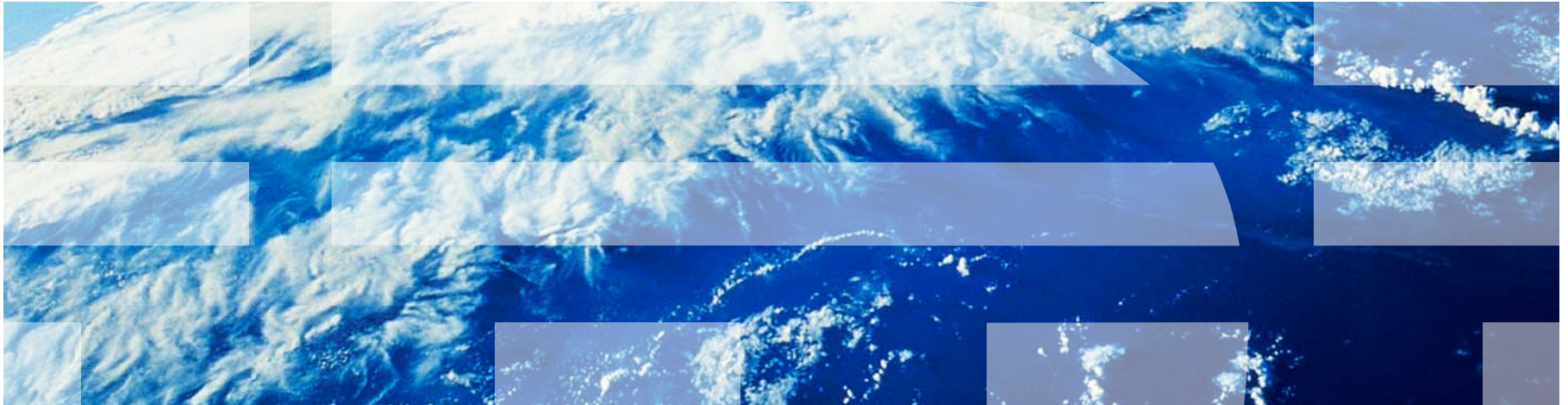


IBM Worklight V6.1.0 Getting Started

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



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Agenda

- Apache Cordova plug-in overview
- Plug-in declaration
- Implementing `cordova.exec()` in JavaScript
- Implementing an Objective-C code plug-in

Apache Cordova plug-in overview

- In some cases, developers of an IBM Worklight® application might have to use a specific third-party native library or a device function that is 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 Apache Cordova plug-in, and how to use it in your code.
- More samples can be found in the Apache Cordova documentation at <https://github.com/phonegap/phonegap-plugins>.

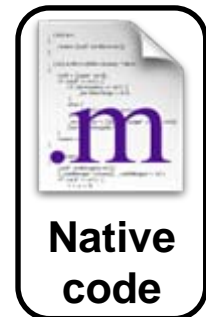
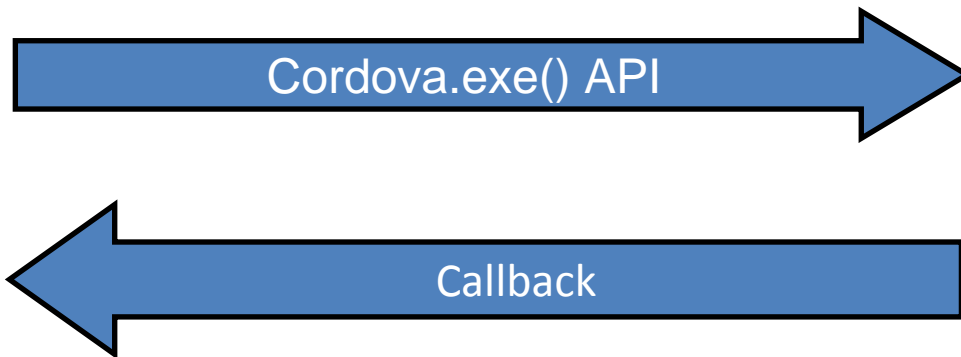
Apache Cordova plug-in overview – continued

- To create and use an iOS Apache Cordova plug-in:
 - Declare the plug-in in the `config.xml` file.
 - Use `cordova.exec()` API in the JavaScript code.
 - Create the plug-in class that will run natively in iOS.
- The plug-in performs the required action, and calls a JavaScript callback method that is specified during the `cordova.exec()` invocation.

Your JavaScript
function



Your JavaScript
callback

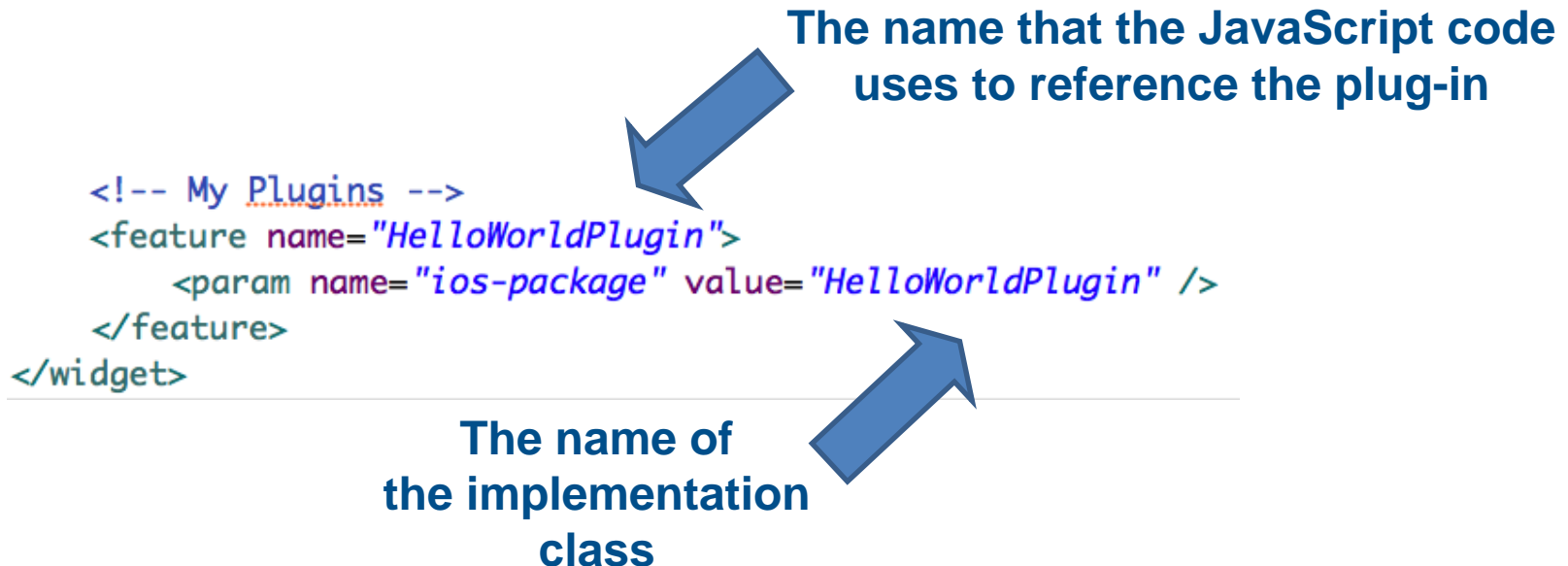


Agenda

- Apache Cordova plug-in overview
- Plug-in declaration
- Implementing `cordova.exec()` in JavaScript
- Implementing an Objective-C code of a plug-in

Plug-in Declaration

- You must first declare the new plug-in in the project, so that Cordova knows about this plug-in. The creation process of the plug-in is covered in the following slides.
 - Add your plug-in reference to the `config.xml` file, which is located in the **native** folder of the iOS environment.
 - Add your custom plug-ins toward the end of the list.



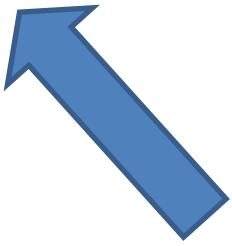
Agenda

- Apache Cordova plug-in overview
- Plug-in declaration
- **Implementing cordova.exec() in JavaScript**
- Implementing an Objective-C code of a plug-in

Implementing `cordova.exec()` in JavaScript

- From the JavaScript code of the application, use `cordova.exec()` to call the Cordova plug-in.

```
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);  
}
```



Use `cordova.exec()` to call the plug-in.

Implementing `cordova.exec()` in JavaScript – continued

- From the JavaScript code of the application, use `cordova.exec()` to call the Cordova plug-in.

```
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)
}
```

Success callback

Failure callback

Plug-in name as declared in config.xml


Action name

Parameters array

Implementing `cordova.exec()` in JavaScript – continued

- From the JavaScript code of the application, use `cordova.exec()` to call the Cordova plug-in.

```
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);  
}
```



The plug-in will call success and failure callbacks.

Agenda

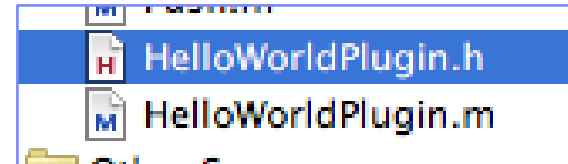
- Apache Cordova plug-in overview
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- **Implementing an Objective-C code of a plug-in**

Implementing an Objective-C Code plug-in

- Now that the plug-in is declared, and the JavaScript implementation is ready, you can implement the Cordova plug-in itself.
- For this purpose, ensure that the project is built in Eclipse, and opened in the Xcode IDE.

Implementing an Objective-C Code plug-in – continued

- In the Xcode IDE, open the generated Xcode project that you previously built in Eclipse.
- Add an Objective-C class. Call it HelloWorldPlugin.
- Import the Cordova/CDV.h and inherit the CDVPlugin class.
- Declare the method signature.



```
#import <Foundation/Foundation.h>
#import <Cordova/CDV.h>

@interface HelloWorldPlugin : CDVPlugin

- (void)sayHello:(CDVInvokedUrlCommand*)command;

@end
```

Implementing an Objective-C Code plug-in – continued

- Implement the method:


```
#import "HelloWorldPlugin.h"
@implementation HelloWorldPlugin
- (void)sayHello:(CDVInvokedUrlCommand*)command{
    NSString *responseString =
        [NSString stringWithFormat:@"Hello World, %@", [command.arguments objectAtIndex:0]];
    CDVPluginResult *pluginResult =
        [CDVPluginResult resultWithStatus:CDVCommandStatus_OK messageAsString:responseString];
    [self.commandDelegate sendPluginResult:pluginResult callbackId:command.callbackId];
}
@end
```

The `command` argument contains references to the parameters that are sent from JavaScript and callbacks.

Implementing an Objective-C Code plug-in – continued

- Implement the method:

```
#import "HelloWorldPlugin.h"
@implementation HelloWorldPlugin
- (void)sayHello:(CDVInvokedUrlCommand*)command{
    NSString *responseString =
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    [self.commandDelegate sendPluginResult:pluginResult callbackId:command.callbackId];
}
@end
```



Use it to retrieve the parameters that are sent from JavaScript.

Implementing an Objective-C Code plug-in – continued

- Implement the method:

```
#import "HelloWorldPlugin.h"

@implementation HelloWorldPlugin

- (void)sayHello:(CDVInvokedUrlCommand*)command{

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    CDVPluginResult *pluginResult =
        [CDVPluginResult resultWithStatus:CDVCommandStatus_OK messageAsString:responseString];

    [self.commandDelegate sendPluginResult:pluginResult callbackId:command.callbackId];
}

@end
```



The `pluginResult` object is created with data retrieved from JavaScript. The `CDVCommandStatus` parameter defines whether the plug-in call was successful or not.

Implementing an Objective-C Code plug-in – continued

- Implement the method:

```
#import "HelloWorldPlugin.h"
@implementation HelloWorldPlugin
- (void)sayHello:(CDVInvokedUrlCommand*)command
{
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        [CDVPluginResult resultWithStatus:CDVCommandStatus_OK messageAsString:responseString];

    [self.commandDelegate sendPluginResult:pluginResult callbackId:command.callbackId];
}
@end
```

The `sendPluginResult` method is used to return a response back to JavaScript (invoke callback).



End Result

- 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>



Important

- If you add existing Cordova plug-ins instead of creating your own plug-ins, make sure to place their `.m` and `.h` files in the **Classes** folder of the Xcode project.
- If you place these `.m` and `.h` files only in the `iphone\native\classes` folder in Eclipse, they will not be referenced in the Xcode project.

Check yourself questions

- 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 a Cordova plug-in?
 - When you want to implement an application in the native code because you are not familiar with JavaScript.
 - When you want your application to look more like a native application.
 - When you want to gain access to OS APIs that you cannot access within the web container.
 - When you need to retrieve data from a remote server.
- What are the mandatory components of a Cordova plug-in?
 - A native class that implements the required functionality. After it is declared in the `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. Native classes are already provided by IBM Worklight.

Check yourself questions

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