FlexCourse

for Adobe Flex Builder 3

Image gallery

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Table of Contents

Introduction

This document uses several symbols. Below is the explanation of these symbols:

- An arrow (➔) means instruction. This means you have to follow the step after it.

  Example: ➔ Click on the object with the right mouse button.

- A text between < and > refers to a key on the keyboard.

  Example: Press <Enter> to confirm the operation.

- A combination of more than one key will be written with the plus sign (+).

  Example: Press <Alt> + <F4> to exit the program.

- A button on the screen will be written between [and].

  Example: Click at [OK] to close the window.

- If there is an arrow (→) between two words, this means a click sequence in a menu.

  Example: Choose File → Save

- A new technique or additional information will be written inside a grey box.

  Example:

  This is how this technique works.

- Source code will be shown in a dark grey box. Please not that sometimes a single line of code will shown as two lines in the document because of the paper width.

  Example:

```
<mx:Canvas xmlns:mx="http://www.adobe.com/2006/mxml" horizontalScrollPolicy="off"
verticalScrollPolicy="off">
```

About the technique

Adobe Flex

With Adobe Flex it is possible to create Rich Internet Applications (RIA). These RIAs are running in a browser through the Adobe Flash plugin. This is great advantage since you do not need any new plugin to run these applications. Almost everyone using the internet has the Flash plugin installed.

Adobe Flex uses MXML files. These files contain the graphically formatting as well as AcrionScript code. Compiling the MXML files result in a SWF file which is a Flash file. These SWF files can, just as Flash files, be embedded in a HTML file.

Many examples of Adobe Flex can be found at:

http://flex.org/showcase/

Microsoft Silverlight

Microsoft created another platform for RIAs called Silverlight. The advantages over Adobe Flex are performance and its integration within Visual Studio.

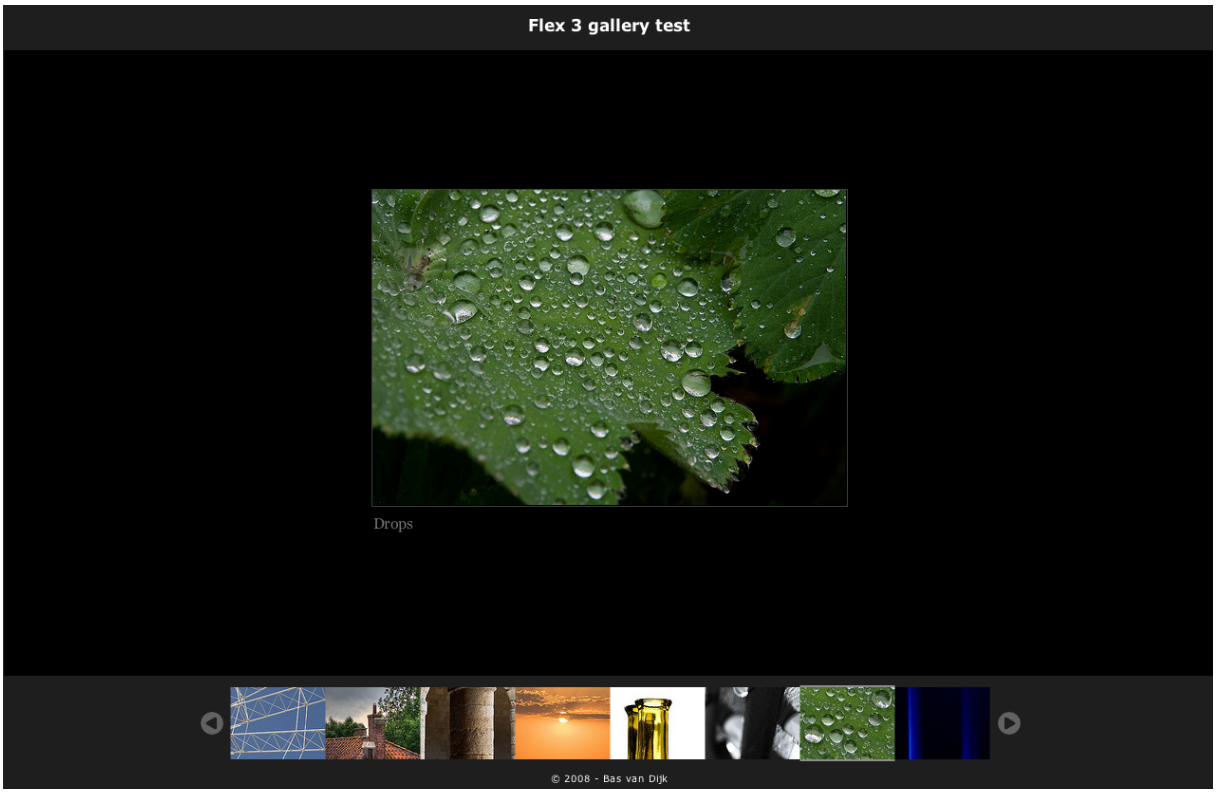
Some advantages are the cross platform usability. Linux is not (yet) supported. For Silverlight one need to install a separate Silverlight plugin, while most computers already have the Adobe Flash plugin installed.

Examples of Silverlight can be found at (in order to view you need the Silverlight plugin installed):

http://silverlight.net/Showcase/

About this FlexCourse

This FlexCourse is teaching you how to create a image gallery such as the one on the screenshot below.



On top, the gallery shows a gallery title. In the middle, there is a full size picture with a description underneath. At the bottom, there is a thumbnail list. When a thumbnail is clicked, the full size picture of this thumbnail is shown in the middle of the gallery. In order to navigate trough the thumbnails the little arrows at the end can be used. At the bottom of the gallery is a small footer for copyright notices.

Installing the Adobe Flex Builder IDE

In order to start with Adobe Flex, you need the Adobe Flex SDK, which is available for free. This SDK comes without an IDE. The IDE created by Adobe is called "Flex Builder". Flex Builder is based on Eclipse and provides autocompletion and visual designing your application. This tool costs about 210 Euro.

There are some free IDEs in the market like FlexDevelop (http://www.flashdevelop.org). In this tutorial we are going to use Adobe Flex Builder.

License

Students can get a educational license from Adobe for free. In order to get one, you should fill in the form at:

> https://freeriatools.adobe.com/student.php

They ask for a scanned copy of your student card. If you send one you receive your license within three days. In the meantime the 60 day trial version can be used.

Download

You can download Adobe Flex Builder from:

> http://www.adobe.com/cfusion/entitlement/index.cfm?e=flex3email

Flex Builder is available for both Mac and Windows.

Installing

> The SDK is already in the package. There is no need to download and install it separately!

➔ Download and install Flex Builder on your machine so you can get started with Adobe Flex development!

For your information

This tutorial has been tested on a MacBook Pro, 2.6Ghz with 4Gb RAM. It is not tested against Windows, but you should not have any difficulties following this tutorial.

On my machine the gallery runs very smoothly. If you experience problems with the smoothness of your gallery please see if your system is fast enough to run the Flex project.

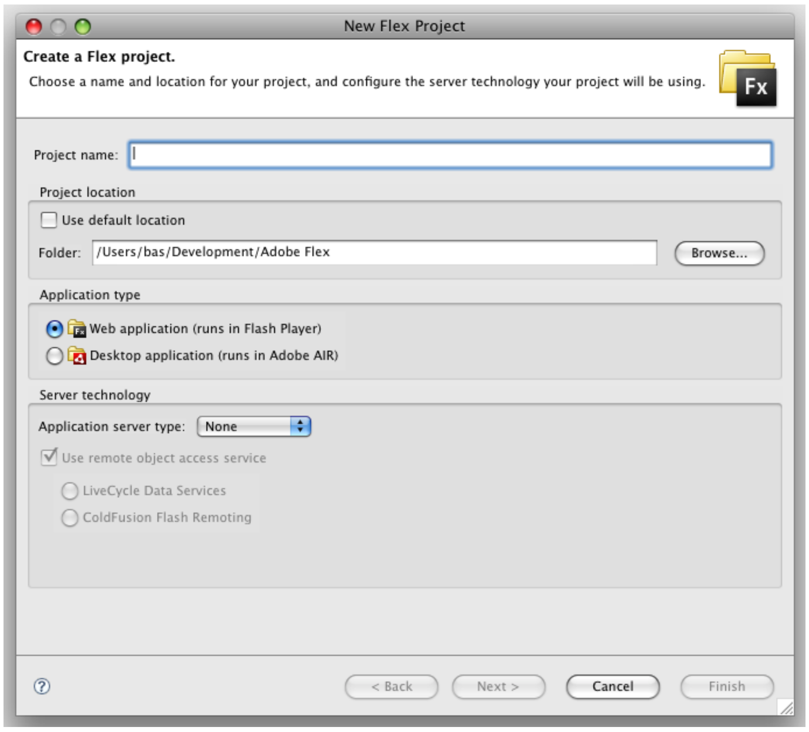
Creating the Flex gallery

Creating the project

In order to create our gallery we need a project to work in. This is why we are going to create our first Adobe Flex project.

- ➔ Start the Adobe Flex Builder.
- ➔ Choose File → New → Flex Project

A window pops up.



New Flex Project

Create a Flex project.

Choose a name and location for your project, and configure the server technology your project will be using.

Project name:

Project location

☐ Use default location

Folder: /Users/bas/Development/Adobe Flex

Application type

[✓ Web application (runs in Flash Player)]

Desktop application (runs in Adobe AIR)

Server technology

Application server type: None

☑ Use remote object access service

LiveCycle Data Services

ColdFusion Flash Remoting

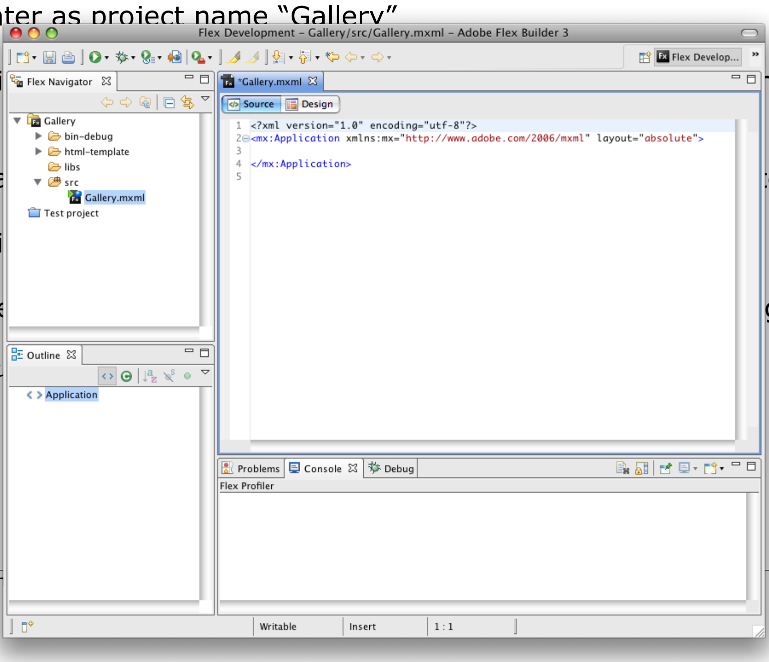
figure 1

In this window you can define all project properties like the name of the project and the location on your filesystem.

- ➔ Enter as project name "Gallery"
- ➔ Cli re you want the project to
- ➔ Ma ted.
- ➔ Cli

Your proje gure 2.

figu



Flex Development – Gallery/src/Gallery.mxml – Adobe Flex Builder 3

```
<?xml version="1.0" encoding="utf-8"?>
<mx:Application xmlns:mx="http://www.adobe.com/2006/mxml" layout="absolute">

</mx:Application>
```

On the left you see the project navigator. This tree shows all your files related to your Flex Project. Below is the project outline which shows the outline of your project. On the right you see the source code of your brand new project.

We are going to run our project for the first time.

➔ On the toolbar, click on the green "play" icon (figure 3).

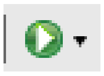


figure 3

> Instead of clicking on this button, you can also use <⌘> + <F11> or <Ctrl> + <F11> for Windows users.

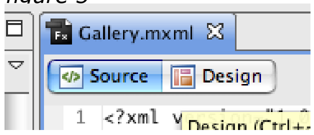
Your browser should display a grey/blue gradient (figure 4).

figure 4

Congratulations! You just created your very first Adobe Flex application! In the next section we are going to create the graphical basics of our image gallery.

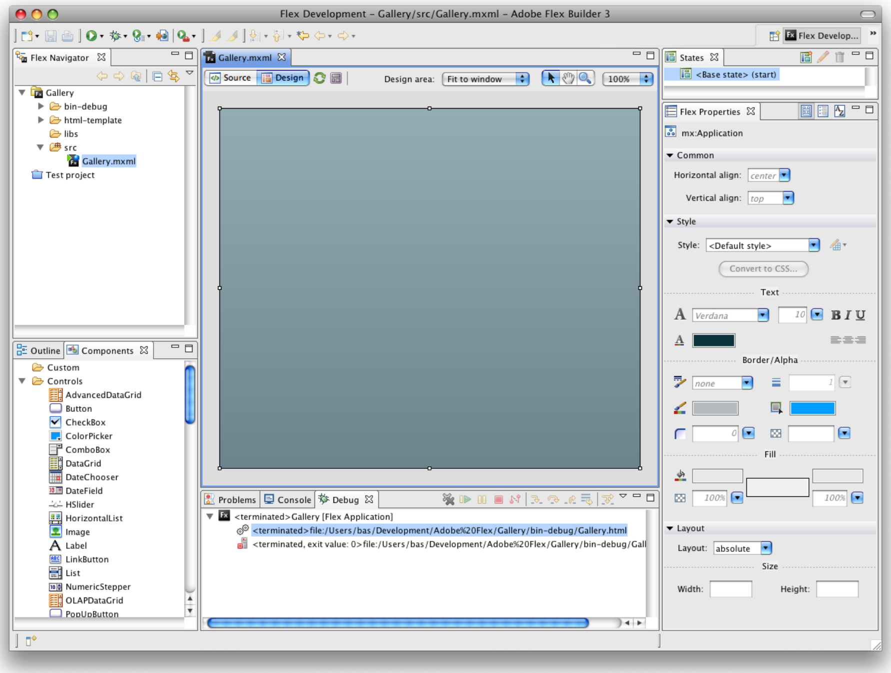
The gallery consists of a few rows: header, content, thumbnails, footer. The thumbnail row consists of three columns, the others consists of one column.

At the top of the screen are two buttons: source and design. The source button shows the source code of our MXML file. The design button shows the MXML code graphically (figure 5).

figure 5


➔ Click on [Design].

This shows our Gallery.mxml graphically. You see the same gradient (figure 6) that we saw before when we ran our application. This area shows what our application will look like when we run it.



```
<terminated>Gallery [Flex Application]
    <terminated>file:/Users/bas/Development/Adobe%20Flex/Gallery/bin-debug/Gallery.html
    <terminated, exit value: 0>file:/Users/bas/Development/Adobe%20Flex/Gallery/bin-debug/Gall
```

figure 6

On the bottom left is a “components” panel. This panel shows several GUI objects which we can use like a label, button, datefield, checkbox, image etc. Adobe has a component explorer at:

http://examples.adobe.com/flex3/componentexplorer/explorer.html

Here you can view all the components in action.

At the centre bottom we can see debug output and possible problems found in our source code.

The right part of our screen shows the several properties of our objects. Here you can adjust dimensions, colours and events. Adobe has an online tool called: Flex Style Explorer. With this tool you can online see the effect of a property. The Flex Style Explorer can be found at:

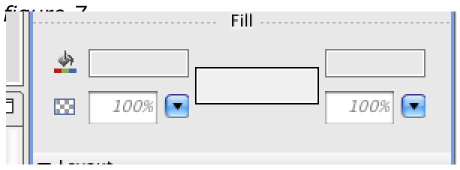
http://examples.adobe.com/flex3/consulting/styleexplorer/Flex3StyleExplorer.html

The layout basics

We are going to change the background colour of our application into black. A background colour consists of two colours. These two colours create a gradient. Since we want a solid black background we need to change both background colours into black.

➔ Click the left colour picker under the fill section and select black (figure 7).

figure 7

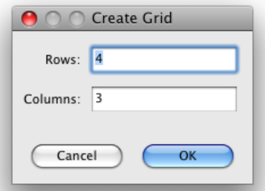


➔ Do the same for the right colour picker.

Our background colour is black, but we need some rows as well. The grid component can help us with this. This component splits a certain area in multiple (or single) rows and columns.

➔ In the component panel, navigate to the Layout section and drag the "grid" component into our application.

A menu appears:



Rows: 4
Columns: 3

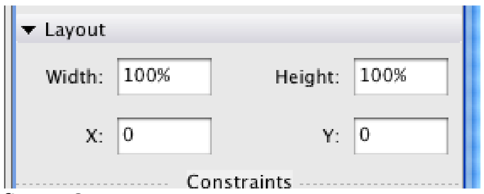
figure 7

➔ Set the rows to 4 and the columns to 3.

➔ Press [OK].

We now have a 4x3 grid on our application. But it does not cover the entire application. This because the width and height of the grid are not set.

➔ Under the layout properties, set the with and height to 100%. This cause our grid to cover the entire application.



Width: 100% Height: 100%
X: 0 Y: 0

figure 8

➔ To place grid in the top left of our application set the X and Y to 0.

Your screen should look like figure 9.

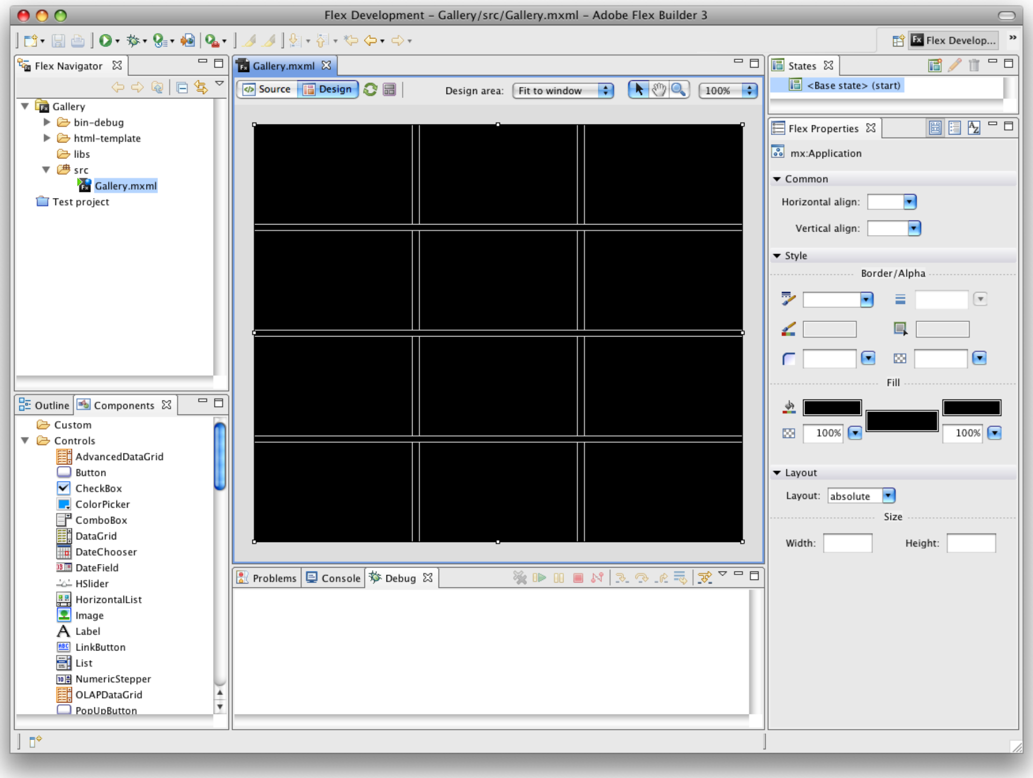


figure 9

We are now going to change each row's height. We are going to do this through the "outine panel".

➔ Click on the outline panel.

This outline panel shows our document tree. You should see four GridRows.

➔ Select the first GridRow.

➔ In the Flex properties panel set the height to 50 and press <Enter>.

We want our second GridRow to be as high as possible so this one stays at 100% height. We continue with the third one.

➔ Set the height of the third GridRow to 100.

➔ Set the height of the fourth GridRow to 20.

➔ Save your work by pressing <⌘> + <S> or <Ctrl> + <S> for Windows users.

Your grid should look like figure 10.

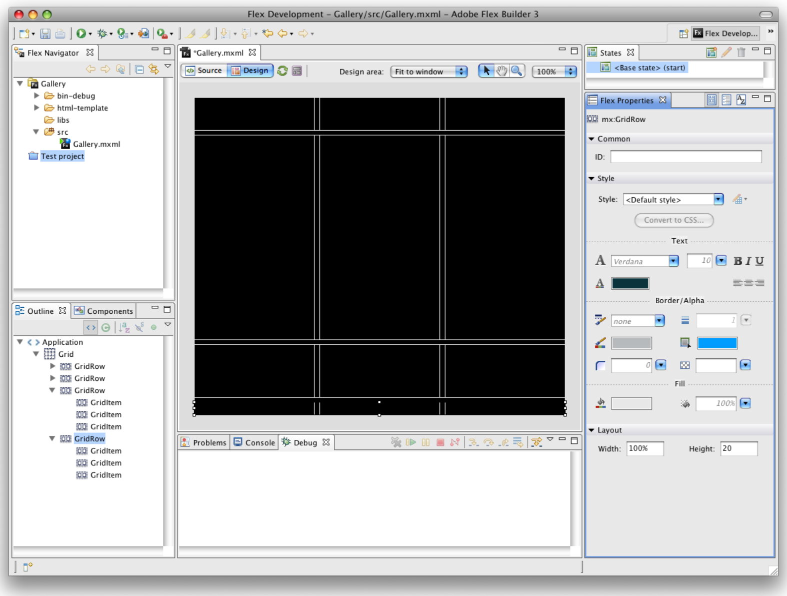


figure 10

All our rows consist of three columns. The only which needs three columns is the third one. We are going to merge the columns of the other rows by using the "colspan" property (you might recognise this property from HTML).

➔ Click on [Source] to view the source code.

Here you can see all the MXML definitions for our Grid. One row consists of three GridItems.

```
<mx:GridRow width="100%" height="50">
        <mx:GridItem width="100%" height="100%">
        </mx:GridItem>
        <mx:GridItem width="100%" height="100%">
        </mx:GridItem>
        <mx:GridItem width="100%" height="100%">
        </mx:GridItem>
</mx:GridRow>
```

Here you can see all the MXML definitions for our Grid. One row consists of three GridItems.

➔ For the top row, remove two GridItems and add `colspan="3"` to the GridItem left.

Your code should look like:

```
<mx:GridRow width="100%" height="50">
        <mx:GridItem width="100%" height="100%" colspan="3">
        </mx:GridItem>
</mx:GridRow>
```

➔ Add `colspan="3"` and remove the other two GridItems for the second and the fourth GridRow. Remember, NOT for the third GridRow!

There is some space between all our GridItems. To make these gaps disappear we need to set the horizontalGap and verticalGap properties for our grid.

➔ Add `horizontalGap` and `verticalGap` properties to the Grid tag.

The Grid code should look like:

```
<mx:Grid x="0" y="0" width="100%" height="100%" horizontalGap="0"
verticalGap="0">
```

➔ Switch to the design view.

Your layout should look like figure 11.

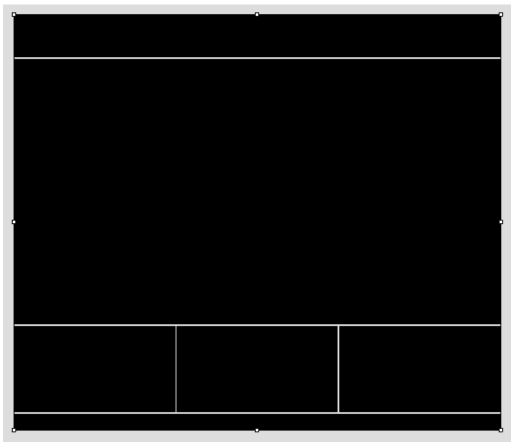


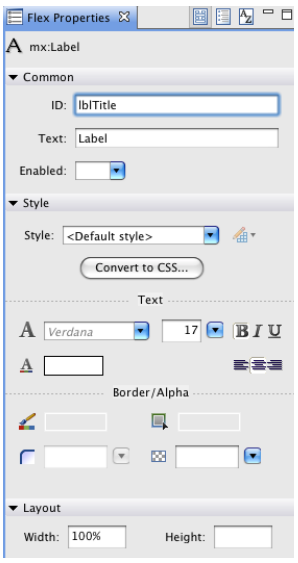
figure 11

We are now ready to add our component into each GridItem. We start with adding a Label component for the gallery title.

➔ From the component panel, drag the Label component and drop it on the top GridItem (when hovering over our GridItem the cursor changes into a green + sign).

➔ In the Flex Properties panel, set the following properties (as shown in figure 12):

ID:	*lblTitle*
width:	*100%*
font size:	*17*
font style:	*bold*
text-align:	*centre*
font-colour:	*white*


Flex Properties

mx:Label

Common

ID: lblTitle

Text: Label

Enabled:

Style

Style: <Default style>

Convert to CSS...

Text

Verdana 17

Border/Alpha

Layout

Width: 100% Height:

figure 12

The label is really close to the top of our application and not in the vertical middle of our GridItem.

- ➔ Click below our Label in the top GridItem.
- ➔ In the Flex Properties panel change the vertical align from “top” to “middle”.
- ➔ Add to the bottom GridItem another Label in the same way as we did for the title. But now with the following properties:

ID:	*lblFooter*
width:	*100%*
text-align:	*centre*
font-colour:	*white*

- ➔ In the Flex Properties panel change for the footer GridItem the vertical align from “top” to “middle” as well.
- ➔ Save your work by pressing <⌘> + <S> or <Ctrl> + <S> for Windows users.

The easy part is done. Now we are going to fill the second GridRow where our enlarged image will be displayed. This is a rather complicated construction.

Our enlarged image consists of an Image component and a Label component. We want these to be centred in the middle of the second GridRow. To accomplish this we need two nested Grid components; one to combine the Label and the Image, and one to centre it in our second GridRow.

Image 13 shows a schematic view. The red lines are Grid components, the blue once are GridItems.

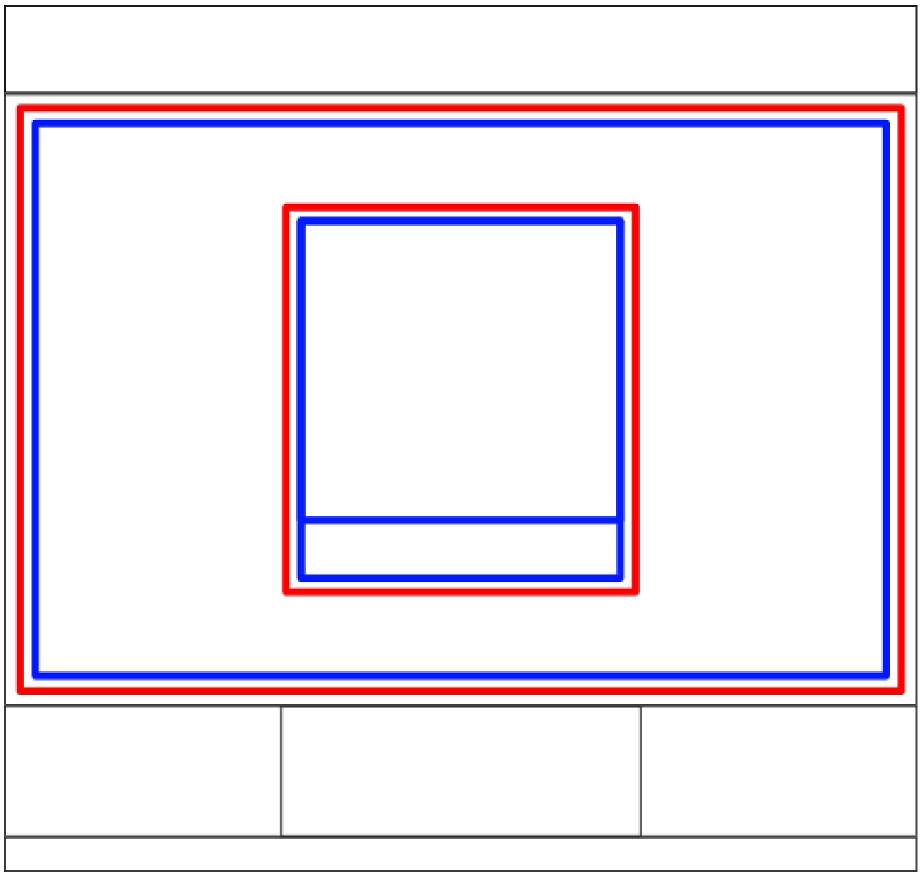


figure 13

We start with creating the outer Grid component. This Grid component has one Griditem inside which is 100% width and 100% height.

- ➔ Drag and drop a grid into the second GridRow of our application. Set as the number of rows and columns: 1.
- ➔ Make the grid 100% width and height.
- ➔ Click inside the new Grid to select the new Grid.
- ➔ Set in the Flex Properties panel the horizontal align to "center" and the vertical align to "middle".
- ➔ Drag a new Grid component into our previously created Grid. Give this the size of 1 column and 2 rows.
- ➔ Drag an Image component into the top part and give it the ID "imgMain".
- ➔ Drag a Label component into the bottom one and give it the ID "lblImageTitle".
- ➔ Change the Label text colour into white.

Your application should look like figure 14.

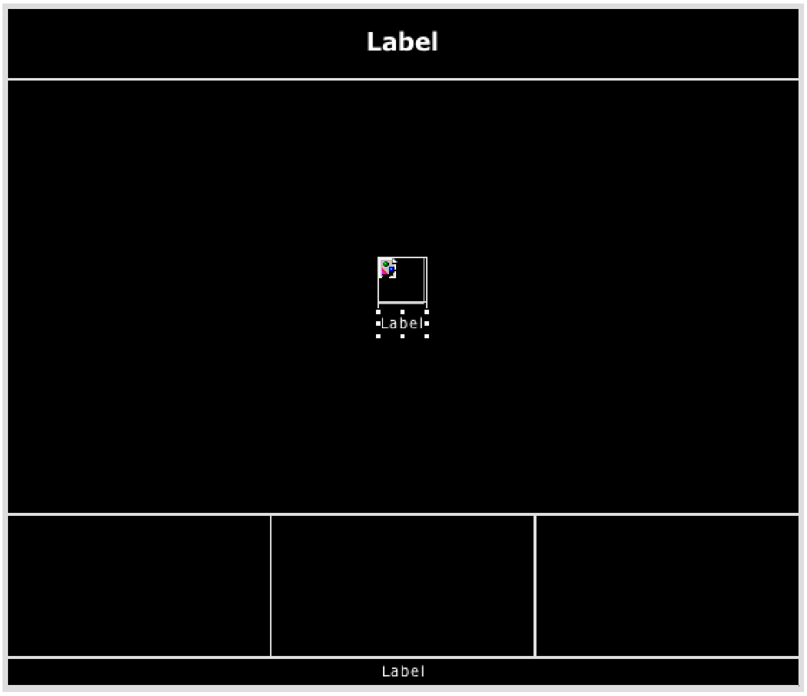


figure 14

The only missing part is our thumbnail navigator and the scroll buttons. This navigator has three GridItems. We start with creating the scroll buttons.

- ➔ Click inside the left GridItem and set the "Horizontal align" to "right".
- ➔ Set the "vertical align" to "middle".
- ➔ Drag an Image component into this GridItem and give it the ID "cmdScrollPrev".
- ➔ Drag a Spacer component between the Image and the right border of the GridItem so there is some space between the Image and the right border.
- ➔ Click inside the right GridItem and set the "vertical align" to "middle".
- ➔ Drag an Image component into this GridItem and give it the ID "cmdScrollNext".
- ➔ Drag a Spacer component between the Image and the left border of the GridItem so there is some space between the Image and the left border.
- ➔ Click inside the centre GridItem and set the "vertical align" to "middle".
- ➔ Drag a Horizontal List component into this GridItem and set the following properties:

ID:	*lstThumbnails*
width:	*800*
height:	*80*
column width:	*100*

The buttons do not have a image yet. We are going to import existing images into our project.

Importing images

- ➔ Right click on the "src" folder in the Flex Navigator and choose New → Folder.
- ➔ Name the folder "img" and click [OK].
- ➔ Right click on the "img" folder and choose Import.
- ➔ Choose under "General" for "File System" and click [Next >].
- ➔ Click on [Browse...] and navigate to the folder of this tutorial.
- ➔ Click in the left part of your dialog on your tutorial folder.
- ➔ On the right part of your dialog check "next.png" and "prev.png".
- ➔ Click [Finish].

Now you have imported two images from your file system.

- ➔ Select the left image which we gave the ID "cmdScrollPrev".
- ➔ Type as the "Source" property img/prev.png and press [Enter].
- ➔ Do the same with the "cmdScrollNext" image and set the source for this image to img/next.png.
- ➔ Save your work by pressing <⌘> + <S> or <Ctrl> + <S> for Windows users.

It is time to define our images. Our images are stored in an array. This array contains the locations and the descriptions of our images.

- ➔ Create inside our img folder a folder called "photos".
- ➔ Inside this folder, import about 12 images. You can do this just the way as we imported the prev.png and next.png.

> Instead of importing existing images into a folder you can also drag the files from your Finder window (Explorer window for Windows users) into the project folder.

Working with arrays

- ➔ Switch to the source view.

At the bottom of our source code, we are going to add some new code between `</mx:Grid>` and `</mx:Application>`. In this code we define our array of images.

➔ Type the following code at the position specified above:

```
      <mx:Array id="arrImages">
        <mx:Object lbl="Flower" src="img/flower.jpg" />
        <mx:Object lbl="Sunset" src="img/sunset.jpg" />
      </mx:Array>
```

This code defines an array which is identified by the name "arrImages". The array contains items from the type Object. Each object has two properties: lbl and src. Lbl is used for the image description. Src is used for the location of the image.

➔ Inside the array create an object for every image you imported.

Your code should look like:

```
              </mx:GridRow>
      </mx:Grid>

      <mx:Array id="arrImages">
        <mx:Object lbl="Flower" src="img/flower.jpg" />
        <mx:Object lbl="Church" src="img/church.jpg" />
              ...
        <mx:Object lbl="Car" src="img/car.jpg" />
        <mx:Object lbl="Flower macro" src="img/flower2.jpg" />
    </mx:Array>

</mx:Application>
```

The "…" marks a cut in the source to save space. In the real code twelve images are defined.

We would like to have our HorizontalList component to read this image information and create our thumbnails. Unfortunately our HorizontalList does not know how to render each item. Below I explain how this can be defined.

The HorizontalList uses a so called "ItemRenderer" for creating items. We define an item template. This is a separate MXML file in which we define how each item should look.

➔ Right click on the src folder and choose New → MXML component.

➔ Specify as filename "HorizontalListItemRenderer.mxml" and click [Finish].

The source of HorizontalListItemRenderer.mxml will be opened automatically.

➔ Switch to the design view.

You see a white rectangle, which is the Canvas on which we base our Item.

➔ Drag a grid with one column and one row to the Canvas and set the following properties width and height to 100%

➔ Click inside the right GridItem and set the "vertical align" to "middle".

➔ Drag a new image inside the Grid.

➔ Set for the image in the Flex Properties panel the value "{data.src}".

When the HorizontalList items are rendered, the {data.src} will be replaced with the data for each specific item.

➔ Save your work by pressing <⌘> + <S> or <Ctrl> + <S> for Windows users.

We are going back to our created Gallery.mxml.

➔ In the source view click in the Outline panel on the HorizontalList.

The source code line of our HorizontalList will be highlighted. This list does not yet know what ItemRenderer to use and where it can fetch its data.

➔ Add the property `dataProvider="{arrImages}"` , `itemRenderer="HorizontalListItemRenderer"` and `rowHeight="80"` to the HorizontalList so your code looks like:

```
<mx:HorizontalList height="80" width="800" columnWidth="100"
rowHeight="80" dataProvider="{arrImages}"
itemRenderer="HorizontalListItemRenderer"
horizontalScrollPolicy="off" verticalScrollPolicy="off"
borderStyle="none" id="lstThumbnails">
```

The dataprovider defines our Array with the images and descriptions. The itemRenderer defines our created item template. The rowHeight is for later use to make the row exactly fit the HorizontalList.

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application.

Your application should look like figure 15.

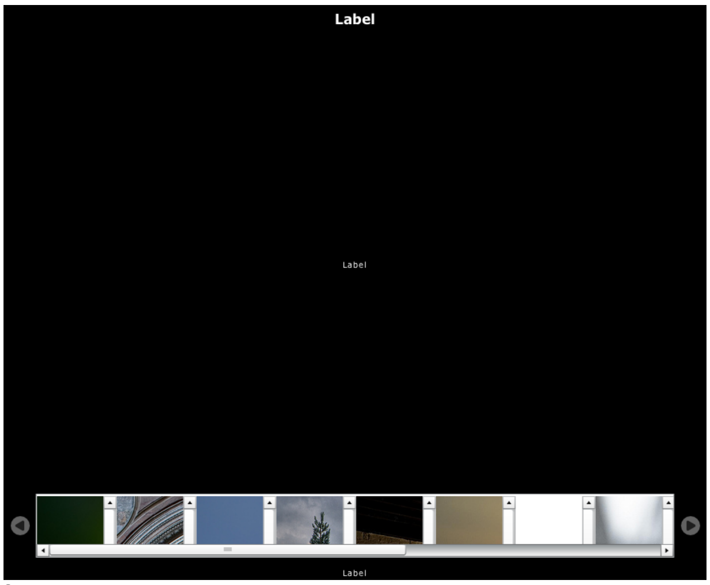


figure 15

This is not quite how we want the scrollbars to look. You also see our thumbnails showing the top left of our image. It would be nicer if we saw the centre of our pictures. In the next part we are going to fix these issues.

First we start with removing the scrollbars from our thumbnail images. Items which have a scrollbar use the scrollbarpolicy property to define if a scrollbar is allowed. Since there are horizontal and vertical scrollbars the properties are `horizontalScrollPolicy` and `verticalScrollPolicy`.

- ➔ Open HorizontalListItemRenderer.mxml in the source view.
- ➔ Add the properties `horizontalScrollPolicy="off"` and `verticalScrollPolicy="off"` to the Canvas component.

Your Canvas code should look like:

```
<mx:Canvas xmlns:mx="http://www.adobe.com/2006/mxml"
horizontalScrollPolicy="off" verticalScrollPolicy="off">
```

- ➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application.

You should see no scrollbars anymore on the thumbnails.

- ➔ Add both scroll properties to the HorizontalList of our Gallery.mxml file to remove the scrollbars from the HorizontalList component as well.
- ➔ Switch to the design view and set the Border style to “none”.
- ➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application.

Your thumbnail HorizontalList should look like figure 16.

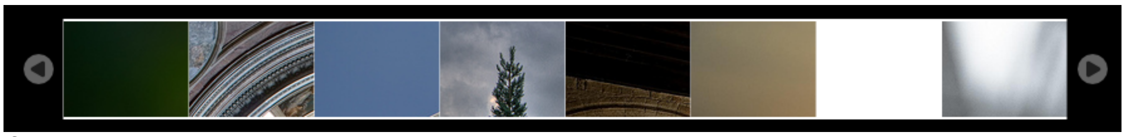


figure 16

The images are still not centred. We are going to change this by adding the `horizontalCenter` and `verticalCenter` parameter. The `horizontalCenter` and `verticalCenter` property specifies the distance between the component's centre point and the container centre.

- ➔ Open HorizontalListItemRenderer.mxml in the source view.
- ➔ Add the properties `horizontalCenter="0"` and `verticalCenter="0"` to your Grid Component.

Your Grid code should look like:

```
<mx:Grid width="100%" height="100%" horizontalCenter="0"
verticalCenter="0">
```

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application.

Your thumbnail HorizontalList should look like figure 17.

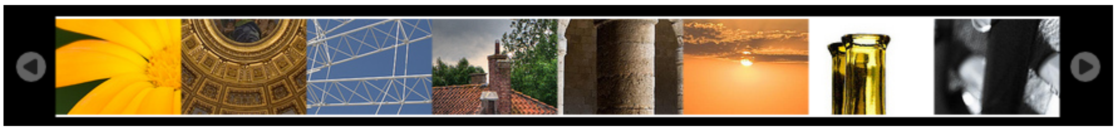


figure 17

When our application is loaded we want an initialisation function to be executed. In this function we can set our gallery title and footer text. The code we used till now was just MXML which defined our Graphical User Interface (GUI) and our array.

The functional code which we for example going to the next slide, set the title, handle click events etc. are using is called AcrionScript.

➔ Open the Gallery.mxml in the source code view.

➔ Add the `creationComplete="initSlideshow()"` property to our Application component. This means we want `initSlideshow()` to be executed when the application is created.

Some code lines are getting very large. Our application component for example consists of a single line which is very large:

```
<mx:Application xmlns:mx="http://www.adobe.com/2006/mxml"
layout="absolute" backgroundGradientAlphas="[1.0, 1.0]"
backgroundGradientColors="[#000000, #000000]"
creationComplete="initSlideshow()">
```

Instead it is allowed to spread the code over multiple lines, like:

```
<mx:Application
      xmlns:mx="http://www.adobe.com/2006/mxml"
      layout="absolute"
      backgroundGradientAlphas="[1.0, 1.0]"
      backgroundGradientColors="[#000000, #000000]"
      creationComplete="initSlideshow()"
      >
```

This can improve the readability of your source code.

We have not yet defined the place to put our ActionScript code.

➔ Scroll to the bottom of Gallery.mxml.

➔ Between `</mx:Array>` and `</mx:Application>` add the following code:

```
    <mx:Script>
      <![CDATA[

            private function initSlideshow():void {
                  if (arrImages.length > 0) {
                        lblFooter.text = "© Bas van Dijk - 2008";
                        lblTitle.text = "Flex 3 gallery test";
                  }
            }

      ]]>
  </mx:Script>
```

On the first line we see `function initSlideshow():void`. ActionScript is a strongly typed language so we need to define the datatype of our functions and variabled. In this case our function is of the type `void`.

With `if (arrImages.length > 0)` we check if our array contains any images. If so we set the text properties of both lblFooter and lblTitle.

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application.

The title and footer should be set to the text you typed in your source. The next step is making the scrollbuttons work in our HorizontalList for the thumbnails. First we need to explain the meaning of the `horizontalScrollPosition`.

Imagine we have five images and our list displays a maximum of three images. The `horizontalScrollPosition` works as follows:

Displayed imagnumber on each position			
thumbnail 1	**thumbnail 2**	**thumbnail 3**	**horizontalScrollPosition**
image 1	image 2	image 3	1
image 2	image 3	image 4	2
image 3	image 4	image 5	3

The first click

So every time we want to scroll our HorizontalList one position further we need to increase the `horizontalScrollPosition` by one. If we want to scroll back we need to decrease it with one.

➔ After our `initSlideshow` function insert the following code:

```
    private function cmdScrollNext_click():void {

            var newPos:int = lstThumbnails.horizontalScrollPosition + 1;
            if (newPos <= lstThumbnails.maxHorizontalScrollPosition) {
                    lstThumbnails.horizontalScrollPosition = newPos;
            }

            checkScroll();
    }
```

This function is the click function for cmdScrollNext therefore it is called `cmdScrollNext`. First we define a new variable called `newPos`. This variable is of the type `int`. In this variable we store our current `horizontalScrollPosition + 1`. If this position is greater than or equal to the maximum possible scroll position we set the new scroll position. The `checkScroll` is a function which we will add later.

➔ After our `cmdScrollNext` function add the following code:

```
    private function cmdScrollPrev_click():void {

            var newPos:int = lstThumbnails.horizontalScrollPosition - 1;
            if (newPos >= 0) {
                    lstThumbnails.horizontalScrollPosition = newPos;
            }

            checkScroll();
    }
```

This function does exactly the opposite of the `cmdScrollNext_click` function and is pretty much self explaining.

We continue with a more complicated function: `checkScroll`. When we are in the first scroll position, it is not possible to scroll back anymore. The same goes if we are at the last scroll position, then we van not scroll any further.

What we want is to hide the next and previous scroll button if it is not possible to scroll in that direction. Each component has the property `visible`. This property can be `true` or `false`. We want to set these properties for our buttons according to the current scroll position.

➔ After our `cmdScrollPrevious` function add the following code:

```
private function checkScroll():void {

        if (lstThumbnails.horizontalScrollPosition == 0)
        {
                cmdScrollPrev.visible = false;
        } else {
                cmdScrollPrev.visible = true;
        }

        if (lstThumbnails.horizontalScrollPosition ==

                        lstThumbnails.maxHorizontalScrollPosition)
        {
                cmdScrollNext.visible = false;
        } else {
                cmdScrollNext.visible = true;

        }

}
```

This functions has two if statements. The first one is for the previous button the second for the next. For the previous button we check if the current `horizontalScrollPosition` is equal to 0. Which means it is as far as possible to the left. If so we hide the button, if not we show the button.

We do the same for the next button, but we check if the `maxHorizontalScrollPosition` is reached.

We have our functions now, but they are not yet bound to the two buttons. We are now going to make this connection.

- ➔ Find in your source code the `cmdScrollPrev` Image component and add the property `click="cmdScrollPrev_click()"`.

- ➔ Find the `cmdScrollNext` Image component as well and add the property `click="cmdScrollNext_click()"`.

Your code for `cmdScrollPrev` should look like:

```
<mx:Image id="cmdScrollPrev" source="img/prev.png"
click="cmdScrollPrev_click()" />
```

And for `cmdScrollNext` like:

```
<mx:Image id="cmdScrollNext" source="img/next.png"
click="cmdScrollNext_click()" />
```

The click events are bound now.

- Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and try the scroll buttons.

When the application is started you will notice that the previous scroll button is still visible. We are going to fix this.

- Add `checkScroll();` outside the if statement of our `initSlideshow` function. This will execute the `checkScroll` function when the application starts.

Now it is time to add the click functionality for our thumbnails so we can see the enlarged picture with the correct label.

- After our `checkScroll` function add the following code:

```
    private function lstThumbnails_itemClick(evt:ListEvent):void {
           imgMain.source = evt.itemRenderer.data.src;
           lblImageTitle.text = evt.itemRenderer.data.lbl;
    }
```

The first line asks the `itemRenderer` which item is clicked. From this item we ask the "src" property so we can set this source as the `imgMain` source. We do the same for the label but now with the label data from the `itemRenderer`.

The HorizontalList uses a special library for handling the events. We need to link to this library.

- Above our `initSlideshow` function add the code below to import the ListEvents. This line goes right under the `<![CDATA[` tag.

```
import mx.events.ListEvent;
```

In order to make the Click event work, we need to bind it.

- Find the HorizontalList in the source code and add the property `itemClick="lstThumbnails_itemClick(event);"` to bind the event.

Your HorizontalList code should look like:

```
<mx:HorizontalList
       height="80" width="800"
       columnWidth="100" rowHeight="80"
       dataProvider="{arrImages}"
       itemRenderer="HorizontalListItemRenderer"
       horizontalScrollPolicy="off"
       verticalScrollPolicy="off"
       borderStyle="none"
       id="lstThumbnails"
       itemClick="lstThumbnails_itemClick(event);">
</mx:HorizontalList>
```

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and try clicking on the thumbnails.

When clicked on a thumbnail your gallery should look like figure 18.

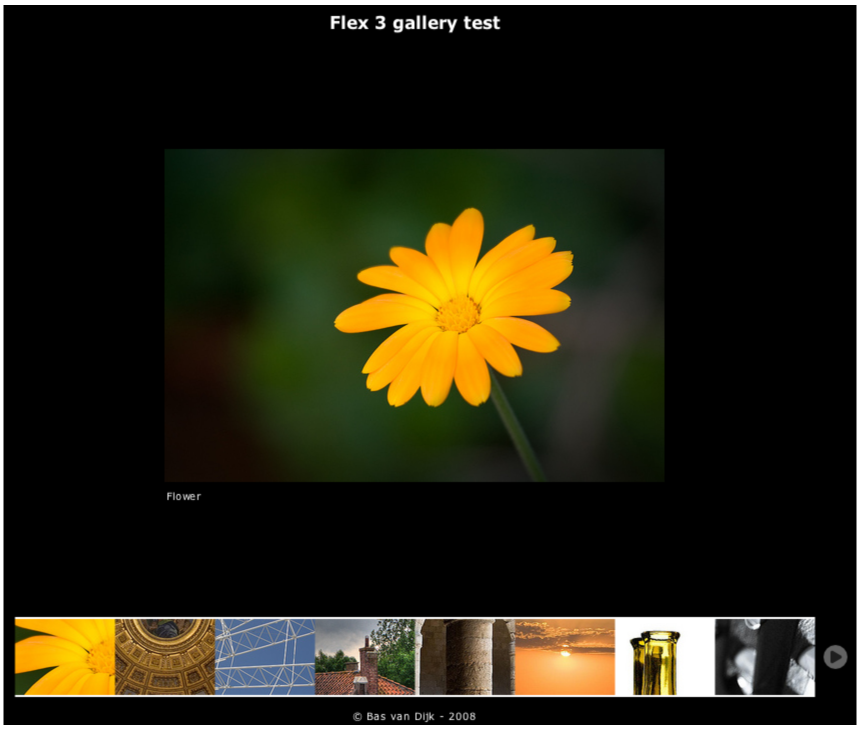


figure 18

You probably noticed that we first need to click on a thumbnail to make the first picture show up. In the next section we are going to fix this.

➔ Add the following code after the `lstThumbnails_itemClick` function:

```
private function loadImage(imageNumber:int):void {
	imgMain.source = arrImages[imageNumber].src;
	lblImageTitle.text = arrImages[imageNumber].lbl;
}
```

This function `loadImage` has one parameter, imageNumber, of the type `int`. This is the number of the image we want to load.

➔ Add inside the if statement of our `initSlideshow` function the statement "`loadImage(0);`".

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application.

Your first image should be loaded automatically.

For our gallery viewer it quite hard to walk through all pictures since he/she needs to click on a thumbnail for every picture. It would be nicer if the viewer can click on the enlarged image for the next one.

➔ Insert the following code after our `loadImage` function:

```
private function imgMain_click():void {
        if (lstThumbnails.selectedIndex < arrImages.length) {
                lstThumbnails.selectedIndex += 1;
                lstThumbnails.scrollToIndex(lstThumbnails.selectedIndex);
                loadImage(lstThumbnails.selectedIndex);
                checkScroll();
        }
}
```

The if statement is to check if an image before the last image is selected. If so we increase the selected index with 1. Then we tell our list to scroll to the new selected image. This makes the thumbnails "follow" the currently selected image. After this we load the new image in our enlarged image. And finally we check if there are any scroll buttons which need to hide.

➔ Navigate to our image and add the following property: `click="imgMain_click()"`

Your image code should look like:

```
<mx:Image id="imgMain" click="imgMain_click()">
</mx:Image>
```

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and test our new function to click on the enlarged image.

If you test very well you noticed something strange. When your first image is loaded you need to click twice for the next image. This is because the selected index is -1 by default. We are going to solve this.

➔ Add the `lstThumbnails.selectedIndex = 0;` statement to our `initSlideshow` function.

Your `initSlideshow` function should look like:

```
private function initSlideshow():void {
        if (arrImages.length > 0) {
                lblFooter.text = "© Bas van Dijk - 2008";
                lblTitle.text = "Flex 3 gallery test";
                loadImage(0);
                lstThumbnails.selectedIndex = 0;
        }
        checkScroll();
 }
```

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and test if the next image appears after one click.

Adding the hand cursor

We click on the thumbnails and buttons because we know it is possible. It is a lot user friendlier when the user sees a hand cursor when he/she moves over a clickable item.

There is a property called `useHandCursor`. Only adding this property is not enough you should tell the image is clickable by adding the property `buttonMode` as well.

- ➔ Find the enlarged image definition and add the property `useHandCursor="true"` and `buttonMode="true"`.
- ➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and hover over the enlarged image. It should show a hand cursor.
- ➔ Add the same two tags for the Scroll next and Scroll previous button, and the thumbnail list.
- ➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and hover over the items where you placed the new properties.

Adding fade effects

ActionScript has the ability to add smooth animations to objects like fading. To add a little more smoothness to our application we are going to add the fade effect to some objects.

- ➔ Find the enlarged image definition and add the property `completeEffect="Fade"`.
- ➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and click through your images. The enlarged image fades when it appears.

We can do the same for our scroll next and scroll previous buttons.

- ➔ Find the `cmdScrollPrev` definition and add the property `hideEffect="Fade"` and `showEffect="Fade"`.
- ➔ Do the same for `cmdScrollNext`.
- ➔ You can also add the `completeEffect="Fade"` property on the Image Component of the HorizontalListItemRenderer.
- ➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and scroll through the thumbnails. The scroll buttons should fade in and out when they appear or disappear.

A Image Component cannot have a border. If we want our enlarged image to have a border we need to place it on a canvas.

- ➔ Find the `imgMain` image in the Gallery.mxml and add `<mx:Canvas borderStyle="solid" borderColor="#3F3F3F">` above it and `</mx:Canvas>` underneath.

Your new `imgMain` code should look like:

```
<mx:Canvas borderStyle="solid" borderColor="#3F3F3F">
        <mx:Image id="imgMain" click="imgMain_click()"
useHandCursor="true" buttonMode="true" completeEffect="Fade">
        </mx:Image>
</mx:Canvas>
```

We might also want to change the font of the label under the enlarged picture.

➔ Add the properties `fontFamily="Georgia"` and `fontSize="16"` to the `lblImageTitle` component.

The `lblImageTitle` code should look like:

```
<mx:Label text="Label" color="#FFFFFF" id="lblImageTitle"
fontFamily="Georgia" fontSize="16"/>
```

➔ Press <⌘> + <F11> or <Ctrl> + <F11> for Windows users to run our application and see the new changes.

You also see a small white border around the HorizontalList.

➔ This can be solved by adding the `backgroundAlpha="0"` property to the HorizontalList.

If you hover over the HorizontalList you see a light blue top and bottom border on the thumbnail on which you hover. To change this:

➔ Add the `themeColor="#1E1E1E"` property to the HorizontalList.

This is the end of this FlexCourse. Your gallery should look like figure 19.

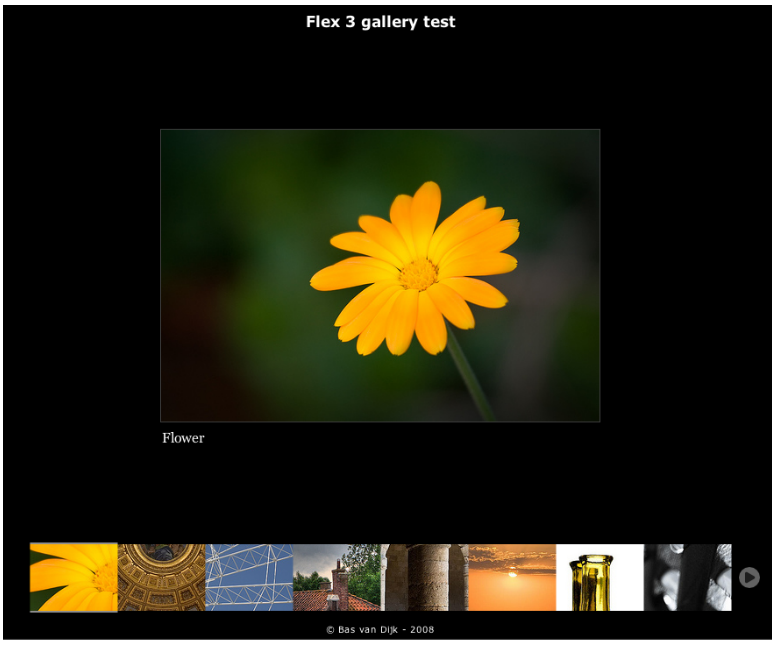


figure 19

Appendix 1 – The source code

Gallery.xml

```
<?xml version="1.0" encoding="utf-8"?>
<mx:Application
	xmlns:mx="http://www.adobe.com/2006/mxml"
	layout="absolute"
	backgroundGradientAlphas="[1.0, 1.0]"
	backgroundGradientColors="[#000000, #000000]"
	creationComplete="initSlideshow()"
	>

	<mx:Grid x="0" y="0" width="100%" height="100%" horizontalGap="0" verticalGap="0">
		<mx:GridRow width="100%" height="50">
			<mx:GridItem width="100%" height="100%" colSpan="3" verticalAlign="middle">
				<mx:Label text="Label" fontSize="17" width="100%" fontWeight="bold" color="#FFFFFF" textAlign="center"
				id="lblTitle"/>
			</mx:GridItem>
		</mx:GridRow>
		<mx:GridRow width="100%" height="100%">
			<mx:GridItem width="100%" height="100%" colSpan="3">
				<mx:Grid width="100%" height="100%">
					<mx:GridRow width="100%" height="100%">
						<mx:GridItem width="100%" height="100%" horizontalAlign="center" verticalAlign="middle">
							<mx:Grid>
								<mx:GridRow width="100%" height="100%">
									<mx:GridItem width="100%" height="100%">
										<mx:Canvas borderStyle="solid" borderColor="#3F3F3F">
											<mx:Image id="imgMain" click="imgMain_click()"
												useHandCursor="true" buttonMode="true"
												completeEffect="Fade">
											</mx:Image>
										</mx:Canvas>
									</mx:GridItem>
								</mx:GridRow>
								<mx:GridRow width="100%" height="100%">
```

```
                                                    <mx:GridItem width="100%" height="100%">
                                                        <mx:Label text="Label" color="#FFFFFF" id="lblImageTitle"
                                                        fontFamily="Georgia" fontSize="16"/>
                                                    </mx:GridItem>
                                                </mx:GridRow>
                                            </mx:Grid>
                                        </mx:GridItem>
                                    </mx:GridRow>
                                </mx:Grid>
                            </mx:GridItem>
                        </mx:GridRow>
                        <mx:GridRow width="100%" height="100">
                            <mx:GridItem width="100%" height="100%" horizontalAlign="right" verticalAlign="middle">
                                <mx:Image id="cmdScrollPrev" source="img/prev.png" click="cmdScrollPrev_click()" useHandCursor="true"
                                    buttonMode="true" hideEffect="Fade" showEffect="Fade" />
                                <mx:Spacer/>
                            </mx:GridItem>
                            <mx:GridItem width="100%" height="100%" verticalAlign="middle">
                                <mx:HorizontalList
                                    height="80"
                                    width="800"
                                    columnWidth="100"
                                    rowHeight="80"
                                    dataProvider="{arrImages}"
                                    itemRenderer="HorizontalListItemRenderer"
                                    horizontalScrollPolicy="off"
                                    verticalScrollPolicy="off"
                                    borderStyle="none"
                                    id="lstThumbnails"
                                    itemClick="lstThumbnails_itemClick(event);"
                                    useHandCursor="true"
                                    buttonMode="true"
                                    backgroundAlpha="0"
                                    themeColor="#1E1E1E"
                                    >
                                </mx:HorizontalList>
                            </mx:GridItem>
                            <mx:GridItem width="100%" height="100%" verticalAlign="middle">
                                <mx:Spacer/>
```

```
                              <mx:Image id="cmdScrollNext" source="img/next.png" click="cmdScrollNext_click()" useHandCursor="true"
                                    buttonMode="true" hideEffect="Fade" showEffect="Fade" />
                        </mx:GridItem>
                  </mx:GridRow>
                  <mx:GridRow width="100%" height="20">
                        <mx:GridItem width="100%" height="100%" colSpan="3" verticalAlign="middle">
                              <mx:Label text="Label" width="100%" color="#FFFFFF" textAlign="center" id="lblFooter"/>
                        </mx:GridItem>
                  </mx:GridRow>
            </mx:Grid>

            <mx:Array id="arrImages">
              <mx:Object lbl="Flower" src="img/photos/flower.jpg" />
              <mx:Object lbl="Church" src="img/photos/church.jpg" />
              <mx:Object lbl="Ferris Wheel" src="img/photos/ferriswheel.jpg" />
              <mx:Object lbl="HDR test" src="img/photos/hdr.jpg" />
              <mx:Object lbl="Arcs" src="img/photos/arcs.jpg" />
              <mx:Object lbl="Sunset" src="img/photos/sunset.jpg" />
              <mx:Object lbl="Glass" src="img/photos/glass.jpg" />
              <mx:Object lbl="Guitar" src="img/photos/guitar.jpg" />
              <mx:Object lbl="Drops" src="img/photos/drops.jpg" />
              <mx:Object lbl="Curtain" src="img/photos/curtain.jpg" />
              <mx:Object lbl="Car" src="img/photos/car.jpg" />
              <mx:Object lbl="Flower macro" src="img/photos/flower2.jpg" />
          </mx:Array>

          <mx:Script>
              <![CDATA[

                   // Libraries used
                  import mx.events.ListEvent;

                        private function initSlideshow():void {
                   if (arrImages.length > 0) {
                         lblFooter.text = "© Bas van Dijk - 2008";
                         lblTitle.text = "Flex 3 gallery test";
                         loadImage(0);
                         lstThumbnails.selectedIndex = 0;
                   }
                   checkScroll();
```

```
}

private function cmdScrollNext_click():void {

 var newPos:int = lstThumbnails.horizontalScrollPosition + 1;
 if (newPos <= lstThumbnails.maxHorizontalScrollPosition) {
        lstThumbnails.horizontalScrollPosition = newPos;
 }

 checkScroll();
}

private function cmdScrollPrev_click():void {

 var newPos:int = lstThumbnails.horizontalScrollPosition - 1;
 if (newPos >= 0) {
        lstThumbnails.horizontalScrollPosition = newPos;
 }

 checkScroll();
}

private function checkScroll():void {

 // Check if the scroll position is at the start position of the list
 // if so hide the scroll previous button
 if (lstThumbnails.horizontalScrollPosition == 0)
 {
        cmdScrollPrev.visible = false;
 } else {
        cmdScrollPrev.visible = true;
 }

 // Check if the scroll position is at the max position of the list
 // if so hide the scroll next button
 if (lstThumbnails.horizontalScrollPosition == lstThumbnails.maxHorizontalScrollPosition) {
        cmdScrollNext.visible = false;
 } else {
        cmdScrollNext.visible = true;
```

```
             }
            }

            private function lstThumbnails_itemClick(evt:ListEvent):void {
                imgMain.source = evt.itemRenderer.data.src;
                lblImageTitle.text = evt.itemRenderer.data.lbl;
            }

            private function loadImage(imageNumber:int):void {
             imgMain.source = arrImages[imageNumber].src;
                 lblImageTitle.text = arrImages[imageNumber].lbl;
            }

            private function imgMain_click():void {
             if (lstThumbnails.selectedIndex < arrImages.length) {
                    lstThumbnails.selectedIndex += 1;
                    lstThumbnails.scrollToIndex(lstThumbnails.selectedIndex);
                    loadImage(lstThumbnails.selectedIndex);
                    checkScroll();
             }
            }

        ]]>
    </mx:Script>

</mx:Application>
```

HorizontalListItemRenderer.mxml

```
<?xml version="1.0" encoding="utf-8"?>
<mx:Canvas xmlns:mx="http://www.adobe.com/2006/mxml" horizontalScrollPolicy="off" verticalScrollPolicy="off">
       <mx:Grid width="100%" height="100%" horizontalCenter="0" verticalCenter="0">
              <mx:GridRow width="100%" height="100%">
                     <mx:GridItem width="100%" height="100%" horizontalAlign="center" verticalAlign="middle">
                            <mx:Image source="{data.src}" completeEffect="Fade" />
                     </mx:GridItem>
              </mx:GridRow>
       </mx:Grid>
</mx:Canvas>
```

Links

Learn Adobe Flex in one week (video training)
http://www.adobe.com/devnet/flex/videotraining/

Flex Examples Blog
http://blog.flexexamples.com/

Flex Cookbook Beta
http://www.adobe.com/cfusion/communityengine/index.cfm?event=homepage&productId=2

Flex quickstart
http://www.adobe.com/devnet/flex/?tab:quickstart=1

Flex showcase
http://flex.org/showcase/

Flex 3 Getting started
http://learn.adobe.com/wiki/display/Flex/Getting+Started

Flex Style Explorer
http://examples.adobe.com/flex3/consulting/styleexplorer/Flex3StyleExplorer.html

Flex Component Explorer
http://examples.adobe.com/flex3/componentexplorer/explorer.html

Flex blog
http://www.flexpasta.com/