HOW TO DESIGN AND BUILD MOBILE APPS FOR A VARIETY OF ANDROID DEVICE RESOLUTIONS
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>GETTING STARTED</td>
<td>3</td>
</tr>
<tr>
<td>Configuring your Mobile Device</td>
<td>3</td>
</tr>
<tr>
<td>Accessing MicroStrategy Web</td>
<td>4</td>
</tr>
<tr>
<td>UPDATING THE REVENUE ANALYSIS PAGE</td>
<td>9</td>
</tr>
<tr>
<td>UPDATING THE REGIONAL ANALYSIS PAGE</td>
<td>24</td>
</tr>
<tr>
<td>DEPLOY THE APP TO YOUR DEVICE(S)</td>
<td>40</td>
</tr>
</tbody>
</table>
INTRODUCTION

You are a BI Developer for an organization that is exploring the possibilities of mobile analytics. Last week, the executive team was given a preliminary look at the application your team has been developing, and they have decided to move ahead with the project. However, they decided they want to provide the application to regional directors and managers as well, positions that were not the original target audience of the POC application. This has changed a main project requirement: the POC application was developed specifically for the executive team, who are all provided tablets by the organization; other users will likely be accessing the application through their personal smartphones.

Your task is to update the existing POC application to address this new requirement, then test the resulting application on both a tablet and a smartphone to ensure that it functions as desired on all device types.

GETTING STARTED

To begin, we will configure our Android device to access our MicroStrategy Mobile Server. We will then be accessing MicroStrategy Web, where we will modify the existing POC application to meet these new requirements.

Configuring Your Mobile Device

1. Download the MicroStrategy Mobile for Android app from the Google Play Store on your Android phone/tablet.

2. Once the app has finished downloading, open the Chrome browser and type the configuration link below that matches the device type you are using:
   - Android Tablet: [http://tinyurl.com/yn3obstr](http://tinyurl.com/yn3obstr)
3. The MicroStrategy Mobile app will open.

**TIP:** MicroStrategy Mobile provides a one-step solution to configuring an app via the configuration link. You can create different configuration links for individual users or user groups. Users can also manually configure their app instead of using the configuration link.

**Accessing MicroStrategy Web**

1. Use the following link to access MicroStrategy Web (link is case-sensitive):
   
   https://env-79172.customer.cloud.microstrategy.com/MicroStrategy/servlet/mstrWeb

2. On the login screen that appears, enter the following credentials and click **Login**:
   
   Username: androidworkshop
   
   Password: androidworkshop
3. After logging in, click on the **Android Workshop** project to open it.

4. Inside the project, right-click on the folder named **1. Workshop Template** and click **Copy**.

5. In the menu that appears, navigate to the **3. User Folders** folder.
6. Click on the **New Folder** button to create a new folder. Name the folder your name in the following format: `<Last Name>, <First Name>` (e.g. “Smith, John”).

7. Click **OK** to create the folder.

8. In the Copy menu, change the name of the folder you are copying to **My Mobile Application**.
9. Click **OK** to copy the Workshop Template folder to the new folder you created.

10. After copying the folders, return to the home screen. Click on the **3. User Folders** folder.

![Image of folders]

11. Inside, you will find the folder (with your name) you just created. Click on that folder to enter it. Note that other users will be creating similar folders, so you will have to navigate to the folder with your name.

![Image of folder with name Smith, John]

12. You will see the My Mobile Application folder you just copied.

![Image of My Mobile Application folder]
UPDATING THE REVENUE ANALYSIS PAGE

The application we’re building is made up of two pages: “Revenue Analysis” and “Regional Analysis.” Because each page was initially built with tablets in mind, our task is to update each page to work on smartphones as well. We will accomplish this using Mobile Views, which allow us to create multiple display styles for a single document.

13. Click on the My Mobile Application folder to open it.

14. Inside, you will find two documents; hover over the Revenue Analysis document with your mouse and click Edit.

15. The Revenue Analysis document opens in Design Mode. Before we make any changes, let’s take a quick tour of the current version of the app.

The Revenue Analysis page lists our three primary KPIs across the top of the screen. Underneath, we have a grid with more detailed information, where the user can filter by Region using a link bar selector. At the bottom of the page, we have created a link bar that we will use for app navigation.
This document was built for tablets that are held in landscape orientation. A separate view of this page has been created for a smartphone, but no actual changes have been made to the objects yet. Let’s navigate to that view now.

16. At the top of the screen, in the Tools dropdown, select **Manage Views**.

Note: When the Manage Views menu launches, you can see that two views of the current document have been created: one for tablets and one for smartphones.

17. Switch to the smartphone view by selecting it as the current view, then click **OK**.
**TIP:** When a document with multiple views is launched from a mobile device, the device automatically detects which view will best fit its screen and open it. If you would like to modify the resolution settings in this menu to better fit your device(s), you can, but it is not necessary for this workshop.

17. The Smartphone view of the Revenue Analysis page will now open.
**TIP:** The Smartphone view contains all of the same objects as the Tablet view, but restructured to fit a phone held in portrait orientation. Views allow us to ensure that the overall user experience is optimized regardless of what device they use.

Note: We are also able to hide objects from one view, but leave them unaffected in others. For instance, let’s hide the selector from the smartphone view…

18. While in the smartphone view, find the **Region Selector** object. It’s located just beneath our three KPIs at the top of the document.

19. Right click on the selector, then select **Delete**.
20. A warning message will appear indicating that this object exists in multiple document views. Select No. (Do not check the box for “Remember my preference.”)

**TIP:** This option box appears when deleting an object from a document with multiple views. Clicking “Yes” will delete the object from all the views, while clicking “No” only deleted the object from the current view. This allows the app designers to independently maintain objects across a document with multiple views.

21. Run the current view in **Editable Mode** by clicking the icon in the toolbar to confirm that the selector no longer appears.
As seen above, the selector no longer appears in this document view.

**TIP:** In *Editable Mode*, we will see the various elements of the document populate with data. We can continue to modify the sizing, placement, and format of objects after they’ve been executed.

22. Return to **Design View** by clicking the icon in the toolbar.

23. Take a moment to save your document. Under the Document Home menu, click **Save**.
24. Return to the Tablet view: Under the Tools menu, click **Manage Views**.

25. Select the Tablet view, and click **OK**.
26. The Tablet View now reopens. We can now make two more updates to this document before moving on to the Regional Analysis page.

27. Select the existing grid object by clicking on it. Then, right click on it, and select Properties and Formatting.
28. The Properties and Formatting window opens. On the left-hand side of this window, under Properties, select **Widget**.

![Properties and Formatting window](image)

Note: Currently, no widget is selected, so the grid will display when the document is run.

29. In the Widget dropdown, navigate to Mobile, and then select **Heat Map**.

![Widget dropdown](image)

**TIP:** Widgets commonly serve as alternate ways to display data on a document outside of a typical grid or graph. Additionally, there are some widgets that are specifically designed for mobile devices, as well as some for use with other MicroStrategy platform functionalities like Transaction Services.
30. By default, the Heat Map widget is enabled for iPad, Android Tablet, and DHTML. This means that on tablets we will see a Heat Map, but on phones we will continue to see the grid instead.

**TIP:** Widgets can be specifically enabled for certain device types through this menu; this is another way of modifying the user experience depending on the device type used.

31. Click **OK** to close the Properties and Formatting Window with your changes applied.

32. If it is not already shown, click on the **Document Structure** tab at the bottom-left corner of the screen to show a list of all the objects on the current document.

33. Within the Body section of the document, find the object called **Region Link**.
34. Right-click on the Region Link image in the Document Structure tab and select **Edit Links**.
35. In the Edit Links menu, we can configure what happens when this image is clicked, i.e. we want to launch the Regional Analysis document. Under “When this link is clicked”, ensure Run this report or document is selected.

36. Click the ellipses (...) button to select which document will run.


38. Click OK. When run, tapping on the Regional Analysis button will now open that document.

40. Using the option in the toolbar, set the document size to **Fit Width**.

41. We’re now finished updating the Revenue Analysis document. Under Document Home, click **Save** again to save your changes.

42. After saving, return to your **My Mobile Application** folder by clicking the link in the folder path at the top of the screen.
UPDATING THE REGIONAL ANALYSIS PAGE

Now that the Revenue Analysis page is updated, we can move on to the Regional Analysis page.

43. From the My Mobile Application folder, hover over the Regional Analysis document and select Edit.

Note: The Regional Analysis document opens in Design Mode.

The Regional Analysis page currently contains a Map widget and an empty panel stack. Because of the limited screen space of a phone, we’ve decided to make the map full-screen. However, unlike before with the selector, we still want the
information that the panel stack will contain to be accessible. Because of this, we’re going to configure the panel stack to function as an information window.

Information windows are additional layers of data that can appear when certain objects on screen are interacted with. In this case, we’re going to have a line chart that displays Revenue by Year when a location on the map is selected.

To start, we need to put some content inside our panel stack.

44. Locate the empty panel stack, and click the **Add Content** button.

45. Within the menu that appears, hover over **Graph**, and then select **Vertical Line**.
46. In the confirmation window that appears, select **Yes** so that the line chart appears in all document views.

A line chart now appears inside the panel stack. By default, the graph zones appear so that we can add dataset objects to the chart.

47. In the bottom-left corner of the document editor, ensure that **Dataset Objects** is selected; this will allow us to add data to the line chart we’ve just created.

48. From your dataset, click and drag the **Year** attribute to the Categories drop zone of the line chart. Click and drag the **Revenue** metric to the Metrics drop zone. Your chart should look like the one below:
49. Close the Graph Zones view by clicking the icon on the top-left of the line chart, shown below:

50. After closing the graph zones view, right-click on the Line Chart and select **Properties and Formatting**.
51. In the Properties and Formatting window, under General, clear the check box for **Show Title Bar**.

52. Click **OK** to apply your changes.

53. Run the document in **Editable Mode** so we can modify the formatting of the graph we just created.

54. Right-click on the line chart and select **Format**.
55. In the Format window that appears, on the left-hand side of the window, select **Format**.

56. In the Format windows, two dropdown windows appear. Select the one on the right and choose **Legend**.

57. In the Legend formatting options, use the Position dropdown to move the legend position to **Bottom**.
58. In the list of options on the left-hand side, choose **Number**.

59. In the Number menu, use the Targets dropdown to select **Y Axis Values**.

60. Change the Y Axis number formatting to be a **Currency**, and set the decimal places to **0**.
61. Click **OK** to apply your changes. Take a moment to observe the changes.

62. Return to **Design Mode** using the button in the toolbar.

63. Take a moment to **Save** your progress.

Now that the panel stack contains a line chart, we want to enable the panel stack to be an information window.

64. In the bottom-left corner of the screen, return to the **Document Structure** tab.

65. Right-click on the **Panel Stack** and select **Properties and Formatting**.
66. In the Properties and Formatting window, under General, check the box for **Use as Information Window**.

67. Click **OK** to leave the Properties and Formatting window.

We’ve now enabled the panel stack to be an information window, which means it will be hidden from view when the document is run. We now need to enable the Map to display the information window when interacted with.
68. Locate the Map widget to the left of the Panel Stack; as we are currently in Design View, the Map widget displays similarly to a grid.

![Map widget in Design View](image)

69. Right-click on the column header for the **City** attribute. Select **Use as Selector**.

![Right-click on column header](image)

70. In the Configure Selector window, you'll see a list of Available Targets at the top. Move **Panel Stack** to the list on the right side to indicate it as a target.

71. At the bottom of the Configure Selector window, you'll see an Information Window dropdown; select **Panel Stack**.

Your Configure Selector window should resemble the image below:
72. Click **Create** to enable the information window.

   **Note:** There’s one last change to make on this document; now that the panel stack is an information window, it is hidden from view by default. This means currently half the tablet view will appear empty when the document is launched.

73. Expand the map widget horizontally so it covers the entirety of the Regional Analysis document.
Now, the map will appear full-screen, and the information window will appear when a city on the map is selected.

74. Once again, **Save** your work.

75. Return to the **Document Structure** tab in the bottom-left corner of the screen. Once your document objects are displaying on the left-hand side of the screen, find the image called **Revenue Link**.
76. Right-click on Revenue Link and select **Enable Links**.

77. Configure the link to launch the **1. Revenue Analysis** document, located in **Mobile Android Workshop > 3. User Folders > [Your User Folder] > My Mobile Application**.
78. Click **OK** to leave the links editor.

79. Ensure the **Document Home** option is selected at the top of the screen so that the appropriate toolbar appears underneath.

![Document Home Toolbar](image)

80. In the option in the toolbar, set the document size to **Fit Width**.

![Fit Width Option](image)

81. **Save** the Regional Analysis document.

We’re now ready to deploy our app to our mobile devices.

**DEPLOY THE APP TO YOUR DEVICE(S)**

Now that our documents are complete, we’re ready to test them on our mobile device.

Note that if you do not have both a tablet and a phone with you today, a tablet can simulate the phone view by switching orientation from portrait to landscape.

82. Open the MicroStrategy Mobile App on the device you previously configured to our Mobile Server. By default, you will be taken to the **3. User Folders** folder.
83. Navigate to the user folder you created at the beginning of the workshop.

84. From your user folder, navigate to the My Mobile Application folder.

85. Open the **Revenue Analysis** document to launch your app.
From here, you can explore all the functionality that we added to each of these documents. On the Revenue Analysis page, you will see the Regional selector only appears if you are on a tablet and viewing the document in landscape view. Similarly, you will only see the Heat Map widget on a tablet; on a phone, it renders as a grid. On the Regional Analysis page, you can trigger the information window we created to appear by interacting with points on
the map widget. The dimensions of the map will match the device type you use. You can navigate between the two documents using the button bar at the bottom of the screen.

**Note:** The two view modes in this workshop are designed for 16x9 screens in the portrait view, and 16x10 screens in the landscape view. Due to this, depending on the exact dimensions of your device, there may be some scrolling required to view the entirety of each view.

**CONCLUSION**

Congratulations! You have completed the How to design and build mobile apps for a variety of Android device resolutions. Check your MicroStrategy Mobile App in your Android tablets and phones to analyze performance, monitor regional analysis, and interact with the information window to get more insights into your data.

For further MicroStrategy Mobile information, including resources and certifications in the MicroStrategy Community, please visit:

https://www.microstrategy.com/us/services/education/