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ArcGIS for Windows Mobile – Developing Applications

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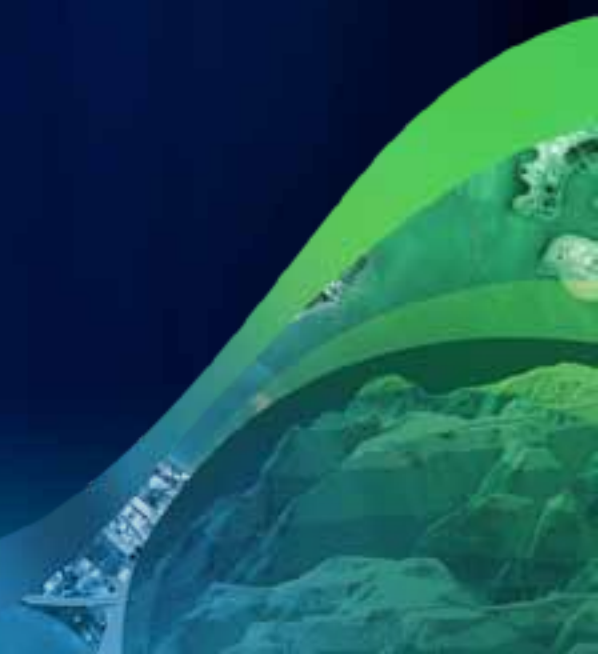


Agenda

- 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

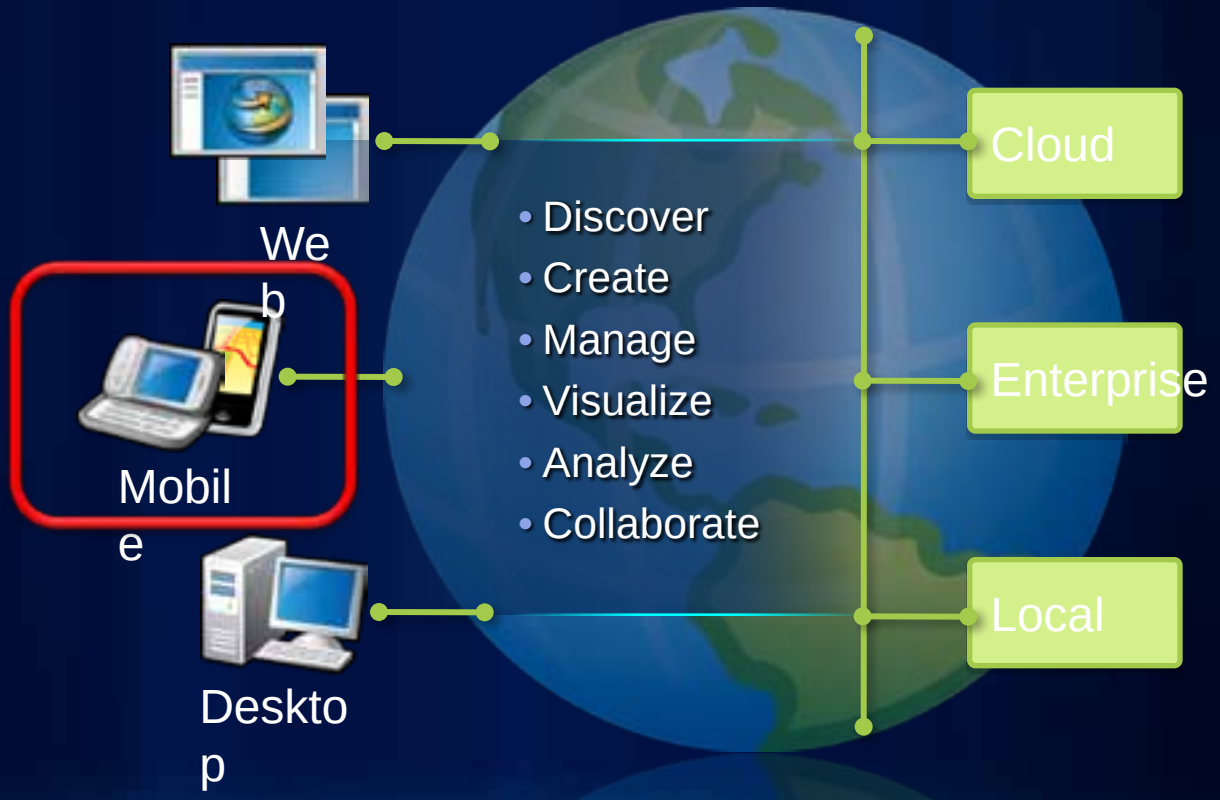
- **With a mobile GIS solution you can**
  - **Carry your maps to the field**
  - **Collect and Update Geographic Information**
  - **Track and Geo-collaborate**

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

Esri Mobile Technologies

Mobile capabilities of the ArcGIS system

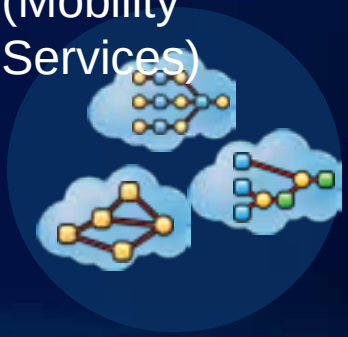
Apps and APIs

Platforms

ArcGIS Mobile

Form Factors

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

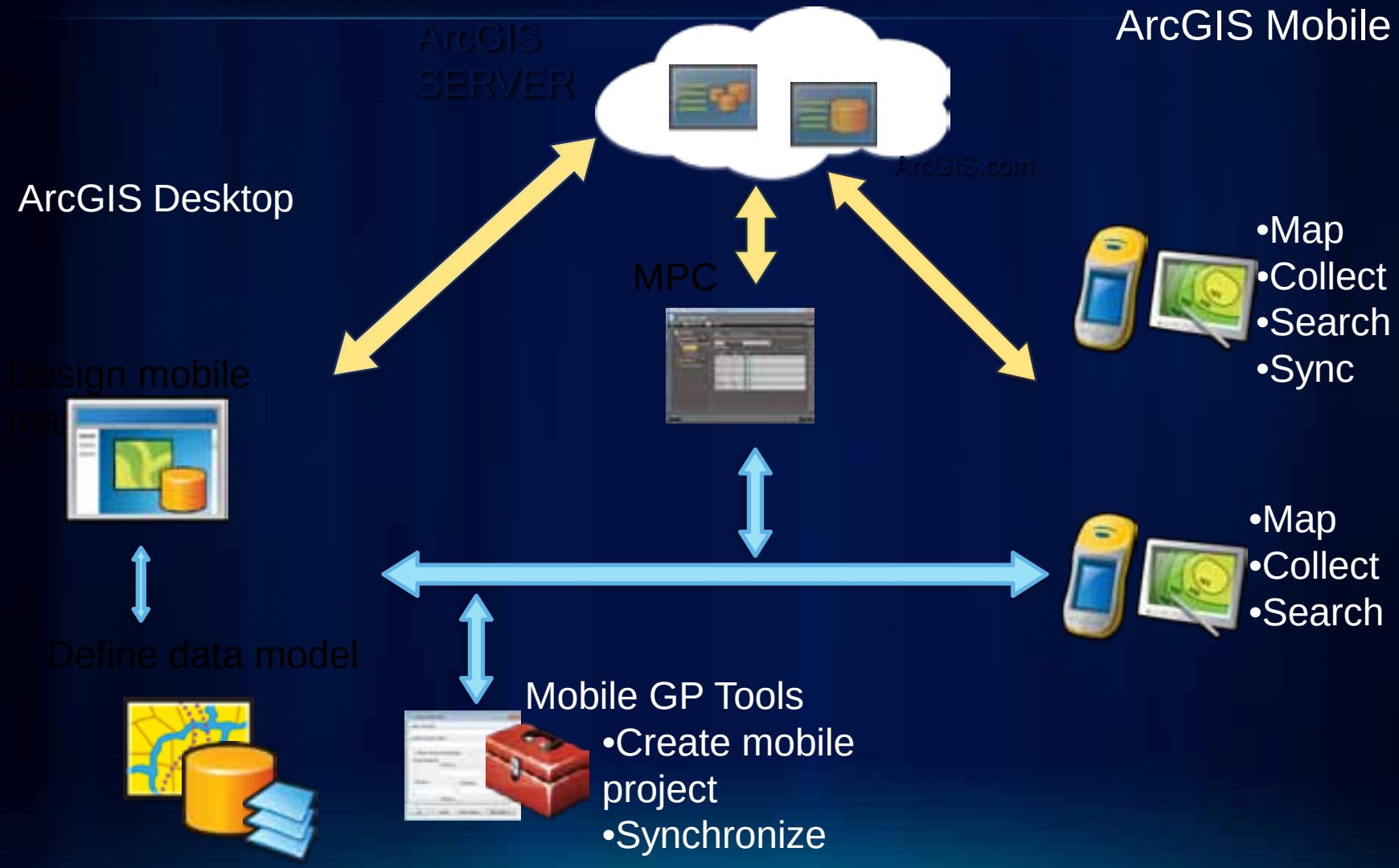
Land Management

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

Applications plus SDK

ArcGIS Mobile 10



ArcGIS Mobile Workflow: Overview

Software Developer Kit

Software Developer Kit

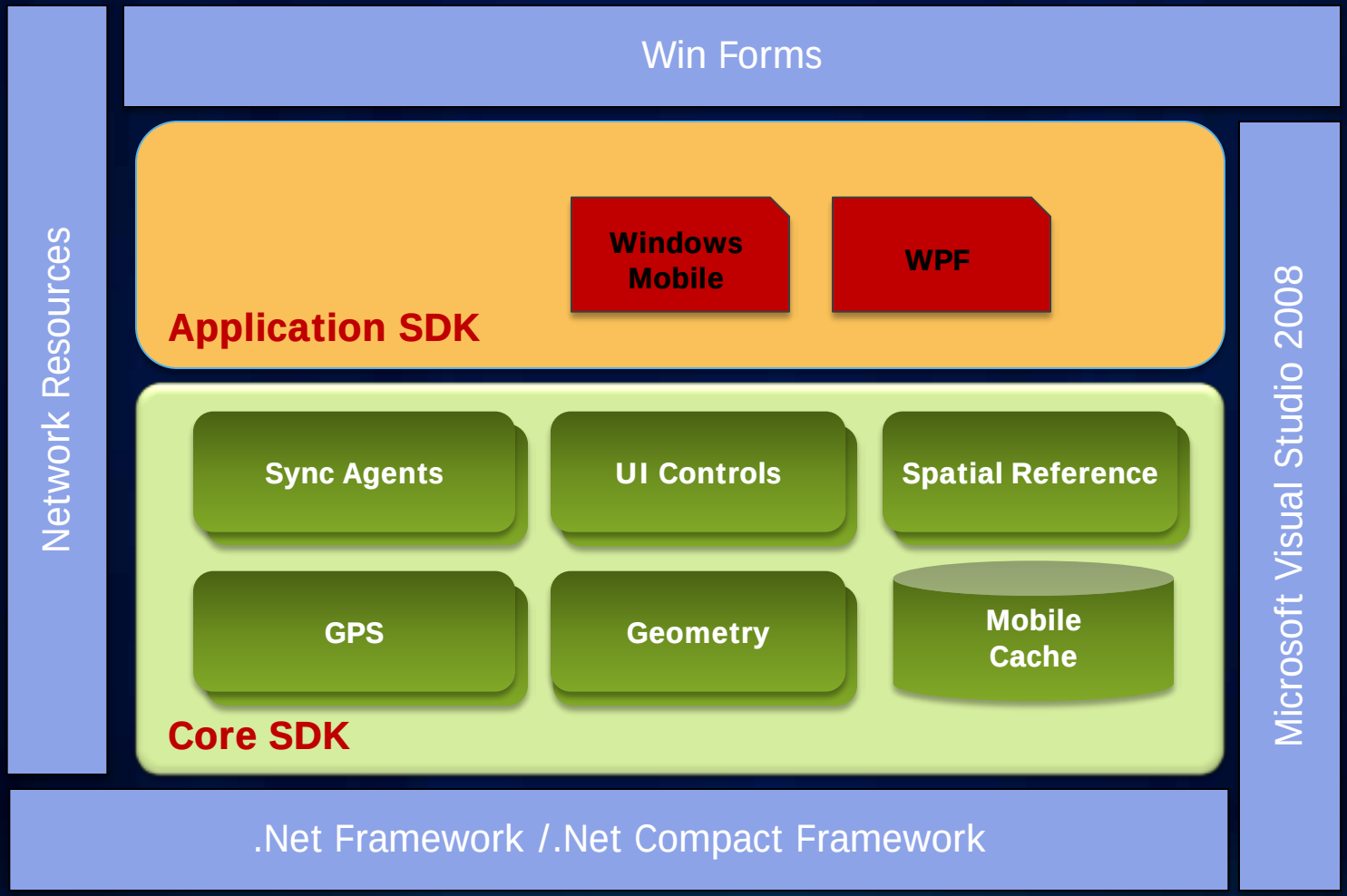
Core SDK API
- Builds new field applications from scratch
- Embed GIS into existing Line-of-business applications
- Connected or occasionally connected filed operations

Conceptual Documentation, API Reference, VS components & templates

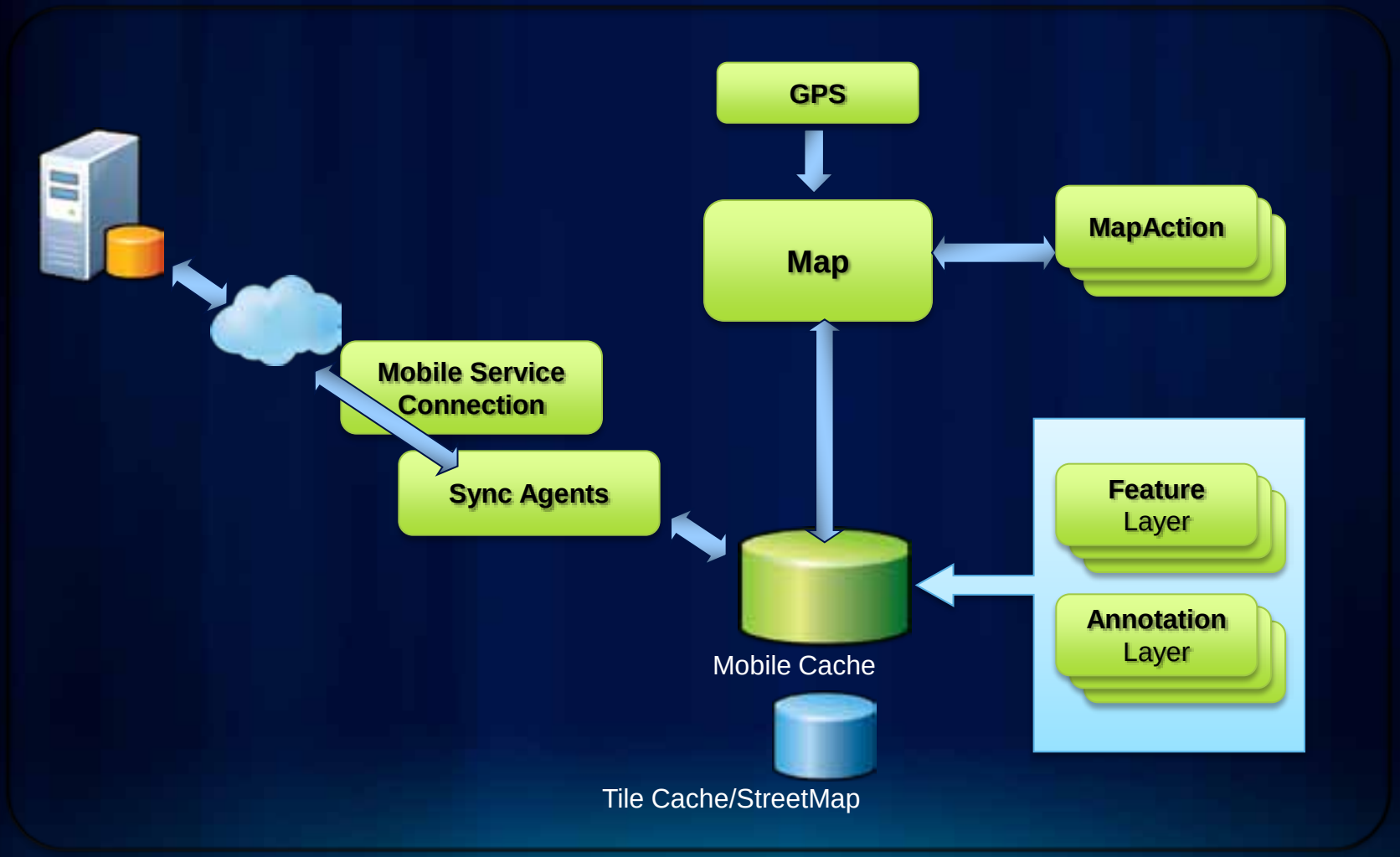
Sample Code

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

Core SDK and Application SDK



Core SDK API


GPS
Map
MapAction
Mobile Service Connection
Sync Agents
Feature Layer
Annotation Layer
Mobile Cache
Tile Cache/StreetMap

Core SDK – Demo

- Getting Data
- Use TileCacheMapLayer
- Use GPS

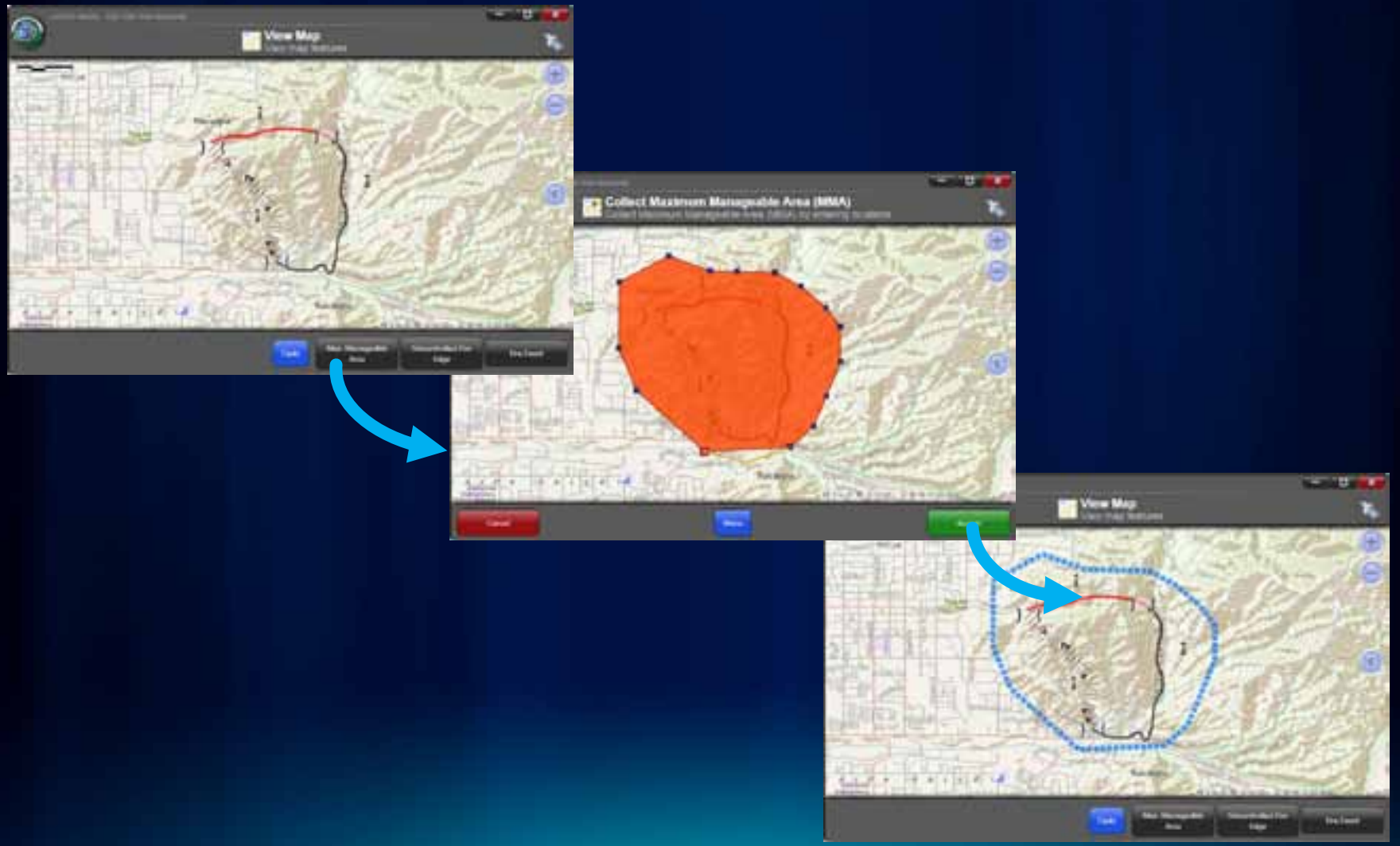
- Query Data
- Select Data

- Create New Feature
- Post Updates to Server

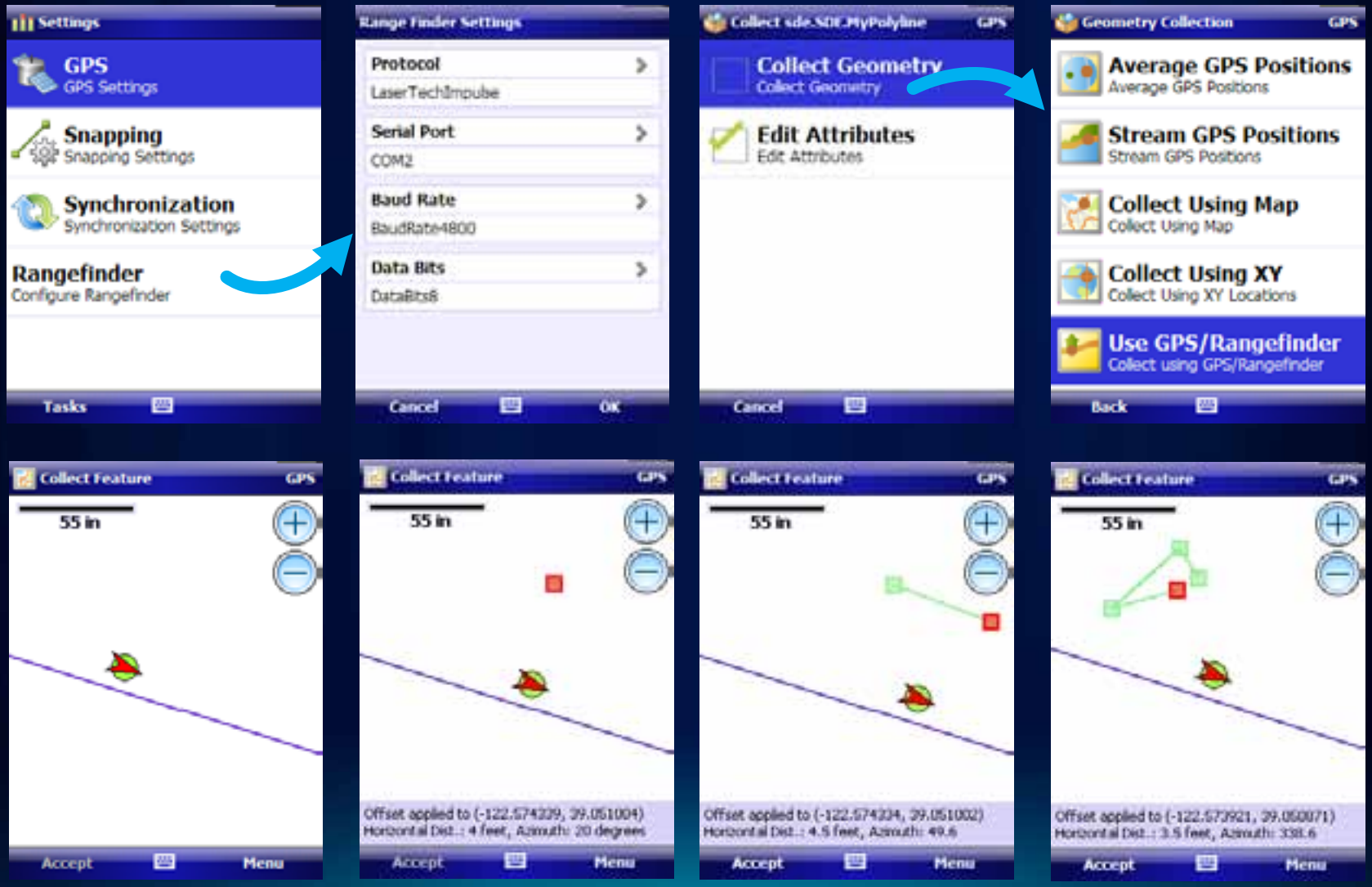
Application Framework - Introduction

- 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

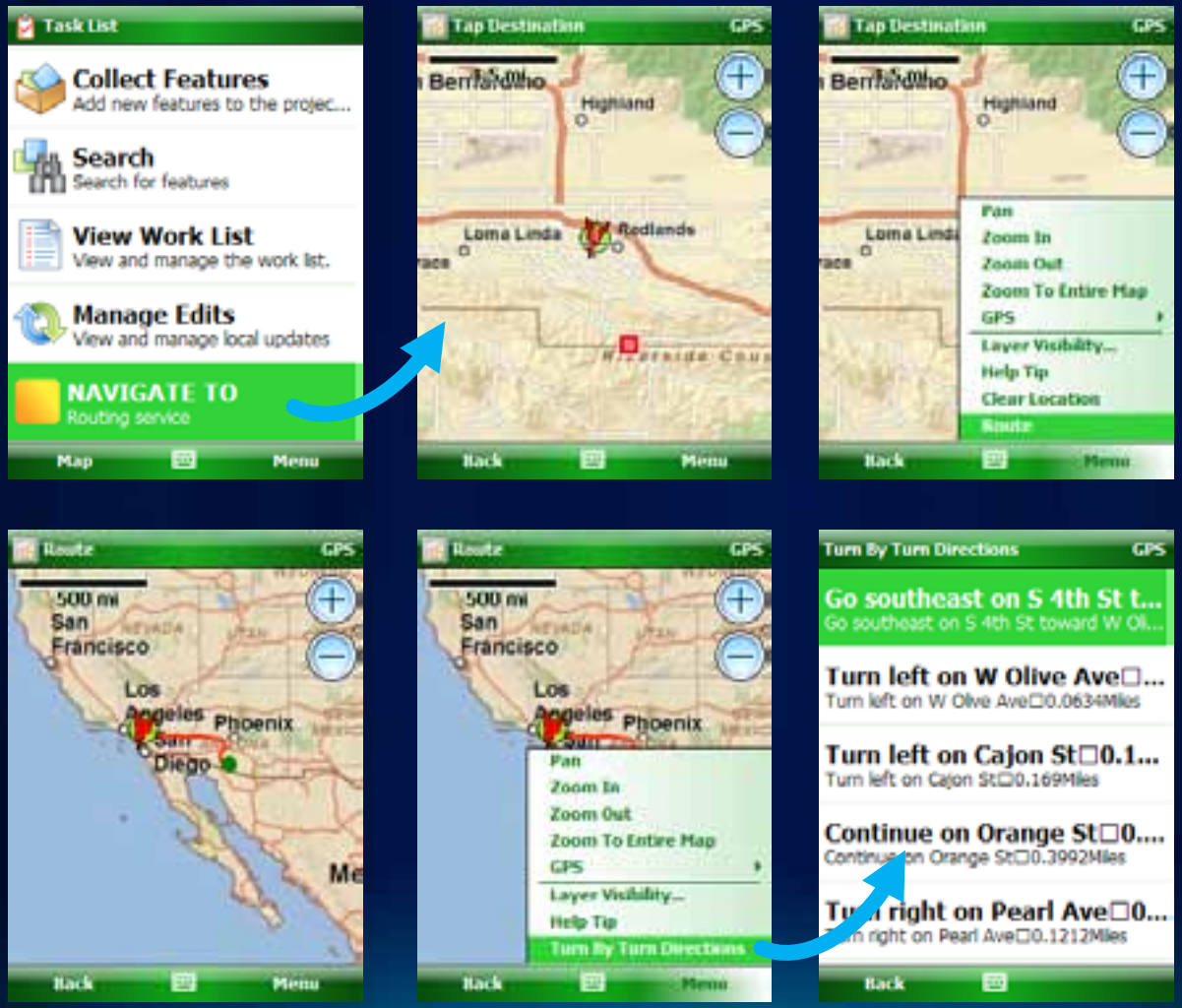
Example – Simplified Fire Data Collection



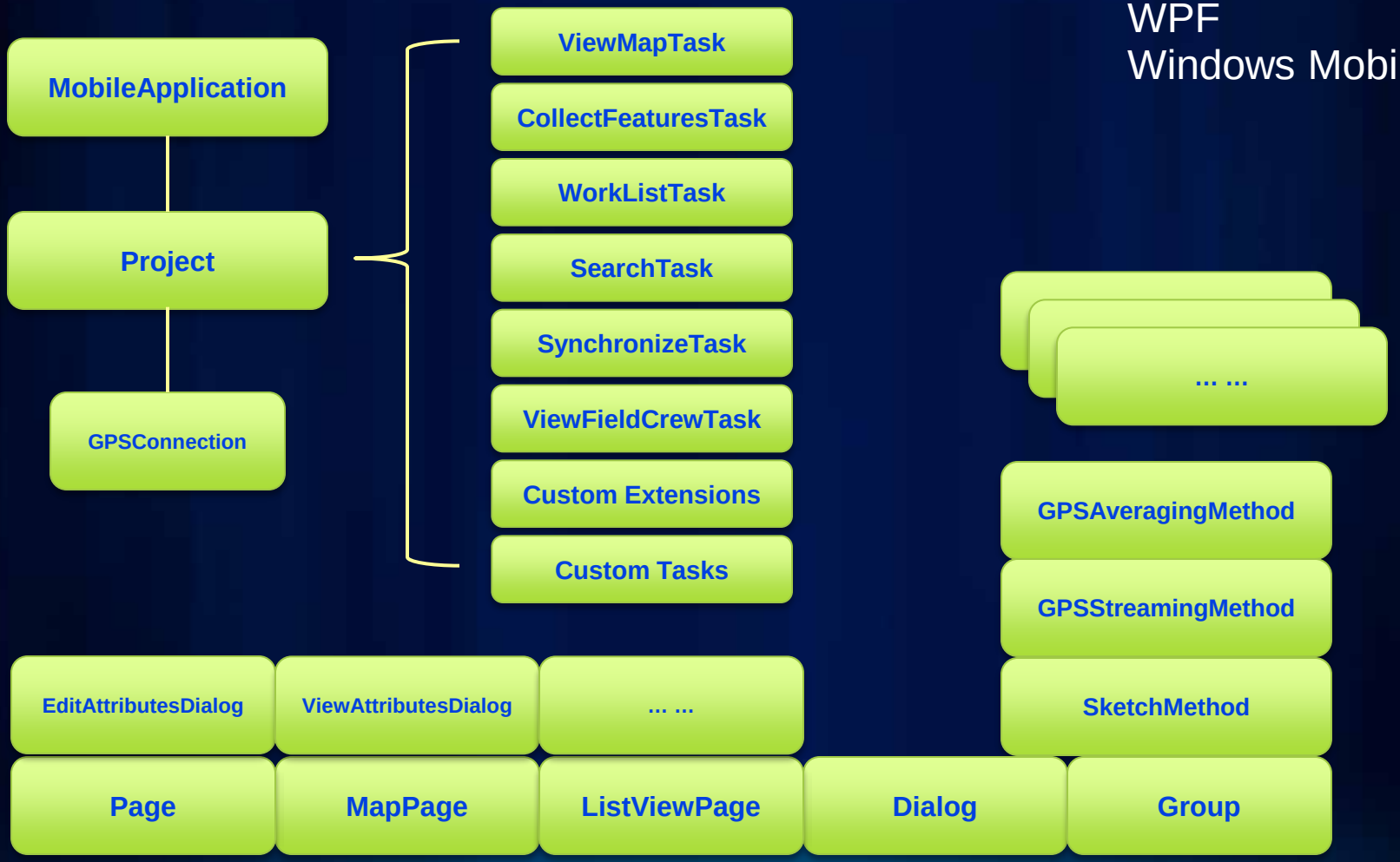
Example – Use Laser Rangefinder for Data Collection



Example – Provide Turn-by-Turn Navigation

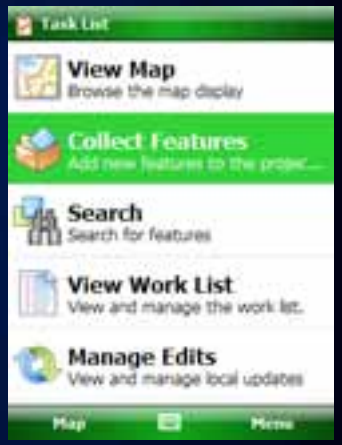


Application SDK – Conceptual Architecture



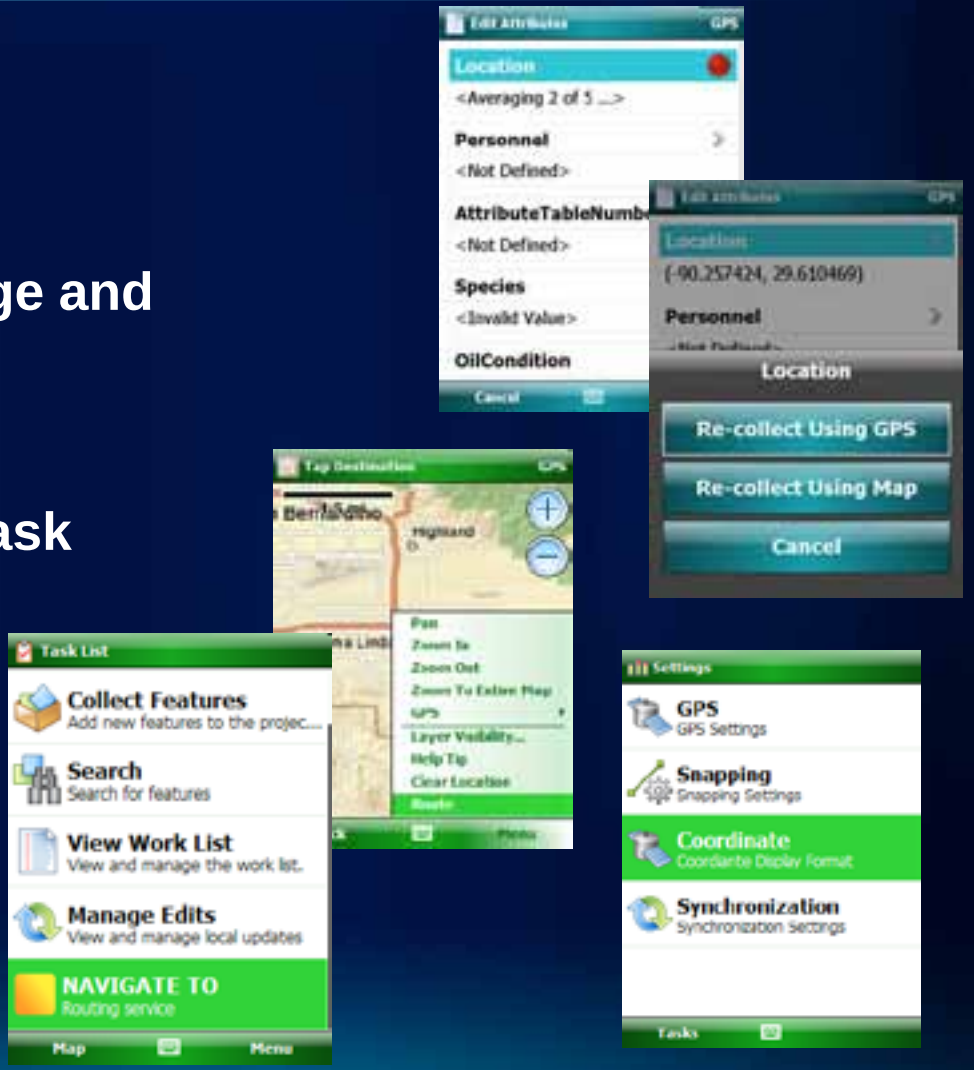
Application SDK – Key Concepts

- **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



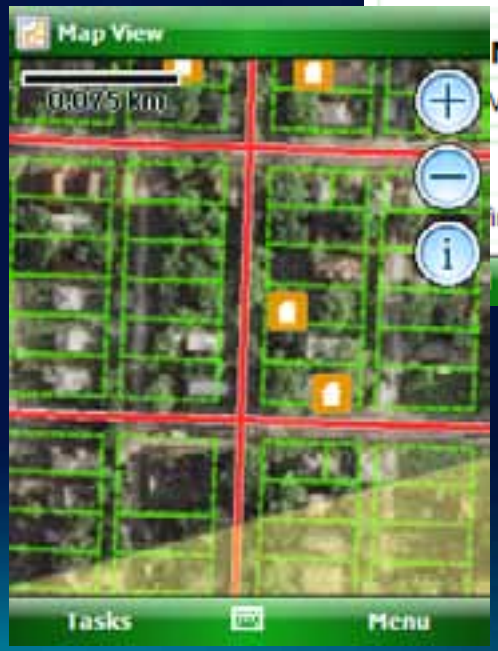
Application SDK – Extensible Points

- 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?