

## What is the Internet of Things?

The [Internet of Things \(IoT\)](#) is a popular phrase for the emerging class of Internet-capable physical objects such as appliances and control systems. It seems as if almost every vendor of electronic devices has some active development of IoT devices and new Internet of Things products are being introduced to the market daily. This new technology offers the potential to revolutionize manufacturing, industrial processing, product design and transport logistics in every industry. The goal is for our everyday working world to function with the data accessibility, responsiveness and customizability that we already take for granted as part of our online experience. In this brief overview, the Application Specialists at CAS DataLoggers cover several industry opportunities presented by today's [wireless data loggers](#) including models with new mobile apps and cloud-based servers which let users monitor temperatures and control processes from any location.



With advances in hardware, software and wireless networking, technology has become affordable and compact enough that low-power sensors and connected processors can be embedded in almost any electronic device. This is most clearly seen in smartphones, which incorporate sensors giving users access to many kinds of data such as GPS, motion, direction and more. Mobile apps use this connectivity to monitor and control climate control systems, light fixtures and all manner of electric devices from toaster to washers to door locks. Smart homes already allow residents to control their appliances and save energy. Soon everything around us may be controlled with just a few taps on a screen anywhere, anytime.

These advances are being matched in a large variety of commercial and industrial applications with sensors that collect data to enable manufacturing processes become more reliable, efficient and cost-effective every day. Equipment vendors of all kinds are finding ways to integrate wireless sensors into their products for easy network access. As a result it's likely that nearly everything will be online and accessible by mobile devices. All these sensors are producing a large amount of data which businesses and organizations can view in real time to optimize efficiency, process automation/control and more.

In our market space, wireless data loggers such as the [TandD TR-71WF](#) temperature logger and [dataTaker DT80W](#) universal input logger are available to enable business owners, managers, engineers and users to realize the savings to be had from switching from manual measurement to connected, web-enabled automated systems. Here are just a few examples of Internet of Things applications:

### Cold Chain/Transport/Logistics:

In these shipping and storage applications, temperature-sensitive products are tightly managed and tracked using wireless data loggers. In this way it's easy for suppliers to deliver products and show proof (temperature data) to receivers as proof of regulatory best practices. This simple setup is an affordable way to protect product and seller reputation.

Wireless [cold chain data loggers](#) with software tracking capabilities form sophisticated solutions for these applications, automatically uploading temperature data to servers in the cloud and alarm notifications over email or text message.



Fleet monitoring is another increasingly common wireless application, using vehicle data loggers to capture data from GPS sensors along with vehicle performance information. There are many examples of how this can save substantial logistics costs by reducing wasted fuel and products.

### Manufacturing Automation/Control:

Thanks to Internet-capable sensors, process automation is reaching a higher level of efficiency and precision. Today's [data loggers](#) and [data acquisition systems](#) can now feed real-time data into PLCs and SCADA systems at every step of the process to improve efficiency and product quality while lowering costs. For example, users can setup a DAQ system program to simultaneously record process data, automatically control process temperature (for a water tank, oven, machine etc) or to add a precise amount of chemical and track batch information.

Wireless temperature and vibration sensors can be used to continuously monitor equipment operating conditions. Major companies including GE and IBM are developing sophisticated condition monitoring systems that couple this data with Artificial Intelligence (AI) to improve efficiency and product quality, increase equipment reliability and reduce downtime. Using insight gained from AI, potential failures can be flagged well before they cause process interruptions and preventative maintenance can be scheduled at convenient times.

## Agricultural/Environmental:

Weather stations can transmit real-time environmental data to give farmers, agricultural companies and research organizations the most accurate view of microclimates under study. Temperature, humidity and soil moisture are especially important factors in many agricultural applications, and wireless sensors now make it easy to collect real time data over many monitoring points, relay it through a wireless gateway, aggregate the results and display it in an easy to understand dashboard web page. Similarly, greenhouse owners are adopting this wireless technology to find the blind zones in their climate control systems and to identify areas with low or high humidity before it damages plants. Likewise, animal husbandry and research applications are also evolving with the development of mobile apps enabling farmers and keepers to quickly check the health of livestock and zoo animals.

For indoor applications, [environmental temperature monitoring](#) is becoming commonplace in schools, offices and data centers. These applications are often focused on temperature, humidity, and carbon dioxide monitoring, which are crucial parameters in HVAC performance validation and indoor air quality control.

## Healthcare and Life Science:

Wireless technology is one of the driving forces behind several exciting advances in healthcare and life science applications. Skin temperature, blood pressure and pulse sensors allow hospital and clinic staff to continually monitor patient health. Surgical, patient isolation and processing cleanrooms are made more secure thanks to environmental and pressure monitoring systems. Connected devices like the [Accsense Monitoring System](#) allow staff to receive a text alarm or phone call when their medical refrigerators/freezers temperatures go outside of safe limits and pose a risk to sensitive drugs or biological samples. Some systems even offer users cloud storage which enables real-time viewing by multiple staff members at once from any location with internet access.



## IoT Applications for Remote Data Accessibility:

With the near-universal presence of smartphones in consumer and industrial markets, many dataloggers now have mobile applications allowing users to view and download data collected from remote sensors, for example machine or product temperature in a processing plant. Whether it's current/voltage, runtime, temperature/humidity, or any other value, users are finding it cheaper and easier to keep tabs on their data whether

they're in the field or outside work hours. These applications allow remote configuration and real-time viewing using user configurable dashboard displays with meters, digital display and graphs.

### Summary:

The Internet of Things is becoming a reality with the help of consumers, industrial users and developers alike. Real-time information is already providing greater transparency and accuracy to just about any application where users are looking for ways to reduce both costs and waste. Process automation is making well-publicized gains every day which shape the way new products are designed and made, but individual users are also able to take advantage of this exciting new technology whether at their jobs or homes.

For more information on [wireless data loggers](#), or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Applications Specialist at (880) 956-4437 or visit our website at [www.DataLoggerInc.com](http://www.DataLoggerInc.com).