Agenda

• Introduction
  - What is Mobile GIS
  - Positioning

• Software Development Kit
  - Framework SDK
    - Architecture
    - Demo
  - Application SDK
    - Introduction and Key Concepts
    - Demo

• Road Map
Introduction
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
- Helps to Make Informed and Timely Decisions
- Replaces paper based work flows
ArcGIS System

ArcGIS mobile functionality exposed through applications and APIs

- Discover
- Create
- Manage
- Visualize
- Analyze
- Collaborate

Cloud

Enterprise

Local
Esri Mobile Technologies

Mobile capabilities of the ArcGIS system

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

Apps and APIs

Form Factors

ArcGIS Mobile

Functionality (Mobility Services)
Esri Mobile Products

**ArcGIS for ...**

**Rugged Devices**
- ArcGIS Mobile
- ArcPad

**Smartphones and Slates**
- iOS
- Microsoft Windows Phone

**Android**
ArcGIS for Windows Mobile

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
ArcGIS for Windows Mobile

- **Client Applications**
  - 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
ArcGIS Mobile Workflow: Overview

1. Build Mobile GDB
2. Author Mobile Map
3. Publish Mobile Service
4. Secure Service/Transmission/Device/Data
5. Design & Build Mobile Application or Extension
6. Build Data Deployment Packages
7. Deploy Mobile Solution
8. Synchronize Mobile Solution
Software Developer Kit
Software Developer Kit

Core SDK API
- Builds new field applications from scratch
- Embed GIS into existing Line-of-business applications
- Connected or occasionally connected filed operations

Conceptual Documentation, API Reference, VS components & templates

Application SDK API
- Extends ready-to-deploy applications
- Creates new tasks or customizing existing functions
- Available for Windows and Windows Mobile

Sample Code
Core SDK and Application SDK

Win Forms

Application SDK

Windows Mobile

WPF

Core SDK

Sync Agents

UI Controls

Spatial Reference

GPS

Geometry

Mobile Cache


Network Resources

Microsoft Visual Studio 2008
Core SDK API

- GPS
- Map
- MapAction
- Feature Layer
- Annotation Layer
- Mobile Service Connection
- Sync Agents
- Mobile Cache
- Tile Cache/StreetMap
Core SDK – Demo

- Getting Data
  - Use TileCacheMapLayer
  - Use GPS

- Query Data
  - Select Data

- Create New Feature
- Post Updates to Server
Application Framework - Introduction

• Customize out-of-the-box app to better fit your data collection/inspection needs
  - Simplified data collection
  - Auto-populating fields…

• Add new functionalities as required by organization’s field work
  - Laser rangefinder
  - Bluetooth Camera integration
  - Navigation…

• App is part of SDK, comes free, easy to extend

• Benefits - lower the cost, repurpose the app, faster and easier
Example – Simplified Fire Data Collection
Example – Use Laser Rangefinder for Data Collection
Example – Provide Turn-by-Turn Navigation
Application SDK – Conceptual Architecture

MobileApplication

Project

GPSConnection

ViewMapTask
CollectFeaturesTask
WorkListTask
SearchTask
SynchronizeTask
ViewFieldCrewTask
Custom Extensions
Custom Tasks

EditAttributesDialog
ViewAttributesDialog

Page
MapPage
ListVIEWPage
Dialog
Group

WPF
Windows Mobile

GPSAveragingMethod
GPSStreamingMethod
SketchMethod
Application SDK – Key Concepts

- **MobileApplication**
  - Represents the instance of mobile application
- **Project**
  - A device may contain multiple projects
  - The app can open one project at a time
- **Task**
  - Think of it as a workflow for field operation
  - Appears on Tasks List
- **ProjectExtension**
  - Custom implementation that changes existing workflow, or introduce new business logic
  - Plug-into the app through extensible points
Application SDK – Extensible Points

- MapPage
- CollectFeaturesTask
- View/Edit Attributes Page and Dialog
- MenuDialog
- SearchTask/WorkList Task
- SettingsPage
- Various Events
- and more…
App Framework Demo – Tornado Damage Assessment

- Auto-populate address for damage site
- Workflow
  - Collects damage assessment point
  - Collects attributes
  - Street address gets auto-populated from underlying parcel layer
App Framework Demo – Laser Rangefinder

- Use Laser Rangefinder for collecting tree height
Deployment Demo

• Deploy to MPC and enable extension in mobile project
  - `<ArcGIS Mobile Install Path>\Mobile10\bin\Extensions`

• Deploy to device
  - **Windows**
    - `<ArcGIS Mobile Install Path>\bin`, or
    - `C:\ProgramData\ESRI\ArcGIS Mobile\Extensions\` (for Vista and Windows 7), or
    - `C:\Documents and Settings\All Users\Application Data\ESRI\ArcGIS Mobile\Extensions` (for XP)
  - **Windows Mobile**
    - `\Program Files\ArcGIS\Mobile\10`
How to get started?

• **Project Templates**
  - Seamless integration with Visual Studio IDE
  - Creates Task or ProjectExtension solutions
  - Supports both Windows and Windows Mobile
  - Includes VS project for MPC

• **Developer Help**
  - Discusses architecture of the framework
  - Reveals extensible points with code snippets

• **SDK Samples**
  - Implemented in C#
  - Demonstrates various extensible points
Road map - ArcGIS Mobile 10.1

• **Data Model Support**
  - Support tables, attachments

• **Data Collection and Editing**
  - Simplified Data Collection Experience
  - Editing of Existing Feature Geometry
  - Related feature data collection
  - Improved GPS Collection (GNSS/RTK support)

• **Map Display**
  - Waypoint Navigation
  - GPS Improvements (Heads-up display, Configuration)
  - Coordinate display (MGRS, DMS, ...)

• **Publishing and Deployment**
  - Map Analyzer and Publishing support (MSD)
  - Project Center improvements
    - Improved Ux
    - Packaging projects and cache
    - Basemap Catalog
  - Improvements to support desktop workflows
  - Improved ArcGIS Online/Portal integration
Questions?