Part 1 and Part 2

- **Part 1**
  - Overview
  - Building Applications with the SDK
    - The Map and Layers
    - Interacting with the Map
  - Deployment

- **Part 2**
  - Local Server and Services Architecture
  - Analysis
    - Identify, Query, Geoprocessing
  - Editing
  - Product Summary & Business Model
  - Release and Future
Local Server and Services
ArcGIS Runtime Local Server Architecture

- All GIS functionality provided through Services
- New ArcGIS Runtime Local Server

ArcGIS Runtime API for Java

ArcGIS REST Services

ArcGIS Runtime Local Server
Benefits Of A Service Based Architecture

• ArcGIS REST Services
  - GeoServices REST Specification

• Clear separation of API from implementation
  - The Local Server can evolve without breaking clients

• Managed APIs separated from Platform
  - One Application will run natively on 32 and 64 bit Machines
ArcGIS Runtime Local Server

- Treat it like a Black Box

ArcGIS Runtime API for Java

ArcGIS REST Services

The Black Box

ArcGIS Runtime Local Server
Inside The Black Box

ArcGIS REST Services

Connected via http REST

Embedded Web Server

Shared Memory

ArcGIS API

Application

Worker

Worker

Worker

Process One

Process Two

Process Three

Process Four

RuntimeLocalServer.exe
Client and Local Server Communication

• http / REST
  - Minimal Call Overhead
    - REST API Calls Coarse Grained
    - Asynchronous
  - Security Considerations
    - Not an external port
    - Unique URL for each Instance

http://127.0.0.1:50000/JyHq9c/arcgis/rest/services/lostlakegeology/MapServer
The ArcGIS Runtime Local Server

- Not a Server as You Know It
  - Not a Generic Web Server
  - Not Tunable
    - It is not an embedded Tomcat!
  - Not a lightweight version of an ArcGIS Server

- Each Local Server serves one Application
- Deploy it if you are going to use Local Services
- Local Server Utility controls some settings
Local Server and Services

Ralf Gottschalk

- Local Server Demo
Analysis
Analysis

• Simple searching and analyzing data
  - Identify, Query, Geocoding
• Task framework (com.esri.tasks) package
• IdentifyTask, QueryTask, Locater tasks
• Utilize both Online and Local Services
• Same programming pattern

1. Define input parameters
2. Execute task synchronously or asynchronously
3. Process and display results
Types of Tasks

- Identify
  - Attributes of specific features
  - Map
  - IdentifyTask(URL to DynamicMapServiceLayer)

- Query
  - Asking attribute and/or spatial questions
  - Layer
  - Where Clause
  - QueryTask(URL to a Layer)

- Locator
  - AddressToLocation or LocationToAddress
  - Locator(URL to a Geocode Service)
Identify, Query, Geocoding
Ralf Gottschalk

- Tasks
  - Identify
  - Query
  - Geocode
What is Geoprocessing?

- A set of tools included in the ArcGIS System to perform GIS Analysis
  - Spatial Analysis, Networking, Data Management, and more…

- Built in System Tools (Supported Tools Documented)

- Custom Script Tools implemented using Python

- Models - sequence of tools that together perform complex GIS analysis
Use Geoprocessing in the ArcGIS Runtime

• Geoprocessing provides advanced GIS analysis
  - Functionality that goes beyond the API
  - Accessed through Geoprocessing Services

• ArcGIS Online’s published services and your enterprise’s ArcGIS Server Services

• Local Geoprocessing Services created from Geoprocessing Packages (GPKs)
Programming model for Online and Local

• Local Only
  - Create a LocalGeoprocessingService providing the path to the gpk
  - Acquire the URL of the Service

• Create a Geoprocessor
• Provide it the URL of the Geoprocessing Service
• Tool Input Parameters
• Execute or Submit the Geoprocessing task
Parameters

- The input and output parameters types are documented
- Input features to the model use GPFeatureRecordSetLayer
  - Points, lines and polygons
  - Spatial reference
  - Attributes
  - Populate from client side by Feature Layer or Graphics Layer
- Maps to the Feature Set data type parameter in Model Builder
Packaging Geoprocessing Analyze

- Prepare Window shows
  - Errors that prevent the model from running on another machine
  - Required Documentation for sharing
  - Additional Runtime deployment requirements
  - Runtime extension licenses
Editing
Introduction

- ArcGIS Runtime editing supported by feature services
- ArcGIS for Server or ArcGIS Runtime
- ArcGIS Runtime SDKs include:
  - Toolkit for editing
  - API Components
- Edit environment authored in *ArcGIS for Desktop*
Editing Workflows

ArcGIS Runtime Client APIs

ArcGIS Server

ArcGIS Runtime Local Server
ArcGIS for Server feature service workflow

- Multiuser GDB
- Feature templates
- Default edit tool
- Attribute settings
- ArcMap Doc
ArcGIS for Server feature service workflow

- Multiuser GDB
- ArcMap Doc
- ArcGIS Server

Feature Service

URL

Feature templates
Default edit tool
Attribute settings
ArcGIS Runtime feature service workflow

Multiuser / File GDB

ArcMap Doc

Feature templates
Default edit tool
Attribute settings
ArcGIS Runtime feature service workflow

Multiuser / File GDB → ArcMap Doc → Map Package

Feature templates
Default edit tool
Attribute settings
ArcGIS Runtime feature service workflow

- Multiuser / File GDB
- ArcMap Doc
- Map Package
- ArcGIS Runtime
- Local Feature Service
- URL
- Feature templates
  - Default edit tool
  - Attribute settings
Runtime Geodatabase Editing Options

- **Temporary edits or what-if scenarios**
  - FileGDB within Map Package

- **Permanent edits to FGDB**
  - FileGDB referenced by Map Package

- **Permanent edits to RDBMS**
  - RDBMS referenced by Map Package

- **Permanent edits to RDBMS**
  - RDBMS via *ArcGIS for Server* Feature Service
Authoring maps for editing

- Add just the editable layers to the map document
- Choose map coordinate system wisely
- Set layer and table properties
  - Define symbology
  - Field properties (aliases, visibility)
  - Define feature templates
  - Set subtypes and attribute domains
  - Layer description / copyright
  - Attachment support
  - HTML popups
SDK provides edit components

- “Toolkit” contain UI controls for editing:
  - Edit Tools Picker
  - Template Picker
  - Feature Edit Overlay
  - Attribute Edit Dialog
  - Attachment Editor

- Full access to the code for the Toolkit
Editing
Ralf Gottschalk

- Toolkit
- Trails Demo
Licensing for Deployment
Runtime Licensed Deployment Levels

• Basic
  - Full client to ArcGIS Server services
  - Local Tile Packages
  - GPS Support

• Standard
  - Local Map, Geoprocessing and Locator Packages
  - Geodatabase Editing
  - Routing

• Extensions
  - Spatial Analyst
  - 3D Analyst (2D display and 3D analysis)
  - Network Analyst
Runtime Windows and Linux Deployment

- **Basic**
  - No additional cost
  - Apps powered by ArcGIS Server and / or ArcGIS Online

- **Standard & Extensions**
  - Sold as 25-packs

- **Pricebook update will be coming soon**
## Core Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>ArcGIS Runtime</th>
<th>ArcGIS Engine</th>
<th>Map Objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Object Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast Display</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Licensing Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geodatabase Read/Write</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ArcGIS Server Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support Rasters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilize Geoprocessing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support ArcMap Cartography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annotations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symbols &amp; Styles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side by Side SDK and Deployment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deploy just what you need</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Platforms
Ralf Gottschalk

- Windows 7
- Linux
  - RedHat
  - Ubuntu
  - Suse
- MacBookPro
Roadmap
Release Plan

- Pre-release available in April
- Extended Beta 2 licenses available on the Customer Care Portal now
- Final available in the summer
- Off cycle release schedule after 1.0
Roadmap - ArcGIS Runtime SDK for Java

- Data Synchronization Framework
- Printing and Exporting
- 3D
- Image Server