ArcGIS for Mobile Devices

Jeff Shaner and David Cardella
aka “Jeda Shadella”
Mobile Trends - Consumer

Increased Usage of Smartphones

GIS Is Accessible to a Larger Market
Mobile Trends - Consumer

50% of people use maps/search on their phones

New market potential

Source: Biz Tech Day
Mobile Trends – App Stores/Market places
Mobile Technology for the Knowledge worker

Constituent Needs

Constituent Engagement

Strategic Needs

Situational Awareness

Executive Dashboard

Field Operational Needs

Digital Map Books

Government Compliance

Asset Maintenance

Emergency Management
Key Benefits of Mobile Solutions
Leverage your investment in ArcGIS

- Rapid Data Collection
- Seamless Data Integration
- Improve Efficiency and Accuracy

Make Informed and Timely Decisions
ArcGIS is a Complete System
Managing and working with geographic information

- Online (public or private cloud)
- Server (on premises or private cloud)
- Desktop
- Mobile/devices
- Content

Many deployment options
Esri Mobile Technologies
Mobile capabilities of the ArcGIS system

Apps and APIs

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

Form Factors

Functionality (Mobility Services)
### Platforms

<table>
<thead>
<tr>
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**Image Description:**
- The image shows a grid with various platforms and their associated apps and runtime SDKs. The grid is color-coded to match the platforms.
- Each platform section contains a list of apps and runtime SDKs.
- The windows section includes apps like ArcGIS, ArcPad, and ArcGIS Explorer, with runtime SDKs for .NET CF and WPF, Java.
- The Windows Phone 7 section has apps like ArcGIS and Silverlight, and a runtime SDK for Silverlight.
- The iOS section includes ArcGIS for iOS, Objective C, and Java.
- The Android section lists ArcGIS, Java.
- The Linux section has Java.
Mobile Applications

ArcGIS running on ...

Windows Mobile

Windows

Microsoft Windows Phone

iOS

Android

Rugged and Embedded Devices

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

Emergency Operations

Service Requests
Rugged Device Strategy

Applications
- Rapid Deployment of Maps, Apps & Projects
- Task-based apps with Workflow Driven User Experience
- Map-centric apps with tools driven User Experience
- Synchronization of Data between Field & Office
- Full Offline Support

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

Data
- Street Map Data Package
- North America/Europe

Platforms
- Windows XP, Vista, Windows 7
- Windows Mobile
The Windows Mobile platform
A strategic platform

- Customers are purchasing new devices with Windows Mobile OS today
- Vendors still releasing new devices

- Rugged devices offer advantages
  - Truly rugged (IP rated)
  - Battery life
  - Positional accuracy
  - Sensor integration
What can you do with ArcPad?

- **Manage Data**
- **Deploy**
- **Collect/Edit**
- **Query**
- **Navigate**
- **Sync**
- **Customize**

**Manage Data & Deploy to device**

- Out-of-box and custom query forms
- Customize Forms, toolbars, projects

**Sync with your choice of cloud, enterprise or desktop**

**Collect and Edit**

- Navigate with StreetMap

**Navigate with StreetMap**

- Sync with your choice of cloud, enterprise or desktop

- Out-of-box and custom query forms
Release Status

• **ArcPad 10.0.3**
  - FME Reader for AXF
  - Python scripting support for Desktop
  - Updated StreetMap data
  - Bug fixes and localization

• **ArcPad 10.0.4**
  - Specific fixes for specific users
    - Non-English AXF file & field names fixed in FME Reader for AXF
    - Sync issues with ArcGIS Server ArcPad Extension
  - Support $GPGST NMEA for additional measures of signal quality

• **ArcPad 10.0.5**
  - Specific fix for rugged Windows 7 tablet integrated cameras
  - Graphic layer memory leak improvement
ArcGIS for Windows Mobile

Windows and Windows Mobile Devices

- Rapid Deployment of Maps, Apps & Projects
- Task-based, Workflow Driven User Experience
- Disconnected
- Synchronization of Data between Field & Office
- Focused Mobile Applications
- High Accuracy Data Collection
- Users have little GIS training
- Scalable to large field workforce
ArcGIS for Windows Mobile

Windows and Windows Mobile Devices

- ArcGIS Runtime SDK for Windows Mobile
  - Coarse-grained .NET API
  - Extend COTS application
  - Create focused Mobile GIS applications
  - Embed ArcGIS into existing line of business applications
  - Included in Setup
  - Help and Samples location at the Mobile Resource Center
Mobile Project Center

• Create projects for Field Applications
• Configure workflows and data
• Project packaging
• Project verification
• Publish and share projects
  - Local
  - On-Premise Server
  - Cloud (ArcGIS.com)
Field Applications

- View and identify features
- Measure distance, areas, features
- Adhoc and pre-defined queries
- GPS/GNSS data collection
- High accuracy collection
- Forms centric editing
- Intelligent field types driven by data model
- Field validation
- GPS logging
New in 3.0

- Simplified data collection experience
- Support for geodatabase attachments
- Geometry editing (WM)
- Improved GPS/GNSS display
- Waypoint navigation
- Auto-populate of attributes
- Portal support
Trimble Positions

- Enhances data collection capabilities
  - Ensures Positional accuracy
  - Supports post-processing of GPS positions
  - Enables VRS/RTC connection to corrected positions
  - GeoExplorer series, Juno series and Nomad devices

- ArcGIS for Windows Mobile
  - Extends ArcGIS field app
    (Windows Mobile platform only)

- ArcGIS for Windows Mobile SDK
  - Trimble GPS construction methods
  - Post-processing capability
ArcGIS for Mobile on Smartphones and Slates

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
Smartphone Strategy
ArcGIS accessible by many

iOS
Android
Windows Phone

ArcGIS Application
Native Developer SDKs
ArcGIS Application
iOS, Android, Windows Phone Devices

- Works with maps:
  - ArcGIS Online
  - On Premise

- Key Capabilities:
  - Role-based
  - View Maps…
  - Search
  - Data Collection and Editing
  - Bookmarks
  - Sharing
  - Secured Services
What is ArcGIS Online?

- Cloud-based system
  - Platform for building Geospatial Apps
  - Online or on premises
- Geospatial content management system for organizations
  - Catalog
  - Search/discovery
  - Sharing and group collaboration
- Ready-to-use Map Content & Services
What Can You Do With ArcGIS Online?

• Leverage as a platform for your apps
• Organize and manage geospatial content and maps
• Access, discover, share and collaborate
• Map business data across your enterprise
• Publish or register map services
• Easily provide public access
Using ArcGIS on your smartphone

David Cardella
ArcGIS Runtime SDKs
Available via EDN and the Resource Centers

- Target dominant platforms
- Common framework
- Online services
- Local data and processes
- Runs on the platforms you need
ArcGIS Runtime SDKs
iOS, Android, Windows Phone, Windows Mobile

• Native developer toolkit
• Build focused mapping applications
• Embed ArcGIS in to existing apps
• Leverage the ArcGIS system
Best Practices
Planning Your Field Classroom Needs

• Content
  - Maps
  - Collection Forms (often paper-based)
  - Reference Map Content

• Information Management
  - Infrastructure (Servers, Security)
  - Data Flow (Mobile, Cloud, Desktops, Web Apps)
Choosing the right device platform

• Conditions of use in the field
  - Rugged terrain, remote areas or urban setting?

• Cost of devices
  - Purchase, rental?

• Capabilities of device
  - Location Accuracy needs?
  - Integration with peripheral devices?

• Developer Environment
  - Java
  - .NET
  - Objective C (**Requires a Mac)
Designing Map Content

• Transactional Map Content
  - Survey Forms
  - Questionnaires

• Paper forms
  - Survey Form to feature class data modeling (feature types, transaction model)
  - Map representation (field aliases, order, layer names, templates)
  - Device representation (project/map configuration)
Designing Maps for Mobile Devices

- Keep it simple
- Project considerations
  - Goals of the project
  - Short and long term management of projects
- Design for your users
- Visualization, navigation, collection and updating
Environmental Conditions

- Lighting
  - Bright sunlight
  - Low light conditions

- Temperature
  - Will your field staff be wearing gloves?
Consider Data Workflows with ArcGIS Online

Using ArcGIS Online only

Publish Hosted Services using ArcGIS Online

Define Client Feature Editing Model on item

Create and Share Web Maps in ArcGIS Online

Discover and update maps on Devices

Spatial Data In

KML, GPX, SHP, CSV

Export Spatial Data Out

Using ArcGIS Online and ArcGIS Desktop

Versioned Geodatabase with Editor Tracking

Author Data using Desktop

Publish Hosted Services online

Define Client Feature Editing Model on item

Create and Share Web Maps in ArcGIS Online

Discover and update maps on Devices

Export Replica***

Export Spatial Data Out CSV, GPX

CS, SHP
Smartphone Software Installs (COTS)

• App Store or Marketplace Only
  - Apple Platform Deployment
    - App Store on device/iTunes deployment
    - Windows Phone Deployment
    - Marketplace Apps on device
  - Android Deployment
    - Android Marketplace
    - Amazon App Store
  - Use 3rd party MRM tool
    - (SOTI, Airwatch, Afaria, others)

• Configuration
  - On device/by device
  - By email
  - By web site
Windows and Windows Mobile Installs

- **Windows Application**
  - Run ArcGIS Mobile Installer (Windows Application Feature)
  - Script and run in silent mode

- **Windows Mobile Application**
  - Tether to Windows and use Handheld Installer
  - Copy .cab file to device and tap to install
  - Use 3rd party MRM tool (SOTI, SCMDM, Airwatch, others…)

- **Application extensions**
  - Deployed with projects
  - 3.0 release embedded inside of project with data**
Attribution Requirements
For Custom Applications

- Attribution in About or Credits
  - API
  - Data

- Esri logo on map screens
  - When using ArcGIS Online basemap
Deployment and Licensing of Custom Applications
iOS, Android and Windows Phone

- App does NOT generate revenue
  - No licensing fees

- App DOES generate revenue (Sales, advertisement, etc...)
  - Licensing fees apply
Deployment and Licensing of Custom Applications

Windows Mobile

- ArcGIS Server Advanced Enterprise
  - Unlimited deployments

- ArcGIS Desktop
  - Includes one deployment

- Deployment packs of 5/50 are available
Road ahead

- Configurable Apps
- 3D Capabilities
- Offline Functionality
- New Platforms and APIs
- Release strategy
# Apps and SDKs

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**Apps**
- ArcGIS, ArcPad
- ArcGIS
- ArcGIS Explorer
- ArcGIS for iOS
- ArcGIS for Mac
- ArcGIS

**Runtime SDKs**
- .NET CF
- WPF, Java
- Silverlight, WP8
- Objective C
- Java
- Java, Qt
Platform Strategy
Built from a common GIS Runtime

Apps
Configurable App Framework for Mac OS X
Configurable App Framework for Smartphones and Tablets
Configurable App Framework for Windows

SDKs
Build your own app
Mac OS X Cocoa
iOS Cocoa Touch
Android Java
Linux Java
Windows Phone
Windows Metro
Windows WPF
Windows Java SE

Core Components
Geometry
Sync Framework
Graphics
Symbols
Map Grids
Spatial Reference
Feature Cache
Tiles
Messaging
Map Display
3D
More…
Road Ahead Session Schedule

- Road Ahead – ArcGIS for Mobile Devices
  - *Wednesday* July 25, 10:15am - Ballroom 06 B

- *Thursday* July 26, 10:15am - Ballroom 06 B
Thank You!