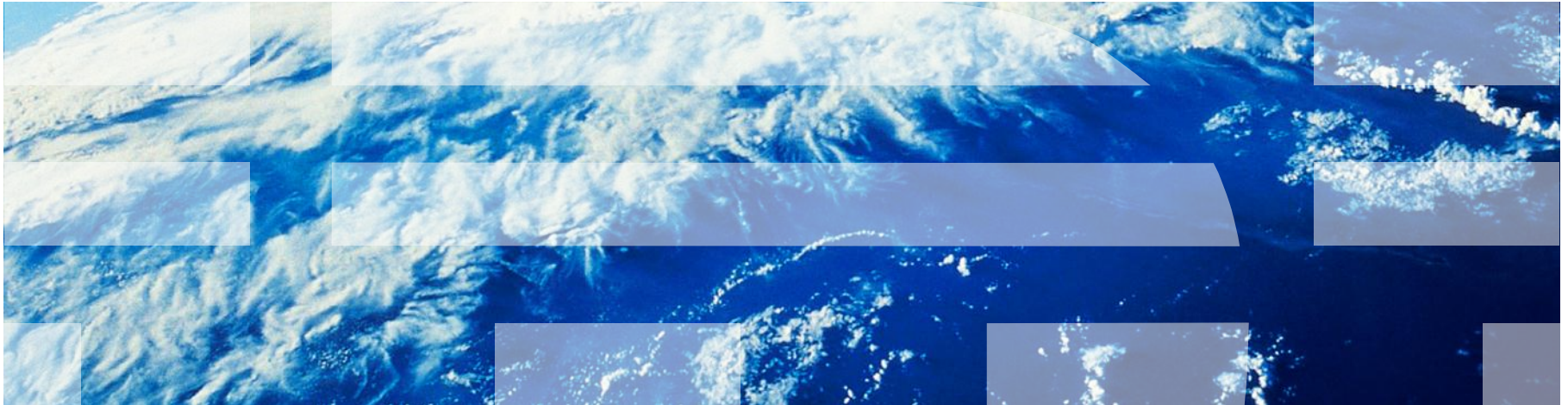


IBM Worklight Foundation V6.2.0 Getting Started

Android – Adding native functionality to hybrid application with Apache Cordova plug-in



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Agenda

- Apache Cordova plug-in overview
- Declaring the plug-in
- Implementing the plug-in by using Java code
- Calling the plug-in from JavaScript

Apache Cordova plug-in overview

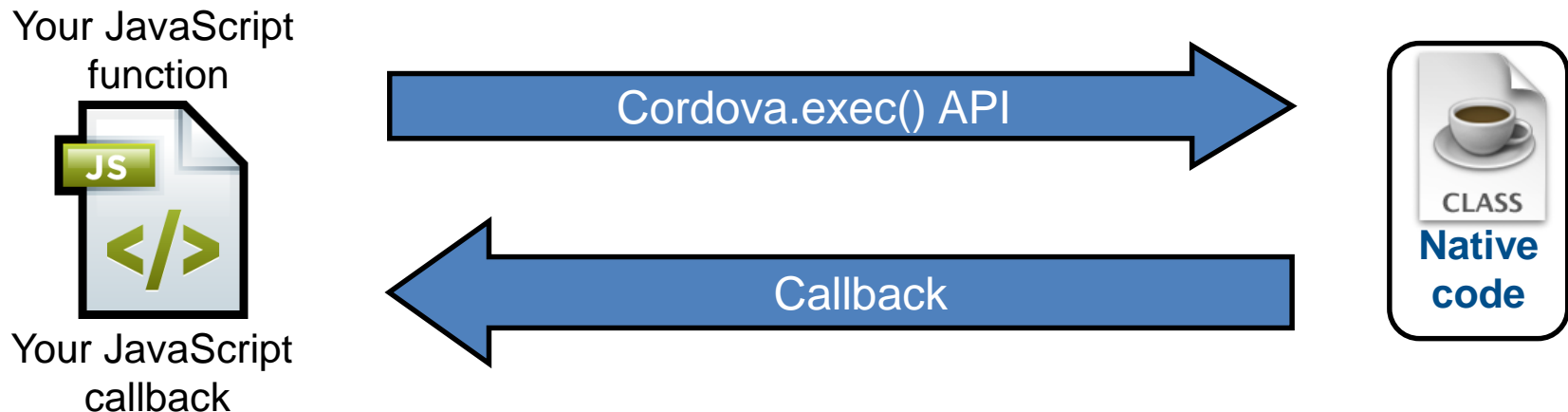
- Occasionally within an IBM Worklight® application, developers must use a specific third-party native library or a device function not yet available in Apache Cordova.
- With Apache Cordova, developers can create an Apache Cordova plug-in, which means that they create custom native code blocks, and call these code blocks in their applications by using JavaScript™.
- In this module, you learn how to create a simple Android Apache Cordova plug-in and how to use it in your code.

Apache Cordova plug-in overview

- **Note:** Unlike with Cordova-based applications where a developer is required to check for the `deviceready` event before using the Cordova API set, in a Worklight application this check is done internally.
- Instead of implementing this check, you can place your implementation code in the `wlCommonInit()` function in `common\js\main.js`.

Apache Cordova plug-in overview

- Creating and using an Android Apache Cordova plug-in consists of three steps:
 - Declare your plug-in in the `config.xml` file.
 - Create a plug-in class, which will run natively in Android.
 - Use the `cordova.exec()` API method in the JavaScript code.
- The plug-in performs the required action, and calls a JavaScript callback method that is specified during the `cordova.exec()` invocation.



Agenda

- Apache Cordova plug-in overview
- Declaring the plug-in
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Declaring the plug-in

- You must first declare the new plug-in in the project, so that Cordova knows about it. The creation process of the plug-in is covered in the following slides.
 - Add your plug-in definition to the `config.xml` file, which is located in the `native\res\xml` folder in the Android environment.
 - Add your custom plug-in at the end of the list.

The plug-in
name, referenced
from JavaScript

```
<feature name="HelloWorldPlugin">  
  <param name="android-package" value="com.AndroidCordovaPlugin.HelloWorldPlugin" />  
</feature>
```

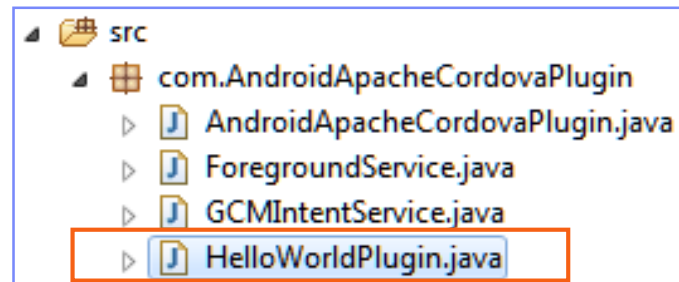
The name of
an implementation
class

Agenda

- Apache Cordova plug-in overview
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- **Implementing the plug-in by using Java code**
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Implementing the plug-in by using Java code

- Start by creating a Java™ class for a plug-in. Call it `HelloWorldPlugin.java`.



- Extend the `org.apache.cordova.CordovaPlugin` class and add required imports.

```
public class HelloWorldPlugin extends CordovaPlugin {
```

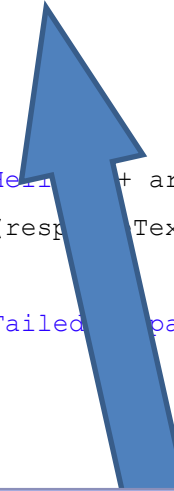
Implementing the plug-in by using Java code - continued

- Implement an `execute` method.

```
public boolean execute(String action, JSONArray args, CallbackContext callbackContext)
    throws JSONException {

    if (action.equals("sayHello")){
        try {
            String responseText = "Hello " + args.getString(0);
            callbackContext.success(responseText);
        } catch (JSONException e){
            callbackContext.error("Failed to parse parameters");
        }
        return true;
    }

    return false;
}
```




The arguments contain information that is required by a plug-in, such as action, arguments array, and callback context

Implementing the plug-in by using Java code – continued

- Implement an `execute` method.

```
public boolean execute(String action, JSONArray args, CallbackContext callbackContext)
    throws JSONException {
    if (action.equals("sayHello")){
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            callbackContext.success(responseText);
        } catch (JSONException e){
            callbackContext.error("Failed to parse parameters");
        }
        return true;
    }
    return false;
}
```



If the supplied action is **sayHello**, retrieve the first argument from the **args** array, prepare a **responseText** string, and, by using the **callbackContext** argument, call the **success** callback with this **responseText** string as the argument.


Implementing the plug-in by using Java code – continued

- Implement an `execute` method.

```
public boolean execute(String action, JSONArray args, CallbackContext callbackContext)
    throws JSONException {

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        try {
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        }
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    return false;
}
```



Returning **false** means that the action supplied from JavaScript was not recognized.

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Calling a plug-in from JavaScript

- Now you are ready to call the plug-in from JavaScript:

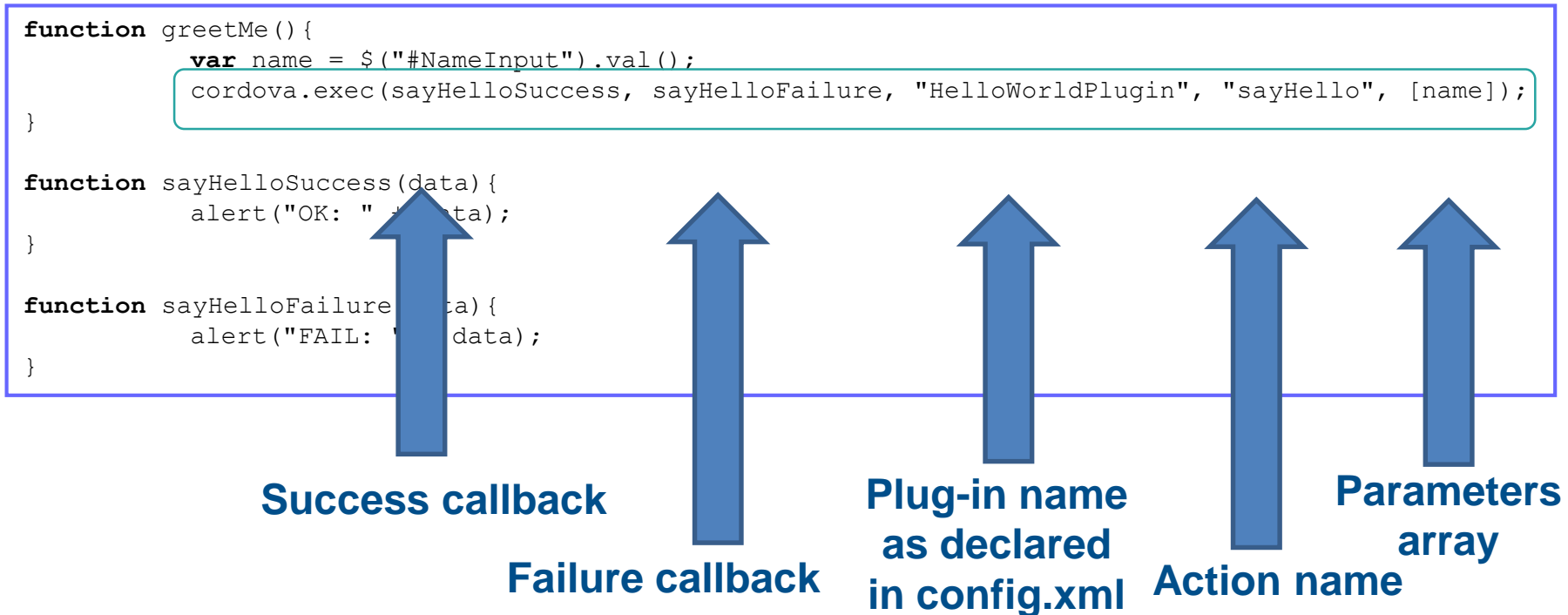
```
function greetMe() {  
    var name = $("#NameInput").val();  
    cordova.exec(sayHelloSuccess, sayHelloFailure, "HelloWorldPlugin", "sayHello", [name]);  
}  
  
function sayHelloSuccess(data) {  
    alert("OK: " + data);  
}  
  
function sayHelloFailure(data) {  
    alert("FAIL: " + data);  
}
```



Cordova.exec() API method is used to call the plug-in.

Calling a plug-in from JavaScript – continued


- Now you are ready to call the plug-in from JavaScript:



Calling a plug-in from JavaScript – continued

- Now you are ready to call the plug-in from JavaScript:

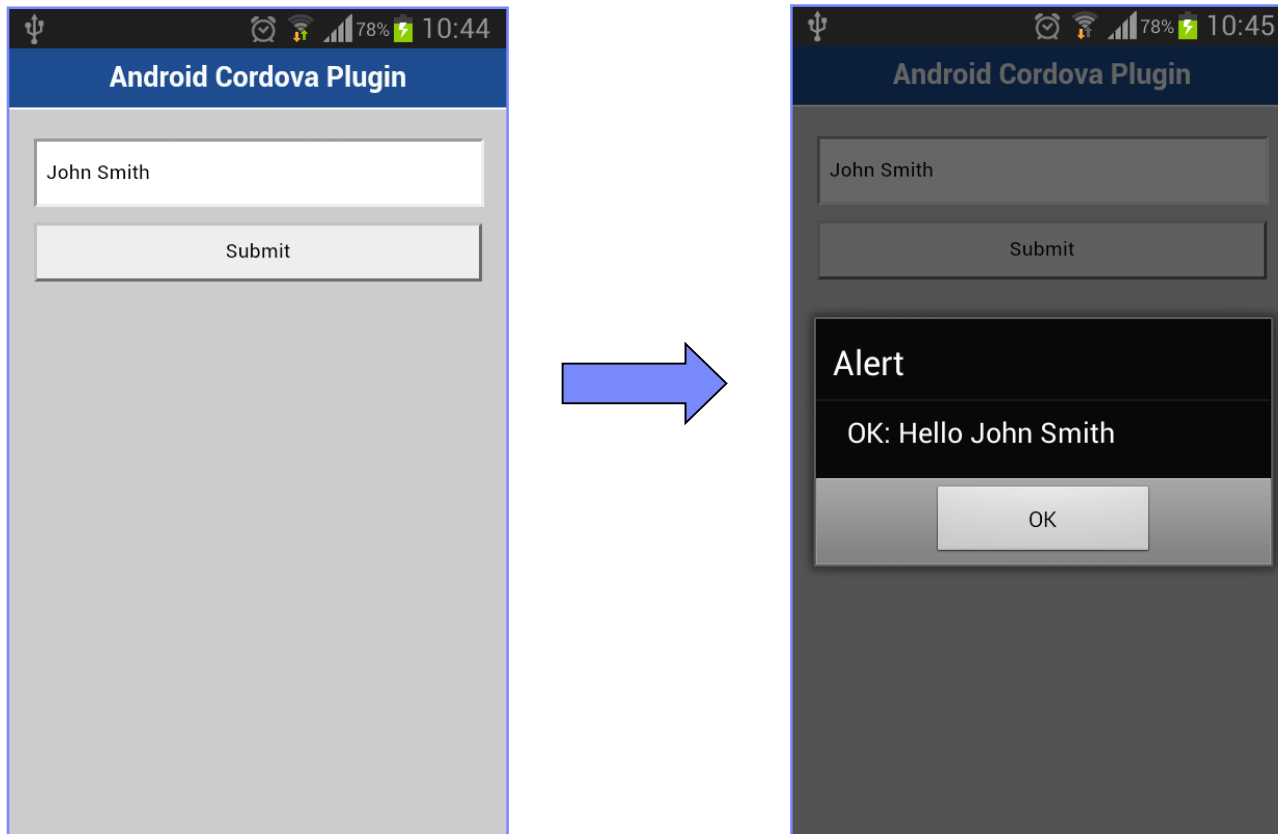
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}  
  
function sayHelloFailure(data) {  
    alert("FAIL: " + data);  
}
```



A plug-in invokes the success and failure callbacks

Calling the plug-in from JavaScript – continued

- The sample for this training module can be found on the **Getting Started** page of the IBM Worklight documentation website at <http://www.ibm.com/mobile-docs>



Quiz

Test your knowledge of the material in this module. Answers are in the following slide.

- For a plug-in to be recognized in a JavaScript application:
 - You must add it to the `config.xml` file.
 - You must add it to the `Worklight.plist` file.
 - You must add it to the `Plugins.plist` file.
 - The plug-in is automatically recognized by JavaScript, and does not need to be added to any file.
- When must you use Cordova plug-ins?
 - When you want to implement your application in native code, because you are not familiar with JavaScript.
 - When you want the application to look more like a native application.
 - When you want to gain access to the OS APIs that are not accessible within the web container.
 - When you want to retrieve data from a remote server.
- What are the components of a Cordova plug-in?
 - Native class that implements the required functionality. Once it is declared in `config.xml` file, it can be called from the JavaScript code of the application.
 - A native class that implements the required functionality and a JavaScript wrapper for it. The wrapper functions can be called from JavaScript.
 - A native class that implements the required functionality, a JavaScript wrapper for it, and a declaration in the `application-descriptor.xml` file.
 - A JavaScript wrapper only. The native classes are already provided by IBM Worklight.

Quiz - answers

- For a plug-in to be recognized in a JavaScript application:
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