Assisted GPS (A-GPS) project

Johan Blom
Mobile Arts

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Mobile Arts

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- HQ in Stockholm
  - Branch offices in UK and Russia
- 14 employees
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  - Most sales through larger Partners
- Telecom products for operator domain, i.e. highly reliable etc.
Mobile Arts
Overview
Project:

GSM/UMTS network

Location
Application

Location
Server

HLR
SS7
SS7
SS7
SS7
IP
GSM core network

IP
SS7
SS7
SS7
SS7
GGSN
BSC
MSC

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Assisted GPS (A-GPS) project
Project Goals

- Implement GPS server
- Implement Demo Location Application
- Test in real GSM network
The GPS server aids the mobile with calculating the position.

Advantages: Saves time and battery power.
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- **Advantages:** Saves time and battery power

- **Tasks:**
  - Receives approximate position from location server
  - Fetch latest info on satellite positions etc from internet
  - Pick satellites closest to the approximate position
  - **if** *MS-Based* → Forward assistance data to mobile and let the mobile calculate the position
  - **if** *MS-Assisted* → Calculate the position

Help from Geodesy department at KTH with algorithms
Will provide a report with the necessary info
Location Server implemented in Erlang
Mobile Arts will provide an Erlang API
GPS Server

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GPS Server

Location Application

GPS Server

Reference Data (on Internet)

Location Server

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BSC

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GSM core network

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Assisted GPS (A-GPS) project
Network application

- Examples:
  - Tracking of closest taxi cab, delivery guy etc
  - Presence-dependent push-content, such as traffic information and weather forecasts

- Interface
  - Mobile Location Protocol (XML based standard)
  - Subset implemented by Mobile Arts - will provide spec
Network application

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- We want a tool that allows to show a map with the current position of the GPS mobile
Network application environment
Examples:
- Navigation services
- “Friend Finder”

Interface
- Implement Java class in phone to access location
- Use GPRS to send data
Mobile application architecture

- **Overview**
- **Project:** A-GPS server
- **Demo/Test application**

**Environment**
- Mobile application architecture
- HLR
- JAVA enabled
- SS7
- GSSN
- IP
- MSC
- BSC
- GPS
- Server
- Erlang API
- Location Server

Assisted GPS (A-GPS) project
Terminal

- Terminal from Mitac
- Pocket PC based
- SiRF A-GPS chipset
Practical Constraints

- **Access to Mobile Arts Location Server**
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  - API documentation
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  Two possibilities:
  - Use Uppsala University GSM network
  - Use “live” network in Russia
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- **Access to Mobile Terminal**
  - Promised delivery of terminal in end of September
  - Siemens has announced similar phone
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- **Access to Map data**
  - Will look into this further...