



jChampions
Conference

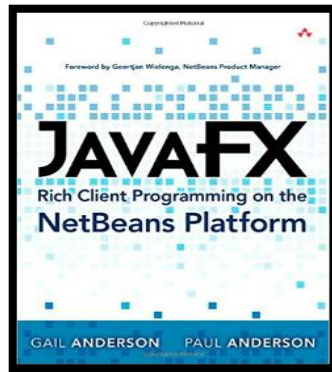
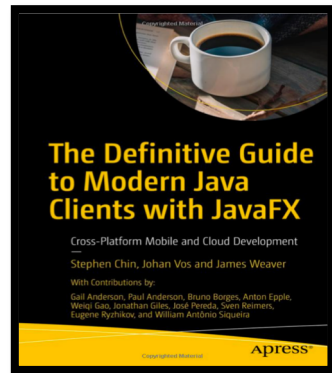
Virtual Everywhere
January 13, 2021

It's How We Play the Game, JavaFX and GraalVM

Paul Anderson
Gail Anderson
Anderson Software Group, Inc.
asgteach.com

So Who Are We?

- ▶ Training Company
 - Java, JavaFX Courses
- ▶ JavaFX Authors
 - Definitive Guide to JavaFX
 - JavaFX Rich Client Programming on the NetBeans Platform
- ▶ LiveLesson Videos
 - JavaFX Programming
 - Java Reflection



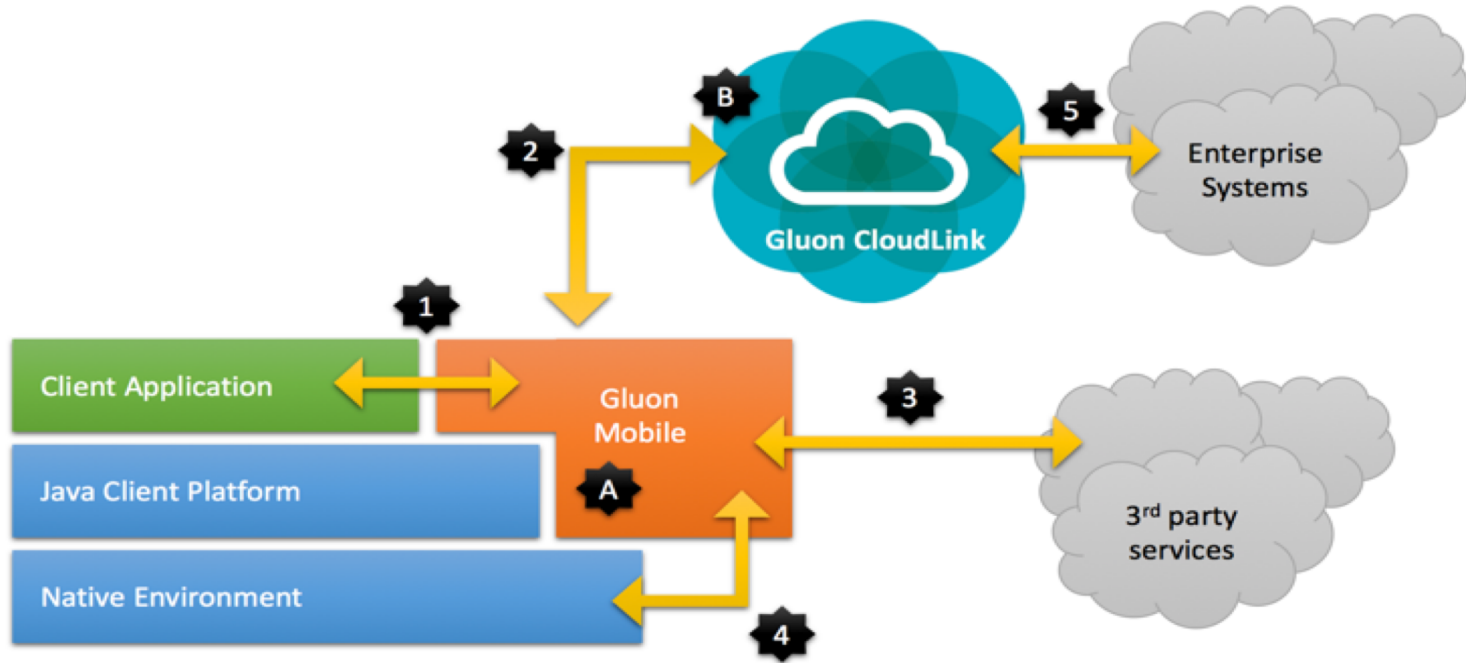
Agenda

- ▶ Why JavaFX on Mobile?
- ▶ Gluon Framework
- ▶ Gluon Substrate and GraalVM
- ▶ Mobile App Roadmap
- ▶ Gluon Client Plugin
- ▶ IOS and Android Native Images
- ▶ App Stores
- ▶ Wrap Up, Q & A

Why JavaFX On Mobile?

- ▶ **Critical Goal**
 - Platform independent source code
 - “Write Once, Install Everywhere”
- ▶ **Design Approach**
 - Gluon tools and GraalVM platform
 - Lets you build native images
- ▶ **JavaFX Advantages**
 - Java UI, scene graph, nodes, FXML views
 - Properties, listeners, binding, event handlers

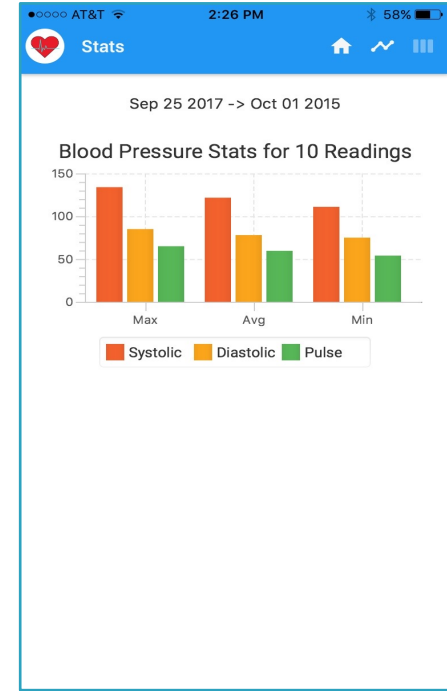
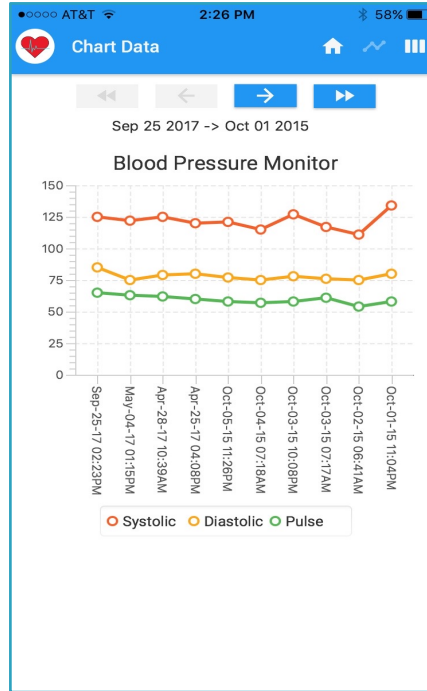
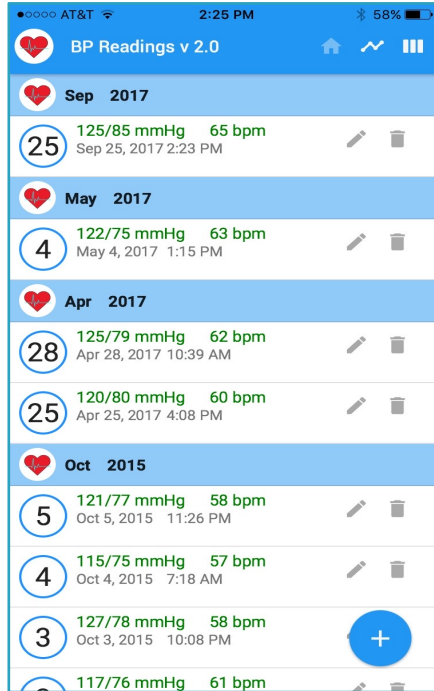
Gluon Framework



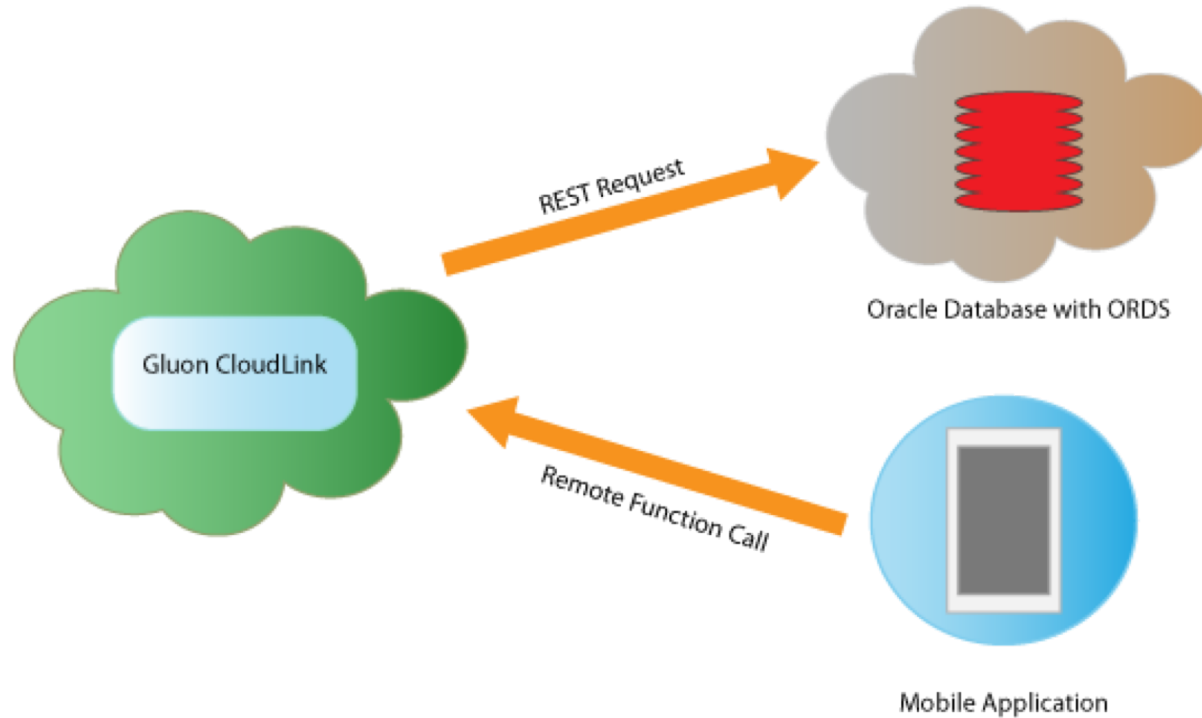
Mobile App Structure

- ▶ **MobileApplication**
 - Main class for JavaFX mobile applications
 - Extends JavaFX Application class
 - Specify views as factories that are called on demand
- ▶ **Views**
 - View class invokes FXMLLoader for FXML
 - Presenter class is the FXML controller class
- ▶ **Resources**
 - fxml, css, images, licensing files

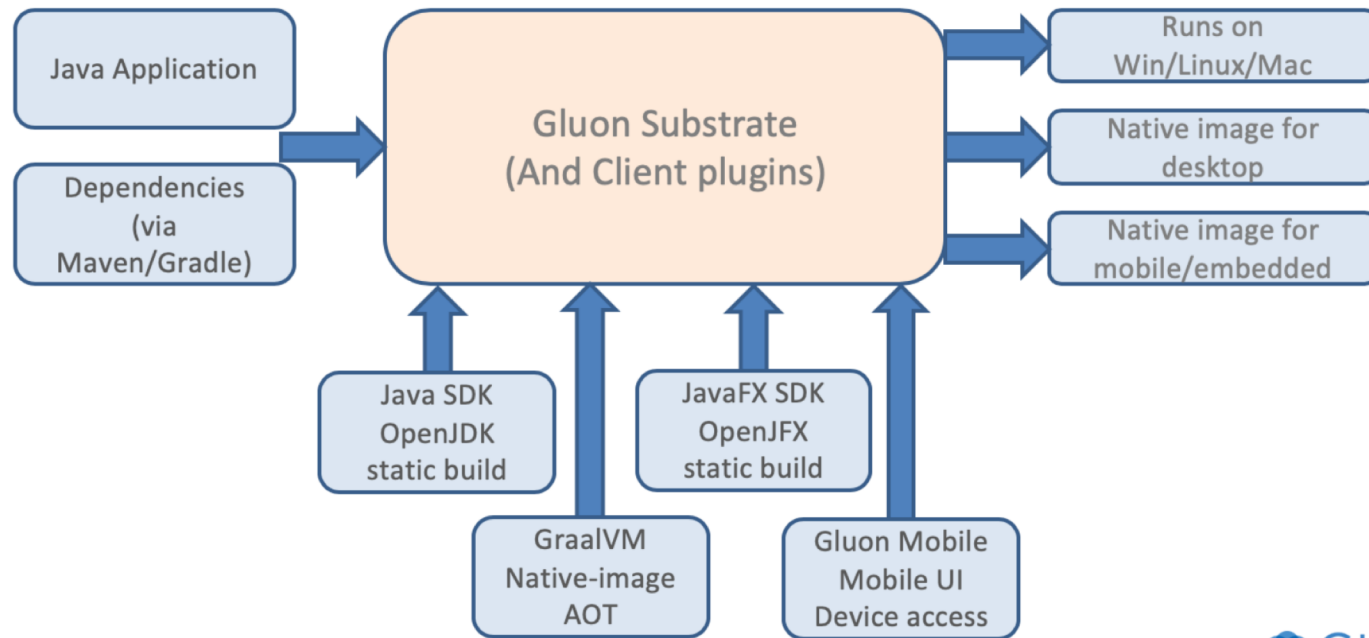
BPMonitor



Cloud Database



Gluon Substrate

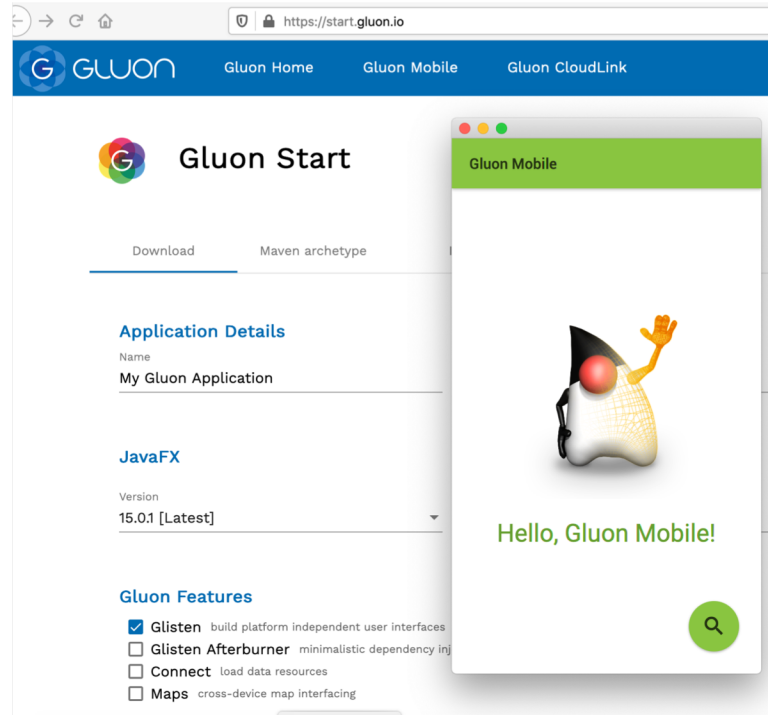


Mobile App Roadmap

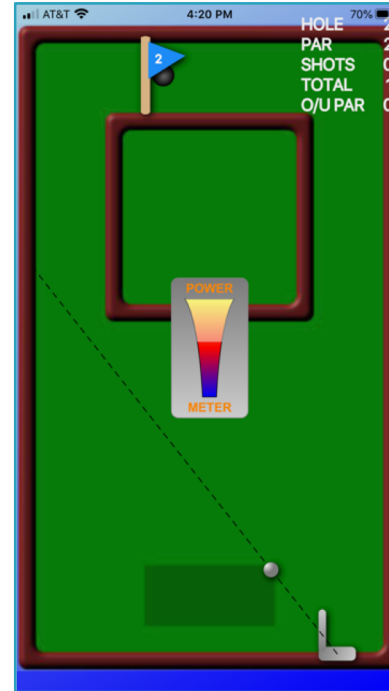
► Development Steps

- 1 Local development with JVM/Desktop environment
- 2 Install and test on local device
- 3 Upload to stores for beta testing/approval
 - TestFlight for IOS
 - Multilevel Beta Testing for Android
- 4 Place in store for general access/approval

Getting Started



MiniGolf- TeeTime



Gluon Client Plugin

▶ Maven Client Plugin

- Builds native image apps for multiple platforms
- Targets MacOS, Linux, Windows, IOS, Android
- Leverages GraalVM, OpenJDK, OpenJFX

▶ GraalVM Features

- Java VM and JDK platform, implemented in Java
- Supports AOT compilation of Java applications
- Creates native images
- Fast startup, low memory footprint

IOS Target Setup

- ▶ Mac with MacOS
 - Xcode development tools
 - Native libraries
 - GraalVM JDK
- ▶ Other Requirements
 - Apple provisioning
 - Icon images
 - Feature configuration

IOS Native Target

- ▶ Maven Configuration File

`pom.xml`

- ▶ Build and Package

```
$ mvn -Pios client:build  
$ mvn -Pios client:package
```

- ▶ Install and Run

```
$ mvn -Pios client:run
```

Android Target Setup

- ▶ Linux Box or Virtual Linux OS
 - Development tools
 - Native libraries
 - GraalVM JDK
- ▶ Other Requirements
 - Java signing
 - Icon images
 - Feature configuration

Android Native Target

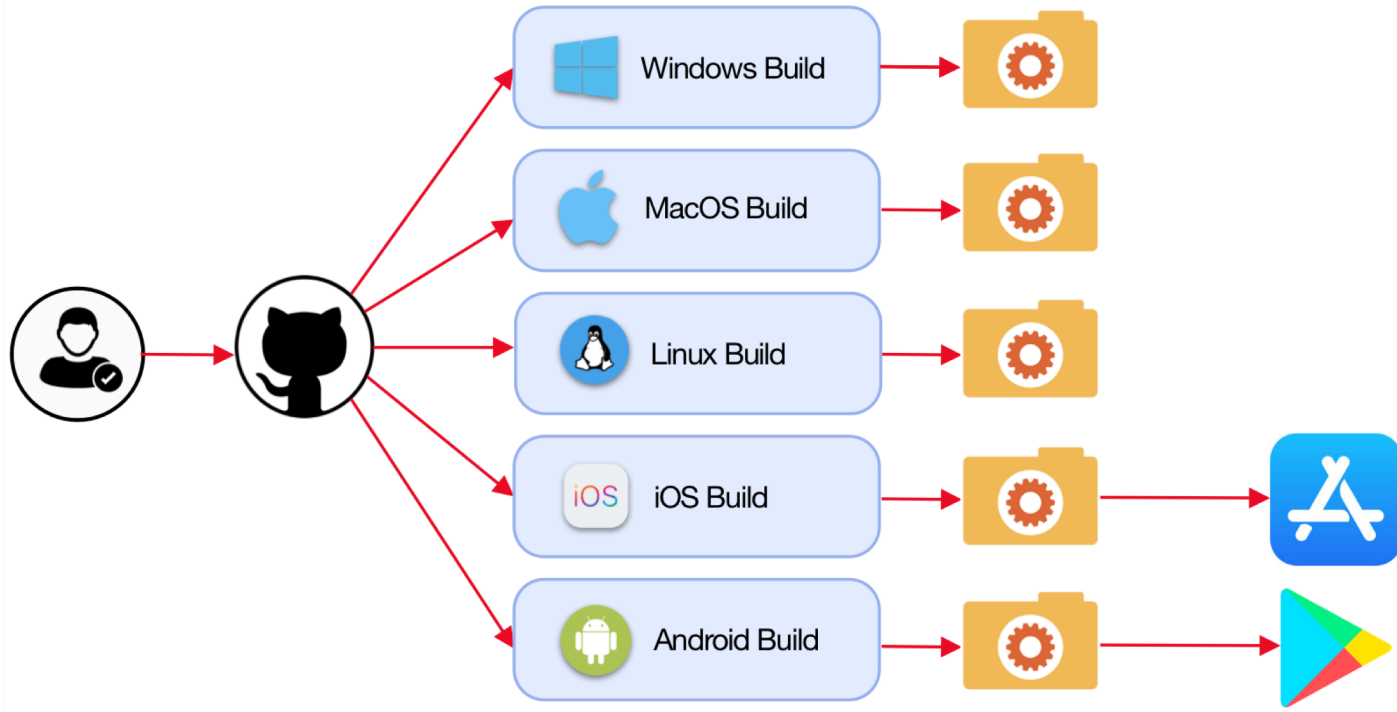
► Build and Package

```
$ mvn -Pandroid client:build  
$ mvn -Pandroid client:package
```

► Install and Run

```
$ mvn -Pandroid client:install  
$ mvn -Pandroid client:run
```

GitHub Actions



App Stores

- ▶ Apple AppStore
 - Provisioning profile to sign app
 - App Store Connect
 - Upload with Transporter
- ▶ Google Play
 - Signup for Google Play Console
 - Sign APK package
 - Upload to site

Get the App!



<https://t.co/141k1n7iQ6?amp=1>



<https://t.co/aylnaH8cvi?amp=1>

Summary

▶ JavaFX Advantages

- Platform independent source code
- Observables, binding, listeners, event handlers
- Background tasks to sync UI

▶ Useful Frameworks

- Gluon Substrate for mobile deployment
- Based on OpenJDK and OpenJFX
- GraalVM to create IOS and Android native images
- GitHub Actions to simplify deployments

Wrap Up

- ▶ Thanks for Attending!

paul@asgteach.com @paul_asgteach
gail@asgteach.com @gail_asgteach

- ▶ GitHub Source Code

<https://github.com/gailasgteach/MiniGolf>

- ▶ Q & A

