



# Bring Out Your Qt Side: ExeQting Best App Development Patterns

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# Agenda

- **Cross-platform Development Environment**
- **SDK Components and Quick Controls**
- **Modularize QML Components**
- **JavaScript code in QML**
- **QML Property binding**
- **Models and Views**
- **Testing and Deployment**
- **Q & A**

# Cross-platform Development Environment

## System setup

- **Windows + Visual Studio, Linux, or macOS**
- **Qt SDK and Qt Creator from The Qt Company – [www.qt.io](http://www.qt.io)**
  
- **Building for Android devices?**
  - The Android SDK & NDK bits
  - Ant (deprecated): Gradle is used now
  - JDK (8)
  
- **Building for iOS devices?**
  - Xcode
  - Apple Developer Subscription

# SDK Components

Ready-to-use elements

- **Toolkit - Controls and Dialogs**
  - Reuse or subclass existing components
- **ArcGIS Extras plugin for Qt**
  - C++ APIs exposed to QML
    - File I/O
    - Application settings
    - High-DPI scale factor



# Qt Quick Controls 2

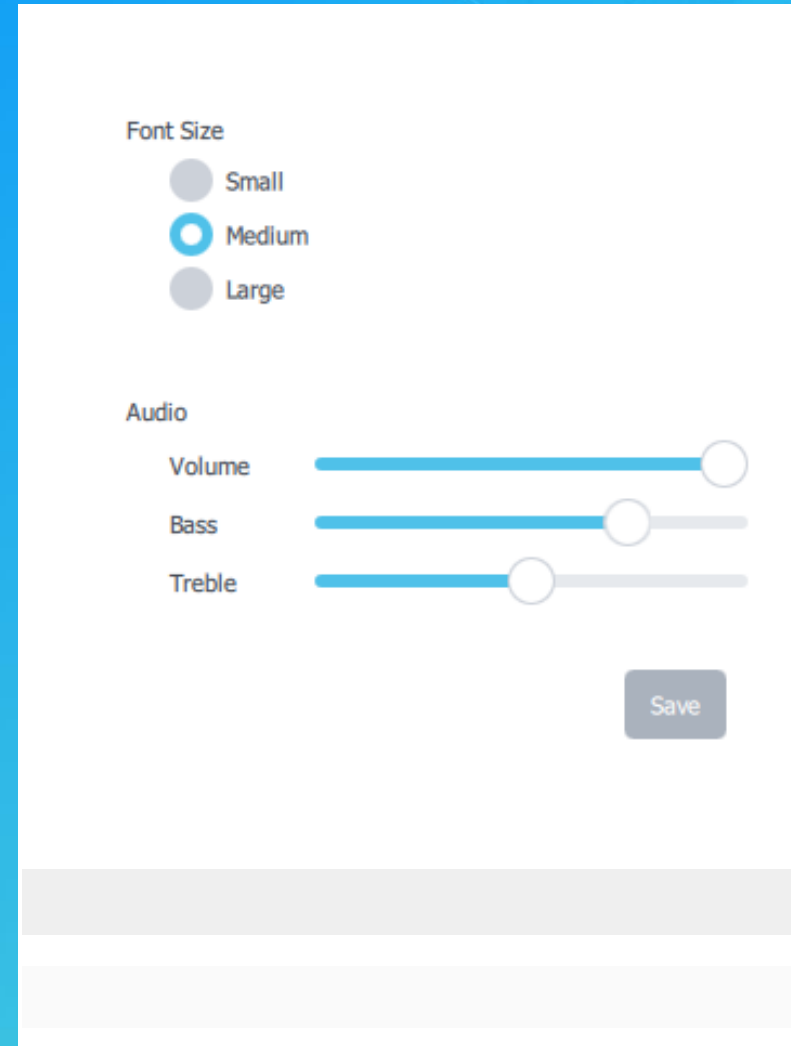
More ready-made UI elements

- Available Styles

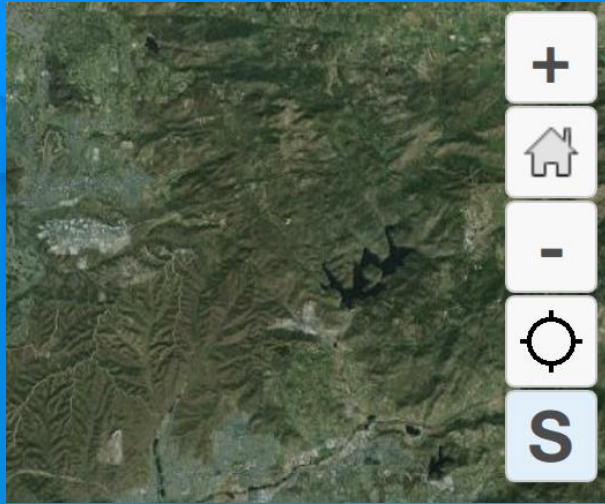
- Default style
- Material style
  - Google's guidelines
- Universal style
  - Microsoft's guidelines
- Fusion style
  - Desktop-oriented look and feel
- Imagine style
  - Based on image assets

- <http://doc.qt.io/qt-5.10/qtquickcontrols2-index.html>

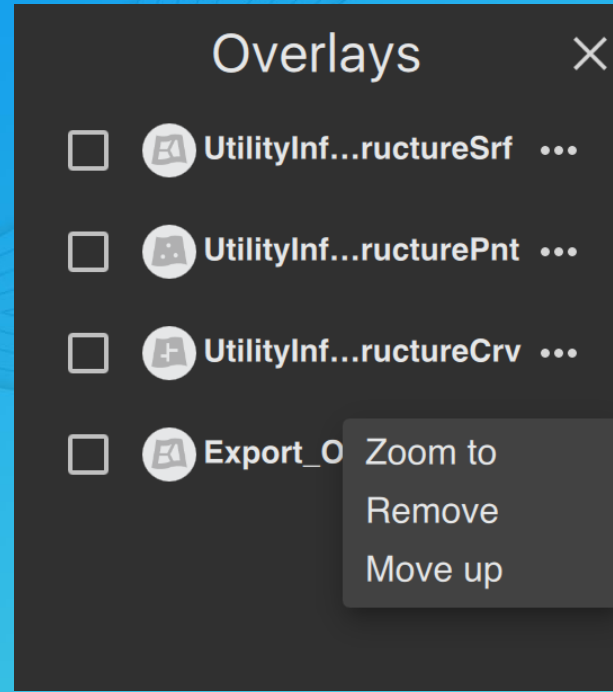
- **Dialogs style**







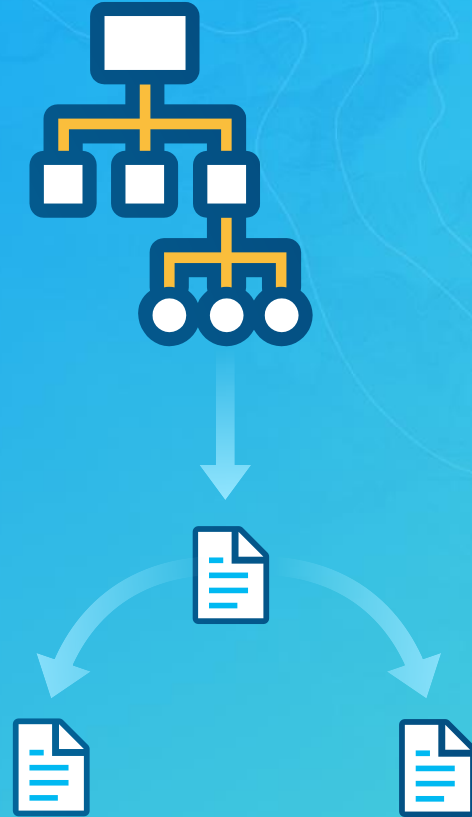
# SDK components and controls

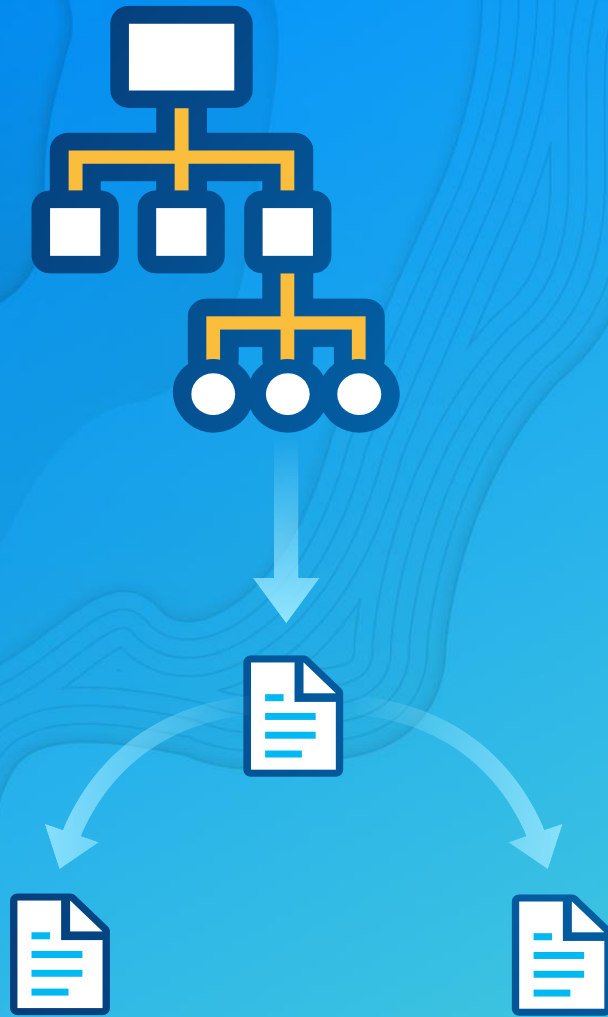


# Modularize your QML code

UI versus Business logic

- Keep your UI in separate QML files
  - Declare component as a local type
- Access components through custom properties
- Reuse components in multiple apps





# Modularize QML components





# Property binding

JavaScript expression result

- **UI updates when property changes**
  - The QML engine monitors the property's dependencies
  - Property notifies any other bound (dependency) property that it has changed
  - QML Property Binding

```
height: parent.height / 2
```

```
height: Math.min(parent.width, parent.height)
```

```
height: parent.height > 100 ? parent.height : parent.height/2
```

- **Create property bindings from JavaScript**
  - `property = Qt.binding(function() { return calculated_value })`

```
function chooseBasemap(selectedBasemap) {
  if (selectedBasemap.item)
    title.text = selectedBasemap.item.title;

  var newMap = ArcGISRuntimeEnvironment.createObject("Map",
                                                    {basemap: selectedBasemap});

  mapView.map = newMap;
  mapView.visible = true;
  drawer.close();
}
```

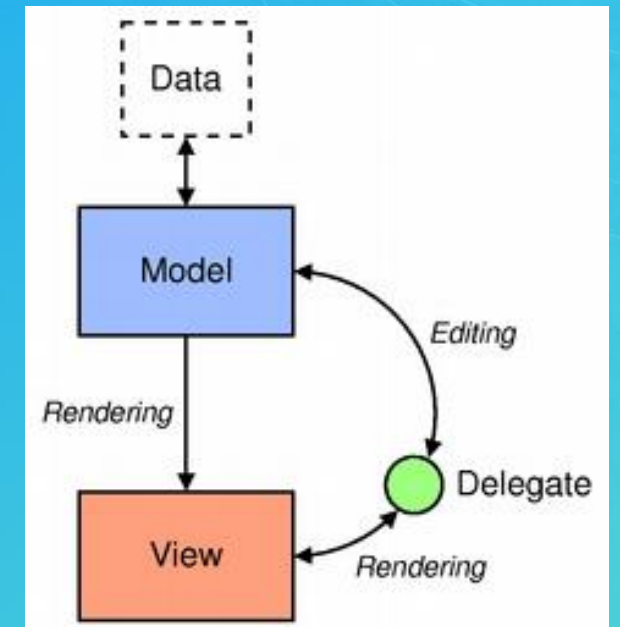
# JavaScript and Property binding

# Models and Views

Separation of data and UI

- **Models and Views**

- Data separated from the presentation through a model-view
- Visualization of each data element is separated into a delegate
- Models notify the view to update when data changes
- Binding list properties to QML views



```
ListView {  
    id: listView  
  
    model: ListModel {  
        id: listModel  
    }  
}
```

## QML Model / View



# Testing and Deployment

- Test and debug your app directly from Qt Creator
- Deploy your app with local data



## File Sharing

The apps listed below can transfer documents between your iPad and this computer.

### Apps



AppStudio Player



ArcGIS Qt C++



ArcGIS Qt QML



ArcGISRuntimeSDKQt\_QMLSamples



CarHMIDemo

### ArcGIS Qt C++ Documents

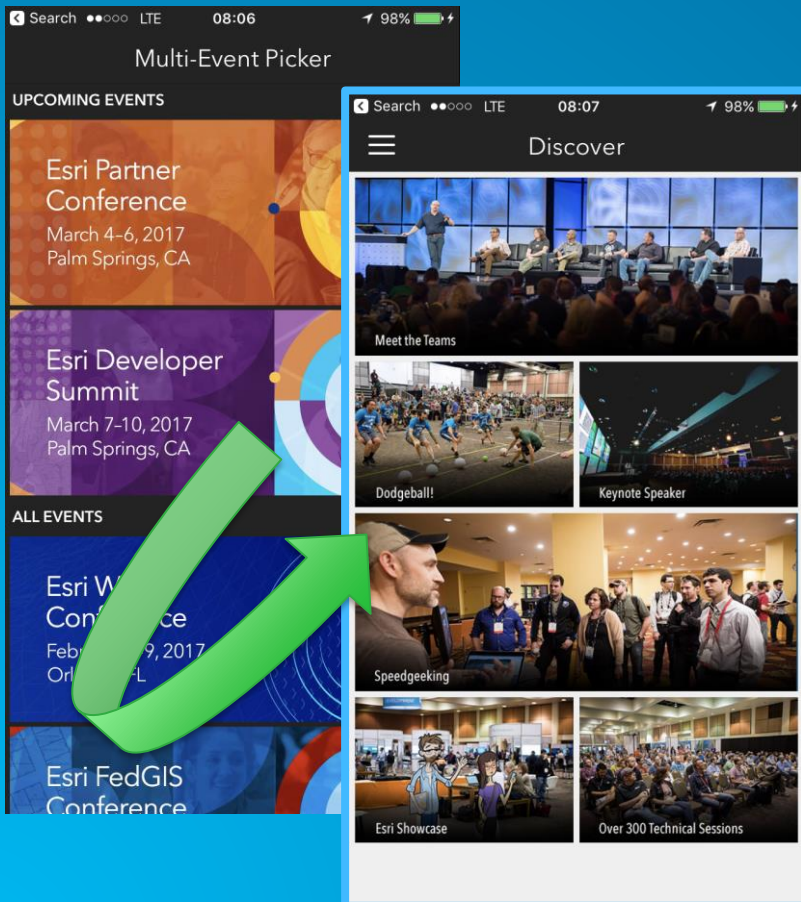


ArcGIS

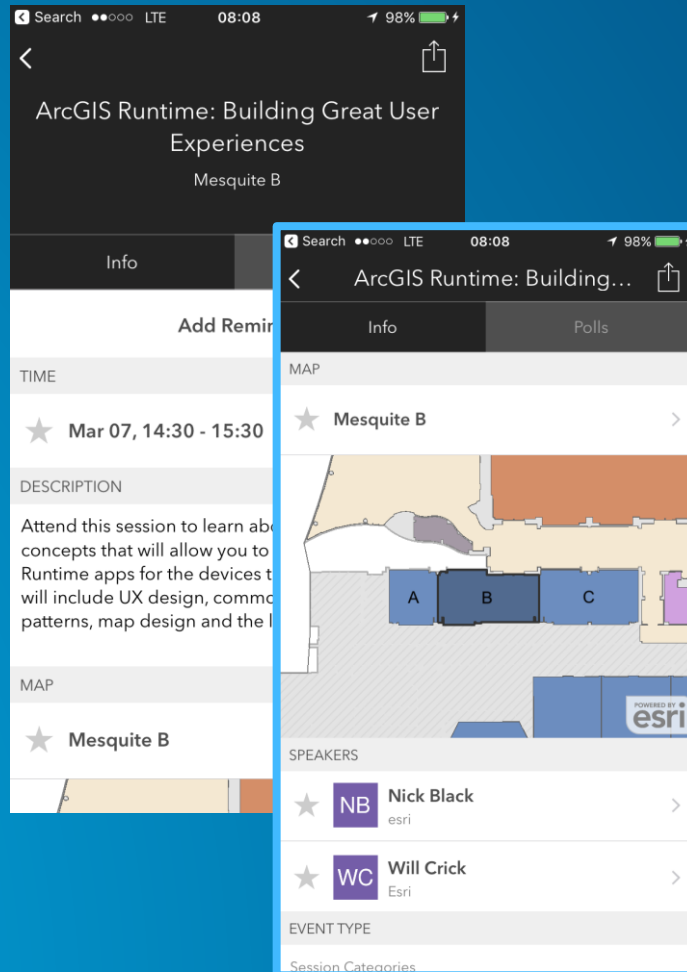
# Deploy local data

# Please Take Our Survey!

Download the Esri Events app  
and go to DevSummit

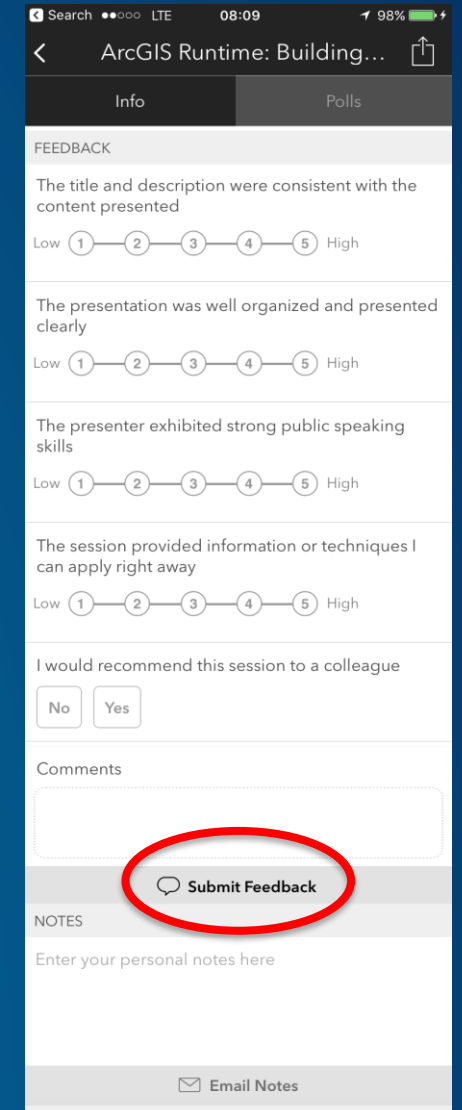


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Complete Answers,  
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Questions?







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