ArcLocation™ Solutions

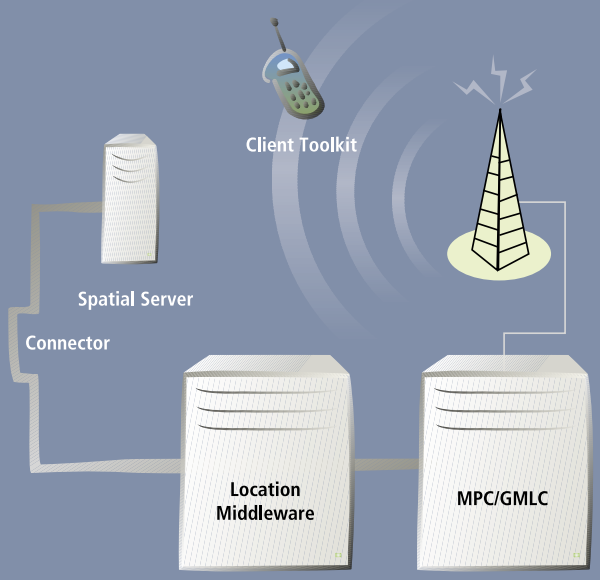
ESRI®

ArcLocation™ Solutions

As the world becomes more mobile, computing becomes more pervasive, and information becomes more ubiquitous, locating people, places, and things and deriving useful information from locations have never been more important. Consumers increasingly demand convenient services that enhance their mobile lifestyles, while businesses are mobilizing their support systems to deliver critical business data to personnel and resources in the field. Location-based services (LBS) and systems tied to communications networks are augmenting these types of services that promise to improve how businesses, public authorities, and information societies communicate and use geographic information.

ArcLocation™ Solutions involves the key aspects of

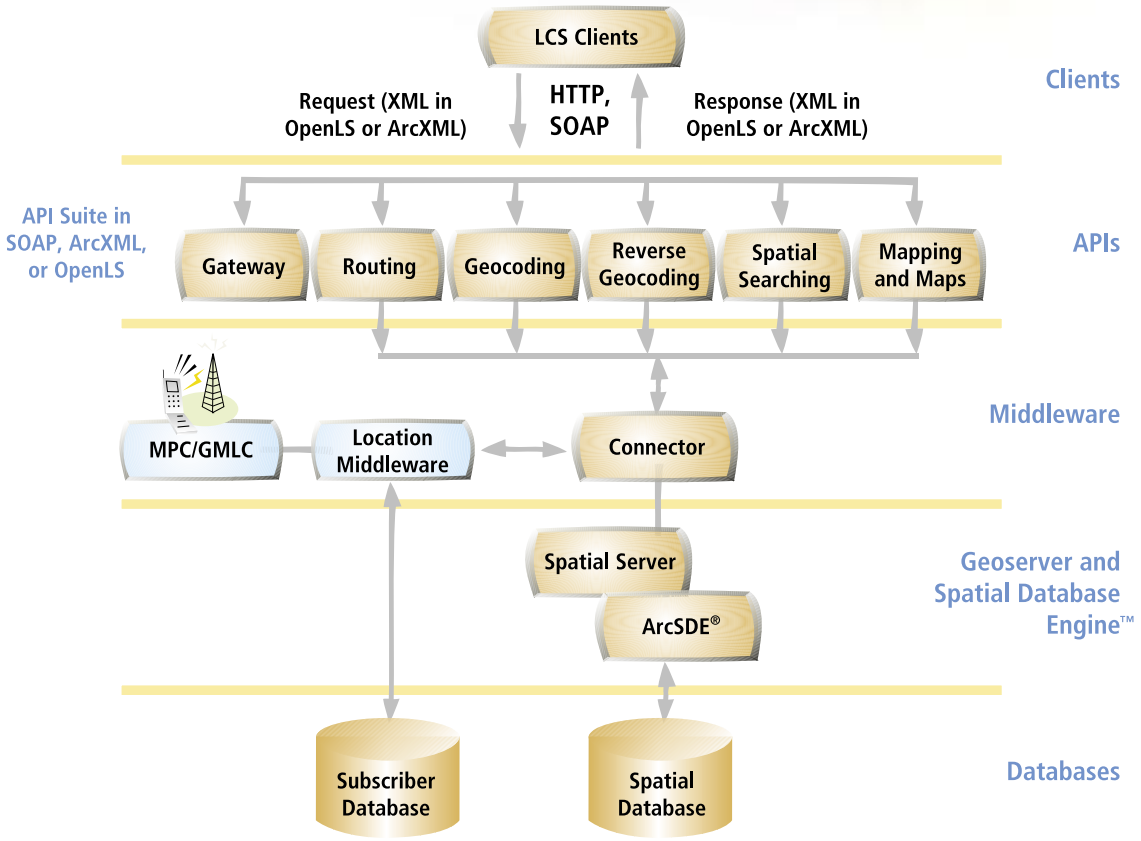
- Spatial Processing
- Network Integration
- Application Development



MOBILE COM

ArcLocation Solutions

ArcLocation Solutions is ESRI's solution for wireless location-based services. The solution provides mobile operators and their application developer communities with the services and tools needed to introduce new location-based service applications or enhance existing ones. ArcLocation Solutions consists of a **Spatial Server** built atop industry-standard SOAP and Open GIS Consortium (OGC) Open Location Services (OpenLS™) XML API suites; a **Connector,** which handles services chaining, location middleware integration, MPC/GMLC integration, and mobile application server integration; and **Toolkits** for developing mobile applications.



MUNITIES

The ArcLocation Spatial Server

The ArcLocation Spatial Server is at the core of ArcLocation Solutions. ArcLocation Solutions Spatial Server performs basic spatial functions such as geocoding, reverse geocoding, spatial searching, routing, and mapping. The Spatial Server is bundled with spatial data and designed to function autonomously, or it can be used in a modular architecture to enhance larger server applications.

The Spatial Server's functionality is openly exposed through a comprehensive suite of SOAP APIs for Web services implementation hosted by ESRI and ArcXML and the location services standard OGC OpenLS XML APIs for the more traditional internal geotoolbox type of implementation. All API suites are openly exposed and easily consumed by external LCS server applications or mobile client applications built with the ArcLocation Solutions Toolkits. Specific Spatial Server capabilities include

Address Finder (Geocoding)

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

Place Finder (Reverse Geocoding)

Place Finder 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 locations determined by user input or by mobile network location infrastructure.

Spatial Searching (Proximity)

Spatial Searching returns information about people, places, or events that are within a user-defined proximity of a specified or network-determined user location. The capability 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.

Driving Directions (Routing)

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

Mapping (Maps)

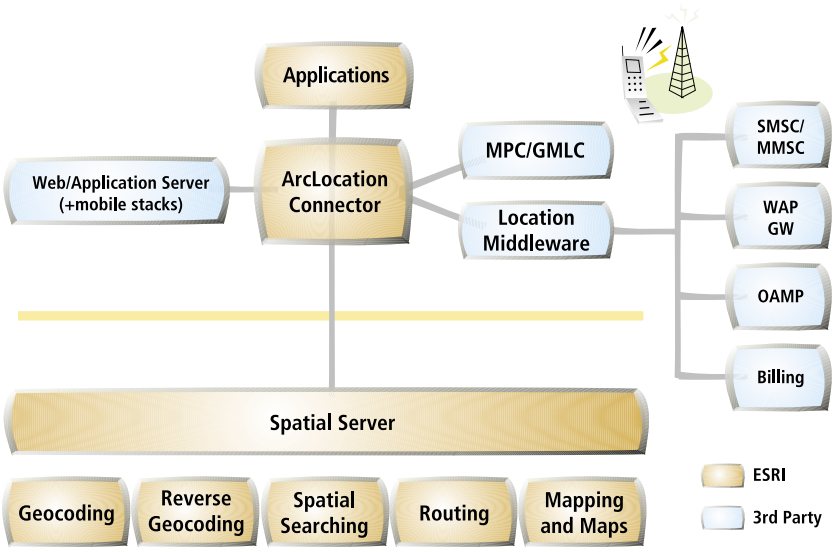
Mapping provides access to a wide variety of dynamic maps. The maps include detailed streets, point-of-interest data, real-time weather and traffic, satellite imagery, business demographics, topographic maps, and much more.

The ArcLocation Connector

ArcLocation Solutions comes with a middleware API called the ArcLocation Connector. The Connector is a suite of APIs designed to interface to any third party system or subsystem.

The Connector API suite has four main functions.

- The Connector handles integration between the Spatial Server and a mobile operator's location middleware (LES), which eases deployment and integration with network elements (e.g., SMSC, MMSC, WAP GW, OAMP, and billing systems).
- The Connector handles integration between the Spatial Server and a mobile operator's MPC/GMLC. The Connector currently implements the Location Interoperability Forum (LIF) Mobile Location Protocol (MLP) API.
- The Connector interfaces to an image compression capability used by the mapping function of the Spatial Server.
- The Connector employs a service chaining function on top of the OGC's Open Location Services API suite. The service chaining capability reduces round-trip queries, which subsequently reduces over-the-air transmission latency while maximizing limited wireless bandwidth capabilities.



ArcLocation Toolkits

ArcLocation Solutions comes with fully extensible server and client software development toolkits. These toolkits ease server and terminal application development.

Server Toolkit

The ArcLocation Solutions Server Toolkit is an XML API suite. It provides application developers with all the interfaces needed to consume and embed spatial functions and capabilities into LCS applications. Application developers will find ESRI's API suite simple to use. There are two API suites available with the Server Toolkit.

- The ESRI ArcXML API suite
- The location services industry-standard OGC Open Location Services XML API suite

Both suites will help application developers quickly embed spatial capabilities into their LCS applications.

Mobile Toolkit

ArcLocation Solutions comes with a mobile client toolkit. The Mobile Toolkit is an SDK built on Java™ 2 Micro Edition (J2ME), based on Connected Limited Device Configuration (CLDC) and the Mobile Information Device Profile (MIDP) API. Supported platforms include WAP/J2ME hybrids, Palm™, RIM, and Symbian. The Mobile Toolkit may be used directly by a mobile operator to develop mobile Java applications, or it may be published to the application developer community through a mobile operator's application developer program.

Starter Applications

ArcLocation Solutions comes with two starter sample applications. Both applications are built with the Mobile Toolkit. The applications run locally on the terminal. Both applications are designed to serve as a framework from which to build additional applications.

- ArcLocation Info—This is a personal concierge application that allows mobile users to locate neighboring POIs and subsequently retrieve attribute information such as physical address, phone number, hours of operation, and so on. The application generates distance to preferred destination and routing directions and displays maps with the POIs atop the map. Users can save their preferred POIs in a favorites folder. The favorites list can be accessed offline.

- ArcLocation Route—This is a personal routing application that accepts two or more location inputs. The inputs can be defined by a user or determined by the PDE/MPC, SMLC/GMLC. Once the two locations have been specified, the application then generates routing directions and drive times and displays distances in segments or in their entirety to the point-of-interest destination. The application also displays maps and draws routes atop the map. Users can save their preferred routes in a favorites folder. The favorites folder can be accessed offline to display route text and supporting maps without additional requests to the server.

ESRI Professional Services

Major investment in time and materials is required to deploy a location services system. ESRI's professional services for ArcLocation Solutions consist of consulting and implementation services that solve mobile operator IT integration-point challenges that typically slow down deployment processes.

Hosting Services

ESRI recognizes that some mobile operators may prefer to outsource select components of a location services system. ESRI provides ArcLocation Solutions hosting services to ease the rollout of these services. ArcLocation Solutions hosting services offer an innovative approach for delivering additional content and services to customers without assuming up-front financial burdens associated with purchasing hardware, software, data, and ongoing maintenance expenses.

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.

Corporate

ESRI
380 New York Street
Redlands, California
92373-8100, USA
Telephone: 909-793-2853
Fax: 909-793-5953

For more information on ESRI, call

1-800-447-9778

(1-800-GIS-XPRT)

Send e-mail inquiries to

info@esri.com

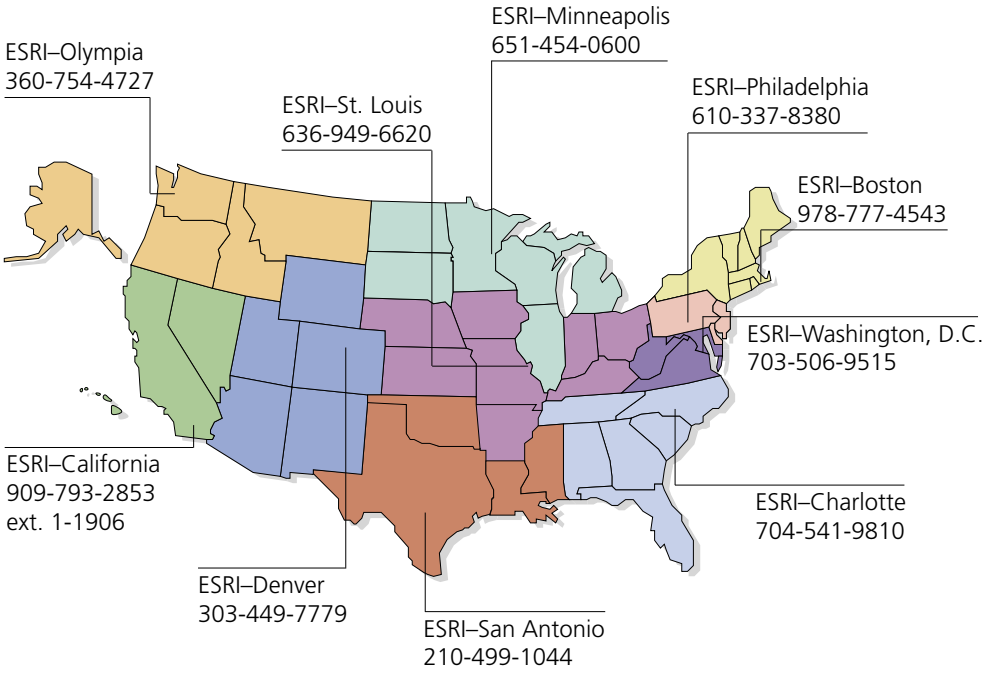
Visit ESRI's Web page at

www.esri.com

Outside the United States, contact your local ESRI distributor. For the number of your distributor, call ESRI at 909-793-2853, ext. 1235, or visit our Web site at

www.esri.com/international

Regional Offices



International Offices

Australia
613-9867-0447

Belgium/Luxembourg
32-2-460-7480

Bulgaria
359-2-964-0850

Canada
416-441-6035

France
33-1-46-23-6060

Germany/Switzerland
49-8166-677-0
41-1-360-2460

Hong Kong
852-2730-6883

Hungary
361-428-8040

India
91-11-620-3802

Indonesia/Malaysia
62-21-570-7685
603-7874-9930

Italy
39-06-406-96-1

Japan
81-3-3794-6681

Korea
82-2-571-3161

Netherlands
31-10-217-0700

Poland
48-22-825-9836

Portugal
351-2-1-781-6640

Romania
40-1-231-13-81

Singapore
65-742-8622

Spain
34-91-559-4375

Sweden
46-23-755-400

Thailand
66-2-678-0707

United Kingdom
44-1296-745-500

Venezuela
58-212-285-9394

Place ESRI business partner or distributor address here.

GSA
No. GS-35F-5086H

92124
xxxx10M10/02sf

Printed in USA