Flash CS3 - Introduction

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Part I – Introduction
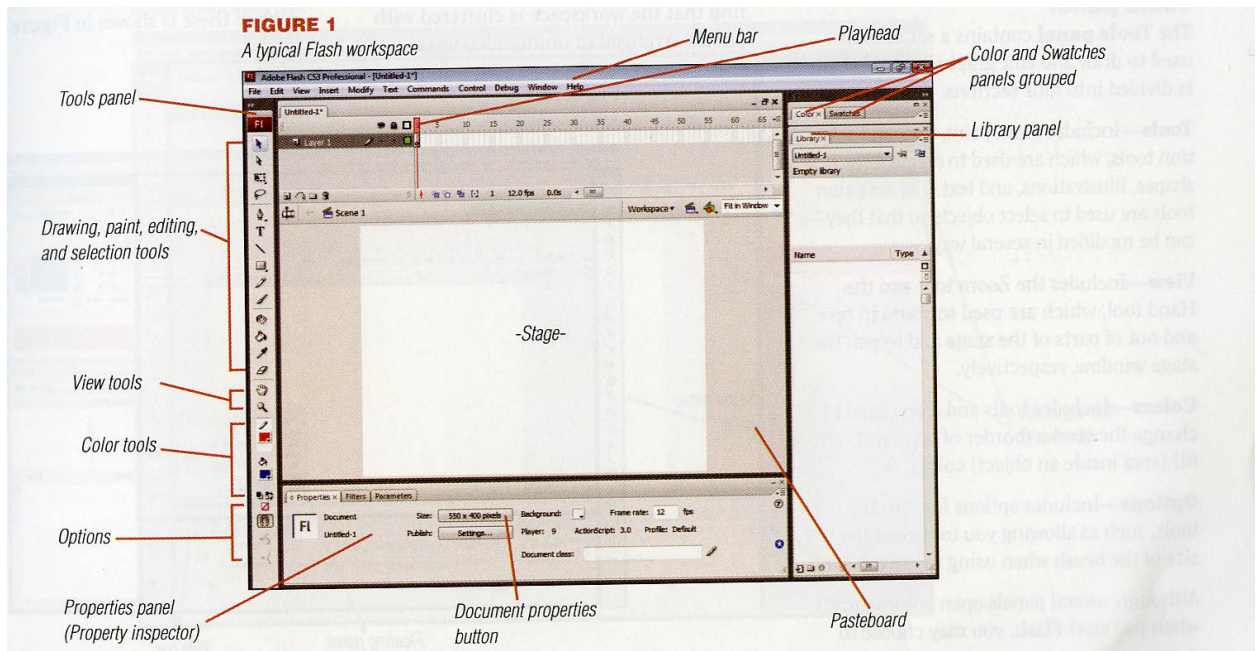
1. **What is Flash?**
   Flash is a tool used to create simple and complex animations for web sites as well as games and simulations. Flash uses vector graphics, which means it can be resized without losing quality and is relatively small in file size. Flash content on a web site is displayed by Flash player, which is a free browser plug-in and supported by all popular web browsers. This allows virtually everyone to access Flash media on the Internet.
2. **Typical web sites that use Flash movies**
   a. Web sites enhanced by Flash
      i. Rice home page: http://www.rice.edu/
      ii. YouTube: http://www.youtube.com/
   b. Web sites based on Flash
      i. A Philadelphia Web Design and Advertising agency http://www.singularitydesign.com/
   c. Sample Flash animations
      i. Rice University 2009 holiday greeting card http://www.rice.edu/holidaycard/
      ii. Adobe Flash Developer Center http://www.adobe.com/devnet/flash/samples/
      iii. NASA online http://www.knowitall.org/nasa/simulations/science.html
3. **How should webmasters work with Adobe Flash?**
   a. Use it when it is needed since some textual contents stored in Flash as graphics can be missed entirely by search engines– Google webmaster central blog http://googlewebmastercentral.blogspot.com/2007/07/best-uses-of-flash.html
   b. Use Flash as a tool to enhance web site and web content, not as a replacement to HTML due to Flash's accessibility issues, compatibility problems, etc. For a list of drawbacks in using Flash for a website, go to: http://www.bjornenki.com/blog/why-flash-based-websites-are-discouraged - drawbacks
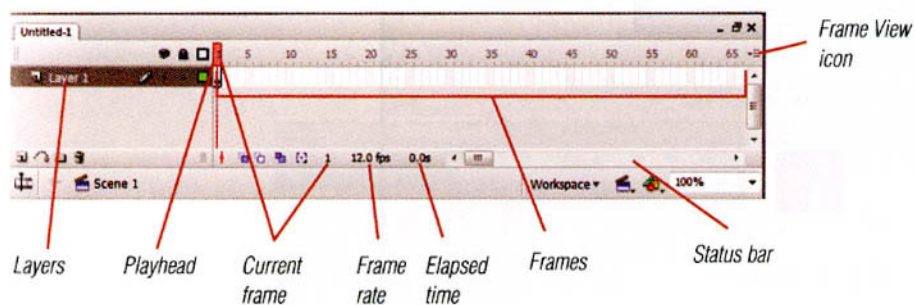4. **Flash Workspace**
   Flash's workspace consists of six main components: **a Menu bar** on the top that organizes commands within menus, **a Stage** in the center where objects are displayed, **a Timeline** below the Menu bar used to organize and control objects on the stage along a time axis, **a Tools panel** on the left, **a Properties panel** at the bottom, and **one or more panels** on the right.

FIGURE 1
A typical Flash workspace

Labels: Tools panel; Drawing, paint, editing, and selection tools; View tools; Color tools; Options; Properties panel (Property inspector); Document properties button; Menu bar; Playhead; Color and Swatches panels grouped; Library panel; -Stage-; Pasteboard

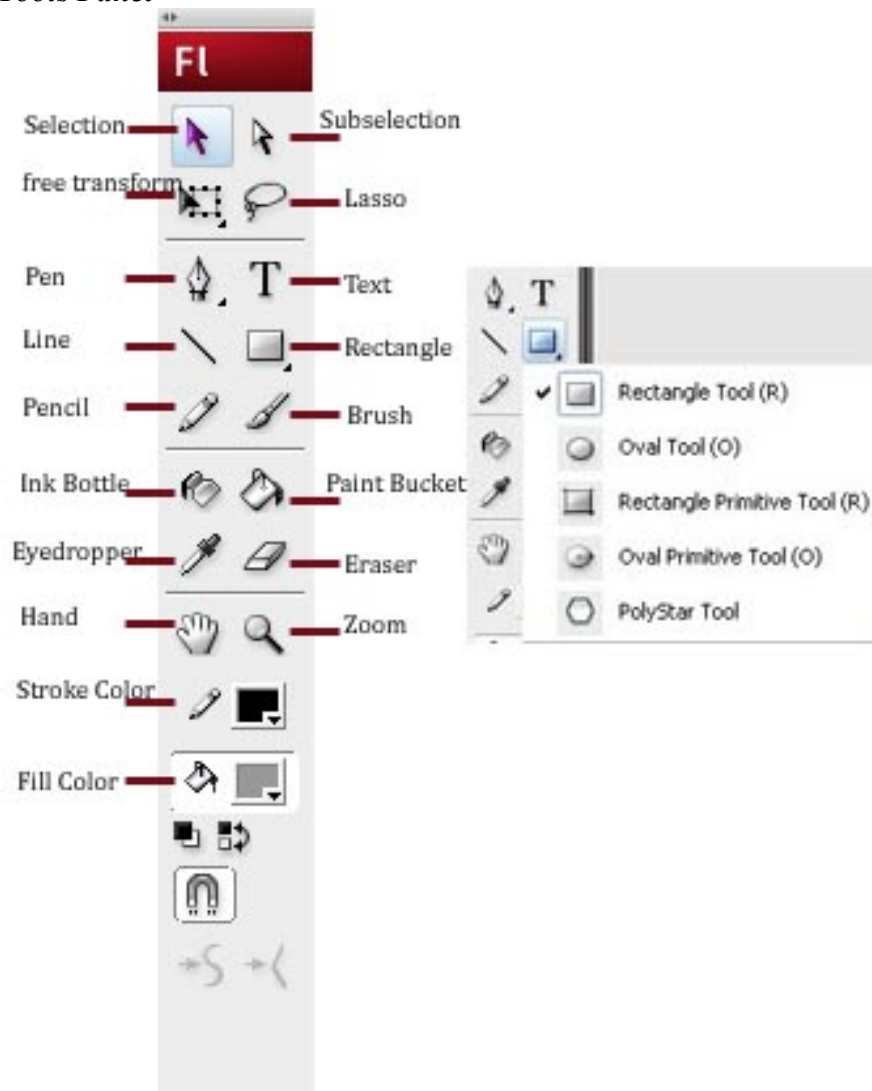- *picture from "The Web Collection Revealed", book by Sherry Bishop, Jim Shuman, & Barbara M Waxer*

- • **Menu Bar:** It contains basic functions such as creating and saving files, as well as special functions such as exporting and publishing. It also contains commands such as testing movie, opening a panel, etc.
- • **Stage:** Think of the stage as an actual performance stage. Everything placed on the stage will be seen by your viewers. The gray area surrounding the stage is the Pasteboard. You can use Pasteboard as the extension to the stage or your scratch space. But keeping this in mind, neither Pasteboard nor the objects on it will be visible to your audience. You can draw objects directly on the stage or drag them from the Library Panel to the stage. The stage size is also your Flash document size. You can change it using the Properties panel.
- • **Timeline:** The Timeline organizes and controls an animation's contents over time. With Timeline, you can determine what will be happening next, which object will be animated and how an object will be animated.

Elements of the timeline

Labels: Untitled-1; Layer 1; Scene 1; Workspace; 100%; Frame View icon; Layers; Playhead; Current frame; Frame rate; Elapsed time; Frames; Status bar

- *picture from "The Web Collection Revealed", book by Sherry Bishop, Jim Shuman, & Barbara M Waxer*

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- ***Tools Panel***

The Tools panel contains a collection of tools for you to select, create, and manipulate objects on the stage. When you mouse over a tool, its name appears next to the tool. When you see a black triangle at the right corner of a tool, you can press and hold down left key on your mouse to reveal more tools that are grouped under this tool.
- ***Properties Panel*** It is used to change the properties of an object, such as the background color and size of a document, and the fill color of a rectangle.
- ***Library Panel*** It is the place where you store and organize symbols created in Flash, as well as imported files, including bitmap graphics, sound files, and video files.

Part II Starting a Flash Project

1. **Starting a Flash Project**

a. Launch the Adobe Flash CS3 program, click Flash File (ActionScript 3.0) under Create New.
b. To save a new created Flash project, go to File > Save. The extension of the saved project file is FLA. This file can't be opened without Flash application.
c. *To have a portable flash movie file, once you are done with your project, go to File > Publish. The default publishing format is SWF (SWF stands for Shockwave Flash). SWF files will play on any computer with Flash player. Alternatively, you can export a Flash movie as an animated GIF (GIF stands for Graphic Interchange Format) that is even more compatible with web browsers.*
d. Setting Document Properties – when you start a new Flash project, the default document settings are: Document Size - 550x400 pixels, Background color – white, and Frame rate -12 fps. You can change these settings in the Properties panel at the bottom of the Flash interface, or go to Menu bar, Modify -> Document.
    i. Document Size – it is also the Stage size or frame size of the movie. It is measured in pixels. For animated movie that will have most of its life on web sites, it is not recommended to have big frame size. The bigger the frame size, the bigger the file size. 640x480 pixels, 320x240 pixels, 240x180 pixels are common web video sizes. Just to give you an idea what the frame sizes are when measuring in pixels: NTSC movies on TV - 720x480, high definition movies - 1440x1080 or 1920x1080.
    ii. Background color – it defines the background color on which your artwork appears.
    iii. Frame rate – it is the number of pictures played per second. NTSC movies on TV are 30 fps, movies played in theatre are 24 fps. The bigger the frame rate, the bigger the file size. 12 fps is a good value to start with to create smooth animations on web sites.
2. **Creating graphics**
You can create graphics objects in Flash using the drawing tools.
E.g. Drawing a circle
    i. Click and hold the Rectangle tool on the Tools panel to display the list of tools, and click the Oval tool.
    ii. On the Properties panel, choose the stroke and fill color respectively
    iii. Hold down Shift key, then drag the Oval tool on the stage to draw a circle. (Pressing and holding shift key creates a perfect circle.)

Part III Frame-by-frame animations

Frames contain content that your audience will see in the animation. Each frame represents a moment of time in an animation.
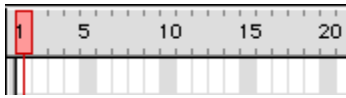
The rectangles on the left are example of frames. Every fifth frame appears gray, making them easy to count at a glance. The red square is your **play head**. Dragging it around with the mouse lets you "scrub" through your project, previewing it as you work by simulating the animation process.

A Key Frame represents a point on the Timeline where a change occurs in the animation. (a change can be add content, subtract content, position change of an object, etc.)
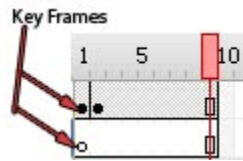
These are examples of keyframes.
The keyframes on top layer are solid black dots, telling you that they contain objects. The keyframe at the bottom layer is a white dot, which means it is blank. The keyframe on the left at the top layer is one frame long, while the one on the right at the top layer is eight frame long.

To work with the contents of a certain keyframe, click its first frame (the one with the black dot). It is now selected and its contents will appear on the **stage**.

To add a blank keyframe:
Click on an empty section of the timeline, press F7 or choose Insert->Timeline ->Blank Keyframe

Essentially, **frame-by-frame animation** works by creating a unique image in each frame. Each frame then becomes a keyframe since there is a change that alters the animation.

Here is an example of simple animation.

Here is the first keyframe.

Here is the second keyframe.

Here is the third keyframe.

Put them together and you get... simulated motion! Frame by frame animation, though sometimes useful, is very labor intensive and has a tendency to create very large files.

Part IV Animation with Motion Tweening and Shape Tweening

Flash simplifies matters with a kind of animation called **Tweening**. Once you create start and end frames, Flash generate a smooth series of frames that fill the inbetween space (i.e. In-be-TWEEN). There are two types of tweened animations: motion and shape. Motion Tweening is animation in which objects are resized, repositioned, rotated, and recolored. Shape Tweening is similar to image morphing in which one object slowly turns into another object, such as a robot that turns into a person. Since Tweening uses instances of symbols, let's talk about what symbols and instances are.

Symbols and Instances

A **symbol** is a self-contained object within a Flash animation which can be used multiple times. This is very useful for making changes throughout an animation. Say you are animating a picture of a rocketship, and the same rocket appears in 30 different frames. If you decide later on that your rocket needs to be blue instead of red, or have the words "Big Bertha" emblazoned on the side, imagine what you must do if each rocket is a collection of lines and fills. 30 frames must be individually changed and perfectly matched! You may as well give up and start over, unless your rocket is a symbol! By creating a picture as a symbol, you create a "master copy" which sits in your project's **library.** Making changes to the master **symbol** will affect all its **instances** throughout your Flash project.

To create a symbol from a picture you have already drawn:

1. Select all the elements of the picture you wish to be part of your instance. Use the rectangular marquee, the lasso, or click on elements while holding down the SHIFT key.
2. Choose **Modify > Convert to Symbol** from the menu bar.
3. Give your symbol a name, and select its type (graphic symbols are the most basic). The new symbol should now reside in your **Library**.

To create a new symbol from scratch:

1. Choose **Insert > New Symbol** from the menu bar.

2. Give your symbol a name, and select its type.

Symbol Types:

Symbols come in three varieties:

Movie Clip:

> Movie clips are generally used by advanced Flash users to create animations which can start and stop interactively. An animated Movie clip will play continuously, even if it is placed in a project only one frame long.

Graphic:

> This is your basic Flash symbol. Its animation is dependant on the project's timeline. This means that if a Graphic Symbol is 35 frames long, and it is placed in a project only 24 frames long, the symbol's animation will reset on the 24th frame.

Button:

> Buttons are used to provide interactivity. They are symbols with four frames, one for each button state - Up, Over, Down, and Hit which correspond to the use of the mouse.

1. **Motion Tweening**
   To create a motion tween:
   a. Create two blank keyframes on the timeline using the F7 key
   b. Fill each keyframe with instances of the same symbol
   c. Move, flip, and resize the instances in one or both frames. Your animation will be the transition between the two, so the differences are what make it interesting.
   d. Lengthen your first keyframe using the F5 key which inserts frame. This defines the length of the transition.
   e. Right click any frame between the start and end keyframe, from the popped up window choose Create Motion Tween.
   f. Hit Enter to play the animation you just created.

   A good rule of thumb when doing Motion Tweening:
   - Only instances of symbols can be motion tweened. If you select an object that is not already a symbol in the library and create a motion tween, Flash automatically creates a symbol, names it Tween 1, and places it in the Library panel.
   - Only one symbol per layer can be motion tweened! (You can make as many layers as you want. Remember to name them so you don't get confused.)

Guide Layers - Guide layers allow you to direct a motion tween, and make a symbol take an indirect path to its destination.

To Create a Guide Layer:

1. Click the **Add Motion Guide** button on the **Layers** section of the Timeline**.** This creates a new layer on top of the layer you have selected.
2. Click on the Motion Guide layer to make sure it is the active layer.
3. Click on the Pencil tool in the left toolbox. Set the Pencil Mode to Smooth.
4. Draw a line beginning on the image and ending at the other side of the Stage. Imagine this is a track and your symbol will be the train.

Here's an example of a good **guide layer**:

To Match a Motion Tween to a Guide Layer:

1. Create a Motion Tween using the steps from the previous section.
2. Extend the duration of the guide layer keyframe by clicking on it and then pressing **F5**. It needs to have the same duration as the motion tween.
3. Using the mouse, grab the Transformation Point (shown as a mall circle) on the center of the symbol from the first frame of the motion tween .
4. Drag the Transportation Point of the symbol to the beginning of the Guide Layer's path.
5. Now drag the symbol from the ending frame of the tween onto the very end of the path.
6. Hit Enter to play the animation.

2. **Shape Tweening**
   Shape tweening creates an animated transition from one vector image to another. You may have seen similar effects on TV or in movies, where one person or object "morphs" into another.
   To create a shape Tween:

   a. Create two keyframes on the timeline using the **F7** key.
   b. Fill each keyframe with a different vector graphic.
   c. Lengthen your first keyframe using the **F5** key. This defines the length of the transition. (Your ending frame can be as long or short as you want it.)

d. Right click any frame between the start and end keyframes and select **Create Shape Tween.**
e. Hit Enter to play the animation.

Part V Publish

Once you are done with your flash movie, you can go to File -> Publish Settings to set up the Publish Settings. Flash offers a series of file types to which your creation can be published. Typical file formats are SWF and GIF.

Appendix – Animation terminology

Glossary:

Alpha: the amount of transparency in a symbol instance. When Alpha = 100% the symbol is opaque. When Alpha = 0% it is completely transparent (i.e. invisible).

Bitmap: any picture file not made of vectors, such as JPEG's GIF's and BMP's.

Frame: a single increment or picture on the Flash timeline. Animation happens when large numbers of these are displayed in fast succession. In Hollywood movies this is when a series of photographs are projected on a screen at a rate of 24 frames per second.

Frame rate: the number of frames that pass the screen every second.

Inspector: a window which contains options to control the characteristics of selected objects such as texture, stroke, etc.

Instance: a duplicate of a symbol. Instances can be changed in size, copied, and deleted without altering the original **symbol**, which resides in your **library**.

Keyframe: A keyframe is a frame in which you define a change to an object's properties for an animation.

Library: A panel within Flash displaying all your project's symbols, sounds, pictures, etc.

Object: any entity within your Flash project, such as a polygon, a line, or a bitmap.

Onionskin: This option displays several (you decide how many) frames at once. The single frame highlighted in the timeline will remain solid, while the other frames appear somewhat transparent. Onionskin is useful for aligning and spacing graphics across multiple frames.

Panel: a window which contains options to control tool characteristics, or collections of assets.

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Scrub: to grab the red play head with the mouse and drag it back and forth across the timeline, simulating the final animation process.

Stage: the central "screen" of your main project window. When working with Flash this is where all the graphics and animation are previewed.

Symbol: a self contained object within a Flash animation which can be used multiple times.

Timeline: part of the Project window where frames, keyframes, and tweens are arranged on a numbered grid.

Tween: a method of simplifying the animation process. Flash is given initial and final keyframes, and generates a series of inbe**tween** frames.

References:

- Adobe Flash Developer Center: http://www.adobe.com/devnet/flash/