Understanding

Mobile Terminal Location Detection Services

Course Description

There are a number of mobile applications that requires that a central server be aware of the location of the mobiles which are using that application.

Often GPS is available but this is not always either available or suitable. This is especially true of the location of a mobile is to be determined without the mobile being involved by using either a GPS chip or any detection of the location process.

While mobile operators have network-based methods for finding where their mobiles are and are also prepared to sell that information, that may also not always be appropriate..

A location detection system can be network-based, mobile-based or mobile-assisted.

The service should be able to operate over as many mobile technologies as possible internationally, not just GSM and UMTS. This may require different location detection techniques for different networks.

Location sensing and location based applications are rapidly finding their place in the mobile marketplace. GPS is currently the preferred solution. Therefore the GPS solution is therefore described is some depth. However, other solutions are available and will be described and considered in their own right.

Students Will Learn

- **Mobile Location Services**
- **GPS-Based Solutions**
- **Location Services Standardization**
- **Non-GPS Solutions**
- **And More...**

Target Audience

Anyone needing an in-depth overall understanding of Mobile Terminal Location Detection Services. Such attendees would be employed or contracted to operators, manufacturers, integrators or regulators. Anyone requiring to focus on Mobile Terminal Location Detection Services as directed to these topics in this courses.

Course Outline

Module I: Mobile Location Services Overview

- The Location Marketplace
    - Applications
- Location Based Services (LBS)
- LoCation Services (LCS)
- Operator-based Location Detection
- Mobile Based and Mobile-assisted Location Detection

Module II: GPS-Based Solutions

- GPS Overview
    - Assisted GPS
- Galileo
- GPS Advantages and Disadvantages
- Current GPS-capable Phones
- Current Application Server Products in this Area.

Module III: Location Services Standardization

- 3GPP and 3GPP2
    - Extensive Work by both organisations
- OMA Open Mobile Alliance
- OpenLS - OpenGIS Open Location Services Interface Standard
- IETF Internet Engineering Task Force
    - IETFGeographic Location/Privacy Working Group [geopriv]

Module IV: Non-GPS Solutions Overview

Basic Positioning Methods

Mobile-Based and Mobile Assisted Methods

Dead Reckoning

Proximity Sensing (Signal Signature Tracking)

Triangulation

Trilateration (and AFLT) and Multilateration

Cell Identity plus Time Advance

Enhanced Observed Time Difference (EOTD)

Module V: **Non-GPS Solutions**

- Mobile Technology Location Detection for:
  a. GSM/GPRS/EDGE
  b. UMTS & HSPA

     3GPP has developed a range of standards for UMTS location services.

     a. Summary of 3GPP Work
     b. Cell Coverage Based
     c. Observed Time Difference of Arrival (OTDOA)
     d. OTDOA plus Idle Period Downlink (IPDL)

  c. LTE
  d. Mobile WiMAX
  e. WiFi

     a. Digital Signatures/Fingerprinting
     b. Design Pointers for Wi-Fi networks to enable location sensing

Delivery Method

Instructor-Led with numerous case-studies and exercises.

Equipment Requirements

(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

2 Days