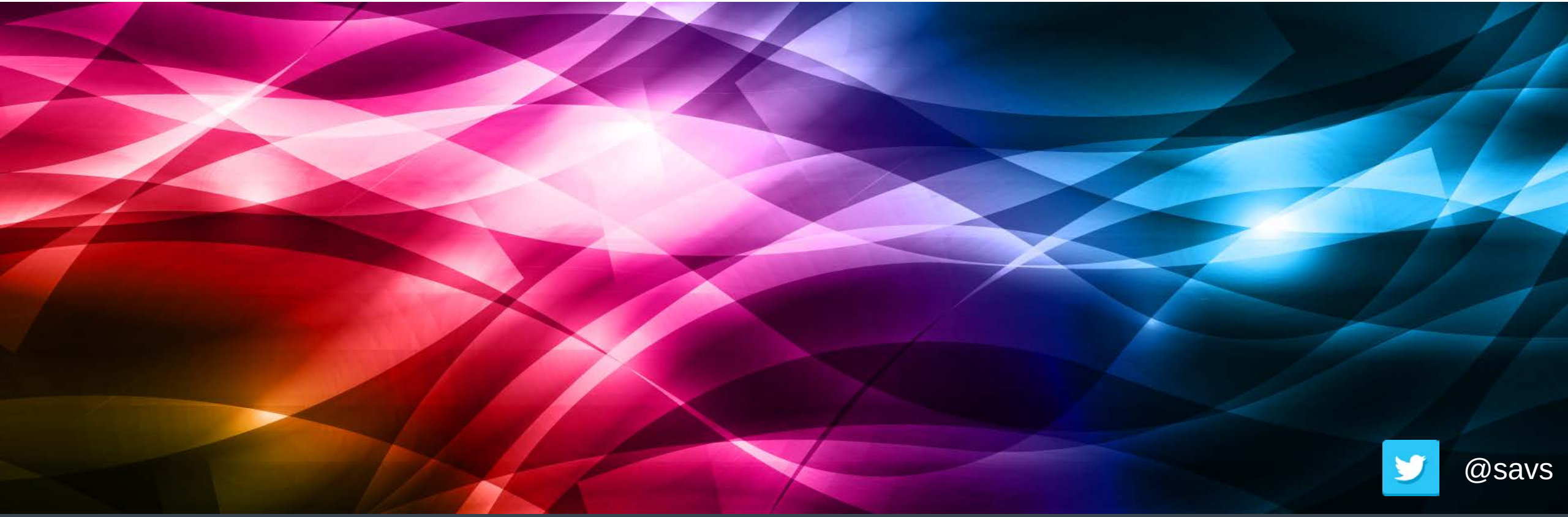
Develop Hybrid Mobile Applications with Apache Cordova & PhoneGap Enterprise

Andrew Savory | Mobile Services and Solutions Evangelist, Adobe

Association for Computing Machinery

Advancing Computing as a Science & Profession



@savs

© 2014 Adobe Systems Incorporated. All Rights Reserved.

ACM Learning Center

http://learning.acm.org

- 1,400+ trusted technical books and videos by leading publishers including O'Reilly, Morgan Kaufmann, others
- Thousands of short IT and desktop videos covering the latest toolkits and software for "on-the-job" problem solving
- Online courses with assessments and certification-track mentoring, member discounts on tuition at partner institutions
- Learning Webinars on big topics (Cloud/Mobile Development, Cybersecurity, Big Data, Recommender Systems, SaaS, Agile, Machine Learning, NLP, Hadoop Parallel Programming, etc.)
- ACM Tech Packs on top current computing topics: Annotated Bibliographies compiled by subject experts
- Popular video tutorials/keynotes from ACM Digital Library, A.M. Turing Centenary talks/panels
- Podcasts with industry leaders/award winners

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Agenda

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Types of mobile application

NATIVE

CROSS-PLATFORM

HYBRID

WEB

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

PhoneGap vs Apache Cordova

© 2014 Adobe Systems Incorporated. All Rights Reserved.

The PhoneGap Framework

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

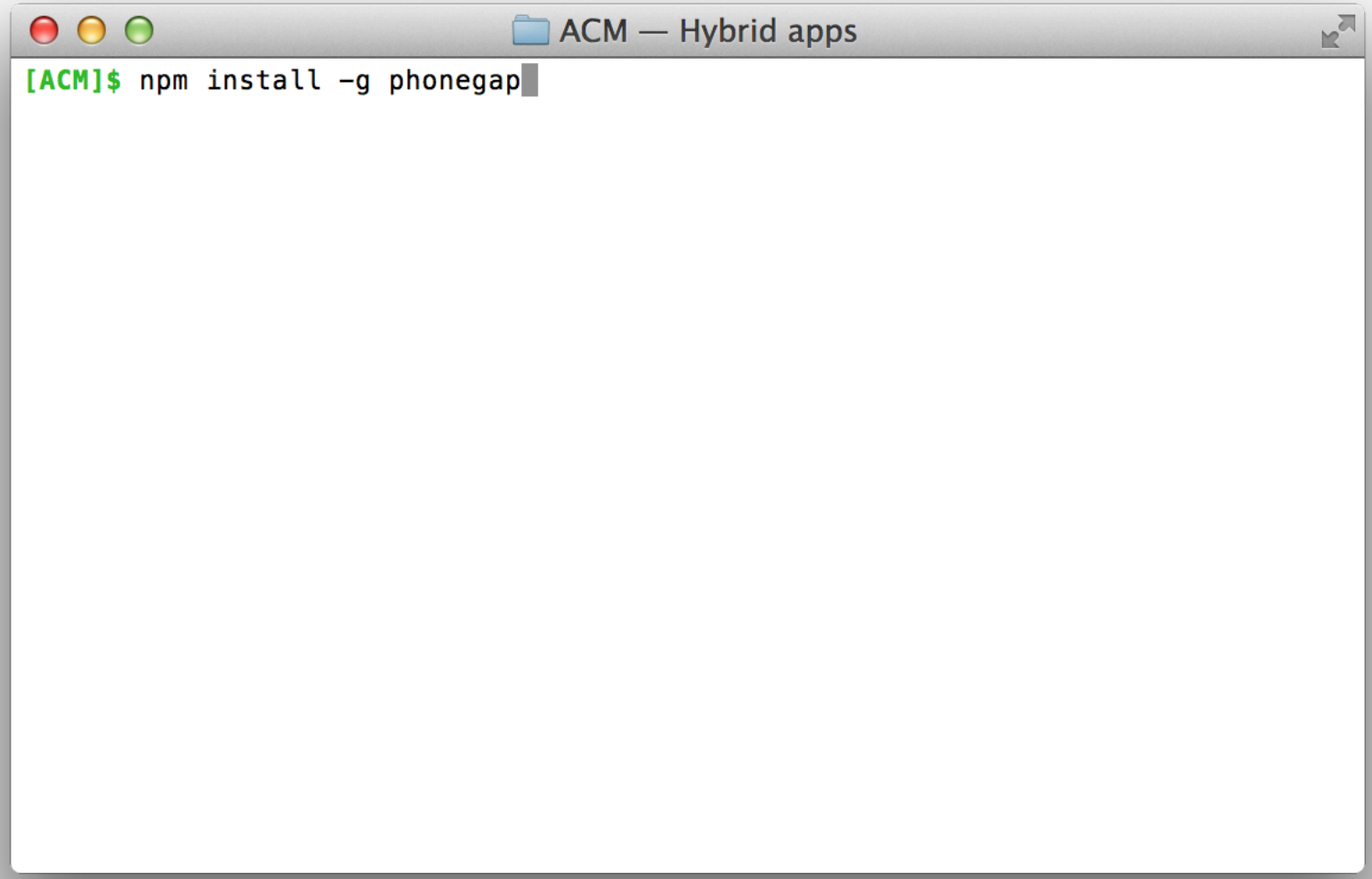
Installation prerequisites

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.”

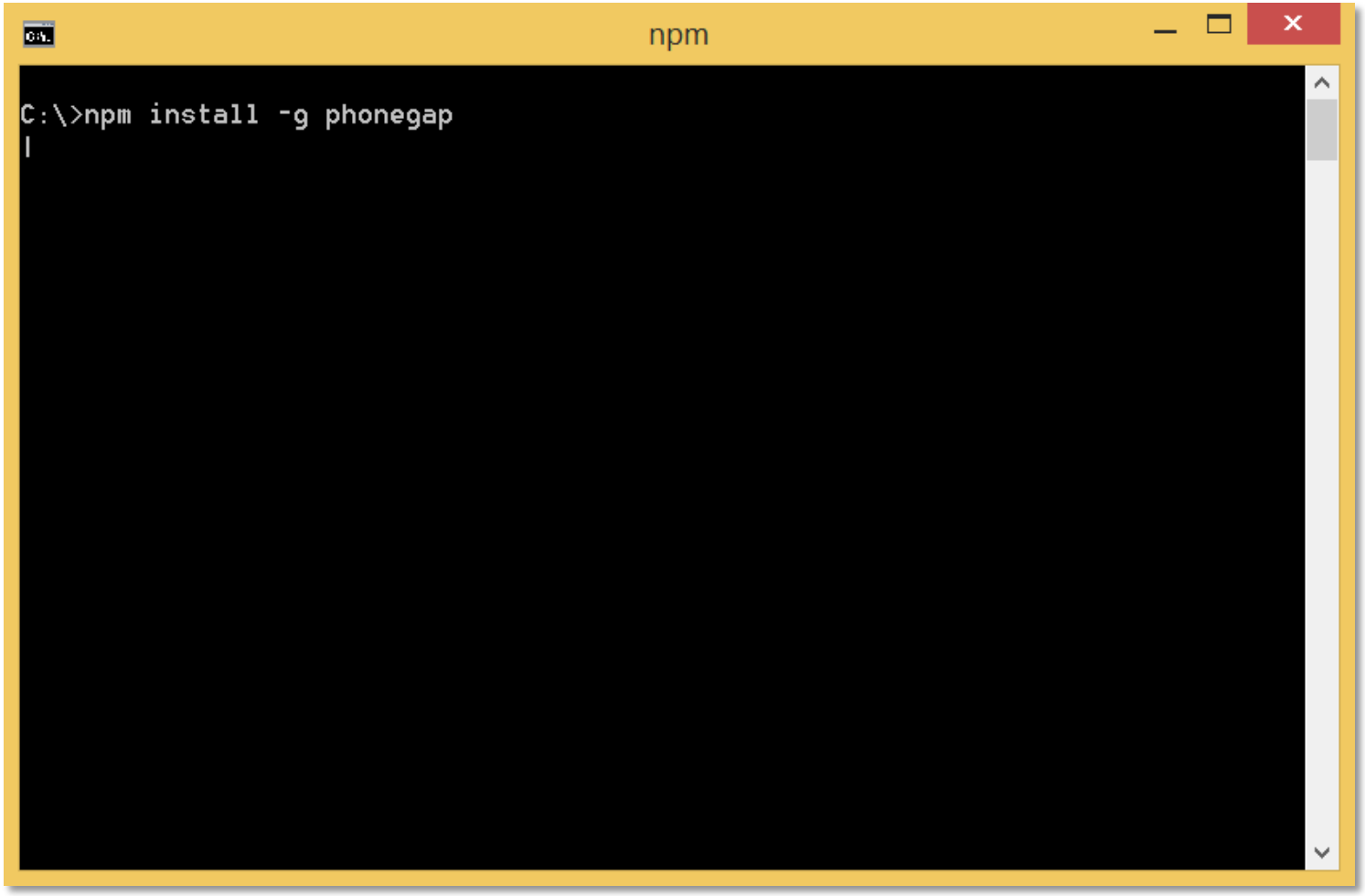
© 2014 Adobe Systems Incorporated. All Rights Reserved.

Installation



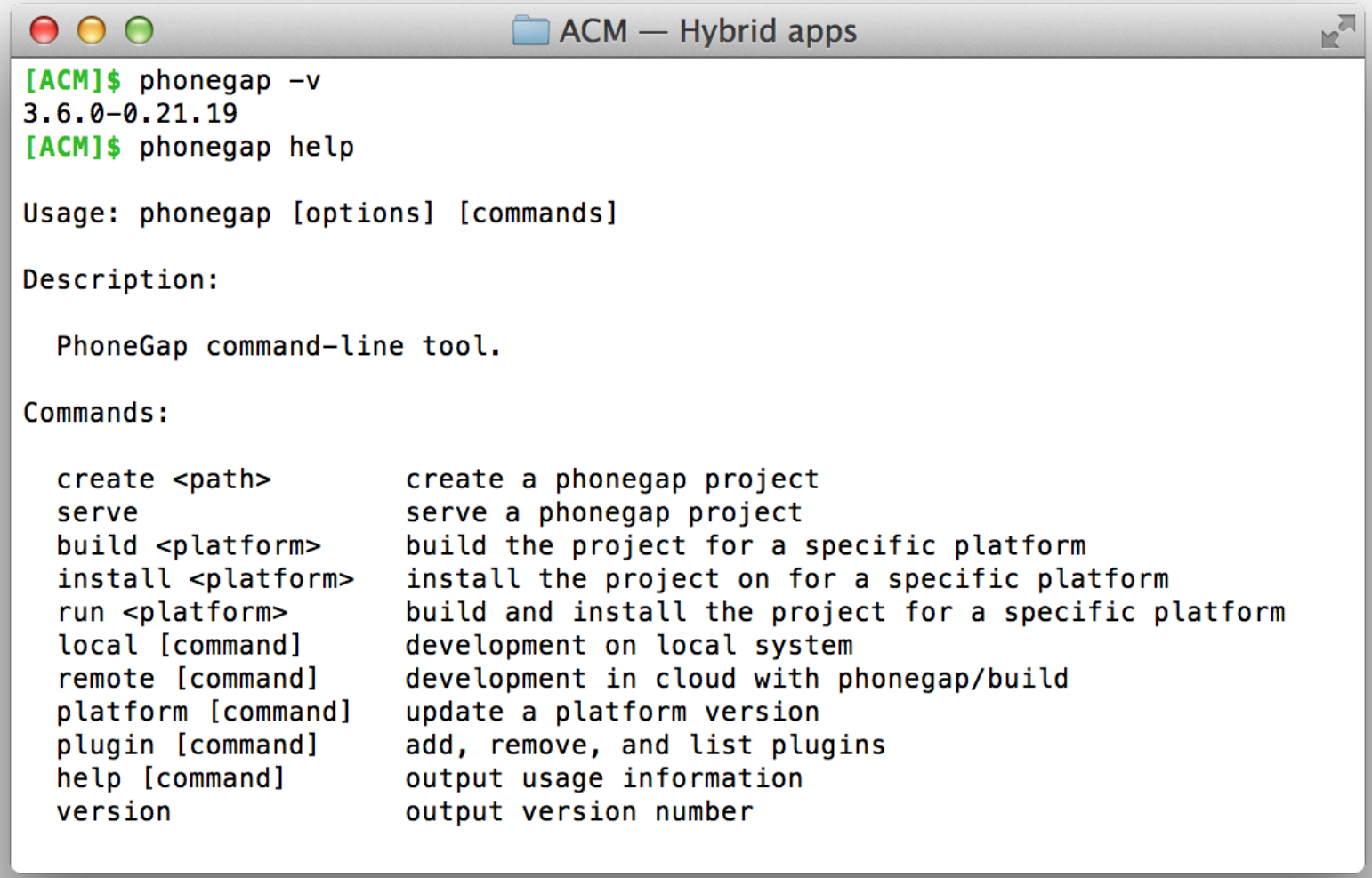
© 2014 Adobe Systems Incorporated. All Rights Reserved.

Installation



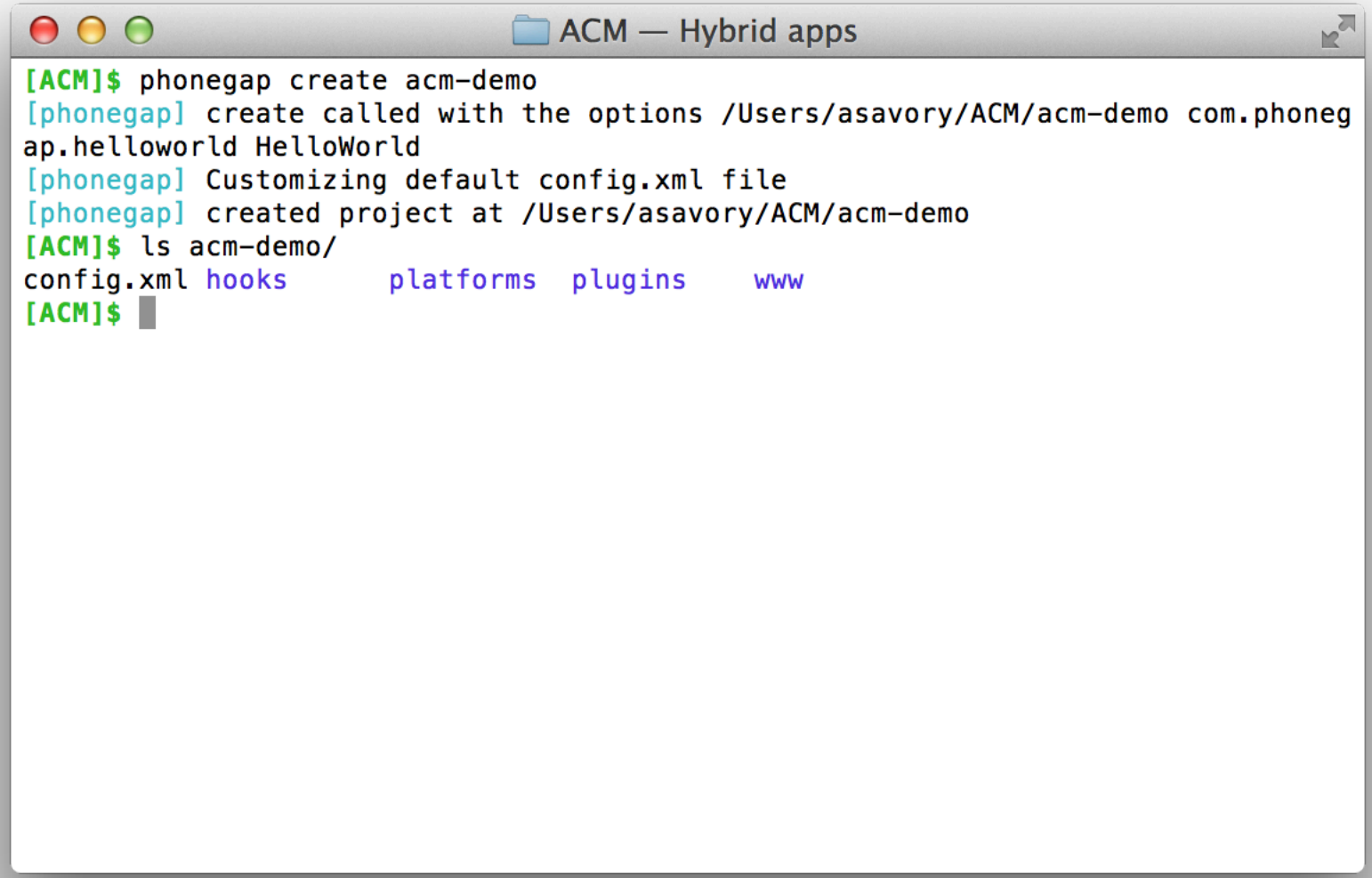
© 2014 Adobe Systems Incorporated. All Rights Reserved.

Getting Started



© 2014 Adobe Systems Incorporated. All Rights Reserved.

Hello World



© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

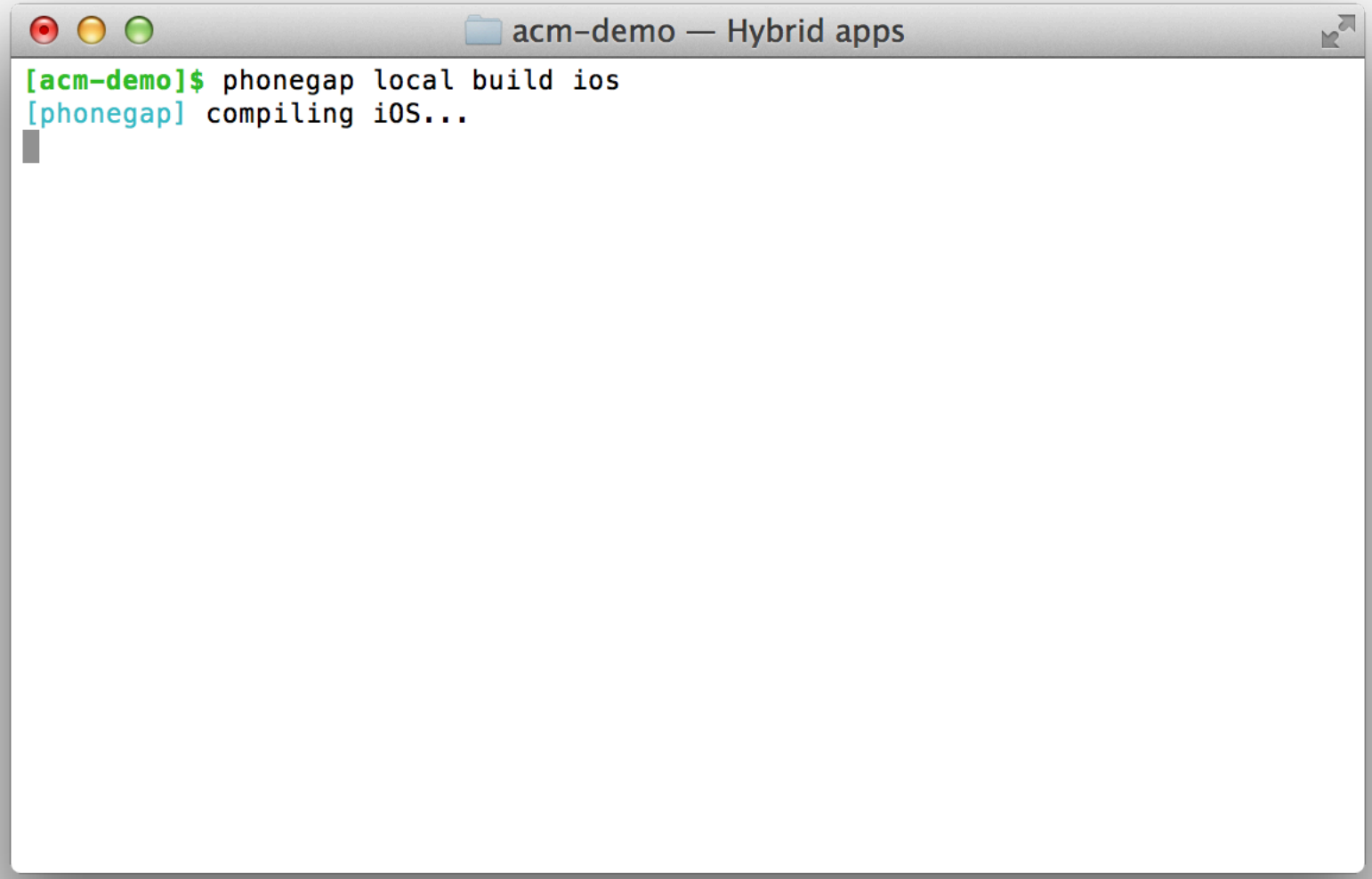
Anatomy of a PhoneGap application

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

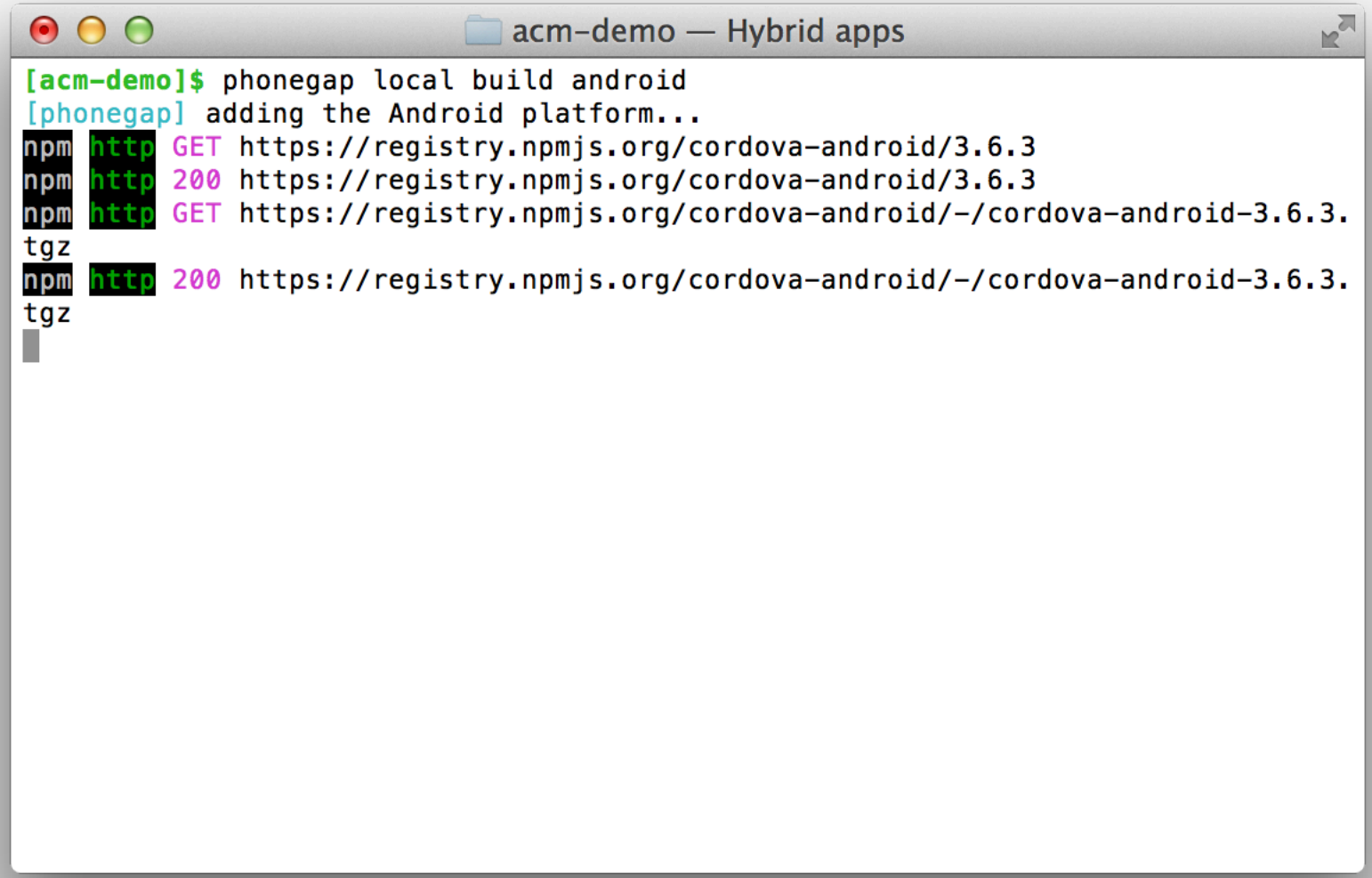
Adobe

Adding platforms



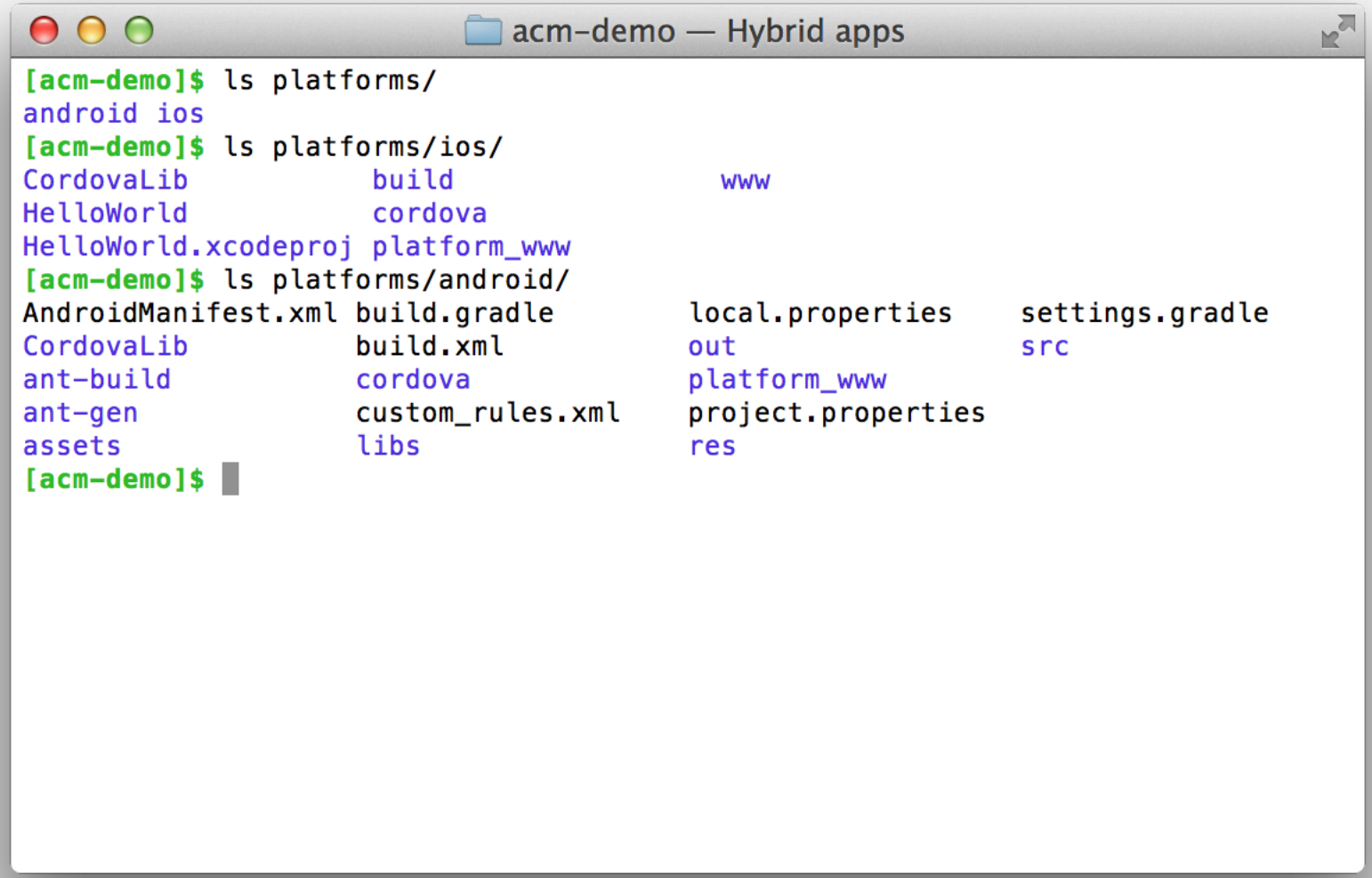
© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adding platforms



© 2014 Adobe Systems Incorporated. All Rights Reserved.

Platforms



© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

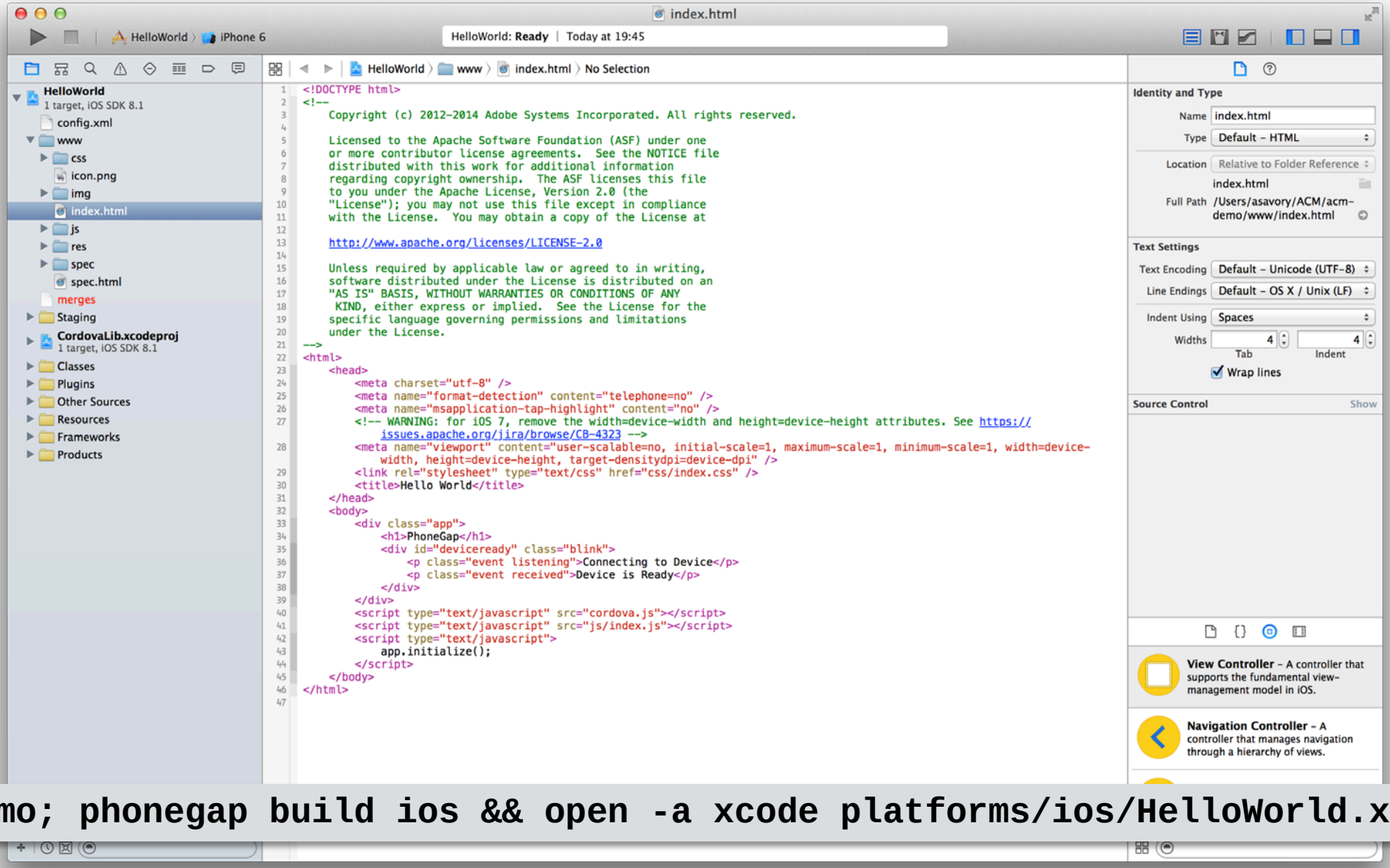
Running the app

acm-demo — Hybrid apps

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Native SDK tooling

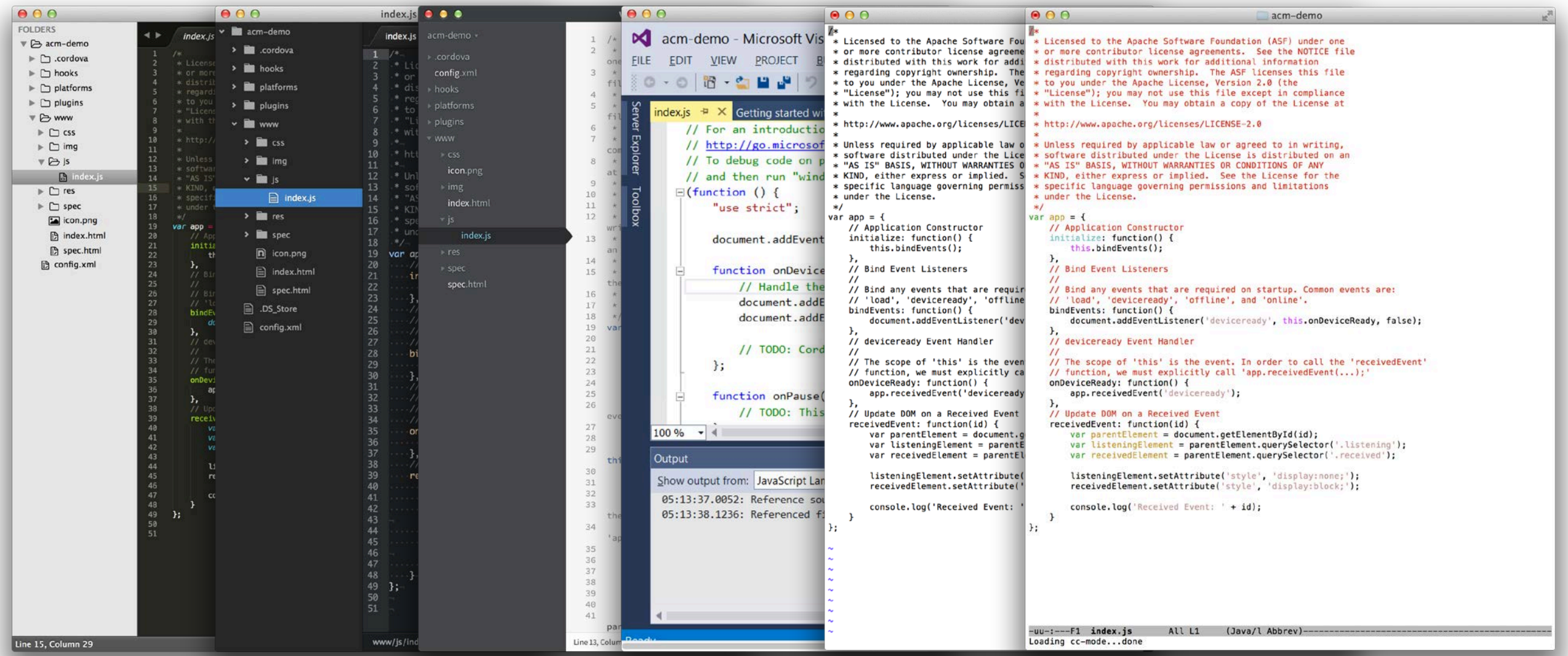



```
cd acm-demo; phonegap build ios && open -a xcode platforms/ios/HelloWorld.xcodeproj
```

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

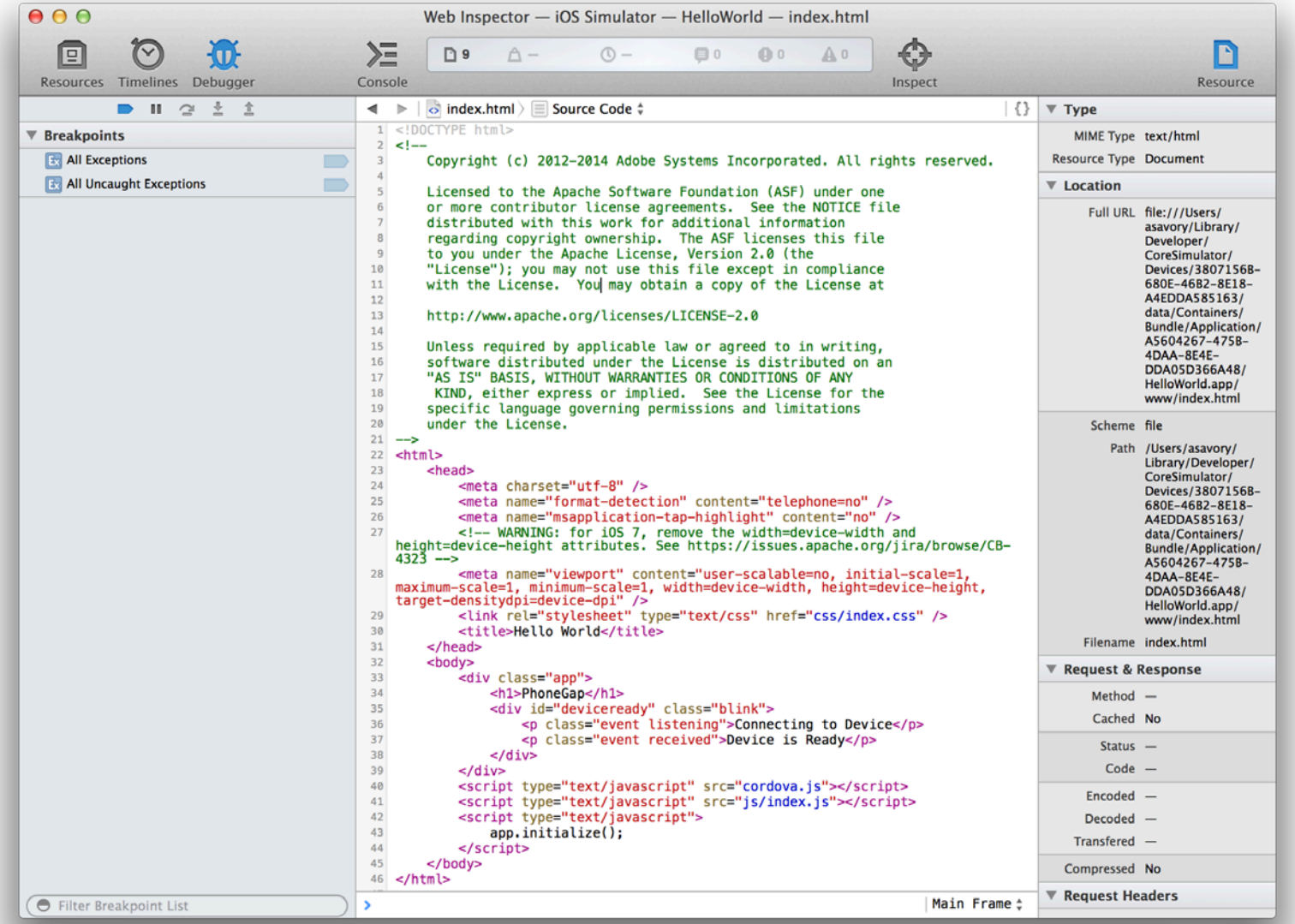
IDEs



© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

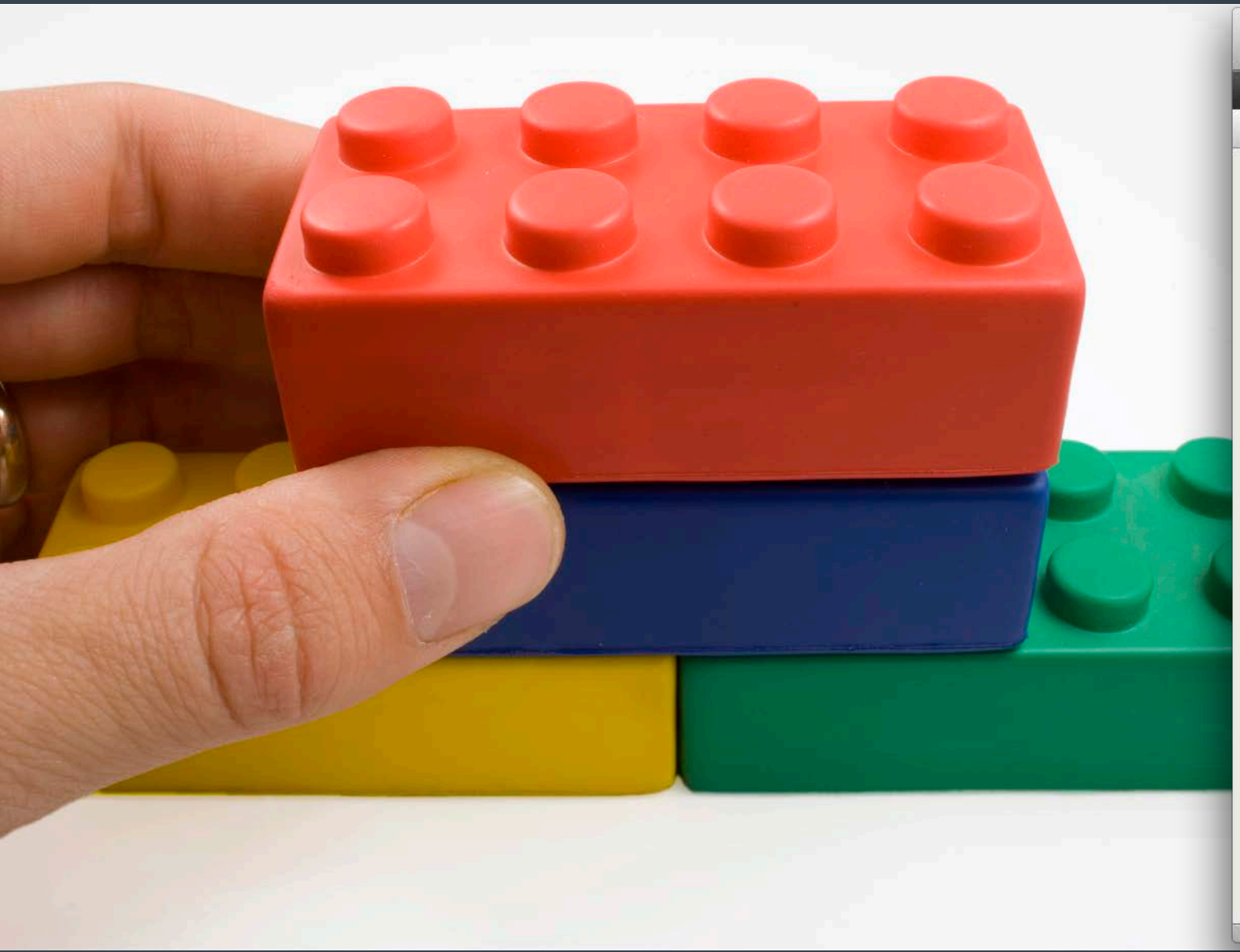
Debugging



© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

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

API Reference

- Battery Status
  - Monitor the status of the device's battery.
- Camera
  - Capture a photo using the device's camera.
- Contacts
  - Work with the devices 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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

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);
```

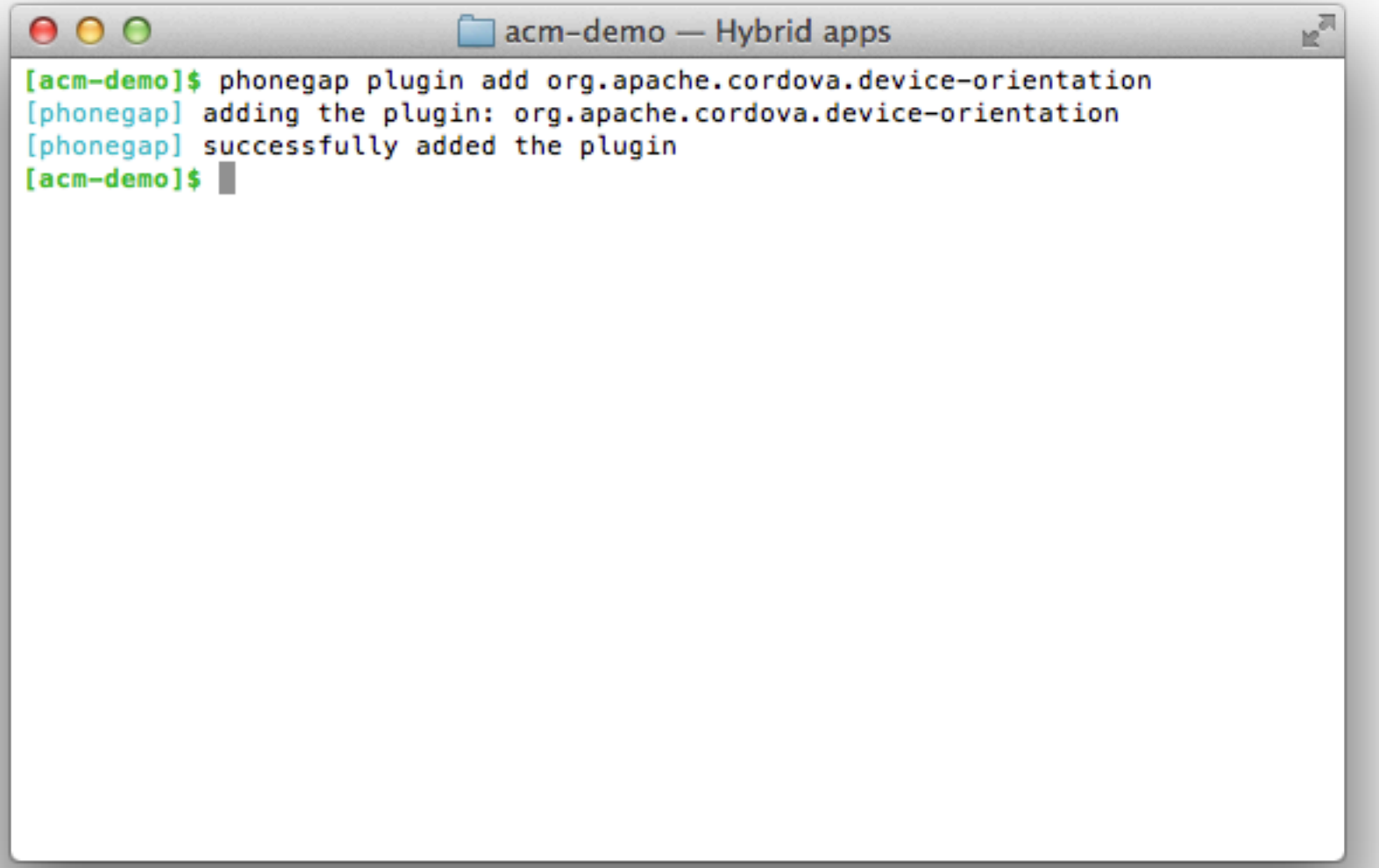
```
// Use the true heading if it is valid.
CLLocationDirection  theHeading = ((newHeading.trueHeading > 0) ?
                                   newHeading.trueHeading : newHeading.magneticHeading);
```

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

Plugins



© 2014 Adobe Systems Incorporated. All Rights Reserved.

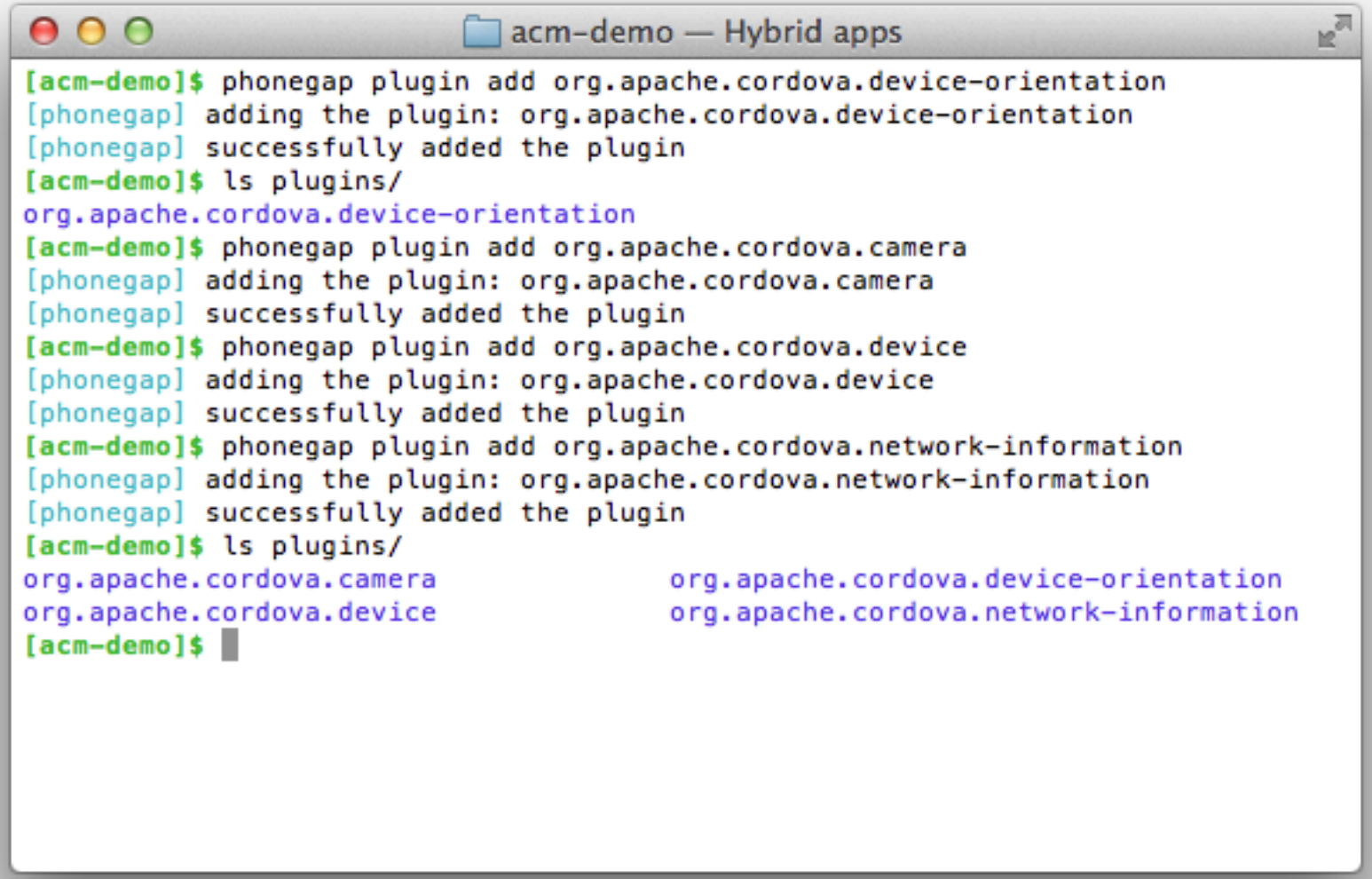
Using Plugins: Compass

```
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
```

© 2014 Adobe Systems Incorporated. All Rights Reserved.

More Plugins



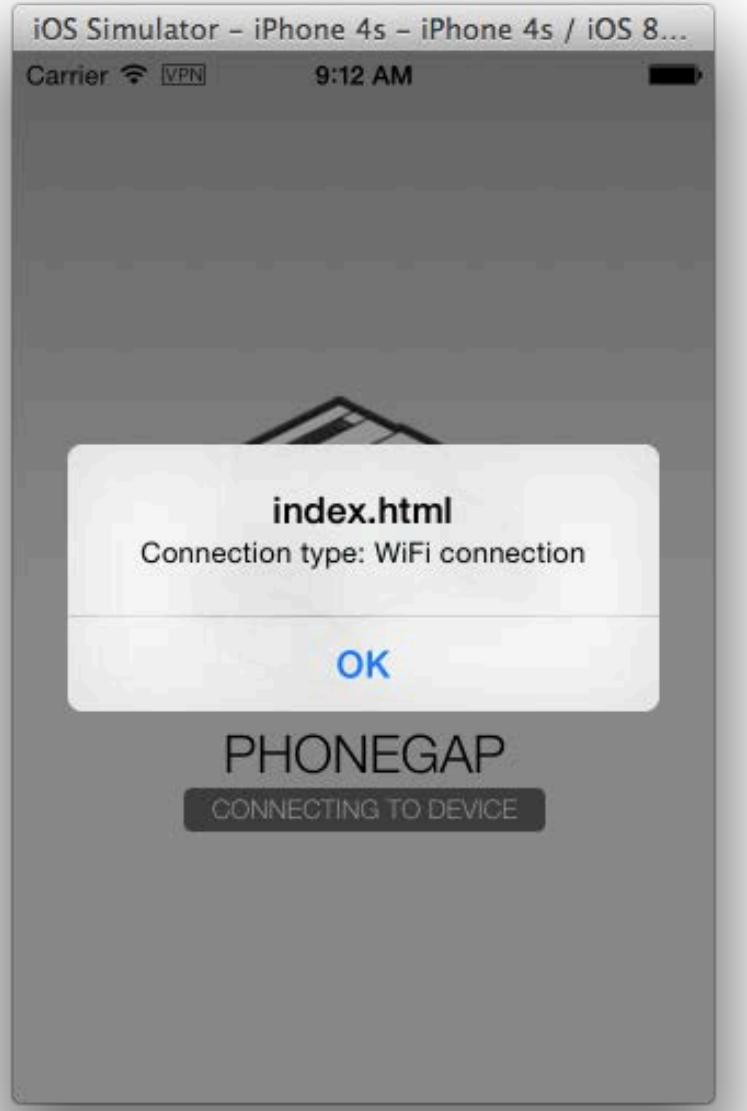
© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

Using Plugins: Network Information

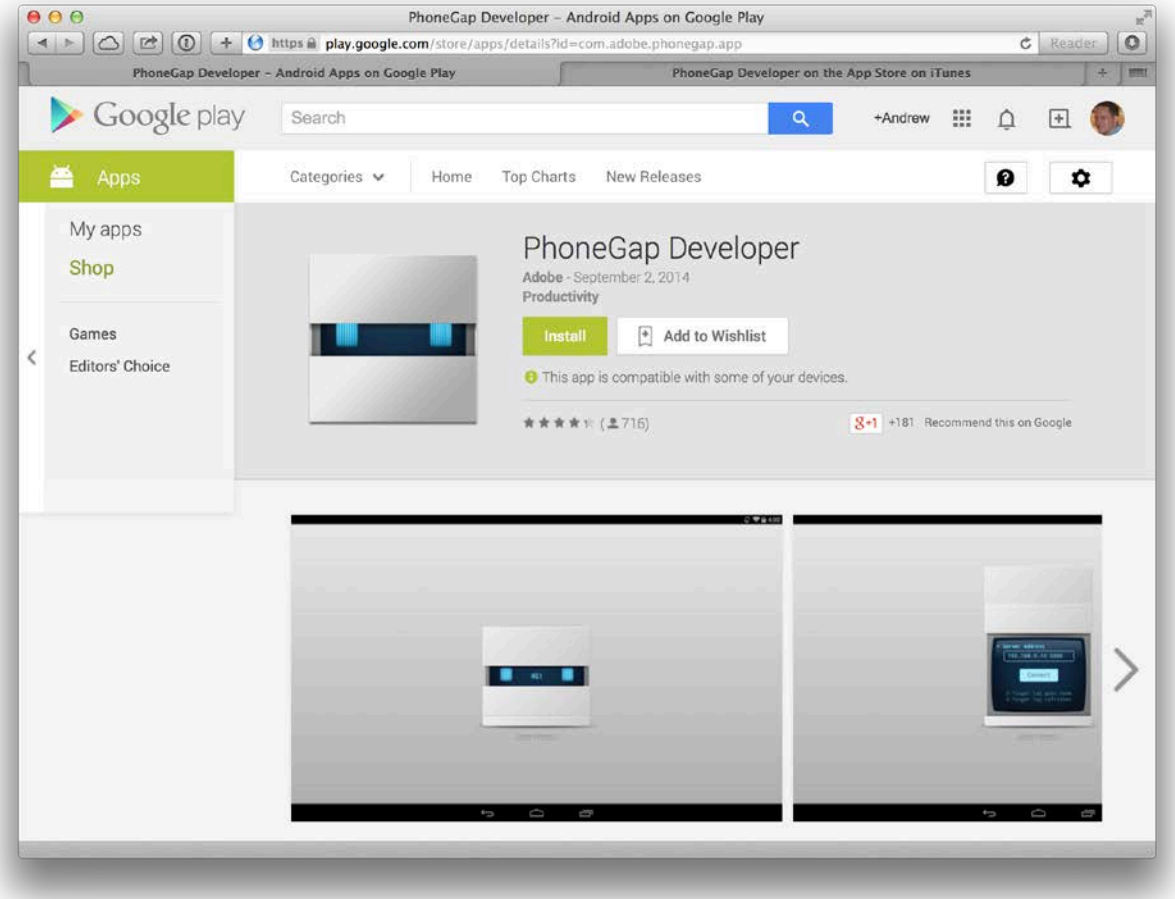
```
phonegap plugin add org.apache.cordova.network-information
```

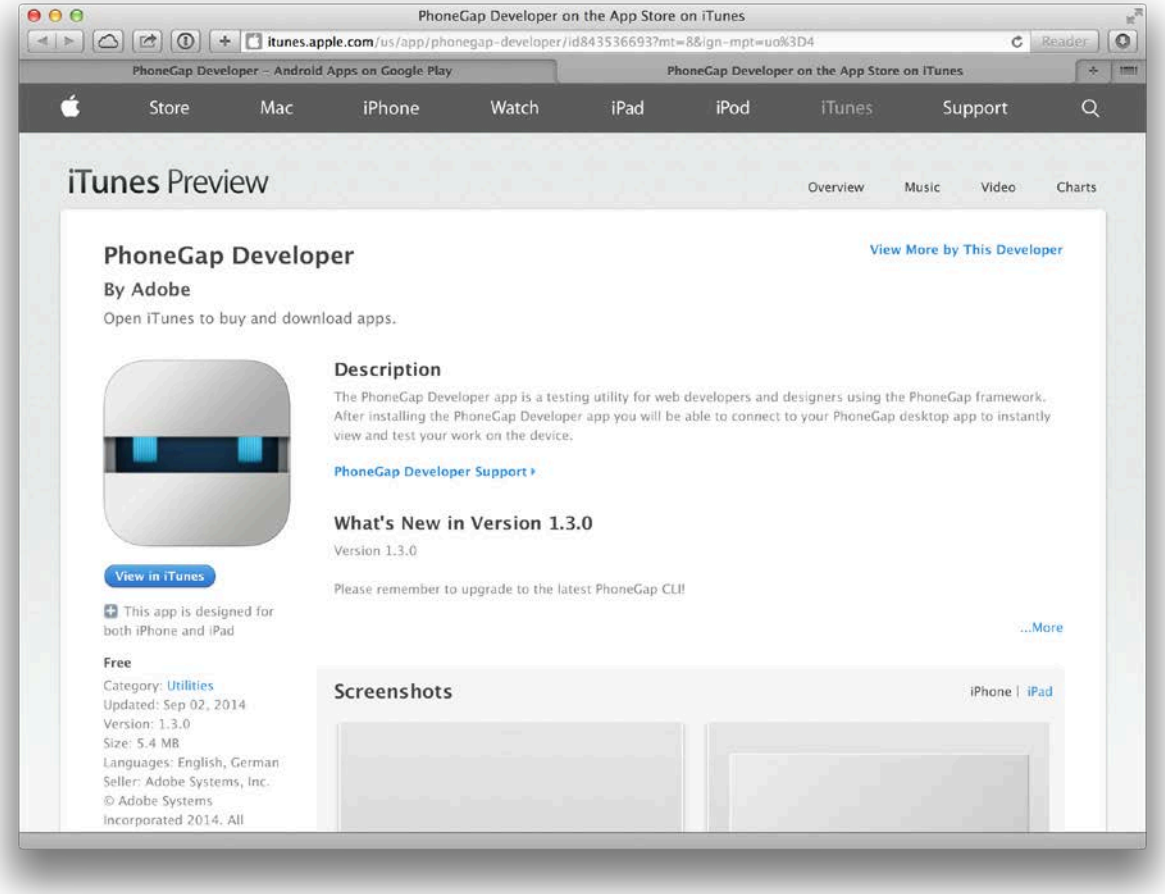
```
35      onDeviceReady: function() {
36          app.receivedEvent('deviceready');
37          app.checkConnection();
38      },
39
40      checkConnection: function() {
41          var networkState = navigator.connection.type;
42
43          var states = {};
44          states[Connection.UNKNOWN]  = '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      },
```



© 2014 Adobe Systems Incorporated. All Rights Reserved.

PhoneGap Developer App





© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

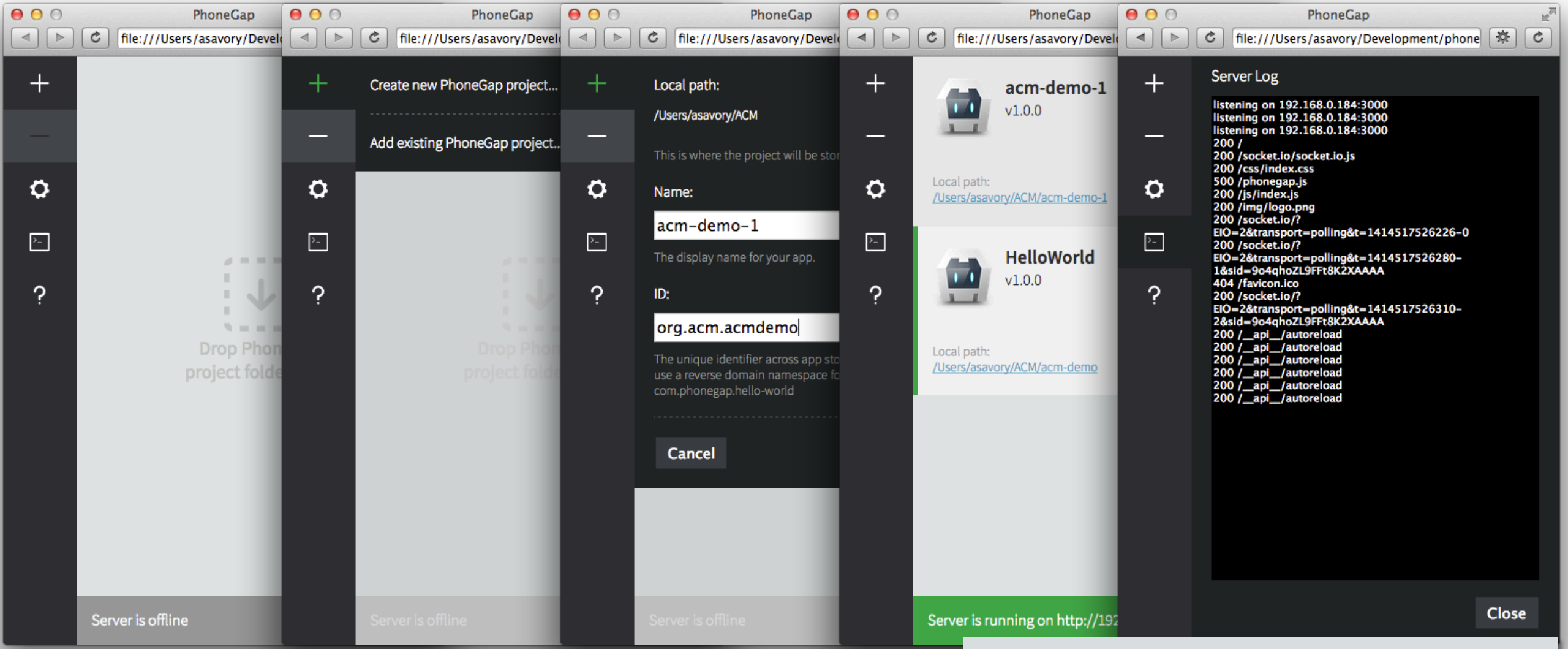
PhoneGap Developer App

```
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]
```

© 2014 Adobe Systems Incorporated. All Rights Reserved.

PhoneGap Desktop App

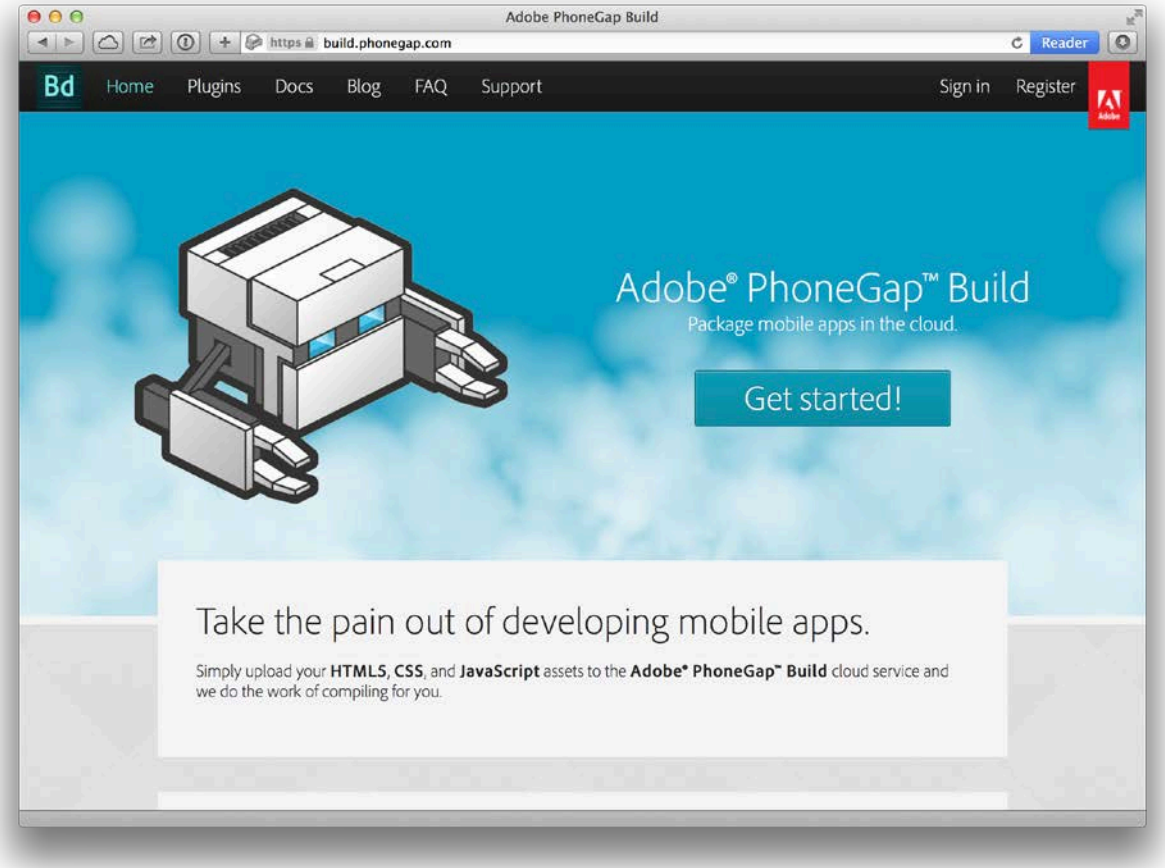


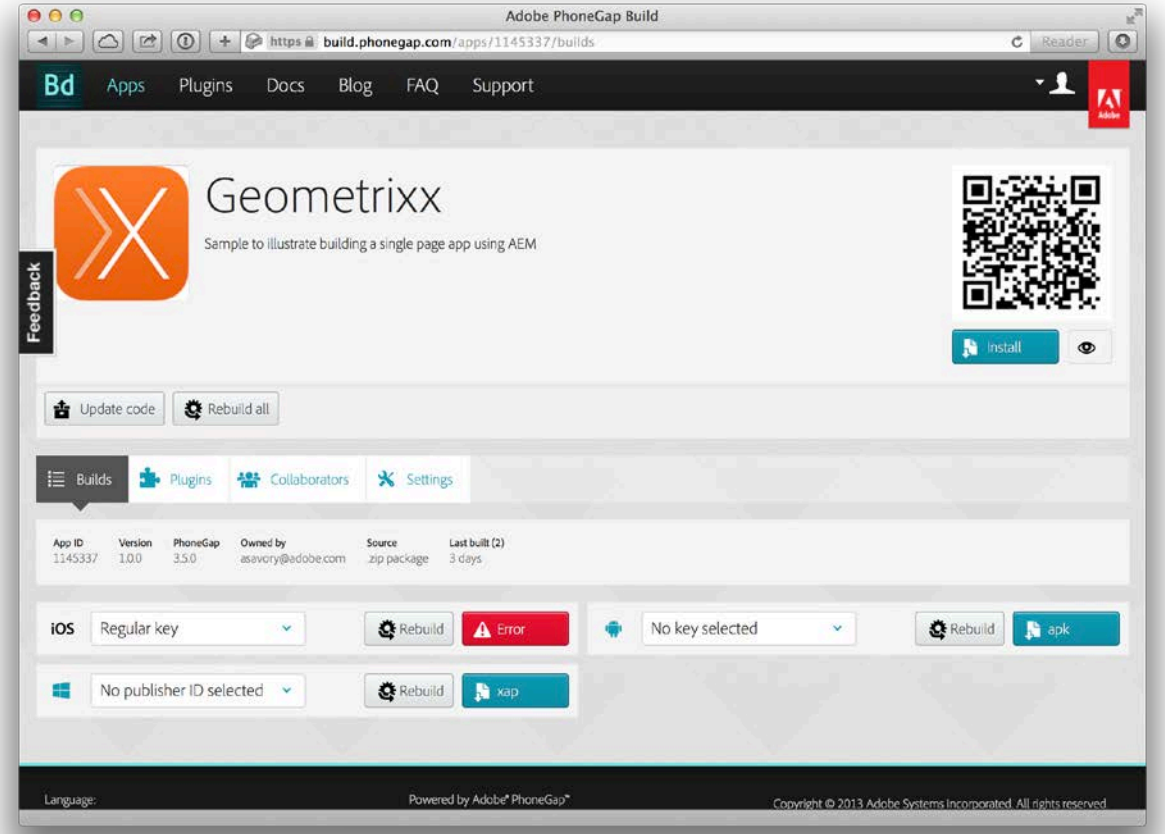
https://github.com/hermwong/phonegap-gui

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

PhoneGap Build

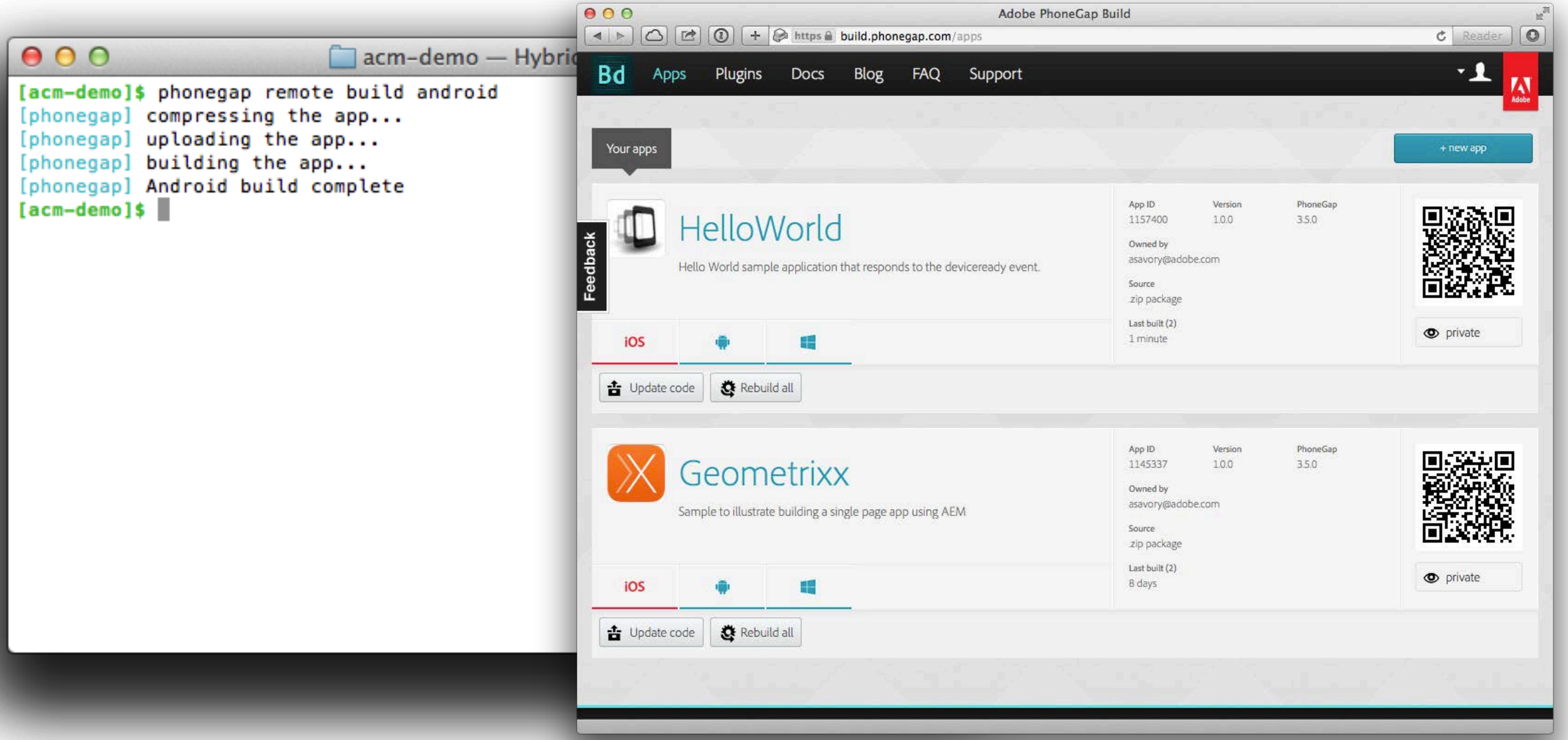




© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

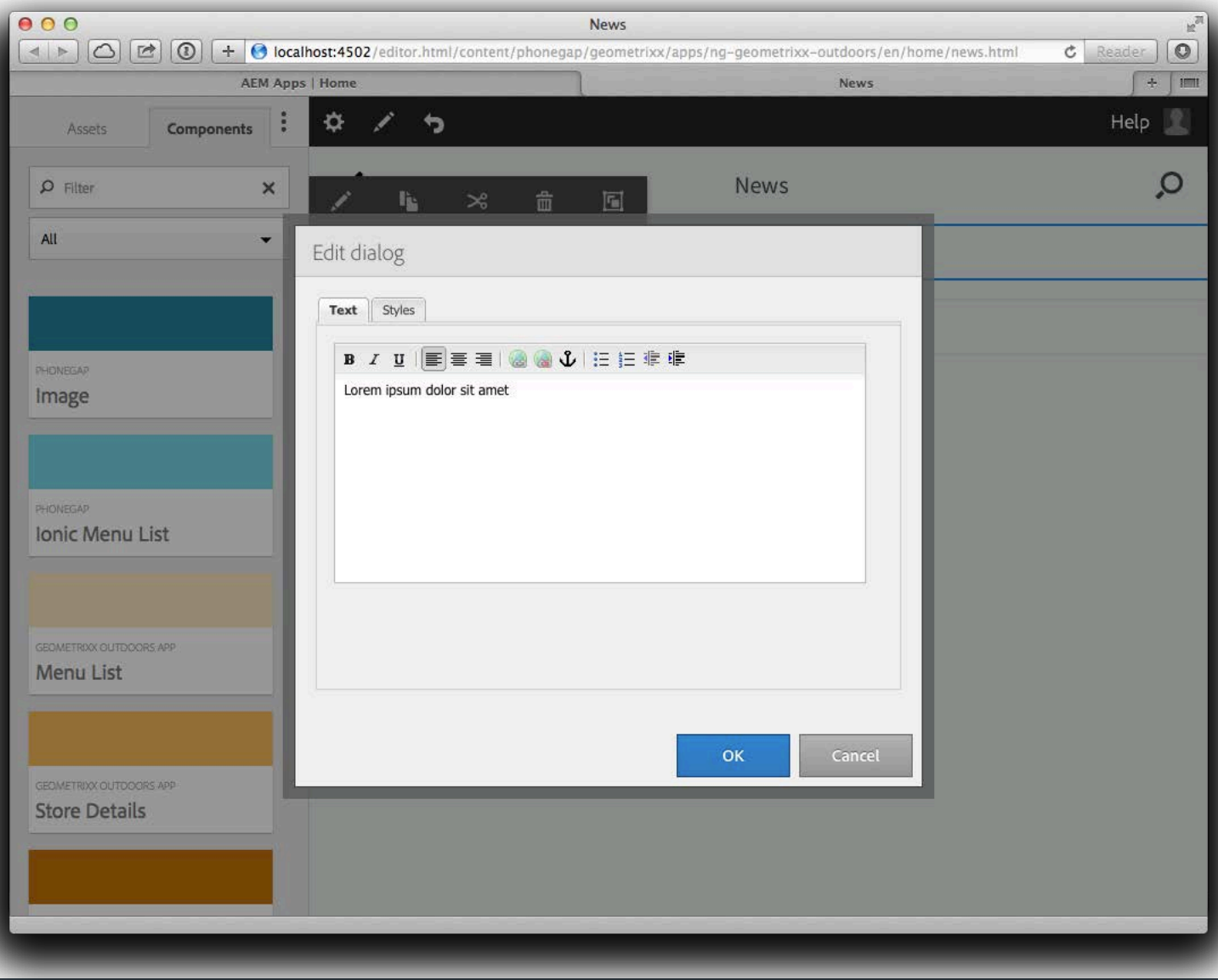
Build in action

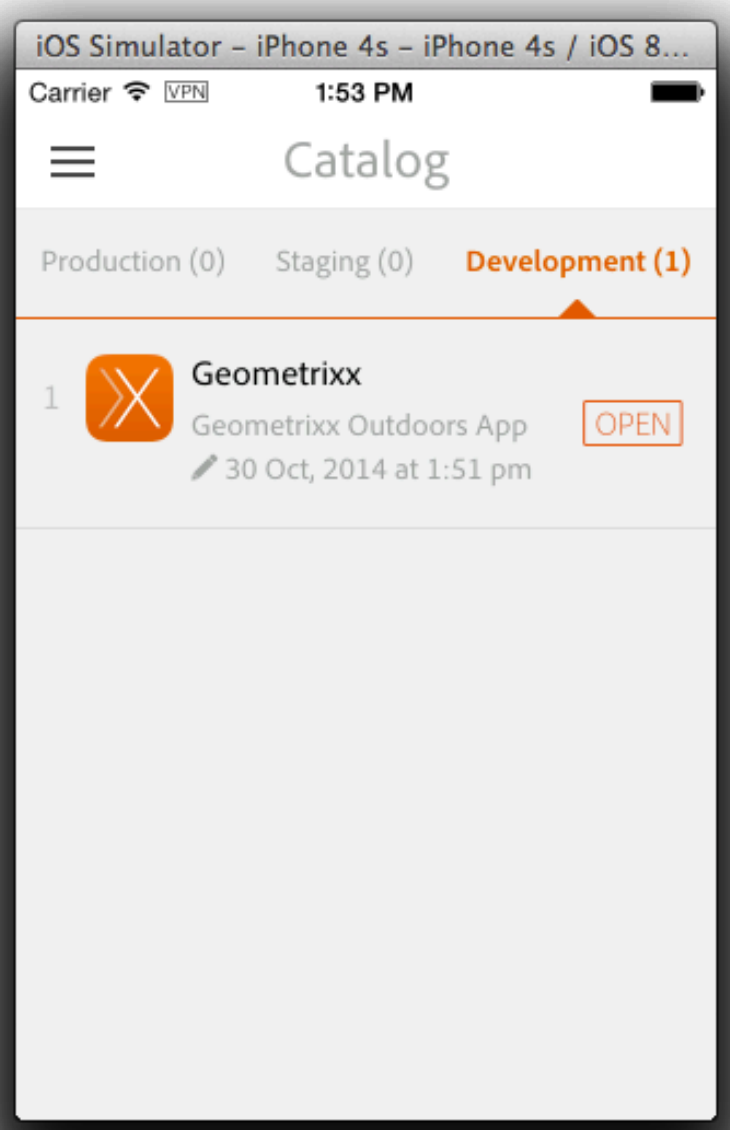


© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

PhoneGap Enterprise





© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

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

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe

ACM: The Learning Continues…

- Questions about this webcast? learning@acm.org
- ACM Learning Webinars (on-demand archive): http://learning.acm.org/webinar
- ACM Learning Center: http://learning.acm.org
- ACM Queue: http://queue.acm.org/

© 2014 Adobe Systems Incorporated. All Rights Reserved.

Adobe