GIS and Mapping Solutions for Developers

ESRI® Developer Network (EDN™)
Why Build GIS Applications

Geospatial data is everywhere. Customer addresses, time zones, office facility locations, service areas, political boundaries, status of shipments, utility networks, field-worker positions, real estate, location of mobile assets, and warehouse sites are all examples of geospatial data. Using GIS to leverage this information is critical to an organization’s continued success.

GIS technology allows you to visualize and analyze the connection of a feature attribute with its geographic location. GIS displays this data in the form of a “smart map.” Viewing and analyzing your data in such an intuitive manner means that you can spot trends and relationships that are not apparent in tables of rows and columns.

By developing your own custom GIS applications, you can better integrate them with your existing technologies and workflows. With ESRI technology, you can make GIS available to the people in your organization—at all levels—who need it most.

ESRI’s ArcGIS Platform

The ArcGIS® platform enables you to focus on solving business problems with a powerful set of application programming interfaces (APIs) designed to deliver GIS functionality to your applications. ESRI has GIS development and deployment tools created to meet your specific needs. These are just some of the reasons to develop on the ArcGIS platform:

- Develop applications using industry-standard programming languages.
- Deploy applications on a variety of platforms.
- Access and manipulate GIS data in multiple formats.
- Subscribe to a program that provides all the software resources needed to build GIS solutions.

“Think of GIS as more than a technological tool. Think of it as a method for strategic planning.”

Don Cortez
Vice President of Distribution Support
CenterPoint Energy
ArcGIS: A Complete System for Your GIS Development

With ArcGIS, developers can work with a variety of APIs, standards, and tools to create a robust GIS solution. ArcGIS provides a complete system for developing desktop, mobile, and Web applications as well as for interfacing with GIS Web services.

Desktop Applications

Desktop GIS client applications can be created to consume and process local or server solutions via the Web or a LAN. With ArcGIS, you can create desktop client applications by utilizing one or more ArcGIS APIs to access different functionalities. For example, you can create a custom desktop client application consuming an ArcGIS Server service, such as a map service, using the ArcGIS REST API. In addition, you can use ArcGIS Engine or ArcGIS Desktop APIs to build or extend ArcGIS functionality.

Web Applications

The ArcGIS Web Application Developer Framework (ADF™) for both the Java and .NET frameworks enables you to integrate GIS data and editing capabilities into your ASP.NET or JSF-based Web applications. These Web ADFs include both server-side and client-side controls and libraries as well as templates.

Web Services

ArcGIS provides GIS Web services that help you make geographic information accessible using Web service standards. For instance, you can access ArcGIS services, such as map, geocode, geoprocessing, and image, as GIS Web services. ArcGIS offers two APIs, SOAP and REST, to allow you to interact programmatically with a GIS Web service.

Mobile Applications

ArcGIS enables you to build focused mobile GIS applications using the ArcGIS Mobile Software Development Kit (SDK) based on the Microsoft .NET Framework. With the mobile SDK, you can build server-centric mobile applications to synchronize maps and data directly with a GIS server and cache information locally on the device to support both connected and disconnected applications.
### Which ESRI Products Are Best Suited to Your Development Efforts?

Use this table as a guide to help you focus on the ESRI developer environments you should investigate further.

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<td>Desktop Application</td>
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Developer Products

ArcGIS Server
ArcGIS Server provides you with Microsoft .NET and Java components for building geospatial applications and services. These components include a Web ADF, an enterprise ADF, an out-of-the-box Web mapping application template, and APIs for SOAP and REST services. You can also use ArcGIS APIs for Flex, Silverlight, and JavaScript to consume GIS services from ArcGIS Server in Web or desktop applications. With ArcGIS Server, you can add, integrate, and access GIS across the enterprise and the Web.

ArcGIS Web Mapping APIs
ArcGIS Web Mapping APIs are part of ArcGIS Online and are available at no cost to ArcGIS Server users. With the ArcGIS APIs for JavaScript, Flex, or Microsoft Silverlight, you can easily embed mapping capabilities into any Web application. You can also access ArcGIS Online premium and standard map services, which include street maps, imagery, and topographic maps, along with ArcGIS Online task services, which include geocoding and routing. Applications built with the ArcGIS Web Mapping APIs can access additional services from ArcGIS Server as well as Bing Maps (formerly known as Virtual Earth).

ArcGIS Engine
ArcGIS Engine is a core set of cross-platform components and developer resources that allows you to add dynamic mapping and GIS capabilities to existing desktop applications or build new custom GIS solutions. The ArcGIS Engine SDK simplifies the process of building custom GIS applications by having access to all the required resources needed to be successful such as samples, controls, tools, and object libraries.

ArcGIS Mobile
ArcGIS Mobile is a mobile GIS software platform that enables organizations to deliver GIS data and services from centralized servers, providing real-time access to information over wireless networks to a range of Windows® mobile devices. ArcGIS Mobile provides you with a set of .NET tools to build a full range of custom, small-footprint mobile GIS applications that provide basic GIS functionality including map display, navigation, GPS support, simple viewing, and GIS editing capabilities.

ArcGIS Desktop
ArcGIS Desktop includes a suite of integrated applications including ArcCatalog™, ArcMap™, ArcGlobe™, and ArcScene™. Using these applications, you can perform any GIS task, from simple to advanced, including mapping, geographic analysis, data editing and compilation, visualization, and geoprocessing. You can customize the ArcGIS Desktop application interfaces by positioning toolbars in a specific area of the application, group commands based on personal preference, add new macros, or load custom commands from another source. The .NET Framework SDK allows you to extend the ArcGIS Desktop applications with specialized analysis.
Use ArcGIS extensions to perform analysis and visualize, model, and enhance the data in your applications.

**3D extension**—Enables the visualization of data in 3D. The controls for SceneControl and GlobeControl provide the interface for viewing multiple layers of 3D and global data for visualizing information and creating and analyzing surfaces.

**Data Interoperability extension**—Eliminates barriers to data sharing by providing direct data access, transformation, and export capabilities via geoprocessing tools. This extension enables your desktop applications to easily use and distribute data in many formats.

**Geodatabase Update extension**—Provides the necessary components to build solutions that deal with data automation and compilation and the construction of complex geodatabase features.

**Geostatistical extension**—Publishes geostatistical layers created in ArcGIS Desktop as Web services. The Geostatistical extension also provides powerful Web tools for data and surface exploration.

**Image extension**—Provides fast access to imagery while preserving information accuracy. You can dynamically mosaic large collections of imagery, access metadata for each image in a mosaic, and perform on-the-fly processing for display.

**Maplex® extension**—Allows you to perform high-quality text and label placement.

**Network extension**—Provides network-based spatial analysis capabilities including routing and travel directions as well as closest facility and service area assessments. The Network extension allows you to create and deploy powerful custom applications for transportation, emergency response, fire, military, and a host of other purposes.

**Schematics extension**—Provides you with components to manage schematic data and processes. The Schematics extension supports the analysis, display, and manipulation of schematic data.

**Spatial extension**—Provides a broad range of powerful spatial modeling and analysis features that allow you to create and analyze cell-based data, perform integrated vector-raster analysis, and derive information about your data.

**Tracking extension**—Allows you to display, analyze, and manipulate temporal data within custom GIS solutions.
To help you license the software you need, ESRI created the ESRI Developer Network (EDN™). EDN is an annual subscription-based program that provides you with SDKs, tools, and software needed to build a wide range of custom GIS solutions.

What Do You Get with EDN?
EDN offers a complete suite of development frameworks that help you rapidly build and test custom GIS applications on every platform. These applications are deliverable on the desktop, mobile, client, Web, or server tier and embedded into both new and existing applications. The main software components and resources of the EDN subscription include

- **ArcGIS Server (all editions)**—A complete and integrated server-based GIS including 3D, Data Interoperability, Geostatistical, Image, Network, Schematics, and Spatial extensions
- **ArcGIS Engine Developer Kit**—Components for creating custom desktop GIS applications including 3D, Data Interoperability, Geodatabase Update, Maplex, Network, Schematics, Spatial, and Tracking extensions
- **ArcGIS Mobile**—An SDK to build and deploy custom mobile applications
- **ESRI Data & Maps**—Ready-to-use map data

Additionally, you can add an optional single use license of ArcGIS Desktop (ArcInfo®, ArcEditor™, or ArcView®) to your EDN subscription. By adding ArcGIS Desktop to your EDN subscription, you can accelerate your development efforts by having access to the necessary tools to make maps, design and build geographic databases and 3D visualizations, and create datasets. You can also create custom commands, tools, menus, and modules within ArcGIS Desktop.

During the term of your subscription, you receive the latest versions of the software and all updates. All software included in the EDN subscription is for development and testing only. Standard use deployment and production use licenses are sold separately.

Collaborate with Other Developers
ESRI has online resource centers that unify the ESRI developer resources by providing all the online content related to ESRI products and developer APIs in one easy-to-find location. It also connects you with others in the ESRI user community to share ideas and information. The ESRI Resource Centers provide a framework where you are able to interact more easily, share ideas, and collectively strengthen the ESRI development platform. Some collaborative features of the resource centers include

- Regularly updated online product documentation
- Community-contributed sample code and technical insight
- User community tools such as discussion forums and blogs from the ESRI product teams
- Online SDKs

Additional EDN Features
**EDN Support Option**—EDN subscribers can purchase high-quality technical support from ESRI Support Services. This support covers all EDN products and includes 10 support incidents.

**EDN Training Option**—Developer-focused, instructor-led training is available at a discounted price to all EDN subscribers. The training consists of five days of instruction at an ESRI training facility and is offered to help EDN subscribers be successful with their GIS projects.

Get connected with the resources you need to build GIS applications, visit [www.esri.com/edn](http://www.esri.com/edn).
About ESRI

For four decades, ESRI has been helping people make better decisions through management and analysis of geographic information. Our culturally diverse staff work with our business partners and hundreds of thousands of people who use GIS to make a difference in our world.

A full-service GIS company, ESRI offers support for implementing GIS technology from the desktop to enterprise-wide servers, online services, and mobile devices. GIS solutions are flexible and customizable to meet the needs of all our users.

Our Focus

At ESRI, we focus on promoting the value of GIS and its applications throughout the world and pay close attention to our users’ needs. Our software development and services respond to our customers with products that are easy to use, flexible, and integrated. Our technology is multidisciplinary, productive, and valuable to our users.

We have a strong commitment to educating our customers through ESRI’s various training programs. ESRI is a socially conscious business and invests heavily in issues regarding education, conservation, sustainable development, and humanitarian affairs.

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