ArcGIS Runtime: Building Advanced Apps for Android with MVVM

Puneet Prakash

Rama Chintapalli

2021 ESRI
DEVELOPER SUMMIT

Agenda

- ❑ Android App Architectures
- ❑ MVVM Principles in Practice
- ❑ Android JetPack Components
- ❑ ArcGIS Runtime Android App - Demo

Android App Architectures

Rama

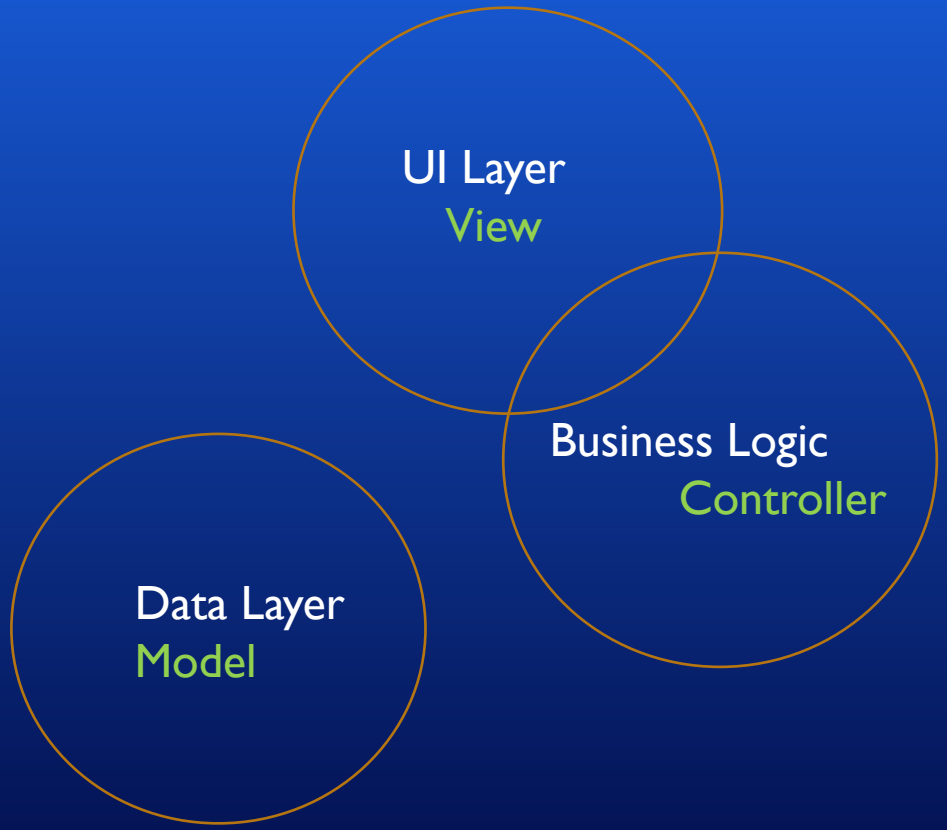
Android App Architectures

Android App Structure

UI Layer	View/Activity/Fragment
Business Logic Layer	Business Control Logic
Data Layer	Database Connections/Network Requests

Android App Architectures

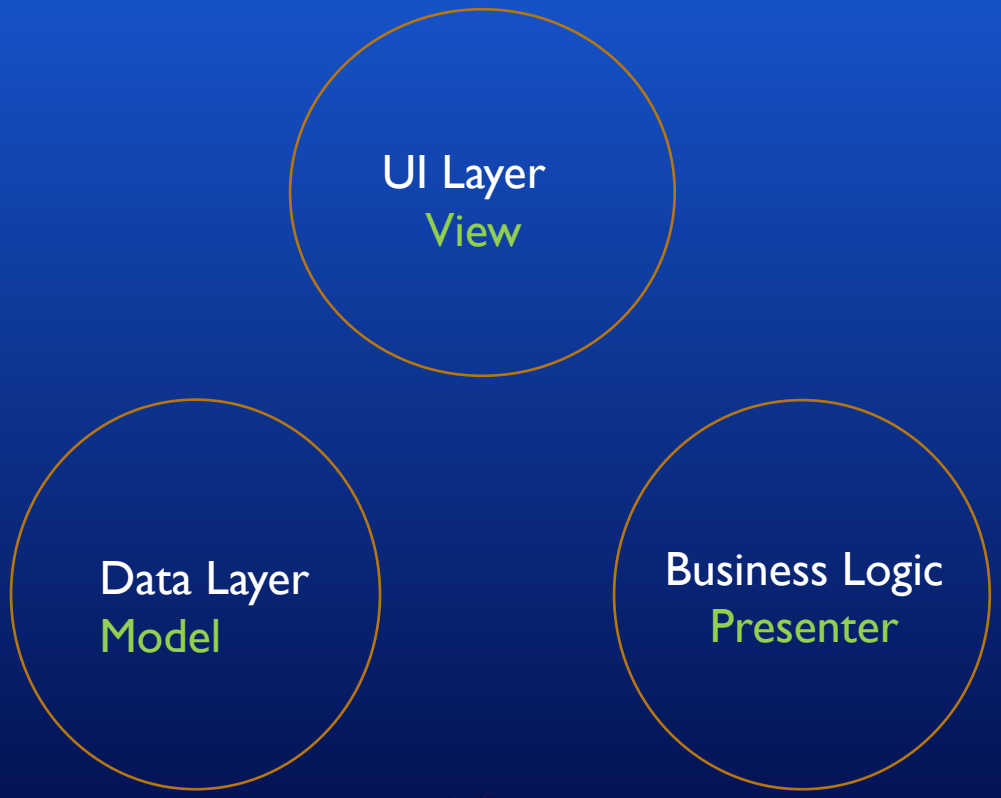
MVC (Model – View – Controller)



- Controller and the View depend on the Model
- Activity became a combination of View and Controller
- No separation of View (layout xml) purely as Views
- Large amount of activity code as App grows

Android App Architectures

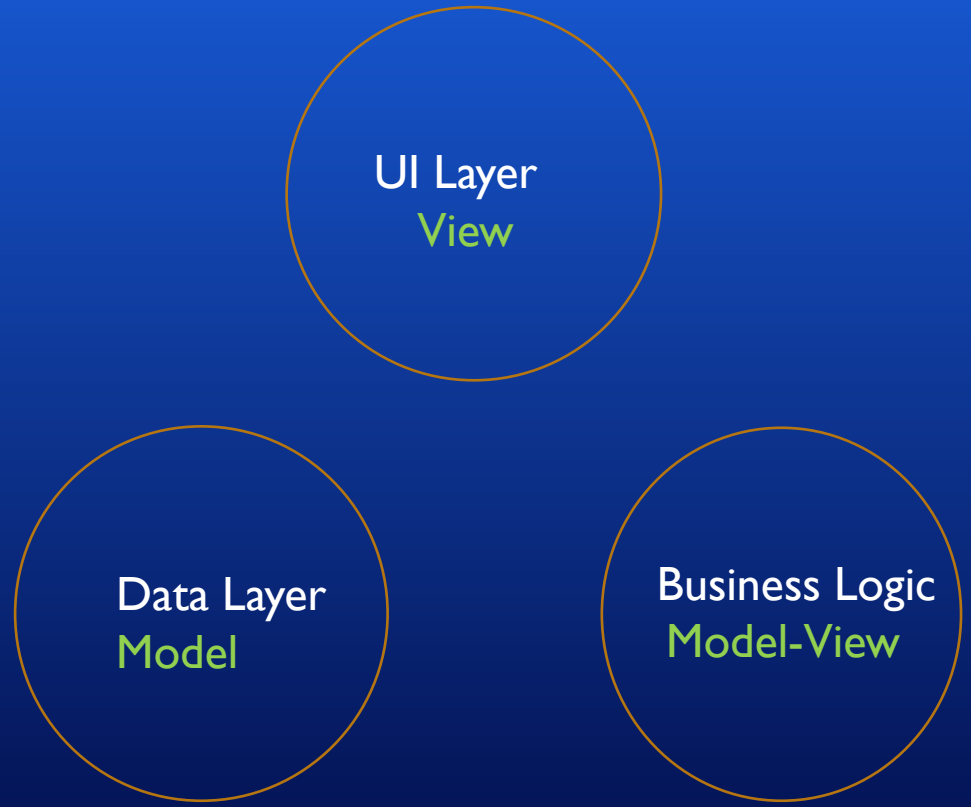
MVP (Model – View – Presenter)



- View requests data through Presenter
- Presenter interacts to Model and updates View
- Reduce amount of activity code
- Model transfers data to Presenter via callbacks
- View needs to hold reference to Presenter and vice versa

Android App Architectures

MVVM (Model – View – ViewModel)



- Model gets the data required by View
- View-Model responsible for communication between View and Model
- Introduces two way data binding between Model-View and View
- ViewModel doesn't have hold references to View anymore. Communication is managed by events

MVVM Principles in Practice

Puneet

MOBILE APP ARCHITECTURE

- App does not store any app data or state in your app components!
- App components do not depend on each other

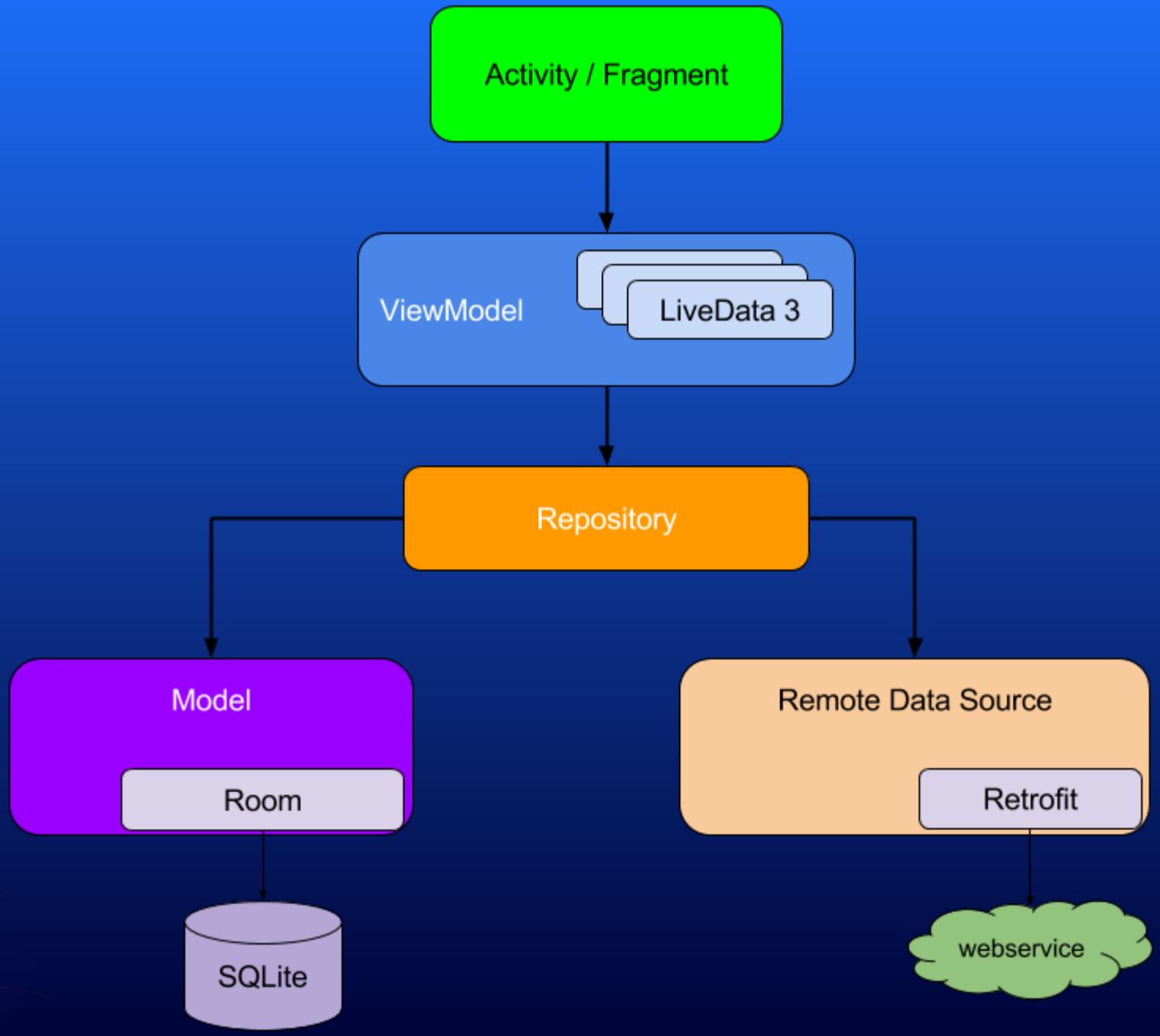
COMMON ARCHITECTURAL PRINCIPLES

- Separation of concerns
- Drive UI from model(persistent)

- Model-View-ViewModel
- Single Activity Model

APP ARCHITECTURE

- MVVM
- Each component depends on the component one level below it



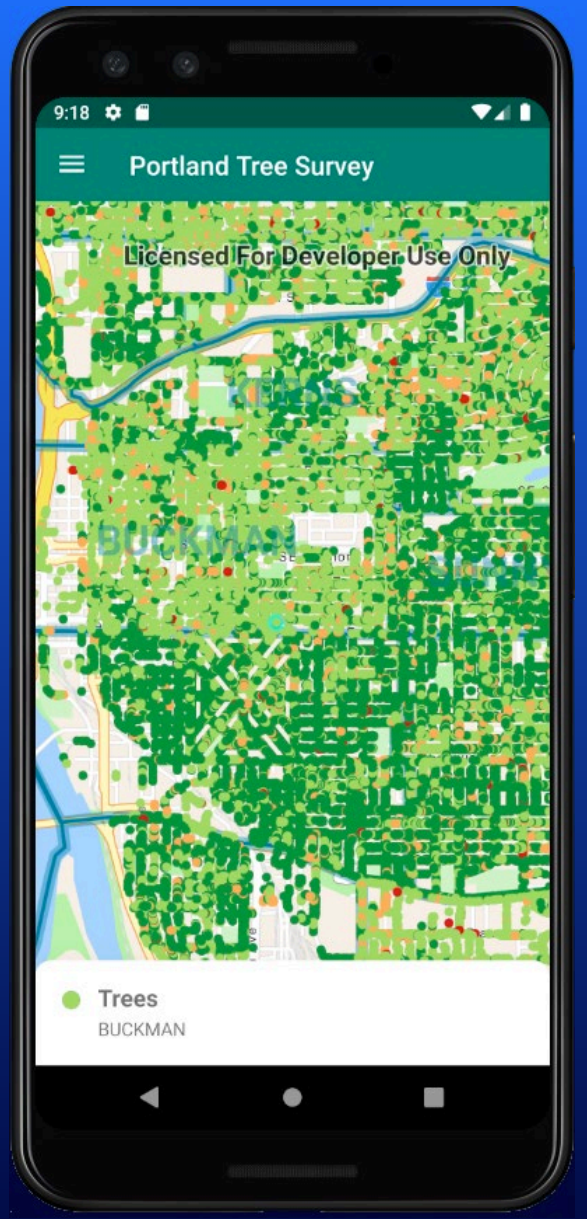
ANDROID JETPACK COMPONENTS

- Data Binding – Declaratively bind observable data to UI elements
- Lifecycles – Manage your activity and fragment lifecycles
- LiveData – Notify views when underlying database changes
- Navigation – Handle everything needed for in-app navigation
- ViewModel – Manage UI-related data in a lifecycle-conscious way
- Paging – Gradually load information on demand from data source
- Room – Fluent SQLite database access
- WorkManager - Manage your Android background jobs

DATA COLLECTION
(ARCGIS RUNTIME OPENSOURCE APP)

Features :

- Viewing and editing your data with Popups (version 0.1)
- Identifying map features (version 0.1)
- Portal authentication with OAuth (version 0.1)
- Working with Features, Popups and PopupManager



DATA COLLECTION
- LET'S LOOK AT SOME CODE

Agenda

- ❑ Android App Architectures
- ❑ MVVM Principles in Practice
- ❑ Android JetPack Components
- ❑ ArcGIS Runtime Android App - Demo

Please provide your feedback for this session by clicking on the session survey link directly below the video.

THANK YOU