The SmartCone IoT Technology Platform

Rapid deployment of connected devices and sensors for safety and monitoring systems, in any location, no matter the size

According to Gartner, 8.4 billion connected things will be in use around the world in 2017 — up a whopping 31% from 2016. And by 2020, Goldman Sachs predicts that as many 28 billion "things" will be connected to the Internet, ranging from bracelets to cars.

The Internet of Things (IoT) is poised to make a foundational change on how we manage safety and monitoring in industry and for the public.

The main strengths of IoT for safety are deployability and scalability. "IoT is not about software but about helping users make intelligent decisions," says Dan Bieler at Forrester Research. SmartCone enables companies to deploy an intelligent IoT solution that can scale to any size.

Deploying IoT systems can be expensive. Currently most safety and monitoring systems are set up for sensors that stream raw or nearly raw data to a central location, usually over the cloud. Decision-makers — in the field or at head-quarters — can get only basic information without incurring massive costs in processing power, storage, and data transfer requirements.

SmartCone's IoT technology creates robust, on-premises networks — with a wide range of sensors providing critical data — that fuse and process sensor data. The Smart-Cone solution streamlines this data for immediate delivery, locally and over the Internet, saving you time and money.

This architecture enables mass deploy-ment of sensors around your areas, whether permanent or temporary, by keeping data processing, storage, research, and transfer cost-efficient. You also keep full control of all your sensor data, which is stored on-premises on the SmartCone Solution, and not in the cloud.

The SmartCone Solution can be deployed in any area — no matter how transient, remote, dangerous, or limited in connectivity. It performs mission-critical tasks reliably. Here's how:

Reliable and independent operation — Mesh network

The SmartCone Solution is made up of one or many SmartCones. The Smart-Cones form a mesh network, so that each cone can act as an independent router. The mesh network is self-healing and self-managed: if one cone breaks down or if a connection goes bad, the network can still operate.

The SmartCones automatically configure themselves according to the availability and proximity of bandwidth, storage, and so on. The network is more robust, thanks to dynamic connections between cones that enable packets to use multiple routes through the network.

If your site loses connectivity, the SmartCone solution continues to monitor sensor levels, and still issues necessary alerts locally for any thresholds that are crossed.

The SmartCone solution can also operate outside the power grid. Cones can be powered by battery and solar, in addition to grid power.

The SmartCone IoT platform means you can build a high degree of redundancy into your safety and monitoring, simply by adding more cones as you require.

Portable — Moveable self-contained units

You can put a SmartCone anywhere you need it. Each SmartCone contains all the necessary sensors, cameras, alarming devices, middleware, storage, and data analytics.

Each SmartCone contains a power-efficient multi-core computing plat-

form running SmartCone IoT Fusion-Core software. FusionCore uses a novel cognitive behavior fusion engine to process sensor data coming in through the individual cones. A series of complex algorithms collect, manip-ulate, and populate a "prior knowledge repository" with real-time findings from the sensor network. Each sensor type is configured and integrated into FusionCore.

Cost-efficient — "Edge" computing

SmartCone's IoT technology is a highly cost-efficient solution for managing a large fleet of assets or monitoring large areas.

Sensor data processing takes place on the "edge" of the network, also known as "fog" computing. The IoT platform fuses and processes the data in real-time, and sends only the meta-data over the Internet, such as cone location and alerts. Only one cone communicates with the cloud. (The self-healing mesh network ensures that if the cone goes down, another takes over.) This minimizes internet usage and keeps communication costs under control.

Totally scalable — On-premise analytics, data mining and archiving

As part of the network of connected things, the SmartCone solution can easily be expanded to increase your capabilities and coverage area. You can add new sensors and increase video recording features as your require-ments change.

SmartCone's embedded server provides a single secure web interface where users can search for sensor and video data based on alarm events. Employees can search using any combination of filters such as alarm type, sensor input, camera name, time, license plates, Wireless MAC Addresses, etc.

Robust protection from intrusions and attacks

The SmartCone Solution maintains high standards to ensure the security of your solution.

- Industry-standard AES-256 TLS encryption with 2048-bit RSA keys on all cones. Any data that is transferred off the system is encrypted. Options for other types of encryption are available.

- The entire cone, including all IoT sensors, are protected by a firewall. All unnecesary firewall ports are always closed off.

- Factory default usernames and passwords are never used.

- All stored passwords are hashed.

- We perform continuous security and performance patches.

- Disk encryption and remote wiping capabilities provided if required.

- Proximity sensors can be setup to detect intrusion.

The SmartCone solution provides intelligent reporting. The SmartCone can build OLAP data cubes to increase data mining efficiency and reporting response times.

End users can access their data through a variety of ways: view or download from the web interface, transfer over Local Area Network, download on a USB device, or third party integration using the API.

Tailorable - Sensors to suit the application

Every application is unique and requires its own set of sensors to solve the local business problem. The SmartCone IoT platform is based on an open architecture, enabling third party sensor integration and quick integration into the SmartCone framework.

Notes

Gartner, "Gartner Says 8.4 Billion Connected "Things" Will Be in Use in 2017, Up 31 Percent From 2016." Press Release. February 7, 2017.

Dan Bieler, "Bosch Connected World 2017 – Lessons From IoT Practitioners." Dan Bieler's Blog. Forrester. March 27, 2017.

M2M and the Internet of Things (IoT) – The Impact on Public Safety. Association of Public Safety Communications Officials (APCO). November 2015.

A few of our customers

Enterprise Rent-A-Car

Exelon Corporation

City of Ottawa

Department of Transportation North Dakota

SBA RCA Participant

Department of Transportation Florida

Village of Lyons Police Department

About SmartCone Technologies
At SmartCone Technologies, our mission is simple: we want to save lives and secure your assets. Since 2011, we've been researching and developing IoT (Internet of Things) technologies to make safety more intelligent, cost-effective, adaptable, and mobile, all at the highest standards of security and privacy.

SmartCone solutions have been used for securing dangerous work sites, controlling bicycle lane traffic, managing vehicle fleets, monitoring traffic incident scenes, mobile and fixed advertising, crowd control, and site security surveillance. Our clients include utility companies, departments of transportation, construction companies, engineering firms, automobile dealerships and various policing agencies among others.

To learn more about how you can deploy IoT technology to improve safety, contact us at
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