

# JADSDS Engine

## **Thank you!**

JADSDS engine is a friendly tag based JavaScript animator created to make easier web projects using the power of HTML5.

At the moment the engine includes features like color cycling, scale and rotation, gif animated support, multiple layers for parallax effects, capturing events and trigger actions and much more.

All your web projects run in Android as well, an app is included with the engine allowing you run your project in an Android device.

This is just the first step, more functions will be included as soon as possible. All will depend if the people fall in love with the project.

For more information remember visit our website:

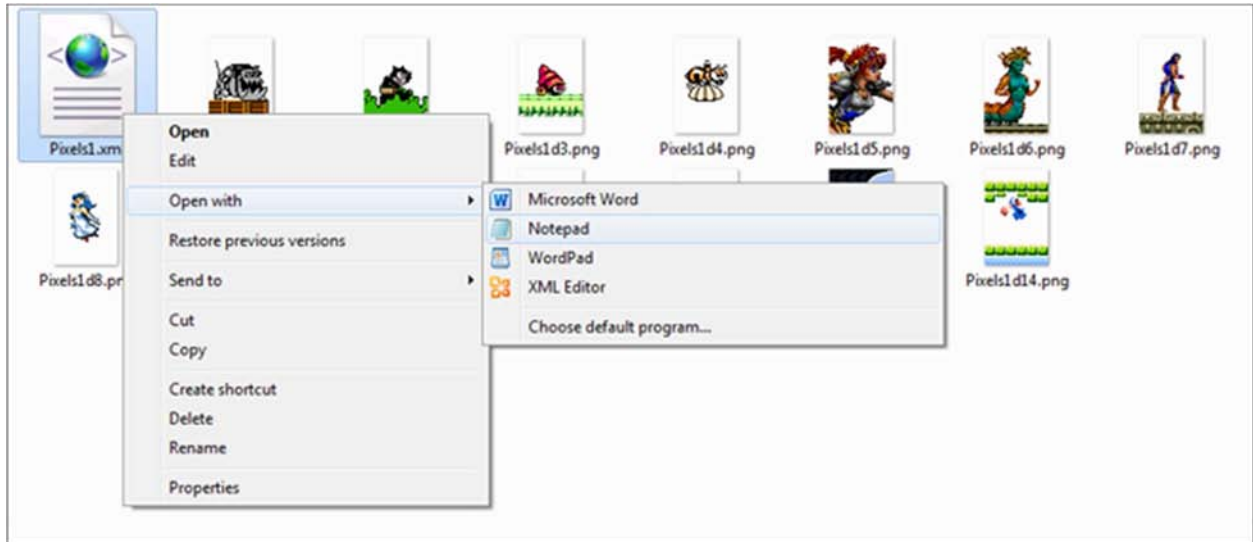
<http://pixelslivewallpaper.github.io/jadsdsengine/>

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## How can I open xml files?

Exist thousands of options for this purpose. The easiest one is your Windows Notepad, otherwise any other text editor will be ok.



## How can I create xml files?

You can use any xml file included in this application for your animations, just save it using “Save As” and pick a different name.

Is strongly recommended use “**Notepad++**”, it is free and a very powerful tool.

All your animations need to be **saved inside a folder named “animations”** in your website. Create a new folder, pick a name and include all your images and the xml inside the folder. The xml file must have the **same name** as the new folder. Please check the examples included.

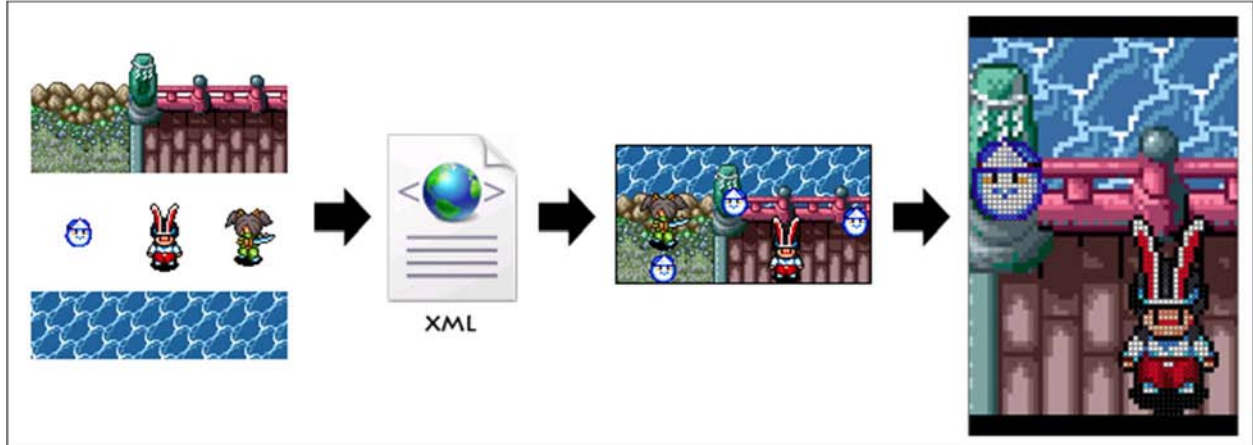
The xml file used in your animation is divided in sections, where "Basic" and "Images" are the most important.

Remember all the tags are case sensitive.

With “<!--” and “-->” you can comment xml tags and they will be ignored by the engine. Example:

```
<!--<tag>false</tag>-->
```

## Basic section



- **screenCanvasResolution:** It's the size of your canvas html object located in your website. Use "0" for default size or add values for resize it. If you are planning use your animation in your android phone, it needs to be the screen resolution.

**Note:** *screenPhoneResolution* and *screenCanvasResolution* are the same. The app will read them in the same way, is just for avoid confusions between Android and HTML 5.

- **canvasResolution:** It's the resolution for your project. The app will stretch your animation until fit the canvas html object always keeping the aspect ratio.
- **bgColor:** Declare the default color for your background. Remember it uses the same logic used in HTML #ARGB, the values need to be in Hexadecimal.

Example: **#ff63aeff** (#Alpha-Red-Green-Blue)

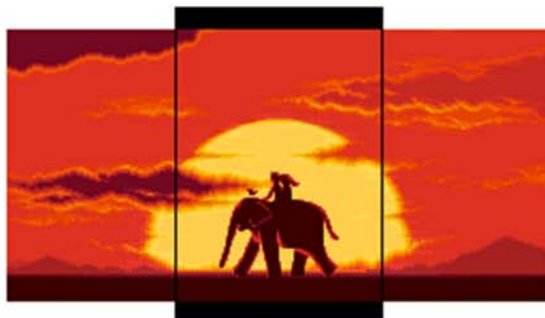
Alpha is used for transparency levels where "ff" means no transparent color. We recommend learn more about this on internet.

- **antiAlias:** If you are stretching your images maybe this option needs to be set to true. It will help to reduce the distortion in all your images. This tag is only functional if your project is using "RenderMode.Advanced", please check page 69 for more information. By default is true.

```

<basic type="animations">
  <screenCanvasResolution>
1    <width>320</width>
    <height>480</height>
  </screenCanvasResolution>
  <canvasResolution>
2    <maxWidth>256</maxWidth>
    <maxHeight>128</maxHeight>
  </canvasResolution>
  <bgColor>#ff000000</bgColor>
</basic>

```



- **grid:** If you are creating a pixel art animation this can be handy, it creates that pixel effect that we all love.
  - **addGrid:** Enable or disable the effect. Possible values: True or False.
  - **gridColor:** Allow set a color for the grid.
  - **addPixelBetweenGrid:** This is a cool effect. Possible values: True or False.

- **camera:** Allow control the camera, remember the size of the area for the camera in the same used in “**screenCanvasResolution**” tag. Please check page 67 for more information.

- **align:** Choose Top, Middle, Bottom or Custom. You’ll need these tags:

- **customAlignLeft:** The coordinates for horizontal align.
- **customAlignTop:** The coordinates for vertical align.

```
<align>Custom</align>
<customAlignLeft>-650</customAlignLeft>
```

- **autoHorizontalScroll:** Allow move the camera automatically. You’ll need these tags:

- **iniPosition:** Decide where the animation will begin. The values are between 0 and 1, where 0 is the beginning and 1 is the end. For example: 0.5 is the half. Use “;” for join the coordinates x and y.

```
<iniPosition>0;0</iniPosition>
```

- **iniPositionInPixels:** We strongly recommend use the previous tag “iniPosition” instead but, if you are confused, use this tag adding a value in pixels. Remember use negative values for move the camera to the left.

```
<iniPositionInPixels>-950;0</iniPositionInPixels>
```

- **pixelsMove:** The camera moves by default every 2 pixels. You can try another value.
- **cameraSpeed:** Change the animation speed, a higher number means a slower speed.

Example:

```
<camera>
  <autoHorizontalScroll>true</autoHorizontalScroll>
  <iniPosition>0;0</iniPosition>
  <pixelsMove>-2</pixelsMove>
  <cameraSpeed>1</cameraSpeed>
</camera>
```

- **forceLandscape:** This tag is only for the Android app, it forces the animation to be always in landscape orientation.

```
<forceLandscape>true</forceLandscape>
```

- **forcePortrait:** This tag is only for the Android app, it forces the animation to be always in portrait orientation.

```
<forcePortrait>true</forcePortrait>
```

- **addBlackLines:** Create a nice cinematic effect. You'll need these tags:
  - **blackLinesHeight:** The height for the black lines in pixels.
  - **blackLinesUpperTop & blackLinesLowerTop:** When black lines are used you have two, at the top of the screen or at the bottom. Here you decide in pixels the position.



```
<addBlackLines>  
  <blackLinesHeight>50</blackLinesHeight>  
  <blackLinesLowerTop>294</blackLinesLowerTop>  
</addBlackLines>
```



- **customScroll:** Move the camera using the tags “moveAnimation” or “pathAnimation”. Remember that you can use the tags “iniPosition” and “iniPositionInPixels” and decide the start position for the camera.

```
<camera>
  <customScroll>
    <moveAnimation>
      <iniLeft>0</iniLeft>
      <maxLeft>-1920</maxLeft>
      <pixelsMoveLeft>2</pixelsMoveLeft>
      <pixelsMoveTop>0</pixelsMoveTop>
    </moveAnimation>
  </customScroll>
</camera>
```

- **events:** Trigger events with the camera. Please see the “Event tags” section for more information.

```
<events>
  <event>
    <eventType>TriggerActionByPosition</eventType>
    <eventActions>
      <eventAction>StopMove</eventAction>
    </eventActions>
    <whenGlobalVariableIs>
      <variable>
        <id>screen</id>
        <value>0</value>
      </variable>
    </whenGlobalVariableIs>
    <whenCurrentPositionIs>-960;0</whenCurrentPositionIs>
  </event>
</events>
```

**Note:** Remember that is possible control the camera using events, just use as id “Camera”. Check the page 44 for an example.

# Images section

- **fileName:** The file name of your image. Remember use the complete file name, including the extension. “MyImage.png”, for example.

**Optional:** You can use the attribute “from” when the image is in another folder or if you just want borrow images from other animations.

```
<fileName from="mapzLake">whirlpool1.png</fileName>
```

- **speed:** Change the animation speed, a higher number means a slower speed.
- **id:** Sometimes you are going to need add an id. Please check the event “EditAnimationByID” in the event tags section.
- **left & top:** These are used as coordinates for the images. Remember that these coordinates are based in the resolution used in the tag “canvasResolution” or “createBackgroundLayer” if you are using a background layer.
- **flipImage:** Flip the image, you have two options: “Horizontal” or “Vertical”.



- **coordinates:** Sometimes is necessary place the same image in difference places, using this tag instead the tags “left & top” is a way to do it easier. Use “;” for left and top and “,” for the next coordinate. Example: 6;41, 55;3, 108;30.
- **frames:** Load a group of images and create an animated object. Change the animation speed with the tag “framesAnimationSpeed” (see below). Leaving one of the frames empty, the background will be used as frame allowing you save some memory. Check the example named “jamr2.xml” for more information.
  - **frame:** This tag represent one frame and require other tags for configurations.
    - **fileName:** The file name of your image. Remember use the complete file name, including the extension. “MyImage.png”, for example. This tag is necessary and must be included.

Note: A nice trick is leave the tag empty and the background will be used as frame allowing you save some memory. The first frame never can be empty.

- **delay:** You can control the animation speed in real time using this tag. Like previous speed tags, a higher number means a slower speed. This tag is optional.
- **applyAlterationsToThisFrame:** Please check “Image alterations” section for more information.
- **currentFrame:** Declare the default frame index. Default value is 0.
- **loadFramesByImageIndex:** Allow you save memory re-using images from another “image tag”, just use its index number.



```
<?xml version="1.0"?>
<doc>
  <basic type="animations">...</basic>
  <images>
    0 <image>...</image>
    1 <image>...</image>
    2 <image>...</image>
    3 <image>...</image>
    4 <image>...</image>
    5 <image>...</image>
    6 <image>...</image>
    7 <image>...</image>
    8 <image>...</image>
    9 <image>...</image>
    10 <image>
      <frames>
        <loadFramesByImageIndex>2</loadFramesByImageIndex>
      </frames>
      <fillWithPattern>
        <repeatTimesHorizontal>2</repeatTimesHorizontal>
      </fillWithPattern>
      <attachToMainLayer>false</attachToMainLayer>
      <alpha>100</alpha>
      <speed>6</speed>
      <left>0</left>
      <top>164</top>
    </image>
    11 <image>...</image>
    12 <image>...</image>
  </images>
</doc>
```

Remember these numbers were added as a reference, they are **not** visible in your xml editor.

- **framesAnimationSpeed:** Change the animation speed, a higher number means a slower speed.
- **framesAnimationStop:** By default is false, changing its value to “true” the animation will be frozen. Remember you can toggle its value using events.
- **reUseTagFramesFromPreviousImage:** Allow you re-use images from other “image tags” and save some memory.
- **convertGifAniToFrames:** Convert a gif animated to frames.

**Optional:** Use the attribute “from” when the image is in another folder or if you just want borrow images from other animations.

```
<convertGifAniToFrames from="toads">toad.gif</convertGifAniToFrames>
```

- **convertImageSequenceInFrames:** Convert a sequence of images in frames. Please check the example:
  - **filePreName:** The file name before the numbers. Leave it empty if you do not need it.
  - **startNumber:** The lowest number in the sequence.
  - **endNumber:** The very last number in the sequence.
  - **formatNumber:** The format used for the numbers. Leave it empty if you do not need it.
  - **fileNameExtension:** The file extension of the image.

Image sequence: pic000120.jpg, pic000121.jpg, pic000122.jpg... pic000179.jpg

```
<images>
  <image>
    <frames>
      <convertImageSequenceInFrames>
        <filePreName>pic</filePreName>
        <startNumber>120</startNumber>
        <endNumber>179</endNumber>
        <formatNumber>#####</formatNumber>
        <fileNameExtension>jpg</fileNameExtension>
      </convertImageSequenceInFrames>
    </frames>
    <left>0</left>
    <top>0</top>
    <speed>1</speed>
  </image>
</images>
```

**Optional:** Use the attribute “from” when the images are in another folder or if you just want borrow images from other animations.

```
<convertImageSequenceInFrames from="re0b2">
```

- **frameCollection:** An animated object is able to have multiple frames. We can have frames for different kinds of animation. For Example: walking, look around, jump, etc. Remember you can change them with the action “ChangeFrameCollection”. Please check “Events tags” for more information.
  - **repeatThisLoopForTimes:** Will repeat the animation included inside the tag “frameCollection” for a number of times and then the event “FrameAnimationRepeatLoopEnds” will be triggered.
  - **applyAlterationsToAllFrames:** Please check “Image alterations” section for more information.
  - **convertGifAniToFrames:** Convert a gif animated to frames.
  - **convertImageSequenceInFrames:** Convert a series of images in frames.
- **defaultFrameCollection:** The frameCollection tags have an index number like the tag “loadFramesByImageIndex” explained previously. This tag allows you decide which collection will be loaded first. Default value is 0.
- **returnBackwardToFirstFrame:** An animation is an endless loop of frames that returns to the first frame after reach the last one. Changing the value to true, the animation after reach the last frame will return backward instead go to the first one. The default value is false.
- **colorCycling:** This app cannot be completed without this feature. Color Cycling was used in old video games as an alternative for save memory. The technique consists in use only one frame and the app literally “moves the colors” creating a feeling of animation.

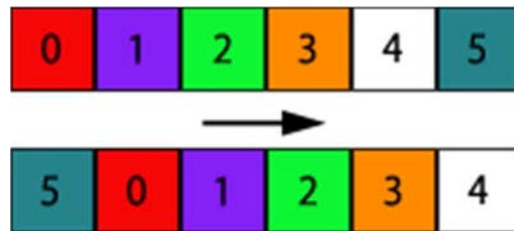
With imagination you can create really beautiful designs with few lines of code. You will need these tags:

- **fileName:** The file name of your image.
- **backwardAnimation:** By default the color animation is forward, but changing this tag to true it moves backward.

- **basicPaletteColor:** These are the colors to be animated. The format is simple A, R, G, B (Alpha, Red, Green, Blue) and for the next color use “-”.

**Example:**

```
<image>
  <frames>
    <colorCycling>
      <fileName>colorcycling.png</fileName>
      <basicPaletteColor>
        255,82,115,247-255,164,247,82-255,82,231,247-
        255,247,82,82-255,82,115,40
      </basicPaletteColor>
    </colorCycling>
  </frames>
  <left>317</left>
  <top>100</top>
</image>
```

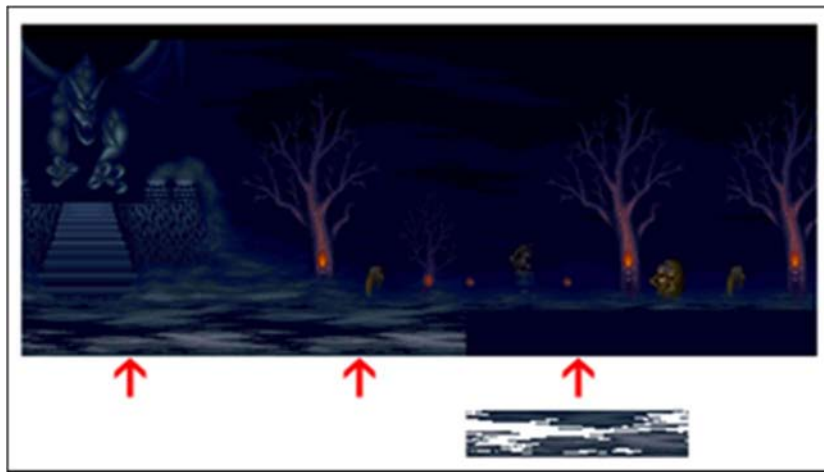


Here we have an example of color cycling animation. The colors are moved forward.

- **reUseImageFromPreviousImage & loadImageByImageIndex:** Like previous tags, allow you save memory. The big difference here is not to depend of the tag “<frames>”, these ones re-use the image loaded using the tag <fileName>. Use it when your image is not animated.
- **fillWithPattern:** This is great for backgrounds, you can fill areas in your project using an image as pattern. The tags “repeatTimesHorizontal” or “repeatTimesVertical” allow you repeat the pattern multiple times.

Animated patterns are compactible just use the tag “frames”.

```
<image>
  <frames>
    <frame>
      <fileName>dcbackft1.png</fileName>
    </frame>
    <frame>
      <fileName>dcbackft2.png</fileName>
    </frame>
    <frame>
      <fileName>dcbackft3.png</fileName>
    </frame>
  </frames>
  <fillWithPattern>
    <repeatTimesHorizontal>4</repeatTimesHorizontal>
  </fillWithPattern>
  <speed>6</speed>
  <left>0</left>
  <top>164</top>
</image>
```

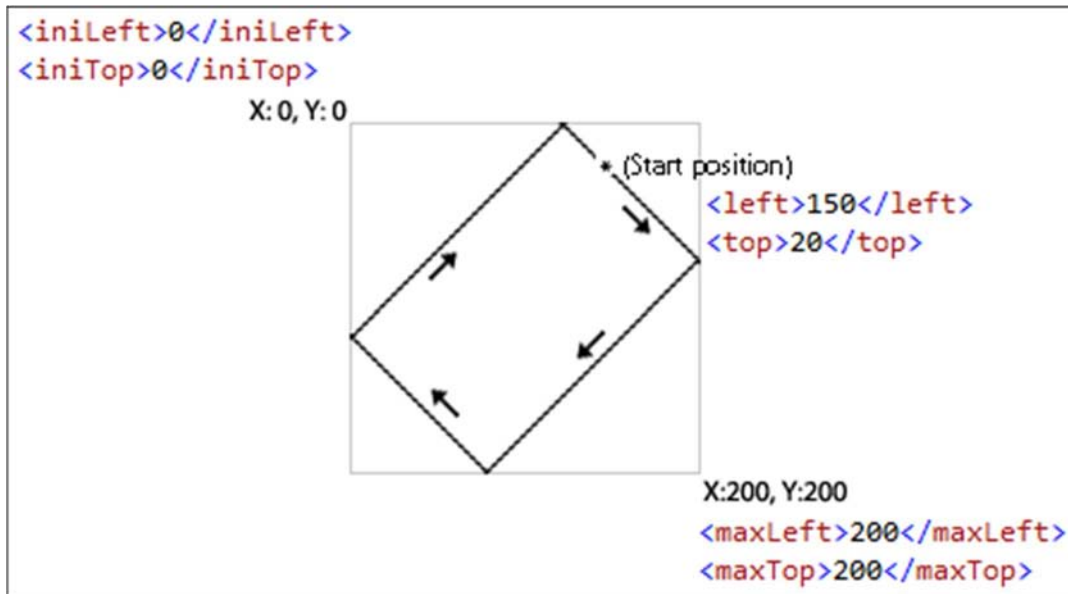


- **alpha:** Change the level of transparency in an image. The values are between 0 and 255, where 0 is completely transparent and 255 is the opposite.
- **moveAnimation:** Move an image from a point to another one. The trajectory is calculated by the app. Please check “**pathAnimation**” for another alternative.

Use “pixelsMoveLeft” and “pixelsMoveTop” to indicate how many pixels the engine will move the image. If pixelsMoveLeft is 0 means vertical movements, both with values mean diagonal movements or use negative values for move it backward. By default the values are 2 pixels for both.

- **pixelsMoveLeft**: Horizontal movements.
- **pixelsMoveTop**: Vertical movements.
- **iniLeft & iniTop**: The start position for the image.
- **maxLeft & maxTop**: The final position for the image.
- **moveAnimationSpeed**: Like the tag “speed”, it changes the animation speed.
- **moveAnimationStop**: By default is false, but if your design required it, change it to “true” and the animation will be frozen. Remember you can change it to "false" again using “actions”.
- **returnToTheBeginning**: By default the image after reach the limits of the area return backward to the beginning. Changing this tag to true the image will be moved instantly to the beginning.

When we need move our image horizontally or vertically is easy to understand the configuration but in some cases our design requires diagonal movements and here is where people get confused. Please check the next images for understand the basics of moveAnimation.



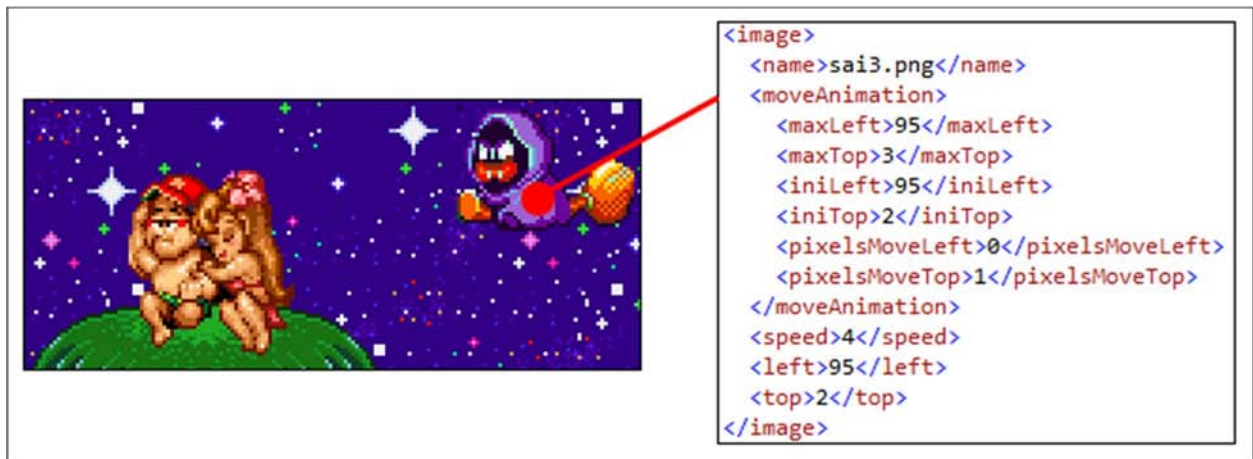
Here “pixelsMoveLeft” and “pixelsMoveTop” are using the same values, causing the image keeps moving in a diagonal direction.



In the previous image an area is created with iniLeft, iniTop, maxLeft & maxTop. This means that the image can only move inside this area, after reach the limits automatically will return.

Playing with “pixelsMoveLeft” and “pixelsMoveTop” values change the direction of the image. Use negative values for **backward** movements.

Here we have another example but only for vertical movements, for reach that purpose we change the value of “pixelsMoveLeft” to 0.



Here “pixelsMoveLeft” was changed to 0 for vertical movements.

- **moveEndLessAnimation:** Create horizontal or vertical loops following an image pattern. This is useful for animate roads or backgrounds.
  - **direction:** The animation can be done in 4 directions: Forward, Backward, Down and Up.
  - **pixelsMove:** The image pattern is moved following the quantity of pixels declared in this tag. Higher values create a feeling of speed, an image with a value 1 will move slower than another one with 4. Use negative values for backward movements.
  - **moveEndLessAnimationSpeed:** Like in previous speed tags, you can reduce or increase the speed using this tag.
  - **moveEndLessAnimationStop:** By default is false, but if your design required it, change it to "true" and the animation will be frozen. Remember you can change it to "false" again using "actions".

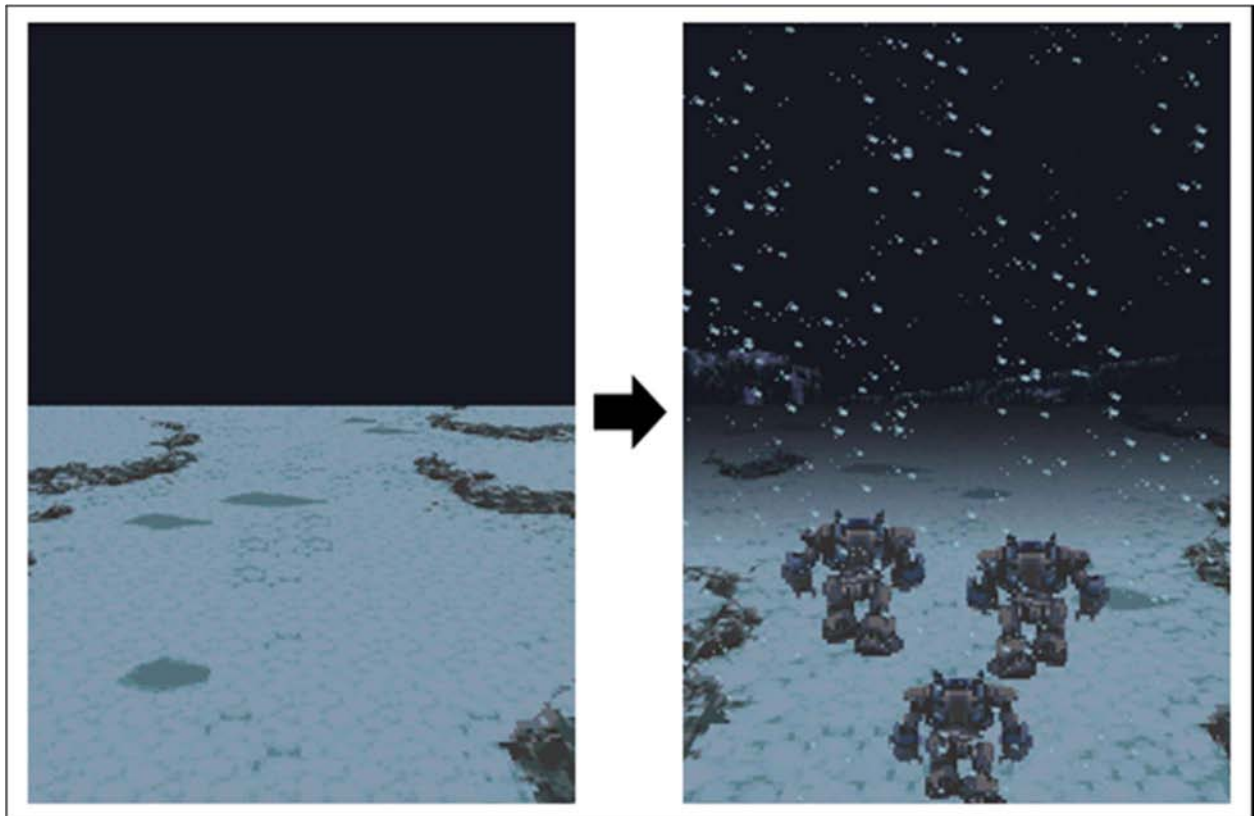


moveEndLessAnimation is usually used for animate roads

- **pathEndLessAnimation:** Like the previous tag, it creates a loop but here we have more options. This is useful for create snow effect or clouds in animated skies.
  - **iniLeft, iniTop, maxLeft & maxTop:** You are not only limited to vertical or horizontal movements. These tags create a line between two points and will be used as path.
    - **iniLeft & iniTop:** The start point.
    - **maxLeft & maxTop:** The final point.
  - **numberOfLayers:** By default is 1, It means the quantity of times that the pattern will be printed horizontally.
  - **distanceBetweenLayers:** Change the distant (in pixels) between layers. Use this tag if you are working with multiples layers. See previous tag.

- **numberOfImagesPerLayer:** You can repeat the image pattern vertically how many times is required.
- **maxRandomNumberPerLayerInPixels:** If you are trying to create snow, rain, etc. this can be useful. The distance for the image pattern between the layers will be random. If you are creating an animated background, probably this value would be useful in 0.
- **repeatLoop:** By the default is true but if you design require it, change it to false and after the loop is finished will stop.
- **pixelsMove:** The image pattern is moved following the quantity of pixels declared in this tag. Higher values create a feeling of speed, an image with a value 1 will move slower than another one with 4. Use negative values for backward movements.
- **pathEndLessAnimationSpeed:** Like in previous speed tags, you can reduce or increase the speed using this tag.
- **pathEndLessAnimationStop:** By default is false, but if your design required it, change it to "true" and the animation will be frozen. Remember you can change it to "false" again using "actions".
- **mode7:** This is the first attempt to create a similar mode 7 effect. Mode 7 was popular in the 90's thanks to the snes. It takes an image and changes its perspective creating a 3d effect. Only scale is supported by now, but in a future version rotation will be included.
  - **cameraY & cameraX:** These are the coordinates for the camera, based in the image size where the mode 7 will be used. You can focus specifics areas of the image with these values.
  - **cameraPixelsMoveX & cameraPixelsMoveY:** Like in moveAnimation, the image is moved base in these values. You can create a feeling of speed adding high values. Use negative values for backward movements.
  - **cameraPixelsMoveIniX & cameraPixelsMoveIniY:** These are the coordinates for the start position of the image. Remember all the values are based in the image size where mode 7 will be used.
  - **cameraPixelsMoveMaxX & cameraPixelsMoveMaxY:** These are the coordinates for the final position of the image. Remember all the values are based in the image size where mode 7 will be used.

- **scaleVertical & scaleHorizontal:** You can spread the image for fill a specific area in your design.
- **useFilters:** Turn on or off anti-aliasing. Possible values are true or false.
- **mode7Speed:** Change the animation speed, a higher number means a slower speed.
- **mode7Stop:** By default is false, but if your design required it, change it to "true" and the animation will be frozen. Remember you can change it to "false" again using "actions".
- **cameraControl:** You have two different values for this tag:
  - **StartAgain:** Create an endless loop making the feeling of walking on a road. This is the default value for this tag.
  - **Return:** When the camera reached the cameraPixelsMoveMaxX & cameraPixelsMoveMaxY values, it returns to the start point.
- **boxSizeWidth & boxSizeHeight:** Declare the size of the area where the mode 7 effect will be placed.




Is strongly recommended open the file ff6.xml inside the folder "your sd card / PixelsLW / ff6 /" and play with the values. The only one way to understand is changing the values and see what happened.

- **createBackgroundLayer:** If you are working with a camera and scrolling you can create multiple layers with this tag for a nice *parallax* effect.

This tag creates an alternative “canvasResolution”. If you are planning create a background layer you must use a resolution smaller than the main “canvasResolution”, thereby the background layer will move slower when the scrolling happens.

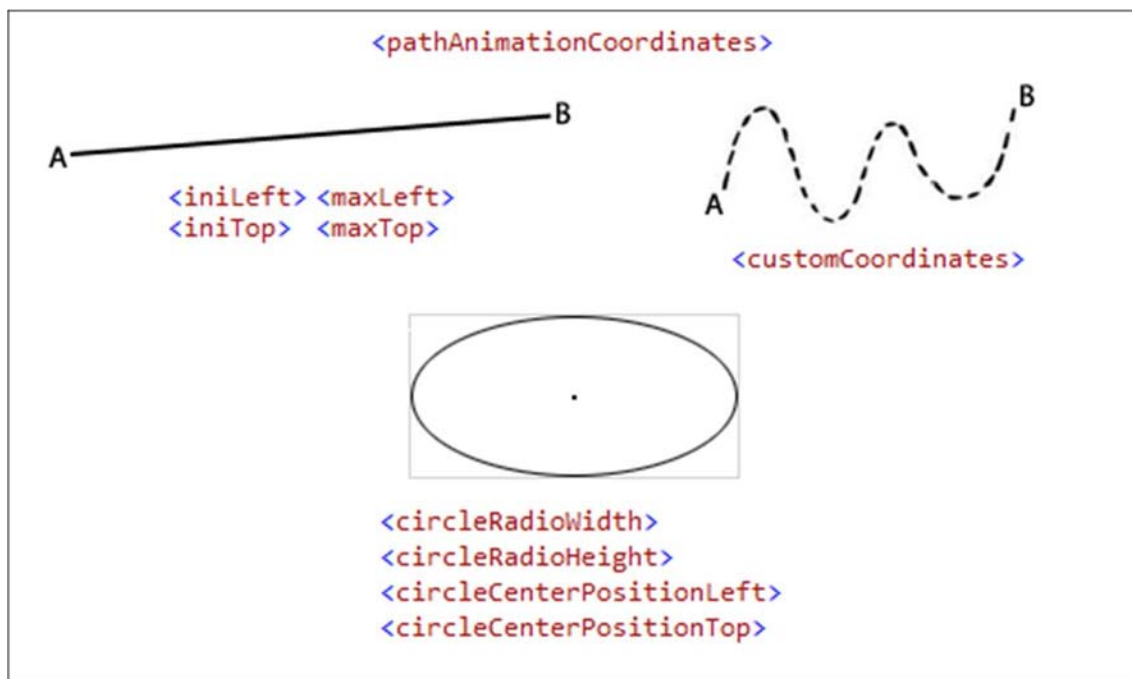
- **maxWidth & maxHeight:** Declare the size for the alternative canvas.

```
<?xml version="1.0"?>
<doc>
  <basic type="animations">
    <screenCanvasResolution>
      <width>196</width>
      <height>294</height>
    </screenCanvasResolution>
    <canvasResolution>
      <maxWidth>621</maxWidth>
      <maxHeight>224</maxHeight>
    </canvasResolution>
    <bgColor>#ff000000</bgColor>
    <camera>
      <autoHorizontalScroll>true</autoHorizontalScroll>
      <iniPosition>0;0</iniPosition>
      <pixelsMove>1</pixelsMove>
      <cameraSpeed>1</cameraSpeed>
    </camera>
  </basic>
  <images>
    <image>
      <name>dcback.png</name>
      <createBackgroundLayer>
        <maxWidth>458</maxWidth>
        <maxHeight>191</maxHeight>
      </createBackgroundLayer>
    </image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
    <image>...</image>
  </images>
</doc>
```



The width used in createBackgroundLayer is smaller than the width used in canvasResolution.

- **reUseBackgroundLayerFromPreviousImage:** You don't need create a background layer multiple times, using this tag the previous background layer will be re-used again.
- **pathAnimation:** Similar to **moveAnimation**, it allows move an image from a specific point to another one creating a path with coordinates. The difference between both is freedom, **moveAnimation** is limited to use straight directions and **pathAnimation** not. The advance of **moveAnimation** is CPU – memory friendly and less complicated to configure.
  - **pathAnimationCoordinates:** **pathAnimation** includes different options for move your images. Please check the next tags:
    - **iniLeft, iniTop & maxLeft, maxTop:** The start point and final point. Use it for straight movements.
    - **customCoordinates:** Create a path with coordinates. The syntax used is “;” for left and top and “,” for the next coordinate. Example: 1;1, 2;2, 3;3. The image is moved following these coordinates.
    - **circleRadioWidth, circleRadioHeight, circleCenterPositionLeft & circleCenterPositionTop:** Create a circle path.



- **pixelsMove:** The image pattern is moved following the quantity of pixels declared in this tag. Higher values create a feeling of speed, an image with a value 1 will move slower than another one with 4. Use negative values for backward movements.

- **pathAnimationSpeed:** Change the animation speed. A higher number means a slower speed.
- **startPosition:** pathAnimation creates a path of coordinates between “iniLeft & iniTop” and “maxLeft & maxTop”. This tag allows you decide where will be the start point.
- **pathAnimationStop:** By default is false, but if your design required it, change it to “true” and the animation will be frozen. Remember you can change it to "false" again using “actions”.
- **returnBackwardToTheBeginning:** By default the image after reach the limits of the area return backward to the beginning. Changing this tag to true the image will be moved instantly to the beginning.
- **imageTimer:** Is possible create a timer for trigger actions after a specific period of time. Please see the “Event tags” section for more information.
  - **timerDelay:** Decide the time between actions. 1000 means a second.
  - **timerStop:** By default is false and the timer starts just after the animation is loaded. Change it to true, will be in standby until the action “RunTimerOnlyForNumberTimes” is triggered.
  - **runTimerOnlyTimes:** Use it if you need run the timer only for a specific number of times. Remember the action “RunTimerOnlyForNumberTimes” allows change this value.
- **disableImage:** An image can be temporally disabled using this tag. Check the action “EnableByID” in the “Event tags” section for more information. The default value is false.
- **applyAlterations:** Please check “Image alterations” section for more information.
- **visible:** Do not confuse this tag with “disableImage”. The “visible” tag hides the image but all its animations are still running. Check the action “ChangeVisibleValue” in the “Event tags” section for more information. The default value is true.
- **width & height:** Allow you change the real size of the image by a new one in pixels.
- **rotate:** Rotate the image following the quantity of degrees declared. Something important when this tag is used is the incompatibility with the tag “flipImage”, you must use “Image alterations” instead, check its section for more information.

- **video:** Image files are not the only one available source for animation frames, using this tag you can include videos. Keep in mind that image manipulations cannot be used on videos.
  - **playerID:** It is quite important include a player id, it's the only way to manipulate the video from other animations. The video tag belongs to the image tag, it means that the player id and the image id are the same. If you have included a player id, you do not need include an image id.
  - **videoFile:** The file name of your video. Remember use the complete file name, including the extension, "MyVideo.mp4". The attributes available are:
    - **from (optional):** You can use the attribute "from" when the video is in another folder or if you just want borrow videos from other animations.
    - **streamed:** By default is true. Streamed videos is a nice way to speed up loading times especially if the video file is quite heavy. Please check on Internet more information about it. Changing this option to false, the video will be fully downloaded before play it.
  - **forceType:** The application automatically get the file type reading the values submitted in the tag "videoFile", but sometimes if you are using videos from internet (http, https) the url can be confusing making impossible know the file type. In these cases you should use this tag and include manually the file type. Please check on Internet for more information. For .mp4 files use: "video/mp4".
  - **autoPlay:** By default is true, after load the video it will play immediately.
  - **volume:** The values for volume are between 0 and 1. Where 0 is muted and 1 is the loudest.
  - **currentTime:** Allow play a video from a specific position in time. The values are based in seconds.
  - **loop:** If this properly is set true, the player will keep playing the same video infinite times.
  - **useVideoFromPlayerID:** You can re-use a video in multiples "image tags" adding the player id in this tag. It comes handy if you are planning print the same video in different places in your canvas with different effects. Keep in mind that all the videos will be playing the same video and currentTime.



Please check these examples:

```
<image>
  <video>
    <videoFile streamed="false" from="videoexample">Video.mp4</videoFile>
    <autoplay>true</autoplay>
    <volume>0.4</volume>
    <currentTime>90</currentTime>
    <playerID>videoPlayerBeta</playerID>
    <loop>false</loop>
  </video>
  <left>0</left>
  <top>0</top>
  <width>520</width>
  <height>320</height>
</image>

<image>
  <video>
    <useVideoFromPlayerID>videoPlayerBeta</useVideoFromPlayerID>
  </video>
  <left>0</left>
  <top>322</top>
  <width>420</width>
  <height>220</height>
  <id>Im a copy</id>
</image>

<image>
  <fileName>play.png</fileName>
  <left>300</left>
  <top>322</top>
  <id>PlayButton</id>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>PlayVideo</eventAction>
      </eventActions>
      <video>
        <playerID>videoPlayerBeta</playerID>
      </video>
    </event>
  </events>
</image>
```

**Note:** At the moment this is the only one tag not available for Android because is still in development, in a future version will be included.

- **imagePropertiesAnimation:** Allow you animate the properties Alpha, Scale and Rotation in an image.
  - **propetiesToAnimate:** Declare what properties will be animated.
    - **property:** Allow you configure all the settings for animate an image.
      - **propertyName:** Name of the property to animate.
        - **Alpha:** Like the previous tag alpha, this one allows you animate the transparency level of an image. The values are between 0 and 255, where 0 is completely transparent and 255 is the opposite.
        - **Scale:** Change the size of the image (width and height).
        - **Rotation:** Rotate the image.

#### Settings for Alpha:

- **minimumAlphaValue:** It is the minimum value that alpha property can reach, after that, the event “MinimumAlphaValueReached” will be triggered.
- **maximumAlphaValue:** It is the maximum value that alpha property can reach, after that, the event “MaximumAlphaValueReached” will be triggered.
- **animationAlphaAction:** It can be “Increase”, “Decrease” or “Stop” and allows animate the alpha value of the image.
- **updateAlphaValue:** Depending of what option was chosen in the previous tag, you can set a value for increase or decrease the alpha property of the image.
- **currentAlphaValue:** It is the default value that will be used for the alpha animation.
- **alphaSpeed:** Change the animation speed, a higher number means a slower speed.

### Settings for Width & Height:

- **minimumWidthValue:** It is the minimum value that width property can reach, after that, the event “MinimumWidthValueReached” will be triggered.
- **maximumWidthValue:** It is the maximum value that width property can reach, after that, the event “MaximumWidthValueReached” will be triggered.
- **animationWidthAction:** It can be “Increase”, “Decrease” or “Stop” and allows animate the width value of the image.
- **updateWidthValue:** Depending of what option was chosen in the previous tag, you can set a value for increase or decrease the alpha property of the image.
- **currentWidthValue:** It is the default value that will be used for the width animation.
- **widthSpeed:** Change the animation speed, a higher number means a slower speed.
- **minimumHeightValue:** It is the minimum value that height property can reach, after that, the event “MinimumHeightValueReached” will be triggered.
- **maximumHeightValue:** It is the maximum value that height property can reach, after that, the event “MaximumHeightValueReached” will be triggered.
- **animationHeightAction:** It can be “Increase”, “Decrease” or “Stop” and allows animate the height value of the image.
- **updateHeightValue:** Depending of what option was chosen in the previous tag, you can set a value for increase or decrease the height property of the image.
- **currentHeightValue:** It is the default value that will be used for the height animation.

- **heightSpeed:** Change the animation speed, a higher number means a slower speed.
- **keepImageInItsPivotWhenScaling:** This property is false by default, change it to true if you want keep the image in its center when its size changes.
- **keepAspectRatioWhenScaling:** If you are working with the events `MinimumWidthValueReached`, `MaximumWidthValueReached`, `MinimumHeightValueReached` and `MaximumHeightValueReached` probably this tag will be handy. It will keep the aspect ratio of the image when its size is changed.

#### Settings for Rotation:

- **minimumDegreesValue:** It is the minimum value in degrees that the image can reach, after that, the event `"MinimumRotationValueReached"` will be triggered.
- **maximumDegreesValue:** It is the maximum value in degrees that the image can reach, after that, the event `"MaximumRotationValueReached"` will be triggered.
- **animationRotationAction:** It can be `"Increase"`, `"Decrease"` or `"Stop"` and allows animate the image.
- **updateDegreesValue:** Depending of what option was chosen in the previous tag, you can set a value for increase or decrease the degrees of the image.
- **currentDegreesValue:** It is the default value that will be used for the animation.
- **rotationSpeed:** Change the animation speed, a higher number means a slower speed.
- **infiniteRotation:** The image after reach the `maximumDegreesValue` will return to the `minimumDegreesValue` automatically. The default value is `"false"`.

- **pivot:** These are coordinates for the point of rotation. By default, will be the center of the image but you can add a custom coordinate. The configuration is simple use “;” for split coordinates. Example: X;Y.
- **rotateImageAroundCoordinate:** These are the coordinates for keep the image orbiting a point. The configuration is simple use “;” for split coordinates. Example: X;Y.
- **radius:** Depending on the previous tag, it declares the distance between the image and the point.

**Note:** Like happened with the tag “rotate”, animate an image using the property “Rotation” will cause incompatibility with the actions flip image vertically or horizontally. For fix this problem use “Image alterations”, check its section for more information.

Please check the next page, there we are playing with the properties alpha, width and height. Remember check the Event tags section for learn more about what events and actions are available for this animation.

```

<image>
  <fileName>ng3e.png</fileName>
  <left>49</left>
  <top>18</top>
  <alpha>0</alpha>
  <imagePropertiesAnimation>
    <propertiesToAnimate>
      <property>
        <propertyName>Alpha</propertyName>

        <minimumAlphaValue>0</minimumAlphaValue>
        <maximumAlphaValue>255</maximumAlphaValue>
        <updateAlphaValue>40</updateAlphaValue>
        <currentAlphaValue>0</currentAlphaValue>
        <animationAlphaAction>Increase</animationAlphaAction>
      </property>
      <property>
        <propertyName>Scale</propertyName>

        <minimumWidthValue>2</minimumWidthValue>
        <maximumWidthValue>68</maximumWidthValue>
        <updateWidthValue>2</updateWidthValue>
        <currentWidthValue>38</currentWidthValue>
        <animationWidthAction>Decrease</animationWidthAction>

        <minimumHeightValue>2</minimumHeightValue>
        <maximumHeightValue>62</maximumHeightValue>
        <updateHeightValue>2</updateHeightValue>
        <currentHeightValue>32</currentHeightValue>
        <animationHeightAction>Decrease</animationHeightAction>
      </property>
      <property>
        <propertyName>Rotation</propertyName>

        <minimumDegreesValue>36</minimumDegreesValue>
        <maximumDegreesValue>180</maximumDegreesValue>
        <updateDegreesValue>6</updateDegreesValue>
        <currentDegreesValue>0</currentDegreesValue>
        <rotationSpeed>1</rotationSpeed>
        <animationRotationAction>Decrease</animationRotationAction>
      </property>
    </propertiesToAnimate>
  </imagePropertiesAnimation>
</image>

```

## Audio players section

- **playerID:** All the players created in this section will be used later by the animations. The only way to do that is assigning an id to the player.

- **audioFile:** The audio file name.

**Optional:** You can use the attribute “from” when the audio file is in another folder or if you just want borrow files from other animations.

```
<audioFile from="musicFolder">sound.m4a</audioFile>
```

- **loop:** If this properly is set true, the player will keep playing the same sound infinite times.
- **volume:** The values for volume are between 0 and 1. Where 0 is muted and 1 is the loudest.
- **autoPlay:** Set this property to true and the sound will be played just after loaded.
- **events:** You can include events here, please check the section “Event tags” for more information.

**Example:** Here we added background music to our project.

```
<audioPlayers>
  <audioPlayer>
    <playerID>backgroundAudio</playerID>
    <audioFile>A-Bit of Daft Punk.m4a</audioFile>
    <loop>true</loop>
    <volume>0.5</volume>
    <autoPlay>true</autoPlay>
  </audioPlayer>
</audioPlayers>
```

**Another example:** Here we have used an image as button to play a sound.

```
<image>
  <fileName>icon.png</fileName>
  <left>250</left>
  <top>20</top>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>PlayAudio</eventAction>
      </eventActions>
      <audioPlayer>
        <playerID>sfxAudio</playerID>
        <audioFile>laser.mp3</audioFile>
        <volume>0.5</volume>
        <autoPlay>true</autoPlay>
      </audioPlayer>
    </event>
  </events>
</image>
```

In this example the player “backgroundAudio” already have a sound loaded, we just need use the action “PlayAudio” and the “playerID” to play the sound.

```
<image>
  <fileName>icon2.png</fileName>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>PlayAudio</eventAction>
      </eventActions>
      <audioPlayer>
        <playerID>backgroundAudio</playerID>
      </audioPlayer>
    </event>
  </events>
</image>
```



# Text areas section

- **left & top:** They are used as coordinates for the text areas.
- **disableText:** Hide the text area. Check the actions “EnableByID” and “DisableByID” in the “Event tags” section for more information.
- **textAreaID:** All the text areas need an id, is the only way to send instructions from any other animations.
- **stopText:** The text declared inside the text areas is printed immediately. You can stop it setting this tag to false.
- **color:** Change the color of your text. Remember, we are using the same logic used in HTML #ARGB, the values need to be in Hexadecimal.
- **bold:** Set it true for make your text bold.
- **font:** Change the font in your text, just write a font name.
- **size:** Change the size of your text.
- **italic:** Set it true for italicize your text.
- **printOneByOne:** If your idea is show your text character per character, set this tag to true and adjust the speed with the next tag.
- **speed:** If the tag “printOneByOne” was set true, it changes the animation speed, a higher number means a slower speed.
- **events:** You can include events here, please check the section “Event tags” for more information.
- **spaceBetweenLines:** The space between lines is calculated automatically, but can be done manually with this tag.

- **text:** Write your text here, but remember the special codes. Please check next table.

#10;	New line	You must write your text in a single line inside the xml file, thereby the app will replace the code moving the next text to a new line.
#38;	&	"&" is a reserved character in xml, use this code instead and the app will replace it for "&".

### Example:

```
<textAreas>
  <textArea>
    <left>10</left>
    <top>200</top>
    <textAreaID>Area1</textAreaID>
    <stopText>true</stopText>
    <textData>
      <color>#ffffff</color>
      <bold>true</bold>
      <printOneByOne>true</printOneByOne>
      <speed>2</speed>
      <font>Latha</font>
      <size>12</size>
      <italic>true</italic>
      <text>One#10;Two#10;Three#10;Four#38;Five</text>
      <spaceBetweenLines>20</spaceBetweenLines>
    </textData>
    <textData>
      <text>Six#10;Seven#10;Eight</text>
      <font>Roboto</font>
    </textData>
  </textArea>
</textAreas>
```

### Adding an event to a button:

```
<image>
  <fileName>button.png</fileName>
  <left>50</left>
  <top>50</top>
  <id>button</id>
  <events>
    <event>
      <eventType>OnClickUp</eventType>
      <eventActions>
        <eventAction>EditAnimationByID</eventAction>
      </eventActions>
      <editAnimationByIDOptions>
        <option>
          <editActions>
            <editAction>NextText</editAction>
          </editActions>
          <id>Area1</id>
        </option>
      </editAnimationByIDOptions>
    </event>
  </events>
</image>
```

**The text printed will look like this:**

One

Two

Three

Four & Five

**After press the button:**

Six

Seven

Eight

# Global variables

Global variables work in a similar way like “custom conditions”, the big difference is that they can be used by any other objects (images, text, etc.) in your project and not only the current object.

- **Variable:** Create how many variables you need.
  - **Id:** The name for you variable.
  - **Value:** The default value.

**Example:**

```
<globalVariables>
  <variable>
    <id>screen</id>
    <value>0</value>
  </variable>
</globalVariables>
```

Here we have a global variable named “screen” and its default value is “0”. In the next example we can see how it works.

```
<event>
  <eventType>TriggerActionByPosition</eventType>
  <eventActions>
    <eventAction>StopMove</eventAction>
  </eventActions>
  <whenGlobalVariableIs>
    <variable>
      <id>screen</id>
      <value>0</value>
    </variable>
  </whenGlobalVariableIs>
</event>
```

The previous example has an event “TriggerActionByPosition” and only will be triggered when the global variable named “screen” have the value “0”.

We can update the global variables, please check the next example:

```
<events>
  <event>
    <eventType>OnTouchUp</eventType>
    <eventActions>
      <eventAction>UpdateGlobalVariables</eventAction>
    </eventActions>
    <globalVariablesToUpdate>
      <variable>
        <id>screen</id>
        <value>0</value>
      </variable>
      <variable>
        <id>screen2</id>
        <value>7</value>
      </variable>
    </globalVariablesToUpdate>
  </event>
</events>
```

# Timers section

Timers work in the same way as the tag “imageTimer” works, the only ones differences are the tags “id” and “events”.

- **id:** You can use as many timers you need, the only way to change their properties later is giving them an id.
- **timerDelay:** Declare the time between actions. 1000 means a second.
- **timerStop:** By default is false and the timer starts just after the animation is loaded. Changing its value to true, the timer will be in standby until the action “RunTimer” is triggered.
- **runTimerOnlyTimes:** Use it if you need run the timer only for a specific number of times. Remember the action “RunTimerOnlyForNumberTimes” allows change this value.
- **events:** After the period time previously declared, the actions included inside this tag “events” will be triggered. Please check the “Event tags” section for more information.

**Note:** The next page has an example about how to create a timer. The most important difference is the “events” tag, they do not use the tag “eventType” because the engine adds automatically the event “Timer”.

The tag “ids” doesn’t work here because doesn’t make sense, the way how timers change the object properties is using the action “EditAnimationById”, this action is added automatically by the engine.

The tag “avoidRunThisEventMultipleTimes” will have “true” as value and cannot be changed.

```

<timers>
  <timer>
    <timerDelay>2000</timerDelay>
    <timerStop>>false</timerStop>
    <id>timer1</id>
    <runTimerOnlyTimes>2</runTimerOnlyTimes>
    <events>
      <event>
        <eventActions>
          <eventAction>ChangeCustomCondition</eventAction>
          <eventAction>ChangeTimerDelay</eventAction>
        </eventActions>
        <editAnimationByIDOptions>
          <option>
            <id>image27</id>
            <editActions>
              <editAction>ChangeSpeedAnimation</editAction>
            </editActions>
            <newSpeedAnimation>10</newSpeedAnimation>
          </option>
        </editAnimationByIDOptions>
        <whenCustomConditionIs>fast</whenCustomConditionIs>
        <newTimerDelay>5000</newTimerDelay>
        <newCustomCondition>slow</newCustomCondition>
      </event>
      <defaultCustomCondition>fast</defaultCustomCondition>
    </events>
  </timer>
</timers>

```

Another example:

```

<timers>
  <timer>
    <timerDelay>2000</timerDelay>
    <id>timer1</id>
    <events>
      <event>
        <eventActions>
          <eventAction>ChangeCustomCondition</eventAction>
          <eventAction>ChangeTimerDelay</eventAction>
        </eventActions>
        <editAnimationByIDOptions>
          <option>
            <id>ghost1,ghost2,ghost3,ghost4,ghost5</id>
            <editActions>
              <editAction>StopAnimationAndMove</editAction>
            </editActions>
          </option>
        </editAnimationByIDOptions>

        <whenCustomConditionIs>run</whenCustomConditionIs>
        <newTimerDelay>2000</newTimerDelay>
        <newCustomCondition>stop</newCustomCondition>
      </event>
      <defaultCustomCondition>stop</defaultCustomCondition>
    </events>
  </timer>
</timers>

```

# JavaScript actions

Trigger actions using events is a way to control objects in your project, but is not the only one. The tag “`javascriptActions`” allow you trigger actions from JavaScript.

These are the necessary tags:

- **javascriptAction**: Use how many actions you need, they are unlimited.
  - **Id**: The id will be used later from your JavaScript code.
  - **events**: You can include events here, please check the section “Event tags” for more information.

Example:

```
<javascriptActions>
  <javascriptAction>
    <id>Stop</id>
    <events>
      <event>
        <eventActions>
          <eventAction>StopAnimationAndMove</eventAction>
        </eventActions>
        <ids>image1,image2,image3</ids>
      </event>
    </events>
  </javascriptAction>
  <javascriptAction>
    <id>Resume</id>
    <events>
      <event>
        <eventActions>
          <eventAction>ResumeAnimationAndMove</eventAction>
        </eventActions>
        <ids>image4,image5,image6</ids>
      </event>
    </events>
  </javascriptAction>
</javascriptActions>
```

Calling the actions from JavaScript:

```
function testRunJS() {
  jadsdsEngine.runAction("Stop");
  jadsdsEngine.runAction("Resume");
}
```

The method “`runAction`” runs the actions included inside the tag “`javascriptActions`”. Please check the section “Include the engine in your website” for more information.



# Image alterations

The app has three tags that allow us make changes and save some memory re-using images. These tags are: “applyAlterations”, “applyAlterationsToAllFrames” and “applyAlterationsToThisFrame”.

- **applyAlterations:** The alterations will be done to all the frames currently used.
- **applyAlterationsToAllFrames:** Only the frames inside the tag “frameCollection” will be affected.
- **applyAlterationsToThisFrame:** Only the frame inside the tag “frame” will be affected.

You can use all the tags at same time for multiple alterations. The next page includes an example.

## Available alterations:

The tag “alterationsToDo” allows you apply the desire effect. Use “,” for multiple effects.

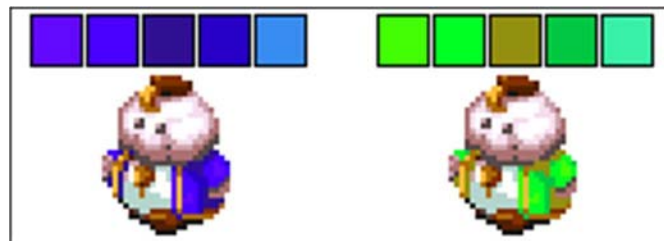
```
<alterationsToDo>ApplyNewPaletteColor,FlipVertical</alterationsToDo>
```

These are the available effects:

- **FlipVertical, FlipHorizontal:** Like the tag “flipImage” flip the images.
- **ApplyNewPaletteColor:** Change the current colors for new ones.

You need the tags “basicPaletteColor” and “newPaletteColor” for change the colors. The format is simple A, R, G, B (Alpha, Red, Green, Blue) and for the next color use “-”.

```
<applyAlterations>
  <alterationsToDo>ApplyNewPaletteColor</alterationsToDo>
  <basicPaletteColor> 255,99,8,255-255,74,0,255-255,49,16,148-
    255,41,0,198-255,57,140,239
  </basicPaletteColor>
  <newPaletteColor> 255,66,255,8-255,0,255,36-255,148,143,16-
    255,0,198,65-255,57,239,168
  </newPaletteColor>
</applyAlterations>
```



You don't need include all the colors, just those ones that you are planning to change.

## Example:

```
<image>
  <frames>
    <frameCollection>
      <frame>
        <fileName>localc1up.png</fileName>
        <applyAlterationsToThisFrame>
          <alterationsToDo>FlipHorizontal</alterationsToDo>
        </applyAlterationsToThisFrame>
      </frame>
      <frame>
        <fileName>localc2down.png</fileName>
      </frame>
      <frame>
        <fileName>localc3up.png</fileName>
      </frame>
      <applyAlterationsToAllFrames>
        <alterationsToDo>ApplyNewPaletteColor</alterationsToDo>
        <basicPaletteColor>255,49,16,148-255,99,8,255-
          255,41,0,198-255,74,0,255
        </basicPaletteColor>
        <newPaletteColor>55,49,16,148-55,99,8,255-
          55,41,0,198-55,74,0,255
        </newPaletteColor>
      </applyAlterationsToAllFrames>
    </frameCollection>
    <frameCollection>
      <frame>
        <fileName>localc1upback.png</fileName>
      </frame>
      <frame>
        <fileName>localc2downback.png</fileName>
      </frame>
      <frame>
        <fileName>localc3upback.png</fileName>
      </frame>
    </frameCollection>
  </frames>
  <applyAlterations>
    <alterationsToDo>ApplyNewPaletteColor,FlipVertical</alterationsToDo>
    <basicPaletteColor>255,49,16,148-255,99,8,255-
      255,41,0,198-255,74,0,255
    </basicPaletteColor>
    <newPaletteColor>255,99,0,33-255,181,0,99-255,148,0,33-255,181,0,66</newPaletteColor>
  </applyAlterations>
  <left>317</left>
  <top>145</top>
  <speed>5</speed>
</image>
```

# Event tags

The app can trigger events when a specific situation happens.

```
<image>
  <fileName>ff6citya.png</fileName>
  <moveAnimation>
    <maxLeft>0</maxLeft>
    <maxTop>224</maxTop>
    <iniLeft>0</iniLeft>
    <iniTop>134</iniTop>
    <pixelsMoveLeft>0</pixelsMoveLeft>
    <pixelsMoveTop>-1</pixelsMoveTop>
  </moveAnimation>
  <events>
    <event>
      <eventType>MoveAnimationMaxTopReached</eventType>
      <eventActions>
        <eventAction>StopMove</eventAction>
      </eventActions>
      <disableEventsAfterTriggered>true</disableEventsAfterTriggered>
    </event>
  </events>
  <left>0</left>
  <top>224</top>
  <speed>5</speed>
</image>
```

These events allow you trigger “actions”. The example above, show us an event triggered by moveAnimation when it reached the maximum vertical top value, thereby an action will be triggered to stop the moveAnimation.

## Events tag:

Inside the tag “events” we can declare default values. They will be used later in our projects for trigger actions. Also, you can use global variables for the same purpose. Please see the “Global variables” section for more information.

- **defaultCustomCondition:** If you are planning to use custom conditions a default value is required. Please see “Conditionals” section for more information.

```
<events>
  <event>...</event>
  <event>...</event>
  <event>...</event>
  <defaultCustomCondition>running</defaultCustomCondition>
</events>
```

## Event Tag:

- **eventType**: Check the events table for more information. Remember that is possible include multiples “eventType” tags in one “event” tag.
- **eventAction**: Check the actions table for more information.
- **disableEventsAfterTriggered**: The event after triggered will be disabled and will not be triggered again.
- **avoidRunThisEventMultipleTimes**: Do not confuse with the previous tag, this one will prevent trigger the same event multiple times but will not be disabled.

```
<events>
<defaultCustomCondition>run</defaultCustomCondition>
<event>
  <eventType>OnClickUp</eventType>
  <eventActions>
    <eventAction>EditAnimationByID</eventAction>
    <eventAction>ChangeCustomCondition</eventAction>
  </eventActions>
  <avoidRunThisEventMultipleTimes>true</avoidRunThisEventMultipleTimes>
  <whenCustomConditionIs>run</whenCustomConditionIs>
  <newCustomCondition>stop</newCustomCondition>
  <editAnimationByIDOptions>
    <option>
      <id>Camera</id>
      <editActions>
        <editAction>StopMove</editAction>
      </editActions>
    </option>
  </editAnimationByIDOptions>
</event>
<event>
  <eventType>OnClickUp</eventType>
  <eventActions>
    <eventAction>EditAnimationByID</eventAction>
    <eventAction>ChangeCustomCondition</eventAction>
  </eventActions>
  <avoidRunThisEventMultipleTimes>true</avoidRunThisEventMultipleTimes>
  <whenCustomConditionIs>stop</whenCustomConditionIs>
  <newCustomCondition>run</newCustomCondition>
  <editAnimationByIDOptions>
    <option>
      <id>Camera</id>
      <editActions>
        <editAction>ResumeMove</editAction>
      </editActions>
    </option>
  </editAnimationByIDOptions>
</event>
</events>
```

- **Ids**: Usually when an event is triggered the actions affect the current object itself. Using this tag the actions will affect only the ids included inside the tag. Use “,” for multiple ids.

**Note:** After use the “ids” tag all the actions will follow it, ignoring the current object. For affect the current object, you have two options.

- Include the current object id inside tag with the other ids.
- Create a new “event tag” with the same “eventType”.

```
<events>
  <event>
    <eventType>PathAnimationEndPointReached</eventType>
    <eventActions>
      <eventAction>StopMove</eventAction>
    </eventActions>
    <ids>image1,image2</ids>
  </event>
  <event>
    <eventType>PathAnimationEndPointReached</eventType>
    <eventActions>
      <eventAction>ResumeMove</eventAction>
    </eventActions>
    <ids>image3,image4</ids>
  </event>
</events>
```

In this example we need to create the event “PathAnimationEndPointReached” twice because the actions only will follow one ids tag.

**Note:** The actions “EnableByID” and “DisableByID” use the tag “ids” exclusively, it means that any other actions in the same event tag will affect only the current image. You can use a new event tag with the same “eventType tag” like we did in the previous example for more actions in other images.

Remember that the tag “ids” is quick way to run actions in multiple objects, but don’t forget the tag “editAnimationByID”.

Please check the page 51 for more information.

- **assignEvents:** This is a nice feature that allows you add or update events in other animations in real time. It is quite intuitive, just declare the id and assign the event.

Please check the example, where we have assigned a new event to the audio player “sfxAudio”, it will play a new sound when the current one is finished.

```
<image>
  <fileName from="dx">icon.png</fileName>
  <left>0</left>
  <top>200</top>
  <events>
    <event>
      <eventType>OnClickUp</eventType>
      <eventActions>
        <eventAction>AssignEvents</eventAction>
      </eventActions>
      <assignEvents>
        <assignEvent>
          <assignID>sfxAudio</assignID>
          <events>
            <event>
              <eventType>PlaybackIsFinished</eventType>
              <eventActions>
                <eventAction>PlayAudio</eventAction>
              </eventActions>
              <audioPlayer>
                <playerID>backgroundAudio</playerID>
                <audioFile>A-Bit of Daft Punk.m4a</audioFile>
                <volume>0.3</volume>
                <autoPlay>true</autoPlay>
              </audioPlayer>
            </event>
          </events>
        </assignEvent>
      </assignEvents>
    </event>
  </events>
</image>
```

- **Audio tags:** Please check the section “Audio players” to learn all about the tags available. Remember use the action “UpdateAudioPlayer” for update the audio player properties.

#### Examples:

```
<image>
  <fileName>icon.png</fileName>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>PlayAudio</eventAction>
      </eventActions>
      <audioPlayer>
        <playerID>sfxAudio</playerID>
        <audioFile>laser.mp3</audioFile>
        <volume>0.5</volume>
        <autoPlay>true</autoPlay>
      </audioPlayer>
    </event>
  </events>
</image>

<image>
  <fileName>icon.png</fileName>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>UpdateAudioPlayer</eventAction>
      </eventActions>
      <audioPlayer>
        <playerID>backgroundAudio</playerID>
        <volume>1</volume>
      </audioPlayer>
    </event>
  </events>
</image>

<image>
  <fileName>icon.png</fileName>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>PauseAudio</eventAction>
      </eventActions>
      <audioPlayer>
        <playerID>backgroundAudio</playerID>
      </audioPlayer>
    </event>
  </events>
</image>
```

- **Video tags:** Please check the page 24 to learn all about the tags available. Remember use the action “UpdateVideoPlayer” for update the video properties.

### Examples:

```
<image>
  <fileName>stop.png</fileName>
  <left>0</left>
  <top>322</top>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>UpdateVideoPlayer</eventAction>
      </eventActions>
      <video>
        <playerID>videoPlayerBeta</playerID>
        <currentTime>90</currentTime>
        <volume>0.7</volume>
      </video>
    </event>
  </events>
</image>
```

```
<image>
  <fileName>stop.png</fileName>
  <left>40</left>
  <top>322</top>
  <events>
    <event>
      <eventType>OnClickDown</eventType>
      <eventActions>
        <eventAction>UpdateVideoPlayer</eventAction>
      </eventActions>
      <video>
        <videoFile streamed="false">Trailer.mp4</videoFile>
        <playerID>videoPlayerBeta</playerID>
        <currentTime>0</currentTime>
        <volume>0</volume>
      </video>
    </event>
  </events>
</image>
```



- **editAnimationByIDOptions:** These are the necessary tags for the action “EditAnimationByID”.
  - **id:** The id of the object to edit. Remember use “,” for multiples ids.
  - **editActions:** Here you can use all the available actions. Please check Actions table.
  - **Previous tags:** The Actions table not only says what actions are available, it also says what tags you need. The next example the action “ChangeVisibleValue” needs the tag “newVisibleValue” for update the property “Visible” of the image.

Please check the next example:

```
<event>
  <eventType>TriggerActionByCurrentFrame</eventType>
  <eventActions>
    <eventAction>EditAnimationByID</eventAction>
  </eventActions>
  <whenCurrentFrameIndexIs>12</whenCurrentFrameIndexIs>
  <editAnimationByIDOptions>
    <option>
      <id>Ball7</id>
      <editActions>
        <editAction>ResumeMove</editAction>
        <editAction>ChangeVisibleValue</editAction>
      </editActions>
      <newVisibleValue>true</newVisibleValue>
    </option>
  </editAnimationByIDOptions>
</event>
```

Another example:

```
<events>
  <event>
    <eventType>OnClickDown</eventType>
    <eventActions>
      <eventAction>EditAnimationByID</eventAction>
    </eventActions>
    <editAnimationByIDOptions>
      <option>
        <id>test</id>
        <editActions>
          <editAction>UpdateImagePropertiesAnimation</editAction>
        </editActions>
        <newImagePropertiesAnimation>
          <propetiesToAnimate>
            <property>
              <propertyName>Alpha</propertyName>
              <minimumAlphaValue>0</minimumAlphaValue>
              <maximumAlphaValue>100</maximumAlphaValue>
              <updateAlphaValue>40</updateAlphaValue>
              <currentAlphaValue>0</currentAlphaValue>
              <animationAlphaAction>Increase</animationAlphaAction>
            </property>
          </propetiesToAnimate>
        </newImagePropertiesAnimation>
      </option>
    </editAnimationByIDOptions>
  </event>
</events>
```

Use your imagination to guess combinations, in this new example we are using the tag “eventAction” with “EditAnimationByID” and “editAction” with “UpdateImagePropertiesAnimation” for update “ImagePropertiesAnimation” of an image.

Remember that “UpdateImagePropertiesAnimation” is not the only one tag available, check page 57 for more information about how update animations using actions.

Please check the next page for more information about the tag “ids”.

## ids tag vs EditAnimationByID action

Depending on your project probably you are confused about the tag “ids” and the action “EditAnimationByID”, the difference between both is that “ids” affect only the object ids inside the tag ignoring the object that is triggering the action. The best way understand is with examples:

<pre>&lt;event&gt;   &lt;eventType&gt;OnClickUp&lt;/eventType&gt;   &lt;eventActions&gt;     &lt;eventAction&gt;ChangeVisibleValue&lt;/eventAction&gt;   &lt;/eventActions&gt;   &lt;ids&gt;ghost1,ghost2&lt;/ids&gt;   &lt;newVisibleValue&gt;&gt;false&lt;/newVisibleValue&gt; &lt;/event&gt;</pre>	<pre>&lt;event&gt;   &lt;eventType&gt;OnClickUp&lt;/eventType&gt;   &lt;eventActions&gt;     &lt;eventAction&gt;EditAnimationByID&lt;/eventAction&gt;   &lt;/eventActions&gt;   &lt;editAnimationByIDOptions&gt;     &lt;option&gt;       &lt;id&gt;ghost1,ghost2&lt;/id&gt;       &lt;editActions&gt;         &lt;editAction&gt;ChangeVisibleValue&lt;/editAction&gt;       &lt;/editActions&gt;       &lt;newVisibleValue&gt;&gt;false&lt;/newVisibleValue&gt;     &lt;/option&gt;   &lt;/editAnimationByIDOptions&gt; &lt;/event&gt;</pre>
---	---

Using the tag “ids” is faster and intuitive, the previous example we can use both without worry about conflicts.

<pre>&lt;event&gt;   &lt;eventType&gt;OnClickUp&lt;/eventType&gt;   &lt;eventActions&gt;     &lt;eventAction&gt;ResumeMove&lt;/eventAction&gt;     &lt;eventAction&gt;ChangeCustomCondition&lt;/eventAction&gt;   &lt;/eventActions&gt;   &lt;ids&gt;ghost1,ghost2&lt;/ids&gt;   &lt;newCustomCondition&gt;alpha&lt;/newCustomCondition&gt; &lt;/event&gt;</pre>	<pre>&lt;event&gt;   &lt;eventType&gt;OnClickUp&lt;/eventType&gt;   &lt;eventActions&gt;     &lt;eventAction&gt;ChangeCustomCondition&lt;/eventAction&gt;     &lt;eventAction&gt;EditAnimationByID&lt;/eventAction&gt;   &lt;/eventActions&gt;   &lt;editAnimationByIDOptions&gt;     &lt;option&gt;       &lt;id&gt;ghost1,ghost2&lt;/id&gt;       &lt;editActions&gt;         &lt;editAction&gt;ResumeMove&lt;/editAction&gt;       &lt;/editActions&gt;     &lt;/option&gt;   &lt;/editAnimationByIDOptions&gt;   &lt;newCustomCondition&gt;alpha&lt;/newCustomCondition&gt; &lt;/event&gt;</pre>
--	--

In the previous example we must be careful, using the tag “ids” with the action “ChangeCustomCondition” will update the custom conditions of all the ids included inside the tag and probably that is not what we want. In these cases the solution is the action “EditAnimationByID” that allows update values to other objects without affecting the current one.

Note: Another way to solve the conflict using the tag “ids” is creating a new event with the same “eventType”, one event will trigger the action “ChangeCustomCondition” and second one will trigger “ResumeMove” as long as you are not using the tag “avoidRunThisEventMultipleTimes”

```

<event>
  <eventType>OnClickUp</eventType>
  <eventActions>
    <eventAction>ChangeCustomCondition</eventAction>
  </eventActions>
  <newCustomCondition>alpha</newCustomCondition>
</event>
<event>
  <eventType>OnClickUp</eventType>
  <eventActions>
    <eventAction>ResumeMove</eventAction>
  </eventActions>
  <ids>ghost1,ghost2</ids>
</event>

```

Note: Remember conditionals are always tied to the object triggering the events. If you are trying to use the tags “ids” or “EditAnimationByID” and you want trigger an event only when a conditional match a value remember use “whenGlobalVariables” because is the only one conditional that can be shared among all the objects.

## Conditionals:

You can decide when the action will be triggered.

### whenFrameCollectionIndexIs

If the current frame collection index matches with the tag then the action is triggered.

```
<event>
  <eventType>FrameAnimationRepeatLoopEnds</eventType>
  <eventActions>
    <eventAction>FlipImage</eventAction>
  </eventActions>
  <whenFrameCollectionIndexIs>0</whenFrameCollectionIndexIs>
</event>
```

### whenCurrentPositionIs

If the current position matches with the tag then the action is triggered. The configuration is simple use “;” for split coordinates. Example: X;Y.

```
<event>
  <eventType>FrameAnimationRepeatLoopEnds</eventType>
  <eventActions>
    <eventAction>ChangeFrameCollection</eventAction>
  </eventActions>
  <whenCurrentPositionIs>2;368</whenCurrentPositionIs>
  <changeFrameCollectionIndexTo>5</changeFrameCollectionIndexTo>
</event>
```

### whenCustomConditionIs

Custom conditions allow trigger actions without depend on animation values.

```
<event>
  <eventType>Timer</eventType>
  <eventActions>
    <eventAction>StopAnimationAndMove</eventAction>
    <eventAction>ChangeCustomCondition</eventAction>
  </eventActions>
  <whenCustomConditionIs>running</whenCustomConditionIs>
  <newCustomCondition>stoppped</newCustomCondition>
</event>
<event>
  <eventType>Timer</eventType>
  <eventActions>
    <eventAction>ResumeAnimationAndMove</eventAction>
    <eventAction>ChangeCustomCondition</eventAction>
  </eventActions>
  <whenCustomConditionIs>stoppped</whenCustomConditionIs>
  <newCustomCondition>running</newCustomCondition>
</event>
<defaultCustomCondition>running</defaultCustomCondition>
```

### whenCurrentFrameIndexIs

An animation contains a group of frames (images) that are quickly showed one by one creating the feeling of animation. These frames are repeated in a loop infinite times. We can trigger actions only when a specific frame is on screen.

```
<events>
  <event>
    <eventType>TriggerActionByCurrentFrame</eventType>
    <eventActions>
      <eventAction>EnableByID</eventAction>
    </eventActions>
    <whenCurrentFrameIndexIs>3</whenCurrentFrameIndexIs>
    <ids>ball</ids>
  </event>
</events>
```

### whenRotationDegreesIs

If you are rotating an image you can trigger an event only when the image reaches a specify degree.

```
<events>
  <event>
    <eventType>RotationDegreesReached</eventType>
    <eventActions>
      <eventAction>ChangeAlpha</eventAction>
    </eventActions>
    <whenRotationDegreesIs>54</whenRotationDegreesIs>
    <alpha>255</alpha>
  </event>
</events>
```

### whenGlobalVariableIs

Only the event is triggered if the global variable match its value.

```
<event>
  <eventType>TriggerActionByPosition</eventType>
  <eventActions>
    <eventAction>StopMove</eventAction>
  </eventActions>
  <whenGlobalVariableIs>
    <id>screen</id>
    <value>0</value>
  </whenGlobalVariableIs>
</event>
```

## Events:

<b>MoveAnimationMaxTopReached</b>
moveAnimation when reached the minimum vertical value.
<b>MoveAnimationMaxBottomReached</b>
moveAnimation when reached the max vertical value.
<b>MoveAnimationMaxLeftReached</b>
moveAnimation when reached the minimum horizontal value.
<b>MoveAnimationMaxRightReached</b>
moveAnimation when reached the max horizontal value.
<b>FrameAnimationRepeatLoopEnds</b>
frameCollection when the tag “repeatThisLoopForTimes” is completed.
<b>FrameAnimationLoopEnds</b>
An animation contains a group of frames (images) that are quickly showed one by one creating the feeling of animation. These frames are repeated in a loop infinite times. When the last frame is showed, this event is always triggered.
<b>TriggerActionByCurrentFrame</b>
Similar to the previous event, it is triggered when a specific frame is showed.
<b>CirclePathMaxRightReached</b>
pathAnimation when “pathAnimationCoordinates” is used for create a circle and the image reaches the max right point.
<b>CirclePathMaxLeftReached</b>
pathAnimation when “pathAnimationCoordinates” is used for create a circle and the image reaches the max left point.
<b>CirclePathMaxTopReached</b>
pathAnimation when “pathAnimationCoordinates” is used for create a circle and the image reaches the max top point.
<b>CirclePathMaxBottomReached</b>
pathAnimation when “pathAnimationCoordinates” is used for create a circle and the image reaches the max bottom point.
<b>PathAnimationStartPointReached</b>
pathAnimation when the first coordinate of the path is reached.
<b>PathAnimationEndPointReached</b>
pathAnimation when the last coordinate of the path is reached.
<b>Timer</b>
imageTimer when reach its time.
<b>FrameAnimationReturnBackwardToFirstFrameEnds</b>
frameCollection when the tag “returnBackwardToFirstFrame” is completed.
<b>TriggerActionByPosition</b>
It’s triggered when the image reaches a specific coordinate.
<b>OnClickDown or OnTouchDown</b>
Happens when the user touch the image.
<b>OnClickUp or OnTouchUp</b>
Happens when the user touch and release the image.
<b>PlaybackIsFinished</b>
It is trigger when an audio player finishes its sound.

<b>StartPrintingText</b>
It happens when a text area starts to print.
<b>PrintingNewLine</b>
It happens when a text area starts to print a new line.
<b>EndPrintingText</b>
It happens when a text area finishes printing its text.
<b>MinimumAlphaValueReached</b>
It happens when the alpha property reach its minimum value.
<b>MaximumAlphaValueReached</b>
It happens when the alpha property reach its maximum value.
<b>MinimumWidthValueReached</b>
It happens when the width property reach its minimum value.
<b>MaximumWidthValueReached</b>
It happens when the width property reach its maximum value.
<b>MinimumHeightValueReached</b>
It happens when the height property reach its minimum value.
<b>MaximumHeightValueReached</b>
It happens when the height property reach its maximum value.
<b>MinimumRotationValueReached</b>
It happens when the image rotate and reach its minimum value.
<b>MaximumRotationValueReached</b>
It happens when the image rotate and reach its maximum value.
<b>RotationDegreesReached</b>
It happens when the image rotate and reach a custom value.



## Actions:

<b>ChangeFrameCollection</b>
If you animation has multiples frame Collections, you can change the current collection for another one adding a new index.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>changeFrameCollectionIndexTo</b>: The index number to update.</li> </ul>
<b>FlipImage</b>
Flip the image.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>flipType</b>: Flip the image, you have two options: “Horizontal” or “Vertical”. Default value “Horizontal”.</li> </ul>
<b>ResumeMove</b>
The image movement is resumed.
<b>StopMove</b>
The image movement is stopped.
<b>StopAnimationAndMove</b>
The image movement and animation is stopped.
<b>ResumeAnimationAndMove</b>
The image movement and animation is resumed.
<b>ResumeAnimation</b>
The image animation is resumed.
<b>StopAnimation</b>
The image animation is stopped.
<b>EditAnimationByID</b>
Allow change the animation properties in other images by id.
Depend on these Tags (and what you want to update): <ul style="list-style-type: none"> <li>• <b>editAnimationByIDOptions</b>: Please check the page 49 for more information.</li> </ul>
<b>ChangeSpeedAnimation</b>
The image speed is changed, including all the animations (frames and movements).
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>newSpeedAnimation</b>: The new value to update. A higher number means a slower speed.</li> </ul>
<b>ChangeTimerDelay</b>
Update the delay for the Timer.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>newTimerDelay</b>: If a Timer has been included, you can update the delay.</li> </ul>
<b>RunTimerOnlyForNumberTimes</b>
Run a Timer only for a specific number of times.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>runTimerOnlyTimes</b>: The number of times to run.</li> </ul>

<b>RunTimer</b>
Run a Timer.
<b>StopTimer</b>
Stop a Timer.
<b>EditPosition</b>
Change the current image position.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>newCoordinates</b>: The configuration is simple use “;” for split coordinates. Example: X;Y.</li> </ul>
<b>UpdateMoveAnimation, UpdatePathAnimation, UpdateMoveEndLessAnimation, UpdatePathEndLessAnimation, UpdateMode7, UpdateFillWithPattern, UpdateImagePropertiesAnimation</b>
They allow you update the animation properties. Check page 68 for another example.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>new + animation name</b>: Please check the next example.</li> </ul> <pre> &lt;event&gt;   &lt;eventType&gt;FrameAnimationRepeatLoopEnds&lt;/eventType&gt;   &lt;eventActions&gt;     &lt;eventAction&gt;UpdateMoveAnimation&lt;/eventAction&gt;   &lt;/eventActions&gt;   &lt;newMoveAnimation&gt;     &lt;iniLeft&gt;2&lt;/iniLeft&gt;     &lt;maxLeft&gt;100&lt;/maxLeft&gt;     &lt;pixelsMoveLeft&gt;-2&lt;/pixelsMoveLeft&gt;     &lt;pixelsMoveTop&gt;0&lt;/pixelsMoveTop&gt;   &lt;/newMoveAnimation&gt; &lt;/event&gt; </pre> <p>Remember you don't need add all the values, just those ones that you are planning to update.</p>
<b>DisableImage</b>
Disable the current image.
<b>EnableByID</b>
Enable images previously disabled.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>ids</b>: Use “,” for multiple image ids. Example: image1, image2.</li> </ul>
<b>DisableByID</b>
Disable images.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>ids</b>: Use “,” for multiple image ids. Example: image1, image2.</li> </ul>
<b>ChangeSpeedAnimationForFrames</b>
Similar to “ChangeSpeedAnimation” but only affects the frames.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>newSpeedAnimationForFrames</b>: The new value to update. A higher number means a slower speed.</li> </ul>

<b>ChangeSpeedAnimationForMovements</b>
Similar to “ChangeSpeedAnimation” but only affects the movements.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>newSpeedAnimationForMovements</b>: The new value to update. A higher number means a slower speed.</li> </ul>
<b>ChangeVisibleValue</b>
Hide – unhide an image. Remember, all the animations are still running. Use “Disable image” for hide an image including its animations.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>newVisibleValue</b>: New visible value.</li> </ul>
<b>CreateRandomCoordinates</b>
Change the current image position to a new one generated by random numbers.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>parametersForRandomCoordinates</b>: The configuration is “X(ini),X(max),Y(ini),Y(max)”, where the values are joined by “,”. Example: <pre>&lt;parametersForRandomCoordinates&gt;696,800,246,286&lt;/parametersForRandomCoordinates&gt;</pre> </li> </ul>
<b>ChangeAnimation</b>
Changes the current animation for a new one.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>changeAnimationTo</b>: Change the current animation. Example: <pre>&lt;events&gt;   &lt;event&gt;     &lt;eventType&gt;OnTouchDown&lt;/eventType&gt;     &lt;eventActions&gt;       &lt;eventAction&gt;ChangeAnimation&lt;/eventAction&gt;     &lt;/eventActions&gt;     &lt;changeAnimationTo&gt;animationname&lt;/changeAnimationTo&gt;   &lt;/event&gt; &lt;/events&gt;</pre> </li> </ul>
<b>PlayAudio, StopAudio, PauseAudio, ResumeAudio, UpdateAudioPlayer</b>
Allow you control the music in your animation. Please check the Audio player section and page 47 for more information.
<b>PlayVideo, StopVideo, PauseVideo, ResumeVideo, UpdateVideoPlayer</b>
Allow you control video players in your animation. Please check the page 24 and page 48 for more information.
<b>ChangeBgColor</b>
Change the background color.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>newBgColor</b>: Assign a new background color.</li> </ul>
<b>ChangeCustomCondition</b>
Change the current custom condition.

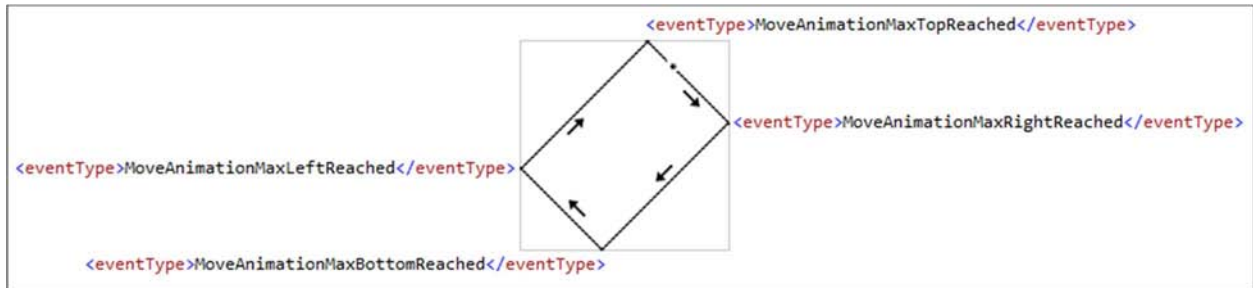
Depend on these Tags:
<ul style="list-style-type: none"> <li>• <b>newCustomCondition</b>: Assign the new value.</li> </ul>
<b>NextText</b>
Give instructions to a text area to show the next text.
<b>PreviousText</b>
Give instructions to a text area to show the previous text.
<b>StopText</b>
Give instructions to a text area to stop printing text.
<b>PlayText</b>
Give instructions to a text area to continue printing text.
<b>LoadTextByIndex</b>
Give instructions to a text area to print a text by its index.
Depend on these Tags:
<ul style="list-style-type: none"> <li>• <b>changeTextAreaIndexTo</b>: Assign the new value for the index.</li> </ul> <pre> &lt;events&gt;   &lt;event&gt;     &lt;eventType&gt;OnTouchUp&lt;/eventType&gt;     &lt;eventActions&gt;       &lt;eventAction&gt;EditAnimationByID&lt;/eventAction&gt;     &lt;/eventActions&gt;     &lt;editAnimationByIDOptions&gt;       &lt;option&gt;         &lt;editActions&gt;           &lt;editAction&gt;LoadTextByIndex&lt;/editAction&gt;         &lt;/editActions&gt;         &lt;id&gt;Area1&lt;/id&gt;         &lt;changeTextAreaIndexTo&gt;0&lt;/changeTextAreaIndexTo&gt;       &lt;/option&gt;     &lt;/editAnimationByIDOptions&gt;   &lt;/event&gt; &lt;/events&gt; </pre>
<b>ChangeAnimationAlphaAction</b>
Change the current action used for alpha in imagePropertiesAnimation.
Depend on these Tags:
<ul style="list-style-type: none"> <li>• <b>animationAlphaAction</b>: You can choose between “Increase” and “Decrease”.</li> </ul>
<b>ChangeAnimationWidthAction</b>
Change the current action used for width in imagePropertiesAnimation.
Depend on these Tags:
<ul style="list-style-type: none"> <li>• <b>animationWidthAction</b>: You can choose between “Increase” and “Decrease”.</li> </ul>
<b>ChangeAnimationHeightAction</b>
Change the current action used for height in imagePropertiesAnimation.
Depend on these Tags:
<ul style="list-style-type: none"> <li>• <b>animationHeightAction</b>: You can choose between “Increase” and “Decrease”.</li> </ul>
<b>ChangeAnimationRotationAction</b>

Change the current action used for rotation in imagePropertiesAnimation.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>animationRotationAction</b>: You can choose between “Increase”, “Decrease” and “Stop”.</li> </ul>
<b>ChangeSize</b>
Change the size of an image.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>height</b>: The new height value in pixels.</li> <li>• <b>width</b>: The new width value in pixels.</li> </ul>
<b>ChangeDegrees</b>
Change the current degree value used for rotate an image.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>degrees</b>: Set a new value.</li> </ul>
<b>ChangePivot</b>
By default an image rotates based in its center, but you can change that adding a new value.
Depend on these Tags: <ul style="list-style-type: none"> <li>• <b>pivot</b>: The configuration is simple use “;” for split coordinates. Example: X;Y.</li> </ul>

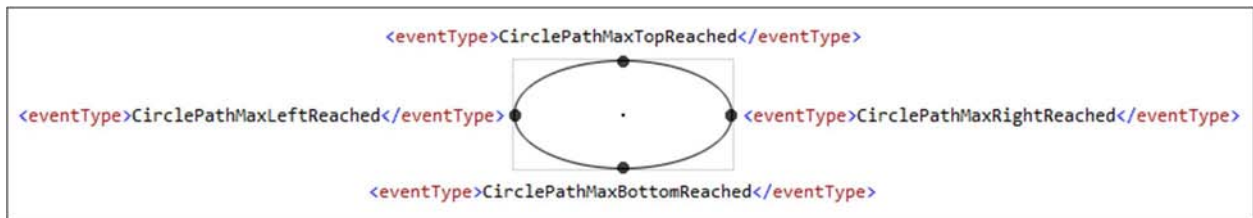
RunJavascriptFunction
Allow you run JavaScript code.
<p>Depend on these Tags:</p> <ul style="list-style-type: none"> <li> <b>runJavascriptFunction</b>: Type you code here. It is highly recommended create a function in JavaScript with all the code and just call it from here. </li> </ul> <pre> &lt;event&gt;   &lt;eventType&gt;MinimumRotationValueReached&lt;/eventType&gt;   &lt;eventActions&gt;     &lt;eventAction&gt;RunJavascriptFunction&lt;/eventAction&gt;   &lt;/eventActions&gt;   &lt;runJavascriptFunction&gt;helloworld("Hello World");&lt;/runJavascriptFunction&gt; &lt;/event&gt; </pre>
UpdateGlobalVariable
Update a global variable, please check the "Global variables" section for more information.
<p>Please check the example:</p> <pre> &lt;events&gt;   &lt;event&gt;     &lt;eventType&gt;OnTouchUp&lt;/eventType&gt;     &lt;eventActions&gt;       &lt;eventAction&gt;UpdateGlobalVariables&lt;/eventAction&gt;     &lt;/eventActions&gt;     &lt;globalVariablesToUpdate&gt;       &lt;variable&gt;         &lt;id&gt;screen&lt;/id&gt;         &lt;value&gt;0&lt;/value&gt;       &lt;/variable&gt;     &lt;/globalVariablesToUpdate&gt;   &lt;/event&gt; &lt;/events&gt; </pre>

# Tips

The next image explains how moveAnimation events are triggered.

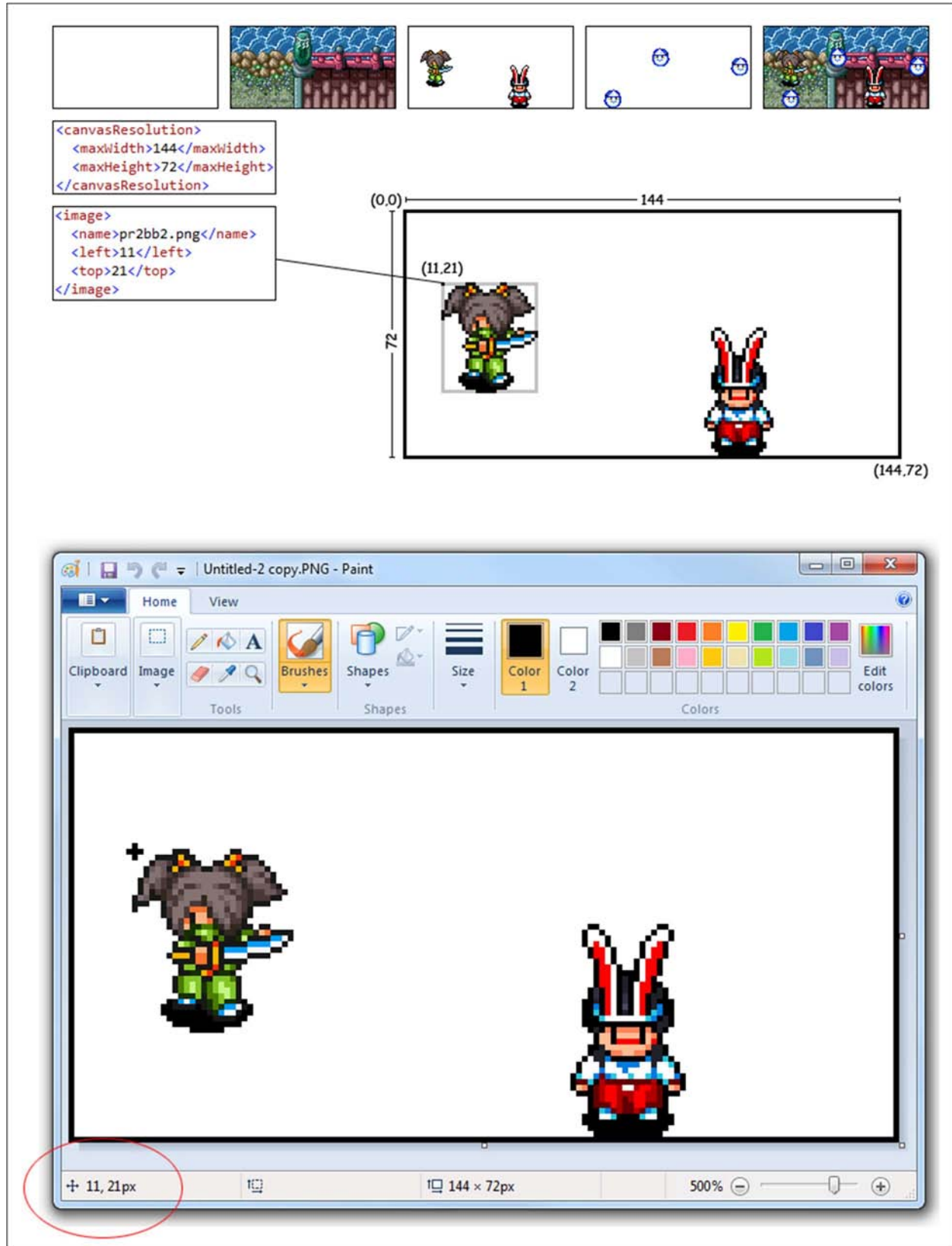


The next image explains how pathAnimation triggers events when “pathAnimationCoordinates” is used for create a circle path.



Remember that circle paths have an end and a beginning, it means that the events “PathAnimationStartPointReached” and “PathAnimationEndPointReached” will be triggered as well.

## Examples





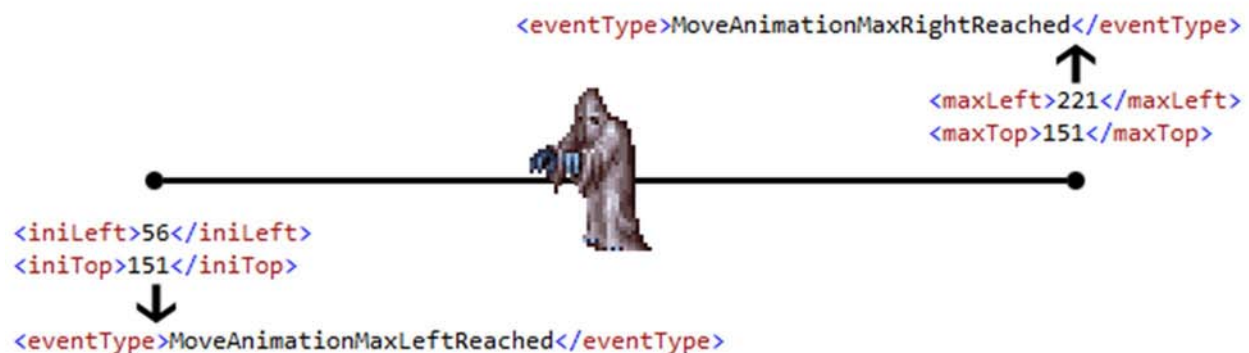
Now is time for advance training, all the examples until now have been as easy as possible for give you a clear idea about how the engine works.

This time we are going to learn how create an advance animation using almost all the available features.

## Images section

The big confusion here is handle events, they are simple and require just a little bit of logic.

```
<events>
  <event>
    <eventType>MoveAnimationMaxLeftReached</eventType>
    <eventActions>
      <eventAction>StopMove</eventAction>
      <eventAction>ChangeFrameCollection</eventAction>
    </eventActions>
    <whenFrameIndexIs>0</whenFrameIndexIs>
    <changeFrameCollectionIndexTo>1</changeFrameCollectionIndexTo>
  </event>
  <event>
    <eventType>FrameAnimationRepeatLoopEnds</eventType>
    <eventActions>
      <eventAction>ChangeFrameCollection</eventAction>
      <eventAction>FlipImage</eventAction>
      <eventAction>ResumeMove</eventAction>
    </eventActions>
    <whenFrameIndexIs>1</whenFrameIndexIs>
    <changeFrameCollectionIndexTo>0</changeFrameCollectionIndexTo>
  </event>
  <event>
    <eventType>MoveAnimationMaxRightReached</eventType>
    <eventActions>
      <eventAction>StopMove</eventAction>
      <eventAction>ChangeFrameCollection</eventAction>
    </eventActions>
    <whenFrameIndexIs>0</whenFrameIndexIs>
    <changeFrameCollectionIndexTo>1</changeFrameCollectionIndexTo>
  </event>
</events>
```



A good example is moveAnimation tag, when an image reaches the limits will trigger an event and you can add actions.


The most common action for moveAnimation is **FlipImage**. In the image above we have an animated image walking, after reach the limits the image returns but we need flip it before otherwise the image will look like walking backward.

Another common action for moveAnimation is **ChangeFrames**. Sometimes we need a different animation when a specific situation happen, something like look around and then returns.

In these cases remember use frameCollection tags for multiples frames.


```
<image>
  <frames>
    <frameCollection>
      <frame>
        <name>dcene1r3.png</name>
      </frame>
      <frame>
        <name>dcene2.png</name>
      </frame>
      <frame>
        <name>dcene1r3.png</name>
      </frame>
      <frame>
        <name>dcene4.png</name>
      </frame>
    </frameCollection>
    <frameCollection>
      <frame>
        <name>dceneb1.png</name>
      </frame>
      <frame>
        <name>dceneb2r4.png</name>
      </frame>
      <frame>
        <name>dceneb3.png</name>
      </frame>
      <frame>
        <name>dceneb2r4.png</name>
      </frame>
      <repeatThisLoopForTimes>1</repeatThisLoopForTimes>
    </frameCollection>
    <framesAnimationSpeed>7</framesAnimationSpeed>
  </frames>
</image>
```

Frames for "walking"



dcene1r3.png   dcene2.png   dcene1r3.png   dcene4.png

Frames for "look around"



dceneb1.png   dceneb2r4.png   dceneb3.png   dceneb2r4.png

Use "whenFrameCollectionIndexIs" for trigger the action in a specific moment. Following the previous example:

```
<event>
  <eventType>MoveAnimationMaxLeftReached</eventType>
  <eventActions>
    <eventAction>StopMove</eventAction>
    <eventAction>ChangeFrameCollection</eventAction>
  </eventActions>
  <whenFrameCollectionIndexIs>0</whenFrameCollectionIndexIs>
  <changeFrameCollectionIndexTo>1</changeFrameCollectionIndexTo>
</event>
```

Only when "whenFrameCollectionIndexIs" is 0 and "MoveAnimationMaxLeftReached" is reached, the actions "StopMove" and "ChangeFrameCollection" are triggered, stopping moveAnimation and changing the frame collection index to 1.

## Camera

By default the camera is static. In this example we are going to use the tags “autoHorizontalScroll” and “customScroll”.

```
<camera>
  <autoHorizontalScroll>true</autoHorizontalScroll>
  <iniPosition>0;0</iniPosition>
  <pixelsMove>-2</pixelsMove>
  <cameraSpeed>1</cameraSpeed>
</camera>
```

Adding the previous camera tag to your project, automatically the camera will move left to right in an endless loop.

The tag “iniPosition” decide where the camera start point will be. These values are simple to understand, you can play with values between 0 and 1, where 0 is the beginning of your design, 0.5 is the half and 1 is the very end.

```
<iniPosition>X;Y</iniPosition>
```

They are like coordinates, where the first value is X and the second one is Y.

Example: `<iniPosition>0.01223241;0.02037037</iniPosition>`

You can be quite precise if you wish, adding an accurate position. For example is your canvas width is 1000 pixels, the half would be 500 what means 0.5.

$$(500 * 1) / 1000 = 0.5$$

This will be the value used in “iniPosition”.

Another example using “customScroll”

```
<camera>
  <iniPosition>0.01223241;0.02037037</iniPosition>
  <cameraSpeed>1</cameraSpeed>
  <customScroll>
    <moveAnimation>
      <iniTop>-11</iniTop>
      <maxTop>-381</maxTop>
      <pixelsMoveTop>-2</pixelsMoveTop>
    </moveAnimation>
  </customScroll>
  <events>
    <event>
      <eventType>MoveAnimationMaxTopReached</eventType>
      <eventActions>
        <eventAction>UpdateMoveAnimation</eventAction>
      </eventActions>
      <newMoveAnimation>
        <iniLeft>-8</iniLeft>
        <maxLeft>-620</maxLeft>
        <pixelsMoveLeft>-2</pixelsMoveLeft>
      </newMoveAnimation>
      <disableEventsAfterTriggered>true</disableEventsAfterTriggered>
    </event>
  </events>
</camera>
```

Here we are using the tag “moveAnimation” to move the camera to a custom position and using an event to move the camera again to another position.

## Include the engine in your website

Before begin is recommended have at least a basic knowledge of JavaScript to make easier understand the next instructions.

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <title></title>
  <script src="JadsdsEngine_min.js"></script>
  <script type="text/javascript">
    window.onload = function () {
      var jadsdsEngine = new JadsdsEngine('mycanvas');
      //jadsdsEngine.fixCanvasSize = false;
      //jadsdsEngine.renderMode = RenderMode.Advanced; //RenderMode.Simple;
      //jadsdsEngine.antiAlias = true;
      //jadsdsEngine.systemFolder = "animations";
      //jadsdsEngine.fpsToUse = 20;
      //jadsdsEngine.loadingMessage = "Loading...";
      jadsdsEngine.loadAnimation("dc");
    };
  </script>
</head>
<body>
  <canvas id="mycanvas" width="320" height="480" style="border-style: solid; border-
width: 1px"></canvas>
</body>
</html>
```

Above the method “loadAnimation()” loads the animation “dc” which is located inside the folder “animations” in your website.

Like you can see some lines of the code are commented, these values are optional. Play with them if you project requires it.

### List of available properties:

- **fixCanvasSize**: The engine reads the tag “screenCanvasResolution” and change the size of the canvas html object following the values submitted by the tag. If you don’t want this change, set “fixCanvasSize” property to false.
- **renderMode**: If you are planning work with the property “fixCanvasSize” in false, consider use the “renderMode” in “Advanced”, this feature require more CPU but the image look better after be stretched. Check the image below for a better review.
- **antiAlias**: If you are planning work with the property “fixCanvasSize” in false and “renderMode” in “Advanced”, probably you are going to need to set this property to true to improve the image quality.
- **systemFolder**: By default the folder where the animations are located is “animations”, but if your website already has a folder with that name, you can change it by another one.

- **fpsToUse:** The frame rate by default used is 20, this is a nice way to keep a low use of CPU. Change it if your animations need a higher value.
- **loadingMessage:** If you website runs in a different language, with this property you can change the loading message by another one.
- **runFunctionAfterLoad:** Allow you run code after load the animation. Check the next example:

```
jadsdsEngine.runFunctionAfterLoad = function () {
    alert("ok");
}
```

- **runAfterLoadAnimation:** All the animations after be loaded run immediately, you can set this property to false and the engine will be paused. Use the method “resume” for resume the animation.
- **stopAnimationWhenIsNotVisible:** If you project is bigger than the user visible area and is using multiples instances of the engine, probably you are going to require an intensive use of the CPU. You can set this property to true and the animation will pause itself when is not visible.
- **loadAnimationScreen:** If you animation is heavy and takes long time to load, using an animation screen while the web browser is downloading the data is nice way to keep the user waiting until the animation is fully loaded. Just include the name of your loading animation in this tag.

**Note:** The animation need to be simple with almost no images, the idea is something quick and easy to download, otherwise the user will see a back screen.

Example:

```
jadsdsEngine.loadAnimationScreen = "myLoadingScreen";
```

#### List of available methods:

- **stop:** Stop the animation. Example: `jadsdsEngine.stop();`
- **resume:** Resume the animation. Example: `jadsdsEngine.resume();`
- **runAction:** Trigger the actions included inside the tag “`JavaScriptActions`”. The parameter is the `JavaScriptAction` id. Check the “JavaScript actions” section for more information.

```
function testRunJS() {
    jadsdsEngine.runAction("Stop");
}
```

- **unloadAnimation:** If you are planning change the animation, remember always use this method before call “loadAnimation”.
- **loadAnimation:** Allow you load an animation. The parameter is the animation name.

Example:

```
function changeAnimation(animationName) {  
    jadsdsEngine.unloadAnimation();  
    jadsdsEngine.loadAnimation(animationName);  
}
```

The next image shows us what happened when an image is stretched too much. Black lines will appear between the images. In these cases set render mode to “Advanced”.

