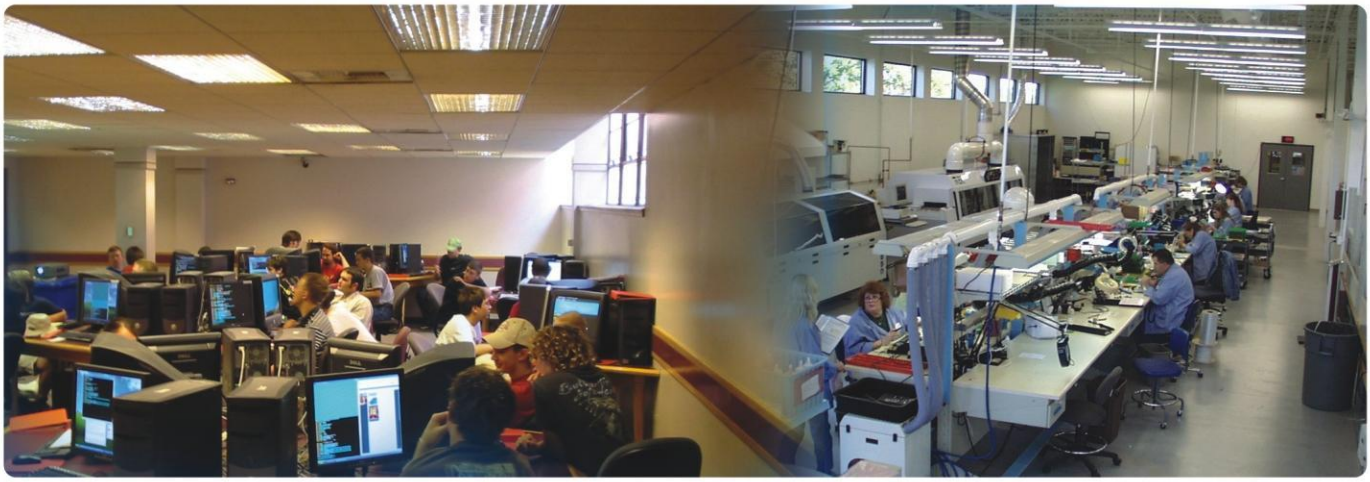
PERVCOM CONSULTING

Real-Time Tracking and Sensing Solutions

Build your Real-Time Sensing Applications

with Wireless Sensor Network Application Development Kit



What is a Wireless Sensor-Actuator Network?

Emergence of wireless communication and networking technology has added networking capabilities to sensors enabling formation of **Wireless Sensor Network (WSN).**

"Wireless Sensor-Actuator Networks" or **WSAN** is a new paradigm where sensors (such as temperature, sound, vibration, pressure, motion or pollutants) gather information about the physical world, while actuators (such as relay, valve, buzzer, etc.) initiate appropriate actions on objects and environments.

Wireless Sensor-Actuator Networks are now used in many application areas, including environment and habitat monitoring, healthcare applications, precision agriculture, monitoring activity status and condition of valuable assets/equipments, wireless fire alarm, traffic control, surveillance etc.

Real-Time Sensing System (RTSS) for better environment visibility

Real-Time Sensing System can detect and control events like:

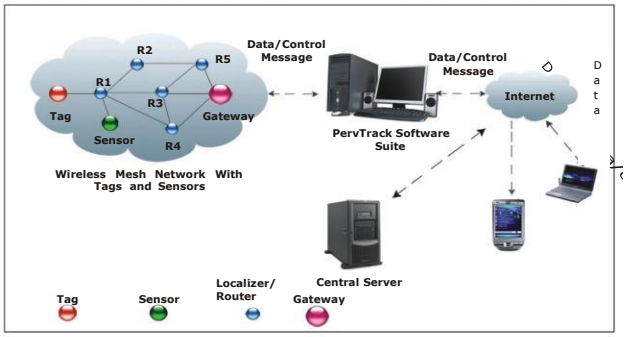
Vicinity & status:
"Is there any smoke in the third floor of the hotel?"
Actions:
Switch on the nearest sprinkler to room#R1.

Whereabouts:
"Which part of the agricultural field has soil moisture readings below acceptable threshold?"
Actions:
Switch on the foggers in the field.

Choke-point control:
"Is there any person working in the area where a gas leakage has occurred?
Actions:
Sound a buzzer to alert the workers in that area.

Core System Components

- A set of small, universal, battery-powered RF devices forming a IEEE 802.15.4-based wireless mesh network.
- Software Engine and Application Suite for device and site configuration, network & event management, rule-based alert notification and reporting functions.



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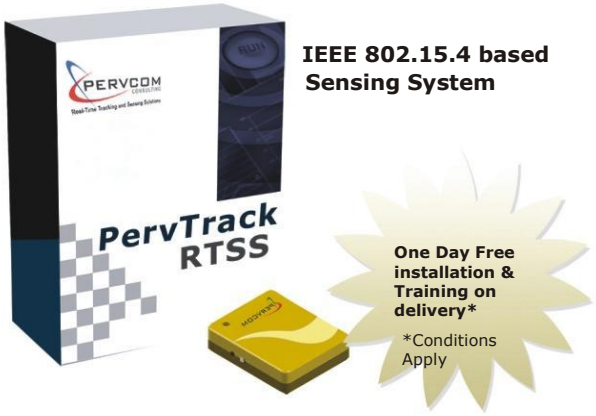
PervTrack RTSS

Wireless Sensor Network (WSN) Application Development Kit



IEEE 802.15.4 based Sensing System

The Kit Contains:

Wireless Devices

with pre-flashed firmware

- **4 PervTrack Universal Tags** (IEEE 802.15.4 compliant devices) with mesh networking capabilities & flexibility to attach any available off-the-shell sensors with 4-20 mA (0V-3V) analog sensor output interface
- **5 different Sensors** (CO, CO2, Ambient Air Quality monitoring Sensor, Temperature & Humidity) for testing the system with sample applications
- **2 PervTrack Actuator Tags** with flexibility to attach actuator devices solenoid valves, relays, buzzer, LED etc.
- **4 PervTrack Localizers/Routers** to find the locations of senor nodes and to broadcast the sensor data from monitoring zone to remote control station
- **1 PervTrack Gateway**
- **PervTrack Software Engine** to collect & process sensor data and to send actuation commands
- **Sample applications**
- **HTTP/ XML APIs** for developing your custom sensor-based applications

This Kit is specially designed for the users (students, researchers, application developer) who does not want to get bothered with the technical nitty-gritty of Wireless Sensor Network but wants to take the advantage of this evolving technology in their field of work.

The kit contains **PervTrack Universal tags** and **PervTrack Actuator Tags** with the flexibility to attach external sensors and actuators respectively. **PervTrack Software System** allows the user to input each sensor–specific calibration chart through an easy User Interface for accurate sensor readings. An unique feature of the kit is that it enables the user to build a **sensor based close-loop control system** where an automated control signal is generated by the system and sent to **actuator tags** for necessary actuation e.g. , switching on the sprinkler on detection of fire.

Who can use this kit?

This kit is very effective for the students and researchers from technology, science as well as any other background whose primary interest is to monitor different parameters related to their domain of interest in real-time & to view, analyze, investigate & study the influence of those observed parameters in their domain of work.

The Kit enables the user to **rapidly deploy a sensor network**, **monitor application specific sensor data, implement application-specific business rule, analyze the sensor data to study the trend, variation & irregularities, automate necessary control decision**.

Few Application Scenarios:

- Detect different environmental parameters for applications like monitoring level of air pollution & agricultural parameter, detection of leakage of poisonous gas, fire and smoke.
- Detect mechanical parameters i.e. vibration, motions etc. which may be useful for application like monitoring vehicle condition, health of mechanical equipments.
- Early warning system for managing criticality & ensuring safety by sounding LED and buzzer on critical event, alert any worker approaching an unsafe zone, access control in secure zone.
- Sensor based Close-loop system to instigate sprinklers, solenoid valve operations on pre specified conditions in real time.

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