

Dear Colleague:

The release of ArcGIS 8.1 is another major step in the fulfillment of a vision that we have been working on and communicating to our users for several years. ArcGIS 8.1 is still composed of the familiar ESRI software products, such as ArcView, ArcInfo, and ArcSDE, but at 8.1 they are all new. They perform the same functions as they did in the past, but the software is built from a whole new core with an integrated look and common architecture.

Built on the foundation of ArcInfo 8.0, the 8.1 release is mature and includes a major leap forward in capabilities. This includes feature linked annotation, versioning on databases, projection on the fly, better support for metadata, and a long list of things that you have asked for over the years. It is more than just feature rich; we have also put a lot of effort into making the software quick to learn and easy to use.

But for me, the most important thing about the 8.1 release is that you, as practitioners, will now be able to conceive of and use geoprocessing as an information system. This means closely integrated data management including an unparalleled collaborative environment for multiuser editing and updating. Furthermore, many others will instantly be able to see and use this data in the applications you deploy whether it is within an organization or across the Internet.

I am amazed at the broad appeal the 8.1 release had with our beta test sites. Whether you focus on data creation and management, application development, or GIS project work, you will find a number of new capabilities that catch your attention. I invite you to investigate ArcGIS 8.1 in the pages that follow.

Jack Dangermond
ESRI President

ArcGIS™ 8

An Overview of ArcGIS

ArcGIS is a family of software products that form a complete GIS built on industry standards that provide exceptional, yet easy to use, capabilities right out of the box. The 8.1 release marks the first release of a complete, single, integrated system for geographic data creation, management, integration, and analysis. Much more than a specialized offering for a small niche of specialists, ArcGIS is designed as a scalable system that can be deployed in every organization, from an individual desktop to a globally distributed network of people.

Complete GIS

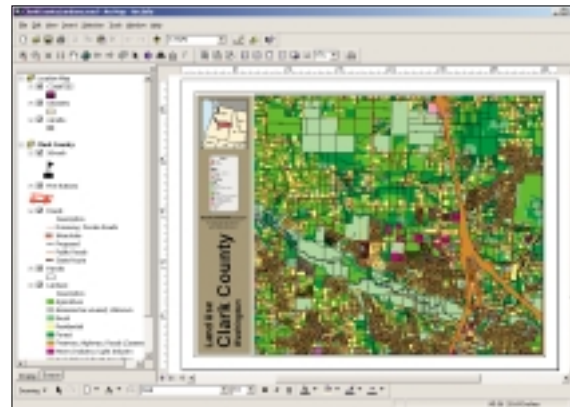
ArcGIS provides flexibility when configuring a system since it is modular and scalable. It is modular in the sense that you acquire the system in pieces. ArcView provides data visualization, query, analysis, and integration capabilities along with the ability to create and edit simple geographic features. ArcEditor, a brand new soft-

"The ability to use ArcIMS services is one of my favorite features in ArcGIS 8.1."

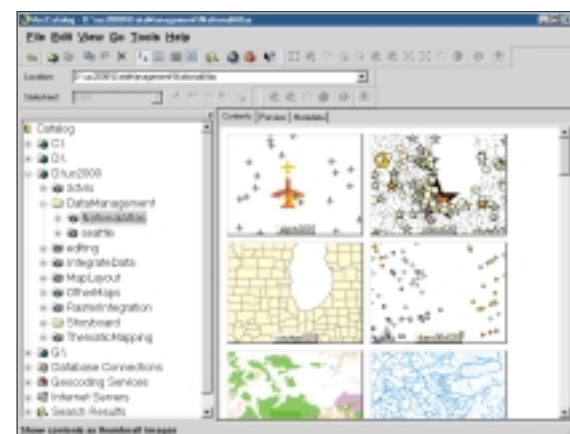
Glenn Hazelton, Massachusetts Water Resources Authority

ware product, includes all the functionality of ArcView and adds the power to create and edit features in a multiuser geodatabase or coverage. ArcInfo includes all the functionality of ArcEditor and adds advanced geoprocessing capabilities. ArcSDE adds database services to the ArcGIS family, while ArcIMS adds Internet services.

ArcGIS is scalable since it can be deployed on an individual desktop or across a globally distributed network of people. Built out of modern object-based components, the range of software programs share the same core applications, user interface, and operating concepts. After you learn one, you pretty much understand how to use the others. If you extend one, your custom tool or



ArcView, ArcEditor, and ArcInfo share common functionality including superior cartography.



ArcCatalog is for managing spatial data and creating metadata.

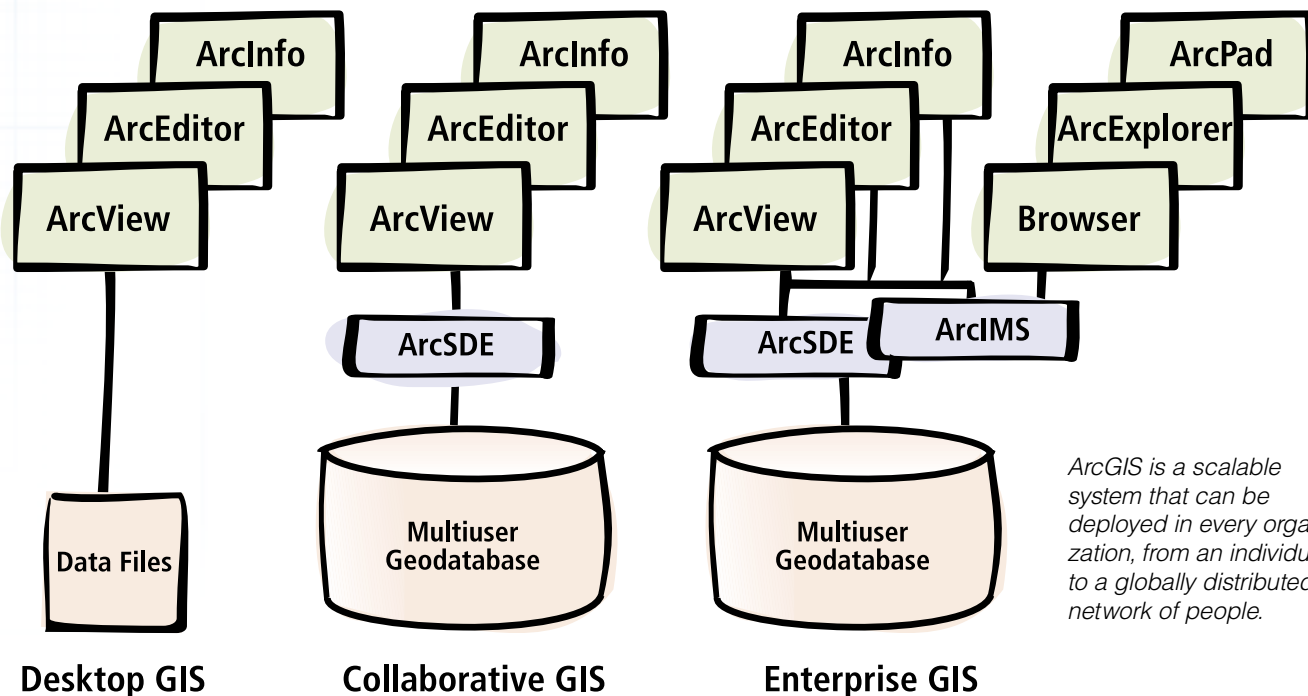
application works with the others. This makes it easier to learn, teach, program, and produce maps. In summary, ArcGIS 8.1 is a robust platform built on an architecture that will be the foundation of ESRI software for years to come.

Industry Standards

ArcGIS features a modern design that embraces the current standards pervasive throughout the information technology (IT) arena. The desktop software is built with an intuitive Windows user interface that makes GIS accessible to all. ArcGIS embraces other standards including geographic metadata standards (Federal Geographic Data Commission [FGDC]), Web standards (Extensible Markup Language [XML]), networking standards (TCP/IP), and the standard notation for the modeling of real-world objects (Unified Modeling Language [UML]). ArcSDE operates with commercial database management systems (DBMS), and it supports a variety of formats, including those from standards bodies such as the OpenGIS Consortium (OGC) and the International Organization for Standardization (ISO) as well as other vendors, such as the Oracle Spatial, Informix Spatial DataBlade, and IBM Spatial Extender formats.

The open programming environment is significant enough to warrant special attention. While other companies provide a programming interface to access functionality, the full capability of ArcGIS is exposed at a fine granularity. The collection of software components that comprise ArcGIS is known as ArcObjects. More than 1,100 individual COM-based components are provided in a well-documented object model. Customization is performed using the built-in Microsoft Visual Basic for Applications (VBA) scripting capabilities or a COM-compliant programming language such as Visual Basic, Visual C++, or Delphi. Because of this reliance on industry standards, ArcGIS is IT compliant and open. As a result, it is easily integrated into an organization.

ArcGIS is Scalable



ArcGIS is a scalable system that can be deployed in every organization, from an individual to a globally distributed network of people.

Rich in Functionality

ArcGIS embraces the functionality that GIS professionals expect and adds a large list of new features. Data automation and editing are enhanced because of a number of advanced feature construction tools. Data management is improved via a Windows-type explorer view of all geographic data and the ability to preview and manage metadata. Geoprocessing and data manipulation are handled via wizards and tools for conversion and analysis. The ArcGIS Desktop Products (ArcView, ArcEditor, and ArcInfo) are Internet-enabled and can seamlessly integrate data from any ArcIMS server for analysis with local data. Moreover, adding data from the Geography Network is straightforward because it is a command in the File menu.

ArcGIS 8.1 includes a number of unique features that have become must-haves with users. On-the-fly projection of both vector and raster data saves huge amounts of time and effort. Being able to adjust the transparency of any layer, whether it is vector or raster data, produces better maps. High-quality reporting and graphing functionality make it easier to communicate the ideas represented on the map. And for many users, the improved cartography is most significant since it provides options that were never available before. For a more complete list of the new features in the 8.1 release, see the related articles in this supplement.

The 8.1 release operates with existing data formats and improves support for the geodatabase (short for geographic database). The geodatabase is a physical store of geographic information inside a DBMS with a data model that supports transactional views of the database (versioning) and also supports objects with attributes and behavior. This allows closely integrated data management and an unparalleled collaborative environment for multiuser editing and update.

Works out of the Box

The rich functionality of ArcGIS is easily usable out of the box. The ArcGIS Desktop has an intuitive user interface that makes GIS accessible to all. The software is logically structured into separate applications for mapping, data management, and geoprocessing. Impressive results are possible with minimal effort. The extensive printed documentation supplies overall concepts, operating guides, and tutorials. Online help is pro-

vided with the software and is also available as a Web-based system with up-to-date information. In addition, all the ArcGIS software includes one year of technical support.

ArcGIS data models provide a template for specific industries and applications with ready-to-use nonproprietary frameworks for modeling and capturing the behavior of real-world objects in a geodatabase. ESRI has initiated a series of programs to facilitate creating these data models in close collaboration with our user groups for each industry. These efforts allow GIS users to spend

"The integration between the data view and the layout view in ArcMap is very appealing. I also like the delineation between ArcMap, ArcCatalog, and ArcToolbox. It is a very logical structure."

Chris Green, U.S. Department of Agriculture

less time designing and developing data models. ESRI's goal is to make these data model extensions open and widely available. In some cases, we are cosponsoring their development.

For Now and the Future

The 8.1 release of ArcGIS meets the ESRI vision for a single, scalable software architecture. Furthermore, the ArcGIS system is designed to interoperate with existing enterprise technology, applications, and databases. Through the use of IT standards, ArcGIS can integrate with enterprise databases, Web servers, and complementary applications for enterprise resource management, customer relationship management, and land management.

In summary, ArcGIS 8.1 is a breakthrough that meets GIS needs now and into the future. Designed to meet the needs of a wide range of users, ArcGIS is a scalable family of software comprising a complete GIS, built on industry standards, that is rich in functionality and works out of the box. Organizations deploy the software of ArcGIS, ArcView, ArcEditor, ArcInfo, ArcSDE, and ArcIMS in a configuration appropriate for their needs.

Considerations for GIS Administrators

Implementing ArcGIS 8.1

ArcGIS 8.1 implements the ArcInfo 8 architecture across the rest of the desktop software. This common architecture, common code base, common extension model, and single development environment will make it easier to manage and administer a system of software. This article highlights a number of key points to keep in mind while implementing ArcGIS 8.1.

Licensing

ArcView is available as a single use license or a concurrent use license (also known as floating) and is the only ArcGIS Desktop software product available in either version. Regardless of

“I like the integrated approach to the data and applications. Also the use of VBA, which is crucial!”

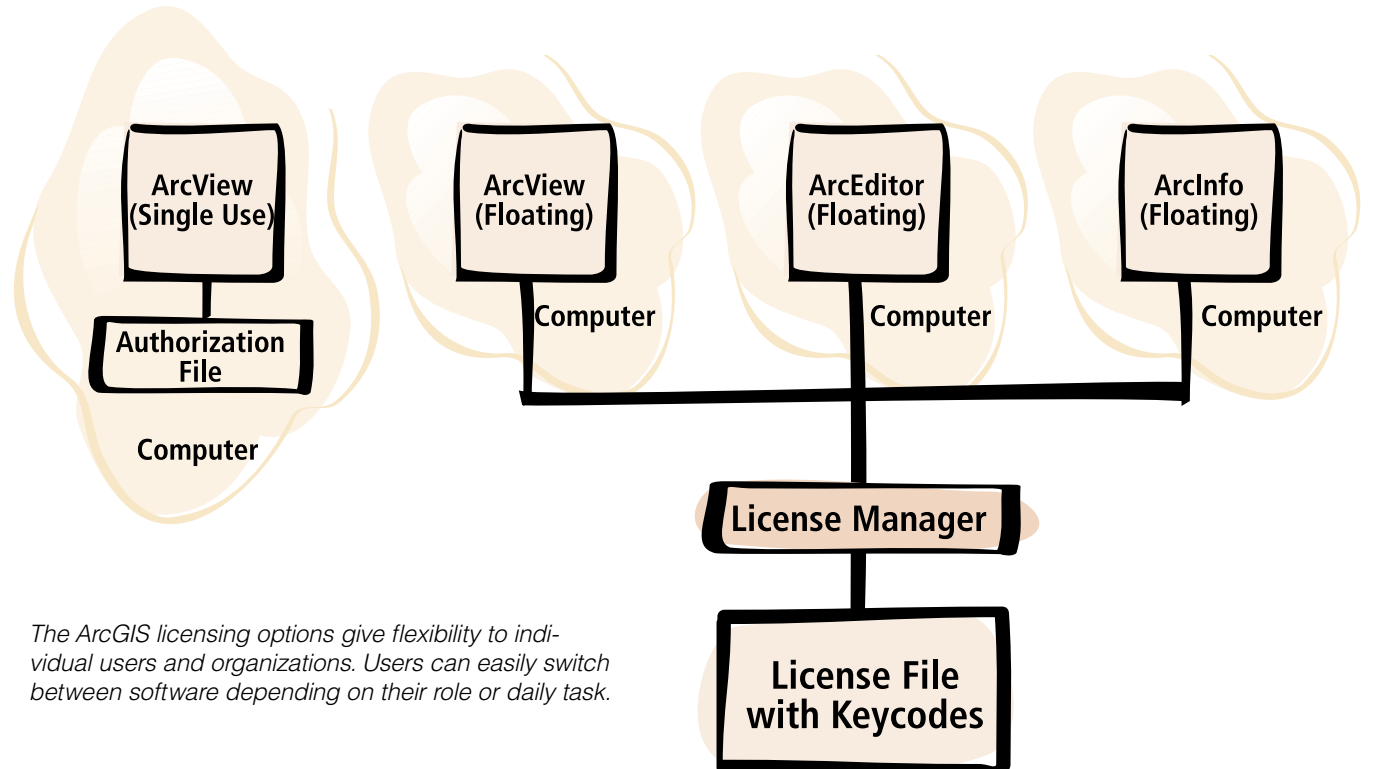
Chris DeJager, Agra Systems Ltd., Canada

the license type, the functionality of ArcView is identical. With a single use license, you can install and use each copy of ArcView on only one machine. In contrast, ArcEditor and ArcInfo are only available as concurrent use licenses.

A concurrent use license offers ArcGIS Desktop users exceptional flexibility. The license manager, installed on the network, notes the number of copies of the software that can be run simultaneously. This means that more users can have the software installed than will actually be using it at one time. This is very helpful for organizations that have several users who do not use the software on a full-time basis.

For example, suppose several users in your organization need ArcEditor. Because you are free to install the software on as many machines as you want, many different users can have access to the software at various times. The number of licenses you purchase determines the number of people who can use the software simultaneously. The license manager keeps track of the available licenses. Once a user starts ArcEditor on that machine, the license manager checks out a seat license. When the user exits ArcEditor, the license is checked back in.

ArcGIS Flexible Licensing



The ArcGIS licensing options give flexibility to individual users and organizations. Users can easily switch between software depending on their role or daily task.

Separate from licensing issues, all the ArcGIS Desktop software can be installed on a single computer—ArcView single use, ArcView concurrent use, ArcEditor, and ArcInfo. ESRI provides a Desktop Administrator tool for controlling which software is operational on that machine and listing additional concurrent use

“The easy user interface of ArcGIS is most appealing.”

Dr. Fred Collins, IBM Global Service Federal

licenses available on the network. Users can easily switch between software depending on their role or daily tasks.

ArcGIS Extensions

The ArcGIS extensions (ArcGIS Spatial Analyst, ArcGIS 3D Analyst, ArcGIS StreetMap, etc.) are also licensed in single use and concurrent use versions. The host software determines the type of license required. Single use extensions only operate with the single use version of ArcView. Concurrent use extensions operate with ArcInfo, ArcEditor, and the concurrent use version of ArcView.

Implementing ArcView 8.1

Geoprocessing and the display of geographic data have always been computer intensive. There are several considerations for implementing ArcView 8.1 including computer platform, system requirements, customization language, extensions, and licensing. The new features and functions of ArcGIS 8.1 require an up-to-date Windows computer (see subsequent articles for details). In addition, the initial release of ArcView 8.1 only runs on Windows NT and Windows 2000. A subsequent release will support Windows 98 and Windows Me.

Visual Basic for Applications (VBA) is

“Our lab was impressed with the advent of the new ArcGIS extensions—the viewing capabilities of 3D Analyst via ArcScene, integrated raster and vector analysis via ArcGIS Spatial Analyst, and the accurate surface creation that Geostatistical Analyst provides.”

Paul Shanayda, Ball State University–UCS/OGIS

included with ArcView 8.1 as the customization language in a similar manner as Avenue with ArcView 3.2. The concepts between VBA and Avenue are related but there is no method for directly translating Avenue code to VBA. In addition, there are a number of extensions that are available for ArcView 3.2 that are not available for ArcView 8.1.

It is important to note that moving from ArcView 3.2 to ArcView 8.1 is not a trade-in upgrade. In other words, users who upgrade to ArcView 8.1 may still operate ArcView 3.2 on the same computer. Some people will require ArcView 3.2 for specific tasks related to Avenue scripts or projects that require ArcView extensions not available at 8.1. Nevertheless, many beta testers switched to ArcView 8.1 for day-to-day business because of the new functionality and usability. Consequently, we recommend that

“The fact that ArcView and ArcInfo are no longer dissimilar programs is a big plus. This makes it easier for us to program, learn, teach, and produce maps.”

Brent Mainzinger, The Sidwell Company

ArcView 3.2 users who have a computer that meets the system requirements add ArcView 8.1 to their GIS repertoire.

Implementing ArcInfo 8.1

The upgrade from ArcInfo 8.0 to ArcInfo 8.1 is a clear advantage. The ArcInfo Desktop includes a number of new features in ArcMap including geocoding, coverage clean and build, client to ArcIMS, new image rectification tools, OLE container, and many more. ArcInfo 8.1 also includes ArcInfo Workstation, which provides geoprocessing using the classic user interface (ARC, ArcEdit, ArcPlot, ARC Macro Language [AML], and more). ArcInfo Workstation operates on Windows NT, Windows 2000, and several UNIX platforms.

Summary

The 8.1 release follows licensing methodology that is familiar to current users and also adds a number of new options. The ability to share extensions and scripts with ArcInfo users, the new licensing options, and greatly improved ease-of-use features will simplify managing and administering GIS.

Training Resources for ArcView 8

Migrating to ArcView 8

ESRI Virtual Campus course designed especially for ArcView 3.x users.

- Learn how to leverage your existing data and skills.
- Includes hands-on exercises for ArcView 8.1.
- Start anytime and work at your own pace.
- Register free at campus.esri.com/arcview8

ESRI Classroom Training

If you prefer live classroom training, consider purchasing one of these instructor-led offerings:

- *Migrating to ArcView 8* (two-day course)
Explore the differences between ArcView 3.x and ArcView 8.1 with an expert instructor.
- *Migrating from Avenue to VBA* (two-day workshop)
Get personal help learning the new customization environment for ArcView 8.1. Designed for those with experience in Avenue.

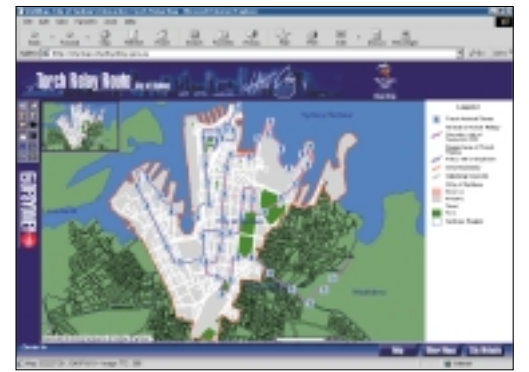
For classroom training prices, schedules, and locations, or to request a printed catalog of Web and instructor-led offerings, visit www.esri.com/training

Getting to Know ArcGIS Desktop

Getting to Know ArcGIS Desktop is a new self-study workbook for learning the basics of ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1. For more information, please visit www.esri.com/esripress

ArcGIS

The ArcGIS software family embraces information technology (IT) standards. Featuring an intuitive Windows user interface for desktop software, ArcGIS integrates with many databases and the open architecture allows the creation of applications that can be deployed in a “loosely coupled” distributed environment using XML protocol. As a result, ArcGIS is easily integrated into an organization.



Web Browsers are lightweight Web clients that complement ArcGIS Desktop.

ArcGIS features an array of Internet aware solutions including ArcGIS Desktop, browsers, mobile devices, and embedded solutions. The ArcGIS Desktop Products consist of ArcView, ArcEditor, and ArcInfo. These three software products share a consistent user experience, common code base, common extension model, and single development environment. This dramatically increases usability and interoperability while retaining flexible deployment options.



ArcPad is a lightweight mobile mapping solution that can retrieve maps using wireless technology.



Mobile Phone can receive maps via the wireless application protocol (WAP) and other open protocols.

Integr
man

“The fact that I can access most of the power of ArcInfo 8.1 through an intuitive user interface is very appealing. I can get impressive results with minimal effort.”

*Alan B. Smith,
Affiliated Computer Services, Inc.*

“My favorite features of ArcGIS 8.1 are projection on the fly, feature-linked annotation, and snapping across themes. Very cool!”

*Mike Smith, ABR, Inc.,
Environmental Research and Services*

“My favorite features of ArcView 8.1 are the floating license option, the geocoding engine, and the integration of Internet data with my local data.”

*Larry Halweg, P.E., Los Angeles County
Department of Public Works*

“The cartographic tools in ArcView 8.1 have improved significantly. The number of options is mind-boggling.”

*Babak Negahban,
MapLogic Corporation*

“By far, ArcMap is the best part of ArcGIS. I appreciate the similar interface and programming environments of the two flagship software products from ESRI—ArcView and ArcInfo.”

*James Price, Mississippi Department
of Marine Resources*

ArcGIS works with **g.net** architecture. It can connect to the Internet and access open map services.

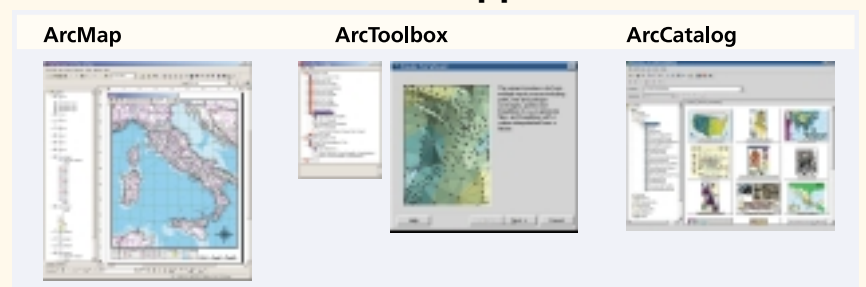
(For a complete explanation of g.net, see the article on the cover of the Spring 2001 ArcNews.)

ArcGIS Desktop Products

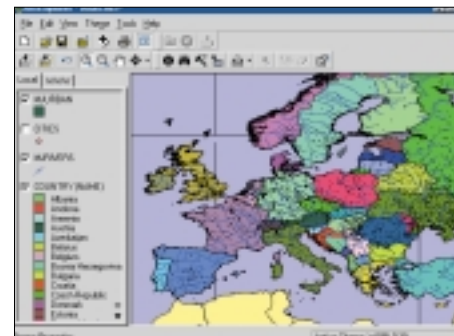
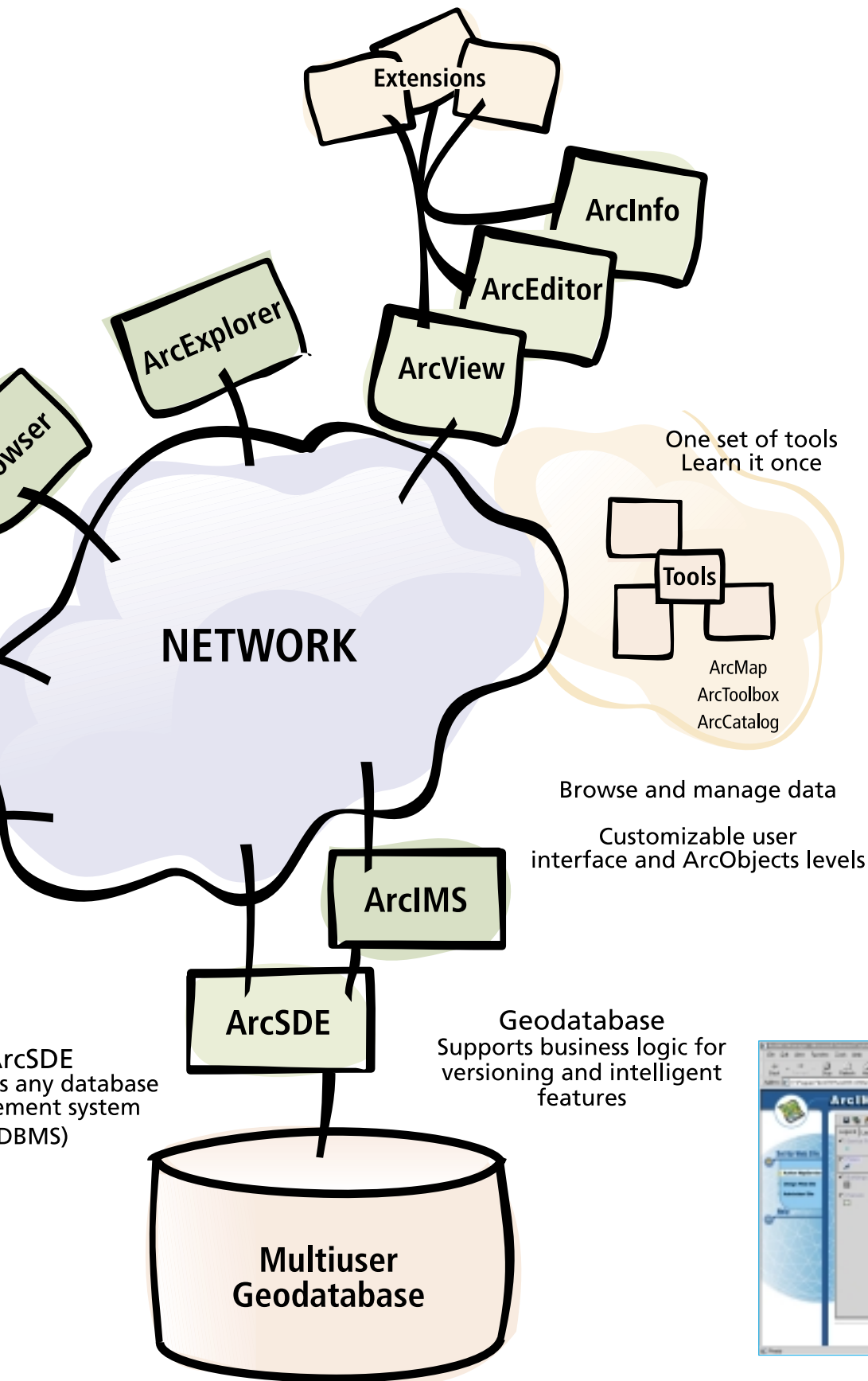
ArcView	ArcEditor	ArcInfo
<ul style="list-style-type: none"> • Data access • Mapping • Customization • Spatial query • Simple feature editing 	ArcView plus <ul style="list-style-type: none"> • Coverage and geodatabase editing 	ArcEditor plus <ul style="list-style-type: none"> • Advanced geoprocessing • Data conversion • Workstation

ArcGIS Desktop Products include ArcView, ArcEditor, and ArcInfo. This scalable set of software products shares the same core applications and user interface. ArcView provides comprehensive mapping and analysis tools, along with simple editing and geoprocessing tools. ArcEditor includes the full functionality of ArcView, with the addition of advanced editing capabilities. ArcInfo extends the functionality of both to include advanced geoprocessing and includes the legacy applications for ArcInfo Workstation.

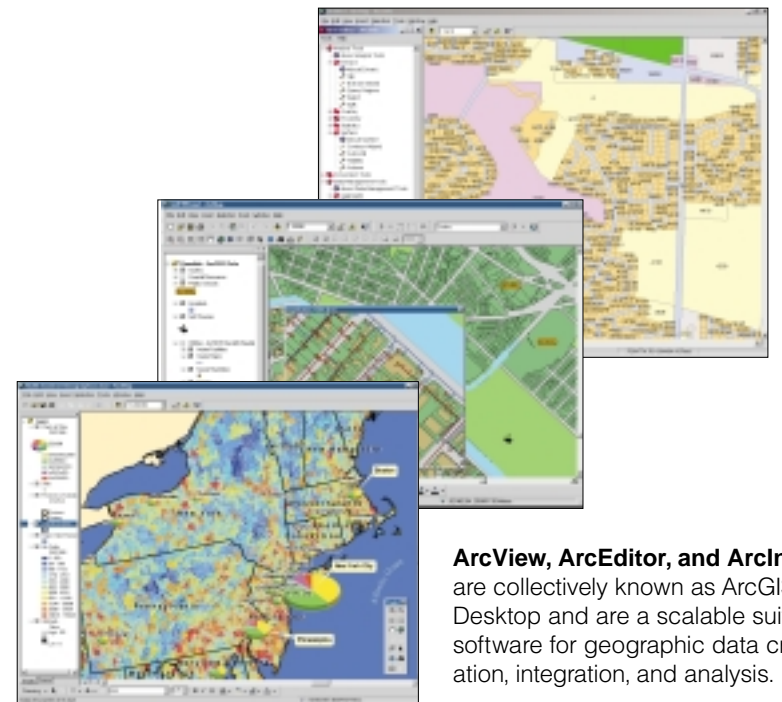
ArcGIS Core Application



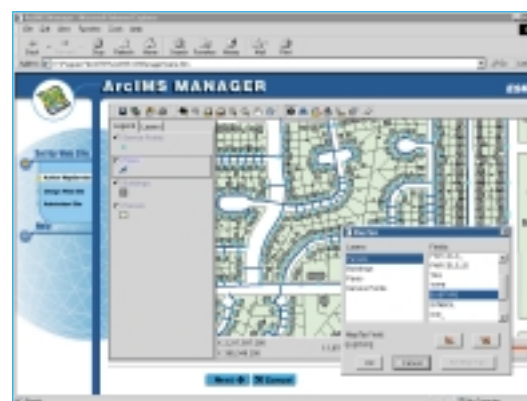
ArcGIS Desktop refers to a suite of three integrated core applications: ArcMap, ArcCatalog, and ArcToolbox. ArcMap is used for all mapping and editing tasks, as well as map-based analysis. ArcCatalog is the application for managing spatial data, for managing database designs, and for recording and viewing metadata. ArcToolbox simplifies many common GIS data conversion and geoprocessing tasks.



ArcExplorer is a free geographic data browser that lets you display, query, and retrieve GIS data.



ArcView, ArcEditor, and ArcInfo are collectively known as ArcGIS Desktop and are a scalable suite of software for geographic data creation, integration, and analysis.



ArcIMS is a powerful Internet mapping system that works with standard Internet server technology.

ArcGIS Desktop Products and Applications

Applications	ArcView	ArcEditor	ArcInfo
ArcMap	Standard	Complete	Complete
ArcCatalog	Standard	Complete	Complete
ArcToolbox	Standard	Standard	Complete
ArcInfo Workstation	Not Available	Not Available	Complete

ArcGIS Desktop Editing Capabilities

Data Formats	ArcView	ArcEditor	ArcInfo
Shapefiles	Yes	Yes	Yes
Coverages	No	Yes	Yes
Personal Geodatabases	Yes ¹	Yes	Yes
Multiuser Geodatabases	No	Yes	Yes

1. ArcView supports simple features (points, lines, polygons, and static annotation) in a personal geodatabase, not rules and relationships.

As you move from ArcView to ArcEditor and finally to ArcInfo, more functionality of the core applications is enabled. The complete applications of ArcMap and ArcCatalog permit the creation and editing of coverages and multiuser geodatabases. The standard ArcToolbox contains 36 basic data conversion tools while the complete ArcToolbox contains 170 data management, analysis, and conversion tools. ArcInfo Workstation includes geoprocessing functionality and operates on Windows NT, Windows 2000, and several UNIX platforms.

ArcGIS operates with existing data formats and introduces a new data model called the geodatabase (short for geographic database). The geodatabase extends the shapefile and coverage model with support for advanced geometry (3D coordinates and true curves), complex networks, relationships among feature classes, planar topology, and other object-oriented features.

What's New?

ArcGIS 8.1

ArcGIS 8.1 marks a major breakthrough in the evolution of ESRI software. The 8.1 release contains three key developments. It marks the first time that ArcView and ArcInfo have been built on the same technology framework. Second, it introduces a new software program with functionality between ArcView and ArcInfo called ArcEditor. Third, it adds a series of ArcGIS extensions that operate with the new software architecture.

ArcGIS Desktop Product

ArcGIS Desktop Products include ArcView, ArcEditor, and ArcInfo. Although licensed separately, they are a scalable set of software with the same underlying executables and user interface. Additional functionality is enabled as you move from ArcView to ArcEditor to ArcInfo. This single integrated platform for geographic data creation, management, and analysis will dramatically increase usability and interoperability.

All of the ArcGIS Desktop software products include the functionality expected of a modern GIS. This list includes integration with Internet map and data services, geocoding, advanced editing tools, high-quality cartography, on-the-fly projection, refined support for metadata, wizard-driven menus, and direct read of more than 40 data formats.

ArcView 8.1

ArcView is an exceptional stand-alone desktop GIS product, as well as the entry point into ArcGIS and provides core mapping and GIS functionality. ArcView 8.1 retains the same base functionality as ArcView 3.x while adding notable improvements such as ArcCatalog for browsing and managing data, on-the-fly coordinate and datum projection, customization with built-in VBA, new editor tools, support for static anno-

and edit all ESRI-supported vector data formats.

ArcInfo 8.1

Within the ArcGIS software family, ArcInfo is the top of the line. It includes all the functionality of ArcView and ArcEditor and adds the advanced geoprocessing capabilities that make ArcInfo the de facto standard for GIS. ArcInfo is the complete GIS data creation, update, query, mapping, and analysis system.

ArcGIS 8.1 Extensions

ArcGIS 8.1 introduces a new set of functional extensions that operate with ArcView 8.1, ArcEditor 8.1, and ArcInfo 8.1. One of the key features of these extensions is that they operate with the entire line of ArcGIS Desktop software products. Prior to ArcGIS 8.1, if ESRI users needed to perform raster analysis they licensed different software depending on their core GIS software. They used ArcView Spatial Analyst with ArcView or ArcGrid with ArcInfo. In contrast, ArcGIS Spatial Analyst 8.1 operates with ArcView 8.1, ArcEditor 8.1, or ArcInfo 8.1.

ArcSDE 8.1

ArcSDE is the gateway for storing and managing a multiuser geodatabase stored in a database management system (DBMS). By allowing joint multiuser editing and providing transacted views of a geodatabase, ArcSDE plays a fundamental role in collaborative GIS systems. ArcSDE 8.1 is tightly integrated with ArcEditor 8.1 and ArcInfo 8.1 for designing, creating, implementing, and sharing multiuser geodatabases. In a collaborative GIS environment, ArcView 8.1 acts as a client for viewing and analyzing geographic data. ArcSDE 8.1 supports Oracle, Microsoft SQL Server, IBM DB2, and Informix.

ArcGIS Extensions Available at the 8.1 Release

Name	Features
ArcGIS Spatial Analyst	Surface creation, raster analysis, and grid algebra—combines the capabilities of ArcView Spatial Analyst and ArcGrid
ArcGIS 3D Analyst	Three-dimensional visualization and analysis—combines the capabilities of ArcView 3D Analyst and ARC TIN
ArcGIS Geostatistical Analyst	A new extension for advanced surface interpolation and exploratory spatial data analysis
ArcGIS StreetMap USA	United States street display and geocoding
ArcPress for ArcGIS	Graphics metafile rasterizer for improved color output control and printing speed—combines ArcPress for ArcInfo and ArcPress for ArcView
MrSID Encoder for ArcGIS	Produces MrSID images from input images up to 500 MB—mosaics MrSID images
TIFF/LZW Compression for ArcGIS	Right-to-use license for TIFF/LZW compression technology patented by Unisys

tation, and much more. ArcView allows you to create and edit shapefiles and simple features in personal geodatabases.

ArcEditor 8.1

ArcEditor 8.1 is new software that includes all the functionality of ArcView and adds the power to edit topologically integrated features in a geodatabase or coverage. Additional functionality includes support for multiuser editing, versioning, custom feature classes, feature-linked annotation, and dimensioning. ArcEditor allows you to create

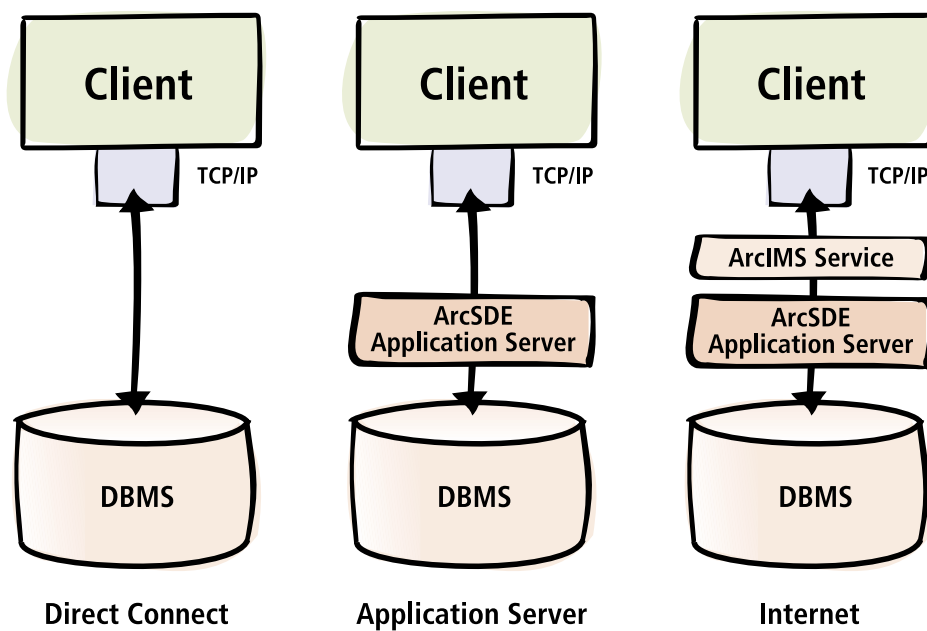
ArcSDE 8.1 introduces a new direct connect capability between clients and the geographic information stored in the DBMS. Prior to 8.1, clients had to first connect to the ArcSDE application server which then connected to the host database. With the new direct connect drivers included with 8.1, clients can connect directly to the database. At 8.1, this direct connect capability is supported on Oracle8i and Microsoft SQL Server 7 and 2000. Direct connect support for IBM DB2 and Informix is planned for the next release of ArcSDE.

ArcView 8.1 Platform Requirements

Operating System	Windows NT, Windows 2000*
Minimum Hardware	128 MB RAM, 450 MHz (or Higher)
Recommended Hardware	256 MB RAM, 650 MHz (or Higher)
License Options	Single Use, Concurrent Use (Floating)

* ArcView 8.1 is supported on Windows NT and Windows 2000. A subsequent release of ArcView 8.x will support Windows 98 and Windows Me.

ArcSDE Configuration Options



Direct Connect

Application Server

Internet

Upgrading to ArcView 8

ArcView 8.1 is a major leap forward compared to ArcView 3.2. Some users are asking when the time is right to upgrade. The exact answer to this question will depend on specific circumstances, but some key factors are outlined below.

Similarities

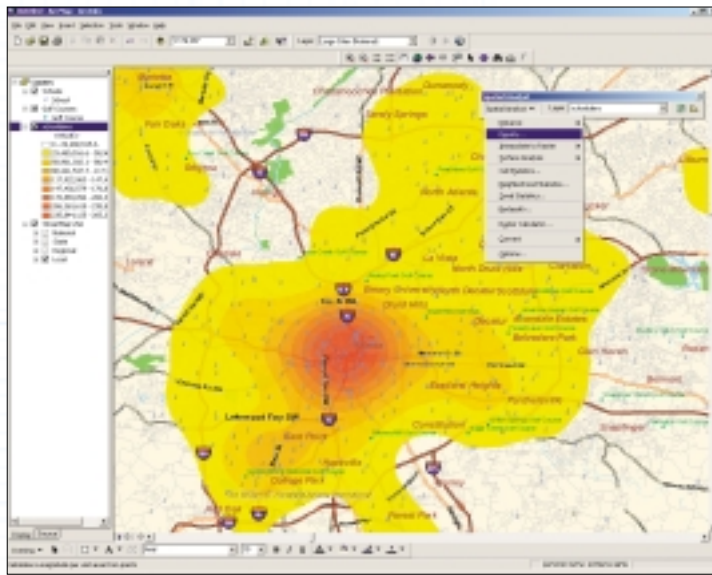
- Binary compatible data—3.2 and 8.1 native data sources are binary compatible. Both use exactly the same shapefile format and can read many of the same vector and raster formats.
- Familiar concepts and terms—3.2 and 8.1 share many similar concepts, terms, and user interface conventions (see table on page VII).
- Extensions—The most popular extensions (Spatial Analyst, 3D Analyst, and StreetMap) are available in both 3.2 and 8.1.

Differences

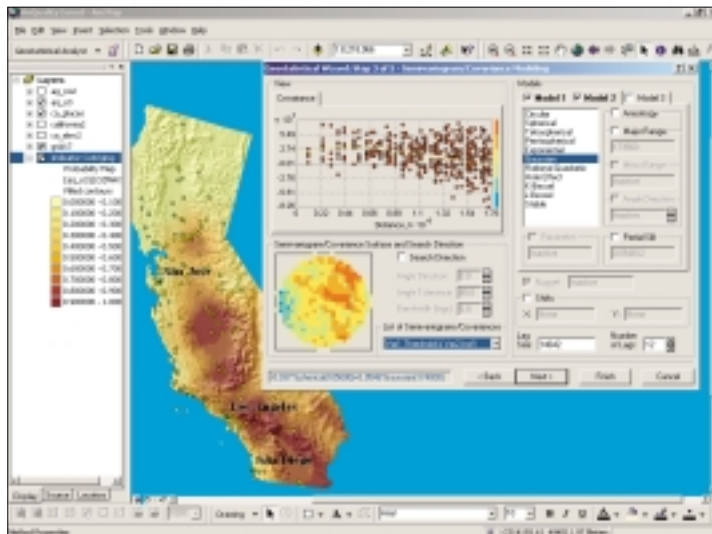
- *Hardware requirements*—In keeping with general industry trends, ArcView 8.1 has been designed to exploit the capabilities of up-to-date hardware (see table on page VII). Any “state-of-the-art” machines purchased in the last two years should be able to run ArcView 8.1. ArcView 8.1 currently runs under the Windows NT 4.0 and Windows 2000 operating systems. ArcView 3.2 will work on older, less powerful hardware and supports the Windows 98 and Me operating systems.
- *Customization*—Perhaps the major difference between 3.2 and 8.1 is the replacement of Avenue with Visual Basic for Applications (VBA). While both are conceptually similar, VBA offers an advanced Integrated Development Environment (IDE) with a visual editor, debugger, and integrated form builder; compatibility with industry standards; access to many third party controls; etc.
- *New functionality*—There is a huge number of new and enhanced capabilities in ArcView 8.1 as described in the “What’s New” article in this ArcNews supplement.
- *Compatibility with other ArcGIS desktop products*—A major feature of ArcView 8.1 is integration with ArcInfo and the new ArcEditor software product.
- *New flexible licensing options*—More flexible licensing options introduced at 8.1 should lower the cost of most departmental and enterprise implementations because users can appropriately configure the level of functionality required for their desktop, while sharing some functionality with other users to maximize the use of ArcGIS 8.1 within their organization.

All new ArcView users should start immediately with ArcView 8.1. Existing users who work with ArcView 3.2 straight out of the box and want access to the latest functionality should consider upgrading sooner rather than later. ESRI recognizes that it may take some time before users with large investments in Avenue code will be able to migrate their applications to 8.1. To ease the process we have developed a two-day workshop class (*Migrating from Avenue to VBA*—see the “Training Resources for ArcView” article in this ArcNews supplement) and allow ArcView 3.2 and 8.1 to be installed on the same machine under the terms of the 8.1 license.

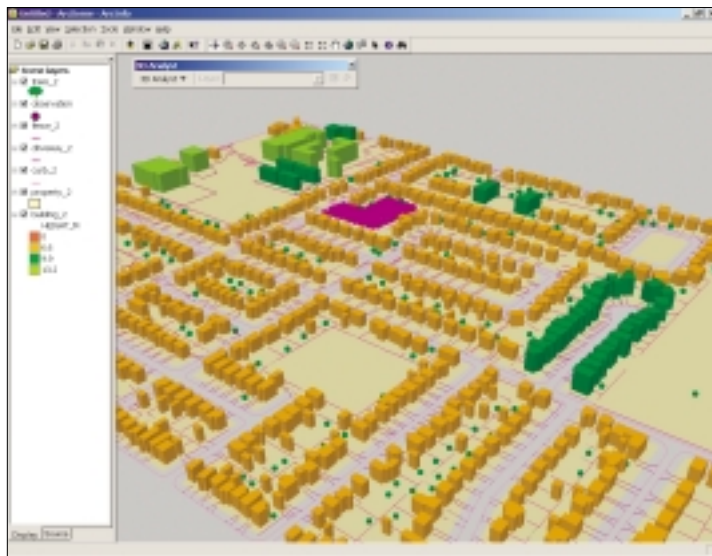
ArcGIS Spatial Analyst provides raster analysis, grid algebra, and surface creation.



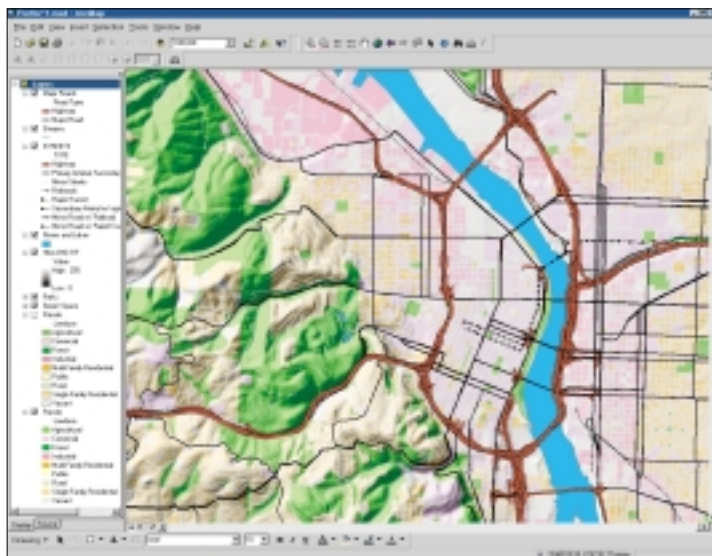
ArcGIS Geostatistical Analyst provides advanced surface interpolation and exploratory spatial data analysis.



ArcGIS 3D Analyst provides three-dimensional visualization and analysis.



ArcGIS StreetMap USA provides street display and geocoding within the United States.



The Geodatabase

ArcGIS is built on the foundation of the geodatabase (short for “geographic database”). The geodatabase consists of the following:

- A storage mechanism for geographic data of all types
- A GIS data model
- A series of data access components

The geodatabase was introduced as part of ArcGIS 8 and offers many advantages over its predecessor (the coverage model):

- All data (vector, raster, address, measures, CAD, etc.) is stored together in a commercial off-the-shelf DBMS. This means that organizations can have an integrated data management policy covering all data, which can significantly simplify support and maintenance, and reduce costs. Single use personal geodatabases are stored in Microsoft’s Jet engine. Multiuser databases accessed by ArcSDE are stored in IBM DB2, Informix, Oracle, or Microsoft SQL Server.
- The geodatabase allows multiuser access to continuous databases through the use of versioning and long transactions. Many users can read and write to the same, shared database (subject to permission) as though they owned the whole database. They can also work on secure edit sessions that span weeks, months, or even longer.
- Support for intelligent features, rules, and relationships. The geodatabase data model supports, as standard, a rich collection of objects (rows in a database table) and features (objects with geometry). The geodatabase supports advanced capabilities such as geometric and logical networks, true curves, complex polylines, and user-defined features. Vector features can now have two, three, or four dimensions (x, y, z, and m). Users can define topological and associative relationships and rules that define how feature classes interact. All this can be done without programming, using the menu-driven GUI.
- Geodatabases can be accessed via the standard menus and tools in ArcCatalog, ArcMap, and ArcToolbox. Programmers can also use the ArcObjects, OLE DB, and SQL APIs included in the software. These data access capabilities are built using commonly accepted industry-standard APIs. A further important aspect of the geodatabase is that it supports on-the-fly direct read of many different types of files and databases. The applications (ArcMap, ArcCatalog, etc.) and, therefore, the user, are unaware of any behind-the-scenes data translation.

For the uninitiated, the geodatabase can seem like one of the great mysteries of ArcGIS. In fact, understanding the basics and working with geodatabases is quite straightforward. They are just modern equivalents of shapefiles and coverages stored in a DBMS. Geodatabases can be created and managed easily using the standard tools in ArcCatalog, and ArcMap provides simple tools to work with geodatabases. The advanced features described above are also available for those users with demanding application requirements.

ArcGIS Data Models

The geodatabase data model allows for the creation of common or essential data models for specific industries and applications. ArcGIS data models provide ready-to-use nonproprietary frameworks for modeling and capturing the behavior of real-world objects in a geodatabase. They are built on the accepted standards in each field and provide data models that can be configured and customized using ArcEditor or ArcInfo. Data migration is the longest and most expensive part of a GIS project. These data models provide “quick start” solutions that optimize performance and establish industry standards that improve data sharing.

ArcView 3.x and 8.1 Comparison of Key Concepts

ArcView 3.x	ArcView 8.1
Project (.apr) —Information is organized and stored as views, tables, charts, layouts, and scripts.	Map Document (.mxd) —Disk-based representation of a map that is stored as maps, graphs, tables, and macros.
View —A set of features (themes) that are displayed together. A view has a table of contents and display areas.	Data Frame —A set of features (layers) that is displayed together. A data frame is listed in the main table of contents and shown in the main display area.
Table of Contents —A list of themes for a particular view.	Table of Contents —A list of data frames with their associated layers.
Theme —A set of related geographic features such as streams, lakes, or highways. A theme exists only within the parent project.	Layer —A set of related geographic features such as streams, lakes, or highways. A layer exists independent of the data frame and can be shared.
Layout —An arrangement of documents (views, tables, or charts) and map elements on a page. Geographic analysis tools cannot be used on a layout. Multiple layouts are supported.	Map in Layout View —An arrangement of data frames and map elements on a page. Geographic analysis tools can be used in a layout view because map elements are live. Layout views can be dynamically altered using map templates. Only a single layout view is supported.
Chart —A diagram showing the relation between two or more variable quantities. Examples are line, bar, and pie charts.	Graph —A diagram showing the relation between two or more variable quantities. Examples are line, bar, and pie graphs.
Avenue Script —A macro written using Avenue.	VBA Macro —A macro written using Visual Basic for Applications.

MORE INFORMATION

For more information on ArcGIS 8.1 including release status, detailed white papers, and the ArcGIS worldwide rollout seminar series, please visit www.esri.com/arcgis