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Windows Mobile GPS应用开发指南

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Agenda

- Location-Based Services (LBS)
- Microsoft® Windows Mobile™ and LBS
- GPS and Microsoft® MapPoint® Location Server Technologies
- Devices and Options
- Windows Mobile 6 SDK and GPS
- Demos
- Q&A

Location-Based Services

- 基于定位信息, 提供其它相关信息
- Simple services
 - Proximity searching – what is near by?
 - Routing – how do I get where I'm going?
- Complex services
 - Real-time team and buddy location tracking
 - Route optimization for route delivery
 - Intelligent dispatch
- GIS
 - Geographic Information System, 地理信息系统

Location Solution Scenarios

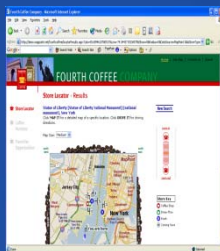
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Consumer

Business

**Store Locator
Retail/store
location
finder**



**Travel portals
Combination
of mapping
capabilities and
POIs (hotels,
restaurants, etc.)**



**Call Center
solutions**
Quickly route
customers to
the next store

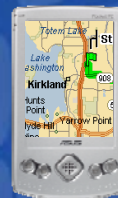
**Field Service
Management**
Re-scheduling/
Re-routing service
technicians to
new customers



**Speech Locator
Service**
Experience via:
1-800-545-0118

Portals/Yellow Pages
Experience at:
<http://maps.msn.com>

**Mobile
Location
services**
Locations via
mobile Devices
(PDA, Smartphones)



Fleet/asset tracking
Integration of high
quality routing and
mapping into fleet
tracking applications



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Mobility and LBS

- Providing relevant information and resources on a mobile device based on user location
- Automated location acquisition is key...
 - Satellite location determination (i.e. GPS)
 - Operator location determination (e.g. MLS)
 - 混合定位方法(e.g. A-GPS (Assisted-GPS))
- Smart Devices
 - Windows Mobile
 - Microsoft® .NET Compact Framework

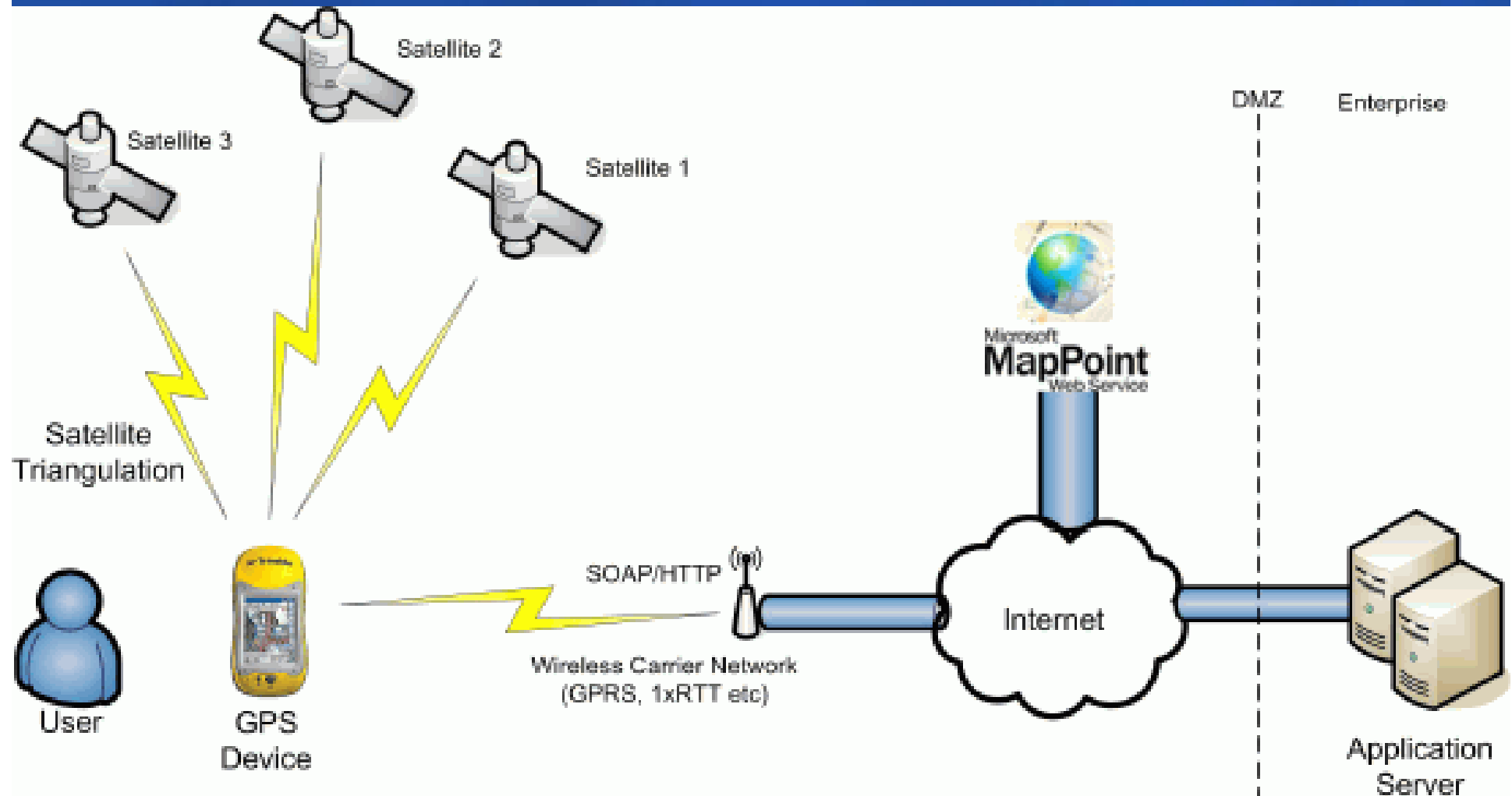
What Is GPS?

- Location determination based on relative position to orbiting GPS satellites
 - Position is determined client-side on device
 - High accuracy
 - Requires view of sky
 - Initial fix can take some time
- Many devices options...
 - Consumer
 - Enterprise
- Development involves local APIs

GPS Solution Architecture

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What Is Operator Location Determination?



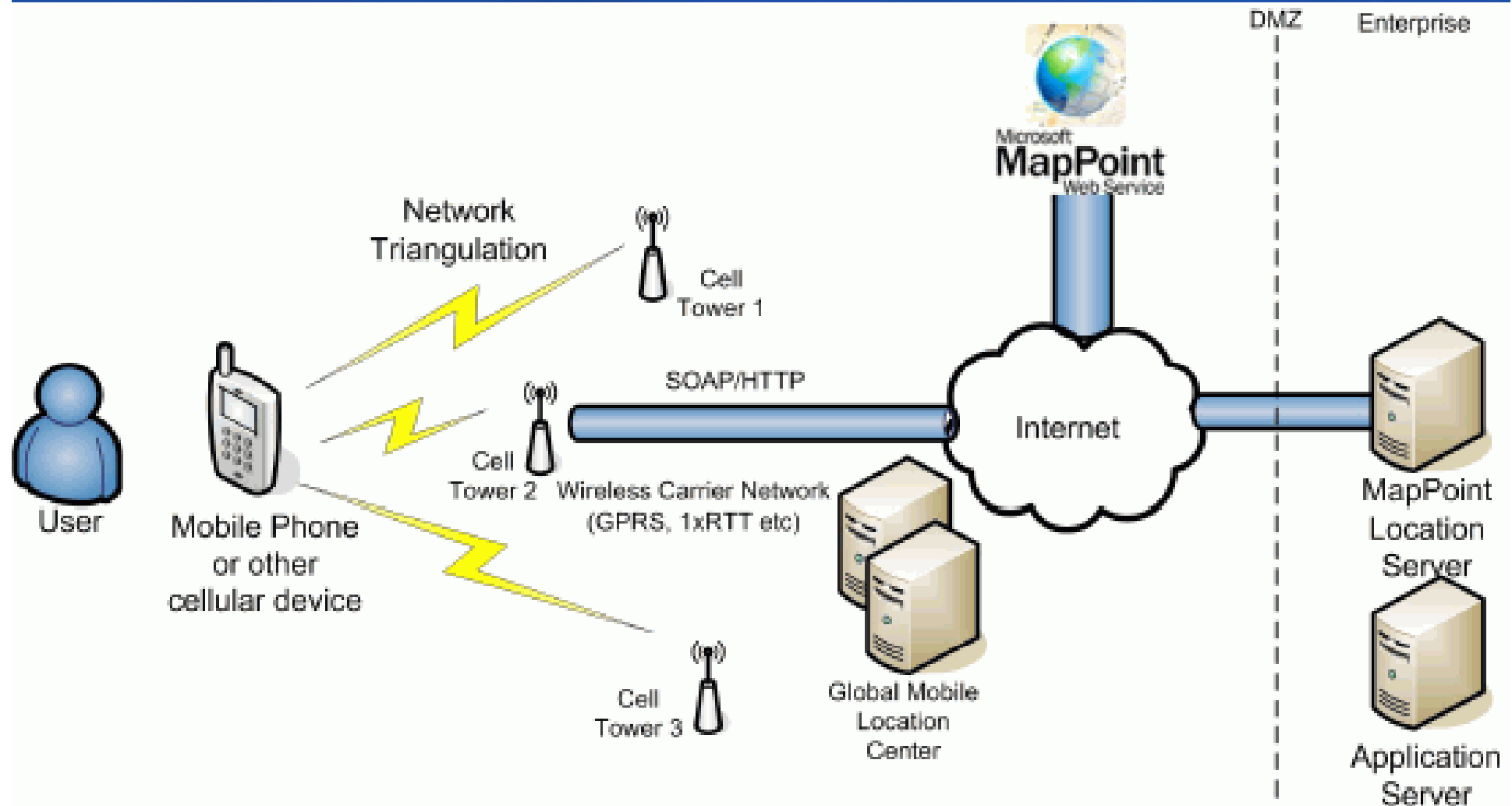
- Location determination based on relative position to wireless operator towers
 - Position is determined as a service of the network
 - Low-cost device can be used
 - Works indoors and outside
- Most wireless devices supported, some have higher accuracy...
 - Cell phones, Microsoft® Windows Mobile™-based Smartphones and Pocket PC Phones
 - Development is either proprietary carrier APIs or the MapPoint Location Server

Carrier Location Architecture

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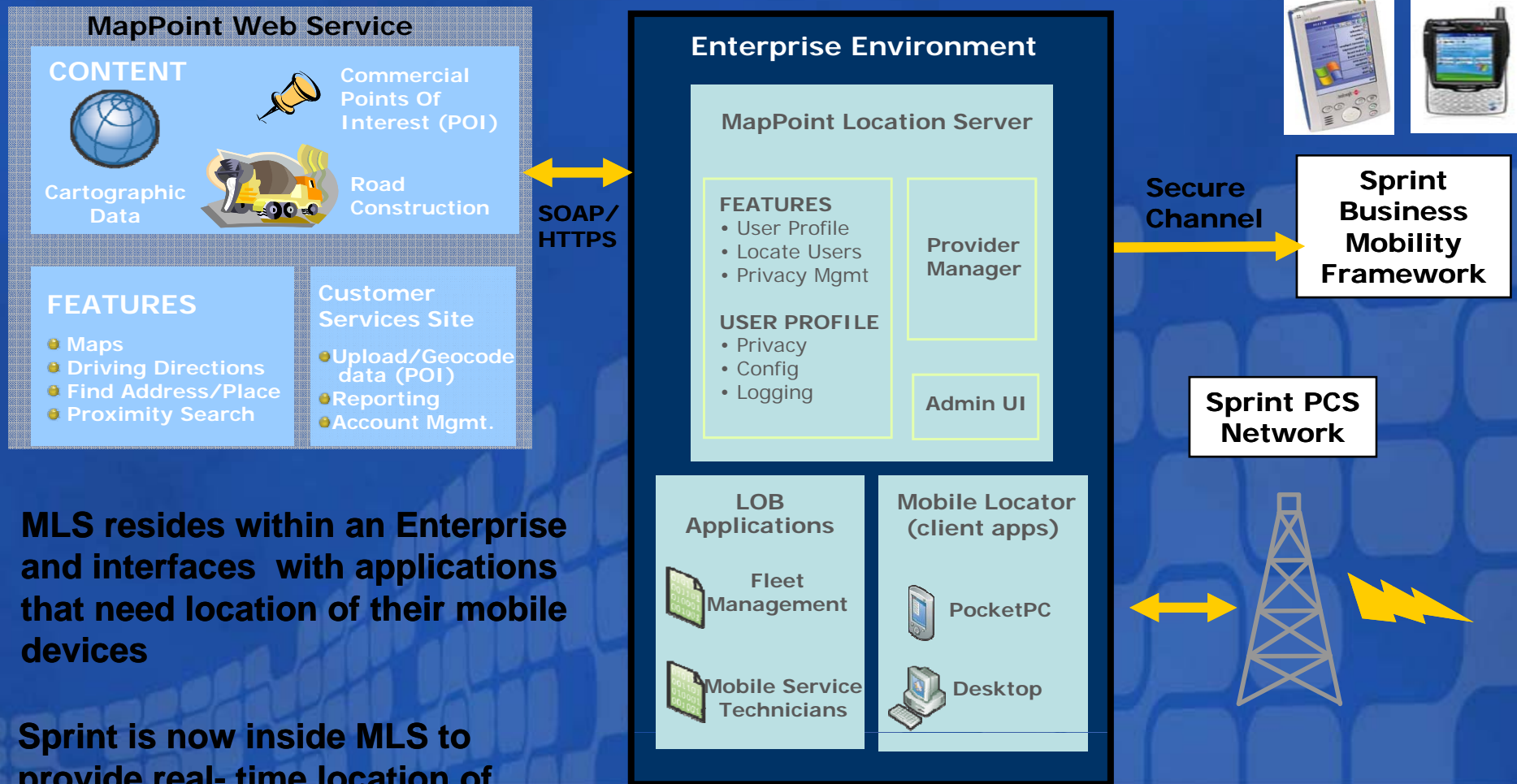
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MLS Architecture

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MLS resides within an Enterprise and interfaces with applications that need location of their mobile devices

Sprint is now inside MLS to provide real-time location of Sprint mobile devices on request.



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Windows Mobile GPS Device Options

- Integrated GPS
 - E.g. WM6 based PPC + GPS
- CF GPS Cards
- Bluetooth GPS Devices

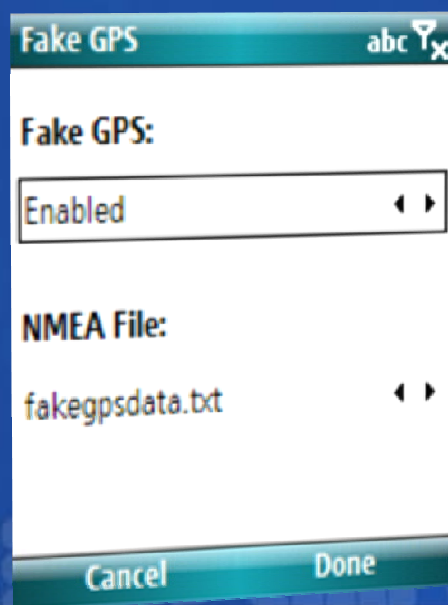
GPS仿真程序 Fake GPS(1)

- **GPSID**
 - Windows Mobile 5.0 引进了 **GPS Intermediate Driver**
 - **GPSID** 的作用: 访问 **GPS** 设备, 解析 **NMEA** 命令
 - **GPSID** 的设置信息都保存在注册表中 (**GPS Settings** 的工具)



GPS仿真程序 Fake GPS(2)

- 与 **GPS** 中间驱动程序结合使用
- 将来自该文本文件的消息路由到读取 **GPS** 源的所有应用程序
- 简化应用程序开发测试



```
$GPGLL,4738.0173,N,12211.1874,W,191934.767,A*21
$GPGSA,A,3,08,27,10,28,13,19,,,,,,,,,2.6,1.4,2.3*3E

$GPGSV,3,1,9,8,71,307,43,27,78,59,41,3,21,47,0,10,26,283,40*77

$GPGSV,3,2,9,29,13,317,0,28,37,226,37,13,32,155,36,19,37,79,42*42
$GPGSV,3,3,9,134,0,0,0*46

$GPRMC,191934.767,A,4738.0173,N,12211.1874,W,0.109623,12.14,291004,,*21

$GPGGA,191935.767,4738.0172,N,12211.1874,W,1,06,1.4,32.9,M,-17.2,M,0.0,0000*75

$GPGLL,4738.0172,N,12211.1874,W,191935.767,A*21
$GPGSA,A,3,08,27,10,28,13,19,,,,,,,,,2.6,1.4,2.3*3E

$GPRMC,191935.767,A,4738.0172,N,12211.1874,W,0.081611,15.81,291004,,*2A
```

GPSID的注册表结构

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- ◆ HKEY_LOCAL_MACHINE\System\CurrentControlSet\GPS Intermediate Driver
- ◆ Drivers
- ◆ "CurrentDriver" = "Acme GPS Hardware"
- ◆ HKEY_LOCAL_MACHINE\System\CurrentControlSet\GPS Intermediate Driver
- ◆ Drivers
- ◆ Acme GPS Hardware
- ◆ "InterfaceType" = "COM1"
- ◆ "FriendlyName" = "ACME GPS Card, version 1.23"
- ◆ "CommPort" = "COM4"

- HKEY_LOCAL_MACHINE\System\CurrentControlSet\GPS Intermediate Driver
- Multiplexer
- "DriverInterface" = "GPD1:"

- HKEY_LOCAL_MACHINE\System\CurrentControlSet\GPS Intermediate Driver
- Drivers
- "CurrentDriver" = "Test File Set 1"
- HKEY_LOCAL_MACHINE\System\CurrentControlSet\GPS Intermediate Driver
- Drivers
- Test File Set 1
- "InterfaceType" = "File"
- "FriendlyName" = "File Test #1"
- "File1" = "\\windows\GPSFileInput1.txt"
- "File2" = "\\windows\GPSFileInput2.txt"

GPSID的调用过程

- 创建一个或两个Windows Mobile事件对象
- 创建一个和GPS硬件设备的连接
- 使用WaitforSingleObject()或WaitForMultipleObjects()处理事件通知
- 重复调用第三步并调用GPSGetLocation()获取GPS信息
- 应用程序的相应处理
- 调用GPSCloseDevice()关闭设备

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Demo

Windows Mobile 6 SDK and GPS

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Session Summary

- Location-Based Services (LBS)
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Resources

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GPS Intermediate Driver Reference

<http://msdn.microsoft.com/en-us/library/ms850332.aspx>

MapPoint Product Information

<http://www.microsoft.com/mappoint>




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<http://www.microsoft.com/china/newsletter/case/msdn.aspx>
- **MSDN开发中心**
<http://www.microsoft.com/china/msdn/DeveloperCenter/default.msp>



Question & Answer

如需提出问题，请单击“提问”按钮并在随后显示的浮动面板中输入问题内容。一旦完成问题输入后，请单击“提问”按钮。

 **问题和解答 (无问题)** ▲ ×

在此会议中尚未解答任何问题。

要向演示者提问，请在此处键入问

提问(A)

删除(D)

问题管理器(Q)

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