Integrating server-generated pages in hybrid applications

 Download MobileFirst project (https://github.com/MobileFirst-Platform-Developer-Center/IncludeExternalPages)

This tutorial covers the following topics:

- Overview
- Java implementation
- JavaScript implementation
- Sample application

Overview

Many enterprises today decide to develop their own customer or employee-facing mobile applications.

Some of those companies already have mobile-facing websites (mobile web).

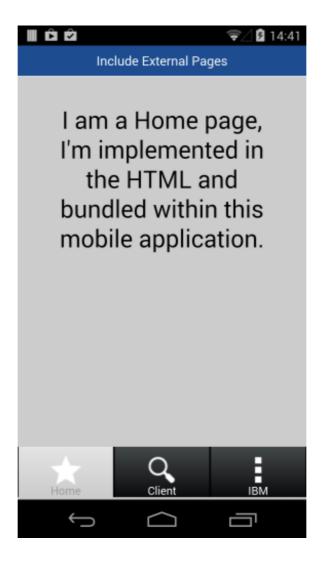
Such companies must make an important decision:

- Should all the mobile web features be implemented from scratch in the mobile application, which is great from a user experience perspective, but very time- and money-consuming?
- Should the mobile application contain only new features with old ones still accessible by a mobile browser, which is easier to implement but not great in terms of user experience?

The **WebViewOverlay** approach allows the reuse and integration of existing mobile websites within a mobile application.

Navigation is smooth and seamless between components that are internal in the mobile application and the external content on the external mobile website.

Web resources that are bundled inside the application



(http://developer.ibm.com/mobilefirstplatform/wp-content/uploads/sites/32/2014/07/10_07_bundled_resources.png)

External web content



(http://developer.ibm.com/mobilefirstplatform/wp-content/uploads/sites/32/2014/07/10_07_external_content.png)

This tutorial demonstrates an application implementation for the Android environment. The application contains three tab items. The first two tabs contain internal content. The third tab shows an external IBM mobile website.







First and second tabs contain internal web resources

Third tab looks like another application page

But technically, it contains an extra WebView component on top of it

(http://developer.ibm.com/mobilefirstplatform/wp-content/uploads/sites/32/2014/07/10_07_3d-phones.png)

 $\textbf{WebViewOverlay} \ \text{is implemented through Apache Cordova plug-ins.}$

Developers can easily create their own protocol between internal web components and the **WebViewOverlay** control. Use the provided MobileFirst project to understand the concepts of **WebViewOverlay**.

Java implementation

Implementing the webViewOverlay

In Java, the sample implements the page integration as follows:

1. In the application main class, a webView0verlay object is declared to display the external content. Static references are used for simplicity.

[code lang="java"]

public class IncludeExternalPages extends CordovaActivity implements

WLInitWebFrameworkListener {

private static WebView webViewOverlay;

public static Activity thisapp;

2. The object is created, its layout properties are set, and it is added as a view to the root element. It is invisible initially. The setMargins method positions the webView0verlay component in the screen.

Note: Android 4.4 introduces a new version of WebView that is based on Chromium and affects

Note: Android 4.4 introduces a new version of WebView that is based on Chromium and affects the WebView margins. For more information about this issue, seeMigrating to WebView in Android 4.4 (http://developer.android.com/guide/webapps/migrating.html).

```
[code lang="java" highlight="13,14,15,16,17,18,19,20,21,22"]
public void onInitWebFrameworkComplete(WLInitWebFrameworkResult result){
if (result.getStatusCode() == WLInitWebFrameworkResult.SUCCESS) {
super.loadUrl(WL.getInstance().getMainHtmlFilePath());
thisapp = this;
WebViewClient webViewClient = new WebViewClient() {
@Override
public boolean shouldOverrideUrlLoading(WebView view, String url) {
view.loadUrl(url);
return true;
}
};
webViewOverlay = new WebView(this);
webViewOverlay.setVisibility(View.INVISIBLE);
webViewOverlay.setWebViewClient(webViewClient);
RelativeLayoutParams webViewOverlayLayoutParams = new
RelativeLayout.LayoutParams(
RelativeLayout.LayoutParams.MATCH_PARENT,
RelativeLayout.LayoutParams.MATCH_PARENT);
webViewOverlayLayoutParams.setMargins(0, 120, 0, 196);
webViewOverlay.setLayoutParams(webViewOverlayLayoutParams);
webViewOverlay.getSettings().setJavaScriptEnabled(true);
[/code]
```

- 3. A RelativeLayout object is created.
 - The RelativeLayout object works as a root layout.
 - The current root view is removed from its original parent. Instead, the root and webViewOverlay objects are added to the rootRelativeLayout object.
 - The content view is set to rootRelativeLayout.

```
[code lang="java" highlight="5,6,7,8,9,10"]
public void onInitWebFrameworkComplete(WLInitWebFrameworkResult result){
...
webViewOverlay.getSettings().setJavaScriptEnabled(true);
RelativeLayout rootRelativeLayout = new RelativeLayout(this);
```

```
((FrameLayout)root.getParent()).removeAllViews();
rootRelativeLayout.addView(root);
rootRelativeLayout.addView(webViewOverlay);
setContentView(rootRelativeLayout);
[/code]
```

Implementing the Java code of the Cordova plug-in

} else if (action.equals(ACTION_CLOSE_WEBVIEWOVERLAY)) {

```
1. In a new class, WebViewOverlayPlugin.java, the actions that the plug-in supports are declared.
  [code lang="java"]
  public class WebViewOverlayPlugin extends CordovaPlugin {
  private final String ACTION_OPEN_URL = "open";
  private final String ACTION CLOSE WEBVIEWOVERLAY = "close";
  [/code]
2. If an open request is received from the web part of the application, the external content is loaded and
  makes the webViewOverlay visible.
  [code lang="java"]
  public class WebViewOverlayPlugin extends CordovaPlugin {
  @Override
  public boolean execute(String action, JSONArray args, CallbackContext callbackContext) {
  if (action.equals(ACTION_OPEN_URL)) {
  IncludeExternalPages.thisapp.runOnUiThread(new Runnable() {
  public void run() {
  IncludeExternalPages.clearWebViewOverlayHistory();
  IncludeExternalPages.loadWebViewOverlay("http://m.ibm.com/");
  IncludeExternalPages.setWebViewOverlayVisibility(View.VISIBLE);
  IncludeExternalPages.requestWebViewOverlayFocus();
  IncludeExternalPages.clearWebViewOverlayHistory();
  }
  });
  return true;
  [/code]
3. If a close request is received from the web part of the application, the webView0verlay is cleaned
  up and hidden.
  UI-related actions occur on a dedicated UI thread.
  [code lang="java"]
  public class WebViewOverlayPlugin extends CordovaPlugin {
```

```
IncludeExternalPages.thisapp.runOnUiThread(new Runnable() {
  public void run() {
  IncludeExternalPages.loadWebViewOverlayContent("");
  IncludeExternalPages.setWebViewOverlayVisibility(View.INVISIBLE);
  IncludeExternalPages.clearWebViewOverlayHistory();
  }
  });
  return true;
} else
return false;
}
[/code]
```

JavaScript implementation

In JavaScript, the sample implements the page integration as follows.

1. A WebViewOverlayPlugin object is created and populated with the required methods.

```
[code lang="javascript"]
function WebViewOverlayPlugin() {};
WebViewOverlayPlugin.prototype.open = function() {
  cordova.exec(null, null, 'WebViewOverlayPlugin', 'open', []);
};
WebViewOverlayPlugin.prototype.close = function() {
  cordova.exec(null, null, 'WebViewOverlayPlugin', 'close', []);
};
window.webViewOverlay = new WebViewOverlayPlugin();
[/code]
```

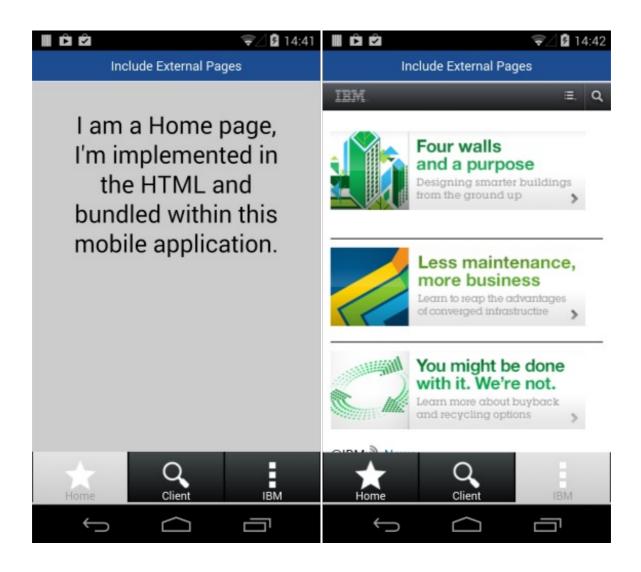
2. The clicked tab ID is analyzed and either shows or hides the webView0verlay accordingly. Loading external content can take time, so adding a Busy Indicator to improve the user experience should be considered.

```
[code lang="javascript"]
function tabClicked(id){
WL.Logger.debug("tabClicked >> id :: " + id);
$(".tab").addClass('hidden');
if (id=="3"){
  openWebViewOverlay();
} else {
$("#tab" + id).removeClass('hidden');
  closeWebViewOverlay();
}
}
function openWebViewOverlay(){
```

```
WL.Logger.debug("openWebViewOverlay");
window.webViewOverlay.open();
}
function closeWebViewOverlay(){
WL.Logger.debug("closeWebViewOverlay");
window.webViewOverlay.close();
}
[/code]
```

Sample application

Click to download (https://github.com/MobileFirst-Platform-Developer-Center/IncludeExternalPages) the MobileFirst project.



(http://developer.ibm.com/mobilefirstplatform/wp-content/uploads/sites/32/2014/07/10 07 end result.png)