

## ABOUT IoT

The Internet of Things (IoT) encompasses the billions of physical devices being made 'smart'—through the addition of sensors and communications technology—and connected to the internet. Inexpensive processing and wireless networks make it feasible to turn practically any object, large or small, into part of the IoT, where they can communicate independently of human interaction. This merging of the physical and digital worlds means that rich new classes of data are now available for use by organizations of all kinds, to increase their efficiency, drive down costs, and generate additional revenue streams through new services and enhanced products that deliver greater customer satisfaction.

## INDUSTRY EXAMPLES

### Technology

Data streaming from online applications and portals can help companies connect their services with wearables, phone applications, and data from other external sources, such as sentiment data. Technology companies can use this wide-ranging IoT data to improve the quality of their offerings and forge deeper connections with their customers.

### Retail

Retailers look to IoT to expand their product offerings and services. By leveraging remote sensors, retailers can make products smart, such as with smart refrigerators, interactive pantries, and smart cooking and cleaning solutions.

### Insurance

Insurance firms often use sensors from pedometers, fitbits, and blood pressure devices to stream real-time data that can provide insights into their policy holders. Insurance companies are also looking at using sensors on cars forensically, to discover what happened during an accident or dispute.

# StreamSets for IoT

## Overview

The Internet of Things (IoT) is becoming prevalent in homes, offices, vehicles, manufacturing plants, amusement parks, and other locations across the globe. The benefits of IoT all revolve around using the data generated by connected devices that consist largely of products that were not designed originally for computing or communications tasks. IoT applications are emerging for everything from consumer-based wearable fitness trackers and smart home appliances to sophisticated commercial and industrial maintenance operations.

## Challenges

IoT devices already generate massive amounts of data, all of which has to be captured, managed, and analyzed so it can be turned into useful information and insights. In addition to the sheer volume of data is the stunning variety of devices, sensors, and protocols for generating that data.

Implementing a successful IoT initiative includes harnessing IoT data for:

- Predictive maintenance.
- Industrial IoT (IIoT) solutions.
- The new world of connected devices.

Organizations struggle to deploy reliable IoT solutions because:

- The systems for managing the data and intelligence from IoT devices are not set up to handle the volume, velocity, or variety of IoT data.
- IoT data often generates noisy outputs, causing traditional data systems to become confused—and requiring transformations and processing of the data before it lands in analytic systems.
- Some IoT processing must happen at the edge. But edge computing solutions often are incomplete, complicated to implement, and require specialized coding skills.

For example, predictive maintenance is one of the most promising IoT benefits. That's because companies spend millions of dollars each year on unexpected repairs and breakdowns, operating purely on guesswork to understand when and why particular parts fail. Many open-source IoT solutions lack the maturity to meet enterprise requirements for processing sensor data into timely, accurate maintenance predictions.

Successful IoT initiatives require contiguous data pipelines flowing from edge collectors through data repositories, where widespread data analysis can happen. The data pipelines must connect to enterprise systems so that organizations can use IoT data to improve their business processes. Organizations need to put in place data operations in order to be able to handle a complex range of sources, often including real-time data. Finally, security and data privacy have to be baked into every stage of IoT data movement.

## INDUSTRY EXAMPLES

### Oil & Gas

IoT sensors are being added to oil wells and mining operations to detect failures, temperatures, friction from moving parts, and other data on equipment operation. The goal is to use IoT to automate the maintenance of drilling sites.

### Manufacturing

Manufacturers deploy sensors to gather data they can use to optimize their manufacturing, production, and distribution processes. Advanced analytics of the IoT data helps them understand material flows, organize delivery to vendors and consumers, and do better business forecasting.

### Automotive

When the IoT data from sensors in cars is streamed back to automotive retailers, they can provide better service and prevent customer unhappiness. In the future, connected vehicles will utilize predictive analytics that are embedded into the driving experience.

## ABOUT STREAMSETS

StreamSets transforms how enterprises flow big and fast data from myriad sources into data centers and cloud analytics platforms. Its DataOps platform helps companies build and operate continuous dataflow topologies, combining award-winning open source data movement software with a cloud-native Control Hub. Enterprises use StreamSets to enable cloud analytics, data lakes, Apache Kafka, IoT, and cybersecurity.

Founded by Girish Pancha, former chief product officer of Informatica, and Arvind Prabhakar, a former engineering leader at Cloudera, StreamSets is backed by top-tier Silicon Valley venture capital firms, including Battery Ventures, New Enterprise Associates (NEA), and Accel Partners.

For more information, visit [streamsets.com](http://streamsets.com)

## Solution

StreamSets enables IoT data to flow reliably and securely from connected edge devices so that an organization can turn the data into actionable insights. StreamSets Data Collector Edge provides critical edge computing options directly in smart environments.

**Develop predictive maintenance.** StreamSets lets organizations build and operate continuous data ingestion pipelines for IoT endpoints. Instead of having to rely on historical trend data to guess when a part might fail—and either performing expensive pre-emptive replacement or equally expensive post-failure replacement—StreamSets enables the harnessing of real-world, point-in-time IoT data to tell when a particular part is likely to fail. This predictive maintenance can significantly reduce operations and support costs.

**Implement Industrial IoT (IIoT) solutions.** In IIoT environments, communications must be bi-directional, and at least some IoT data processing must happen at the edge. With StreamSets, organizations deploying IIoT solutions can instrument their edge and batch processing jobs without hand coding. They can manage complex data topologies as well as data-related service-level agreements (SLAs), mixing IoT data with traditional data sources.

**Navigate the new connected world.** StreamSets gives organizations the performance and scale required to operate in an environment of connected IoT products. StreamSets' data operations platform enables the management of hundreds of data pipelines, with full data visibility across enterprise systems. The data protection and encryption-in-motion capabilities that StreamSets builds into its products means that organizations can comply with regulatory and in-house requirements for data privacy and security.

## StreamSets Benefits

StreamSets enables organizations to:

- Avoid disaster in IoT implementations that have zero tolerance for latency.
- Meet the processing demands of any consumer, commercial, or industrial IoT application.
- Protect IoT data from the edge all the way through to analytics, including while in motion.
- Protect against data drift from incoming IoT sources.
- Parse out noisy data created by IoT edge processing, providing clean and reliable data for analysis.
- Apply common, predictive methods to the very large datasets generated in IoT environments.
- Establish two-way communications with IoT devices.
- Trigger edge analytics operations within data flow pipelines.
- Understand and predict outlier data points, based on real-time inputs from any number of devices.

## Closing

Processing data from the diverse range of IoT sensors and devices isn't for the faint of heart. StreamSets enables organizations to manage through ever-shifting formats of data generated by the brave new world of IoT, preventing data drift and reaping the benefits of IoT.

Find out more about how StreamSets can help achieve implement your IoT initiatives, better and faster than ever before. [Contact a StreamSets representative today.](#)