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
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<th>NATIVE</th>
<th>CROSS-PLATFORM</th>
<th>HYBRID</th>
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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

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.

http://www.nodejs.org
Installation

```
[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

```
acm-demo/
|-- hooks/       Task hooks for power users
|-- platforms/   Native platform projects
|-- plugins/     Your installed plugins
|-- www/        Your web application
|-- config.xml  App configuration
```
Adding platforms

```
[acm-demo]$ phonegap local build ios
[phonegap] compiling iOS...
```
Adding platforms

```
[acm-demo]$ phonegap local build android
[phonegap] adding the Android platform...
```
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]$ 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
Debugging
Plugins

- 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
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";
        }
    });
}

private SensorManager mSensorManager;
private Sensor mSensor;
...

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

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);
Plugins

```
[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

```javascript
onDeviceReady: function() {
    app.receivedEvent('deviceready');
    navigator.compass.getCurrentHeading(app.onSuccess, app.onError);
}

onSuccess: function(heading) {
    alert('Heading: ' + heading.magneticHeading);
},

.onError: function(error) {
    alert('CompassError: ' + error.code);
},
```

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More Plugins

```bash
[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

```javascript
onDeviceReady: function() {
    app.receivedEvent('deviceready');
    app.checkConnection();
}

checkConnection: function() {

    var networkState = navigator.connection.type;

    var states = {};
    states[Connection.UNKNOWN] = 'Unknown connection';
    states[Connection.ETHERNET] = 'Ethernet connection';
    states[Connection.WIFI] = 'WiFi connection';
    states[Connection.CELL_2G] = 'Cell 2G connection';
    states[Connection.CELL_3G] = 'Cell 3G connection';
    states[Connection.CELL_4G] = 'Cell 4G connection';
    states[Connection.CELL] = 'Cell generic connection';
    states[Connection.NONE] = 'No network connection';

    alert('Connection type: ' + states[networkState]);
}
```
PhoneGap Developer App
PhoneGap Developer App

```
[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]
```

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PhoneGap Desktop App

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

Take the pain out of developing mobile apps.

Simply upload your HTML5, CSS, and JavaScript assets to the Adobe PhoneGap Build cloud service and we do the work of compiling for you.
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]$
```
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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