THREAD IN MOTION

10 Best Automation Use Cases

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Audi & Fanuc

Audi is a luxury vehicle manufacturer based in Germany that designs, engineers, manufactures, markets, and distributes luxury vehicles. Audi is a Volkswagen Group wholly-owned company with headquarters in Ingolstadt, Bavaria, Germany. Audi vehicles are assembled in nine factories around the world. Audi Brussels was looking for a solution to check bodywork welds and also in areas where operators are unable or unwilling to go.

As a result of that, a vision system is mounted on cobots to inspect welds. The cobot collaborates with the operators in order to complement their quality control procedures.
In conclusion, the quality control operators have more faith in their performance because the robot performs some of their tasks and therefore opens up new possibilities without jeopardizing the operators' roles. As they use 3Ds principle, any dirty and complicated job is performed by robots. A 4th D now can be considered as “Demographics”.

One benefit of cobots is that they do not need a secure safety zone, which means they take up less room and save money. As they communicate directly with operators, they provide ergonomic assistance. It also enables the opportunity for the future that people with physical or mild physical disabilities will be able to work in jobs where cobots assist.

A CR-7iA/L is a robot that is used in Audi, which is a cobot fitted with a vision system for testing welds as part of a project with Fanuc. First, cobot tests various welds for presence, duration, and location in areas that operators either can't or find difficult to get to in order to create a safer workspace.

As robots perform some of the quality assurance tasks, the quality assured is way better than the human workforce. Simultaneously, people can see that their careers are not in any way jeopardized which must be the main concern of a company like Audi.

Audi plans to use even more interactive robots in the manufacturing process in the future. It will create awareness and also will improve the quality of the workers which will lead them to do their jobs even better.

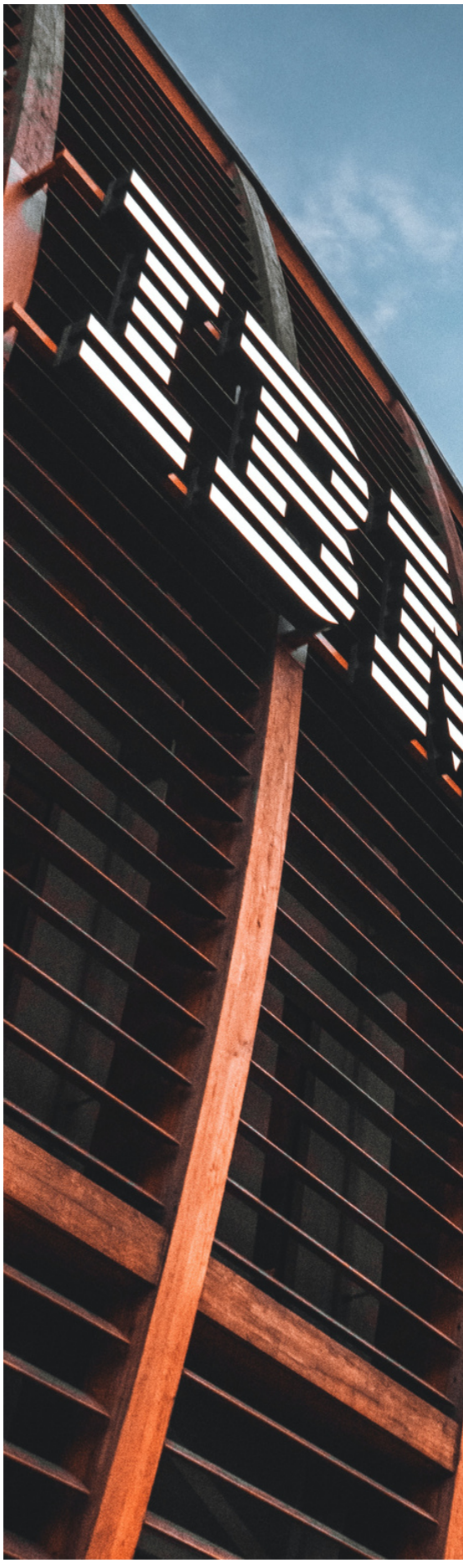
North Star Bluescope Steel & IBM

Every 15 seconds, 151 employees have a work-related accident, according to the International Labor Organization. Annually, 317 million people are involved in non-fatal workplace accidents around the world. The good news is that IoT technology is enabling the linked worker to emerge – a worker who is more aware of and sensed by their surroundings is inherently safer.

Wearable and embedded sensors allow employees to be tracked in their environments, preventing injuries from falls, overexertion, and heavy machinery – the list of what wearables can help us avoid is long. Wearable technology uses the Internet of Things to collect, integrate, and analyze sensor data, and when combined with advanced cognitive capacities and external sources such as the climate and weather, we see tremendous potential for better managing health, wellbeing, and safety, which we believe has the potential to truly change the way we live and function.

North Star Bluescope Steel, a major steel manufacturer for the building and construction industries in Australia, New Zealand, and North America, is collaborating with IBM to create a cognitive network that uses IBM Watson Internet of Things technology to help workers stay safe in unsafe environments. The IBM Employee Wellness and Safety Solution gather and analyze sensor data from sensors installed in helmets and wristbands to provide real-time warnings to workers and supervisors, allowing proactive steps if physical well-being is compromised or safety protocols are not followed.

While some wearable sensors, such as fitness bracelets, provide individualized solutions, the IBM research project provides a framework that can be personalized and expands the power of cognitive computing to capture and analyze data from a large number of sensors. The solution can identify even dangerous combinations that could be missed separately by putting this knowledge together and observing what's actually going on around the employee.



For example, a person suffering from heat stress can have a high skin temperature, a fast heart rate, and no movement patterns for several minutes. These symptoms on their own may not be cause for concern, but when taken together, they signify a serious situation that requires immediate attention. The majority of occupational accidents can be avoided by keeping an eye on employee status. Injuries can be avoided by ensuring that safety equipment is used properly and that time and location limits for dangerous conditions are followed.

Northstar is using the IBM Employee Wellness and Safety Solution to collect data from multiple sensors that continuously track the worker's skin body temperature, heart rate, galvanic skin response, and level of operation, as well as sensor data for ambient temperature and humidity, in order to reduce heat stress. If temperatures increase to dangerous levels, the solution allows Northstar to offer customized safety advice to each individual employee, such as reminding them to take a 10-minute break in the shade.

Environmental Monitoring Solutions & Amazon Web Services

Environmental Monitoring Solutions (EMS) is an Australian company headquartered in Victoria. The business, which was founded 25 years ago, specializes in solutions that assist petrol retailers in gathering and analyzing data on the output of their stations. Its technologies provide remote monitoring and support services to help consumers raise revenue, cut maintenance costs, and reduce the risk of accidents.

Customers like Viva Oil (Shell), PUMA Energy, BP, and 7-Eleven own and run hundreds of petrol stations throughout Australia. Since profit margins are slim, the stations must run at a high level of efficiency. They must, however, have excellent customer service, ensure employee protection, and reduce their environmental effects. Accidents do happen, and a typical EMS customer's annual costs for cleaning up underground gas tank leakage or car fuel tank pollution are likely to be about AU$15 million (US$12.13 million).

EMS built Fuelsuite to help customers optimize efficiencies while still meeting the needs for service excellence, safety, and environmental protection. Fuelsuite helps customers to shift away from manual legacy technologies and unify station management, resulting in substantial cost savings. Customers may use Fuelsuite to keep track of inventory, deliveries, and costs.

The market for cloud computing services was investigated by EMS, with a particular emphasis on providers of Internet of Things (IoT) technology. EMS is now able to collect all sensor data and send it to the Fuelsuite interface using IoT.

The new version of Fuelsuite was developed by EMS to aggregate data from the sensors using a custom-built physical system called Fuelscan, which is located within the gas stations. Fuelscan sends the data wirelessly to the AWS Cloud, where it is processed and transmitted via the Fuelsuite web-based interface. In addition, the sensor data from the devices is stored in a database service, and the Fuelscan data is archived using Amazon Elasticsearch Service. Finally, the data also is archived.

The IoT-enabled Fuelsuite solution is currently used by over 1,000 petrol stations across Australia. Station owners receive near-real-time data on their stations' efficiency, including how much gasoline is sold and how much is in underground storage tanks. It also contains information on the pressure within the hoses connecting the fuel pumps to the cars, as well as the temperature and amount of gasoline in the underground tanks.

AWS IoT–enabled Fuelsuite solution, obtaining a full image of petrol station efficiency to significantly increase efficiencies and identify fuel leaks early to reduce environmental impacts.

Deutsche Telekom & Efento

Efento specializes in Internet of Things (IoT), Machine-to-Machine (M2M), and Cloud computing. They are one of the few companies in the world to have an integrated solution based on wireless sensors (Bluetooth Low Energy, Narrowband IoT, LTE-M), an innovative cloud platform, and mobile applications for tracking and analyzing various physical parameters.

In 18 European countries, customers are able to order Efento NB-IoT sensors with pre-installed SIM cards, which will connect with NB-IoT networks. Customers of Efento are able to order NB-IoT wireless sensors, as well as networking from Deutsche Telekom and its roaming partners.

The basic Efento NB-IoT test kit comes with a SIM card and five years of connectivity.

Furthermore, Efento NB-IoT sensors have their own APN. This, combined with the VPN link between APN and the Efento Cloud platform, ensures a high degree of security since contact between the devices and the cloud platform is "invisible" to third parties.

NB-IoT roaming is now available in 18 European countries thanks to roaming agreements signed by Deutsche Telekom earlier this year with Swisscom, Telia Company, and Vodafone. Austria, Croatia, Denmark, Finland, Germany, Greece, Hungary, Italy, Liechtenstein, Norway, Poland, Slovakia, Spain, Sweden, Switzerland, the Netherlands, and the United Kingdom are among them.

ThyssenKrupp & Microsoft Azure

ThyssenKrupp, a manufacturer of elevators, escalators, and moving walkways, has been using Microsoft's Azure suite's predictive maintenance capabilities, which enables ThyssenKrupp's service technicians to detect elevator issues.

Technicians can use the industrial IoT tools in conjunction with a “mixed reality” system to operate hands-free on the job and make remote calls to more seasoned technicians who can walk them through solutions – and provide them with useful on-site education.

Today, their technicians either have a laptop or a smartphone in one hand or are using laptops to search for details that ease their work. They can communicate with a control room, which directs them to the correct components to replace. They can also examine a 3D hologram of pieces, explore the device, and order what they need automatically.

ThyssenKrupp started working with Microsoft and global systems integrator CGI in 2014 to create a solution that links ThyssenKrupp's thousands of sensors and systems in its elevators to the cloud securely. ThyssenKrupp uses the Microsoft Azure IoT Suite to collect and distribute elevator data such as motor temperature, shaft orientation, cab speed, and door functionality to a single dashboard. This allows for real-time data visualization of current problems as well as data for future management.

This predictive maintenance, which was powered by Microsoft Azure IoT, allowed ThyssenKrupp to provide 95 million hours of new availability per year of service to elevator passengers all over the world.

Yorkshire Water & Siemens

Cutting-edge technology such as artificial intelligence in industry and the Internet of Things (IoT) is helping to protect natural water systems' high value by avoiding contamination. As natural water systems are extremely valuable, they preserve and build tourism and leisure opportunities while also supporting a rich environment for flora and fauna.

Stormwater runoff and household sewage are transported to water treatment plants in the same piping network in cities all over the world – especially in older cities. These so-called combined sewage systems (CSS) have the benefit of purifying runoff water, which may be contaminated with gasoline, pesticides, fertilizer, and other pollutants before being released into the environment.

However, a CSS piping network can be extended to its limits during heavy rainfall or snowmelt, enabling untreated water to escape into waterways through the combined sewer outlet (CSO). When blockages in the CSO are removed in a timely manner, the chances of this occurring are greatly reduced. Siemens, Yorkshire Water, and the University of Sheffield have teamed up to build a device that uses artificial intelligence (AI) and the Internet of Things (IoT) to detect blockages until they cause overspills.

Yorkshire Water, a British water company, manages 55,000 kilometers of sewers. CSOs are built to release excess water and waste into rivers during heavy rains to avoid flooding in public areas. Of course, these occurrences must be held to a bare minimum. Yorkshire Water's Pollution Incident Reduction Strategy 2020-2025 seeks to minimize pollution accidents by 50%.

BAE Systems & Boeing / Tapestry Solutions

Tapestry Solutions, a Boeing subsidiary, has won a contract to supply BAE Systems' manufacturing facilities with its IoT platform. The implementation is part of BAE Systems' larger plan to standardize and automate its manufacturing processes.

On factory floors, supply chains, and through industrial business operations, IoT platform used links individuals, processes, and data. It is viewed as technology agnostic, meaning it can be plugged into many sensors, computers, and 'things' to track and manage assets and workflow processes. Various low-power, wide-area networking technologies can connect them.

The RFID sensors and readers, as well as a range of enterprise resource planning (ERP) and asset management systems, were all integrated in the first installation. Boeing has used the tool as an "information management system" (IMS) in at least 50 of its manufacturing locations.

By reducing assembly time, automating asset receipt and payment, improving inventory management and overall safety, Tapestry Solutions claims the device saved Boeing about $100 million in its first year.

DHL & Fetch Robotics

More than 85,000 unique pieces are housed in Wärtsilä's 37,000 square meter Central Distribution Center in Kampen, the Netherlands. It's an important part of Wärtsilä Global Logistics Services (WGLS), operating as a hub for the entire spare parts logistics chain for energy and marine solutions.

Wärtsilä and DHL have collaborated to manage Wärtsilä's warehouse operations, and the two companies are collaborating on new ways to use technology to increase both safety and performance.

Wärtsilä and DHL were interested in learning how collaborative robots can communicate with their employees and how robotics could add value to their warehouse community. To simplify point-to-point material handling, the Fetch Robotics VirtualConveyor material transport solution and its autonomous mobile robots (AMRs) were integrated into the warehouse workflow.

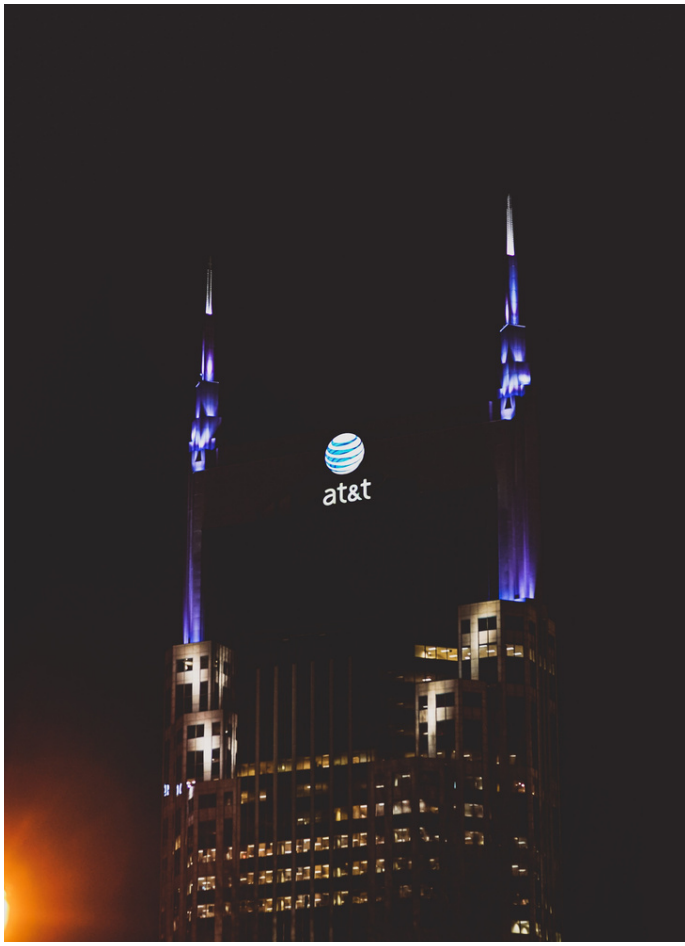
Only in one day the robotic system that is up and running, saves operators up to 32 kilometers a day in walking time. The versatility of the approach, as well as how easy it is to adapt their needs were amazing.

The robots were able to intelligently maneuver through normal warehouse operations, slowing down around people and finding their own safe paths through the warehouse because each Fetch AMR is equipped with sensors that enable it to recognize its position in the warehouse and avoid both static and dynamic obstacles (such as forklifts).

Staff was able to focus on more rewarding and satisfying job opportunities as a result of this. The Fetch Robotics VirtualConveyor Solution saved staff at Wärtsilä's distribution center more than 30 kilometers per day in just a few days, while also increasing their efficiency.

Users with no programming experience found it simple to adjust the robots' routes and schedules, as well as assign restricted areas. Wärtsilä and DHL were able to deploy Fetch AMRs with faith in the robots' ability to adapt to their unique warehouse environment as a result of this. It's this inherent simplicity, combined with safety, reliability, and performance, that makes the Fetch Cloud Robotics platforms so appealing to companies like Wärtsilä and DHL.

Telstra & AT&T



As the Internet of Things (IoT) becomes more common, mobile operators are increasingly turning to Mobile IoT networks to provide low-power wide-area network access to their customers.

Mobile IoT networks use licensed spectrum and 3GPP-standard technology to enable systems that must be low-cost, have long battery lives, and operate in remote locations. The two Mobile IoT technologies – LTE-M and NB-IoT – now serve a wide variety of vertical industries, applications, and implementation scenarios when used together.

For white goods and smart home solutions that don't need a high-speed link, AT&T sees LTE-M as a compelling, convenient, and highly safe alternative to Wi-Fi. AT&T claims there is a gap in the market for solutions that operate right out of the box and include the cost of connectivity in the device's initial price.

The new solution, according to Telstra, is designed to help businesses prevent the loss of assets and cargo, recover those that go missing in action, and improve supply chain performance. With LTE-M, connectivity can be allowed throughout the appliance manufacturing phase, enabling the device to be linked during its entire life cycle, from the factory to distribution, retail, and finally to the consumer's home.

Telstra is now shipping an LTE-M-based system with solar panels and a GPS chip that businesses can use to monitor the position of high-value, non-powered assets including shipping containers, semi-trailers, rail freight wagons, and large machinery.

The tracker is programmed to report its position once every minute while traveling and once every four hours when stationary, using the LTE-M link and when in range. LTE-M allows for near-real-time monitoring as you move from cell tower to cell tower.

Each location message consumes about 1KB of data. Depending on location conditions, the solar panel charges the lithium-ion battery from absolutely flat to fully charged in approximately 4-8 days, charging every day in direct sunlight. Telstra provides the customer with access to location data through APIs or a web portal in addition to providing the hardware and connectivity.

In the future, adding temperature, pressure, or door sensor or configuring the web portal to send a notification are planned. Telstra is now exploring how to enable the asset tracking solution to work internationally.

The introduction of LTE-M networking in the white goods and logistics industries demonstrates how this Mobile IoT technology can be widely adopted by both businesses and consumers. Economies of scale will increase as the number of LTE-M connections increases, generating a virtuous cycle that will push wider deployments.

Mercedes-Benz & Thread In Motion

Thread In Motion was founded in 2016 to produce technologies that combine smart technology with production. Their main objective is to protect the existence of the human workforce and interaction in operations, digitalize processes with low-cost automation solutions provided by smart wearable technology. They develop customer-oriented IIoT solutions and become the global leader of the wearable technology revolution.

The industrial revolution states the fact that no matter how far the operation is automated, every operation has a need for a human workforce. The inevitable problem for all industries; every 9 out of 10 mistakes have been made by humans and we are here to prevent those mistakes instantly. The solution is to use technology with the human workforce.

As they develop more products that are specialized in different fields of work, their 3 smart gloves started to be used in different industries such as automotive, manufacturing, retail, and especially logistics.

Daimler is one of the leading automotive manufacturers in the world. As Mercedes-Benz decided to intensify their production operations locally in Turkey, Hoşdere Bus Factory. As usual, every Kanban system in production sites works with a small equipment car called Tannenbaum tree. This system helps workers to maintain internal logistics operations.

With the help of equipment charts, the worker checks equipment's and car's bar code as if they match. Continuously these workers check if equipment boxes are filled or not, they detect low stock equipment and supply it from the warehouse.

After TIM started to work on the enhancement of the internal logistics process; discovered that this can be digitized. After the implementation; now every shelves and cars are labeled with automatically printed bar codes via TIM40 Software. The worker scans the barcode of the related low stock shelf and the software system instantly sends orders to the warehouse worker. It's also possible to categorize from high priority to low priority, in order to maintain operational continuity.

It's now possible to save and review records of usage, amount of material, duration of the process, to determine which worker was carrying out the process on the dashboard. TIM40 creates a heatmap for material cars to optimize these cars location in order to process route optimization, make predictions to estimate your stock availabilities, and also provides end-to-end traceability of materials and workers.

Thanks to Thread In Motion, there has been 89% decrease in human-centered errors. Moreover, the assembly process is now easier, safer, and more employer-friendly for the people working in the bus factory. If you'd like to know more about the smart gloves that Mercedes Benz uses in its own company, click here to get information about IWO.

We, Thread In Motion, are trying to save costs, improve efficiency and boost the productivity of our customers. If you are also interested in implementing automation in your company, contact us.

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