Oracle 9iAS Wireless와 MAPsee를 이용한 LBS 응용프로그램 개발

(주)아이앤디비 김형준
Agenda

- Introduction
  - IMDB and LBS
  - Oracle9iASWE
  - LBS Support in Oracle9iASWE
  - Developing LBS Apps on Oracle9iASWE
  - DEMO
What is LBS?

• Location-Based Service
  – through “Wireless Internet”
  – on “Handsets”
    – Cellular Phones
    – PDA
    – VMT (Vehicle-Mounted Terminal)
  – with “LDT (Location Determination Technologies)”
    – E-TOD
    – A-GPS
Why LBS?

- **Location is the Killer App for Mobile Internet**
  - Mobile Location Workshop (MLW) 2001
Why LBS? (Continued)

- **Location is the Killer App for Mobile Internet?**
  - Mobile Advertisement
  - L-commerce
  - Emergency Service
  - Privacy

Mass-Market

Killer Application

- Location-based?

Premature Mobile Internet

Mature Mobile Internet
Introduction

LBS Market Prospect (Source: Ovum)

- **Global Market**
  - Year 2001: 1,000
  - Year 2006: 190 (CAGR: 125%)

- **Domestic Market**
  - Year 2002: 1,100 (0.1%, AP: 4.6%)
  - Year 2006: 6 (3%)

![Graph showing market distribution by region: A-Pacific 21.2%, North America 23.9%, West Europe 49.2%, Japan 79.8%, Etc 15.6%, Korea 4.6%]
Introduction

LBS Market Prospect (Continued)

- Domestic LBS Market Growth Rate

( Source: Ovum )
LBS Market Prospect (Continued)

- Domestic LBS Market Penetration Rate (=LBS User/Mobile user)

![Graph showing LBS Market Penetration Rate from 2001 to 2006](Image)


**LBS Service Category (General)**

- **Consumer Applications**
  - Emergency Call (E-911)
  - Emergency Roadside Assistance
  - Vehicle Location
  - Information Service & Yellow Pages (E-411)
  - On Line Navigation & Direction Service
  - Child / Handicapped / Pet Tracking

- **Carrier Applications**
  - Fraud Location
  - Network Design & Management
  - Location-Sensitive Billing

- **Industry Applications**
  - Fleet Management
  - Employee Location
  - Asset Tracking

- **Government Applications**
  - Intelligent Transportation System
  - Law Enforcement

- **Marketing Applications**
  - Location-based Ad.
Introduction

LBS Service Category (General)

• Consumer Applications
  -  
  -  
  -  
  -  
  -  
  -  
  -  
  -  

• Corporate Applications
  -  
  - Fleet Management
Introduction

**IMDB and LBS**
- Oracle9iASWE
- LBS Support in Oracle9iASWE
- Developing LBS Apps on Oracle9iASWE
- DEMO
History

- **1997. 8. 14**: IMDB and LBS
- **1997. 8.**: Web-EDS ('')
- **1997.10.**: DB DB DB (PC) (PC)
- **1998. 3.**: NZINE.COM (PC)
- **1998. 9.**: , MAPsee™ 1.0
- **1999. 3.**: (www.menupan.co.kr)
- **1999. 4.**: (www.kebyjibb.co.kr)
- **1999. 5.**: KIMtech (www.kimtech.co.kr)
- **1999. 5.**: SDS CTS (MKLAND)
- **1999. 7.**: (MKLAND)
- **1999. 8.**: 
- **1999. 9.**: 
- **1999. 9.**: 
- **1999. 12.**: 16 - / / 
- **1999. 12.**: , 
- **1999. 12.**: 
- **2000. 1.**: SDS MAPsee VAR 
- **2000. 1.**: 

Http://www.imdb.co.kr/
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000. 1.</td>
<td>“¢ßÀ¥½ÌÅ©¿Í”</td>
</tr>
<tr>
<td>2000. 1.</td>
<td>PCS/Àü·«Á¦ÈÞ</td>
</tr>
<tr>
<td>2000. 1.</td>
<td>ÀÎÅͳݽºÆ®¸®Æ®</td>
</tr>
<tr>
<td>2000. 2.</td>
<td>°³¹ß°è¾à</td>
</tr>
<tr>
<td>2000. 2-6.</td>
<td>°³¹ß°è¾à</td>
</tr>
<tr>
<td>2000. 6.</td>
<td>20. (22.8) - Àü·«Á¦ÈÞ</td>
</tr>
<tr>
<td>2000. 6-7.</td>
<td>Àü±¹µ¥ÀÌÅͿɼÇÁ¦Ç°Ãâ½Ã</td>
</tr>
<tr>
<td>2000. 8.</td>
<td>PDAÆ®º¥Ã³</td>
</tr>
<tr>
<td>2000. 8.</td>
<td>MAPsee™ 2.0, Àü±¹µ¥ÀÌÅͿɼÇÁ¦Ç°Ãâ½Ã</td>
</tr>
<tr>
<td>2000. 8.</td>
<td>MAPsee-Path Option™</td>
</tr>
<tr>
<td>2000. 9.</td>
<td>MAPsee-GPS Option™</td>
</tr>
<tr>
<td>2000. 11.</td>
<td>MAPsee-Path Option™</td>
</tr>
<tr>
<td>2001. 1.</td>
<td>MAPsee-GPS Option™</td>
</tr>
<tr>
<td>2001. 1.</td>
<td>MAPsee-Path Option™</td>
</tr>
</tbody>
</table>
History (Continued)

- 2001. 2.  &
- 2001. 2~5.  
- 2001. 7.  
- 2001.11.  
- 2002. 2.  
- 2002. 3.  
- 2002. 4.  
- 2002. 5.  

![Image of IMDB and LBS logo]

Http://www.imdb.co.kr/
IMDB’s Business Strategy

- Mobile Technology
- GIS Technology
- Location Technology
- Contents

LBS Solution
- Digital Map
- LBS Map Server
- LBS Service Business
- Location Server

Solution Revenue
Package Revenue
Service Revenue
IMDB’s Target Market

- **Consumer**
  - PNS (svc)
  - LBS Game (svc)
  - LBS PDA (svc)
  - Desktop Application (pkg)

- **Corporate**
  - g-CRM/m-CRM/l-CRM (sol)
  - l-SFA (sol)
  - l-Marketing (sol)

- **Public**
  - BIS (sol, svc)
  - l-Government (sol)
  - l-Marketing (sol, svc)

- **LBS SP/CP**
  - Map Server (pkg)
  - Location Server (pkg)
  - Digital Map (cont)
  - Development Tools (pkg)
  - LBS Technology/Solution
**MAPsee OMS™**

- MAPsee OMS™
- MAPsee IMS V2.1
- °ú¿Ïº®È¯È£È¯
- °´Ã¼ÇüµðÁöÅиʰú°¢Á¾ÀÀ¿ë°´Ã¼¸¦Æ÷ÇÔ
- »ç¿ëÀÚ°¡¿øÇÏ´ÂÁ¤º¸¸¦Áöµµ»ó¿¡½±°íºü¸£°ÔÇ¥Çö°¡´É
- ¾÷¹«¿¡ÇÊ¿äÇѰ¢Á¾Á¤º¸¿¡´ëÇѰø°£ºÐ¼®ÀÛ¾÷Áö¿ø
- gCRM, LBS

---

**IMDB and LBS**

[IMDB and LBS](http://www.imdb.co.kr/)
MAPsee OMS™ - Features

- Server-side rendering
  - (rendering)

- OpenGIS
  - R tree

- (Non Geographic Object, NGO)
- DB
- ActiveX
- ORACLE, MSSQL, DB2, MySQL, ODBC, DBMS

- Server-side
IMDB’s Location-Based Service

Positioning-enabled Devices

IMDB

MAPsee™ OMS

Web-based Location / Tracking Service

MAPsee Browser

Web Browser

Target Biz Apps.

Personal Navigation System

Location-based (enabled) SFA

Location-based CRM

Fleet Management

Mobile Asset Tracking

Internet Map & Mapping Technology

Wireless Location & Tracking Technology

Mobile Compass™

PDA

MAPsee Browser

PDA (WinCE, MobileMap™)

PDA (MobileMap™)

MAPsee Browser PDA

Web Browser

Mobile Compass™

Phone

PDA

MAPsee

Mobile MAPsee

Http://www.imdb.co.kr/
IMDB’s LBS: PNS

- **Personal Navigation vs. Car Navigation**
  - Difference of Topology
    - side-street, subway, girder bridge, crosswalk
  - CNS: GPS + "Gyro sensor"
  - Scope of routing
  - Moving speed of object
  - Map

![Map of Personal Navigation vs. Car Navigation](image)
Mobile Compass™

- Mobile Compass™
  - 2002년 4월 26일
  - 010-2001-0047524
- Center Navigation + Digital Compass
- A kind of Personal Navigation System
- Door to Door Navigation (문의 있으면 안내 드리겠습니다)
- (문의 있으면 안내 드리겠습니다)
Mobile Compass™

- **Mobile Compass™**

Positioning-enabled Handsets

Center System
- Mobile Compass Application
- Map Matching
- Routing
- MAPsee™ OMS

Center Application
- Communication (CDMA)
- Positioning (GPS)
- PNS Topology
- Mobile Map

Monitoring
- Tracking
Mobile Compass™ Key Feature
- Center Navigation
  - (GPS Positioning)
  - map matching, routing
- Digital Compass
  - Cellular Phone
  - POI
• Mobile Compass™ Menu Hierarchy

Main Menu

[Diagram of Mobile Compass™ Menu Hierarchy]
Mobile Compass™ PDA Screenshots
Mobile Compass™ (Continued)

• Mobile Compass™ PDA Screenshots
Mobile Compass™ (Continued)

- Mobile Compass™ Phone Screenshots
Mobile Compass™ (Continued)

- Mobile Compass™ Phone Screenshots
Mobile Compass™ (Continued)

- **Mobile Compass™ Monitoring Screenshots**
  - Tracking Screen

[Image of Mobile Compass™ Monitoring Screenshots]

Http://www.imdb.co.kr/
Solutions and References

- **AVLS**
  - (Layer, logging)
  - (Layer, logging)
  - (Layer, logging)
  - (Layer, logging)
Solutions and References (Continued)

- Citylover, Textmap Service
  - Application
  - MAP
  - TEXTMAP

Http://www.imdb.co.kr/
Solutions and References (Continued)

- LG Telecom(ez-I)
  - 서비스 및 정책
  - 결제 및 요금
  - 구독 및 가입
  - TEXTMAP
  - MAP 데이터
Solutions and References (Continued)

- (PDA Map Service)
  - Application
  - MAP
Solutions and References ( Continued )

- SK Telecom MY Address UTO/TTL.
IMDB and LBS

Solutions and References (Continued)

- PDA

• , 011, 019
Solutions and References (Continued)

- [Image of a map interface]
Agenda

- Introduction
- IMDB and LBS

**Oracle9iASWE**
- LBS Support in Oracle9iASWE
- Developing LBS Apps on Oracle9iASWE
- DEMO
Oracle9iAS Wireless

Services

- mCommerce & Billing
- Transcoding
- Offline Management
- Voice Services
- Mobile Studio
- Mobile PIM & Email
- Push Service & SMS
- Customization & Alert Engine
- Location Based Services

Multi-Modal Core

- Device, Voice, Network Adaption
- XML Application Framework
- Protocol Adapters
Merits

- Wireless Publishing
  - CP1
  - CP2
  - CP3

- Deploy MOBILE HOSTING
  - Content provider
    - oraclemobile.com

Oracle9iASWE
Agenda

- Introduction
- IMDB and LBS
- Oracle9iASWE

**LBS Support in Oracle9iASWE**
- Developing LBS Apps on Oracle9iASWE
- DEMO
9iASWE LBS

- **Location-Based Service**
  - Wireless Networks track phone location
  - 9iAS Wireless and Oracle Spatial personalize services
**9iASWE Location-Based Services**

- **Location Mark**
  - Manage end-user auto and personal locations
  - Allow end-user to set current or wanted location for future applications

- **Driving Direction (Routing)**

- **Business Directory**

- **Maps**

- **Geocoding/Region Modeling**
  - Geocoding: Returns geographic coordinates (longitude, latitude) of postal address
  - Region Modeling: Allow application developer to target its application to a defined geographic regions

- **Mobile Positioning**
  - Supports automatic positioning detection from the leading vendors
  - CellPoint, Ericsson, Nokia, Signalsoft, TruePosition
9iASWE LBS Architecture

9i Application Server WE

LBS Service
- XML UI-API
  - Location Picker
  - Driving Direction
  - Business Directory
  - Mapping
- JAVA API
- LBS API
- Business Logic
- LBS Driver API
  - Geocoding
  - Mapping
  - Routing
  - Biz Directory

OC4J (J2EE Platform)

OMS Server
- GeoObject Option
- PathObject Option

GIS DB

Any Devices

Http://www.imdb.co.kr/
LBS Support in Oracle 9iASWE

9iASWE LBS API Architecture

- XML UI-API
  - Location Picker
  - Driving Directions
  - Business Directory
  - Mapping

- Java API
  - LBS API
  - Business Logic

- Driver API
  - LBS Driver API
  - Map Info
  - Webrasca
  - Info USA

Use
Available Out-of-the-box on HTTP, SMS, Voice

Customize
Customize UI by using Module, Tags and/or Public Java APIs

Extend
Implement drivers
9iASWE LBS Features

• “Multiplexing” – LBS Provider-independent
  - LBS API
  - LBS Provider
  - Driver

• Device-independent
  - 9iASWE Core: Transformer – XML Engine – Adapter
  - Device
LBS Support in Oracle9iASWE

9iASWE LBS Features (Continued)

- **Integration of internal and external services**
  - 
  - **YP DB**  
  - **YP Provider**  
  - **Provider (Mapping, Routing, Geocoding...)**

- **Business flexibility and risk abatement**
  - **Provider**
  - **Provider**

- **Global deployment**
  - **Carrier**  
  - **Geographic**
  - **Providers**

- **Code simplicity**
  - **9iASWE multiplexing**

- **Cross-application communication**
  - **Yellow Page**  
  - **Driving Direction**
Agenda

- Introduction
- IMDB and LBS
- Oracle9iASWE
- LBS Support in Oracle9iASWE
- Developing LBS Apps on Oracle9iASWE
- DEMO
LBS Application Development Procedure

**STEP 1**
Configure Provider Info
- Configure LBS Providers With WebTool
- WebTool

**STEP 2**
Develop Apps
- Implement Business Logic using LBS API (JAVA)

**STEP 3**
Customize UI
- Design UI using XML UI-API
- XML UI-API
Provider Configuration

- **WebTool**
Provider Configuration (Continued)

- **WebTool**: Site->Location Services
Provider Configuration (Continued)

- ProviderName
- Preference
- Classname
- URL
- Username
- Password
- Parameters
- ISO Locale
- Corp. URL
- Version
- Logo URL

WebTool : Site->Location Services->Geocoding

- MapInfoDirect
- Fractify
- MapQuest
- Mapsee
- Location
- Amap
- Mapquest

ISO Locale

Version

Logo URL

Http://www.imdb.co.kr/
Sample Application (Continued)

- `http://server:port/ptg/rm`
Sample Application (Continued)

- Location->Location Picker

[Image of a software interface with options for location picking and editing location marks]
Sample Application (Continued)

- **Location->Maps**
Sample Application (Continued)

- **Location->Driving Directions**

[Image of screens showing location picker and driving directions]
Sample Application Source

- Geocoding

Constructing a SimpleForm Object

```xml
element sf = XML.createElement(result, "SimpleForm");
sf.setAttribute("target", targetString);
result.appendChild(sf);
element sfi = XML.createElement(sf, "SimpleFormItem");
sfi.setAttribute("name", "adrLine1");
sfi.setAttribute("title", "address line 1");
sfi.appendChild(sfi);
sfi = XML.createElement(sf, "SimpleFormItem");
sfi.setAttribute("name", "city");
sfi.appendChild(sfi);
sfi = XML.createElement(sf, "SimpleFormItem");
sfi.setAttribute("name", "state");
sfi.appendChild(sfi);
```

Accessing Address Data

```java
String
adrLine1 = sr.getInputArguments().getInputValue("adrLine1"),
city = sr.getInputArguments().getInputValue("city"),
state = sr.getInputArguments().getInputValue("state"),
postcode = sr.getInputArguments().getInputValue("postcode"),
country = sr.getInputArguments().getInputValue("country"),
```

Geocoding the Address

```java
Location address = SpatialManager.createLocation(
    companyName,
    adrLine1, // "500 Oracle Parkway"
    city, // "Redwood City"
    state, // "CA"
    postcode, // "94065"
    postalCodeExtension, // null
    country); // "US"
```

Accessing Values of the Geocoded Address

```java
address.getLatitude()
address.getLongitude()
address.getLatitude()
address.getAddressLine1()
address.getCity()
address.getState()
```

Geocoding

Geocoded Data

Input Form

Address Data
Mapping

- iaswv20/wireless/j2ee/applications/modules/modules-web/location\maps\jsp\mapsGetMap.jsp

```java
<% Map<
 Mapper mapper = SpatialManager.getMapper();

//LocationHelper l = new LocationHelper(0, name, "", "", companyname, firstline, "", "", "", city, "", state, "", "", "", "", "", Double.NaN, Double.NaN);
//LocationHelper l = new LocationHelper(request);

l.geocode(false, false);

l.setCompanyName(companyname);

if (mapurl == null)
{

// out of range? reset.

zlevel = 0;

z = MAP_ZOOM_FACTOR;

mapurl = mapper.getMapURL(l, ImageFormats.GIF, l.getLongitude() - z * MAP_LNG_SIZE, l.getLongitude() + z * MAP_LNG_SIZE, l.getLatitude() - z * MAP_LAT_SIZE, l.getLatitude() + z * MAP_LAT_SIZE, MAP_WIDTH, MAP_HEIGHT, false);

}

%>

<SimpleImage border="0" src="<%=StringUtil.escape(mapurl)%>" addImageExtension="false"/>
```
Sample Application Source (Cont’d)

- **Routing**
  - iaswv20/wireless/j2ee/applications/modules/modules-web/location\router\jsp\ routerMap.jsp

```jsp
<%
HttpSession httpSession = request.getSession(true);
RoutingResult rr = (RoutingResult) httpSession.getValue(ROUTINGRESULT);
if (rr == null) {
    //LocationHelper l1 = new LocationHelper(0, "", "", "", oaddress, "", "", "", ocity, "", ostate, "", ozip, "", "", Double.NaN, Double.NaN);
    //LocationHelper l2 = new LocationHelper(0, "", "", "", daddress, "", "", "", dcity, "", dstate, "", dzip, "", "", Double.NaN, Double.NaN);
    Router r = SpatialManager.getRouter();
    RoutingSettings settings = new RoutingSettings();
    settings.setRequestMap(true);
    settings.setSecondaryOption(RoutingOption.overviewMapWidth, MAP_WIDTH+"");
    settings.setSecondaryOption(RoutingOption.overviewMapHeight, MAP_HEIGHT+"");
    rr = r.computeRoute(ol, dl, null, settings, iasLocale);
    httpSession.putValue(ROUTINGRESULT, rr);
}
Mapper mapper = SpatialManager.getMapper();
String mapurl = mapper.getMapURL(rr, false);
%>

<SimpleImage border="0" src="<%=mapurl%>">
```
Agenda

- Introduction
- IMDB and LBS
- Oracle9iASWE
- LBS Support in Oracle9iASWE
- Developing LBS Apps on Oracle9iASWE
- DEMO
Mobility is Location,
Location is MAPsee

Thank You.