Choosing a Mobile Solution
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Agenda

• Understanding options for mobile GIS
• What questions to ask when deciding on a mobile platform
• Native vs. web
• Native Apps vs. The Mobile Web vs. Web Apps
• Mobile Solution Scenarios
• Mobile Development Options
Why mobile?

• Mobile is where the market is going

• Mobile internet adoption outpaces desktop internet adoption by 8x (*Economy + Internet Trends*)

• More smartphones than PCs will be sold in 2011
  - RBC analyst Mike Abramsky

• Within 5 years “More users will connect to the Internet over mobile devices than desktop PCs.”
  - Mary Meeker
Mobile development options

• **Native platform**
  - ArcGIS Runtime SDK for Windows Mobile
  - ArcGIS Runtime SDK for iOS
  - ArcGIS Runtime SDK for Windows Phone
  - ArcGIS Runtime SDK for Android
  - ArcGIS API for Flex
  - ArcPad Studio

• **Web**
  - ArcGIS API for JavaScript
How do you decide on a mobile solution

How will the application be used?
- Simple data updates
- Picture / Video / Voice data updates
- peer to peer interaction
- Complex data forms
- Geocoding and geoprocessing

Consume and query content

What’s your budget?
- We have to use existing skills and personnel
- The value of the project defines its scope

What devices are available?
- Provisioned devices
- Existing users devices
- What devices are available?

Can be disconnected

Mobile solution
Native vs. Web
Native vs. Web

• Native
  - Deployed application through app store / marketplace
  - Application deployed with the device

• Web
  - Web page accessed from the mobile device
Native platform benefits vs. cost

• **Performance**

• **Functionality**
  - Full access to device capabilities*
  - Push notifications

• **Usability**
  - Native platforms are designed for the device

• **Market penetration**
  - App store / Marketplace is where many mobile users look first

• **Easier to monetize**

• **Higher development cost, staff compensation**
Web platform benefits vs. cost

- Code reuse / budget
- One development environment
- Targeting multiple devices
  - Modifications needed for each device but development environment is the same
- Limited device access
- Full control over deployment
  - No approval process
- Faster to production
  - No app store
- Development costs much lower
Web Apps vs. The Mobile Web vs. Native Apps

- **Web application**
  - Application that run inside a device’s browser

- **Full web application**
  - Full web application running in a browser

- **Mobile web application**
  - Modified web application optimized for mobile devices

- **Native application**
  - Designed to run specifically on a computer, smartphone, or tablet
Case study: ESPN

- **Full web application**
  - Full content access
- **Mobile web application**
  - Focused content access
    - Main news stories
    - Vote for Sports nation
    - Simple data editing
    - Simple menus categorizing content
- **Native application**
  - Track scores for myTeams
  - Push updates for scores
  - Link to web content
- **Native – many other options**
Case Study: CNN

- Full web application
  - Full content – tabbed sections
- Mobile web application
  - Scrollable sections
- Native application
  - News by section
  - Location based news (My CNN)
  - iReport – data collection
Common themes from case studies

- **Full web application**
  - Most content

- **Mobile web application**
  - Focused content (similar to desktop)
  - Simple feedback

- **Native application**
  - More complex data entry
  - Location based content
  - Push notifications
Mobile Solution Scenarios
Mobile Solution Scenarios

- Initial damage assessment
- Building inspections
- Pipeline maintenance
- Voter information portal
- Tree inventory
Scenario – Initial Damage Assessment

• Following a natural disaster, I need to get my specialized field mobility teams deployed

• These individuals have the field knowledge / industry expertise and will be performing the field assessment
Initial Damage Assessment - Key points

• Ruggedized hardware
• Sometimes connected
• Non-GIS user
• Industry language
• Configure, not code
Initial Damage Assessment - Implementation

• Mobile solution to solve problem (Platforms)
  - ArcGIS for Windows Mobile, ArcGIS Server

• Related scenarios
  - Search and Rescue, Forestry / Wildfire, other Natural Disasters

• Supporting resources
  - Public safety damage assessment template
    http://www.arcgis.com/home/item.html?id=8c175986354046c c801757d47372c3da
Demo

Public Safety Damage Assessment
Why ArcGIS for Windows Mobile

- Professional GIS data collection
- Good GPS and data collection controls
- Easily configurable without code

- Consume and query content
- Picture / Video / Voice data updates
- Peer to peer interaction
- Complex data forms
- Provisioned devices
Scenario – Building inspections

- Building inspectors need an easy way to add inspection information in the field
Building Inspections - Key points

- Quick integration with the rest of the GIS
- Inspectors are not necessarily GIS professionals
- Simple / Familiar User interface
- Accuracy is not of high concern (get me close)
Building Inspections - Implementation

- Mobile solution to solve problem (Platforms)
  - ArcGIS Runtime SDK for iOS, ArcGIS Server
- ArcGIS.com template selected
  - Code Violation for iPad
Demo

Code violation for iPad
Apple Developer Program
ArcGIS Runtime SDK for iOS

http://resources.arcgis.com/content/arcgis-iphone/api

ArcGIS Runtime SDK for iOS

Note, we are migrating to our new Communities page on the Resource Center. This section is being phased out. Please update your bookmarks.

Version 2.3 (Released June 22nd, 2012)

The ArcGIS Runtime SDK for iOS enables you to build applications that utilize the powerful mapping, geocoding, geoprocessing, and custom capabilities provided by ArcGIS Server using Objective C and deploy them to Apple iPhone, iPod touch, and iPad devices. The SDK includes a native Objective-C API along with documentation and samples that can be used within the Xcode Integrated Development Environment (IDE).

Before downloading please read the System Requirements and Getting Started documents. When you are ready to deploy your iOS application, please read the Developer Deployment section.

Sign in and then click the Download button to install the Runtime SDK package.

If you have inquiries regarding the application, please email arcgis4iphone@esri.com.
Code Violation for iPad

**Code Violation for iPad (ArcGIS 10)**

Code Violation for iPad allows code enforcement officers, building officials, and zoning administrators to collect violation and related inspection information in the field.

- **Release Notes:**
  - 10/6/11 - Update adds support for Xcode 4.0 and ArcGIS API for iOS.
  - 5/18/11 - First release of the Code Violation for iPad Template.

- **Software Requirements:**
  - ArcGIS Server 10 w/ SP 1 for the Microsoft .Net Framework – Standalone
  - ArcGIS Desktop 10 w/ SP 1 and Maplex Labeling Extension
  - Apple iOS SDK 4.0 or higher
  - Xcode 4.0 or higher
  - ArcGIS API for iOS 2.0.1

- **Access and Use Constraints:**
  - Sample data governed by the data permissions granted by the City of Naperville.
Xcode project: Code Violation for iPad
Why native solution

- Internal Enterprise deployment
  - Non-gis users
- ArcGIS.com template available
- UI and hardware meet requirements for detailed assessment
Scenario – Pipeline maintenance

- Gas leak detection / leak survey safety reporting mapped during pipeline inspection
Pipeline maintenance - Key points

- Precise correlation of leak surveys to mains & services
- Eliminates wear and tear on the survey books
- Data must be easily integrated with the enterprise GIS
- Accuracy is key, base station / satellite integration
- Ruggedized Hardware
- Forms based data collection
Pipeline maintenance - Implementation

• Mobile solution to solve problem (Platforms)
  - ArcGIS for Windows Mobile, ArcGIS Server

• Related scenarios
  - Utilities and Communications

• Supporting resources
  - Infrastructure Mobile Map Template for ArcGIS 9.3
Why ArcGIS for Windows Mobile

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- Consume and query content
- Picture / Video / Voice data updates
- Peer to peer interaction
- Complex data forms
- Provisioned devices
Scenario – Voter Information Portal

- I need a solution that disseminates voter information to the public through a public facing website as well as mobile devices
Voter Information Portal - Key points

- Voter information must be easily accessible
- Desktop and mobile
- Overlapping content between both experiences
- Simple mobile location based user interaction
Voter Information Portal - Implementation

- Mobile solution to solve problem (Platforms)
  - ArcGIS API for JavaScript, ArcGIS Server
- Related scenarios
- Supporting resources
  - Desktop web
    - Election Polling Places Template
    - Election Results Viewer Template
  - Mobile Web
    - Find Nearby developer sample
Demo
JavaScript Sample
Why JavaScript

- All the “why web platform”
- More easily deploy across platforms
- Leverage web developers skill set
Scenario – Bridge inspections

- DOT needs to collect bridge inspections
Bridge inventory - Key points

- Very little or no development budget / expertise
- It's ok if users have to have network connectivity
- Want to leverage existing phones for collecting data
- Need an application that inspectors can use
- Avoid hosting infrastructure to support the application
Bridge inventory - Implementation

• ArcGIS Online + Mobile solution to solve problem
• ArcGIS Native application, ArcGIS Server, ArcGIS.com
• Editor tracking through ArcGIS Online for Organizations
Demo
Bridge inspections
Why Native ArcGIS Application

- Fast deployment
  - All you need is a web map
  - Users will need instruction on the map to load
- Easy updates of GIS data
- ArcGIS Online provides easy hosting

- Consume and query content
- Geocoding
- Picture / Video / Voice data updates
- Existing users devices
- We have to use existing skills and personnel
More Development Options
Write once – deploy multiple (sort of)

• Never seamless between platforms
  - Tweaks are always necessary: iOS to Android to Windows Phone
  - Tablets may warrant their own interface

• JavaScript compact build
  - Style appropriately for platform
  - Dojox.mobile likely easiest approach

• ArcGIS API for Flex
JavaScript compact build

- JavaScript API with smaller footprint (~30KB)
  - No dijits
  - Limited modules
- Can use with variety of JavaScript toolkits
  - Dojox.mobile, jQuery mobile, jQtouch, Sencha Touch, etc.
- PhoneGap
  - Build native app from JavaScript
  - Development requirements vary by targeted platform
- No limitations on platform, developer platform or IDE
Demo

Desktop (AIR), Desktop Browser (Flash Player), Mobile (AIR)
Sharing code across platforms

Flex Library Project (generic library)

Web (runs in Adobe Flash Player)

Desktop (runs in Adobe AIR)

Mobile (runs in Adobe AIR)
Flex Library Projects

- Repository for reusable code
  - Share code between apps
- ActionScript Documentation
  - ASDoc
- ANT
  - Automate tasks
Desktop applications (AIR)

- Adobe Integrated Runtime
- Desktop apps
  - Application Builder
  - TweetDeck
- WindowedApplication
- More access to local resources
  - Filesystem
  - SQLite
Desktop browsers (FlashPlayer)

- Targeting web browsers on the desktop
- FlashPlayer
Mobile (AIR)

- Adobe Flex SDK 4.6
- Adobe Flash Builder 4.6
- Flex Mobile Project
  - iOS, Android, BlackBerry
  - AIR Native Extensions (ANE)
- Testing during debug
- Export, cross compile into / with AIR Captive Runtime
ArcGIS API for Flex

- Leverage existing skills
- Good support for device capabilities
  - Camera, Accelerometer, GPS

- ArcGIS API for Flex – An Introduction
  - Wed 10:15 – 11:45 AM - Ballroom 06E
- ArcGIS API for Flex – Advanced Topics
  - Wed 8:30 – 9:45 AM - 32B
  - Thurs 10:15 – 11:30 AM – 32B
- Killer Apps: HTML5 and Flex
  - Wed 12:00 – 1:00 PM – Ballroom 06A
iOS using C# - MonoTouch from Novell

- **Platform**
  - iOS

- **Development platform**
  - Mac

- **Development environment**
  - Apple’s iPhone SDK
  - ArcGIS API for iOS
  - MonoDevelop

- **MonoTouch Map Viewer for iPhone 4** on ArcGIS.com
  - Bound assembly to ArcGIS API for iOS native library

- The end result is a true native iOS application
Getting more information
Where can I get more information?

- **Resource center**
  - [http://resources.arcgis.com/content/mobilegis/about](http://resources.arcgis.com/content/mobilegis/about)

- **ArcGIS Online groups**
  - [ArcGIS Mobile Code Samples](https://www.arcgis.com/arcgisforos_IOS.html)
  - [ArcGIS for iOS Developer Samples](https://www.arcgis.com/arcgisforos_IOS.html)

- **Training**
  - [Building Application Using the ArcGIS Mobile SDK](https://www.arcgis.com/arcgisforos_IOS.html)
  - [Building Web Applications Using the ArcGIS API for JavaScript](https://www.arcgis.com/arcgisforos_IOS.html)
Esri Training for Mobile GIS Developers
http://www.esri.com/training

• Instructor-Led Course
  - Authoring and Serving ArcGIS Mobile Projects

• Web Courses
  - Mobile GIS: Creating Web Maps for Lightweight Mobile Apps
  - Mobile GIS: Getting Started with the ArcGIS API for iOS
  - Mobile GIS: Using the ArcGIS for iOS Application

• Online Training Seminars (free, many available!)
Summary

- What is your business problem?
- What are your requirements?
- What is your budget?
- What is negotiable?
Steps to evaluate UC sessions

- My UC Homepage > “Evaluate Sessions”
- Choose session from planner
  - OR
- Search for session
• Thank you for attending
• Have fun!
• Open for Questions

• Please fill out the evaluation:

  www.esri.com/ucsessionssurveys

  Offering ID: 652