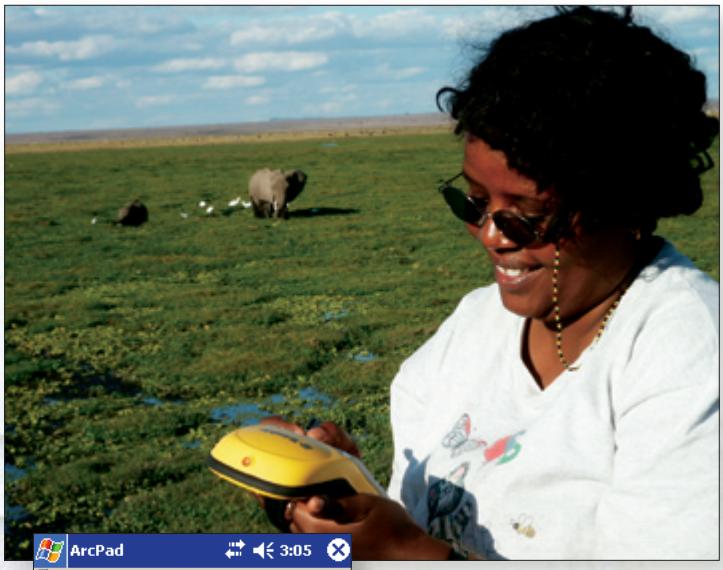
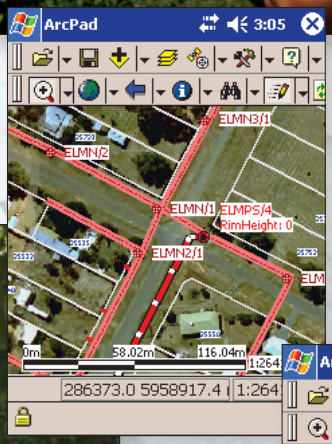
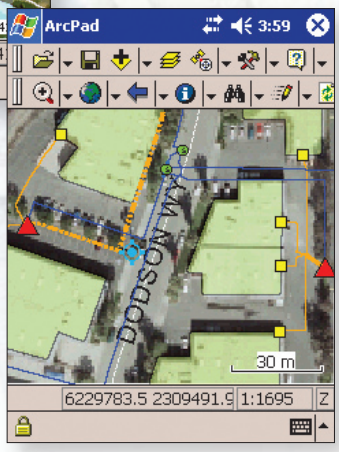
ArcPad®

Mobile GIS Software for Field Mapping Applications







ArcGIS ESRI

ESRI

A utility worker accesses and edits GIS data in ArcPad using a ruggedized handheld computer with a built-in GPS receiver.

ArcPad®

Mobile GIS Software for Field Mapping Applications

ArcPad® is the world's leading software package for mobile geographic information system (GIS) and field mapping applications. It provides field-based personnel with the ability to capture, analyze, and display geographic information in near real time. Field data collection with ArcPad is efficient and accurate and can integrate input from GPS receivers, rangefinders, and digital cameras.

Boost Mobile Productivity

Paper map books are mobile workers' traditional tools to locate assets in the field. These are costly to produce, prone to error, and usually outdated by the time they are released to print. ArcPad is an affordable alternative, making it easy to collect multitudes of geographic information with great accuracy while on-site.

A key feature of ArcPad is the ability to display a variety of geographic and attribute information. ArcPad uses data directly from an individual's desktop or an organization's enterprise GIS system without the need to convert to unique portable formats. ArcPad supports vector and raster data in a multilayered environment. Users can combine vector and raster data with the only limitations being the speed and memory capacity of the hardware in use.

Who Uses ArcPad?

ArcPad is designed for organizations wanting to expand the benefits of GIS to workers in the field. Firefighters, police officers, utility workers, inspectors, soldiers, census workers, field biologists, and more use ArcPad to complete the following tasks:

Field Mapping—Create, edit, and utilize GIS data while in the field.

Asset Inventories—Create and maintain an inventory of asset locations and attribute information.

Asset Maintenance—Update the location and condition of assets and schedule maintenance.

Inspections—Maintain digital records and locations of field assets for legal code compliance and ticketing.

Incident Reporting—Document the location and circumstances of incidents and events for further action or reporting.

ArcPad supports a broad range of mobile devices.

"ArcPad was a quantum leap of improvement over the paper system we used last year."

Pat Fugate
Disease Investigation Specialist
Buncombe County Health Center

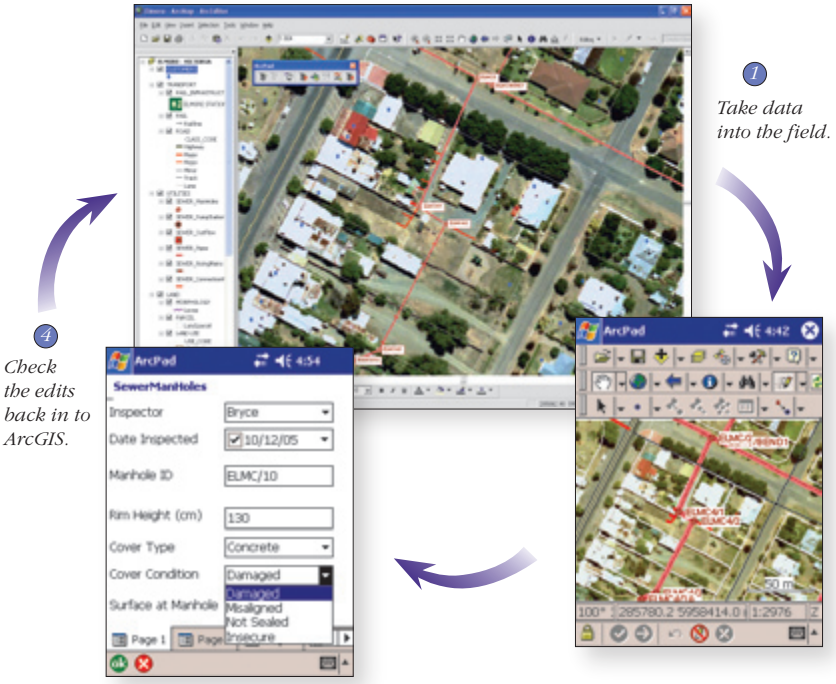
ArcPad

A Mobile Component of ArcGIS

Make Your GIS Data Mobile

As a mobile component of ArcGIS®, ArcPad integrates with desktop GIS technologies to allow field edits to be incorporated into a geodatabase through disconnected editing. ArcPad Tools for ArcGIS Desktop is a toolbar included with ArcView®, ArcEditor™, and ArcInfo® that provides the tools needed for preparing your data for use with ArcPad. Functionality in these tools includes

- Checking out features from your personal and enterprise geodatabase and editing them in ArcPad
- Extracting and converting vector data into shapefiles
- Exporting symbology
- Automatically creating custom input forms using domains and subtypes defined in the geodatabase to generate pick lists
- Checking in the edited data and updating the geodatabase with the edits made in ArcPad



©2005 Douglas Scott, Avalanche Mapping

To help lessen avalanche-related accidents, Douglas Scott and his crew from Avalanche Mapping record avalanche observation data and snow characteristics using ArcPad. When back in the office, ArcView is used with some ArcGIS extensions to perform analyses with the collected data and to map the observations.

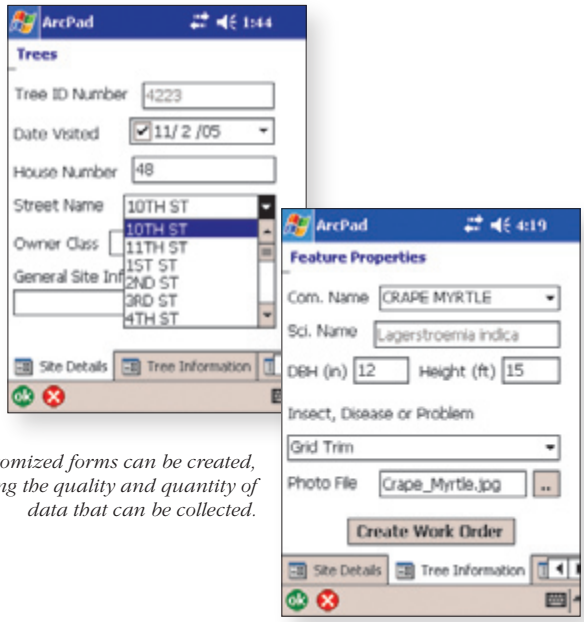
Get an evaluation copy of ArcPad at **www.esri.com/arcpad.**

ArcPad

Data Collection and Representation

Attribute Data Collection

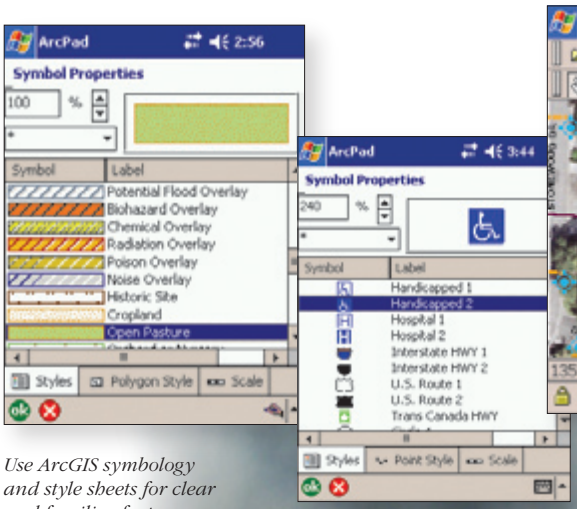
Attribute data is descriptive information about a location and can be edited and collected with ArcPad data collection forms. These forms include fields that are designed for input using a variety of devices (Windows® Mobile devices, laptops, Tablet PCs). Forms include field options for text boxes, menus, calendar/date selection, and more. Simple data collection forms can be quickly created from a shapefile with ArcPad. More specialized custom forms can be created with its customization software, ArcPad Application Builder.



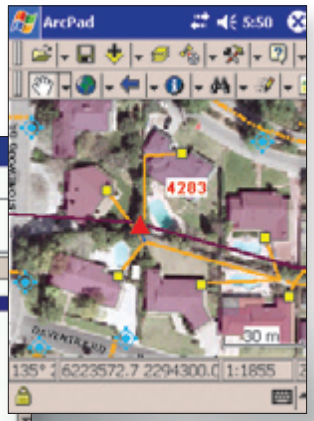
Highly customized forms can be created, maximizing the quality and quantity of data that can be collected.

Support for ArcGIS Symbology and Style Sheets

ArcPad supports a wide range of ArcGIS symbols and style sheets, enabling maps in ArcPad to mirror the appearance of those in ArcGIS. The use of familiar symbology, which complies with organizational cartographic standards, makes it easier for field users of ArcPad to transition from using paper maps or desktop PCs to using mobile devices in the field.



Use ArcGIS symbology and style sheets for clear and familiar feature representation.



Symbology and labeling help mobile workers perform streetlight system inventory.

A firefighter uses ArcPad on a GPS-enabled device to map large burn areas including burning and threatened structures. Firefighters flying over the affected area in helicopters also use ArcPad and GPS to map the fire perimeter and keep track of ground unit locations.

ArcPad

Tools and Product Specifications

Boulder County, Colorado's Road Maintenance Department uses ArcPad to map out thousands of road signs and collect attribute information including type, condition, and location.

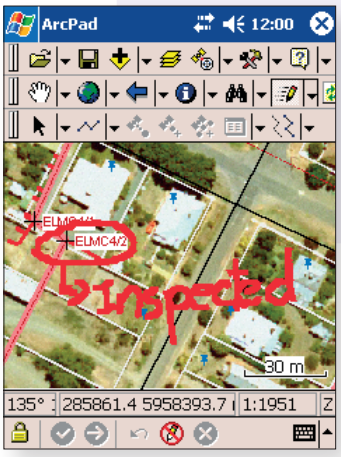
Create, Edit, and Display GIS Data

ArcPad allows users to create and edit spatial data (points, lines, and polygons) using input from the mouse pointer, pen, keyboard, GPS, digital camera, or rangefinder. ArcPad includes editing tools for offsets, repeated attributes, segmented line features, snapping, and more.

Users can record field sketches and notes into the data collection process with ArcPad. Sketches can be shared and exchanged as a graphics layer to and from ArcGIS Desktop. These sketches can become part of the geodatabase and the project record.

ArcPad Tools

Map Navigation	Editing	Display and Query
• Variable and fixed zoom. • Zoom to layer, visible extent of all layers, and bookmark. • General pan and pan to selected features. • Center on current GPS position. • Map rotation (manual or automatic based on GPS).	• Edit vertices. • Segment lines and append to line. • Rotate, move, resize, and scale features. • Snapping. • Offset points and vertices. • Left/Right offset of polylines and polygons. • Linear and radial traverse. • Repeated attributes. • Sketch. • GPS captures: point, vertex, and streaming vertex. • Camera and rangefinder support.	• Identify features by attribute. • Display layers by scale dependencies. • Hyperlink to external files: photographs, documents, video, and sound. • Measure distance, radius, and area. • Calculate geographic statistics for selected features such as area and length. • Find features by attribute query. • Find locations by coordinates.



The convenience of sketching notes on the map and making them part of the project record can greatly enhance the data collection experience.

Supported Data Formats

ArcPad supports ESRI® shapefiles, ArcPad graphics layers, ArcPad photo layers, MrSID® MG2 and MG3 by LizardTech, JPEG, JPEG 2000, TIFF, GIF, PNG, Windows bitmap, CADRG, and ArcIMS® image services via the Internet.

"The ArcPad solution is so easy to use, even nontechnical types feel comfortable with it."

Cecelia Copeland
Code Compliance Manager
City of Riverside, California

ArcPad System Requirements

Desktop PC

- Windows XP/XP Tablet PC Edition or Windows 2000
- Microsoft® ActiveSync® 3.8 or higher

Windows Mobile and Windows CE Devices

- Windows CE 4.2 or 5.0
- Windows Mobile 2003, Windows Mobile 2003 Second Edition, or Windows Mobile 5.0
- Supported CPU chips: ARM based (e.g., Atmel, Intel® StrongARM and XScale, Samsung, Texas Instruments OMAP)
- RAM: 64 MB minimum

A construction worker records vital on-site information using ArcPad on a PDA with the added accuracy of a GPS.

ArcPad

External Hardware Integration

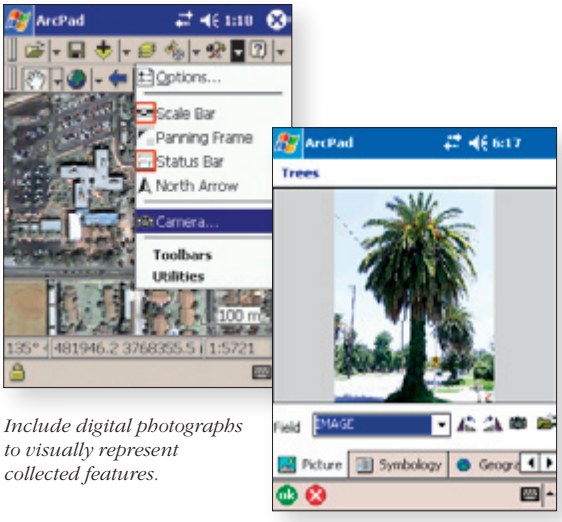
Offset with a Rangefinder

ArcPad supports rangefinders to provide optional input for offset data when capturing or editing features that are located in hard-to-reach or unsafe locations. Rangefinders provide measurements such as distance, bearing, and inclination. Several reference points can be used, and users can snap one or many fixed reference point(s) to existing features. Developers have the additional option of building custom rangefinder extensions using ArcPad Application Builder.

Navigate with GPS

ArcPad offers integration with an optional GPS or differential global positioning system. With an optional GPS attached, ArcPad displays an individual's current position on the map in real time. Position coordinates are instantly available at the touch of a pen on the map.

GPS data can be recorded as a track log (stored as a point shapefile) or as points (often referred to as waypoints), polygons, and polylines in a shapefile. ArcPad supports many data capture options with a GPS receiver, making it a useful tool for diverse applications.



Include digital photographs to visually represent collected features.

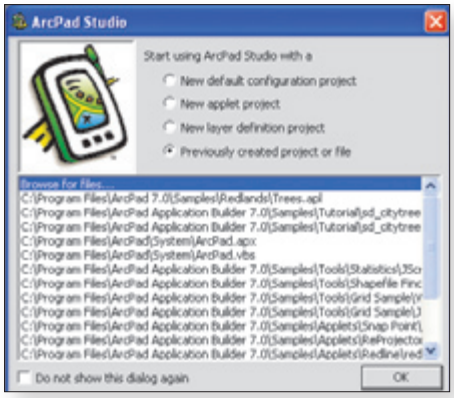
Document with a Digital Camera

Support for digital cameras is now integrated with ArcPad, allowing users to include a visual record as part of the field data collection process. From within ArcPad, you can control the connected camera by previewing the image, then taking the photo. The photo can be linked to the actual location where it was taken and associated with descriptive attribute information. These photos become part of the ArcPad project and can be accessed through hyperlinks to features or displayed as a photo layer. Photographs are an important record for many field tasks with legal and compliance requirements.

ArcPad Application Builder

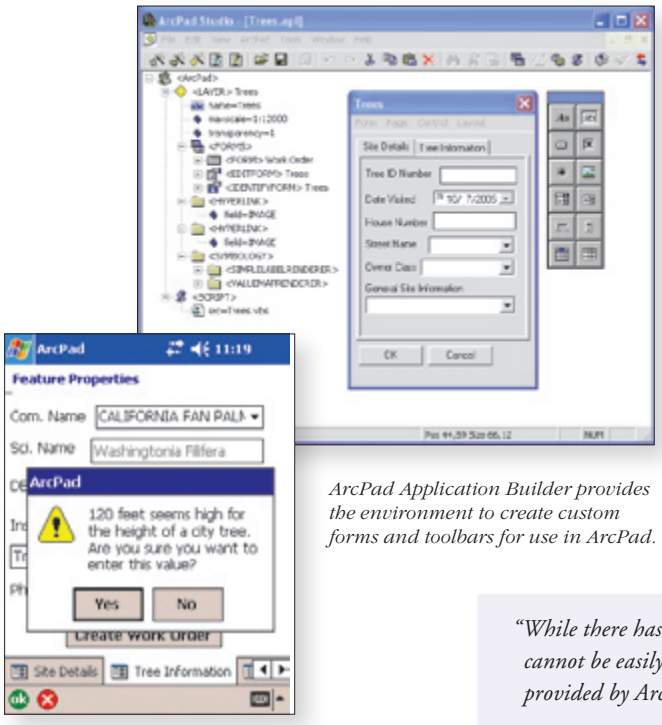
Development and Customization Framework for ArcPad

Effective mobile GIS workers require applications and tools that have been customized for a specific field task or project. Sold separately, ArcPad Application Builder, used on the desktop, is the development framework for creating custom solutions for mobile GIS applications and tasks. Application Builder, which comes with a desktop customization application called ArcPad Studio, allows the development of customized forms and tools that streamline data collection and unsupported external devices.



ArcPad Application Builder allows you to

- Always load the same geographic data when ArcPad starts.
- Create new toolbars that contain built-in and custom tools.
- Design custom forms.
- Build applets to accomplish your organization's unique goals.
- Write scripts that interact with ArcPad software's internal objects.
- Develop extensions to support new file formats, rangefinders, digital cameras, projections, and datum transformations.



ArcPad Application Builder provides the environment to create custom forms and toolbars for use in ArcPad.

Application Builder System Requirements

Many of the customization and personalization tasks are performed directly using ArcPad Studio and require little or no programming. For more complex tasks, ArcPad Studio exposes an extensive object model that can be accessed using JScript and VBScript.

Supported Operating Systems

- Windows XP
- Windows 2000

"While there has been a substantial cost savings, the greatest benefit cannot be easily measured, and that is the user trusting the information provided by ArcPad."

James Owens
GIS Coordinator
Laurens Electric Cooperative

For more information on ArcPad Application Builder, visit **www.esri.com/appbuilder**.

ESRI
380 New York Street
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92373-8100 USA

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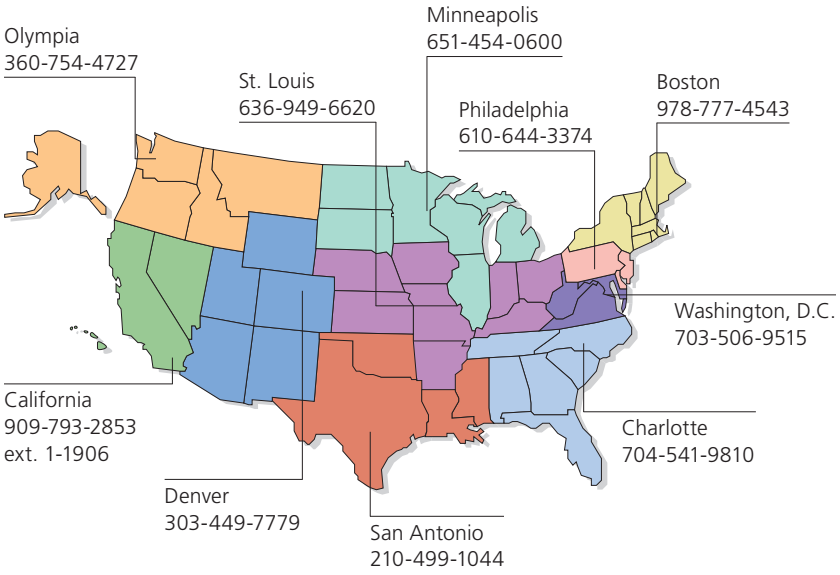

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