Esri Developer Summit

Berlin 2017

ArcGIS Runtime SDK Java: Building apps

Mark Baird

Agenda

- Getting started with 100.1.0
- JavaFX
- Base maps, layers and lambdas
- Offline data
- Local Server
- Graphics overlays
- Licensing and deployment
- Java 9
- Questions

Getting started with 100.1.0

Developers website

ArcGIS for Developers Features Documentation Community Plans Search Sign In

ArcGIS Runtime / Java SDK / **100.0.0**

ArcGIS Runtime SDK for Java

Download SDK Install the SDK

Version 100.0.0 · November 2016 · All Available Downloads

Home Guide API Reference Sample Code Forum

Build cross-platform mapping apps for Windows, Linux, and macOS

The next generation of ArcGIS Runtime is here. Get the SDK that lets you build cross-platform apps with the ArcGIS Runtime SDK for Java. Integrate a wide range of mapping and GIS capabilities online or offline, including editing, geocoding, routing, management of web maps, 2D and 3D, data visualization, mobile map packages, and vector tiled layers. Access documentation and sample code, including installation information using this site.

Looking for the previous version?

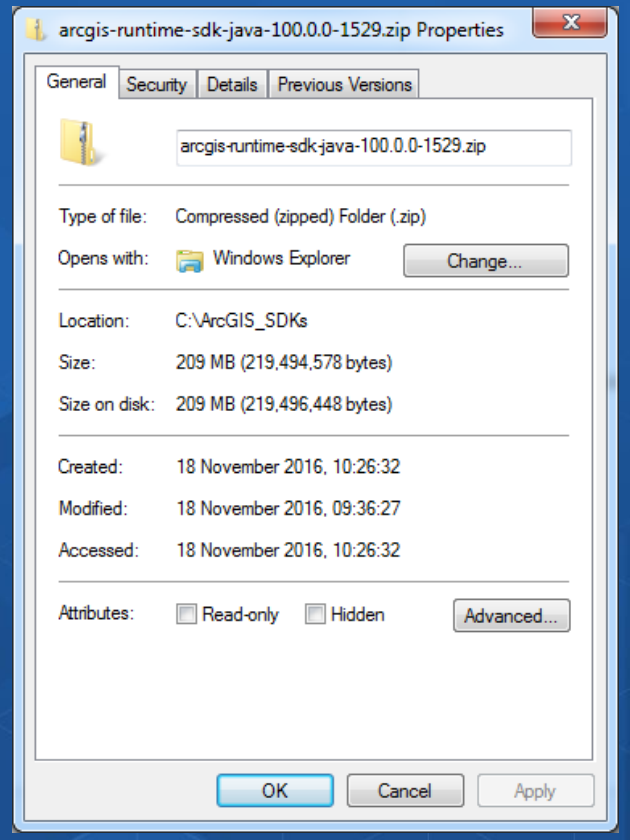
10.2.4 is the previous release of the ArcGIS Runtime SDK for Java.

Go to the previous release

Choosing the right version

SDK Installation

- There is no longer an install!
- SDK is available in 2 ways:
  - Zip / tgz file with all required files
  - Files will be available in a Maven repository
    - Use Gradle to inject dependencies
    - Use a Gradle plugin

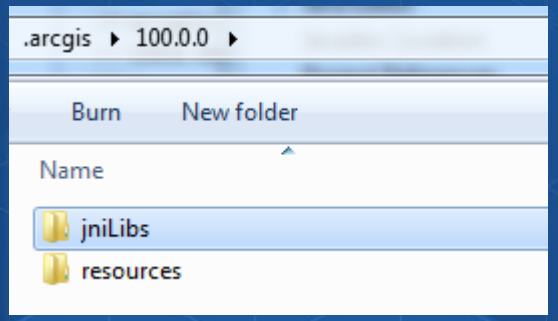


Gradle build scripts

```
apply plugin: 'com.esri.arcgisruntime.java'
apply plugin: 'application'
apply plugin: 'eclipse'
apply plugin: 'idea'

buildscript {
    repositories {
        maven {
            url 'https://esri.bintray.com/arcgis'
        }
    }
    dependencies {
        classpath 'com.esri.arcgisruntime:gradle-arcgis-java-plugin:1.0.0'
    }
}

arcgis.version = '100.0.0'
```



JavaFX

Java FX

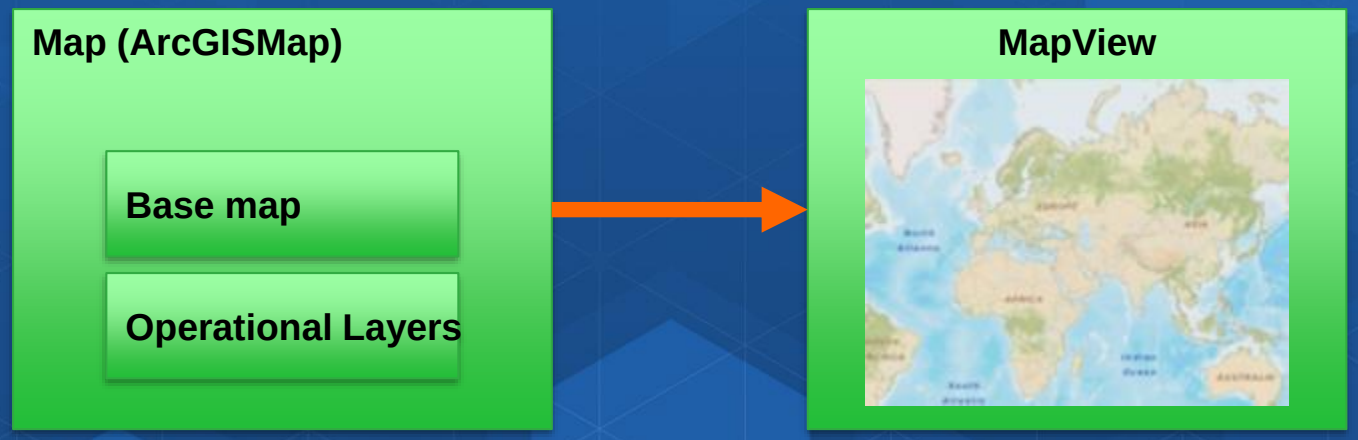
- JavaFX has come of age!
- The controls are JavaFX 8
  - Much nicer modern style applications
  - A better toolkit
  - Use new Java 8 concepts
    - Lambdas
    - Streams
- We are not planning on supporting Swing in 100.x releases
  - Oracle are not developing Swing and further

Moving from Swing to JavaFX

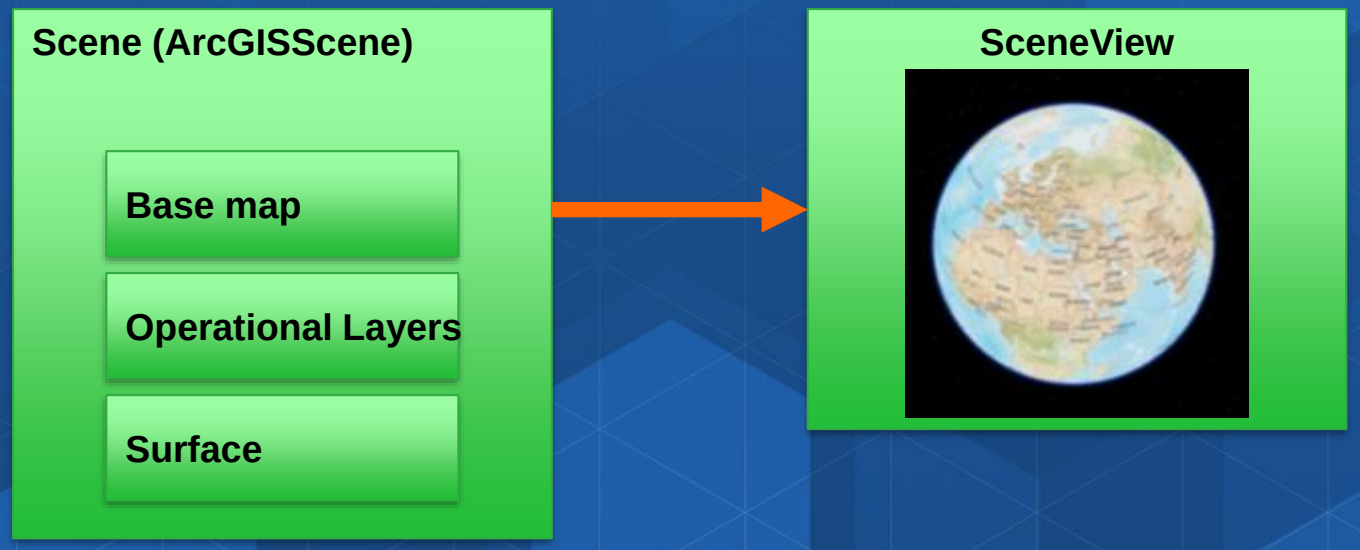
- You can:
  - Put Swing components in JavaFX apps
  - Put JavaFX components in Swing apps
- But… it is generally considered a bad idea!
  - Threading issues with keeping code on the correct UI thread
  - Potential application stability issues
- Please don’t be tempted to mix the technologies!
  - Use 10.2.4 for Swing
  - Use 100.x for JavaFX

Base maps, layers and lambdas

Writing 2D applications

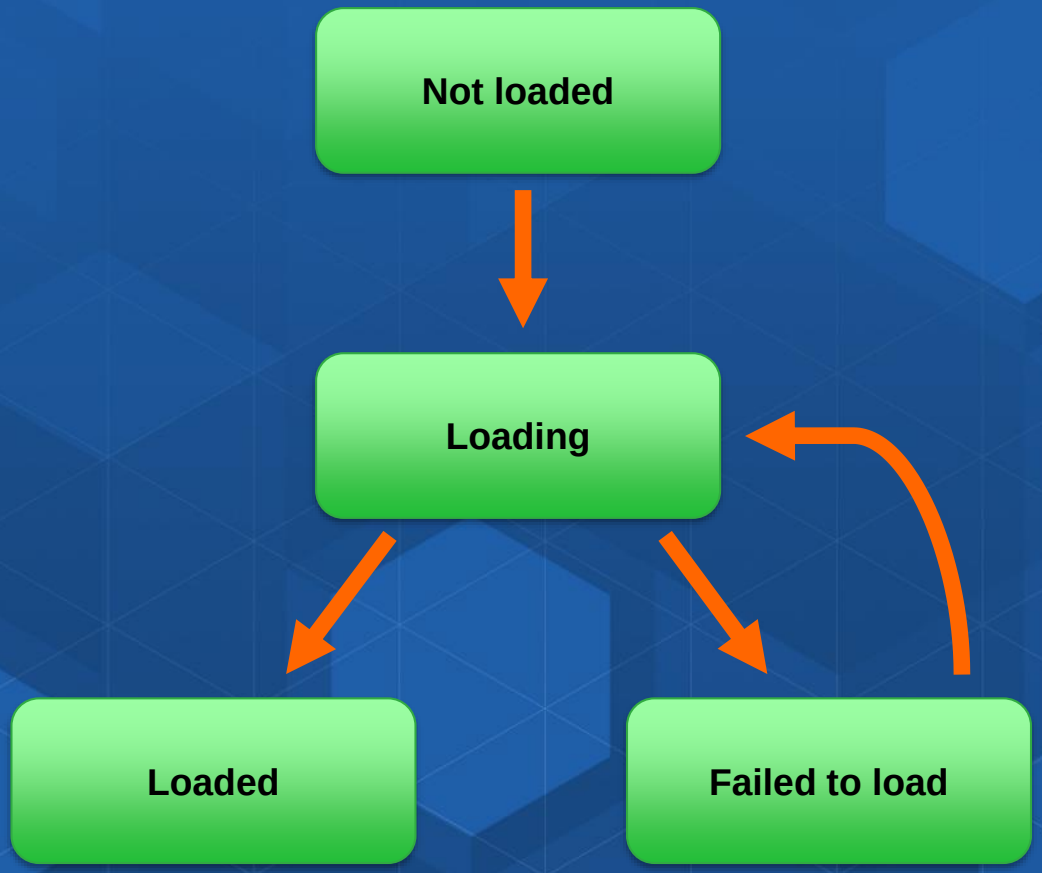


Writing 3D applications



Demo: Maps and layers

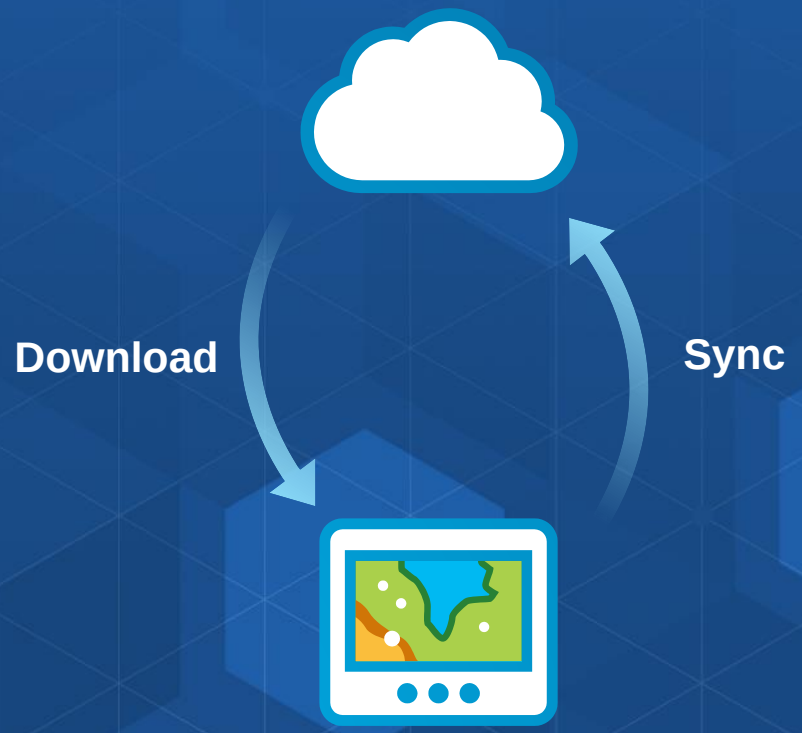
Loadable pattern



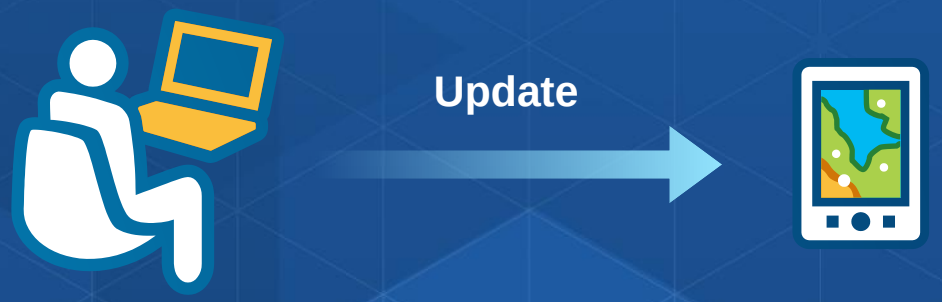
Offline data

Offline

Services Pattern



Desktop Pattern



Local Server

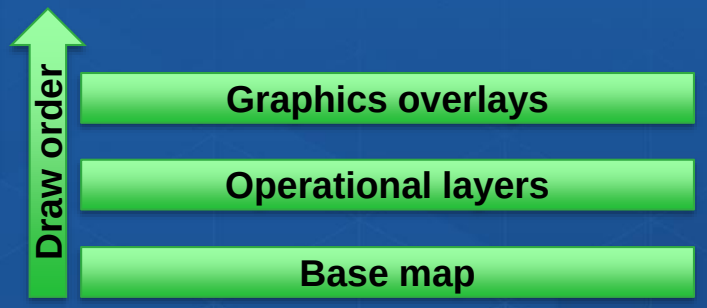
Local Server

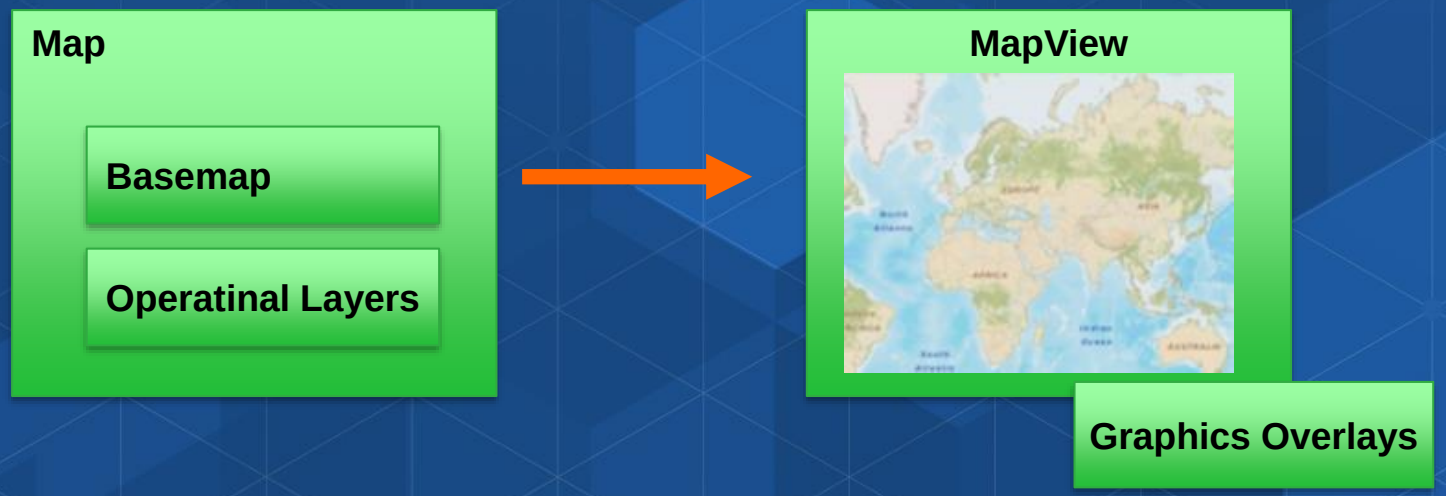
- Local Server is no longer part of the SDK
- It’s not gone away!
- Used less for accessing visual data.
  - Geocoding, routing and offline data methods are all replaced.
- Mainly now for Geo-processing
  - Geo-processing packages generated from ArcMap
- Separate download to install on Linux or Windows.
- Local Server not available for Mac OSX

Graphics Overlays

Graphics overlays (Graphics layers in 10.2.4)

- Used to display temporary or fast updating items
- Can be used to display point, lines or polygons
- Can be rendered in the same way as feature layers
  - Symbols, Unique value renderers, etc
- Graphics overlays are part of the Mapview or SceneView
- Not persisted





Licensing and deployment

License your application

- Choose a license level:
  - Lite
  - Basic
  - Standard
  - Advanced
- See https://developers.arcgis.com/java/latest/guide/license-your-app.htm
- Choose license method
  - Named user
  - License key

License key

- **Use the setLicense method before your app uses ArcGIS functionality**

```
public static void main(String[] args) {
    // set license
    ArcGISRuntimeEnvironment.setLicense("runtimelite,1000,ru

    // launch application
    Application.launch(args);
}
```

Named user licensing

- **Log into your portal to get the license key**

```
// connect to ArcGIS Online or an ArcGIS portal as a named user
    // The code below shows the use of token based security but
    // for ArcGIS Online you may consider using Oauth authentication.
    UserCredential credential = new UserCredential("user", "password");

    // replace the URL with either the ArcGIS Online URL or your portal URL
    Portal portal = new Portal("https://your-org.arcgis.com/");
    portal.setCredential(credential);

    // load portal and listen to done loading event
    portal.loadAsync();
```

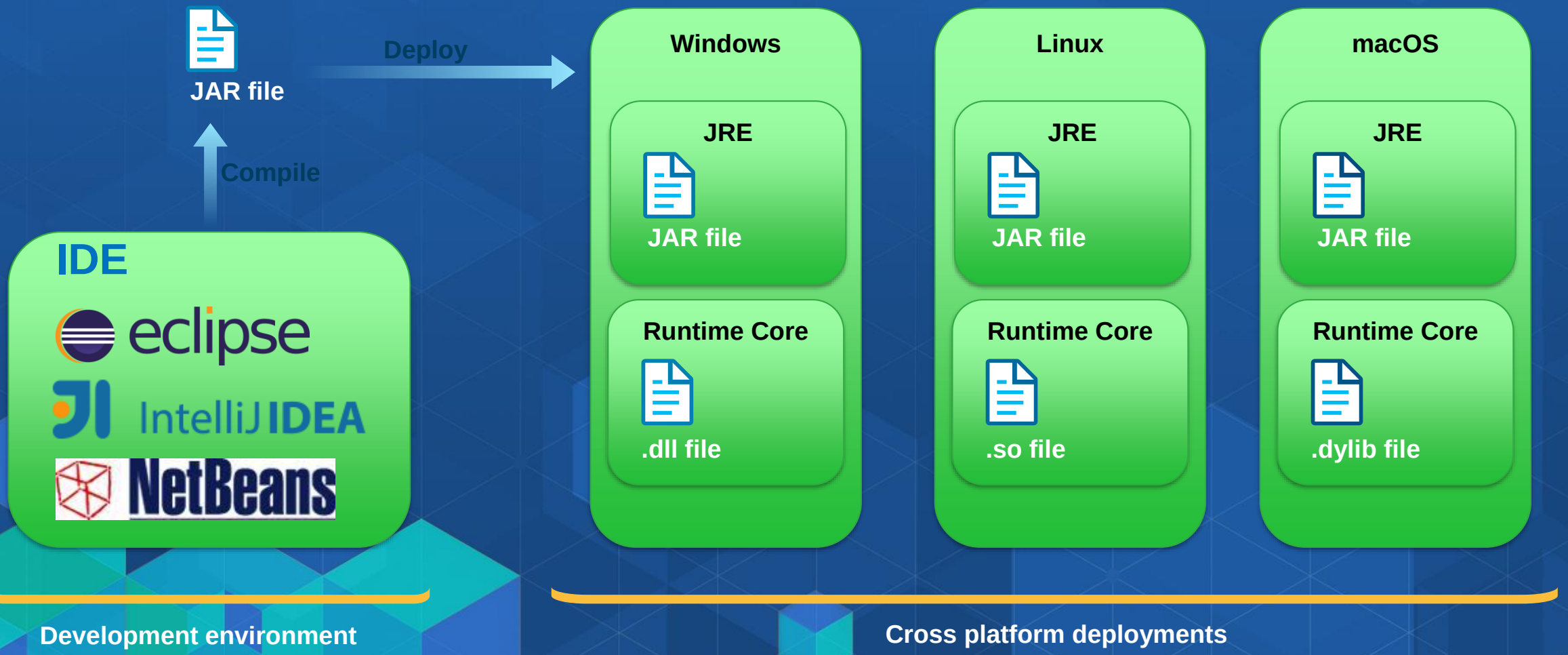
Named user licensing (part 2)

```
portal.addDoneLoadingListener(new Runnable() {

  @Override
  public void run() {
    // get license info from the portal
    LicenseInfo licenseInfo = null;
    try {
      licenseInfo = portal.getPortalInfo().getLicenseInfo();
    } catch (Exception e) {
      // code here to deal with error state
    }
    // obtain the license info as a string
    String licenseJson = licenseInfo.toJson();

    // Add code here to save the JSON license information.
    // This string needs to be saved on local storage.
    // Apply the license
    ArcGISRuntimeEnvironment.setLicense(licenseInfo);
```

Java Runtime development and deployment




Java 9

Java 9 is here!

- Released 21st September 2017
- During 100.1 development we tested against beta releases of 9
  - Minor modifications needed
- Java 9 is not officially supported against 100.1.0 – indications are that it works!
- Aiming to provide support in 100.2.0

Java 9 is here!

- Don’t take an upgrade lightly!
  - Your application is likely to need work.
  - Shared SE / EE libraries do not work!
  - Warning if using internal APIs
  - Jdeps is a good tool for checking for internal APIs
- Modularization
  - We will not initially be modularizing the API
  - Will be addressed with a wider re-achitecture of runtime core.

Questions

esri®

What are we working on next?

- Local Server Dynamic Workspaces
- Take a map offline
- 3D specific
  - 3D Observer scene views
  - Improved rendering of feature layers in 3D
  - Augmented reality for 3D devices
  - Grids (Lat / Long for example) on scene
  - Vector basemap support for 3D