

## Meet the challenges of the emerging world of Internet of Things

Collectively called the *Internet of Things* (IoT), over nine billion devices, including computers, tablets, industrial equipment, consumer appliances, and smartphones around the world are currently connected to the Internet. This number is expected to increase to between 28 billion<sup>1</sup> and 100 billion in the next decade, with an economic impact of \$2.7 trillion to \$6.2 trillion annually by 2025.<sup>2</sup>

### Key Industry Challenges

- Concrete use cases and compelling value propositions
- Data security and anti-tempering
- Privacy and trust
- Diverse data sources
- Evolving architectures, protocol wars, and competing standards

### SENS Benefits

- Leverages new sensor data to transform business operations
- Engages and connects customers
- Reduced waste and eliminates inefficient operations
- Provides innovative services and business models
- Our of box machine learning and AI for sensor data

### Making SENS™ of IoT

There is a proliferation of IoT (devices), especially in Industrial Internet, connected cars, and wearables for healthcare. This sprawl of IoT devices needs analytics and real-time data processing to convert data into actions. Data from countless sensors needs to be classified, organized, and used to make automated decisions; and those decisions, in turn, need to be fed back to IoT devices to act on insights. Managing such far-flung data sources from real world, merging all this data in real time, and predicting the next best action to make value out of this data have never been attempted at the Internet scale of billions of connected devices. Will Internet and enterprise systems survive this onslaught of IoT data?

Examples of IoT data are real-time sensors, identity, condition, geolocation and status change data, such as data captured from a city bus, or a baby incubator in the Pediatric unit of a hospital. This data is often messy, noisy, incomplete, unstructured with video, voice, images, and text, not valuable in isolation, has temporal and spatial gaps, and needs sensor fusion to build context.

Sensitel SENS processes streaming data from connected machines, meters, sensors, mobile phones, and other connected devices (IoT) and from cloud data sources, such as weather and traffic information services, and provides contextual feedback and actionable recommendations based on predictive and physical models.

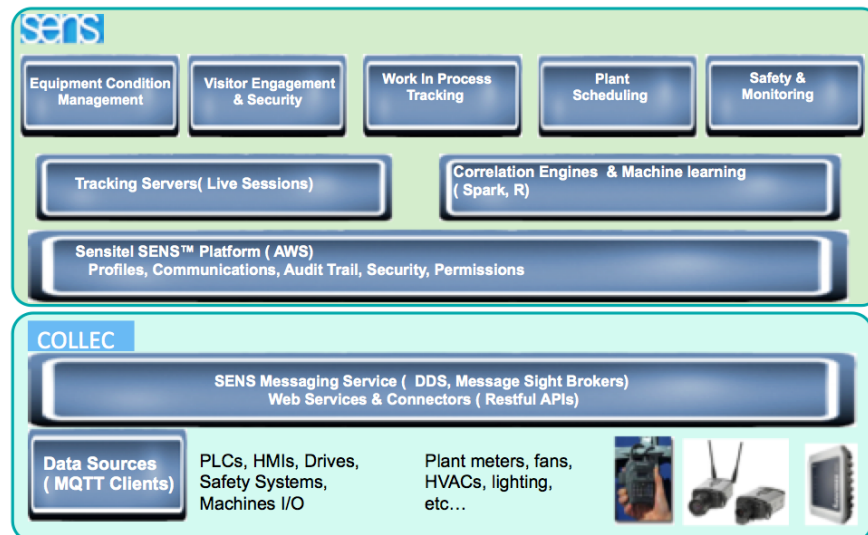


Figure 1. SENS for Internet of Things

<sup>1</sup> "The Internet of Things: Making sense of the next mega-trend," Goldman Sachs Equity Report, September 3, 2014.

<sup>2</sup> "Disruptive technologies: Advances that will transform life, business, and the global economy," McKinsey Global Institute, May

<sup>2</sup> "Disruptive technologies: Advances that will transform life, business, and the global economy," McKinsey Global Institute, May 2013.

Sensitel SENS is ideal for delivering new operational applications, such as web-based, real-time sensing, monitoring, and tracking services. SENS can be deployed, using wireless technologies, on devices in remote locations, in heterogeneous networks, in industrial environments or on mobile assets. SENS can sense any change, monitor any process, and track any move.

Unlike other data collection software, such as event processing oriented middleware, SENS works in conjunction with COLLEC to filter and process streaming data at the point of collection (edge) and persists business events of interest for analytics (cloud). These events are then merged with other publicly available data for analytics and for trend analysis. SENS provides out-of-the-box key data analytics capabilities such as anomaly detection and geospatial representations.

### SENS Application Areas

Typical areas of application include Asset Performance and intelligence and Proactive Condition-Based Maintenance, for Industrials; Consumer Behavior Mapping, Staff Positioning and Fraud Detection for retail; Intelligent Dispatching, Proactive Capacity Planning, Logistics Optimization and Facility Monitoring for Logistics.

### COLLEC Device Connectivity

SENS accommodates a wide variety of devices: Bluetooth Low-Energy beacons, container seals and locks, GPS devices, healthcare monitoring devices, mobile computers, NFC-enabled smartphones, Point-of-Sale systems, scanners, temperature and humidity sensors, vehicle onboard computers, Wi-Fi access points, and ZigBee gateways. Connectivity options include dedicated SIM-based connections or low-bandwidth networks such as SigFox.

### SENS Availability

SENS is available in two modes—device-based agent software and cloud-based services. Companies looking to create an edge through operational intelligence can subscribe to SENS Cloud services and obtain real-time dashboards for management of their business processes.

### Support

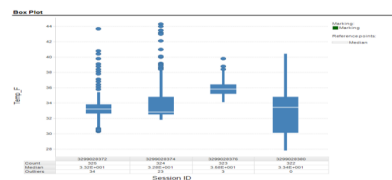
Internet of Things applications require 24x7 support to ensure reliable data collection and analysis. SENS is supported by an expert remote operations management team at Sensitel (Network Operations Center) NOC.

### Success Stories

A leading Telecommunications company uses SENS for fault isolation and reliability testing of their outdoors-installed equipment, reducing customer complaints and ensuring proactive maintenance.



The world's largest coffee brand uses SENS to monitor the condition of every bottle of milk delivered to its stores, and avoids product recalls and associated liability.



### For More Information

Sensitel, Inc.  
 4800 Patrick Henry Drive, Suite 320  
 Santa Clara, CA 95054  
 Tel: +1 (408) 538-2252  
 Fax: +1 (918) 513-5246  
[www.sensitel.com](http://www.sensitel.com)

Tel: +1 (408) 538-2252  
 Fax: +1 (918) 513-5246  
 E-mail: [info@sensitel.com](mailto:info@sensitel.com)  
 Facebook: [facebook.com/sensitel](https://facebook.com/sensitel)  
 Twitter: [twitter.com/sensitel\\_inc](https://twitter.com/sensitel_inc)  
 YouTube: [youtube.com/user/SensitelTV/videos](https://youtube.com/user/SensitelTV/videos)