



Developing Offline Apps with ArcGIS Runtime SDKs

Euan Cameron

Justin Colville

Will Crick

Technical Workshop

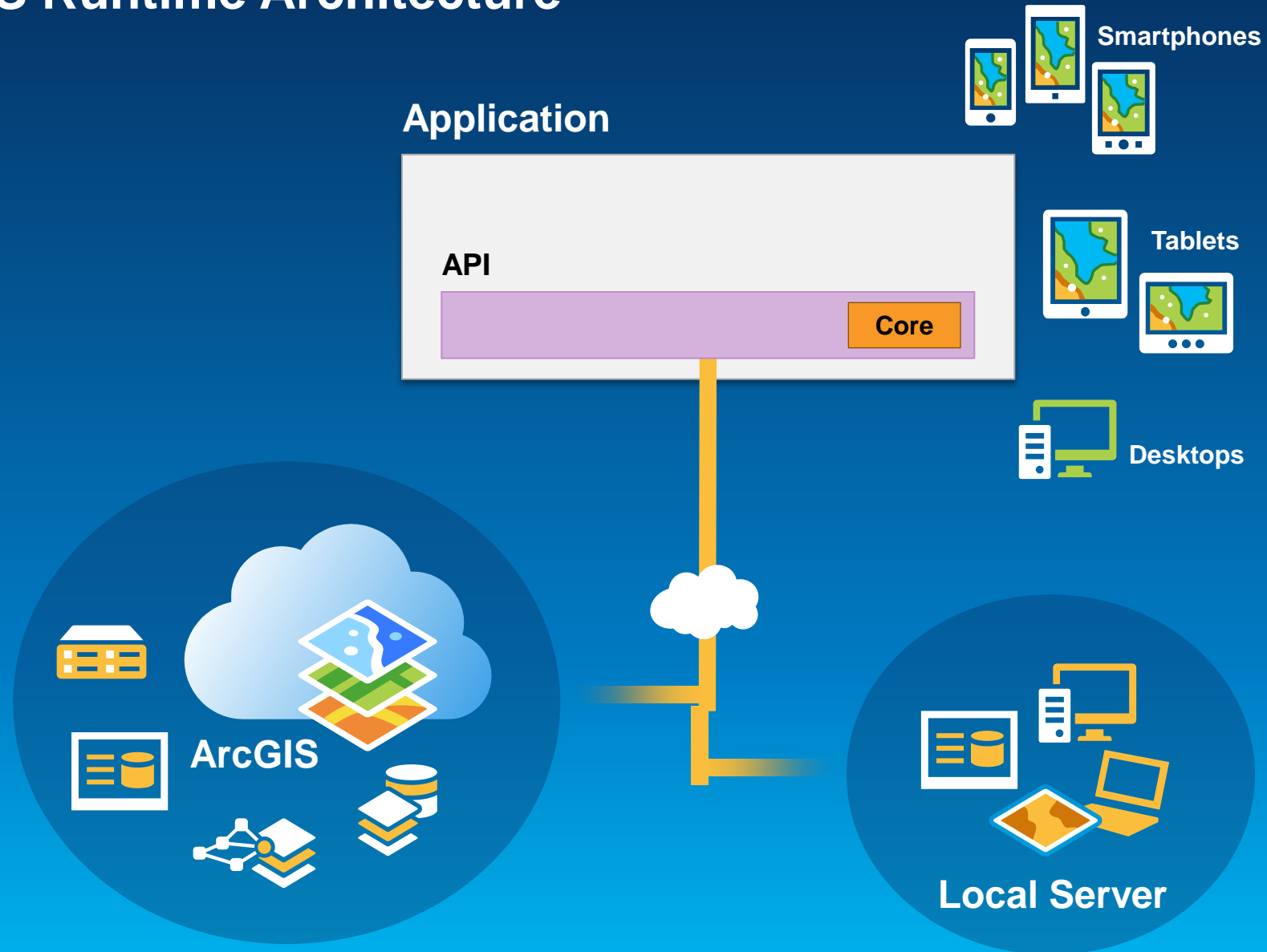
Offline App Capabilities

Disconnected Use of the ArcGIS Platform

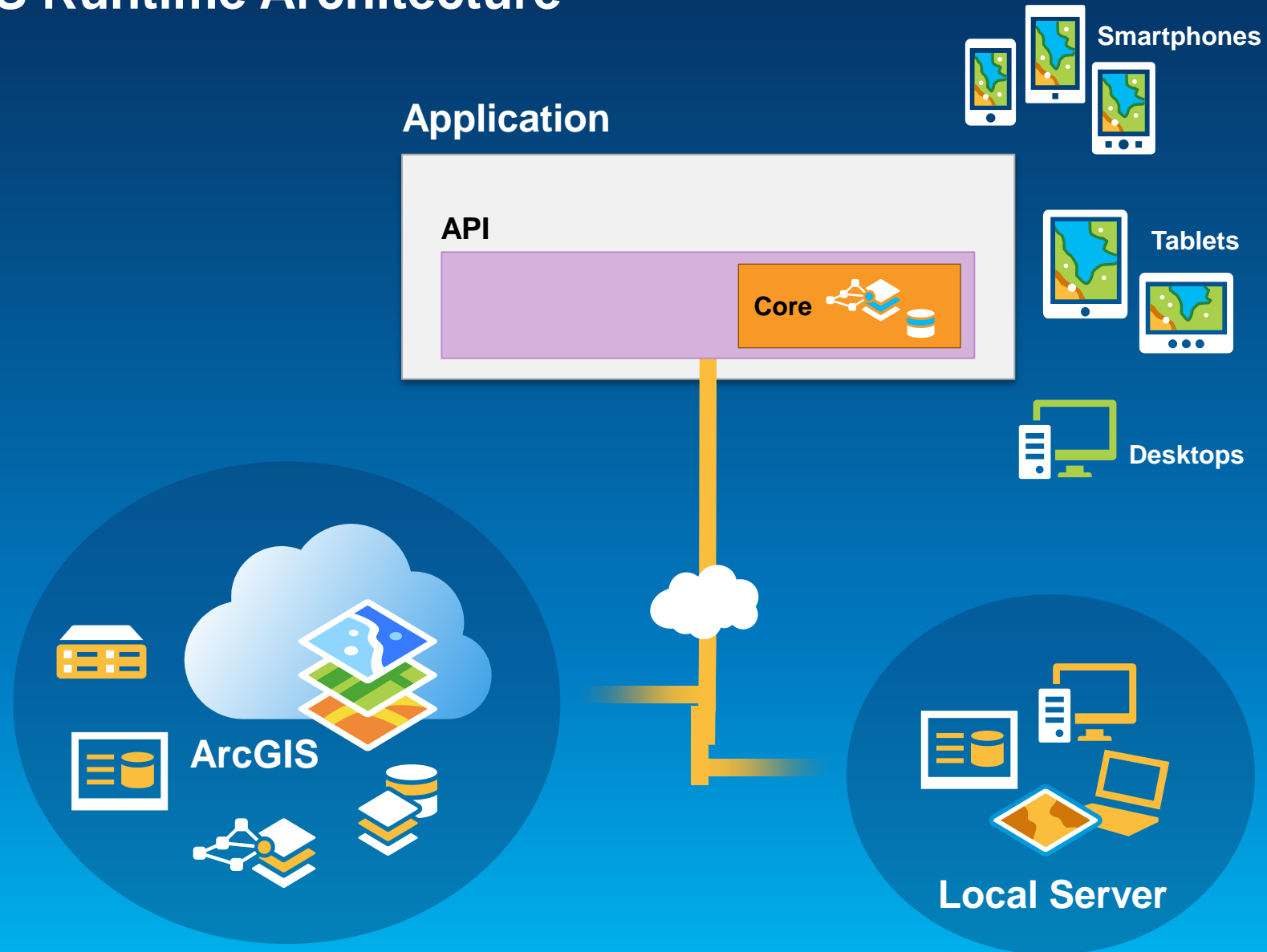
- Viewing and Interacting with Maps
- Querying Data
- Editing Features
 - Synchronization
- Find places and locations
- Get directions
- Pre-planned or On-demand Workflows
- Occasionally Connected Scenarios
- All Runtime SDKs*



ArcGIS Runtime Architecture

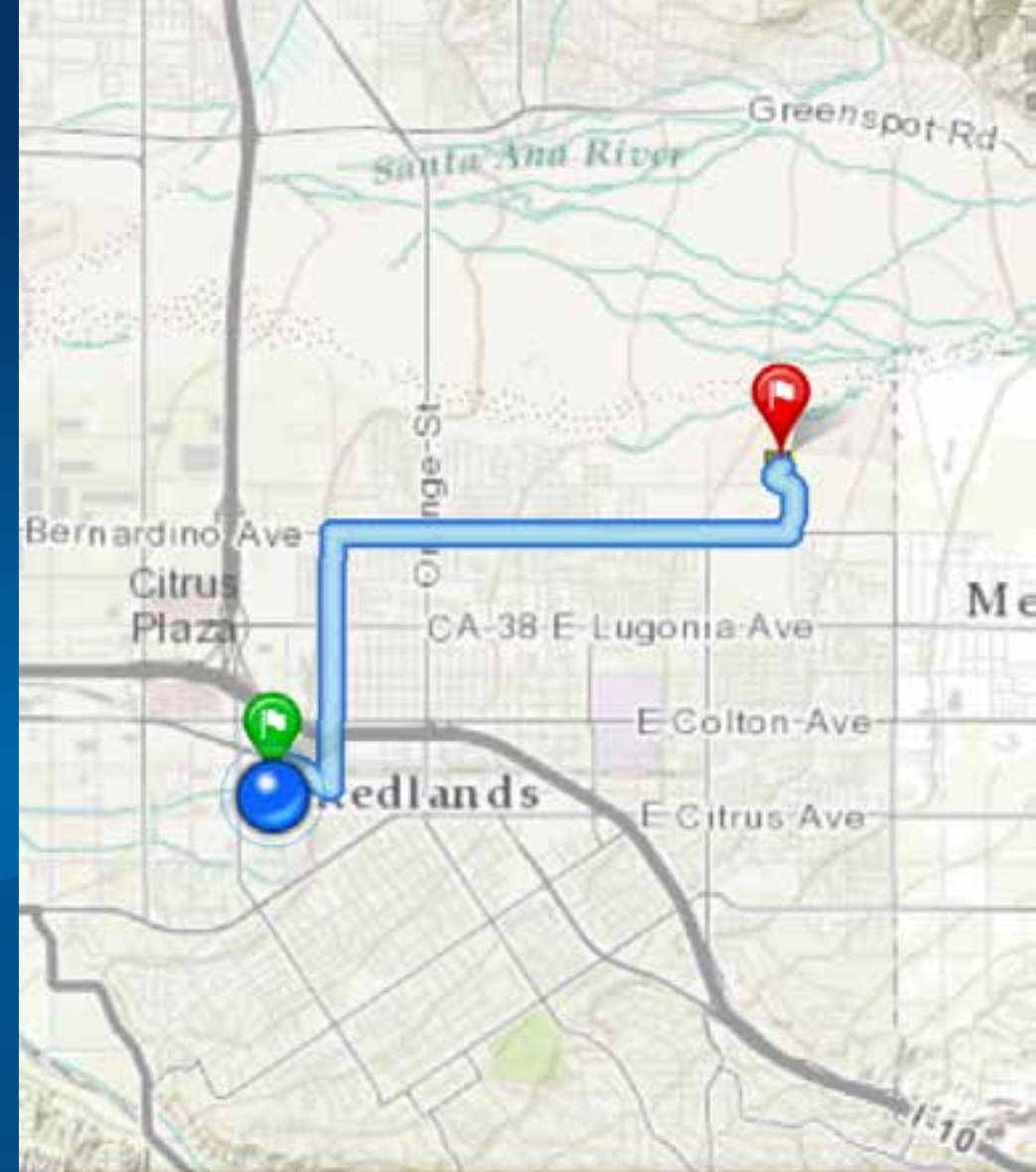


ArcGIS Runtime Architecture



Demo

Offline Capabilities



**Depart Current
location**

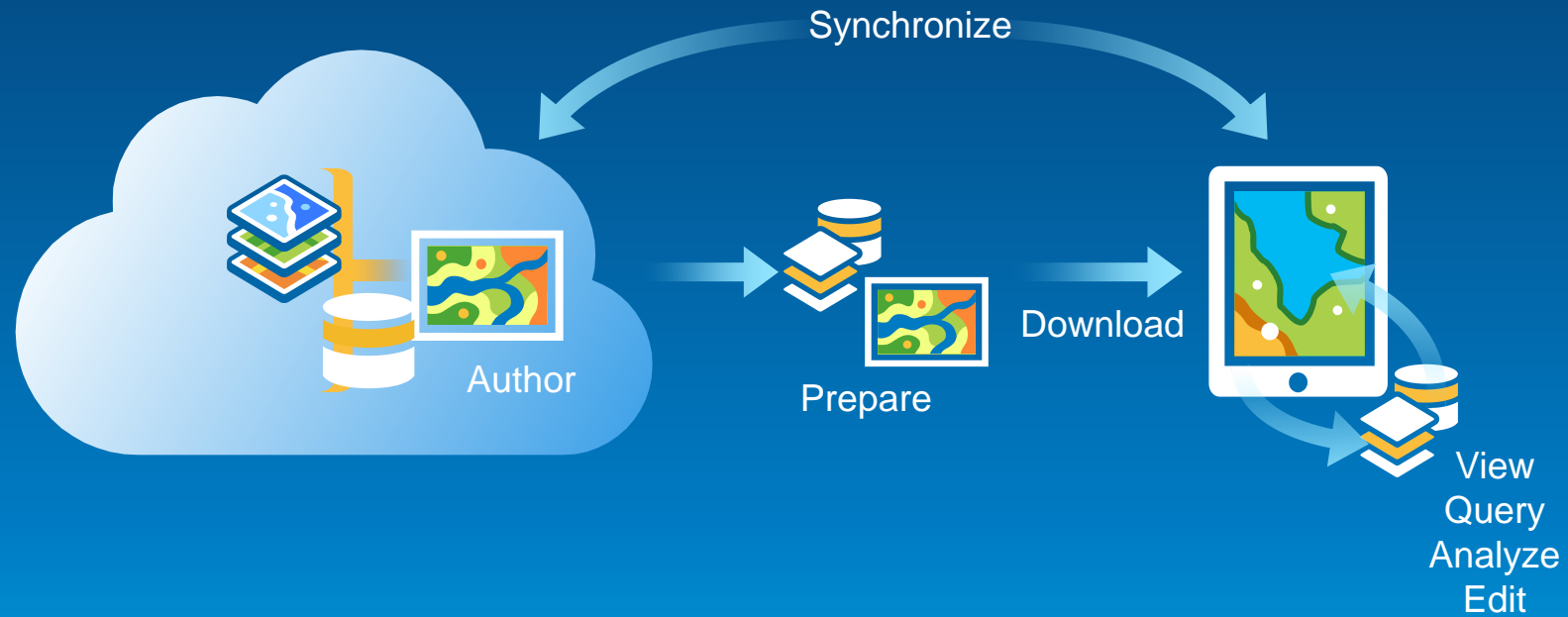
Maps and Data



The ArcGIS Platform – Working Offline

- **Offline Apps Need Maps and Data!**
- **All Compute Platforms Support Going Offline**
 - Online and Portal
 - Server
 - Desktop
- **New Workflows**
 - **Critical for You to Understand These Workflows**

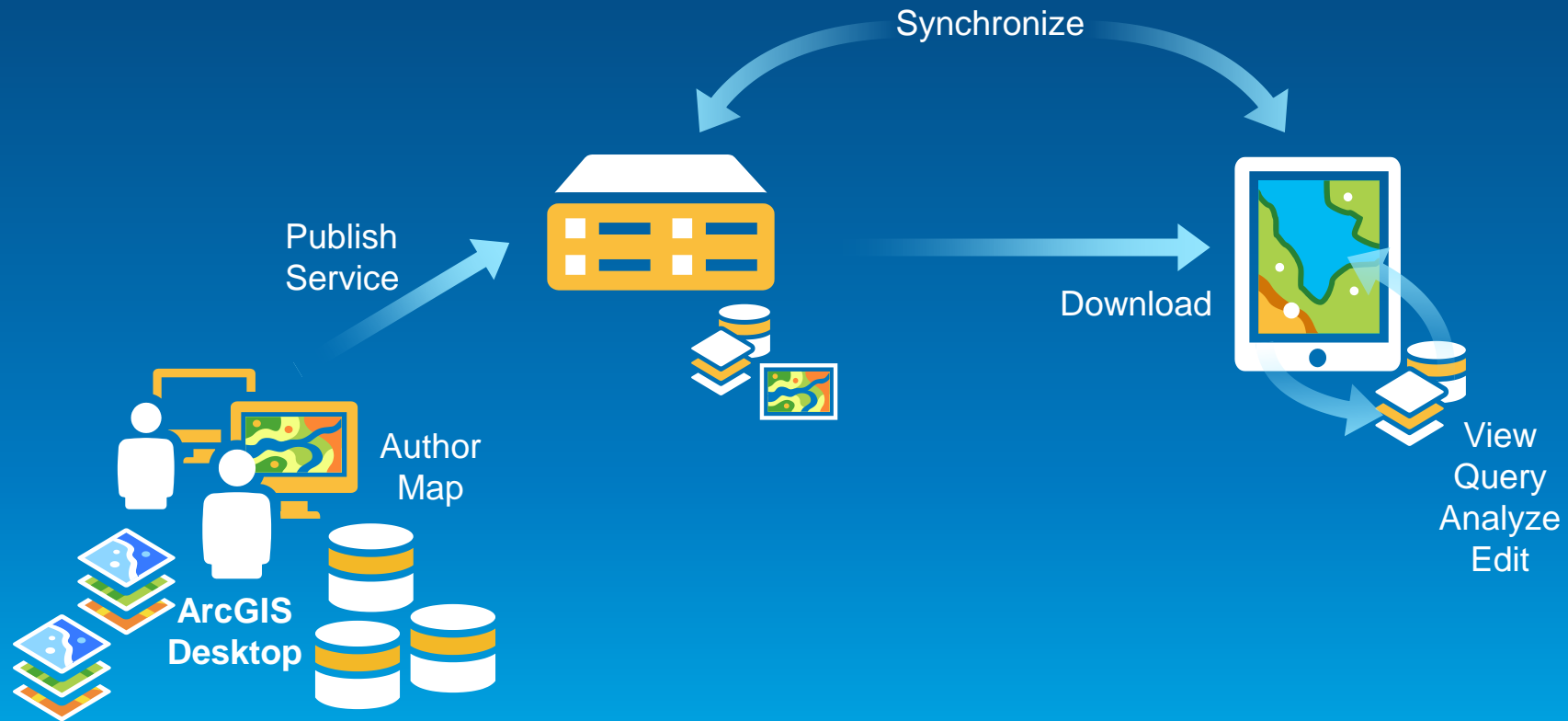
From ArcGIS Online and Portal



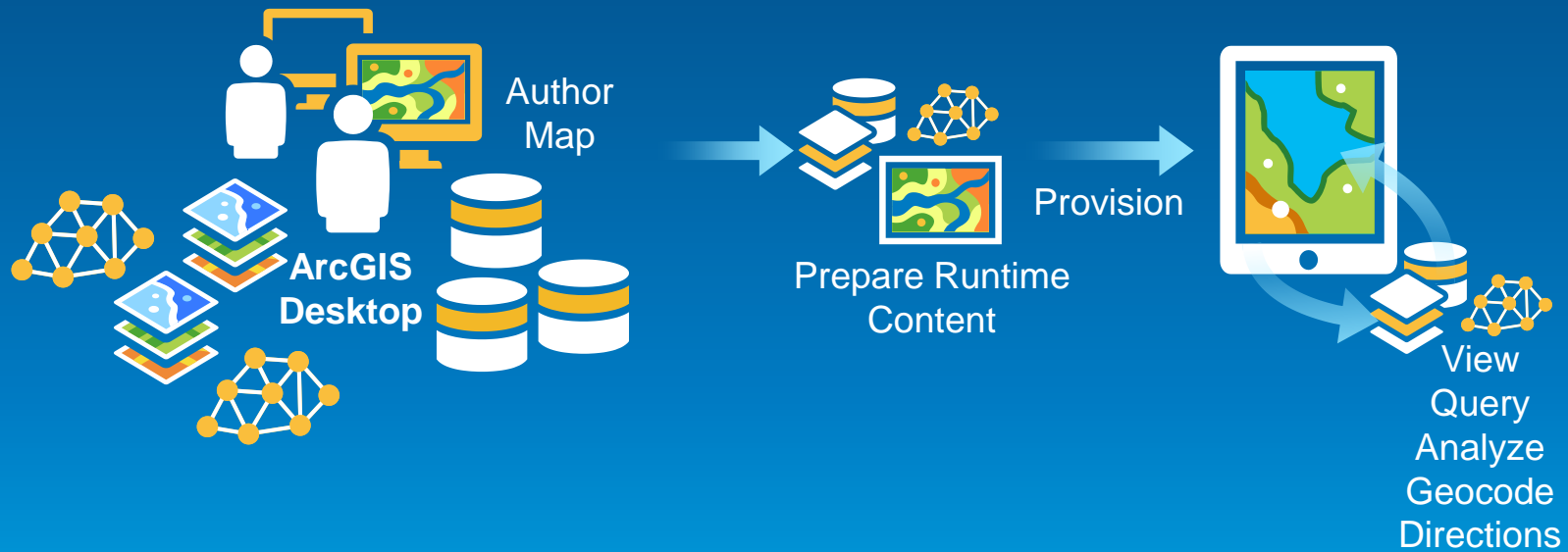
ArcGIS Online Data Licensing

- **Always Review Data Usage Restrictions**
- **Supported Esri Services**
 - **Basemaps**
- **Esri Services Not Supported Offline**
 - **Geocoding**
 - **Routing**

Offline With ArcGIS Server



Offline With Desktop



Demo

Data Preparation



Mixing and Matching

- **Possible to Take a Hybrid Approach**
 - Online basemaps
 - ArcGIS Server feature services
 - Geocoding and routing from Desktop
- **The Hybrid Approach Will Be Common in Your Solutions**
 - Optimize content delivery to match solution

Optimizing The Data Provisioning Process

- **Features and Basemap Content**
 - **On Demand – Retrieves data from the server when requested**
 - **Uses server processing power and bandwidth for every client request**
 - **Side-loading - Content created ahead of time and provisioned onto the device**
 - **Can help alleviate server load at busy times of the day**
 - **Commonly used for basemaps**
 - **Can work with feature data if the workflow is right**
 - **How often and how many features change on the backend?**
- **Networks and Locators**
 - **Side-loading is the only option**

APIs for Building Offline Apps

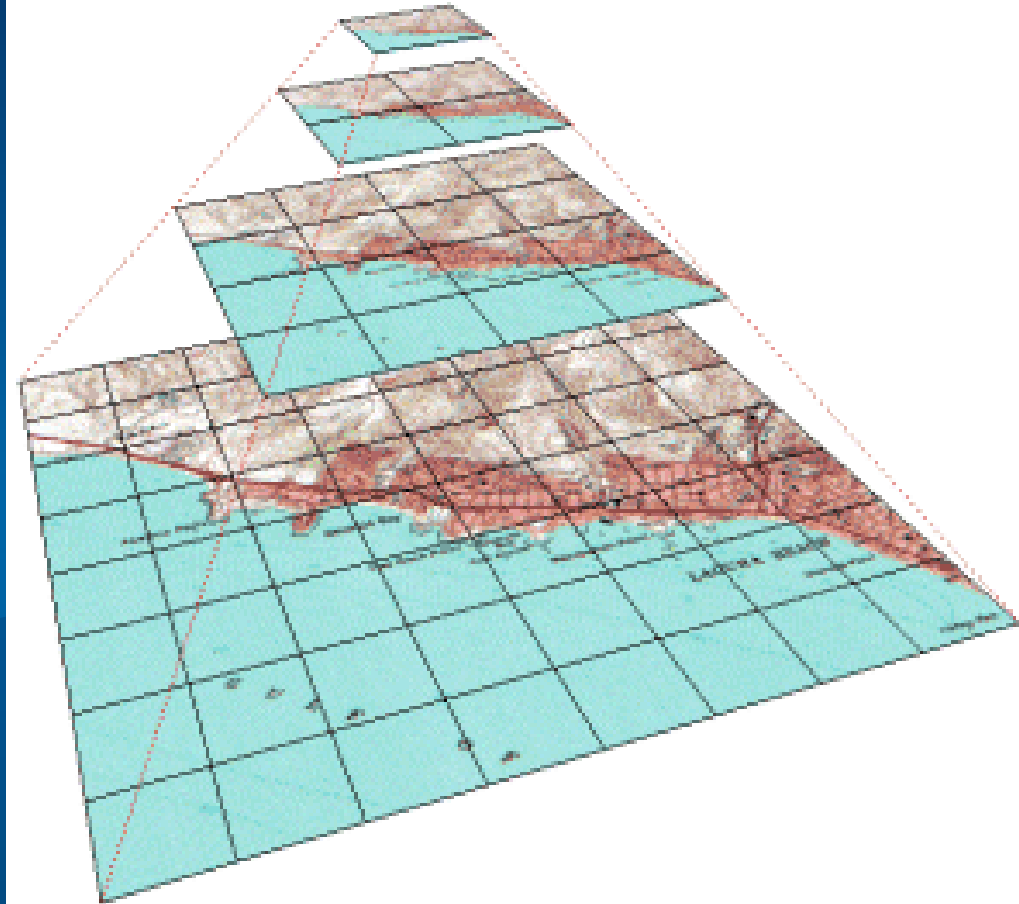


Working With Basemaps Offline

- **ArcGIS Desktop Can Create Tile Caches**
- **Esri Basemaps**
 - <http://tiledbasemaps.arcgis.com/...>
 - [AGOL basemap group](#)
- **ArcGIS Server Tiled Map Services**
- **Services Limit Extent**
 - **Administrator Sets the Limit**
 - **Workable Size**
 - Compression quality
 - **Estimations**
- **Consider Reusing Offline Basemaps**

Demo

Taking ArcGIS Online Basemaps Offline



Working With Operational Data Offline

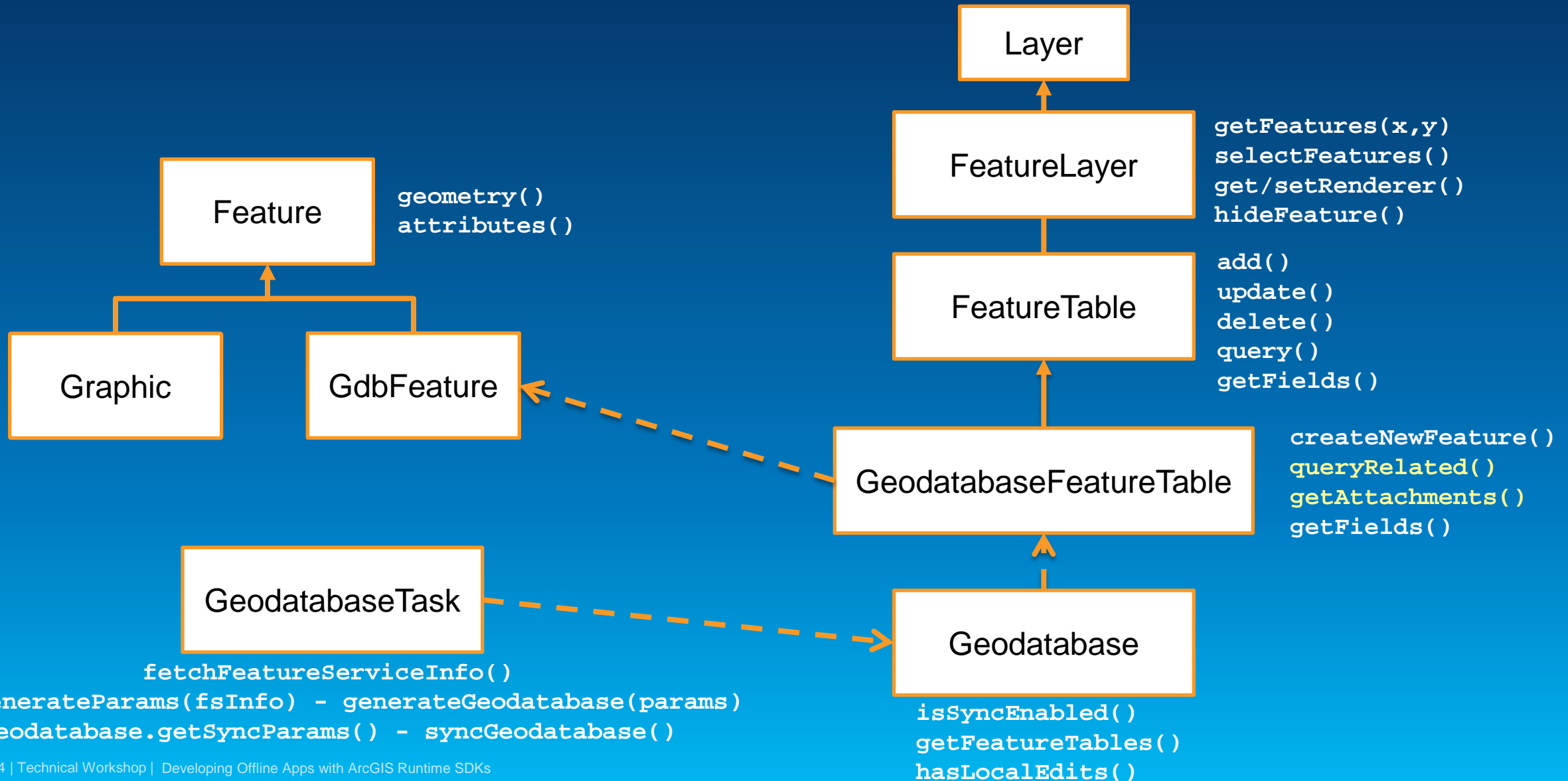
It is all about the features

- **Read only access**
- **Work with Attachments and Relates**
- **Edit Features**
- **Use Popups**
- **Sync Changes with a Server**

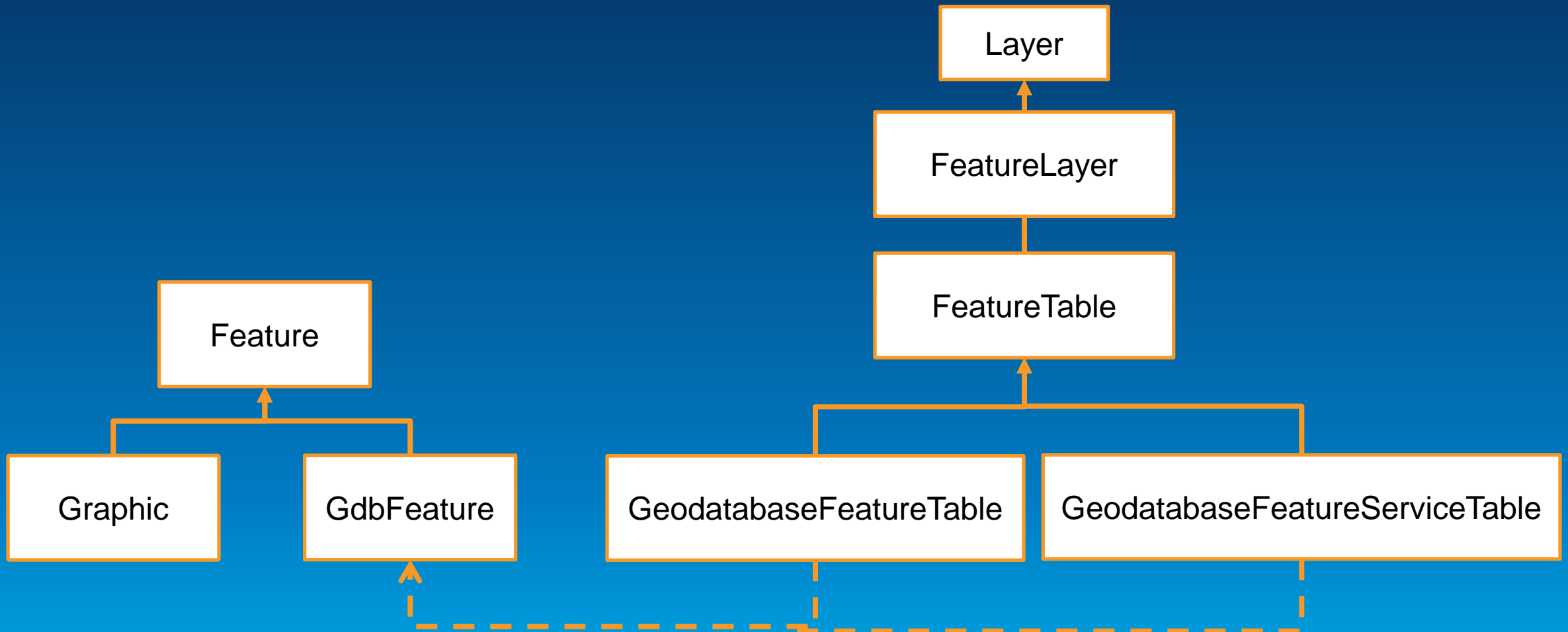
Syncing With a Server

- **Send Edits**
- **Versioned Data – download only**
- **Per Layer Sync – non versioned data**
- **Per Geodatabase Sync – versioned data (download only)**
- **Control Over Sync Direction**
 - **None**
 - **Download changes only**
 - **Upload edits only**
 - **Download changes and upload edits - bidirectional**

Generating a Geodatabase and Showing Features



Offline and Online Features



Working With Features

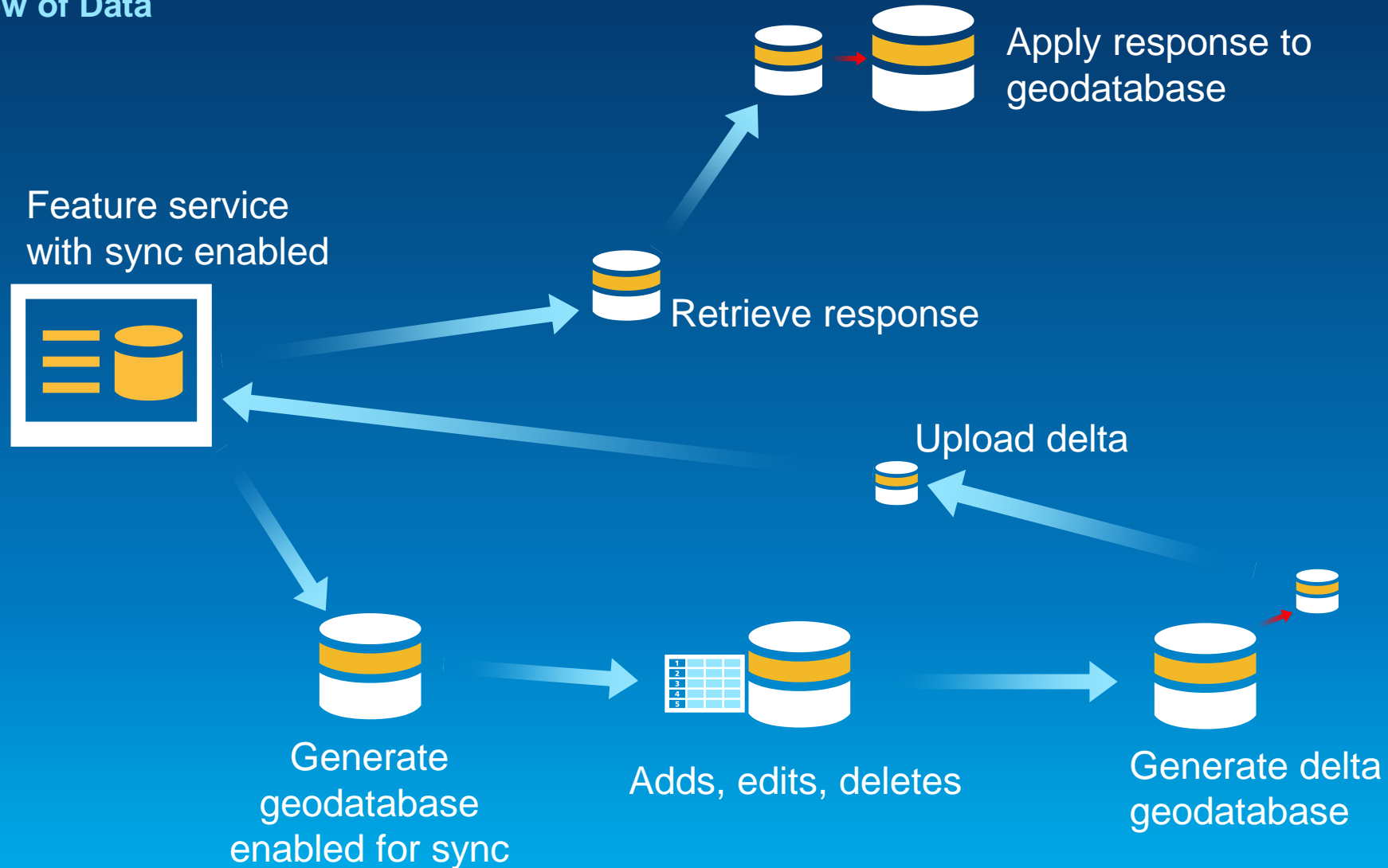
- **A Feature is a Feature**
 - **No Difference for Online and Offline**
 - **Programming model in general is the same**
- **Editing Features is Different**
 - **Local Geodatabase saves edits in the database**
 - **Feature Service posts edits to the server when you tell it**

Offline Features



How Does Sync Work?

The Flow of Data



Working With Locators Offline

- **Prepared for Offline Use Using ArcGIS Desktop**
- **Programming Model Similar to Online Locators**
- **High Performance**

Demo

Offline Locators

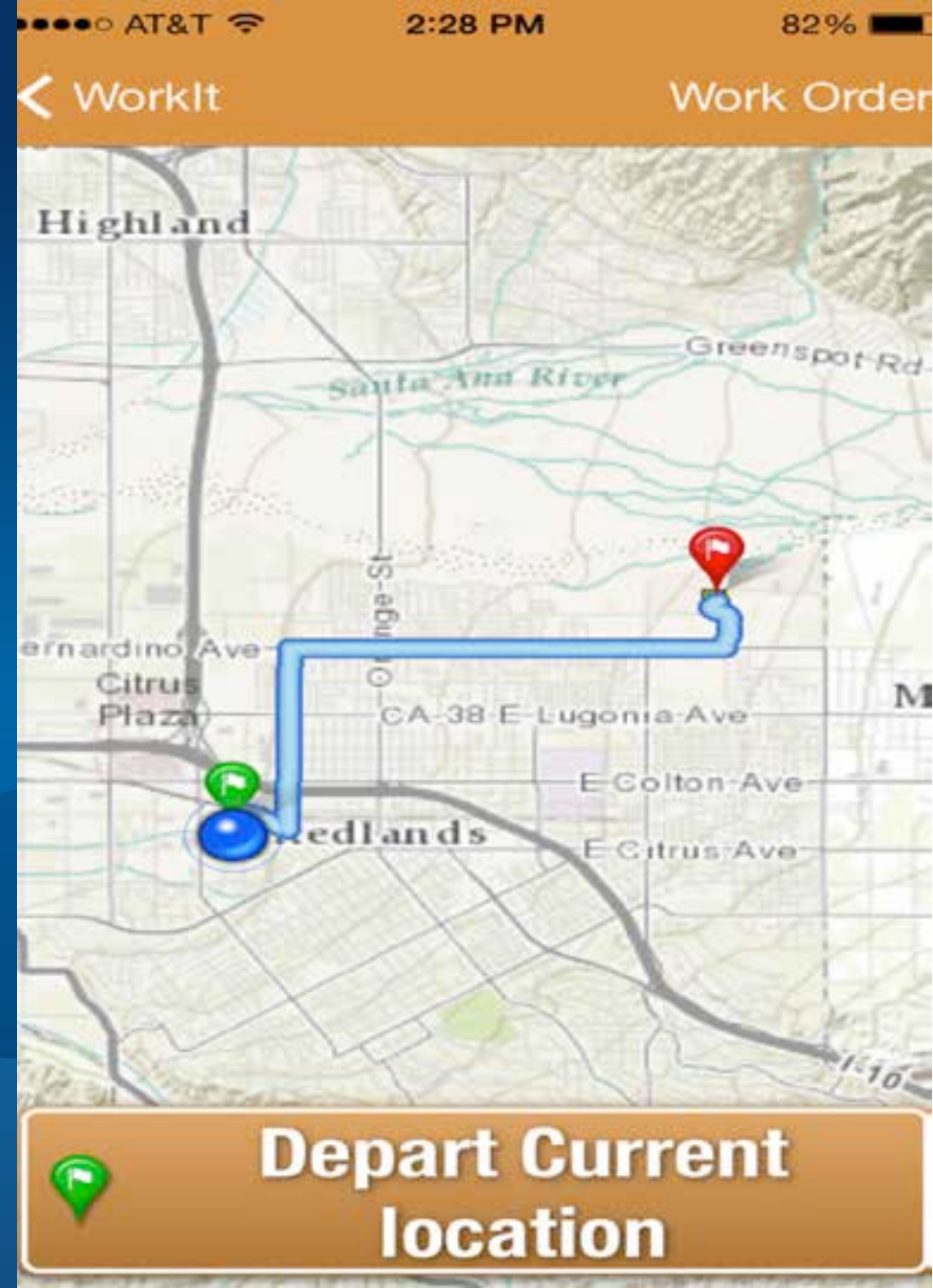


Working With Networks Offline

- **Prepared for Offline Use Using ArcGIS Desktop**
- **Programming Model Similar to Online Networks**
- **High Performance**

Demo

Offline Networks



App development

- **Killed/exited apps**
 - **Hold on to params (or with iOS jobid) and resubmit same job (with use cached job=true)**
 - **If job still exists on the server, will not resubmit job**
 - **If partial download on disk, will not resubmit job**
 - **If error, will resubmit job**
- **Backgrounded iOS apps**
 - **Go to iOS session!**
- **Large data over 3G**
 - **Check for wifi access for ExportTileCacheTask??**

Licensing Offline Capabilities for Your Apps

- **Viewing Vector and Raster Data**
 - Basic License
- **Offline Feature Editing, Geocoding and Networks**
 - Standard License



Your Common Questions

- **Is Versioned Data Supported?**
- **Are Related Tables Supported?**
- **What About Attachments?**
- **Will My Existing ArcGIS Services Work?**
- **How Does Conflict Detection Work?**

Questions?

Thank you...

- **Please fill out the session survey:**

First Offering ID: 2308

Online – www.esri.com/ucsessionsurveys

Paper – pick up and put in drop box



Understanding our world.