



Internet of Things (IoT)

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Speaker's Profile

Kavitha is Program Director in SAP Labs. She leads the M2M / IoT Engineering team in India. The goal of her team is to build IoT platform in SAP which addresses the needs of customers in Asset Tracking and Remote Service Management. She comes with a post-graduation degree from PSG College of Technology, Coimbatore, India and has 15 years of experience in Software development and has delivered on multiple projects.

Objectives of the Talk

To present an overview on the evolution of Internet of Things (IoT) and where the industry is trending to. Impact of IoT in Remote Service Management, healthcare, connected things. Technical platforms that are evolving to support the vast variety of IoT use cases.

Overview

Introduction to Internet of Things

According to Gartner top 10 strategic technology trends for 2013, internet of things is ranked number 4. By 2015, in more than 70% of enterprises, a single exec will oversee all Internet connected things. By 2020, over 30 billion connected things, with over 200 billion with

intermittent connections. Key technologies here include embedded sensors, image recognition and NFC.

Companies like IBM (Smart Cities), Axeda (Cloud M2M Platform), ThingWorx(Platform to build IoT apps), Vodafone are working on the solutions catering to the needs of Internet of things.

Use Cases

- **Remote Service Management** – Examples are: The machine communicates that it is going to break down and needs servicing with details of servicing, e.g. trigger to create a service order. A vending machine installed at various public places changes the price of the item based on the outside temperature, deals and offers. The sensors in windmills communicate when the windmill is going to breakdown or when the next service is required, reducing the whole cost of service management.
- **Smart Cities-** Includes use cases like connected vehicles; manage the traffic using the crowdsourcing and signal data, Smart Utilities (Smart Grid Management).
- **Assisted Living and Remote Healthcare** – Connect remotely to patients, track and monitor and help them to manage their health. Managing chronic diseases like diabetes, heart attacks and sending prior signals to doctors / nurses / to the loved ones.
- **Interesting Use Cases** - Along with machines use social media as sensors, e.g. use semantic analysis on text in Twitter and derive useful information. The first news of earthquake in Japan was reported in Twitter.

Architecture Components

- **Device Management (Connected Devices)** - Understanding the sensor ontology and different protocols for communication of data from the remote machine / sensor to a central intelligent system where the data is streamed, analyzed and further processed.
- **Data Management (Connected Data)** – Two types of data:
 - o Data in Motion – Do Complex Event Processing (CEP) and do Real Time Predictive Analysis (Connected decisions) and tools for the same. Example - predict when the windmill will go down next time; when next the battery needs to be changed.
 - o Data at Rest – Tools for Analytics
- **Integration Components**
 - o Between Assets (remote device / sensors) and IoT Platform
 - o Within IoT Platform components
 - o Between IoT Platform and legacy systems

- **Demo** – Will try to showcase a live demo.
- **Online Machine Learning** – (Building brains to understand world's data). How to make sense out of the data that is getting streamed. Will touch upon the basic concepts based on '[On Intelligence](#)' by Jeff Hawkins.

Challenges

- Standardization
- Device Capacity
- Security (light weight Cryptography)
- Data Volume

Monetization

How to monetize on IoT? Focusing on social machines.

Session Takeaways

- What is IoT and its market, competition and future?
- Application of IoT in real time use cases and businesses. Why IoT is so important?
- Different architecture components supporting various IoT needs.
- End to End Demo of the Use case on the proposed architecture.