Implementation of LBS Services with Oracle Spatial and Graph and MapViewer in ZAIN Jordan

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Agenda

• About Infotech
• About Zain Jordan
• LBS Applications
• Implementation
• Benefits
Infotech

- Oracle Gold Partner from Istanbul, Turkey
- Primarily covering countries around Europe and the Middle East
- Expertise:
  - Strategic Partnerships
  - Specializations
Infotech Operator References

• LBS Suite Applications are used by **6 operators in 3 countries**
• Total Served Customer Base : **90 Million**
• Total Subscribers to Services : **1.2 Million**
• Operators Annual Revenue Generation (est. total) : **$5.5M / year**

[a few logos from the companies listed above]
Zain Jordan

• Zain Group
  • Pioneer of mobile telecommunications in the Middle East
  • 8 countries across the Middle East & North Africa
  • Bahrain, Iraq, Jordan, Kuwait, Lebanon, Saudi Arabia, South Sudan, Sudan, Morocco
  • 7,000+ total employees
  • 45.6 million total active customers

• Zain Jordan
  • 4+ million subscribers
  • 37% market share
  • #1 market position
Requirements

• Zain Jordan has requested a Location Based Services (LBS) Solution
  • Public safety or emergency services
  • Consumer services:
    • Navigation
    • Location based advertising
    • Location based reminders
    • Family and friend finder
    • Location based search
  • Enterprise services:
    • Fleet tracking, asset tracking, field service dispatching, route and delivery optimization and mobile workforce management
• Various Accuracy Requirements
• Through many channels : SMS,WEB,APPLICATION,HTML5
• Many Systems to Integrate
Positioning Technology

- Handset-based
  - Satellite system (e.g. GPS)
  - Hardware
  - Line of sight
  - Battery power
  - Application
  - Internet

- Network-based
  - Positioning infrastructure
  - Powered-up device

- High Accuracy
  - 2-10 meters

- Low Accuracy
  - 50-300 meters
Mobile Positioning System - MPS

- Process of geographically locate mobile phones in the mobile network
- Collecting and analyzing information and calculating the position
- Offers an XML/HTTP based interface
GSM Positioning

• CGI Positioning (Cell-Id)
  • Proximity sensing
  • The accuracy is equal to the mobile cell where the mobile phone is
GSM Positioning

• CGI + TA (Time Advance)
  • Proximity + Time Measurement
  • Measures the round trip time of the signal between antenna and the mobile terminal
  • The accuracy is narrowed down to a circular arc sector within the cell sector
  • The localization is considerably improved.
GSM Positioning

- ECGI – Enhanced CGI
  - Lateration positioning
  - Relies on measurement reports of at least 3 nearby cells on the same antenna
  - Compares the signal strength received from the co-sited cells
  - Allows the location estimate to be moved to a certain angle
Spatial Triggers

- Enables LBS applications to receive notifications from MPS platform whenever a previously registered trigger requirement is fulfilled
  - Any/specific mobile phone **entering** a targeted area
  - Any/specific mobile phone **leaving** a targeted area
  - All phones **within** an area
  - Two subscribers are **closer** than ‘X’ meters
LBS Applications

- Location Based Advertising
- Location Based Demographics
- Family Finder
- Asset Tracking
- Nearest Locations
- Fleet Management
Location Based Advertising

- Location Based Advertising Platform

- Enabling businesses with location based marketing campaigns to their existing or prospect customers
Location Based Advertising

1. CRM
   - 16 parameters: ARPU, Gender, Account Type, Age, Customer Type, Connection Type, Data Consumption, Gender, Handset OS, Handset Type, Nationality, Package Type, Profession
   - Daily import of 4+ million subscribers

2. Predefined Regions
3. Admin. Areas
4. Campaigns
5. Notification
6. Positioning
7. SMS
   - Send SMS
   - Delivery Reports
8. SMS Message
9. Targeted Area

Campaign:
- Region
- Trigger Type
- Message Content
- Time interval
- CRM Filter
- MSISDN Filter
- SMS Count
- MSISDN Count
- Resend policy
- Recurrency options

Trigger Criteria

MPS

Oracle Spatial & Graph SIG
Location Based Advertising

- Predefined Regions
- Administrative Areas
- Campaigns
- CRM Filtering
- MSISDN Filtering
- Delivery Reports
Location Based Demographics

- Location Based Demographics Platform, targeting GSM Operators who would like to analyze customer profiles in locations with heatmaps.
Location Based Demographics

Analysis
- Date interval
- CRM Filter
- MSISDN Filter
- Region

Daily import of 4+ million subscribers

16 parameters
- ARPU, Gender, Account Type, Age, Customer Type, Connection Type, Data Consumption, Gender, Handset OS, Handset Type, Nationality, Package Type, Profession

Predefined Queries
- Dynamic Queries

InfoSense
- MSISDN Data
- Summary Data

Cell Data
- 2G / 3G / LTE

MSISDN
- MSISDN, Cell Id, Timestamp

CDR
- 100+ million CDRs per day imported in 10 min. intervals

Cell based Summarization

Query, Cell Id, Count, Timestamp

Multi Mediation

Oracle Spatial & Graph SIG
Location Based Demographics

- Predefined Queries
  - Based on Summary Data

- Dynamic Analysis
  - Based on MSISDN Data
  - Time Interval
  - CRM Filtering
  - MSISDN Filtering
  - Geographical Region
Location Based Demographics

• Reporting
  • Counts
  • Trends
  • MSISDN Exports
Location Based Demographics

- Offline Campaigns
  - Targeting a set of MSISDNs who have been at certain location(s) at a certain historical time interval
Family Finder

- Consumer Service

- Targets families who would like to know whereabouts of family members

  - Current Locations
  - Location History
  - Geofences
  - Notifications
Asset Tracking

- Enterprise Service
- Targets business who would like to track their business assets
  - Current Locations
  - Location History
  - Geofences
  - Notifications
  - Workforce Management
Asset Tracking
Nearest Locations

- Consumer Service

- Services Suite, serving customers with basic LBS functions (where am I? where is the nearest X? How is the traffic at location Y? etc.)
Nearest Locations

1. GPS
2. Mobile Application
3. SMS
4. Nearest Locations
5. MPS
6. Positioning

Category, Lat, Lon
Fleet Management

- Vehicle Tracking and Fleet Management
- Tracking
- Fleet Management
- Telemetry
- Reporting
- Alarms & Notifications
- Routing
- Driver Scoring

Congratulations

2013 Oracle Excellence Awards for Fusion Middleware Innovation Winner

Oracle Application Development Framework (Fusion Development)
Fleet Management
Fleet Management
Spatial Transactions

Reverse Geocoding
Map Matching
POI
Regions
Points
Routes

Address: Country, Province, District, Neighborhood, ...
Road segment
Speed limit violations
Nearest POI
Distance, heading
Region, territory, service area, ...
Distance traveled in the region
Nearest company location
Distance, checkins, checkouts, approaching
Route violations

Oracle Spatial & Graph SIG
LocationBox

• Location Based Application Development Platform
  • Infotech’s Content + LBS Functionality
  • 50+ partners
  • Cloud based / on premise

• Services
  • Mapping
  • Geocoding / Reverse Geocoding
  • Routing
  • Traffic
  • POI Search / Display
  • Address Services
  • Campaigns, Social Events
  • Map based reporting / Heat Maps / Spatial Analysis
  • User Data (Point, Line, Polygon)
  • User Defined POI Attributes
Benefits

• Generate New Revenue Streams
• Increased Customer Loyalty
• Big Data Production Platform for all CRM applications
• Transform the Operator from an Infrastructure Provider to a Service Provider
• A Consolidated system
• Paradigm shift in operator value chain
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With BIWA 2016: The Oracle Big Data + Analytics Conference

Oracle Spatial & Graph SIG
Customer

- Zain Jordan
- Mobile operator
- 4+ million subscribers
- 37% market share
- #1 market position

Challenges

- Many location based applications and services
- Many Integrations
- Different interfaces: Web, SMS, Mobile applications
- Internal / External users
- High performance requirements
- High volume of spatial transactions

Solutions

- Oracle Database 11g Enterprise Edition
- Spatial and Graph
- Partitioning
- Active Data Guard
- Oracle Fusion Middleware
- MapViewer 11.1.1.9

Results

- Consolidated LBS platform
- Applications:
  - Location Based Advertising
  - Location Based Demographics
  - Family Finder
  - Asset Tracking
  - Nearest Locations
  - Fleet Management