



Esri International User Conference | San Diego, CA
Technical Workshops |

Esri Mobile Solutions Overview

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What is mobile GIS?

Extends the reach of ArcGIS from the office to the field

- With a mobile GIS solution you can
 - Carry your maps to the field
 - Collect and Update Geographic Information
 - Track and Geo-collaborate



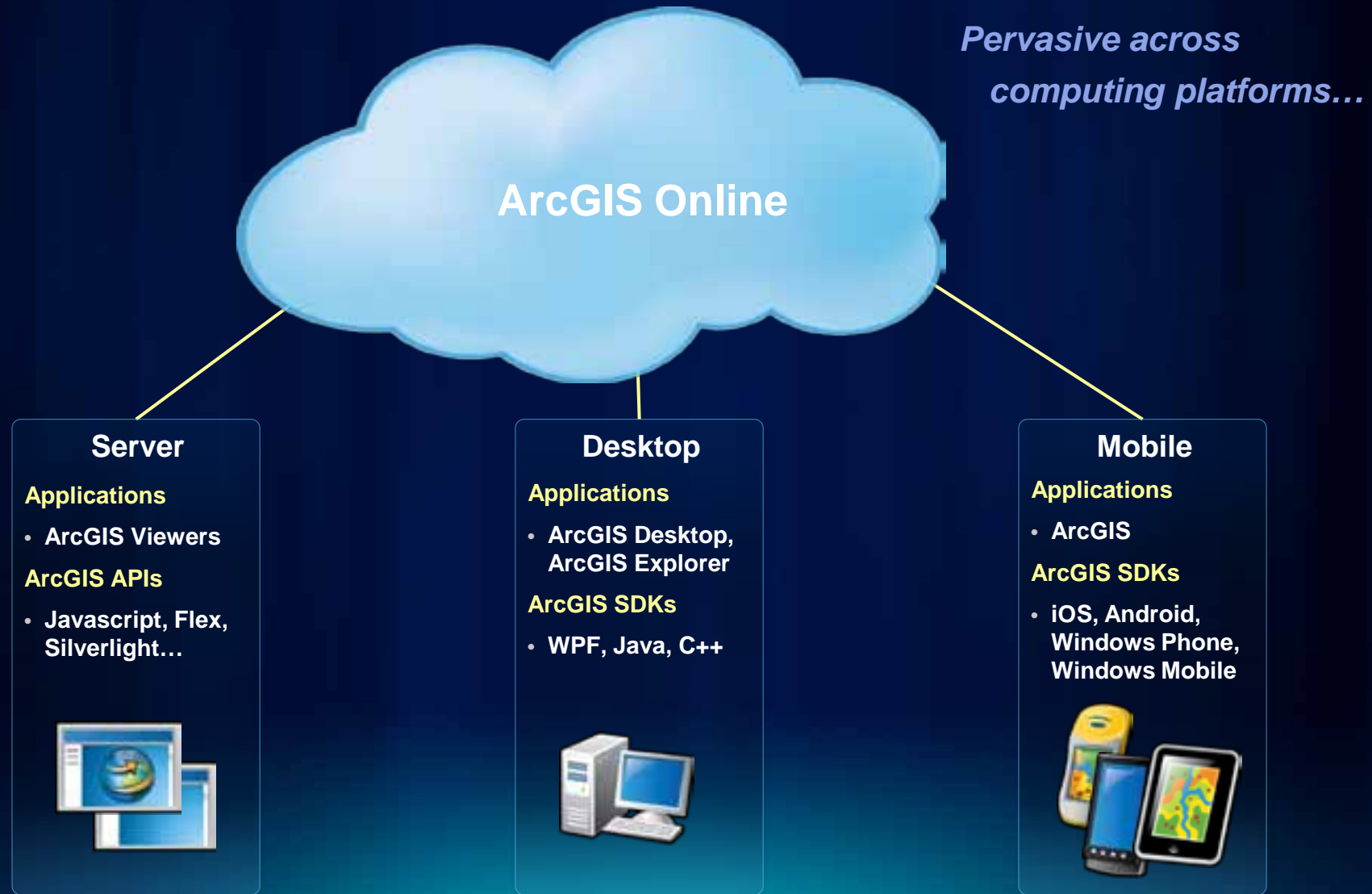
What are the benefits of mobile GIS?

Leverages the investment of your enterprise GIS

- **Improve Efficiency and Accuracy of Field Operations**
- **Rapid Data Collection and Seamless Data Integration**
- **Replaces paper based work flows**
- **Helps to Make Informed and Timely Decisions**



The ArcGIS System



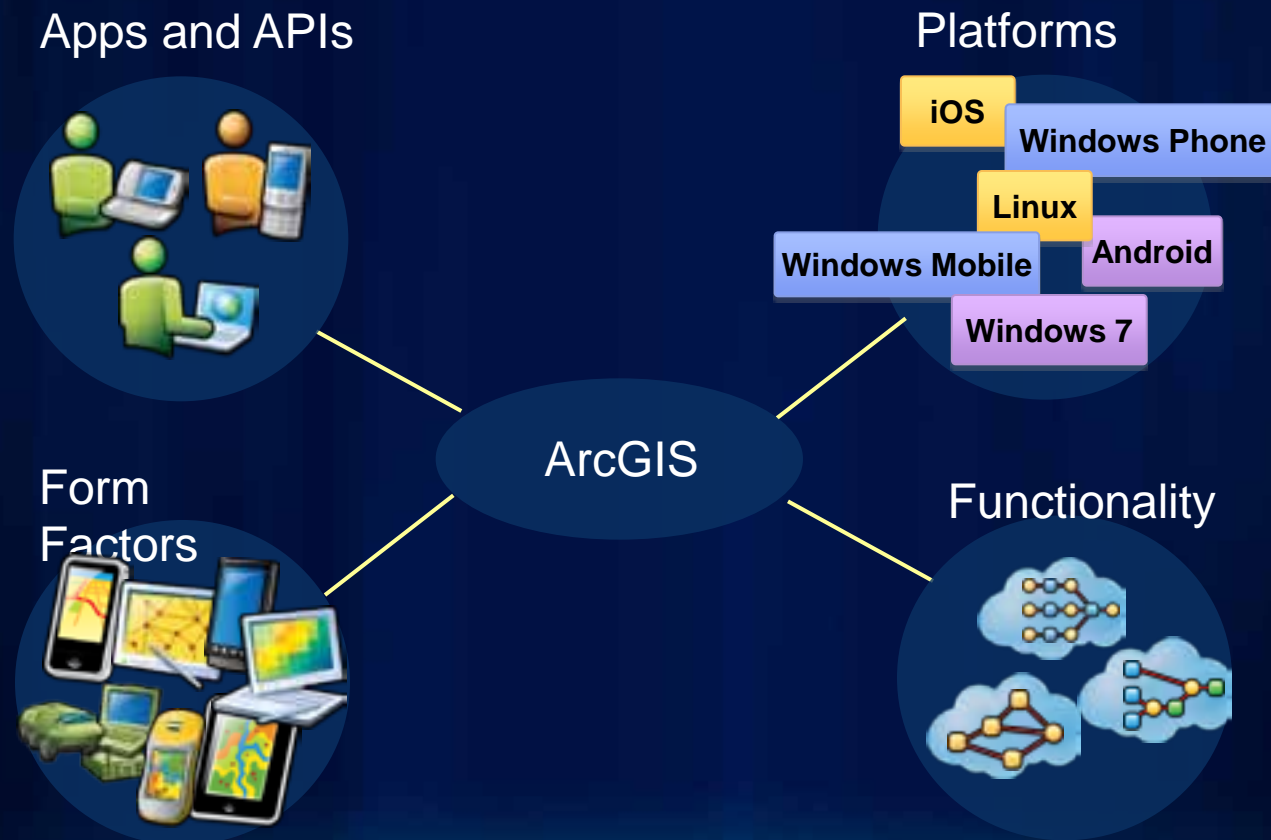
Lightweight Applications and Runtime SDKs

Configurable COTS applications and Native ArcGIS Runtime SDKs

iOS	Android	Windows Phone	Windows Mobile	Windows	Linux
Applications <ul style="list-style-type: none">• ArcGIS	Applications <ul style="list-style-type: none">• ArcGIS	Applications <ul style="list-style-type: none">• ArcGIS	Applications <ul style="list-style-type: none">• ArcGIS	Applications <ul style="list-style-type: none">• ArcGIS Explorer* ArcGIS	Applications <ul style="list-style-type: none">• None
Runtime SDK <ul style="list-style-type: none">• Objective C	Runtime SDK <ul style="list-style-type: none">• Java	Runtime SDK <ul style="list-style-type: none">• Silverlight	Runtime SDK <ul style="list-style-type: none">• .NET	Runtime SDK <ul style="list-style-type: none">• WPF, Java	Runtime SDK <ul style="list-style-type: none">• Qt, Java
					

Esri Mobile Technologies

Mobile capabilities of the ArcGIS system



Esri Mobile Products

ArcGIS running on ...

ArcGIS for Windows Mobile



Rugged Devices

iOS



Microsoft
Windows Phone



Android



Smartphones and Tablets

ArcGIS on Rugged Devices

Windows and Windows Mobile Devices

- Designed for harsh field conditions
- One handed/vehicle-mounted use
- Occasionally connected workflows
- High accuracy data collection
 - GPS integration
 - Laser integration
- Replace Paper Surveys
 - Intelligent forms
 - Barcode integration



Water Facilities Mapping

Asset Maintenance/Inspection

First Responders

Land Management

ArcPad on Rugged Devices

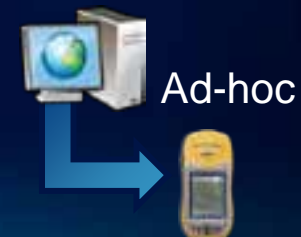
Application

- Single application for Desktop/Mobile devices
- Advanced Data Collection Tools
 - GPS/Laser Integration
 - Data collection forms
- Configurable using VBScript/JScript
- 10.0 is First ArcPad maintenance release



Platforms:

- Windows XP, Vista, Windows 7
- Windows Mobile



Application plus Customization Toolkit

ArcPad 10.1

Culmination of several small releases...

- **Improved Customization Experience**
- **Support for Annotation**
- **Direct Support for AXF in ArcGIS**
- **Improved Symbology**
- **StreetMap update**
- **Windows Embedded Compact 7 Support**

ArcGIS for Windows Mobile

Application

- Rapid Deployment of Maps, Apps & Projects
- Task-based, Workflow Driven User Experience
- Synchronization of Data between Field & Office
- Local Caching of Data



API

- Coarse-grained .NET API
- Build focused, custom solutions
- Extend COTS application

Platforms:

- Windows XP, Vista, Windows 7
- Windows Mobile



Applications plus SDK

ArcGIS for Windows Mobile Licensing

ArcGIS Desktop and ArcGIS Server

ArcGIS Desktop (ArcView, ArcEditor, ArcInfo)



- 1 free deployment license
- Additional packs of 5 can be purchased

ArcGIS Server



- Advanced Enterprise license (unlimited deployments)
- Standard Enterprise license (purchase 50 packs)

Field Applications

Carry Maps to the field

- View maps
- Measure distance, areas, features
- Identify features

Workflow driven data collection

- Map-centric data dictionary
- GNSS/RTK data collection
- Tap on Map collection

Form-based attribute entry

- Intelligent field types driven by data model
- Scrollable pick lists, required values, date picker, more...
- Embedded photo capture

Configurable COTS Application for Windows Mobile and Windows Devices

Field Applications

Client-side/Offline Query

- Execute pre-defined search with a single tap
- Create advanced ad-hoc queries

Field Crew Tracking and Geo-Collaboration

- User sign in
- Silent logging of field crew GPS positions by date/time interval
- Locate field crew members and last time checked in, notes
- Call or email crew members directly

Manage data

- Review collections, updates and deletes
- Send changes directly to server from device
- Receive changes from server to device

Gulf Oil Spill

Large Scale ArcGIS Mobile Deployment

Projects:

- **USFWS**
 - Recovery/Rehabilitation of oiled birds
- **Alabama Marine Police**
 - Verification of Boom placement and state
- **Louisiana Guard**
 - Placement of Engineered Obstacles
 - Surveys (inc. Photo Capture)
 - Daily reporting to Coast Guard

ArcGIS Mobile 10

- Trimble Nomad Units
- AT&T Sim Card, Immarsat Terminals
- Air Watch



450 Handheld Devices Deployed, 139 Active Projects

How it Works...



Author Maps

Leverage the ArcGIS System

Design your data model for field use

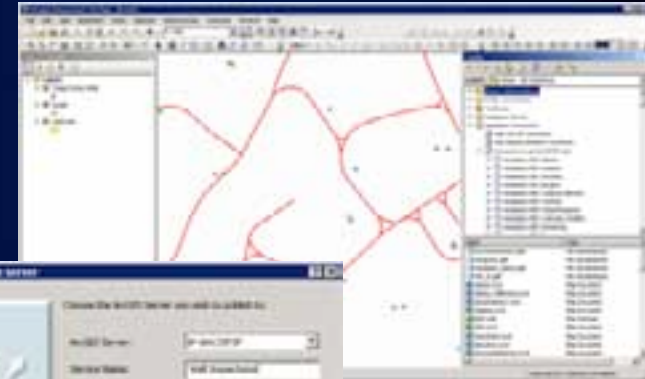
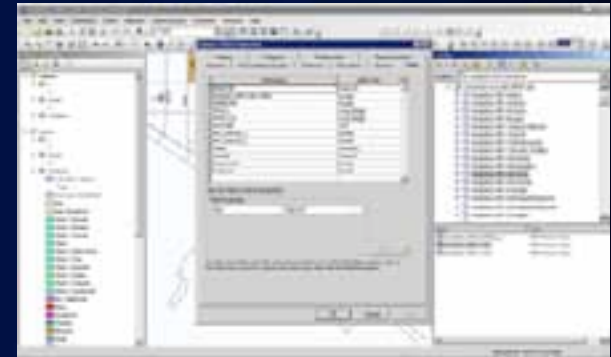
- Coordinate system for spatial data
- Field definition for information to be captured**
- Define transaction model (single/multi-user)

Author Maps and map layers

- Define and build base map content (orthophotos, landbase, etc)
- Author map layers to define “data dictionary” for collection

Publish Maps

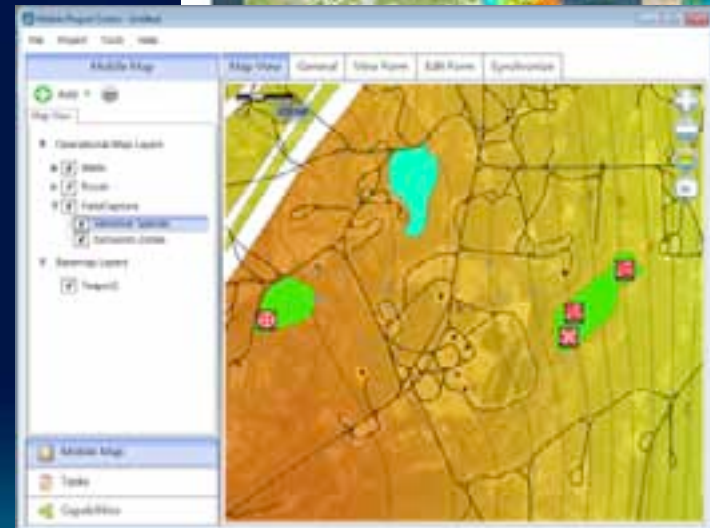
- Use ArcGIS Server to publish services
- Use Desktop Tools to create mobile caches



Create Mobile Projects

Using the Mobile Project Center

- Create & Manage Field Applications
- Publish and share maps & content
 - Local
 - On-Premise Server
 - Cloud (ArcGIS.com)
- Provision Applications and data to field devices.



ArcGIS Mobile SDK

- Coarse-grained .NET SDK
 - Extend field applications
 - Create focused Mobile GIS applications
 - Embed ArcGIS into existing line of business applications
- Included in the Setup
- Help and Samples location at ArcGIS Mobile Resource Center



Using the SDK...

ArcGIS Products for Rugged Devices

Windows and Windows Mobile Devices

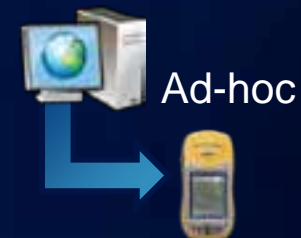
ArcGIS for Windows Mobile

- Focused Mobile Applications
- Task-based, defined workflow
- High Accuracy Data Collection
- Users have little GIS training
- Scalable to large field workforce



ArcPad

- Ad-hoc Mobile Application
- High Accuracy GPS Workflow
- Targets small/mid-size org
- Users typically have GIS Training



Market Opportunities

Focused Solutions for Vertical Markets



Timber Management

Asset Management

Work Order Management

Utility Field Inspections



ArcGIS on Smartphones and Tablets

iOS, Windows Phone and Android Devices

- Designed for touch-screen phones
- One handed use
- Connected Workflows (Wifi, 3G)
- Assisted-GPS Integration
- Replace Paper Surveys
 - Intelligent forms
 - Field Validation
 - Media Integration

Emergency Operations

Service Requests

Parcel Valuation

VGI

Campus Maps



ArcGIS on Smartphones and Tablets

iOS, Windows Phone and Android Devices

ArcGIS Application

- Maps shared across devices
- Display, Query, Edit intelligent maps on all devices
- Available Free in stores and marketplaces

SDK

- Embed ArcGIS into existing applications
- Native APIs for building focused applications
- Common conceptual framework across platforms
- Available Free for development via EDN



What can the ArcGIS Applications do?

Powerful application functionality driven by configurable maps

- Display maps
- Find and share maps by email, SMS, facebook, twitter
- Switch between base maps and dynamically display a legend
- Find addresses and places
- Identify locations and features from services, csv, shp, gpx, notes
- Query map layers
- Measure distances and areas
- Collect new data and edit GIS features including attachment of media



ArcGIS Application Demo



What can the ArcGIS Runtime SDKs do?

iOS, Windows Phone, Android

Maps

- Supports multiple map projections
- Dynamic and cached (tiled) map services plus Bing and Open Street Map



Eclipse

Graphics

- Sketch graphics on map canvas
- Create pop-ups



XCode

Tasks

- Query, Identify, Find GIS features
- Collect GIS features
- Locate/Geocode addresses
- Geometry operations
- Geoprocessing Tasks



Visual Studio
.NET

How do I get an ArcGIS Runtime SDK?

- **ArcGIS Resource Center**

- API download
- Conceptual and reference help
- Community resources
- Samples

- **API Download**

- Libraries
- Help System
- IDE Integration



<http://resources.arcgis.com/>

How are they licensed?

ArcGIS Application

- Free and available via online marketplaces

Runtime SDKs

- Free for Enterprise and Store** Deployments
- Attribution is Required for all Apps!
 - Esri Attribution for ArcGIS Online map layers
 - Bing Attribution for Bing map layers
 - About Box Attribution
- Cost with Esri if:
 - App generates revenue and is in a store
 - Not licensed for server (commercial)
- Cost Basis:
 - Percentage of sales, yearly subscription



iTunes



Android Marketplaces*



Windows Marketplace



XCode



Eclipse



Visual Studio .NET

ArcGIS for iOS



ArcGIS Application

- ESRI's first iOS application
- Universal Application:
 - iPad
 - iPhone
 - iPod Touch
- Works with maps:
 - ArcGIS Online
 - On Premise Content Server



Available on the
App Store

ArcGIS Application – How is it doing?

- **31,528** downloads after 1 week
(Mon July 5th – Sun Jul 11th)
 - #1 Free Productivity App
 - #12 Featured New App
- Over 190,000 downloads
- Supported in 10 languages



Total counts over week 1 downloads

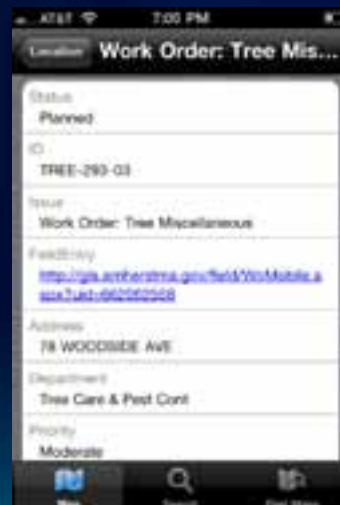


Downloads in over 79 countries!

City of Amherst, MA

Using a ready-to-deploy application

- ArcGIS online group devoted to sharing various maps to city employees:
 - Open Work Orders
 - Water Distribution Network
- Public
 - Trails and Land Conservation

A screenshot of the 'Amherst Staff GIS Viewer' web application. The title is 'Amherst STAFF GIS VIEWER'. Below the title is 'Amherst DPW Work Order Search'. A note states: 'This search page displays Work Orders supplied by the Amherst Department of Public Works. Reported incidents are automatically generated by the Work Order system & are DIFFERENTIATED.' There are tabs for 'Open Work Orders' and 'Closed Work Orders'. A dropdown menu shows 'All Categories'. Below the menu is a 'Show Results' button. The table below has columns: 'Map', 'ID', 'Tree', 'Location', 'Department', 'Planned', 'Details', 'Status', 'Action', and 'Closed'. The table contains several rows of work order data.

Map	ID	Tree	Location	Department	Planned	Details	Status	Action	Closed
Map 30	1110	04	11100000 11100000 11100000	Other	01/01/2012 01/01/2012 01/01/2012	The street to the north is closed on the sidewalk that goes from the fire station across to the street, on the sidewalk side the work is to be completed by the end of the day.	Planned		
Map 30	1110	04	11100000 11100000 11100000	Highway	01/01/2012 01/01/2012 01/01/2012	There is a large pile of snow on the sidewalk in front of the building.	Planned		
Map 30	1110	04	11100000 11100000 11100000	Highway	01/01/2012 01/01/2012 01/01/2012	There is a large pile of snow on the sidewalk in front of the building.	Planned		
Map 30	1110	04	11100000 11100000 11100000	Highway	01/01/2012 01/01/2012 01/01/2012	I went the house at 11100000 on the corner of street and street and I went to point out the street problem as well as the house where the snow piled up and the street. There is a large pile of snow on the sidewalk in front of the building.	Planned		
Map 30	1110	04	11100000 11100000 11100000	Highway	01/01/2012 01/01/2012 01/01/2012	There is a large pile of snow on the sidewalk in front of the building.	Planned		
Map 30	1110	04	11100000 11100000 11100000	Highway	01/01/2012 01/01/2012 01/01/2012	There is a large pile of snow on the sidewalk in front of the building.	Planned		

ArcGIS API for iOS

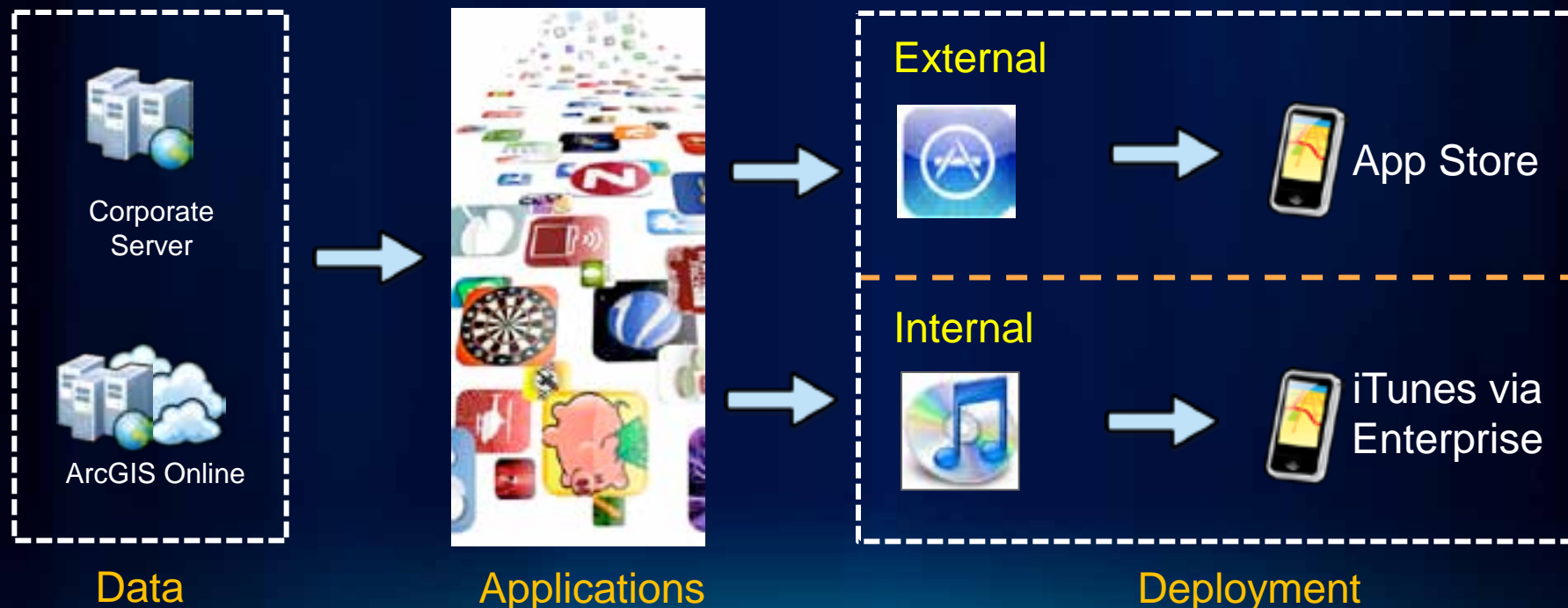
- Native objective C API targeting iPhone developers
- Build focused mapping applications
- Embed GIS into an existing applications



Available from ArcGIS for iOS Resource Center

iOS Application Deployment

- App Store deployment or Internal Enterprise Deployment
- Application management via Apple Developer Portal or iTunes Connect



ArcGIS for Windows Phone



ArcGIS for Windows Phone

- **Application**
 - Available from the Zune Marketplace
 - Built using the ArcGIS for Windows Phone SDK
 - iOS 1.5 compliant in functionality, 2.0 coming soon!



ArcGIS API for Windows Phone

- **Silverlight Development using VS 2010**
 - Download Windows Phone Developer Tools, ArcGIS API
 - Develop Applications using Silverlight API for Windows Phone
 - Publish your .XAP to App Hub for approval
 - Customers download App from Zune Marketplace



- **ArcGIS for Windows Phone Resource Center**

- Download Bits
- Concepts and reference doc
- Forums, blog, code gallery
- Interactive SDK



ArcGIS for Android



ArcGIS for Android

- **Application**
 - Currently In development
 - Built using the ArcGIS for Android Java SDK
 - Will be available from Esri Resource Center
 - Considering various Android Marketplaces
 - Google Marketplace
 - *Amazon Marketplace
 - International Marketplaces



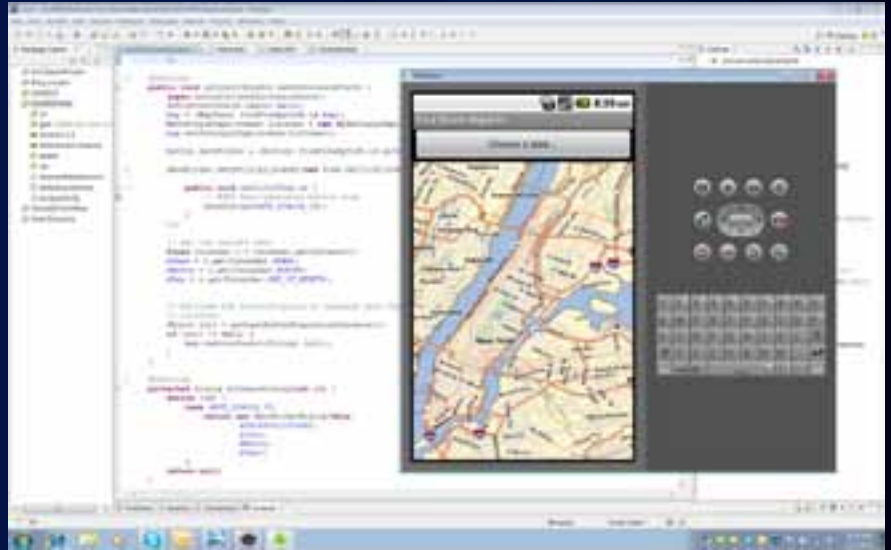
ArcGIS API for Android

- **Java development using Eclipse 3.5 or higher**

- Download Eclipse
- Install ArcGIS API via Eclipse plug-in
- Develop Application
- Determine deployment strategy
 - Marketplace
 - Enterprise Distribution

- **ArcGIS for Android Resource Center**

- Download Bits
- Concepts and reference doc
- Forums, blog, code gallery



Requires Android 2.1 API 7 and higher

Currently in BETA!

Roadmap



Mobile Roadmap

- Android Application available directly from Google/Amazon marketplaces
- Build focused native apps using the ArcGIS Runtime SDK for Android
- Enhanced integration with ArcGIS Online
- Map offline and update existing GIS data with high accuracy GPS systems
- Simplify offline mobile project deployments to Rugged Devices
- Support for ArcGIS Portal and ArcGIS for Organizations
- Offline capabilities on the iOS and Android platforms

Technical Workshops To Attend

Tuesday July 12th

8:30am – 9:45am – ArcGIS for Windows Mobile – An Introduction (31b)

10:15am – 11:30am – Esri Mobile Solutions Overview (31b)

1:30pm – 2:45pm - ArcGIS for Windows Phone (31b)

1:30pm – 2:45pm – ArcPad – Introduction to Customizing ArcPad Solutions (30d)

3:15pm – 4:30pm – ArcPad – An Introduction (31b)

Wednesday July 13th

8:30am – 9:45am - Choosing a Mobile Solution (6f)

8:30am – 9:45am – ArcGIS for iOS (8)

8:30am – 9:45am – Windows Phone – Developing Applications (31b)

1:30pm – 2:45pm – ArcGIS for Android (31b)

1:30pm – 2:45pm – iOS – Developing Applications (15a)

3:15pm – 4:30pm – ArcGIS for iOS (31b)

Technical Workshops To Attend

Thursday July 14th

8:30am – 9:45am - ArcGIS for Android (31b)

8:30am – 9:45am – Deploying Esri's Mobile Technology across... (3)

1:30pm – 2:45pm - Esri Mobile Solutions Overview (15a)

1:30pm – 2:45pm – Android – Deploying Applications (6c)

1:30pm – 2:45pm – ArcPad Advanced Customization (31b)

3:15pm – 4:30pm – ArcGIS for Windows Mobile – Developing Apps (31b)

Friday July 15th

9:00am – 10:15am – Esri Mobile Solutions Overview (4)

9:00am – 10:15am – ArcGIS for iOS (10)

9:00am – 10:15am – ArcGIS for Android (11a)

20 minute Tech Workshops

Wednesday July 13th

8:30am – 8:50am—Using GIS Technology on Smartphones (6a)

Thursday July 14th

8:30am – 8:50am—Using GIS Technology on Smartphones (23b)

8:30am – 8:50am – Road Ahead – ArcGIS for Windows Mobile (24a)

8:55am – 9:15am – Publishing your data for Smartphones and... (23b)

9:20am – 9:40am – Authoring Web Maps for Smartphones and... (23b)

10:15am – 10:35am – Road Ahead – ArcGIS for Android (6b)

10:40am – 11:00am – Road Ahead – ArcGIS for iOS (6b)

11:05am – 11:25am – Road Ahead – ArcGIS for Windows Phone (6b)

12:00pm – 12:30pm – ArcPad – Building great Apps (30a)

3:15pm – 3:35pm – ArcPad/GeoCollector (6b)

Additional Activities to Consider

Mobile Product Island @ Esri Showcase

Meet the development team at the exhibit hall!

Tuesday 9am – 6pm

Wednesday 9am – 6pm

Thursday 9am – 1:30pm

Try ArcGIS Mobile Live!

Tuesday/Wednesday (2:00pm – 4:00pm)

Thursday (10:00am – 12:00pm)

Mobile Special Interest Group Meeting

Tuesday 12:00pm – 1:00pm 23b

The background features a dark blue gradient with a light blue grid pattern. On the right side, there is a stylized green globe showing a landscape with a city and mountains.

Thank You

Questions?

www.esri.com/sessionevals