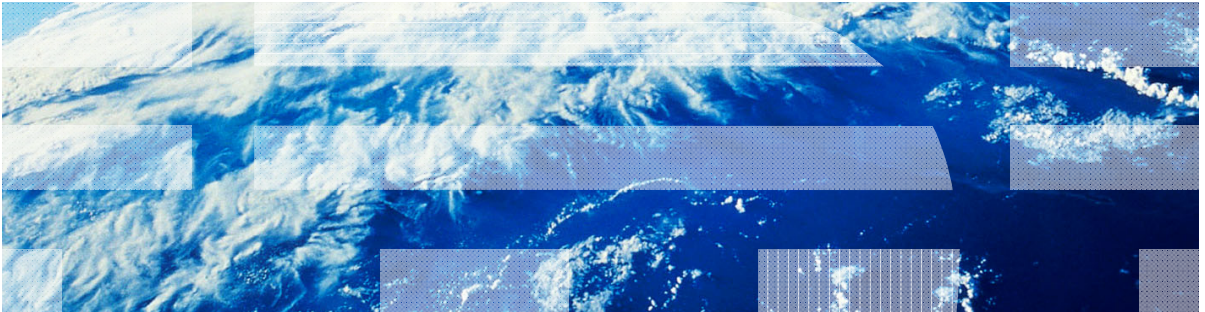


IBM Worklight V5.0.5 Getting Started

Module 31 – Shell Development Concepts



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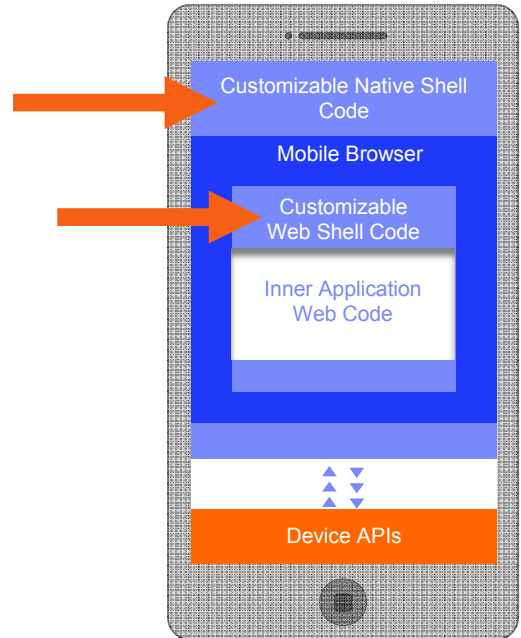
- Overview
- Creating a Shell Component
- Using a Shell Component in a test application
- Creating and using a Shell Bundle in an Inner application

Overview

- The main idea behind shell component methodology is to create two levels of development inside the organization
 - Developers skilled in native development implement native and web code bases that can be used as a starting point in one or more applications. For example:
 - Native functionality to be invoked from JavaScript (Cordova plug-ins)
 - Authentication framework
 - Security configuration
 - Web resources that are shared between applications, such as logotypes and themes
 - Developers who have less native development skills but more web expertise receive a ready-to-use shell component and use it as a wrapper to create the organization applications. For example:
 - Business logic
 - UI development
 - Data integration

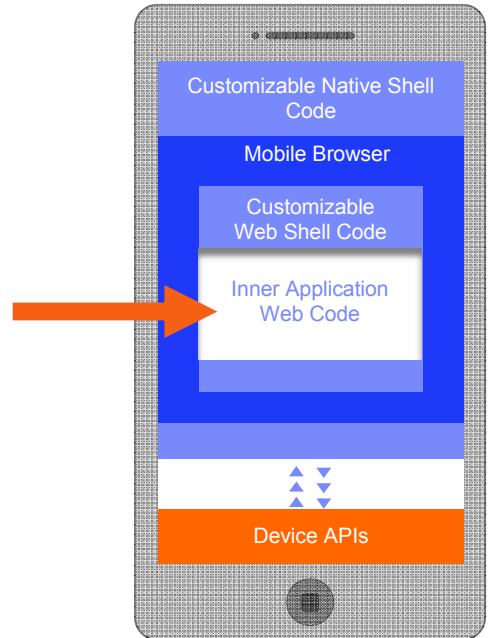
Overview – Architecture of the Shell-based Application

- **Shell component** – a component to be used by inner applications as a code base wrapper. Usually consists of native classes and shell-specific web resources that are going to be used in inner applications. The shell component is implemented by shell developers and sent to inner application developers to use.



Overview – Architecture of the Shell-based Application

- **Inner application** – web resources (HTML / JavaScript / CSS) that are run inside the shell component.
- **Test application** – The shell component is not executable by itself. After it is created, an inner application is automatically added to the project by Worklight® Studio. This application is used by the shell developer to test the shell component functionality.



Agenda

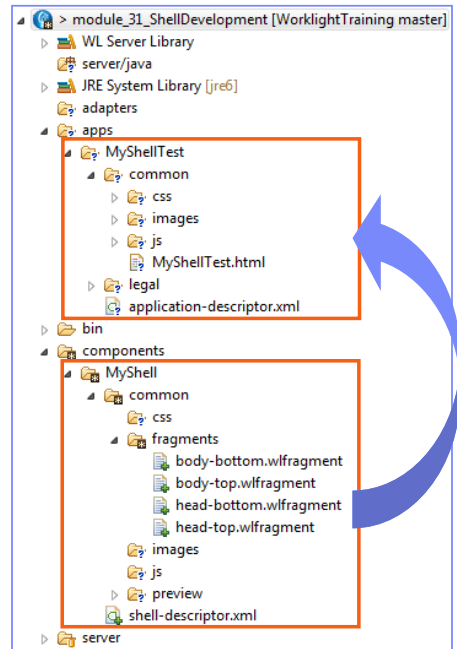
- Overview
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Creating a Shell Component

- This training module covers the basics of creating and using a shell component and an inner application.
- A prerequisite for successful completion of this and subsequent training modules is a solid knowledge of Worklight hybrid application development concepts.
- Make sure that you have a solid understanding of training modules 3.1, 3.2, 7.2, 8, and 9.
- This module covers shell development concepts, using a common folder.
- Following modules cover Android and iOS shell development.

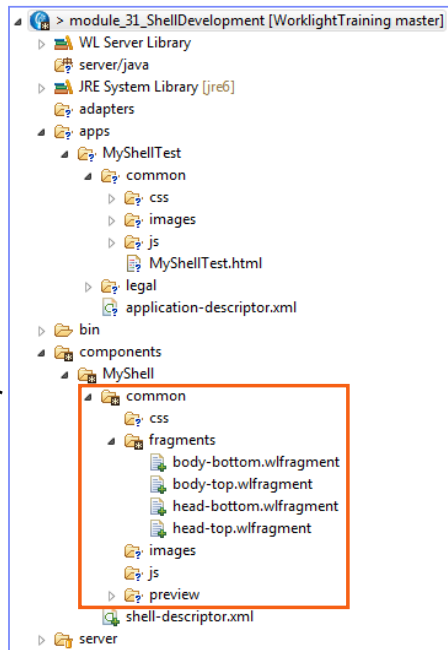
Creating a Shell Component

- A *shell component* is a building block that is used to create inner applications.
- Add a shell component to your project and name it **MyShell**.
- Note that the **MyShellTest** application was automatically created for you; this is a test application as described in the Overview section. You can use it to test and debug the shell component.



Creating a Shell Component

- The `common` folder of the shell component contains the following folders:
 - `css`, `images`, `js` – these folders contain web resources that are added automatically to inner applications at build time,
 - `fragments` – this folder contains html fragments that will be added to predefined locations in the main HTML file of the inner application.
 - `preview` – this folder can be used to implement stubs for simulating native functionality in the Worklight Console preview instead of receiving exceptions.



Creating a Shell Component

- The `shell-descriptor.xml` file contains shell component metadata and application-specific properties
- Application-specific properties that are set in the shell descriptor are used in all inner applications
- `shell-descriptor.xml` can be edited in either Design or Source mode

The screenshot shows the "Shell Descriptor Editor" window. It has a title bar with "shell-descriptor.xml" and a close button. The main area is divided into two panes: "Overview" and "Details".

Overview: Contains a "type filter text" input field. Below it is a list of components: "Shell 'MyShell'" (selected), "Android phones and tablets", and "iphone". To the right of the list are buttons: "Add...", "Remove", "Up", and "Down".

Details: Contains an "Id:" field with the value "MyShell" and a "Version:" field with the value "1.0". Below the "Id:" field is a warning: "The ID must be an alphanumeric string that starts with a letter. It may contain underscore ('_') characters. The ID must not be a reserved word in JavaScript. Once the shell Id has been defined it cannot be modified."

At the bottom of the window is a code editor showing the XML content of the descriptor:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!-- Licensed Materials - Property of IBM
      5725-G92 (C) Copyright IBM Corp. 2006, 2012. All Rights Reserved.
      US Government Users Restricted Rights - Use, duplication or
      disclosure restricted by GSA ADP Schedule Contract with IBM Corp. -->
<!-- Attribute "id" must be identical to shell component folder name -->
<shell xmlns="http://www.worklight.com/shell-descriptor" id="MyShell" platformVersion="5.0" version="1.0">
  <iphone version="1.0"/>
  <android version="1.0"/>
</shell>
```

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Using Shell Component in Test application

- Follow these instructions to develop a functioning shell component.
- Create a `myshell.js` file in the `MyShell\common\js` folder.
- Add the following function to it:

```
function sayHelloFromShell(){  
    alert("Hello from Shell");  
}
```

- Modify the `body-top.wlfragment` file and add the following lines to it.

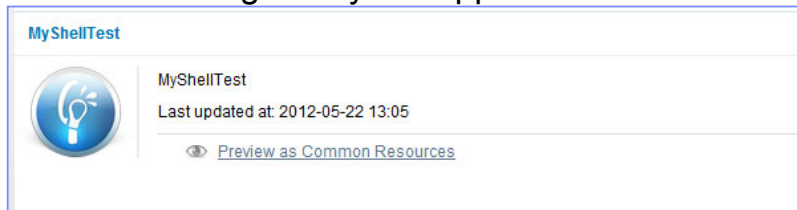
```
<h1>This is a header that will be visible in all inner applications that use this Shell</h1>  
<script src="js/myshell.js"></script>
```

Using Shell Component in Test application

- Modify the `MyShellTest.js` file in the `apps/MyShellTest/common/js` folder.
- Invoke the function that you previously added in the shell component.

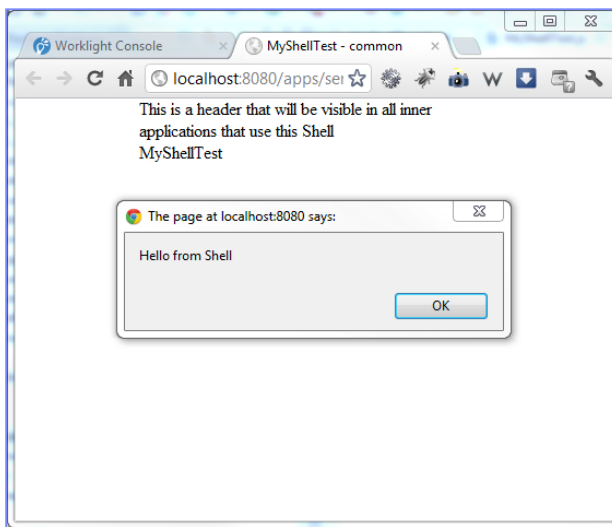
```
function wlCommonInit(){  
    sayHelloFromShell();  
}
```

- Note that the `sayHelloFromShell()` function is not a part of the inner application, but is from the shell component.
- Build and deploy the `MyShellTest` application.
- When you have built and deployed your application, you will find it in Worklight Console as a regular hybrid application.



Using Shell Component in Test application

- Preview your Test application. Note that it contains web resources from both the shell component and the inner application.



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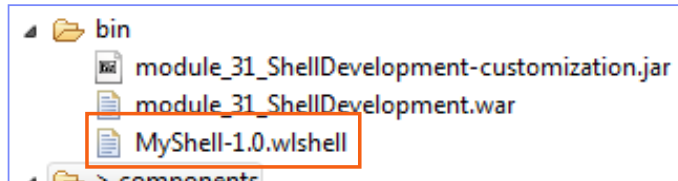
- Overview
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Creating and using a Shell Bundle

- When the shell developer builds a shell component a `.wshell` file is created in the project `bin\` folder. This file is called a *shell bundle* and can be sent to inner application developers to use.
- A shell developer working with a test application is not required to explicitly create a shell bundle. The test application references the shell component source code directly from the location that is specified in its `application-descriptor.xml` file
- However, when the shell developer wants to send the shell component to the inner application developer the need to create a shell bundle arises.

Creating and using a Shell Bundle

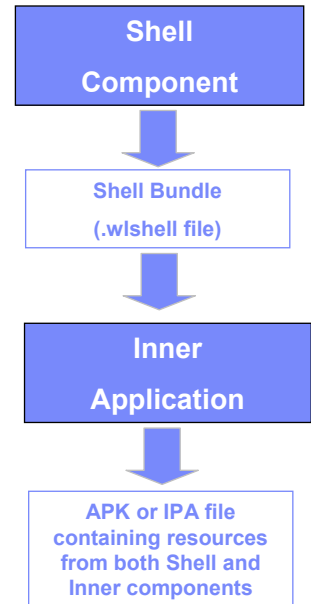
- To create a shell bundle, right-click a shell component folder and select **Run > Build Shell Component**.
- The `.wshell` file is created in the `bin\` folder of your project, as described previously.



- This file can be sent to inner application developers.

Creating and using a Shell Bundle

- The inner application developer must copy the shell bundle file to a Worklight project.
- When inner application developers create a new inner application, they must specify the location of a shell bundle file.
- If a new shell bundle file is received from shell component developers, inner application developers must replace the existing shell bundle file and rebuild their applications.



Next training modules

- Shell development for Android and iOS environments is covered in subsequent training modules.
- Ensure that you have a solid understanding of this training module before you move to the next ones.

Check yourself questions

- In which case should the shell development approach be taken?
 - The company has only two developers
 - The company wants to create a number of mobile applications sharing the common native code base and authentication mechanism
 - The company wants to create a native iOS and Android application, but its resources are limited
 - The company has distributed development teams that are situated on different continents but requiring to share the source code
- Which of the following should not be a part of the Shell component?
 - Authentication module
 - Native functionality JavaScript wrapper
 - Application UI components
 - Company logotype that should be shared between several applications
- When a shell developer completes developing the shell components, what is the correct way to distribute it to inner application developers?
 - Compressing the Worklight project and emailing it to inner application developers
 - Committing the Worklight project to a source control management system and telling inner application developers to use source code from it
 - The shell developer should not distribute the shell component to inner application developers. They should send their inner applications to the shell developer in order to build them
 - Sending the `wlshell` shell bundle file to inner application developers

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