Developing Cross-Platform Native Apps with AppStudio for ArcGIS

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2018 **Esri Developer Summit DC**

AppStudio
for ArcGIS®

What is AppStudio for ArcGIS?

A suite of productivity tools for creating native apps

Why native apps ?

Offline

Device Capabilities

App Stores

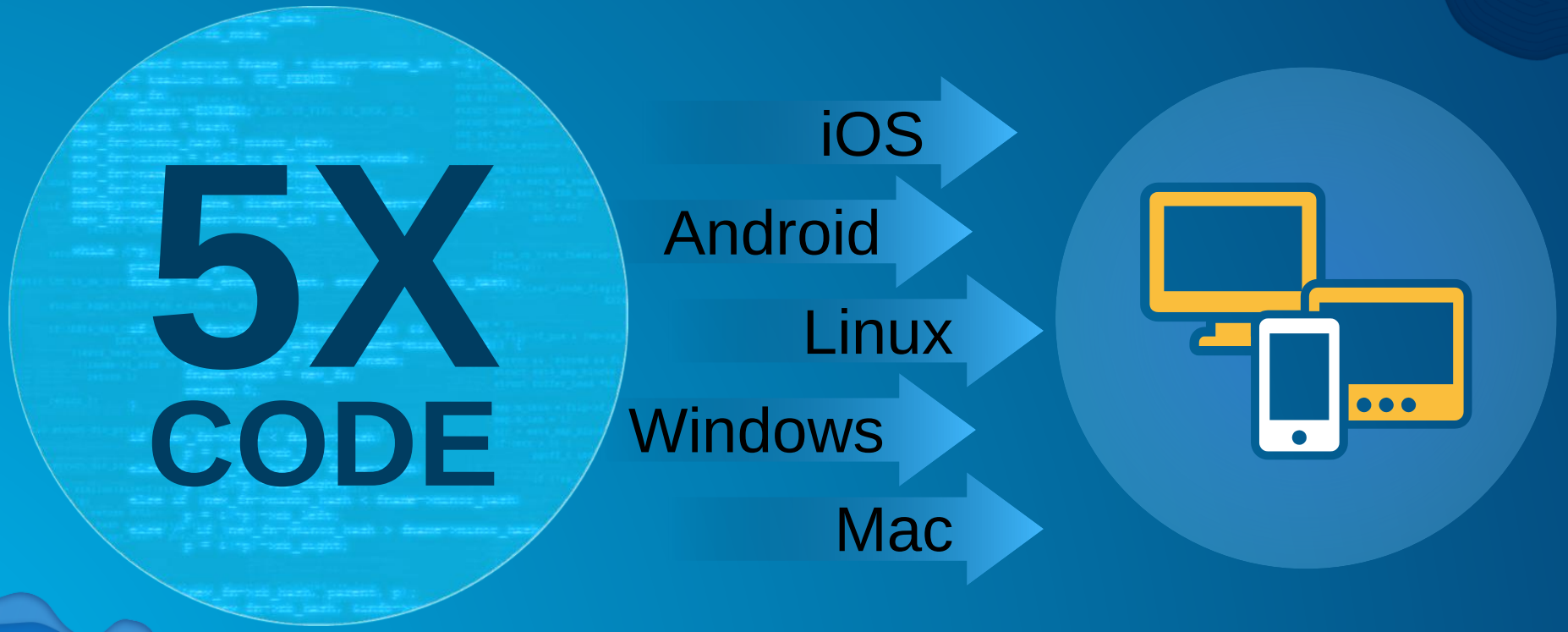
The challenge

- App development is….
  - Complicated
  - Expensive
  - Time Consuming

Native App Challenges – Things to Consider

- Cost (Time + Resources * Platforms = $$$)
- App Distribution
- App Security
- App Strategy (family of apps)
- App Maintenance

The challenge



Question?

- Who can deliver these apps?
  - **GIS department / Web developers / Desktop / Python developers**
- Quickly, Often and Cost-effectively
- Have fun doing it

What is AppStudio for ArcGIS?

- A new platform to build focused cross-platform apps
- Targeted for both Developers and Non-Developers alike
- No development skills required to get started
- Choose from a gallery of application templates or build your own
- Deploy to app stores or in your organization

Cross-Platform

1
App

iOS

Android

Linux

Windows

Mac

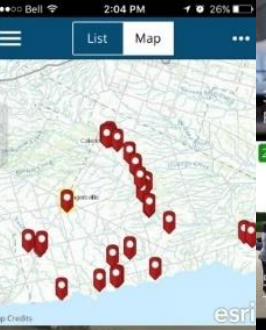
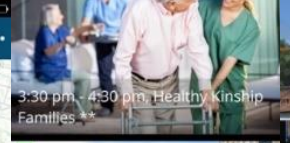
Cross-Platform

AppStudio Delivers Value

- Powerful ArcGIS Runtime API
- Leverages Portal, Server and Online
- Developer Productivity Tools
- Quick start templates
- Player to test and deploy
- Cloud Make
- Common set of UI/Widgets
- Ease of Web and Power of Native Platform

AppStudio

Examples


List
Map

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807 Highway 80 East 601-854-8242

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Edinburgh Square Heritage and Cultural Centre

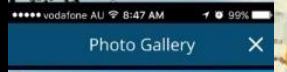
15.7 km

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Photo Gallery

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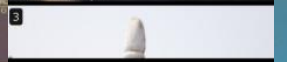
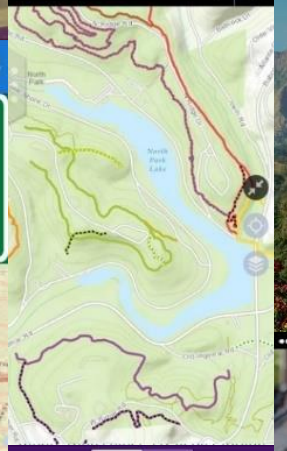

North Park

List
Map

21 of 21

Map Credits
esri

45 of 70
Goldfield Sporting Complex (48)

GoTime
Cambridge
esri

PicosPR
Comenzar
Pelahatchie
Businesses & Attractions

95
4 MI
5
MINS

30
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100+ km
Goldfield Sporting Complex (48)

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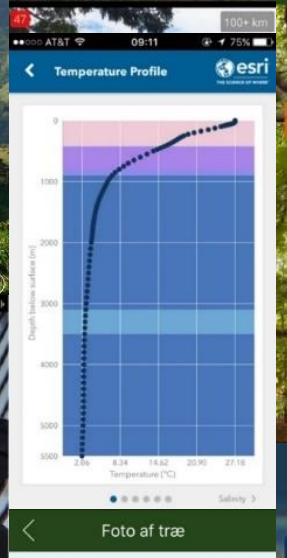
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75%
Temperature Profile
esri
Temperature (°C)
Foto af træ


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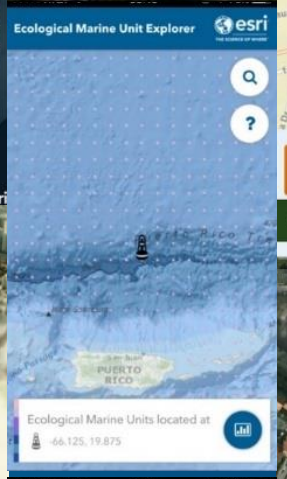
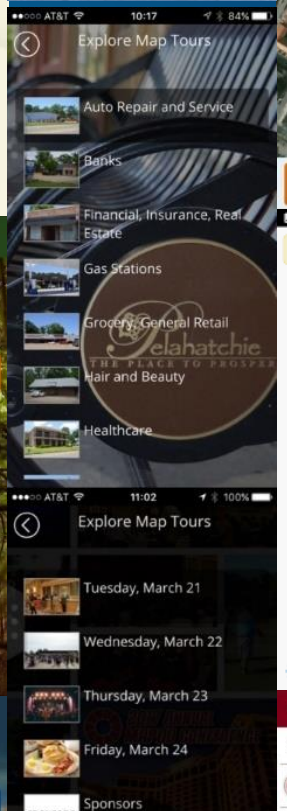
MY ADDRESS
Easy to find
Registrering af livstræer

(Online)
Nyt livstræ
BlueBays

1 of 24
Cerro La Santa

Ecological Marine Unit Explorer
esri
Ecological Marine Units located at
-66.125, 19.875

AT&T 10:17
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Explore Map Tours
Auto Repair and Service
Banks
Financial, Insurance, Real Estate
Gas Stations
Grocery, General Retail
Hair and Beauty
Healthcare
Pelahatchie
AT&T 11:02
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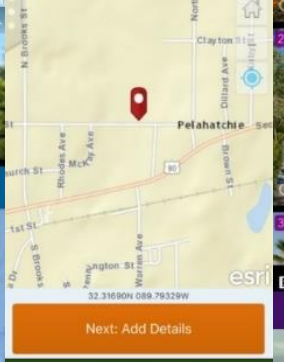
Explore Map Tours
Tuesday, March 21
Wednesday, March 22
Thursday, March 23
Friday, March 24
Sponsors

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esri
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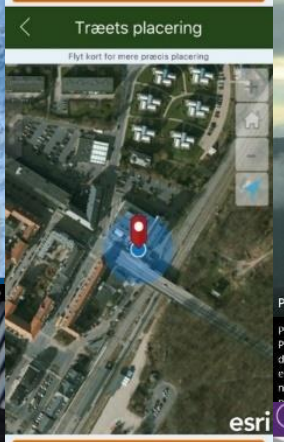
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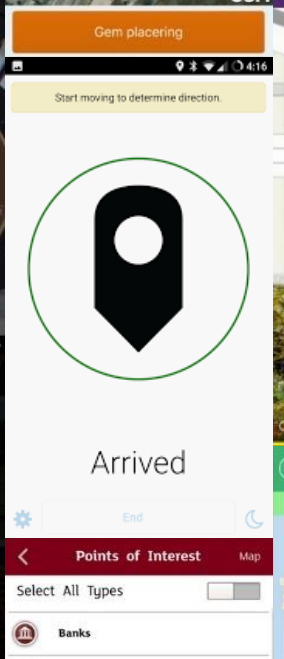
AT&T 4:16
Start moving to determine direction.
Arrived
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Points of Interest
Map
Select All Types
Banks

Campus Entrance
California Livin

List
17 of 24
Pico El Yunque
Pico El Yunque es el decimoquinto
Puerto Rico. Este se encuentra
del Bosque Nacional El Yunque
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nivel del mar. El pico está casi s

Campus Entrance
SHOPS

21 of 40
Hagersville Farmers Market

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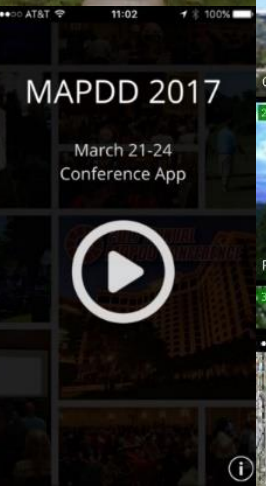
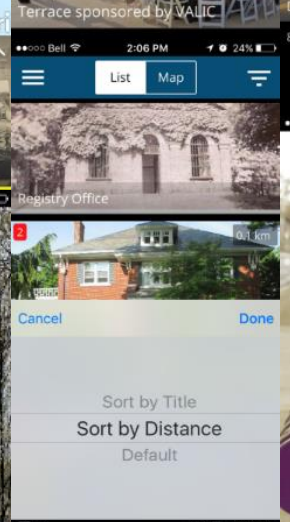
29%
GRIFFITH ON THE GO
Phone Numbers
Events Calendar
Facebook
Report Problems
Code Violation Descriptions

AT&T 11:02
100%
MAPDD 2017
March 21-24
Conference App

21 of 40

Registry Office

0.1 km

Cancel
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Sort by Title
Sort by Distance
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List
Map

Cerro La Santa

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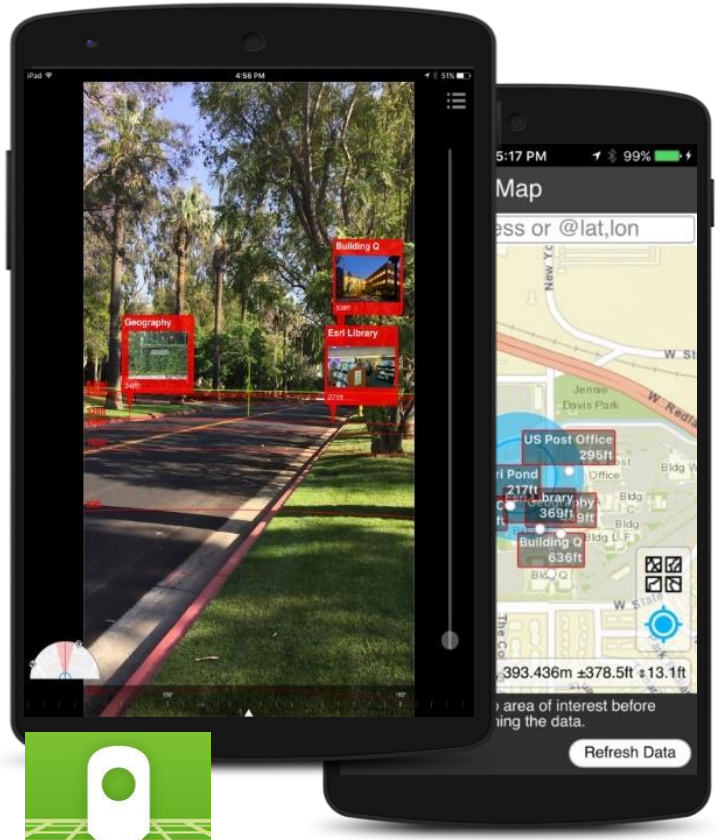
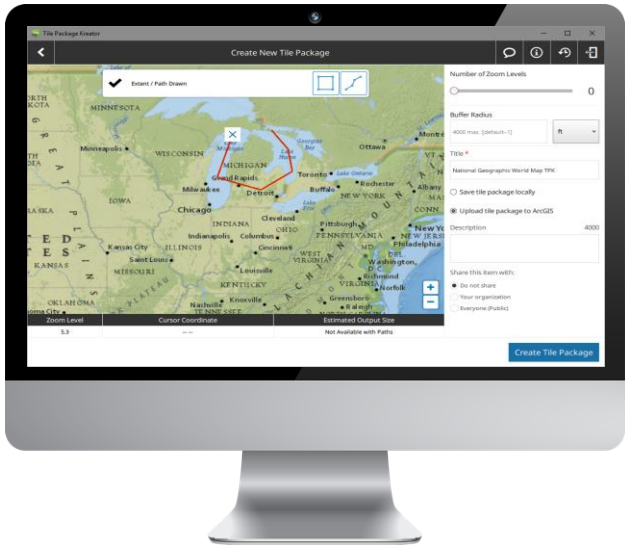
Fill in the fields below

Esri Labs

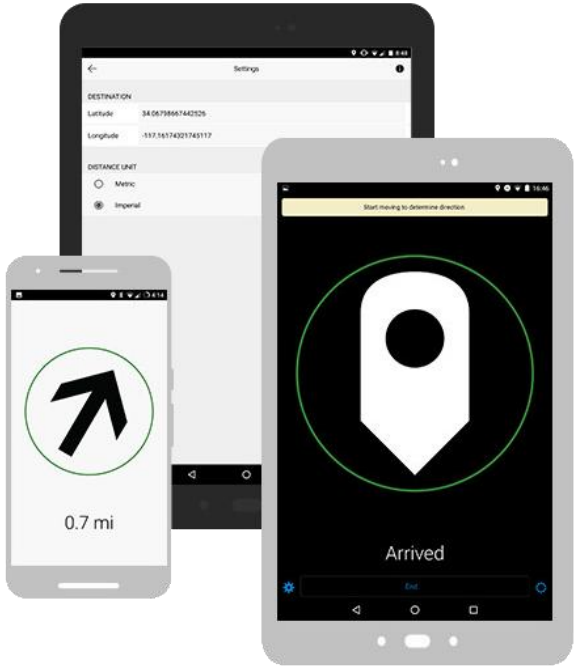


esri labs

AuGeo

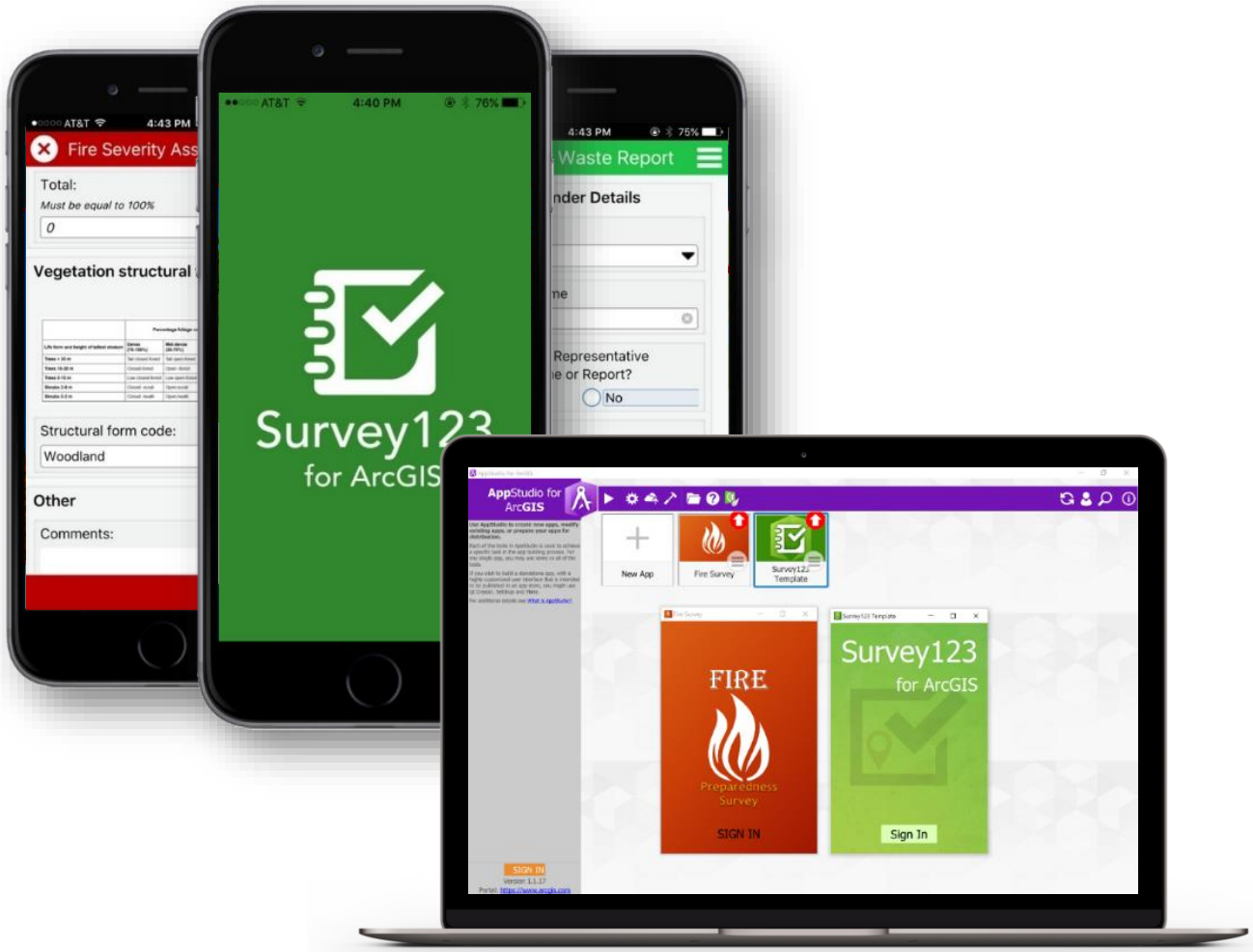


Tile Package Kreator



Trek2There

Survey123 - customization



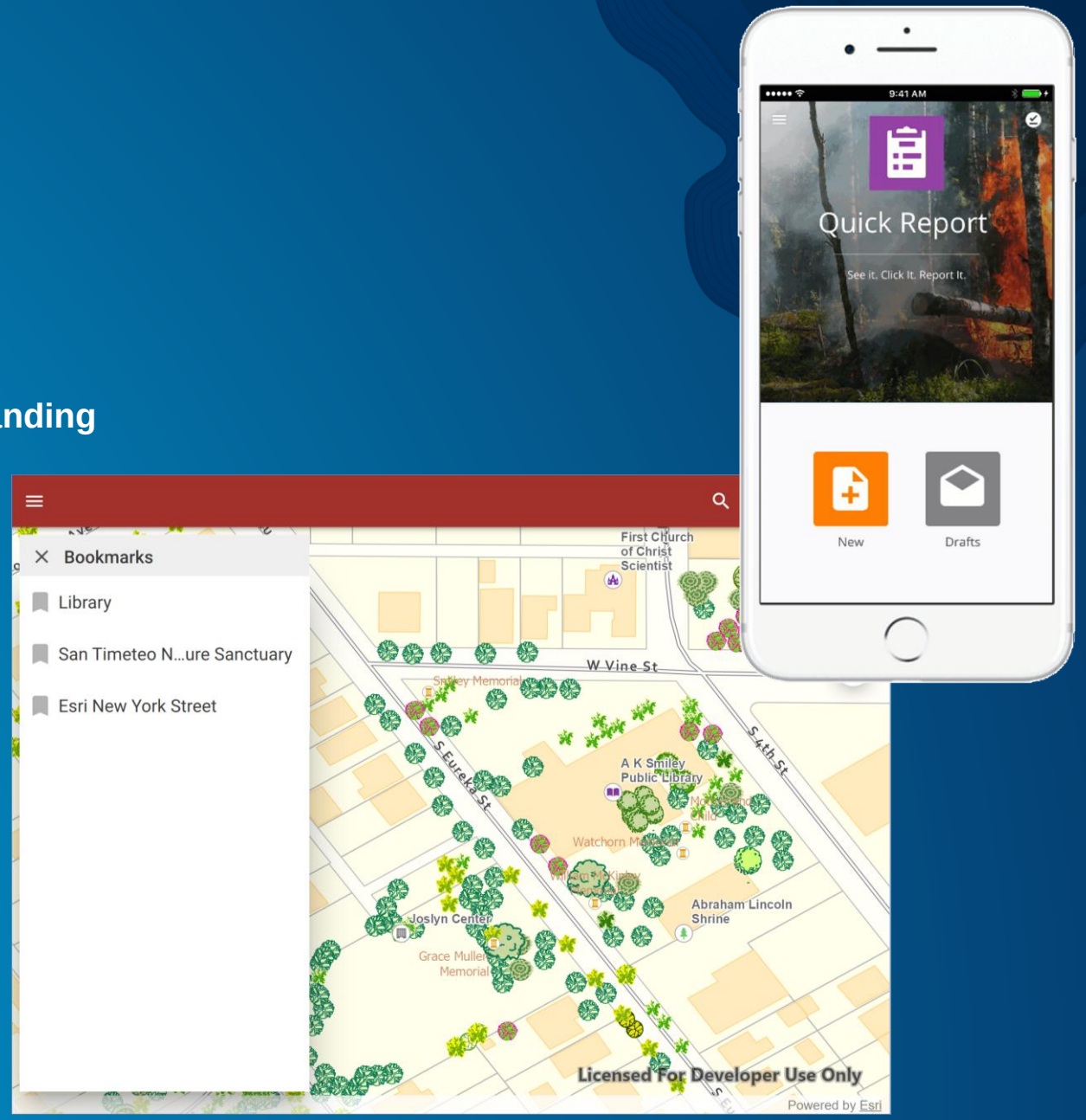
- American Red Cross
- Texas DOT
- Southern Ute Tribe
- GeoDecisions (partner)

AppStudio

Licensing

AppStudio – Basic and Standard

- **AppStudio Basic (Web only)**
  - **No development** skills required
  - **Configure app templates** with your maps and branding
  - Publish in the **App Stores**
- **AppStudio Standard (Web or Desktop)**
  - **Developer Friendly** Tools
  - Extend template or write from scratch
  - Share with the public or the **enterprise**



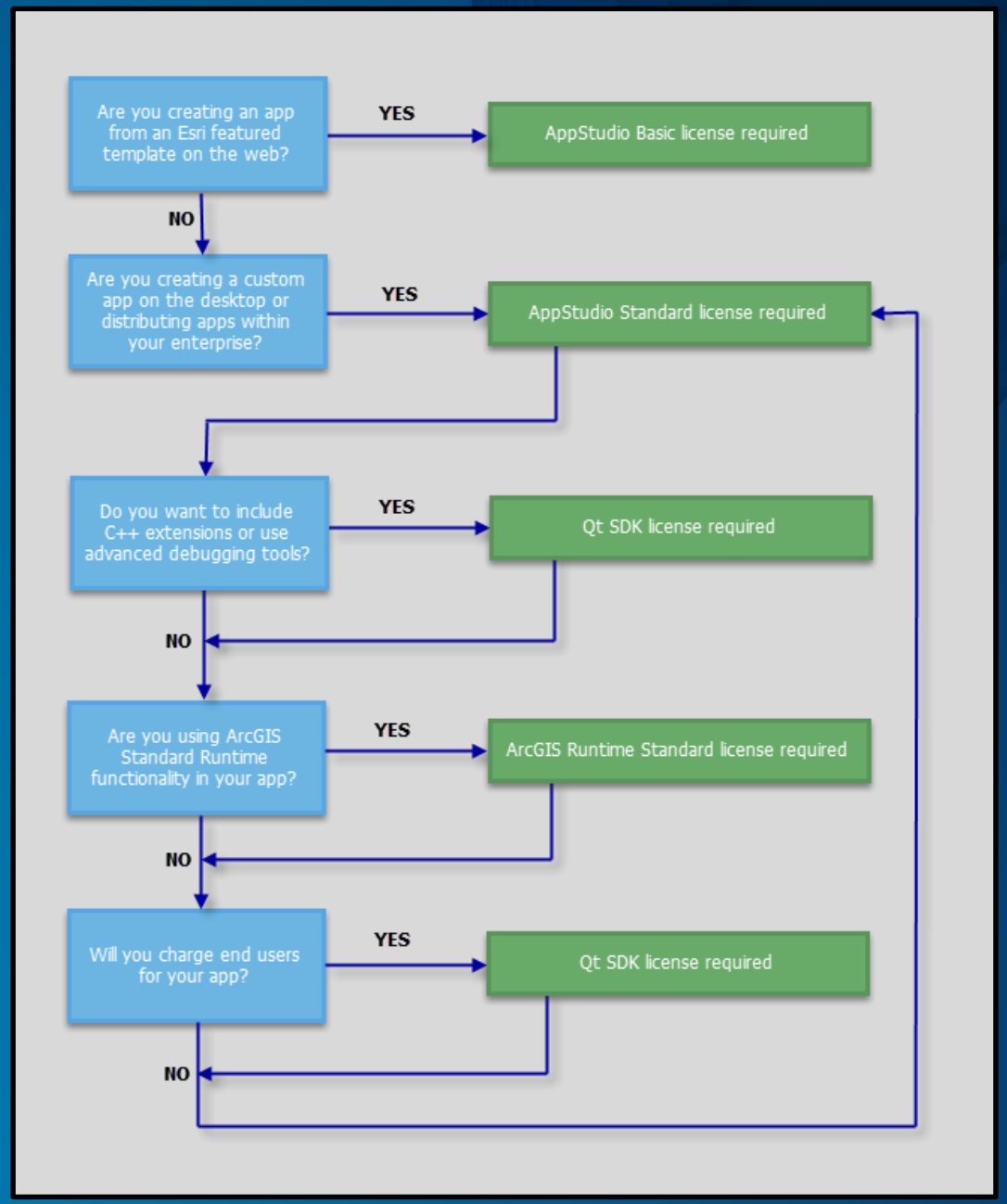
Runtime 100 licensing

- Lite
- Basic
- Standard
- Advanced

https://developers.arcgis.com/arcgis-runtime/licensing/

What License Do I need?

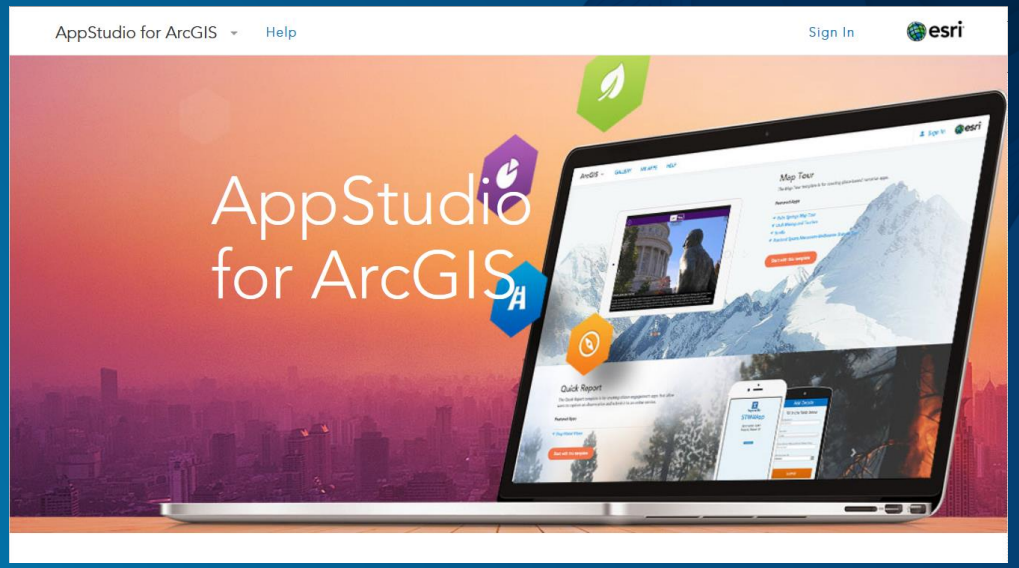
https://doc.arcgis.com/en/appstudio/create-apps/licenseappstudio.htm



AppStudio Desktop

Build an app using Template

- Pick a template
- Create an app
- Configure the app
- Upload to your org
- Use Player to test
- Submit a build using cloud make

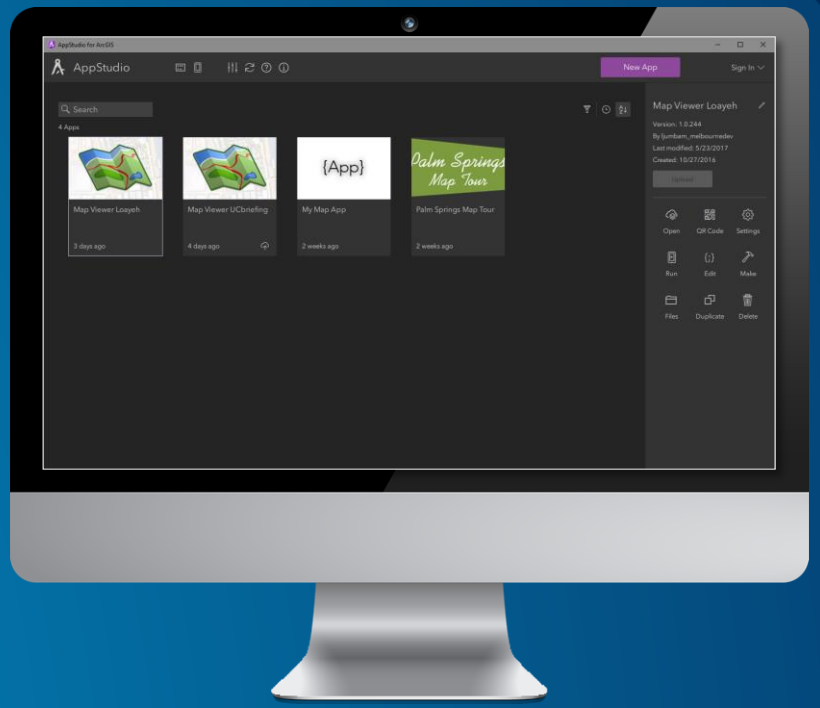


Player

Make

AppStudio Desktop

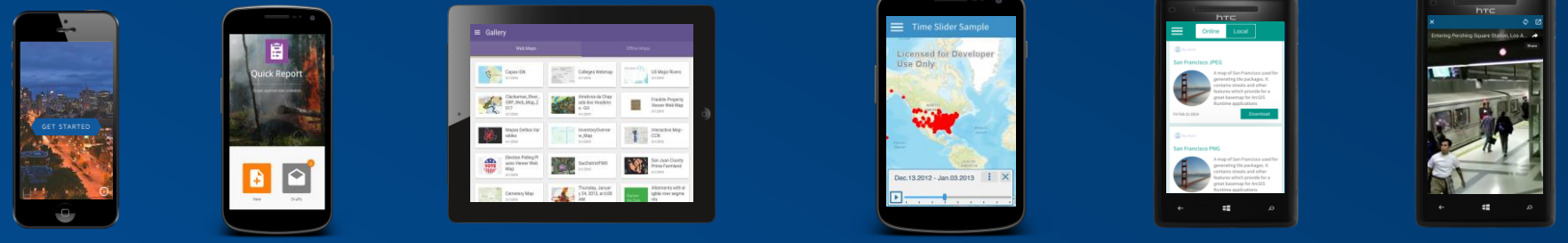
- Organize and Manage your Apps (app projects)
- Access to:
  - Templates
  - Samples
  - Layouts
- Configure Properties
- Access the IDE / Edit Code
- Request a Build



- Available on Win, Mac, and Ubuntu Linux

AppStudio Demo

The Development Stack



QML + Javascript

AppStudio AppFramework

ArcGIS Runtime API for Qt

Qt Quick Framework
(QML, JS, C++)

ArcGIS Services
(REST API, Feature Services, Maps, Packages)

AppStudio Stack

Qt Quick Framework	ArcGIS Runtime API	AppStudio AppFramework
• Core QML Components • UI Controls • Positioning • Sensors	• Map Control • Layers • Geometry • Portal • Geocoding • Network Analysis • Geodatabase • Symbology	• App Infrastructure • File System Components • Network Components • UI Widgets • Additional Plugins

What is QML?

- **Qt Meta Language**
- QML constructs the UI, JavaScript constructs the application logic

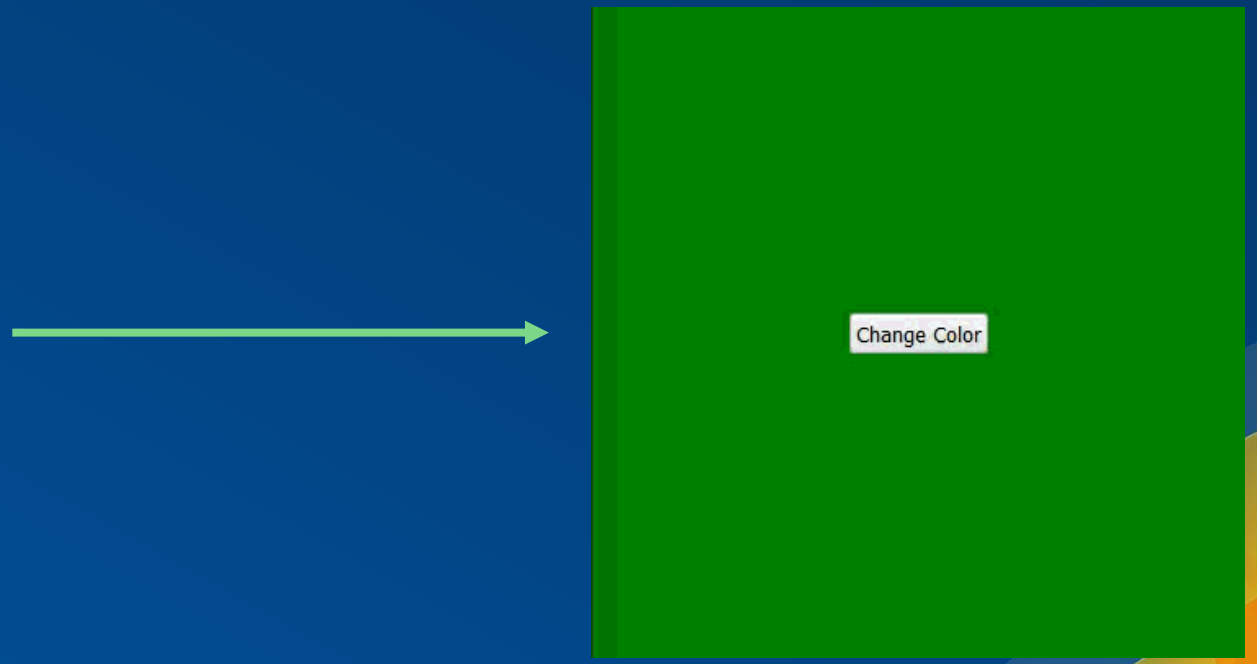
```
import QtQuick 2.7
import QtQuick.Controls 1.4


Rectangle {
    id: app

    width: 400
    height: 400
    color: "green"

    Button {
        text: "Change Color"
        anchors.centerIn: parent

        onClicked: {
            if (Qt.colorEqual(app.color, "green")) {
                app.color = "red"
            } else {
                app.color = "green"
            }
        }
    }
}
```



Awesome bits

- Quick prototyping
- Beautiful transitions and animations
- Promotes componentization and reuse of code
- Property binding
- Signals
- JavaScript engine (ES Language Specification 5)
- Backed by native C++

User Interface

- Different Platform/Devices
  - iOS – iPhone(s) and iPad(s)
  - Android – hundreds kinds
  - Windows – desktop, mobile

- Different screen resolution
- Font sizes
- Animation
- Graphic Effects

Material Design Guidelines

- A philosophy to design the UI/UX. It decides how the UI should work, look and what animations it should use.
- Based on Google Material Design Guidelines

- It’s your choice!

- Other Styling options:
  - Custom
  - QML Universal Style

ArcGIS Runtime QML

- ArcGIS Runtime SDK for Qt QML API https://developers.arcgis.com/qt/
- It brings the power of Mapping and GIS
- All of the features that Runtime provides can be used in AppStudio Apps
- Latest version, AppStudio 3.0 Beta supports Runtime 100.2

Introduction to AppFramework

- It provides lot of powerful cross platform components to power up your app
- Its written purely in C++ and expose a JavaScript like QML objects
- Qt, the underlying tech doesn’t expose a lot of native capabilities or utilities that an app needs
- AppFramework provides array of functionalities as basic as getting system information to complex operations such as Device Discovery

AppFramework – Modules

- AppFramework
- Authentication
- Barcodes
- Desktop
- Devices
- Multimedia
- Networking
- Notifications
- Positioning
- Promises
- SecureStorage
- Sensors
- Speech
- SQL

DEMO

- To create a nice-looking, GIS, cross-platform, native mobile app using AppStudio for ArcGIS

- Lets create new app!
- Lets make it pretty!
- Lets add a Map!
- Lets add a AppFramework Plugin


esri
THE SCIENCE OF WHERE