GIS Solutions

for Location-Based Services

ESRI

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As the global community becomes increasingly more mobile, locating people, places, and things and subsequently deriving useful information from raw location determinations have never been more important. Mobile consumers increasingly demand convenient commercial location-based services (LBS) that enhance mobile lifestyles, and legislation in the United States requires wireless operators to quickly deploy highly reliable, trusted, and always available emergency service applications, ensuring public safety responses for all location-aware mobile devices.
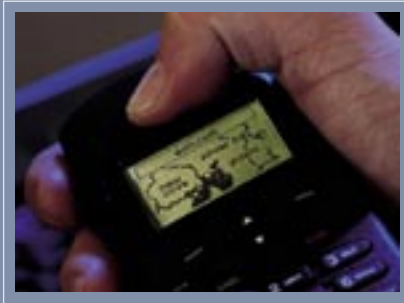
With the convergence of wireless communications, network computing, and the Internet; local and global positioning technologies; and an abundance of miniaturized mobile devices, location-based services are gradually becoming common offerings of wireless operators worldwide. ESRI recognizes the importance and value of location-based services. We are committed to providing the core and essential geographic information system (GIS) software tools and spatial technologies required to offer location-based services. These services will enhance how the mobile information society communicates and will introduce new mediums to consume geographic information relevant to place.
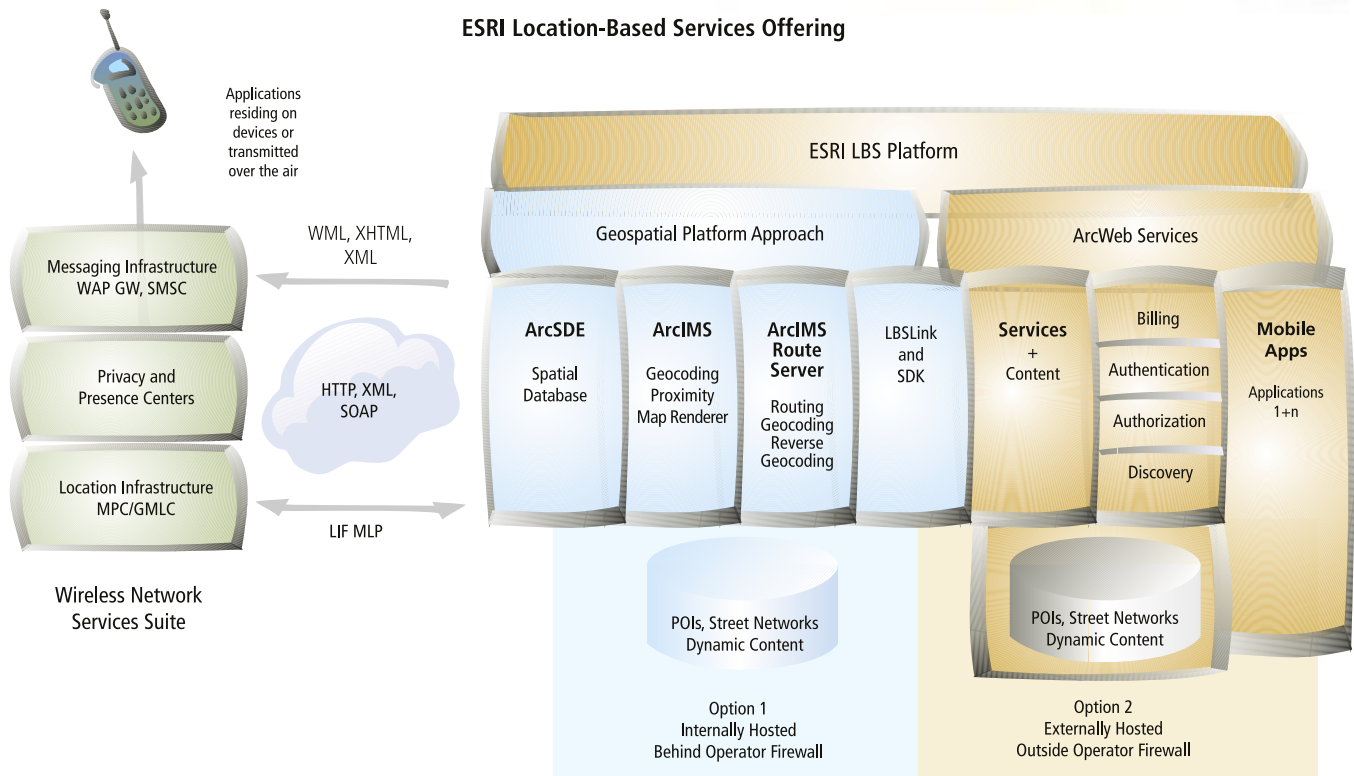
MOBILE COM

GIS Solutions
for Wireless Location-Based Services

ESRI's GIS solution for wireless location-based services consists of two options for wireless network operators—an internally hosted and managed Geospatial LBS Platform solution behind your firewall or an externally hosted, carrier-grade ASP solution via ESRI® ArcWeb℠ Services. Both turnkey options help you deploy location-based services quickly, so you can start capitalizing on your investment in mobile Internet infrastructure now, not tomorrow.

ESRI Location-Based Services Offering

Applications residing on devices or transmitted over the air

WML, XHTML, XML

Messaging Infrastructure
WAP GW, SMSC

Privacy and Presence Centers

HTTP, XML, SOAP

Location Infrastructure
MPC/GMLC

LIF MLP

Wireless Network Services Suite

ESRI LBS Platform

Geospatial Platform Approach

ArcWeb Services

ArcSDE
Spatial Database

ArcIMS
Geocoding Proximity Map Renderer

ArcIMS Route Server
Routing Geocoding Reverse Geocoding

LBSLink and SDK

Services + Content

Billing

Authentication

Authorization

Discovery

Mobile Apps
Applications 1+n

POIs, Street Networks
Dynamic Content

POIs, Street Networks
Dynamic Content

**Option 1
Internally Hosted
Behind Operator Firewall**

**Option 2
Externally Hosted
Outside Operator Firewall**

Option One
ESRI's Geospatial Platform

ESRI's Geospatial LBS Platform option is the solution for wireless operators who want to host and manage spatial-processing capabilities and supporting geospatial data needed to offer location-based services to mobile subscribers. The Geospatial LBS Platform is installed within your network. It seamlessly integrates into 2G architectures, while providing an open framework for 2.5 and 3G migration.

The Geospatial LBS Platform consists of four integrated software applications—ArcSDE™, ArcIMS®, the ArcIMS Route Server extension, the LBSLink & SDK, plus preferred spatial data sets.

ArcSDE

ArcSDE is a spatial database gateway that allows you to store and manage spatial data in any preferred DBMS. ArcSDE is open; it works with a variety of different databases—including Oracle®, Informix®, IBM® DB2®, and Microsoft® SQL Server™.

With ArcSDE, ArcIMS and the RouteServer extension work directly with spatial data managed in any preferred DBMS. ArcSDE also works as an application server, delivering spatial data to many kinds of applications and serving spatial data across the Web and wireless Web.

The ArcSDE server runs on leading UNIX® platforms including Sun™ Solaris™, SGI™ IRIX™, IBM AIX®, HP-UX®, and Compaq® Tru64™—Microsoft Windows NT® and Windows® 2000 servers are also supported. ArcSDE is built on standard TCP/IP protocols.

ArcIMS

ArcIMS is the foundation for distributing spatial data and applications over the Web and wireless Web. It performs basic spatial functions such as geocoding, reverse geocoding, spatial searching, and mapping. ArcIMS is composed of a multitier, highly scalable architecture consisting of Web server connectors, an application server, spatial processing server, and a suite of open XML APIs that allow the application developer community to easily and quickly develop compelling location-based applications. ArcIMS has a monitoring and event logging engine that integrates with your network OA&M and billing systems.

ArcIMS runs on leading UNIX platforms including Sun Solaris, SGI IRIX, IBM AIX, HP-UX, and Compaq Tru64—Microsoft Windows NT and Windows 2000 servers are also supported. ArcIMS is built on standard TCP/IP protocols.

ArcIMS Route Server Extension

ArcIMS Route Server is the routing extension of the ArcIMS spatial server. ArcIMS Route Server offers the ability to incorporate fast, accurate routing and point-to-point driving directions into location-based service applications built with ArcIMS. It also calculates optimal routes based on time and distance and accommodates multiple stops along a route.

The ArcIMS Route Server extension's features include the ability to perform rapid cross-country routing, set routing preferences (highway preferences, shortest route, or fastest route), and use precision settings to fine-tune results.

The ArcIMS Route Server is compatible with data sets that are specially optimized in spatial data compressed (SDC) format for high-speed routing. Data providers selling data that is compatible with ArcIMS Route Server currently include Geographic Data Technology, Inc. (GDT), and Tele Atlas. Spatial data availability by these vendors covers the United States, Canada, and Europe.

ESRI LBSLink Extension and SDK

The ESRI LBSLink API supports OpenLS and SOAP and runs on top of ArcIMS. It handles the chaining of device and server interactions for various clients, such as WAP, J2ME, RIM, Symbian, and CE, capable of initiating XML calls through your network's messaging infrastructure.

The ESRI J2ME SDK is an easy-to-use, quick-to-develop environment for developing J2ME mobile applications (MIDlets). The J2ME toolkit is based on the Connected Limited Device Configuration (CLDC) and the Mobile Information Device Profile (MIDP).

Geographic Data

In addition to the core ESRI software bundle identified above, ESRI may also include spatial data upon request. Existing data types include street networks, POI business data, demographic data, real-time weather, real-time traffic, and other value-added data such as three-dimensional pedestrian-level city maps. All this data is provided by preferred ESRI business partners. ESRI continually adds spatial data business partners to our growing list. The spatial data vendors we add directly correspond to more application development possibilities and unique offerings wireless operators may explore.
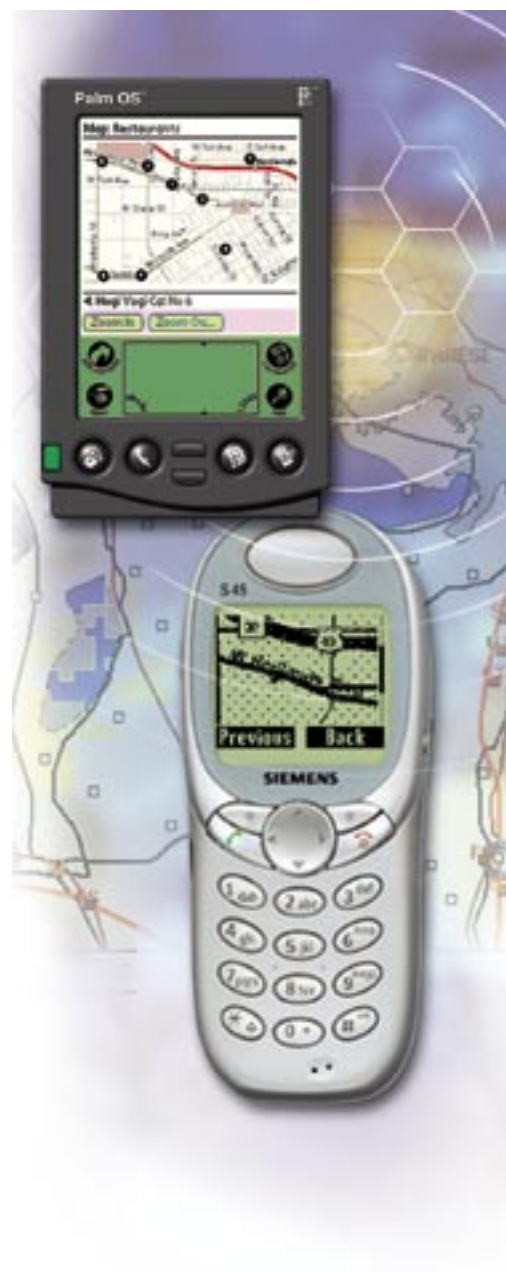
Option Two

GIS Web Services

ArcWeb Services is a one-stop shop, plug-and-play, carrier-grade ASP offering for location-based services. Its 24/7 systems are highly secure, fault tolerant, load balanced, scalable, and built on open, industry-standard SOAP and OpenLS XML APIs. ArcWeb Services provides all the hardware infrastructure, spatial processing functionality, spatial data, application developer SDKs, and network management systems needed to distribute location-based information to your mobile customers.

Individual modular ArcWeb Services include

Maps and Mapping

ESRI provides access to a wide variety of dynamic maps for the United States, Europe, and select areas in the Asia–Pacific region. The maps include detailed streets, point-of-interest data, real-time weather and traffic, satellite imagery, business demographics, topographic maps, and much more.

Address Finder

Address Finder determines the latitude/longitude coordinates for U.S. street addresses. The results of these latitude/longitude calculations can be used by applications to process against other GIS databases in order to deliver relevant information to mobile users.

Place Finder

The Place Finder service determines a ranked candidate list of place names to associated latitude/longitude coordinates. The results of these address place names can be used to provide comprehensible context to location determinations performed by your wireless network location infrastructure.

Driving Directions

The Driving Directions service lets users generate multipoint driving directions between two or more point-of-interest destination locations. The routing service accepts latitude/longitude inputs for two or more locations along with routing preferences and returns textual driving directions for the suggested route.

MAPPING

Proximity

The Proximity service returns information about people, places, or events that are within a user-defined proximity of a specified, or network-determined, user location. They can be integrated with various data sources to provide information about businesses, facilities, attractions, or other items within a specified distance of a determined location.

Accounting and Billing

ArcWeb Services has an integrated e-commerce engine that monitors and archives billable transactions. The e-commerce engine automatically invoices or assigns royalty bills to our accounting system so that third parties involved in the transaction are accounted for. The open-format detail records and event logs can be easily integrated into most carrier billing systems, and we provide you with Web-based monitoring stations to view events.

Privacy, Authentication, and Authorization

ArcWeb Services has an integrated client authentication and authorization feature that ensures privacy for your subscribers as well as your network.

Roaming

ArcWeb Services houses a large repository of internationalized and localized spatial data to support your customers who roam between countries on your network.

For more than 30 years ESRI has been helping people manage and analyze geographic information. ESRI offers a framework for implementing GIS technology in any organization with a seamless link from personal GIS on the desktop to enterprisewide GIS client/server and data management systems. ESRI GIS solutions are flexible and can be customized to meet the needs of our users. ESRI is a full-service GIS company, ready to help you begin, grow, and build success with GIS.

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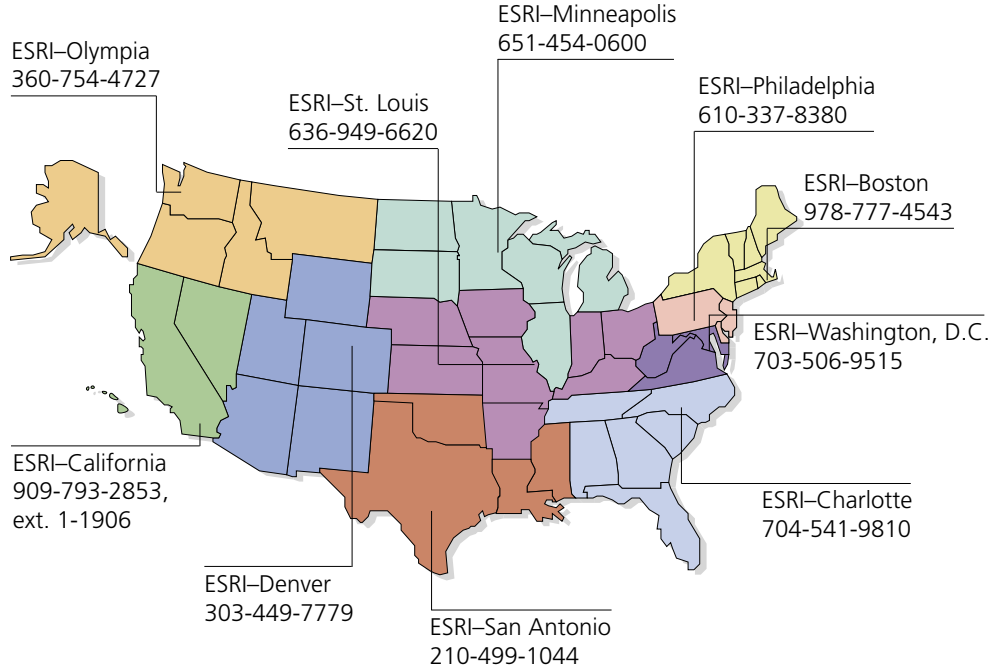For more information
on ESRI, call

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or contact an ESRI reseller near you.

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