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Chapter 7
BlackBerry themes and animated graphics

Objectives

- Describe Scalable Vector Graphics
- Explain why SVG are appropriate for mobile devices
- Describe how you can use SVG for media application development for mobile devices
- Describe two key methods for creating SVG
- Describe the purpose of the Plazmic® Content Developer’s Kit
- Explain the purpose of the Plazmic Composer
- Explain the purpose of the Plazmic Theme Builder
- Describe the types of objects you can make using Plazmic Composer
- Describe the type of content you can import into Plazmic Composer
- Describe the methods you can use to make animations using Plazmic Composer
- List the ways you can make content interactive using Plazmic Composer
- Describe the method used to export and test the files that you create in Plazmic Composer
- Describe how to post the content that you create in Plazmic Composer

This chapter provides an overview of SVG and its significance when developing media applications for mobile devices. The chapter describes the two main methods you can use to create SVG: coding manually in a text editor or designing with a graphics editing tool. The chapter provides an overview of the Plazmic Content Developer’s Kit and its two components: Plazmic Composer and Plazmic Theme Builder. The chapter also outlines the key features of Plazmic Composer, which you can use to create the following type of SVG content for mobile devices: interactive themes, mobile web sites, splash screens, graphics, and animations.
Scalable Vector Graphics

SVG language is a text-based XML language developed by W3C® that represents 2-D graphics, animation, and interactivity. W3C is a nonprofit, open-standards consortium that created HTML and XML.

The key feature of SVG objects is their scalability.

How vector graphics compare to bitmap graphics

*Bitmap or raster* graphics, such as JPG and GIF images, maintain a specified size despite the display area. In contrast, you can *scale* SVG to fit any display area.

Bitmap graphics draw shapes using an array of rectangular pixels. Because bitmap graphics maintain a static number of pixels, they appear pixelated or grainy if you scale them to a larger size.

Vector graphics define shapes and text based on paths and key points, rather than defining the content of each pixel. As a result, you can scale vector graphics to fit a variety of screen sizes without degradation in image quality or legibility of text.

This illustration shows the difference between bitmap and vector graphics after they are scaled to a larger size.

![Illustration of bitmap vs. scalable vector graphics](image)

*Figure 8.1 Vector graphics compared to bitmap graphics*

The SVG language draws irregular shapes, such as *polygons, polylines, freehand paths, elliptical arcs,* and *Bézier curves* by using a number of path segments. Path segments are either straight or curved: polygons and polylines contain one or more straight path segments; freehand paths, elliptical arcs, and Bézier curves can include straight and curved path segments.
The software defines the path segments by the position of the following two kinds of points:

- anchor points that specify the beginning and end of the path segment
- control points that you use to change the direction and shape of a curve

This illustration shows an anchor point, a control point, and a path segment on a vector graphic.

![Diagram of vector graphic paths and key points]

*Figure 8.2 Vector graphic paths and key points*

**SVG and mobile device screens**

You can scale SVG to fit a variety of screen sizes and layouts (portrait or landscape), with no loss in image quality or in the legibility of text. This adaptability makes vector graphics ideal for conveying graphical information on BlackBerry® smartphones.

Depending on the model, BlackBerry smartphone screens vary in size. For example, the display screen size on a BlackBerry® Pearl™ 8100 Series smartphone is 240 by 260 pixels, while the display screen size on a BlackBerry® Curve™ 8900 smartphone is 480 by 360 pixels.

On BlackBerry® Storm™ Series smartphones, users can switch between portrait view and landscape view by turning the device sideways.

This screen shows BlackBerry Storm Series smartphones in landscape and portrait modes.
SVG and media applications for mobile devices

You can use SVG to develop the following types of content for mobile devices:

- interactive themes
- mobile web sites
- splash screens
- graphics
- animations

Methods for SVG creation

You can create SVG content in one of the following ways:

- Write the code manually in a text editor.
- Design the content with a graphics editing tool, such as Plazmic Composer, Adobe® Illustrator®, or Microsoft® Visio®. With these tools, you can export your content as SVG.

RIM® does not recommend that novice application developers write SVG code manually. Instead, you can create PME content using the Plazmic Composer, or you can create SVG content, and then transcode it using the SVG Transcoding Utility. Both the Plazmic Composer and the SVG Transcoding Utility are available with the Plazmic Content Developer’s Kit.
BlackBerry support for vector graphics

The BlackBerry® Browser supports vector graphics in SVG, PME, or PMB formats.

- **SVG**: The BlackBerry Browser provides full support for the SVG Tiny 1.1 specification on BlackBerry smartphones running BlackBerry® Device Software version 4.7.1 or later.
- **PME**: The PME format (Transcoded SVG) is a proprietary, binary representation of SVG content that BlackBerry smartphones support exclusively. The BlackBerry Browser supports PME on BlackBerry smartphones running BlackBerry Device Software version 3.7 or later.
- **PMB**: The PMB format combines images, audio, and PME files into a single file to minimize the number of connections made over the wireless network. With the PMB format, you can do the following:
  - animate primitives (for example, rectangles and polygons), color, and images (PNG, GIF)
  - create hotspots (similar to links in HTML, but more flexible)
  - trigger events (for example, clicking a hotspot to change a color or play an animation)

BlackBerry Browser supports SVG, PME, and PMB as browser plug-ins. You can view these file formats in the browser as an individual file, or you can embed SVG and PME in an HTML page using the `<object>` element.

**APIs**

You can use two different types of SVG APIs for your Java applications:

- SVG APIs that allow you to render SVG directly in your application
- Plazmic APIs that allow you to play back PME content

**SVG APIs**

SVG API packages include the following:

- org.w3c.dom
- org.w3c.dom.events
- org.w3c.dom.svg

**Plazmic APIs**

The BlackBerry smartphone supports a binary representation of Scalable Vector Graphics (SVG) content in the form of a PME file.

You can use the Plazmic Composer to create a .PME file or use the Plazmic SVG Transcoding Utility to convert an SVG file to a PME file. The Plazmic Content Developer’s Kit includes Plazmic Composer and the Plazmic SVG Transcoding Utility.

Plazmic API packages include the following:
• net.rim.plazmic.mediaengine
• net.rim.plazmic.mediaengine.io
1. Why are SVG images scalable?
   A. They are drawn with an array of rectangular pixels.
   B. They are drawn at a higher resolution.
   C. They maintain a static number of pixels.
   D. They define shapes based on paths.

2. How does SVG define the position of image segments?
   A. Anchor points and control points
   B. Pixels and arrays
   C. Bitmaps and areas

3. Why is the SVG file format useful in the BlackBerry smartphone environment?
   A. It is the only image type that BlackBerry smartphones support.
   B. It can fit a variety of screen sizes.
   C. It produces low resolution graphics that take up less memory.

   A. PMB
   B. PME
   C. EPS
   D. SVG

5. What methods can you use to create SVG content? Choose two.
   A. Writing code in a text editor
   B. Using the BlackBerry Smartphone Simulator
   C. Using a raster converter
   D. Using a graphics editor
Answers

1. D
2. A
3. B
4. A, B, and D
5. A and D
SVG creation with the Plazmic Content Developer’s Kit

The Plazmic Content Developer’s Kit is a free suite of graphic design tools that you can use to create the following types of content optimized (as SVG, PME, or PMB) for use on BlackBerry smartphones:

- interactive themes
- mobile web sites
- splash screens
- graphics
- animations

The Plazmic Content Developer’s Kit includes utilities that facilitate the conversion of various file formats (including Adobe® Flash®) into a format that is optimized for delivery and use on mobile devices. You can use the BlackBerry Smartphone Simulator to test and debug your themes and animations before distributing them to mobile devices.

The Plazmic Content Developer’s Kit includes the following:

- Plazmic Composer, an illustration and animation tool for designing SVG content
- Plazmic Theme Builder, a tool for designing custom BlackBerry themes

Plazmic Composer overview

Plazmic Composer is a graphic design tool for creating animated content for BlackBerry smartphones, such as animated web graphics, application splash screens, and custom theme icons. You can create content that uses animation, sound, and interactivity such as object rollovers, hyperlinks, and triggers to start applications. You can then use this content to create fully customized screens that contain multimedia content, and that you can adapt for use as web content in the BlackBerry Browser.

You can also use the Plazmic Composer to customize Home screen and Lock screen themes using rich multimedia content.

The Plazmic Composer workspace incorporates a view window for manipulating content, a toolbox for common drawing tasks, a catalog for project resources, an animation editor for developing animated content, and windows for viewing and working with layers and objects.

This screen shows the Plazmic Composer workspace.
Figure 8.4 Plazmic Composer workspace

After you create your content, you must export it as SVG and add it to a theme using the Plazmic Theme Builder.

Plazmic Theme Builder overview

You can use the Plazmic Theme Builder to customize various elements on the BlackBerry smartphone UI. With the Plazmic Theme Builder, you can customize Home screen icons, banners, indicators, backgrounds, fonts and colors for lists and menus, and more. As part of the theme, you can add SVG that you create in Plazmic Composer to the Home screen or Lock screen.

The Plazmic Theme Builder workspace includes the following:

- a view area to see how your theme appears on the selected BlackBerry smartphone
- buttons for designing each of the customizable elements and areas (such as the Home screen, banners, and global UI elements)
BlackBerry themes and animated graphics

- tools for arranging and resizing elements on the BlackBerry smartphone screen
- catalogs for organizing project resources such as images and colors for later use; these catalogs include sample resources for reuse

This screen shows the Plazmic Theme Builder workspace.

**Figure 8.5 Plazmic Theme Builder workspace**

You can download and install the BlackBerry Smartphone Simulator to test new themes on the desktop before you distribute them to the BlackBerry smartphone.

After you complete a theme, you can use Plazmic Theme Builder to export it as a COD file that the BlackBerry smartphone can read.
1. Which of the following tasks can you perform with the Plazmic Content Developer’s Kit? Choose three.
   A. Create themes
   B. Convert other file formats
   C. Edit XML code
   D. Create full multimedia content

2. You can use the Plazmic Composer to create custom Home screen and Lock screen graphics. True or false?
   A. True
   B. False

3. Which of the following tools can you use to organize your project resources in Plazmic Theme Builder?
   A. Catalog
   B. Explorer
   C. Workspace

4. After creating a theme in Plazmic Theme Builder, you must export it as which type of file?
   A. SVG
   B. COD
   C. PMB
   D. XML
Answers

1. A, B, and D
2. A
3. A
4. B
Plazmic Composer features

You can use the Plazmic Composer to create interactive and animated graphics for BlackBerry smartphones. You create content for BlackBerry smartphones using the following basic steps:

1. Create and edit: Design and create interactive and graphical content using the Plazmic Composer. You save project files in the Plazmic Composer (.cp) format.
2. Test: Preview your content using the BlackBerry Smartphone Simulator, which you can launch directly from the Plazmic Composer.
3. Export: Export your Plazmic Composer files to .svg, .pme, or .pmb files.
4. Post: Post your Plazmic Composer content on an application server.

Create and edit content

Using Plazmic Composer, you can create and edit objects, animated content, and interactive content. You can also import existing content of various file formats and edit it.

Objects

You can create the following type of objects in Plazmic Composer: shapes, text, user input, buttons, and animations. You can also define the and set the ratio aspect of an object to control how a BlackBerry smartphone displays the object.

Shapes

The shapes and text that you create in Plazmic Composer are vector graphics.

You can use the toolbox to create objects such as text, graphics, and images. Shapes include lines, rectangles, squares, rounded rectangles and squares, ellipses, circles, freehand paths, arcs, polylines, and Bézier curves.

You can also use the Inspector pane on the right side of the workspace to change object properties.

Text objects

You can create the following two kinds of text objects:

- Simple text objects: These objects are a single line of text.
- Text-on-curve objects: These objects align to an existing path on the workspace. When you create a text-on-curve object, you can no longer select or modify the path object because it becomes part of the text-on-curve object.
User input objects

You can create user input objects such as text entry fields and selection lists in Plazmic Composer. With these input objects, you add HTML form elements to your content to collect user data. To add HTML form elements, you must use a Form Submit action with a corresponding web address.

Button objects

You can create buttons that cause an event to occur. For example, a user can select a list object, and then click a button to submit the information to the content server.

In the Plazmic Composer, buttons are complex objects that comprise one or more other objects. For example, you can create a button with a rectangle object and a text object placed above it. Buttons have the following four states:

- Initial State represents the initial appearance of the button.
- On Focus In represents the button when it has focus.
- On Focus Out represents the button when it does not have focus.
- On Activate represents the button after the user clicks it.

Each button state is a separate entity; you can change the look and feel for each state to create the look and feel of a button. For example, you can make the button color brighter for the On Focus In state to provide a visual highlight when the button has focus.

If you create a button, Plazmic Composer sets the workspace to editing mode. On the canvas, you can see only the component objects that make up the button image. In editing mode, you can access each of the four button states on the Animation key editor timeline.

This screen shows four button states on the Animation key editor timeline.

![Figure 8.6 Four button states on the Animation key editor timeline](image)

Each button state has its own timeline, which is independent of the main project timeline. With this method, you can animate or add actions to each state independently. For example, you can animate the On Activate state to make the button look pressed after the user clicks it.
Animation objects

You can create animation objects to define a small animated sequence that begins after an event triggers it. You can manipulate animation objects just as you can manipulate any other object; you can move, scale, or rotate the entire scene.

Animation objects have their own timeline, independent of the main project timeline, that starts only after an event triggers the animation object.

Viewable screen area

The Plazmic Composer includes a Camera tool that you can use to define the view box. The view box outlines the portion of the canvas that the user sees in the view port on the BlackBerry smartphone.

You can use a view box to create effects similar to those you can create using a video camera. You can, for example, display only a certain portion of your scene, and then pull away to reveal the whole scene, or pan across the background.

After you select the Camera tool, the Plazmic Composer displays the view box over the canvas. The content in the view box is the content that users see on their BlackBerry smartphones. Like shapes or text, the view box has configurable transformation properties; you can scale the view box or reposition it on the canvas, just like any other object. In addition, you can animate these transformation properties. For example, you can simulate zooming in and out of the scene on the canvas by animating the size of the view box over time; or you can simulate panning across the canvas by animating the position of the view box.

This illustration shows how to use the Plazmic Composer Camera tool to define the portion of the canvas that the users see in their BlackBerry smartphone view port.
BlackBerry smartphones come in a variety of models with a variety of screen sizes, so you might not know the dimensions of the view port when you create your content. By default, the BlackBerry smartphone stretches the content to fill the entire screen, which can distort the content.

If you do not want the BlackBerry smartphone to stretch the content to fit the screen, you can use the Preserve Aspect Ratio property of the Camera tool to control how the BlackBerry smartphone resizes the contents of the view box.

**Aspect ratio of an object**

Aspect ratio refers to the ratio between the height and the width of a rectangular object.

You can preserve the aspect ratio of the view box so that the BlackBerry smartphone does not stretch the graphic when it displays the graphic in a view port that has a different aspect ratio. By default, the BlackBerry smartphone does not preserve the aspect ratio of the view box; it stretches content so that it fits the view port.

The Preserve Aspect Ratio property is a combination of the following:

- **Scaling.** This setting defines how the BlackBerry smartphone scales the view box in the view port. You can choose one of the following options:
- Meet: The BlackBerry smartphone scales the view box so that there is no loss of content, and adds transparent padding around the content.
- Slice: The BlackBerry smartphone clips the view box so that the content fills the view port with no padding.
- Alignment. This setting defines how the BlackBerry smartphone aligns the view box in the view port.

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<tbody>
<tr>
<td>Because the dimensions of the view box and view port are identical, the BlackBerry smartphone does not alter the view box aspect ratio.</td>
<td>Scaling: Meet Alignment: Centered</td>
<td>Scaling: Slice Alignment: Centered</td>
<td>The BlackBerry smartphone does not preserve the aspect ratio.</td>
</tr>
<tr>
<td>The BlackBerry smartphone centers the content horizontally and vertically in the view box and scales it to fit the view port without clipping it.</td>
<td>The BlackBerry smartphone centers the content horizontally and vertically in the view box and scales it to fill the view port by clipping excess content.</td>
<td>The BlackBerry smartphone stretches the content in the view box to fit the view port.</td>
<td></td>
</tr>
</tbody>
</table>
1. What are the four steps for creating content for a BlackBerry smartphone using Plazmic Composer?
   A. Create and edit, Test, Export, Post
   B. Create and edit, Export, Post, Test
   C. Create and edit, Import, Upload, Test
   D. Create and edit, Test, Upload, Test

2. Which of the following objects can you create in Plazmic Composer? Choose three.
   A. Shapes
   B. Wire frames
   C. Text
   D. User input

3. In Plazmic Composer, what do you use to create user input objects (such as text entry fields)?
   A. XML elements
   B. HTML form elements
   C. Objects
   D. SVG elements

4. In Plazmic Composer, buttons have how many states?
   A. 1
   B. 2
   C. 3
   D. 4
5. Which tool do you use to define the view box in Plazmic Composer?
   A. ViewBox
   B. Camera
   C. Timeline
   D. Input

6. What must you do to prevent BlackBerry smartphones from stretching your content in a way that distorts it?
   A. Select the Preserve Aspect Ratio option
   B. Clear the Preserve Aspect Ratio option
   C. Disable the Camera
   D. Enlarge the ViewPort to the maximum size supported by the BlackBerry smartphone

7. How does a BlackBerry smartphone display an image if you select the Meet property for an image?
   A. Inserts additional pixels into the image
   B. Clips portions of the image to ensure that it fits in the screen
   C. Adds transparent padding around the image
   D. Ensures that the edges of the graphic meet all the edges of the screen
Answers

1. A
2. A, C, and D
3. B
4. D
5. B
6. A
7. C
Animated content

You can create animation effects for your Plazmic Composer content by changing the values of certain object properties over time.

Timeline animation is a combination of the following:

- **Key frames**: Key frames are the frames on the timeline at which you set a new value for one or more object properties.
- **Interpolation**: The Plazmic Composer calculates the intermediate values for an animation for each frame between two key frames.

Key frame animation

You can animate the properties of an object at specific points, or key frames, on the timeline. Key frame animation is sequential. To use key frame animation, begin with the following principles:

- Select a starting frame on the Animation key editor, and then set the initial property value for an object.
- Select the ending frame on the Animation key editor, and then set the final property value for an object.

Each time you select a frame and change the value of a property, the Plazmic Composer adds a key to the Animation key editor for the altered property at the selected frame. These keys signify a change in value for a property. Frames that contain a key are called **key frames**. The values you set for the property at each key frame are the key values.

The Plazmic Composer interpolates the value of the property between key frames. You can configure interpolation parameters using the **tweening** editor.

Nonlinear animation

When the Plazmic Composer interpolates a property between two key frames, by default, it calculates the property change for each frame to produce an even change across the frames. This change is most evident if you animate position. If selected, animated objects display a green line that represents the path of the object. On the green line, square indicators (the reference points) display where the software draws the object in each frame. When the software begins to animate an object, these reference points are spaced evenly.

This illustration shows evenly spaced reference points on an animation object.
You can change the way the Plazmic Composer interpolates object properties between key frames. Use the tweening editor to change both the spacing between reference points and the path that the reference points follow to create nonlinear animation.

You can use tweening to simulate real-world motion effects, for example, the curved paths, acceleration, and deceleration characteristics of a bouncing ball. You can also use the tweening editor with other properties. For example, the tweening editor can change color slowly at first, and then speed up.

**Interactive content**

With interactivity, you can control what triggers certain actions in your content. For example, you can use interactivity to add the following functionality to your content:

- Add rollovers to objects.
- Define hyperlinks that link to other content.
- Launch an application.
- Play animation sequences or sounds based on user actions.

An *interactive element* comprises the following two components:

- event, such as a button click, that you set as a trigger
- action, such as the playing of an animation or sound, that the event triggers

With the Plazmic Composer, you can add interactive elements by defining an event trigger, and then specifying the actions to trigger after the event occurs. One event can trigger multiple actions.

By using different combinations of event triggers and actions, you can create a variety of interactive effects.

For example, when you create an animation object, you create a self-contained animation with its own timeline; it is not based on the main timeline of the Plazmic Composer project, and does not necessarily begin to play when the user loads content on the BlackBerry smartphone. An event must trigger the animation object before it plays.
You can trigger the animation by defining the following types of events:

- **user-initiated**: for example, after a user clicks a button or presses a specified key on the BlackBerry smartphone keypad
- **timeline-initiated**: for example, after the main timeline reaches a specified frame
- **action-initiated**: (that is, an event that is relative to some other action); for example, 5 seconds after Animation_X stops playing

## Events

Events trigger actions; that is, after an event occurs, it triggers the specified action. The Plazmic Composer supports the following event types: Button, HotKey, Timeline, and Relative.

<table>
<thead>
<tr>
<th>Event trigger type</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Button**         | Triggers an action after the user performs one of the following:  
|                    | - clicks the button using the Select key (On Activate state)  
|                    | - scrolls onto a button object (On Focus In state)  
|                    | - scrolls off a button object (On Focus Out state)  
| **HotKey**         | Triggers an action after the user presses a specified key on the BlackBerry smartphone  
| **Timeline**       | Triggers an action after the animation reaches a specified frame on the timeline  
| **Relative**       | Triggers an action at a point that is relative to the timeline of a specified animation object  
|                    | For example, you can trigger an action five seconds after Animation_1 begins  

## Actions

The Plazmic Composer supports several actions.

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Play Animation** | Plays the specified animation object. When you specify a Play Animation action, you set the animation settings to control behavior; for example, whether the animation starts from the beginning, loops, or accumulates.  
| **Stop Animation** | Stops the specified animation.  |
You can define actions with the events that trigger them, or you can define actions on their own, and then bind them to an event later. Use the Interactivity dialog box to define actions and the events that trigger them. Use the Actions dialog box to define actions without defining how an event triggers them.

### Import content

You can import the following file types into the Plazmic Composer:

- GIF
- JPG
- PNG
- TIF
- BMP
- TGA
- PSD
- WMF
- AI
- AVI
- MP4
- MPEG
- SVG
- SVGZ
• SWF

If you import Flash (SWF) content into the Plazmic Composer, the Plazmic Composer converts the SWF file to PME or SVG files. The Plazmic Composer only supports a subset of Flash content. However, you can repurpose a Flash file that you developed for the web if you want to deploy it on a BlackBerry smartphone. To repurpose the file, you must import it into Plazmic Composer and perform some fine-tuning of the content.

For more information about importing Flash content, see the Plazmic Composer for BlackBerry Smartphones User Guide.

Test content

You can preview and test your content by launching the BlackBerry Smartphone Simulator from the Plazmic Composer.

Preview content using the BlackBerry Smartphone Simulator

1. In the Plazmic Composer, select one of the following options:
   • open an existing file
   • create a new file

   **Note:**
   You can preview a new file before saving it.

2. On the toolbox, click the Simulator button.

3. Use the playback buttons to move backward and forward in your content.

Export content

From the Plazmic Composer, you can export content to the following formats:
• SVG
• PMB
• PME
• PNG
• GIF
• animated GIF
The Plazmic Composer exports nonsystem fonts as images.

**Post content**

You can post animated content on a web server in SVG, PMB, or PME format, which users can view in the browser.

If you import your Plazmic Composer content into Plazmic Theme Builder, you can export your finished JAD and COD files, and then post them on a web server to allow users to install the theme using the browser.
1. In Plazmic Composer, animation consists of which two key features?
   A. Buttons and events
   B. Graphics and events
   C. SVG and bitmaps
   D. Key frames and interpolation

2. Which tool can you use to change the way that object properties vary in an animation?
   A. Tweening editor
   B. Interpolation editor
   C. Change point

3. How can you make content interactive in Plazmic Composer? Choose three.
   A. Vary view port size
   B. Add rollovers to objects
   C. Add hyperlinks to other content
   D. Launch applications

   A. Nonlinear
   B. Relative
   C. Linear
   D. Timeline
5. Which action setting can you use to make your animation disappear from the screen?
   A. Hide Component
   B. Form Reset
   C. Component Reset
   D. Show Component

6. The Plazmic Composer supports _______ Flash content.
   A. All
   B. A superset of the
   C. A subset of the
   D. No

7. Which tool can you use to test your BlackBerry smartphone content?
   A. The BlackBerry Smartphone Simulator
   B. The Plazmic Composer
   C. A BlackBerry smartphone in debug mode
   D. The Plazmic Content Developer’s Kit
Answers

1. D
2. A
3. B, C, and D
4. B and D
5. A
6. C
7. A
SVG language is a text-based XML language developed by W3C that represents 2-D graphics, animation, and interactivity.

Bitmap or raster graphics, such as JPG and GIF images, maintain a specified size despite the display area. In contrast, you can scale SVG to fit a variety of screen sizes and layouts (portrait or landscape), with no loss in image quality or in the legibility of text. This adaptability makes vector graphics ideal for conveying graphical information on BlackBerry smartphones.

The two main methods you can use to create SVG are coding manually in a text editor or designing with a graphics editing tool.

The Plazmic Content Developer's Kit is a free suite of graphic design tools that you can use to create content that is optimized (as SVG, PME, or PMB) for use on BlackBerry smartphones. You can use the Plazmic Content Developer's Kit to develop the following types of content for mobile devices: interactive themes, mobile web sites, splash screens, graphics, and animations.

The Plazmic Content Developer's Kit includes the Plazmic Composer and the Plazmic Theme Builder. Plazmic Composer is an illustration and animation tool for designing SVG content. Plazmic Theme Builder is a tool for designing custom BlackBerry themes.

Using Plazmic Composer, you can create and edit objects, animated content, and interactive content. You can also import and edit existing content of various file formats.

You can create the following type of objects in Plazmic Composer: shapes, text, user input, buttons, and animations. You can also define the viewable screen area and set the ratio aspect of an object to control how a BlackBerry smartphone displays the object.

You can create animation effects for your Plazmic Composer content by changing the values of certain object properties over time. Timeline animation is a combination of key frames and interpolation. You can also use tweening for nonlinear animation that simulates real-world motion effects.

In Plazmic Composer, you can add interactive content such as hyperlinks that link to other content. To create an interactive element, you must set an event, such as a button click, that you set as a trigger. You must also set at least one action, such as the playing of an animation or sound, that the event triggers.

You can import various file types into the Plazmic Composer. However, if you import Flash (SWF) content into the Plazmic Composer, you must perform some fine-tuning of the content.

You can preview and test your content by launching the BlackBerry Smartphone Simulator from the Plazmic Composer.
From the Plazmic Composer, you can export content to SVG, PMB, PME, PNG, GIF, and animated GIF.

You can post animated content on a web server in SVG, PMB, or PME format, which users can view in the browser. If you import your Plazmic Composer content into Plazmic Theme Builder, you can export your finished JAD and COD files, and then post them on a web server to allow users to install the theme using the browser.
1. Define each of the following graphic terms:
   A. SVG
   B. Bitmap graphic
   C. Vector graphic
   D. Path segment
   E. Anchor points
   F. Control points

2. Explain the benefits of SVG graphics in the BlackBerry smartphone environment, comparing them to bitmap graphics.

3. List and describe the three types of vector graphic file formats that BlackBerry supports for BlackBerry smartphones.

4. List the key components of the Plazmic Content Developer’s Kit and describe the purpose of each component.

5. What four steps do you use to create SVG content and make it available to the BlackBerry smartphone?

6. Describe five types of objects that you can create in the Plazmic Composer.

7. List and define the four states of button objects.

8. Explain what the view box is and provide examples of the type of effects you can create with it.

9. Describe the aspect ratio, scaling, and alignment settings illustrated in the following graphic.
10. Describe the relationship between key frames and interpolation when creating animations.

11. Define the following terms for interactive content:
   
   A. Event
   
   B. Action

12. In what scenarios do you use Button, Timeline, and Relative events?