



Develop Hybrid Mobile Applications with Apache Cordova & PhoneGap Enterprise

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Agenda

- What are hybrid mobile applications?
- Introduction to Apache Cordova and PhoneGap
- Introduction to PhoneGap Enterprise

Types of mobile application

NATIVE

CROSS-PLATFORM

HYBRID

WEB

<http://www.developereconomics.com/pros-cons-top-5-cross-platform-tools/>

What are hybrid applications?



Mobile apps – written in web tech you know and love



Native enough to be submitted to app store(s)

Native enough to provide access to device APIs

PhoneGap vs Apache Cordova



The PhoneGap Framework

- A PhoneGap project
- PhoneGap CLI
- PhoneGap Desktop App
- PhoneGap Developer App
- PhoneGap Build
- PhoneGap Enterprise

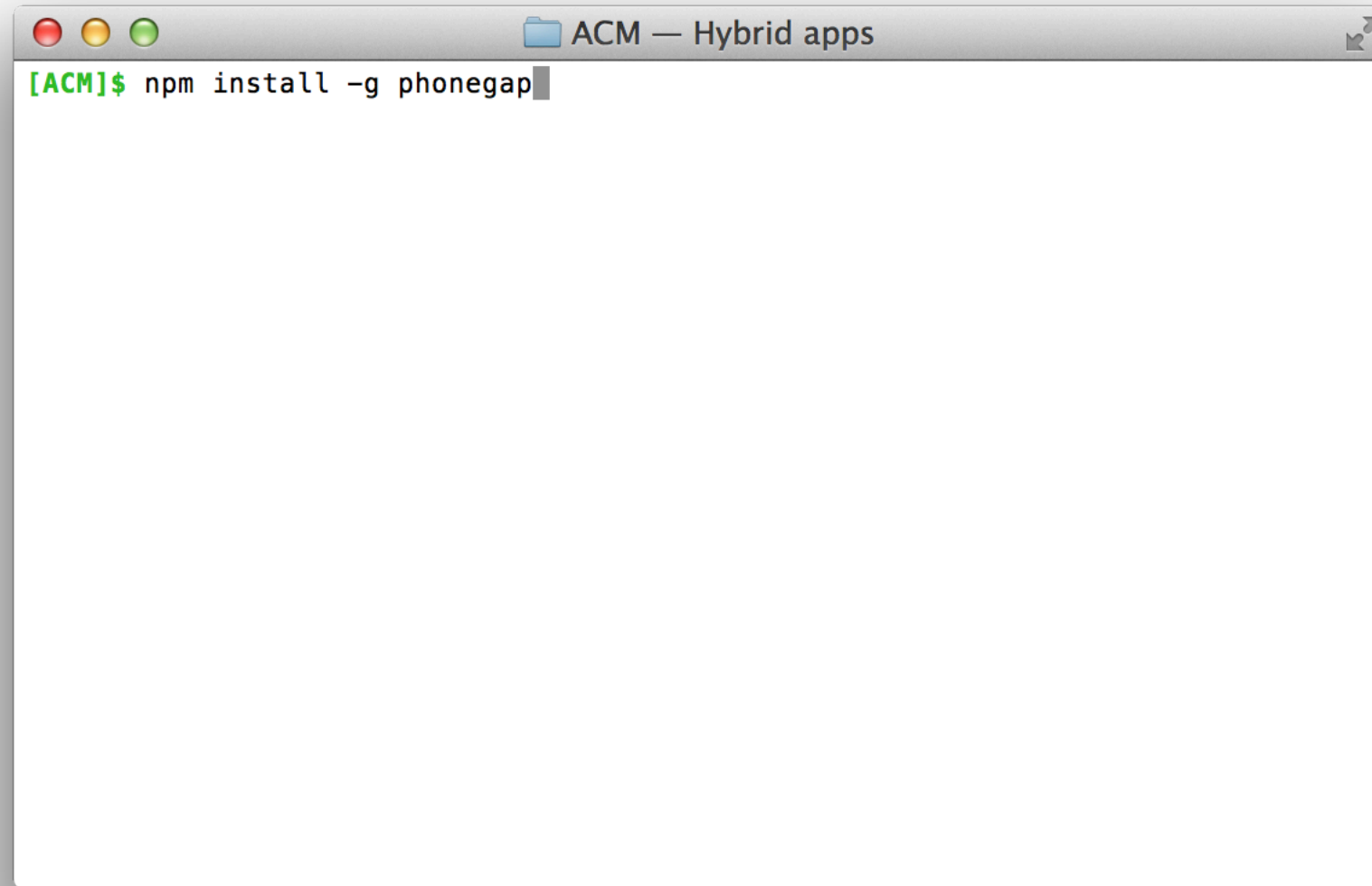
Installation prerequisites



<http://www.nodejs.org>

“Node.js is an open source, cross-platform runtime environment for server-side and networking applications. Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, Linux and FreeBSD.”

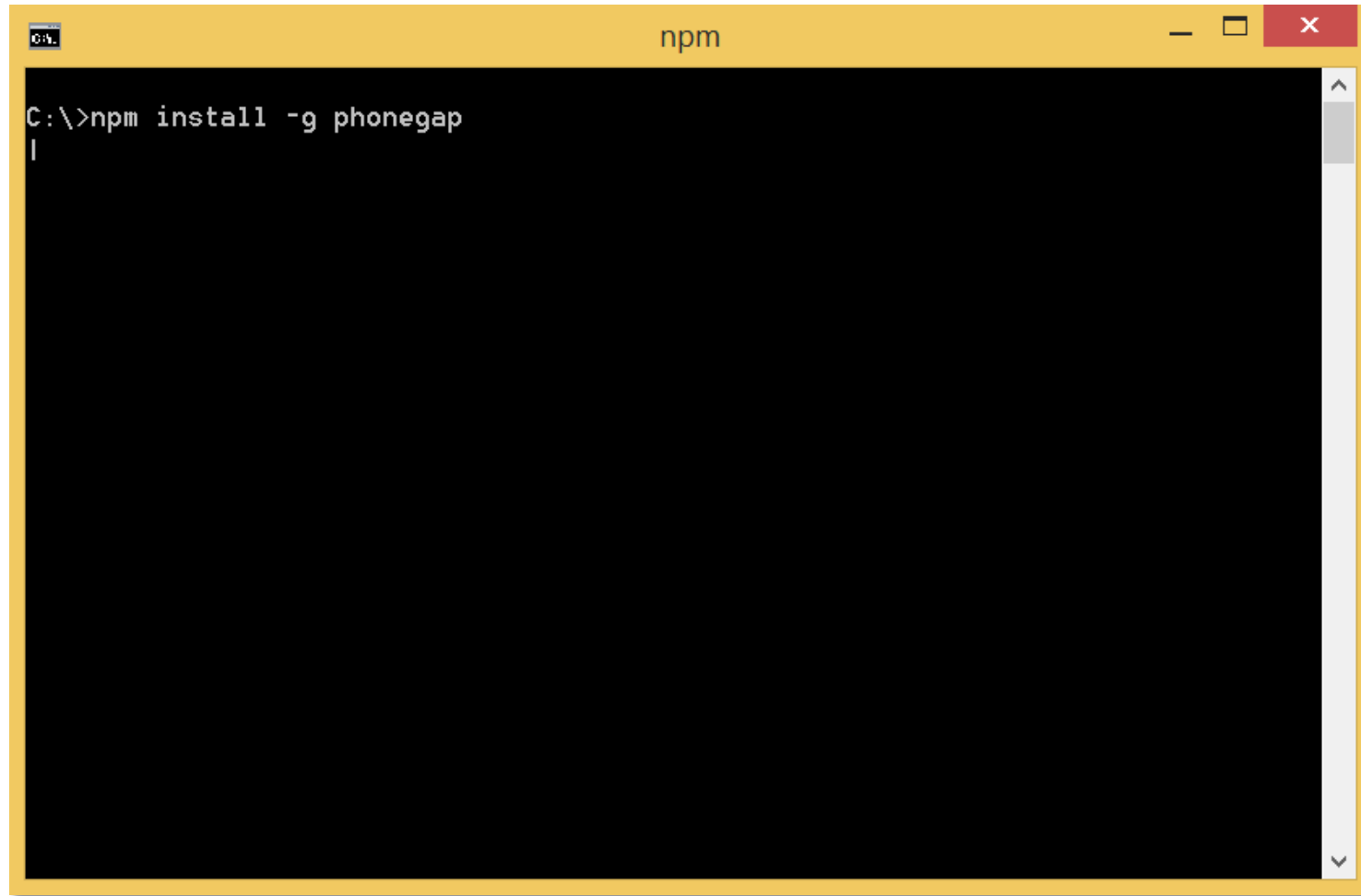
Installation



A screenshot of a macOS-style terminal window. The title bar at the top reads "ACM — Hybrid apps" and features three colored window control buttons (red, yellow, green) on the left and a maximize button on the right. The terminal content shows a green prompt "[ACM]" followed by a dollar sign "\$" and the command "npm install -g phonegap" with a black cursor at the end of the line.

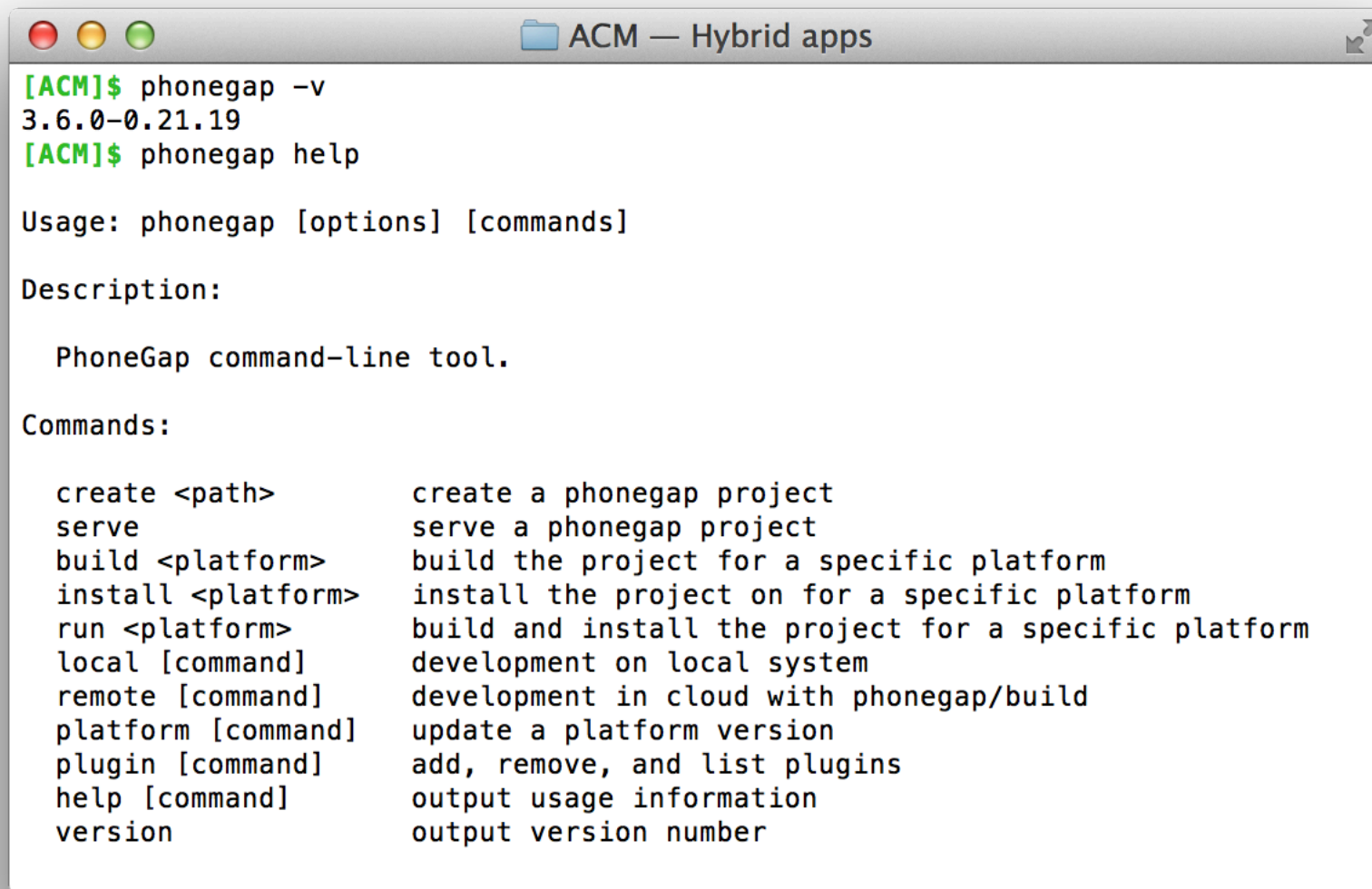
```
[ACM]$ npm install -g phonegap
```

Installation



```
C:\>npm install -g phonegap
|
```

Getting Started



```
[ACM]$ phonegap -v
3.6.0-0.21.19
[ACM]$ phonegap help

Usage: phonegap [options] [commands]

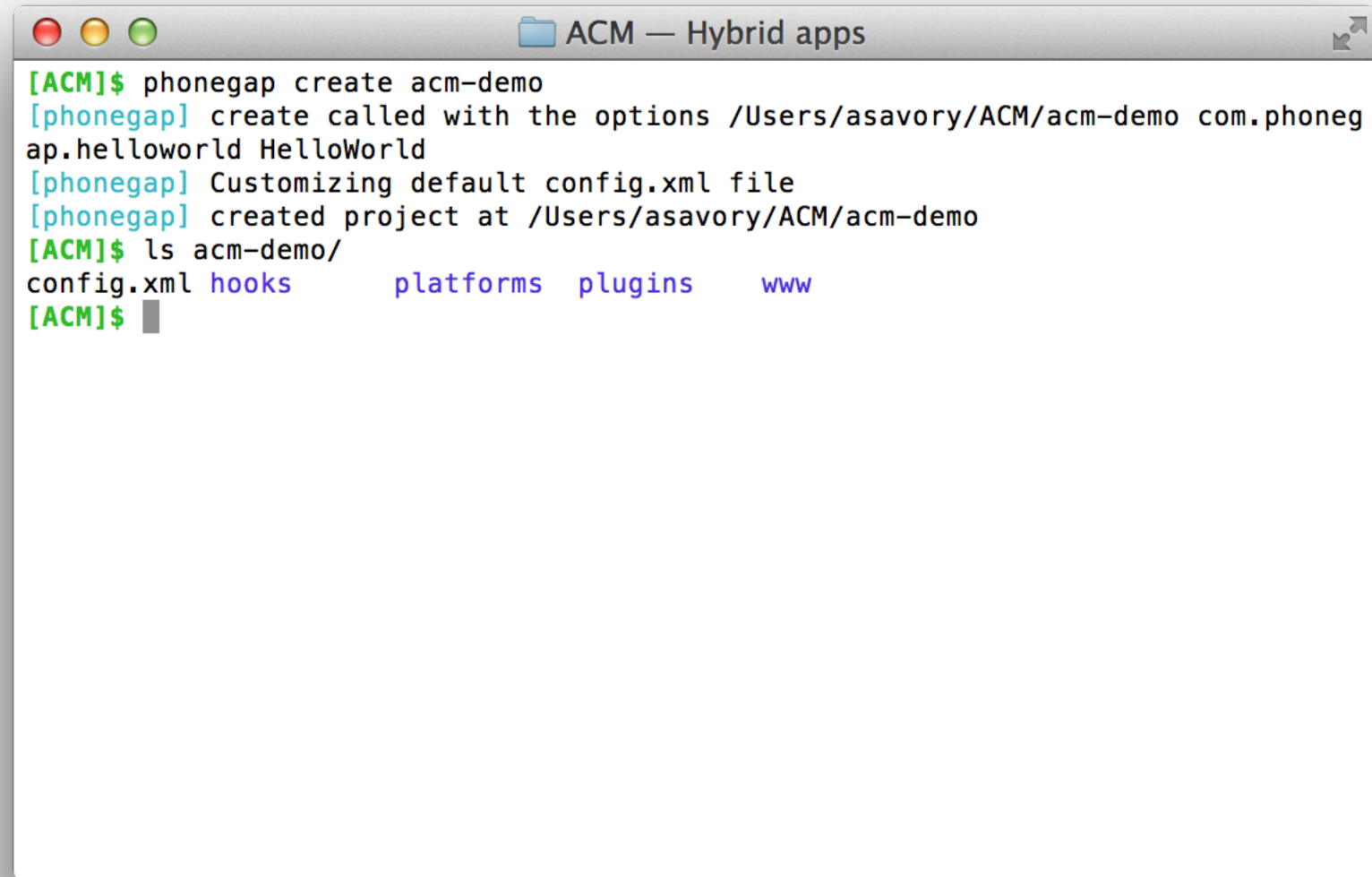
Description:

  PhoneGap command-line tool.

Commands:

  create <path>          create a phonegap project
  serve                  serve a phonegap project
  build <platform>       build the project for a specific platform
  install <platform>     install the project on for a specific platform
  run <platform>         build and install the project for a specific platform
  local [command]        development on local system
  remote [command]       development in cloud with phonegap/build
  platform [command]     update a platform version
  plugin [command]       add, remove, and list plugins
  help [command]         output usage information
  version                output version number
```

Hello World

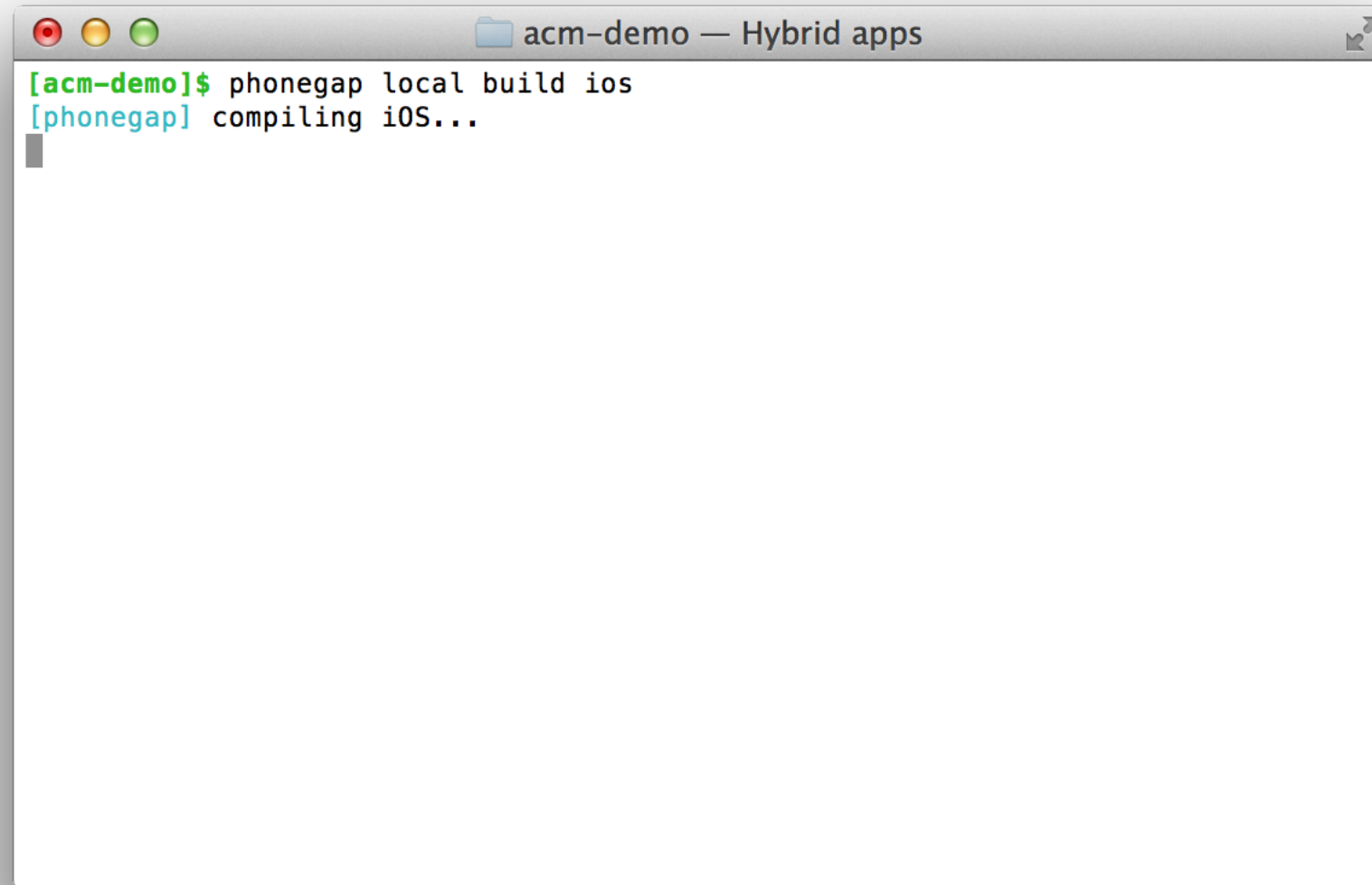


```
[ACM]$ phonegap create acm-demo
[phonegap] create called with the options /Users/asavory/ACM/acm-demo com.phonegap.helloworld HelloWorld
[phonegap] Customizing default config.xml file
[phonegap] created project at /Users/asavory/ACM/acm-demo
[ACM]$ ls acm-demo/
config.xml hooks      platforms  plugins    www
[ACM]$
```

Anatomy of a PhoneGap application

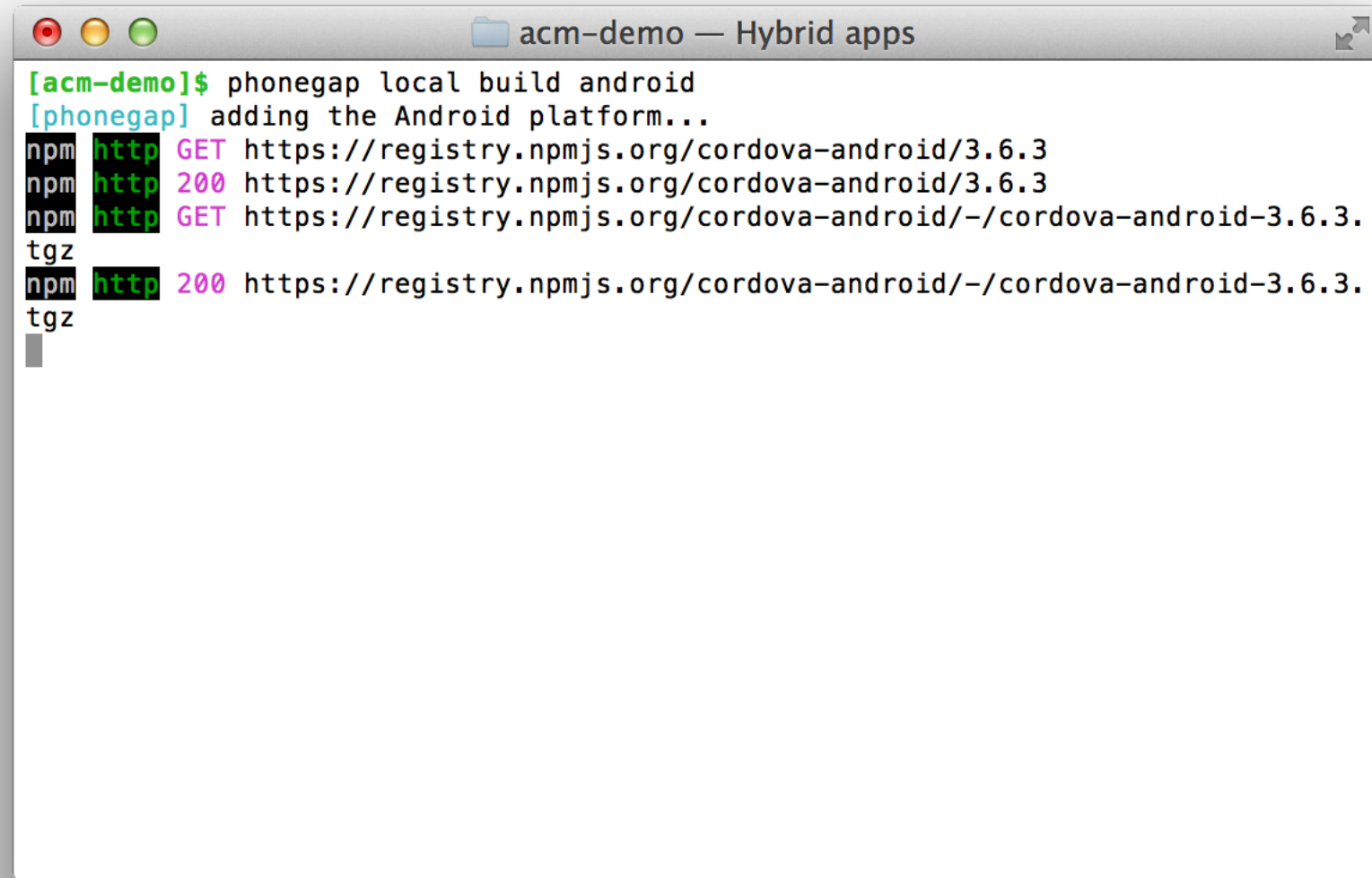
<code>acm-demo/</code>	The project called “acm-demo”
<code> -----hooks/</code>	Task hooks for power users
<code> -----platforms/</code>	Native platform projects
<code> -----plugins/</code>	Your installed plugins
<code> -----www/</code>	Your web application
<code> -----config.xml</code>	App configuration

Adding platforms



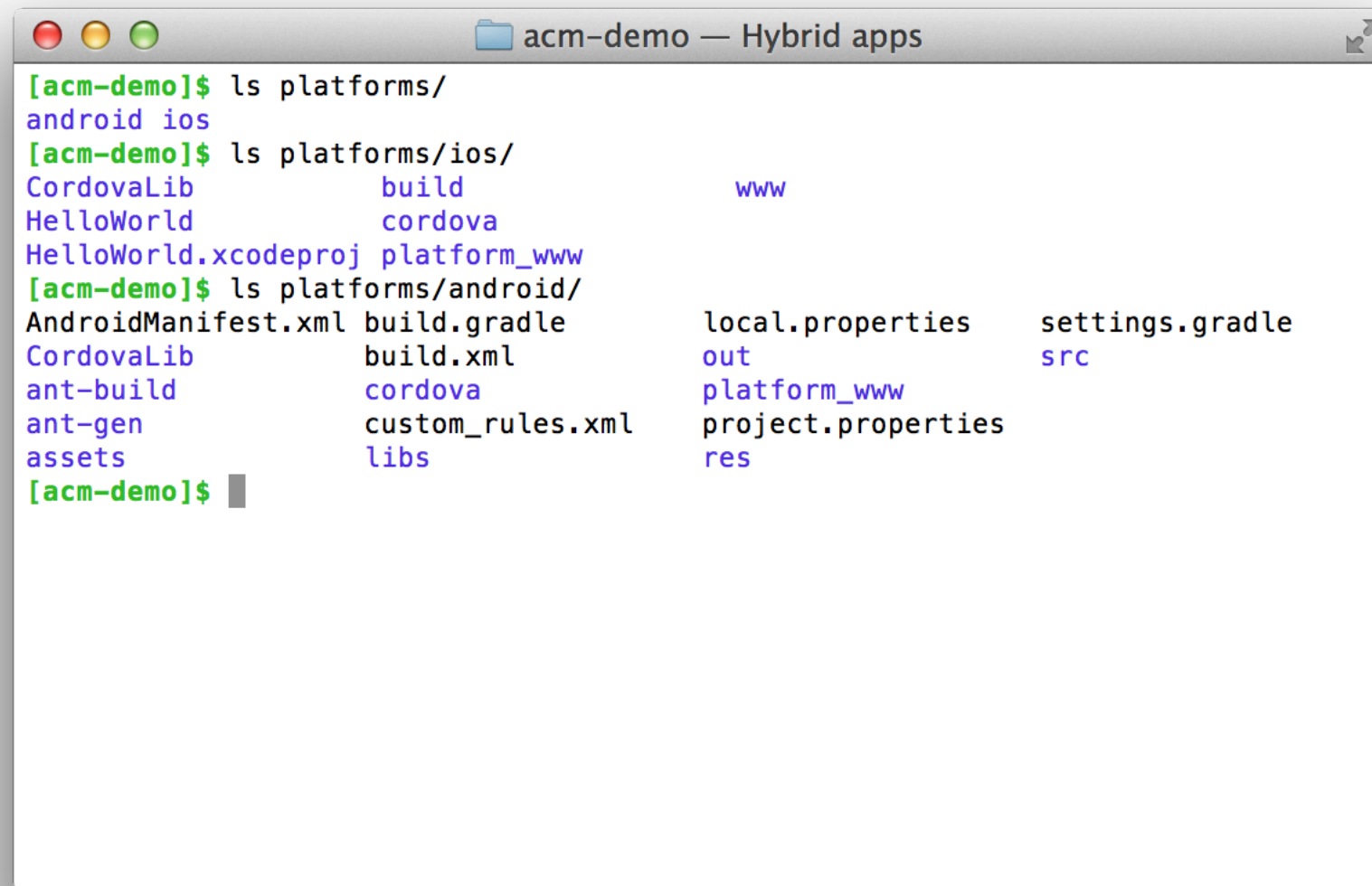
```
acm-demo — Hybrid apps
[acm-demo]$ phonegap local build ios
[phonegap] compiling iOS...
```

Adding platforms



```
acm-demo — Hybrid apps
[acm-demo]$ phonegap local build android
[phonegap] adding the Android platform...
npm http GET https://registry.npmjs.org/cordova-android/3.6.3
npm http 200 https://registry.npmjs.org/cordova-android/3.6.3
npm http GET https://registry.npmjs.org/cordova-android/-/cordova-android-3.6.3.
tgz
npm http 200 https://registry.npmjs.org/cordova-android/-/cordova-android-3.6.3.
tgz
```

Platforms



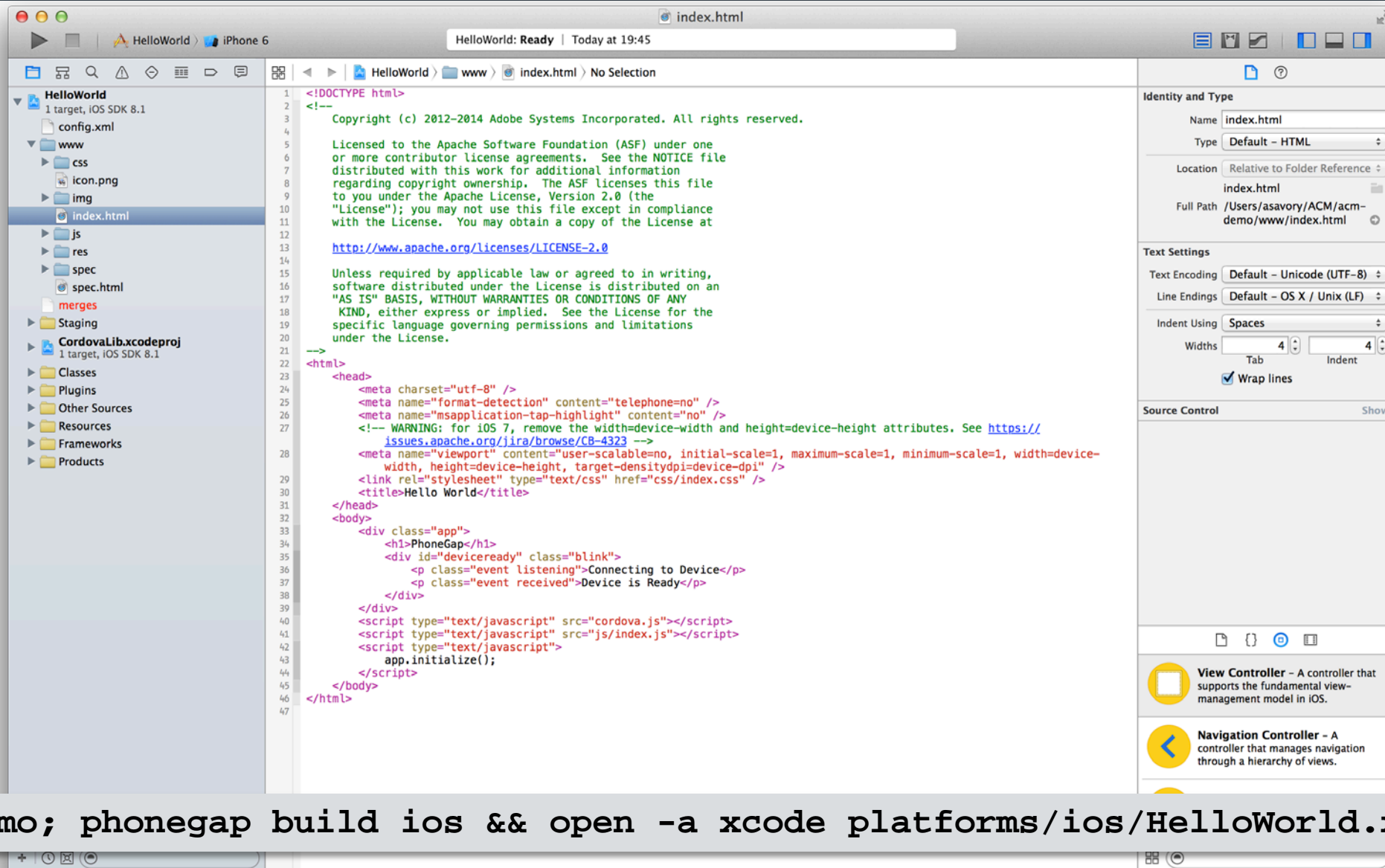
```
[acm-demo]$ ls platforms/  
android ios  
[acm-demo]$ ls platforms/ios/  
CordovaLib          build          www  
HelloWorld          cordova  
HelloWorld.xcodeproj platform_www  
[acm-demo]$ ls platforms/android/  
AndroidManifest.xml build.gradle    local.properties settings.gradle  
CordovaLib          build.xml      out            src  
ant-build           cordova        platform_www  
ant-gen             custom_rules.xml project.properties  
assets             libs          res  
[acm-demo]$
```


Running the app

```
acm-demo — Hybrid apps
[acm-demo]$ phonegap run ios
[phonegap] detecting iOS SDK environment...
[phonegap] using the local environment
[phonegap] compiling iOS...
```

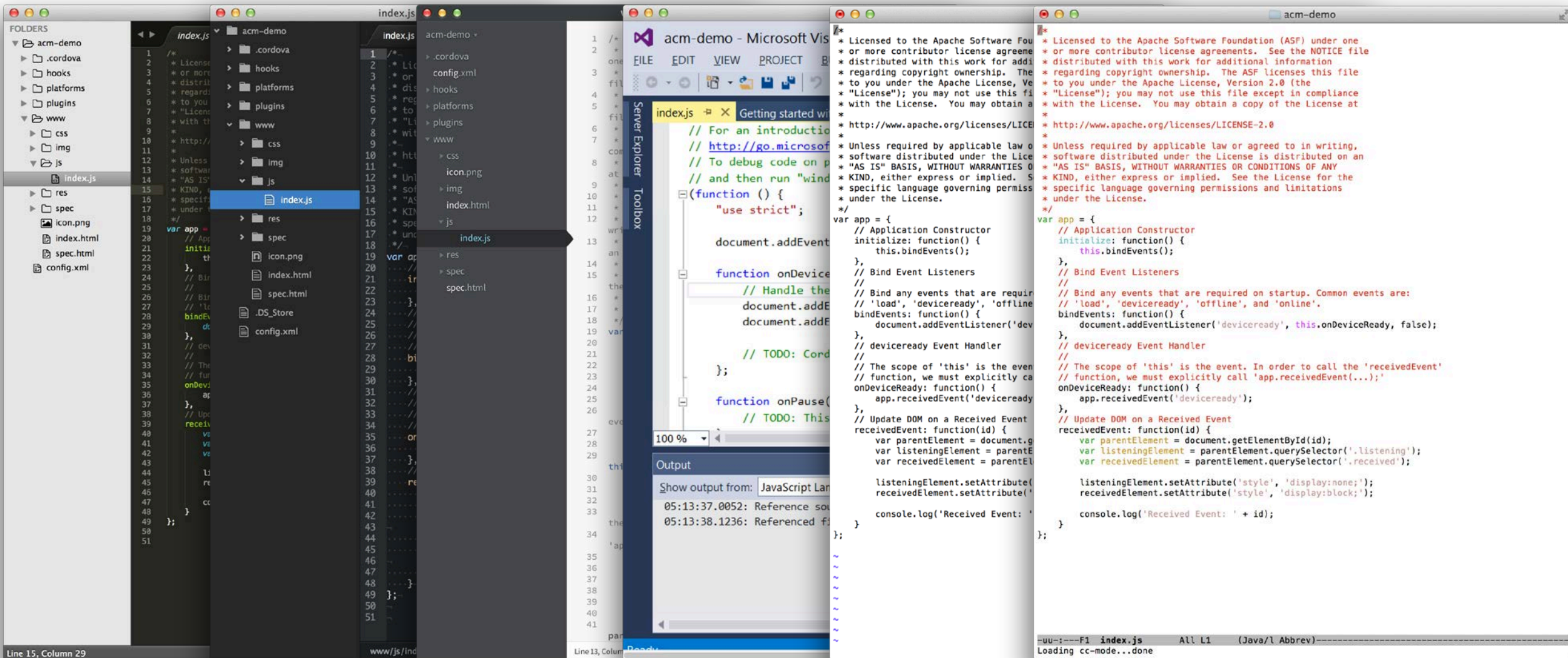


Native SDK tooling

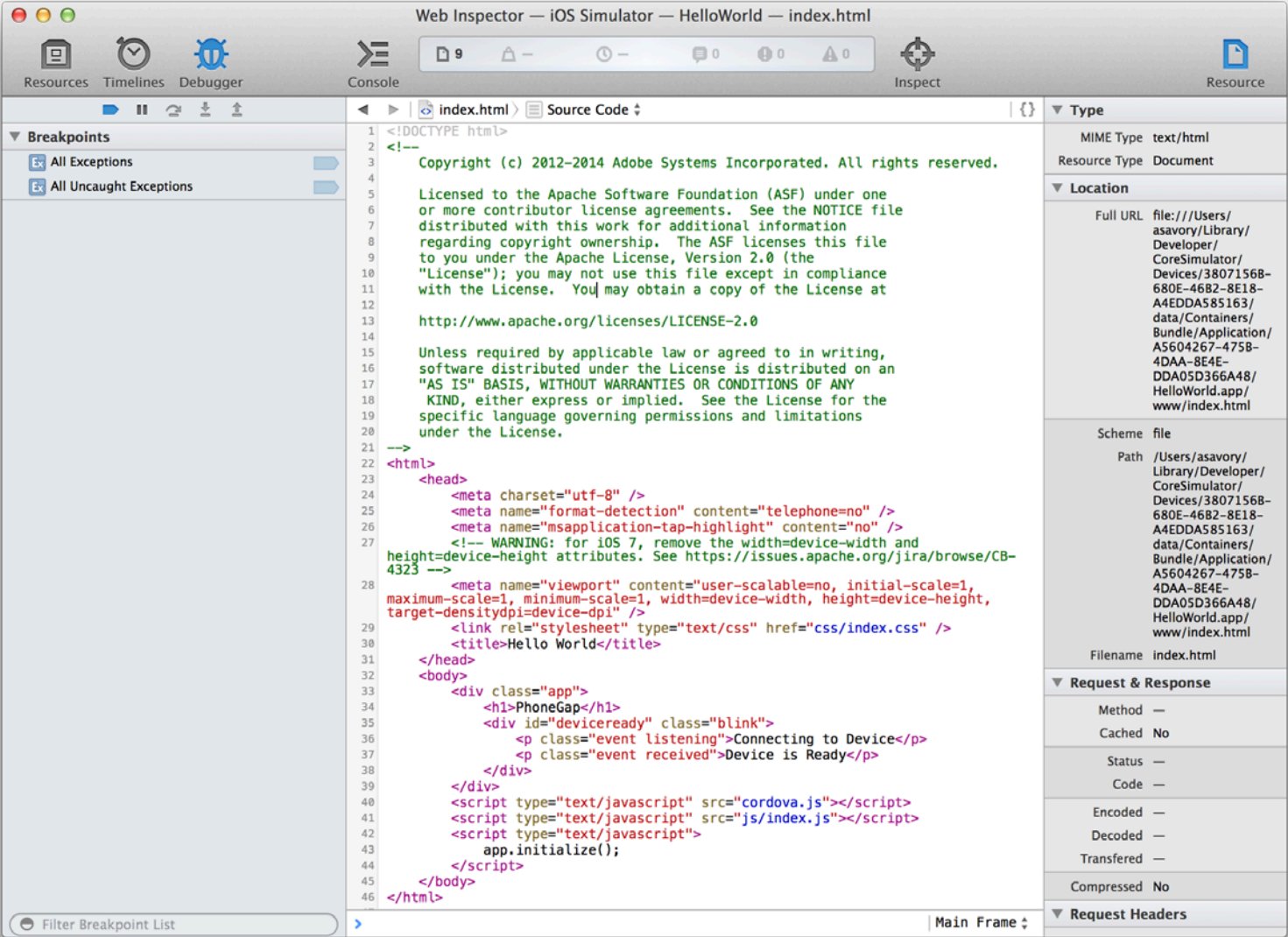


```
cd acm-demo; phonegap build ios && open -a xcode platforms/ios/HelloWorld.xcodeproj
```

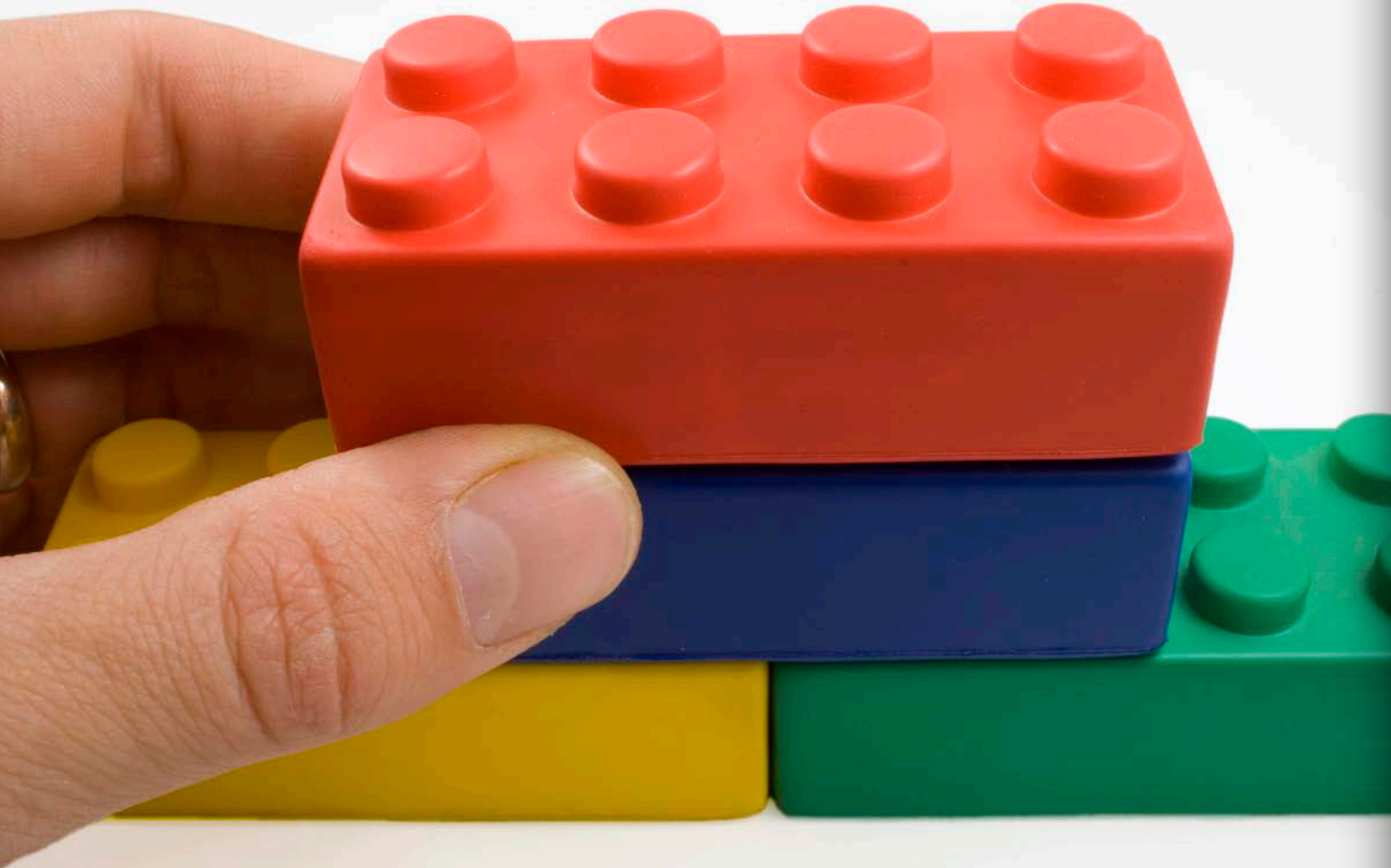
IDEs



Debugging



Plugins



PhoneGap API Documentation

docs.phonegap.com/en/3.5.0/cordova_plugins_pluginapis.md.html#Plugin%2

PhoneGap Documentation

Plugin APIs

Guides

- Overview
- Platform Support
- The Command-Line Interface
- Platform Guides
- Using Plugman to Manage Plugins
- The config.xml File
- Icons and Splash Screens
- Embedding WebViews
- Plugin Development Guide
- Privacy Guide
- Security Guide
- Whitelist Guide
- Storage
- Next Steps
- Keyword Index

- **Battery Status***
“ Monitor the status of the device's battery.
- **Camera***
“ Capture a photo using the device's camera.
- **Contacts***
“ Work with the device's contact database.
- **Device***
“ Gather device specific information.
- **Device Motion (Accelerometer)***
“ Tap into the device's motion sensor.
- **Device Orientation (Compass)***
“ Obtain the direction that the device is pointing.
- **Dialogs***
“ Visual device notifications.
- **FileSystem***

API Reference

The native approach

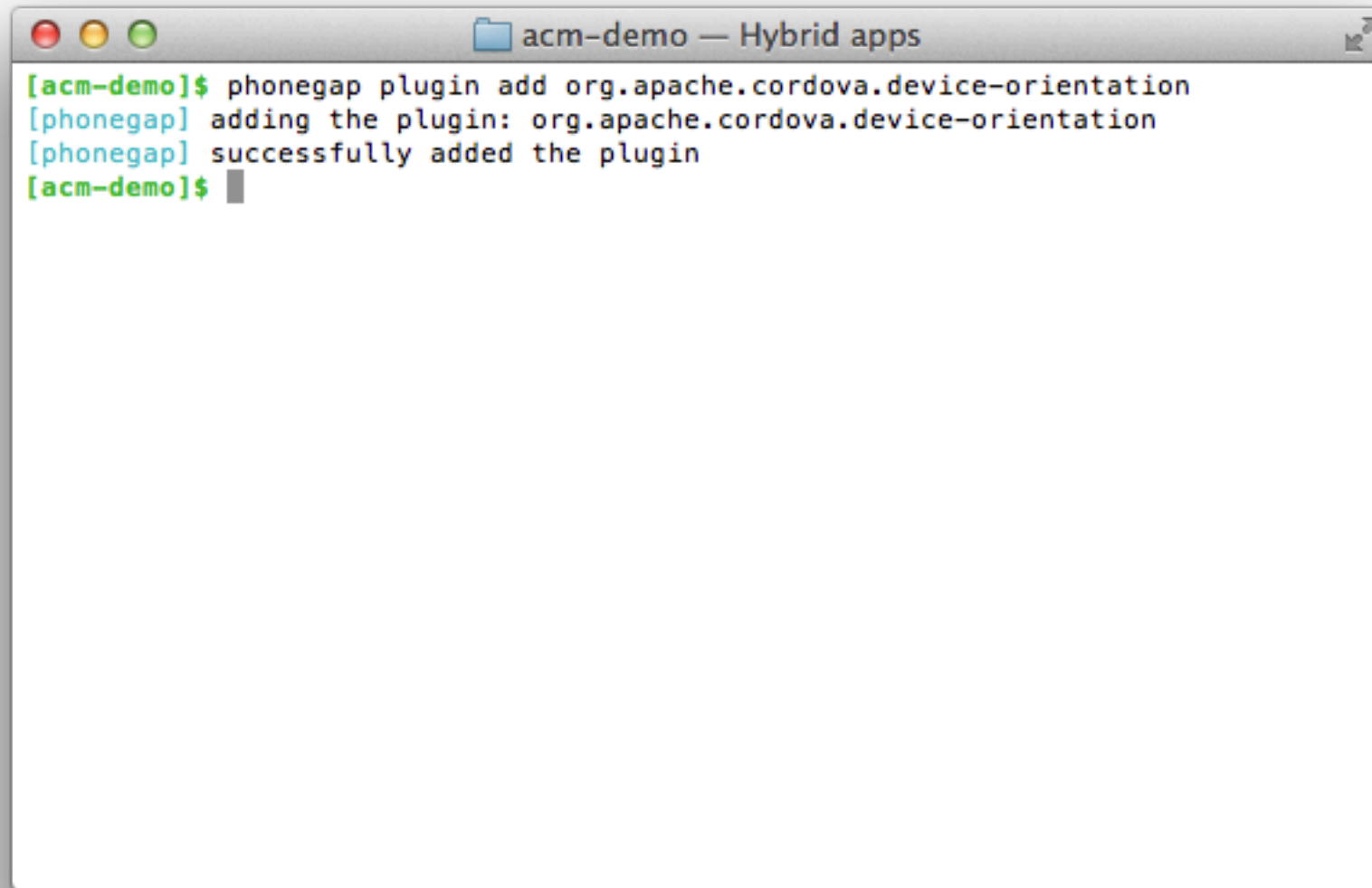
```
async private void ReadingChanged(object sender, CompassReadingChangedEventArgs e)
{
    await Dispatcher.RunAsync(CoreDispatcherPriority.Normal, () =>
    {
        CompassReading reading = e.Reading;
        ScenarioOutput_MagneticNorth.Text = String.Format("{0,5:0.00}", reading.HeadingMagneticNorth);
        if (reading.HeadingTrueNorth != null)
        {
            ScenarioOutput_TrueNorth.Text = String.Format("{0,5:0.00}", reading.HeadingTrueNorth);
        }
        else
        {
            ScenarioOutput_TrueNorth.Text = "No data";
        }
    });
}
```

```
sensor_t *mag = sensor_new(SENSOR_TYPE_MAGNETOMETER);
SIGEV_PULSE_INIT(&ev, coid, SIGEV_PULSE_PRIO_INHERIT,
                 MY_SENSOR_PULSE_CODE, mag);
sensor_event_notify(mag, &ev);
```

```
// Use the true heading if it is valid.
CLLocationDirection theHeading = ((newHeading.trueHeading > 0) ?
                                   newHeading.trueHeading : newHeading.magneticHeading);
```

```
private SensorManager mSensorManager;
private Sensor mSensor;
...
mSensorManager = (SensorManager) getSystemService(Context.SENSOR_SERVICE);
mSensor = mSensorManager.getDefaultSensor(Sensor.TYPE_ORIENTATION);
```

Plugins



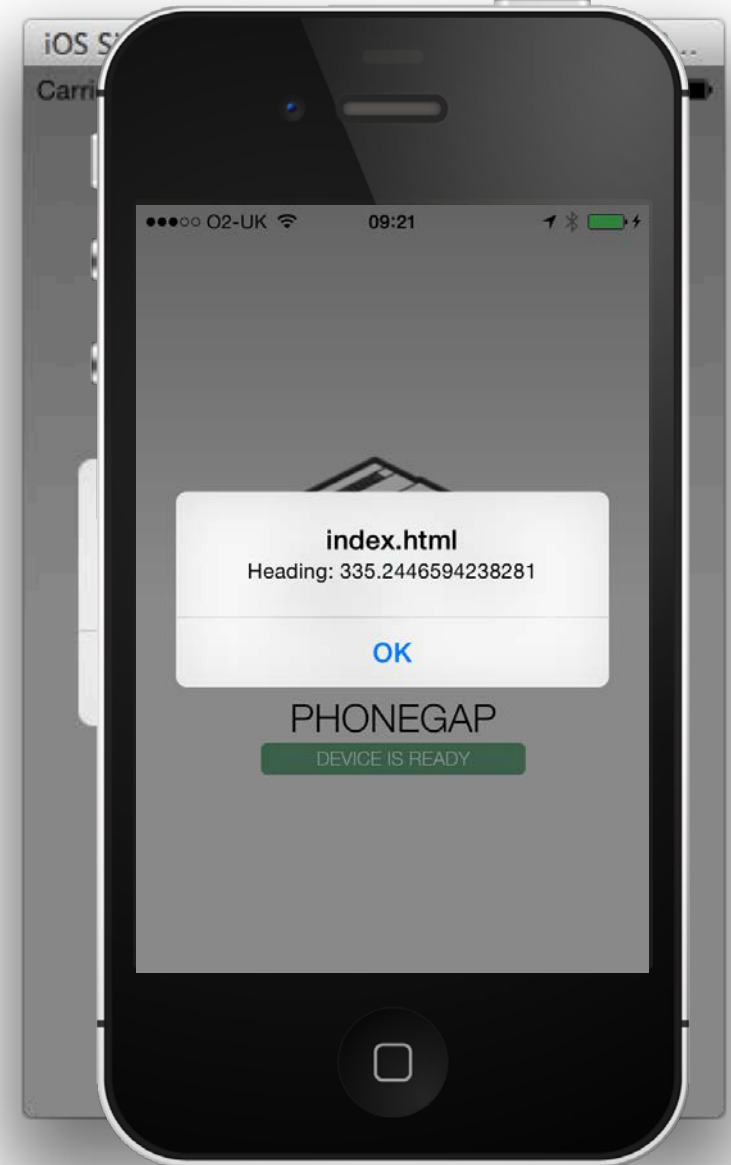
A screenshot of a macOS-style terminal window titled "acm-demo — Hybrid apps". The window contains a series of commands and responses. The first command is `[acm-demo]$ phonegap plugin add org.apache.cordova.device-orientation`. This is followed by two lines of output: `[phonegap] adding the plugin: org.apache.cordova.device-orientation` and `[phonegap] successfully added the plugin`. The prompt returns to `[acm-demo]$` with a cursor.

```
[acm-demo]$ phonegap plugin add org.apache.cordova.device-orientation
[phonegap] adding the plugin: org.apache.cordova.device-orientation
[phonegap] successfully added the plugin
[acm-demo]$
```

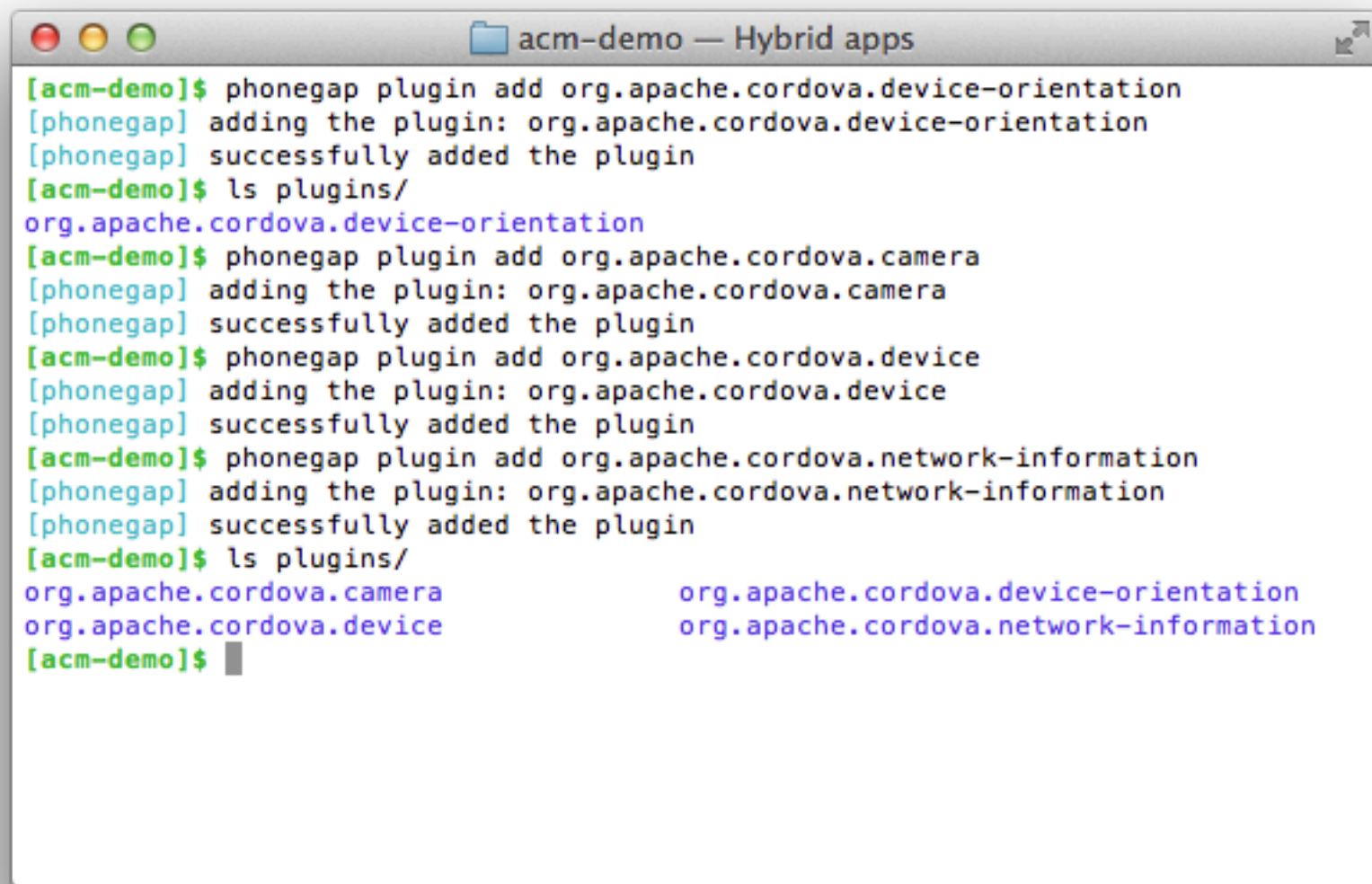
Using Plugins: Compass

```
phonegap plugin add org.apache.cordova.device-orientation
```

```
35     onDeviceReady: function() {  
36         app.receivedEvent('deviceready');  
37         navigator.compass.getCurrentHeading(app.onSuccess, app.onError);  
38     },  
39       
40     onSuccess: function(heading) {  
41         alert('Heading: ' + heading.magneticHeading);  
42     },  
43       
44     onError: function(error) {  
45         alert('CompassError: ' + error.code);  
46     },  
47     }
```



More Plugins



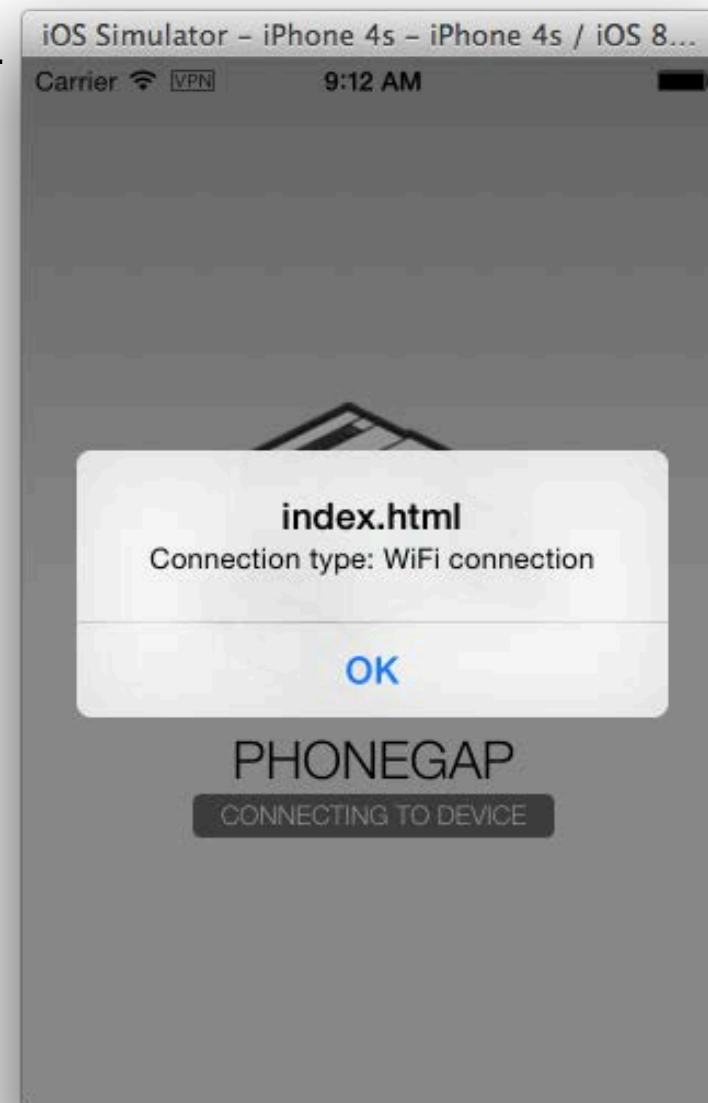
A terminal window titled "acm-demo — Hybrid apps" showing the installation of four Cordova plugins. The user runs the command "phonegap plugin add" for each plugin: "org.apache.cordova.device-orientation", "org.apache.cordova.camera", "org.apache.cordova.device", and "org.apache.cordova.network-information". Each command is followed by two lines of output: "adding the plugin: ..." and "successfully added the plugin". After each installation, the user runs "ls plugins/" to list the installed plugins. The first list shows only "org.apache.cordova.device-orientation". The second list shows "org.apache.cordova.camera" and "org.apache.cordova.device-orientation". The third list shows "org.apache.cordova.device" and "org.apache.cordova.device-orientation". The final list shows all four plugins: "org.apache.cordova.camera", "org.apache.cordova.device", "org.apache.cordova.device-orientation", and "org.apache.cordova.network-information".

```
[acm-demo]$ phonegap plugin add org.apache.cordova.device-orientation
[phonegap] adding the plugin: org.apache.cordova.device-orientation
[phonegap] successfully added the plugin
[acm-demo]$ ls plugins/
org.apache.cordova.device-orientation
[acm-demo]$ phonegap plugin add org.apache.cordova.camera
[phonegap] adding the plugin: org.apache.cordova.camera
[phonegap] successfully added the plugin
[acm-demo]$ phonegap plugin add org.apache.cordova.device
[phonegap] adding the plugin: org.apache.cordova.device
[phonegap] successfully added the plugin
[acm-demo]$ phonegap plugin add org.apache.cordova.network-information
[phonegap] adding the plugin: org.apache.cordova.network-information
[phonegap] successfully added the plugin
[acm-demo]$ ls plugins/
org.apache.cordova.camera                org.apache.cordova.device-orientation
org.apache.cordova.device                org.apache.cordova.network-information
[acm-demo]$
```

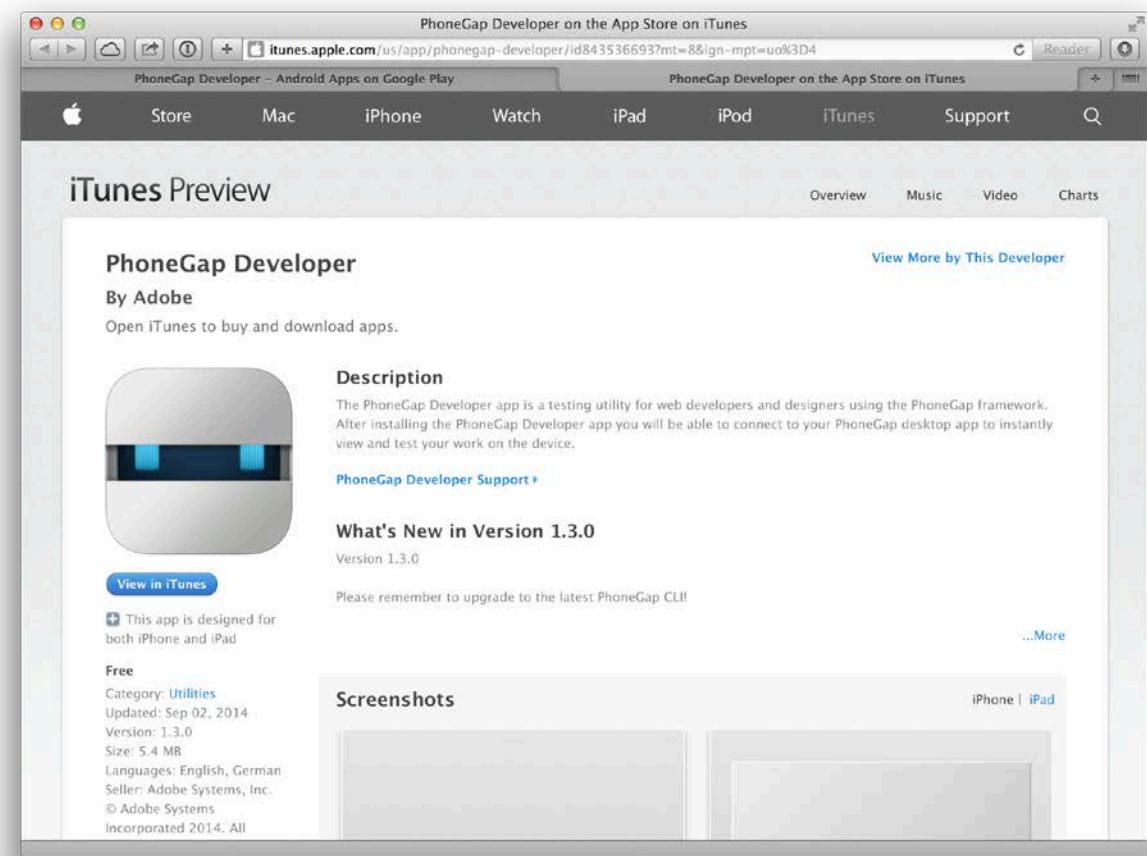
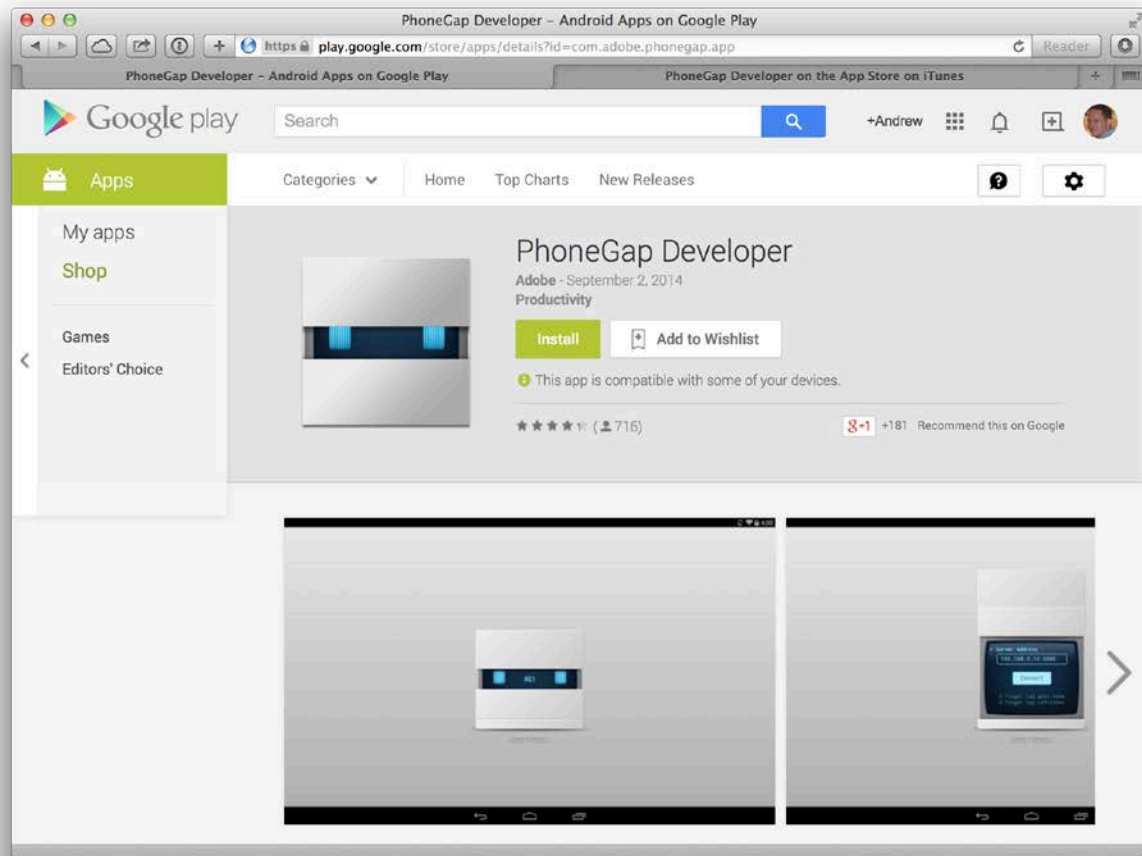
Using Plugins: Network Information

```
phonegap plugin add org.apache.cordova.network-information
```

```
35     onDeviceReady: function() {  
36         app.receivedEvent('deviceready');  
37         app.checkConnection();  
38     },  
39       
40     checkConnection: function() {  
41         var networkState = navigator.connection.type;  
42           
43         var states = {};  
44         states[Connection.UNKNOWN] = 'Unknown connection';  
45         states[Connection.ETHERNET] = 'Ethernet connection';  
46         states[Connection.WIFI] = 'WiFi connection';  
47         states[Connection.CELL_2G] = 'Cell 2G connection';  
48         states[Connection.CELL_3G] = 'Cell 3G connection';  
49         states[Connection.CELL_4G] = 'Cell 4G connection';  
50         states[Connection.CELL] = 'Cell generic connection';  
51         states[Connection.NONE] = 'No network connection';  
52           
53         alert('Connection type: ' + states[networkState]);  
54     },
```



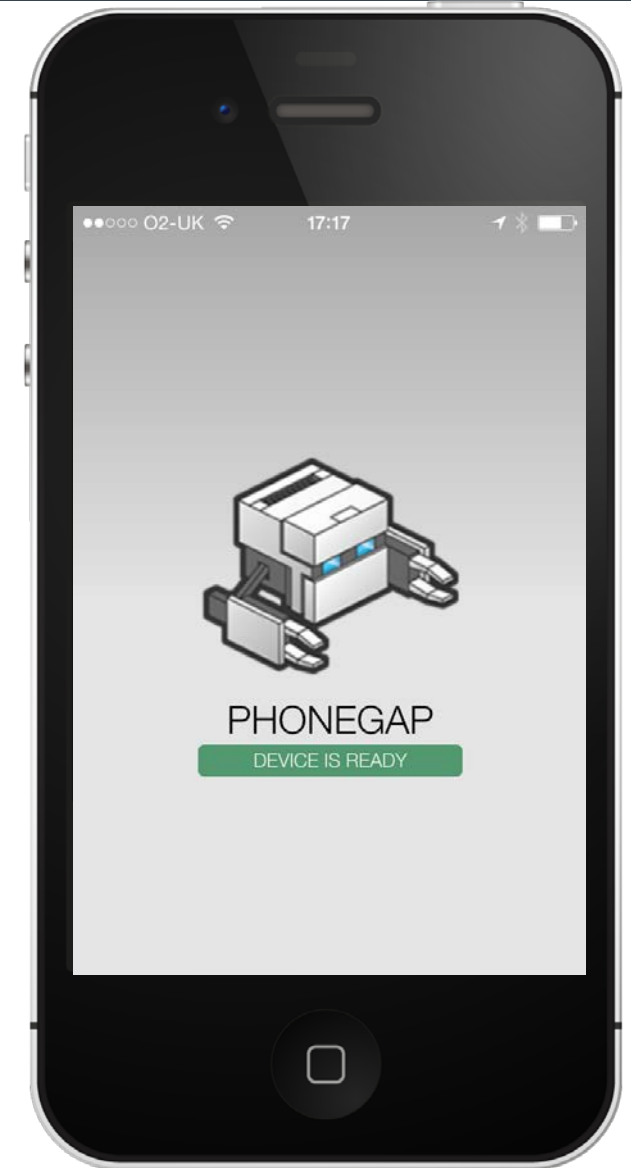
PhoneGap Developer App



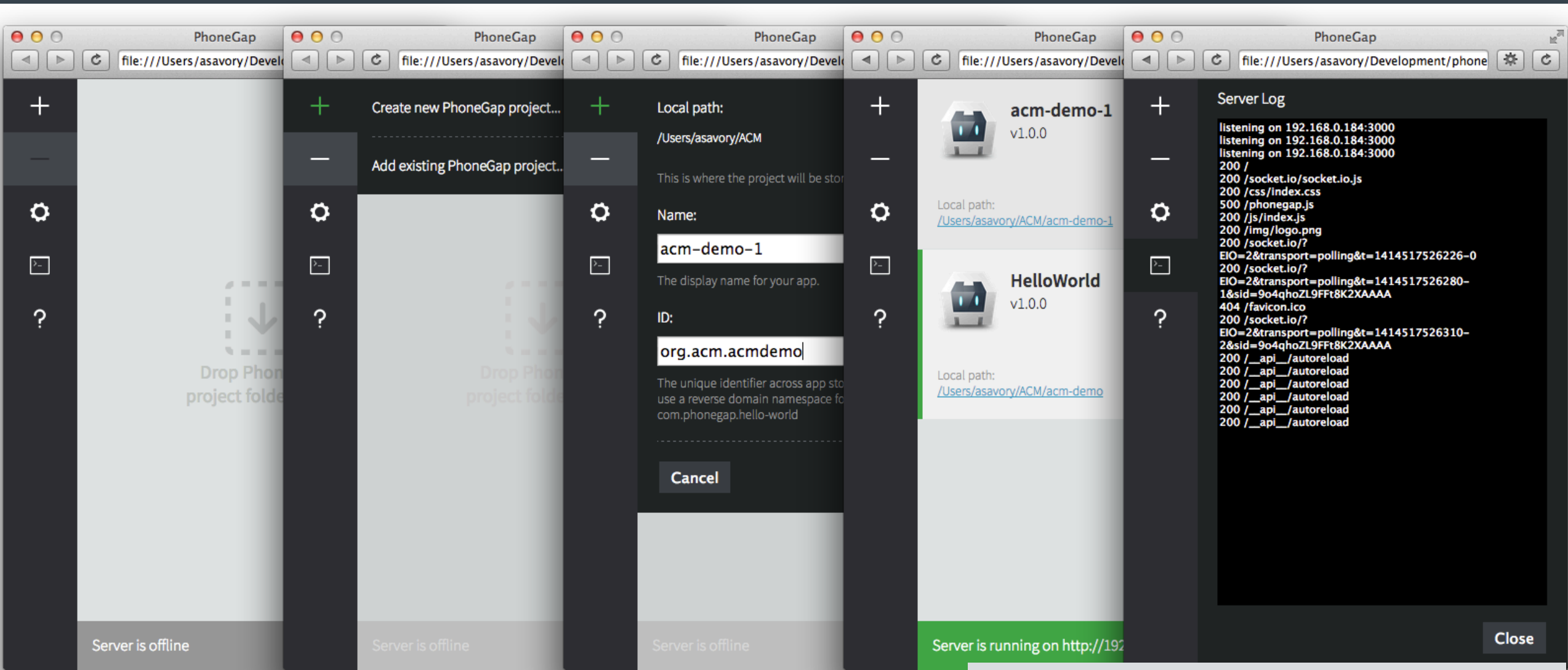
PhoneGap Developer App

```
acm-demo — Hybrid apps
[acm-demo]$ phonegap serve
cp: no such file or directory: /Users/asavory/ACM/acm-demo/icon.png

[phonegap] starting app server...
[phonegap] listening on 192.168.0.184:3000
[phonegap]
[phonegap] ctrl-c to stop the server
[phonegap]
```

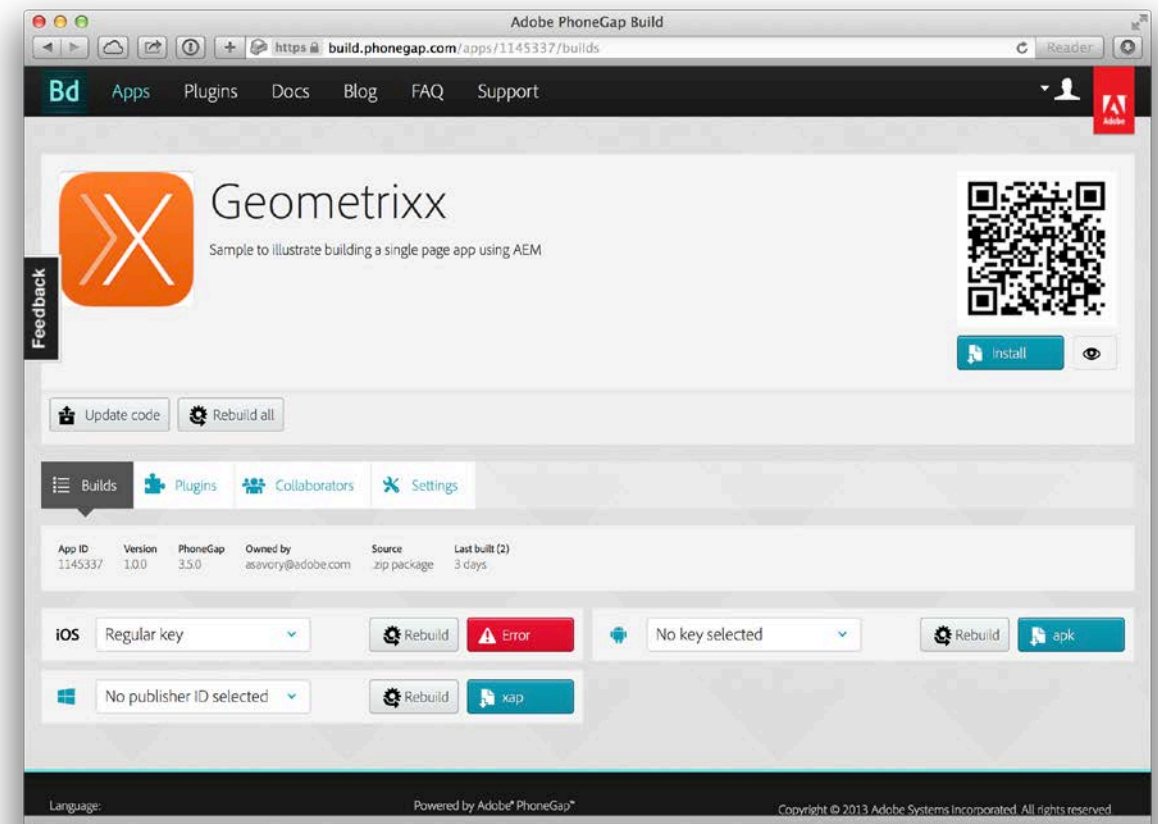
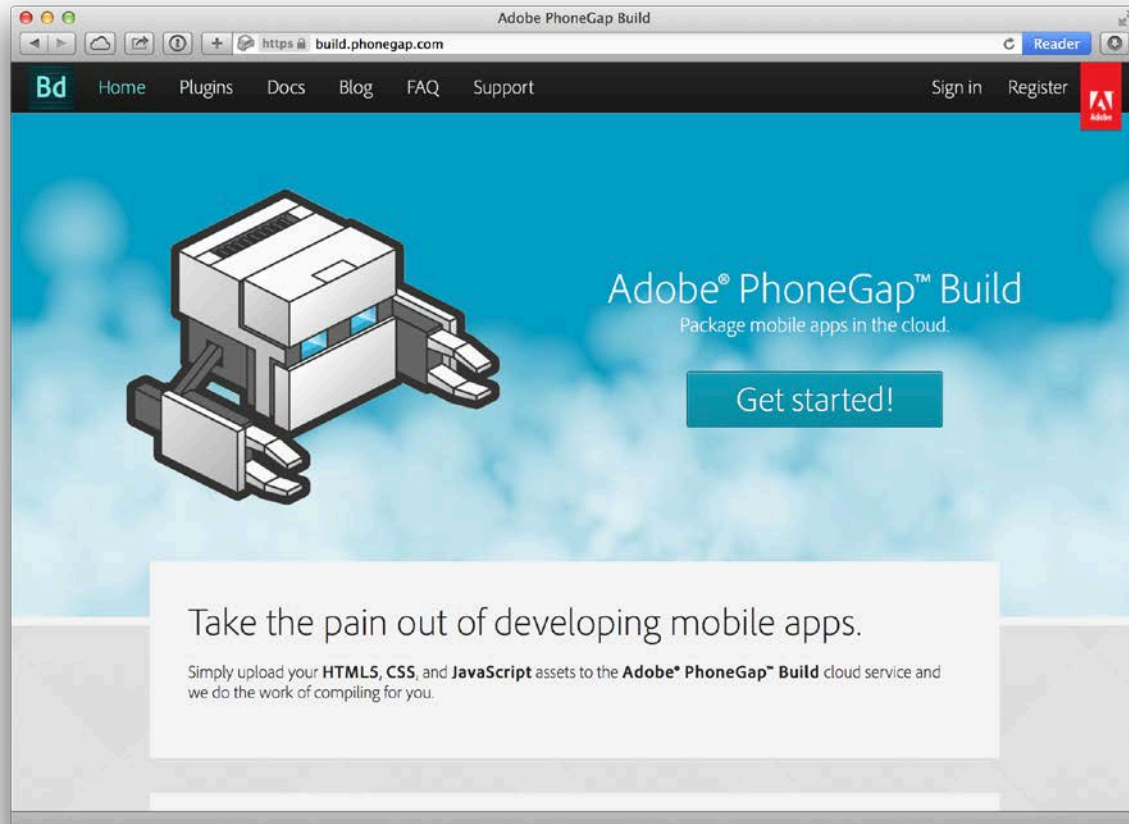


PhoneGap Desktop App



<https://github.com/hermwong/phonegap-gui>

PhoneGap Build



Build in action

```
[acm-demo]$ phonegap remote build android
[phonegap] compressing the app...
[phonegap] uploading the app...
[phonegap] building the app...
[phonegap] Android build complete
[acm-demo]$
```


Adobe PhoneGap Build

https://build.phonegap.com/apps

Bd Apps Plugins Docs Blog FAQ Support

Your apps + new app

Feedback



HelloWorld

Hello World sample application that responds to the deviceready event.

App ID: 1157400


Version: 1.0.0

PhoneGap: 3.5.0

Owned by: asavory@adobe.com

Source: zip package


Last built (2): 1 minute



private

iOS Android Windows

Update code Rebuild all



Geometrixx

Sample to illustrate building a single page app using AEM

App ID: 1145337


Version: 1.0.0

PhoneGap: 3.5.0

Owned by: asavory@adobe.com

Source: zip package

Last built (2): 8 days



private

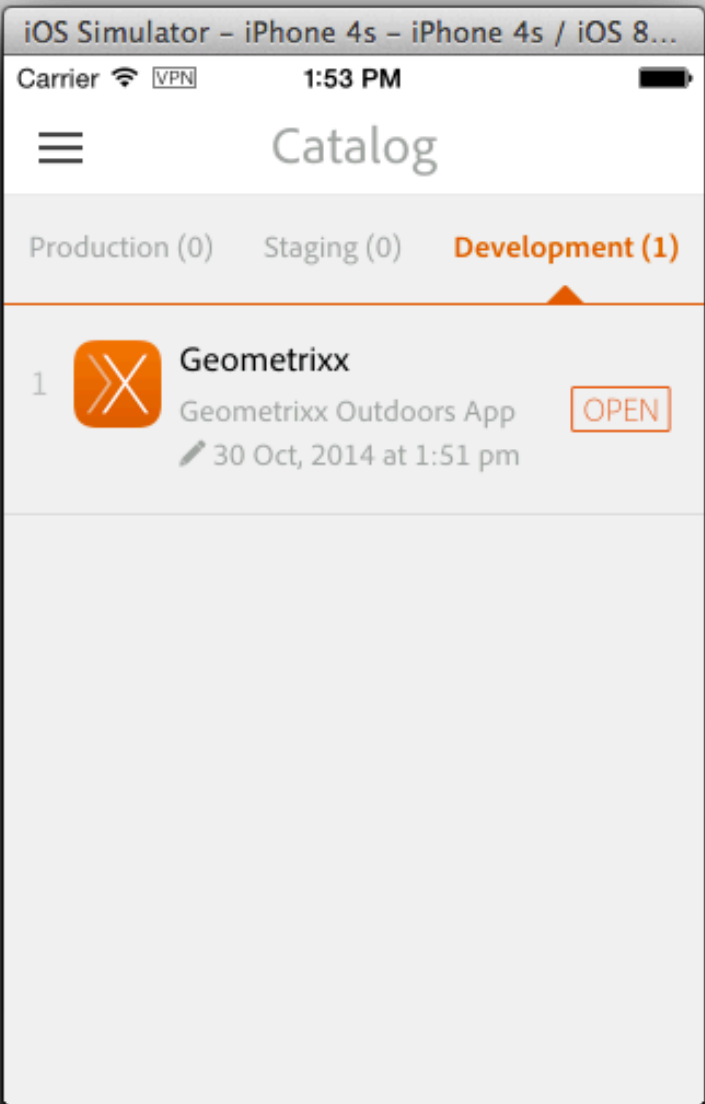
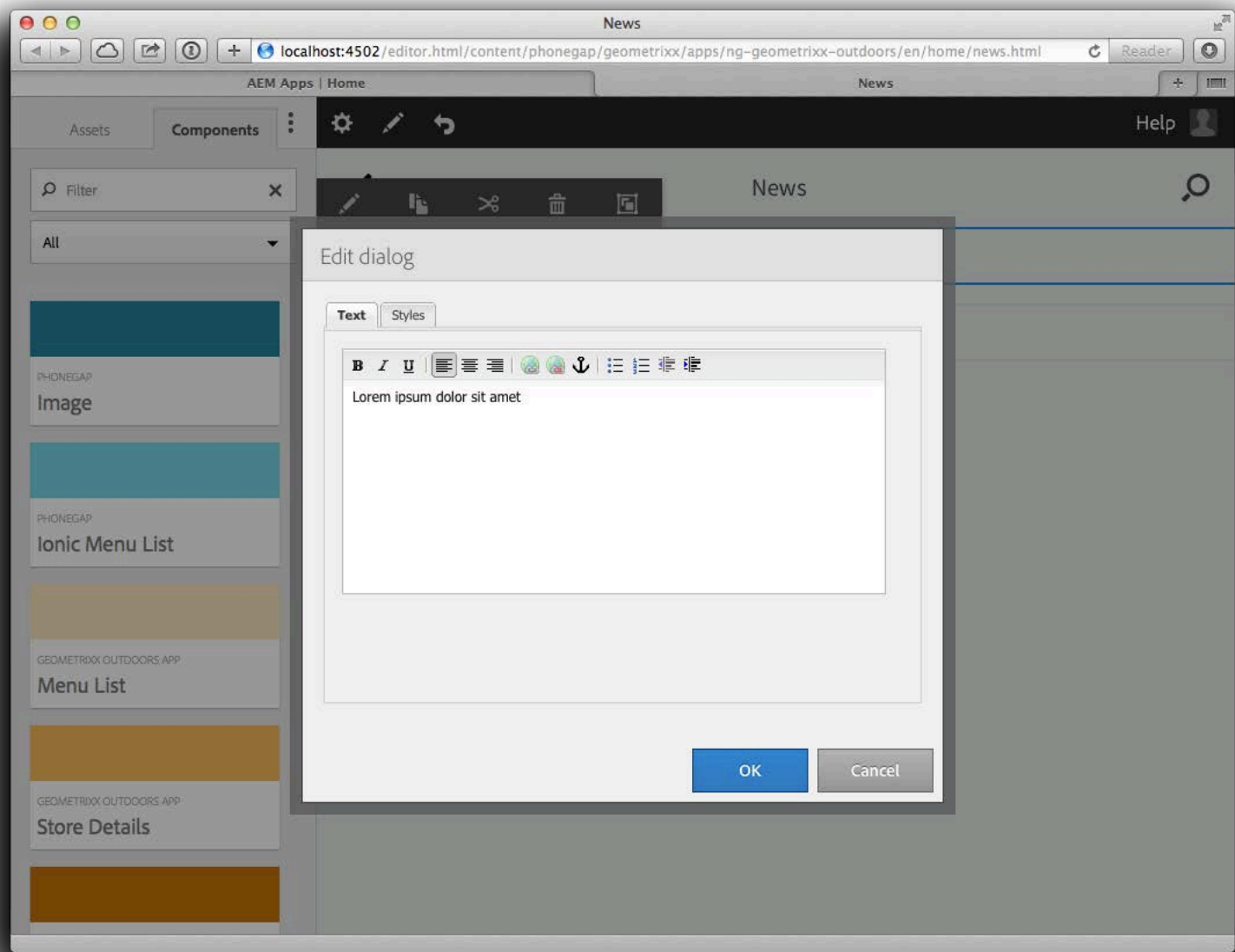
iOS Android Windows

Update code Rebuild all

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PhoneGap Enterprise



Resources

- Apache Cordova: <http://cordova.apache.org>
- Apache Cordova on StackOverflow: <http://stackoverflow.com/questions/tagged/cordova>
- PhoneGap: <http://phonegap.com>
- PhoneGap docs: <http://docs.phonegap.com/>
- Michael Brooks' tutorial: <https://github.com/mwbrooks/phonegap-day-workshop-beginner/wiki>
- PhoneGap Day: <http://pgday.phonegap.com>



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