries occur because workers are not wearing their personal protective equipment (PPE) or are not wearing it properly. Ask almost any employee if he or she has seen coworkers not wearing PPE or wearing it wrong and the answer will be "yes." Systems are being developed that allow smart cameras that are connected to a real-time video analysis platform powered by machine learning algorithms to track PPE use and create alerts when appropriate PPE is not being worn. Some PPE equipment features sensors, for example, fall protection that has sensors that indicate when a harness has been used and should be retired. Workplaces can even install machines that are programmed to automatically distribute the correct PPE to employees based on an ID number, location or coded badge.
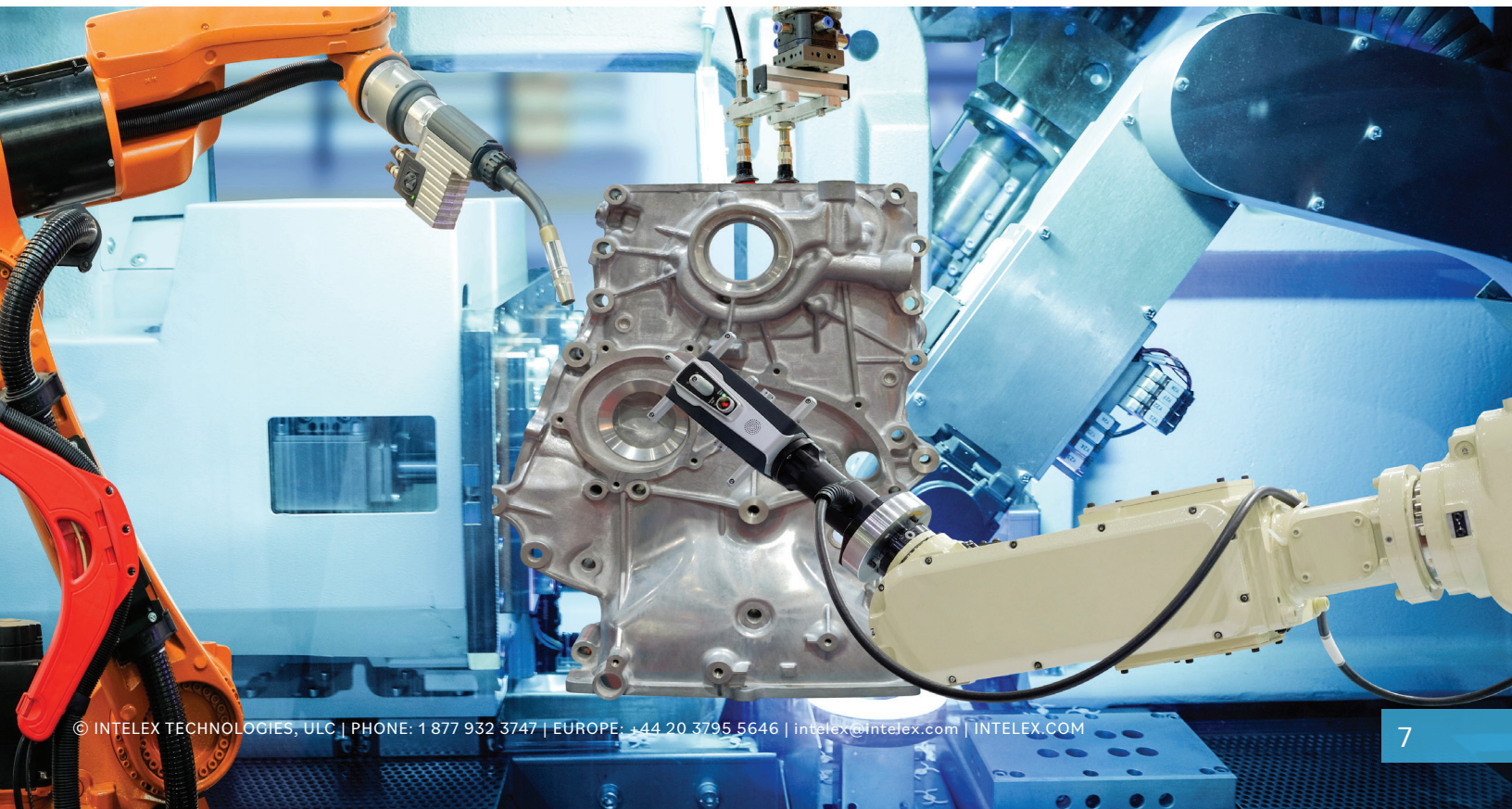
Automation Is Not a Dirty Word

Automation can improve performance by reducing risk and waste and, in some cases, achieve production outcomes that exceed human capabilities.

"Advances in robotics, artificial intelligence (AI) and machine learning are ushering in a new age of automation, as machines match or outperform human performance in a range of work activities, including ones requiring cognitive capabilities," noted the authors of A Future that Works: Automation, Employment and Productivity (McKinsey Global Institute).

Further, according to the report, "Automation of activities can enable businesses to improve performance, by reducing errors and improving quality and speed... At a time of lackluster productivity growth, this would give a needed boost to economic growth and prosperity and help offset the impact of a declining share of the working-age population in many countries. Based on our scenario modeling, we estimate automation could raise productivity growth globally by 0.8 to 1.4 percent annually."

Companies can now automate functions that once required operators to work in close proximity to large machines or to enter potentially hazardous situations to take readings. Today's workers can operate equipment from remote locations when hazardous conditions are present. For example, Industrial Scientific offers live monitoring solutions that generate real-time text and email alerts for gas hazards, panic, and mandown situations, allowing workers to see what's happening on a map and to respond to incidents in the moment. Workers are always "visible," even when they are miles away.

[Plume Modeling](), which collects data from gas and weather sensors during a chemical release or combustion event, can predict gas paths for more informed emergency response and better environmental health and safety outcomes. Digital permits to work can alert authorities to pending requests and uploads those requests to a searchable database that automatically populates them with real-time gas detection data, which also frees workers and EHS professionals from the tedium of manual paperwork.

And ultimately, what's the point of creating and storing physical paperwork if there's no longer anyone working in an office to manage it or update it? Due to the COVID pandemic, many organizations have been forced to speed up their adoption of connected solutions related to machine learning, data collection via mobile devices, regulatory compliance, EHSQ monitoring for facilities and employees, robotics, analytics, dashboards, training, employee communications and more.

Although business slowly is returning to what will become our "normal," one thing remains clear: employees have become accustomed to using mobile devices and apps to remain connected to work, the workplace and coworkers. And that's unlikely to change.

About the Author

Sandy Smith, Global Content Lead, Intelex Technologies, is an award-winning newspaper reporter and business-to-business journalist who has spent 20+ years researching and writing about EHSQ and networking with EHSQ professionals. She is passionate about helping them become leaders in building and maintaining safe workplaces and participate in creating workplace cultures that promote and support EHSQ.

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Intelex Technologies Inc. is a global leader in environmental, health, safety and quality (EHSQ) management software. Since 1992 its scalable, web-based platform and applications have helped clients across all industries improve business performance, mitigate organization-wide risk, and ensure sustained compliance with internationally accepted standards (e.g., ISO 9001, ISO 14001, ISO 45001 and OHSAS 18001) and regulatory requirements. Virgin Atlantic, Brinks, Air Liquide, Lafarge, Volvo and almost 1,400 customers in 195 countries trust Intelex to power their EHSQ initiatives. Intelex is one of North America's fastest-growing technology companies, recognized as a Great Place to Work for over 7 years, recipient of Waterstone's Most Admired Corporate Cultures award, and Deloitte's Best Managed Companies award. For more information, please visit www.intelex.com.

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