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

**Applications**

- ArcGIS Viewers
- ArcGIS APIs
  - Javascript, Flex, Silverlight...

**Desktop**

- ArcGIS Desktop, ArcGIS Explorer
- ArcGIS SDKs
  - WPF, Java, C++

**Mobile**

- ArcGIS
- ArcGIS SDKs
  - iOS, Android, Windows Phone, Windows Mobile

Pervasive across computing platforms...
## Lightweight Applications and Runtime SDKs

**Configurable COTS applications and Native ArcGIS Runtime SDKs**

<table>
<thead>
<tr>
<th>Platform</th>
<th>Applications</th>
<th>Runtime SDK</th>
</tr>
</thead>
<tbody>
<tr>
<td>iOS</td>
<td>ArcGIS, ArcGIS</td>
<td>Objective C</td>
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<tr>
<td>Android</td>
<td>ArcGIS, Java</td>
<td>Java</td>
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<tr>
<td>Windows Phone</td>
<td>ArcGIS, Silverlight</td>
<td>.NET</td>
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<tr>
<td>Windows Mobile</td>
<td>ArcGIS Explorer* ArcGIS</td>
<td>WPF, Java</td>
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<tr>
<td>Windows</td>
<td>ArcGIS Explorer* ArcGIS</td>
<td>None</td>
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<tr>
<td>Linux</td>
<td>None</td>
<td>Qt, Java</td>
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</tbody>
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Esri Mobile Technologies

Mobile capabilities of the ArcGIS system

Apps and APIs

Form Factors

Platforms

- iOS
- Windows Phone
- Linux
- Windows Mobile
- Android
- Windows 7

Functionality
Esri Mobile Products

ArcGIS running on ...

ArcGIS for Windows Mobile

ArcPad

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

Ad-hoc
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

- Utility Field Inspections
- Asset Management
- Work Order Management
- Timber 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

Service Requests

Parcel Valuation

VGI

Campus Maps

Emergency Operations
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?

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

Graphics
- Sketch graphics on map canvas
- Create pop-ups

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

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
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

Data → Applications → Deployment

- External
  - App Store
- Internal
  - iTunes via Enterprise

Corporate Server
ArcGIS Online
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