Point Of Interest
UU/IT/Project DV 2006

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Content

- Mobile Arts & Streetmedia7 Introduction
- Application Scenarios
- Network Location technology
- Solution Architecture
- Challenges & Options
- Deliverables
- Equipment
Mobile Arts
Introduction

- Provides mobile telecom solutions to Mobile Operators, and consulting services

- Product Areas
  - Messaging (SMSC, Voice Mail Server)
  - Call Completion (Missed Call Alert)
  - Location (GMLC, SMLC, Middleware)

- Established 2001 with offices in:
  - Stockholm, Sweden (12 People - HQ, R&D)
  - London, UK
  - Moscow, Russia

Mobile Arts
Development Environment

- Erlang
  - Erlang is a general-purpose programming language and runtime environment, with built-in support for:
    - concurrency
    - distribution
    - fault tolerance

- Open Telecom Platform (OTP)
  - OTP is a large collection of libraries for Erlang to do everything from compiling ASN.1 to providing a WWW server
  - Mnesia database

- PC / Linux (Commercial: SUN / Solaris)
**Street Media7**

**Introduction**

- Provides Mobile marketing solutions (games, toys) for consumer brand companies.
- Product areas: Java applications for mobile phones (J2ME). And messaging solutions (SMS, WAP)
- Company started in 2003. Offices in Uppsala and Vancouver (Canada)

**StreetMedia7**

**Development Environment**

- **J2ME**
  - Java 2 platform micro edition: is a collection of Java APIs for the development of software for resource constrained devices such as PDAs, cell phones and other consumer appliances.
  - Runs on almost every phone available on the market today.
- **PC / Linux**
- **Emulation software:** Sun / SonyEricsson / Nokia / Samsung / Motorola...
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Point Of Interest
What's new?

- Interactive POI
  - Communication rather than information
- Location enabled without Operator participation
  - Enables ISP’s to enter market segment
Point Of Interest
Service Scenario I – Community Service

- The application is serving a “community”
- POI entered by the users
- POI: Location + data: text, pictures, Rating, etc
- Possible to comment other entries
- WEB and WAP access

Point of Interest Application
Service Scenario II – Tourist information

- POI entered mainly by the ISP.
- Tourists may comment and rate the information
- Vouchers linked to POI.
- Click to call
- ...

Google Map Example
Assumed Business model

- Service to be operated by ISP (Internet Service Provider)
- GSM/UMTS operator only provides connectivity
  - Celldata has to be re-engineered by use of GPS enabled terminals.
- Community service
  - WEB/WAP advertisement
- Tourist service
  - WEB/WAP advertisement
  - Paid content

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Technology Overview

GPS

Download of information:
- Satellite ID
- Almanac
- Ephemeris
- Clock
- Ranging Code
- Etc
... at 52 bps

Technology Overview

A-GPS (last year project)

Download of information:
- Satellite ID
- Ranging Code

Assistance data at 50 Kbps
+ rough location
**A-GPS location**

Automatic population of Cell DB.

- Cell-id to x,y,z,r (existing)
- x,y,z,r to Cell-id (new)

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**GPS location**

Script tool.

Enables fast population of Cell database.

(www.placelab.org)
**Cell-Id location**

Non GPS terminals

- Cell-Id DB either preloaded as file or,
- Cell-Id sent up in WAP session

Cell-Id to x,y,z,r database

- Cell-Id through J2ME interface

**GSM/ UMTS radiocells**

- A Radio cell covers typically an area of 0.1 to 10 SqKm
- Each Cell is given a unique Cell-Id per operator & country
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Proposed architecture

- GSM/UMTS
- POI Server logic
- Cell-Id DB
- POI DB (Erlang/OTP)
- Location collection script
- PDA POI client
- J2ME POI client
- MAP Server
- A-GPS Server
- Starcus API
- MLP
- GUI
- O&M

= Project design area
Challenges

- Re-engineering of Celldata network
  - How estimate Cell-sizes
  - How handle missing cells?
- Data modelling
  - Storage in terminal (J2ME SW) versus WAP access?
- End-user interfaces
  - How make intuitive, yet functional?
- Terminal development environments
  - Cell-data access, GUI
- Interoperability with Google maps?

Project Deliverables

- Prototype of both Client and Server
- Documentation of solution
  - Data allocation
  - System architecture (SW modules etc)
  - Special algorithms etc
  - High level state diagrams
  - High level installation/operation manuals
- First round of field trial executed
  - Cell-Id data for central town collected
  - System reasonably debugged
  - Feedback on user experience collected and documented
Option Table

... if enough time / personell

- Terminal program for drive (cycle) around and map CellId to measured location.
- Advanced algorithms for Cell-Size adaptation
- Barcode voucher by WAP/MMS?
- Service Administration
  - Censoring
  - DB administration GUI
- Triggered terminal alerts based on POI linked to Cells.
- Load/robustness tests
- 802.11 sites for location determination

Equipment provided

- A-GPS terminals
  - Mitac 701 with A-GPS support
  - HP + Bluetooth A-GPS device
  - Terminal Development API from SiRF
- GSM J2ME terminals
  - Tbd (SonyEricsson or Nokia)
- Remote access to Starcus MAP server with API for POI overlay generation.
- Remote access to Mobile Arts A-GPS server
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