

Sketchlet Tutorial

Graphics and Animation in Sketchlet

sketchlet.sf.net

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obren.info/



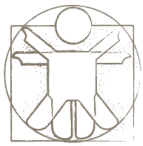
Graphics and Animation in Sketchlet

- Creating Images
 - Background Image
 - Images in Regions
- Graphical Transformations
 - Region Transformations
 - Sketch Transformations
- Animation
 - Flip Book Animation
 - Build-In Properties Animation
- Free-Hand Gesture Support
 - Defining Trajectory and Timers through Gesture



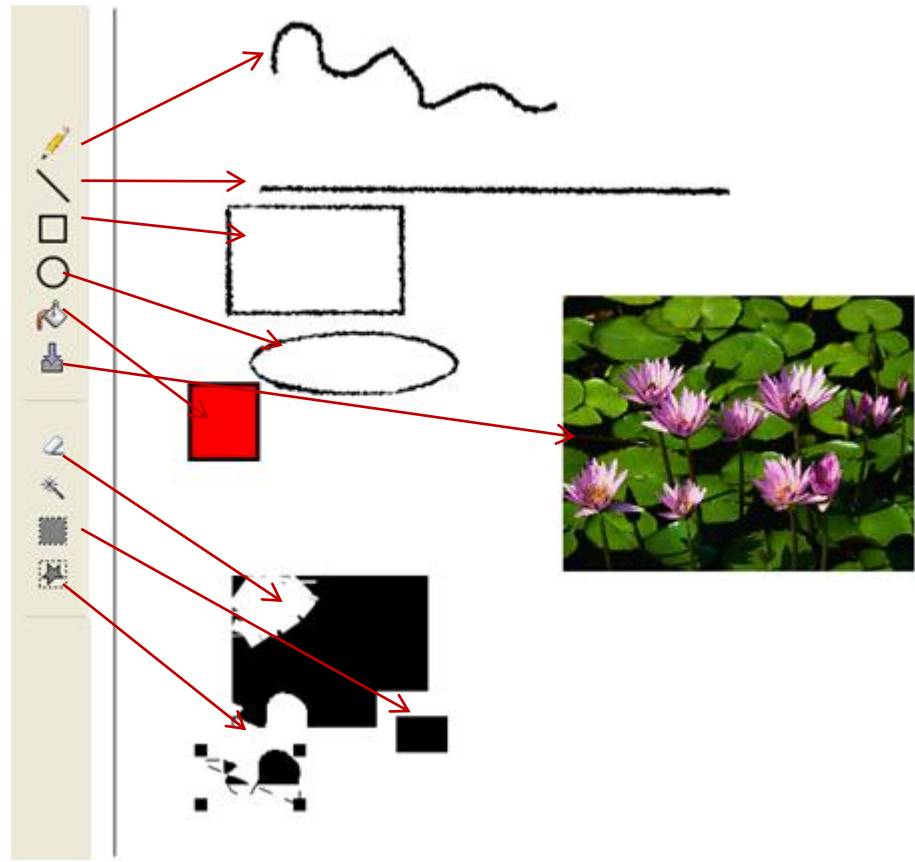
Graphics and Animation in Sketchlet

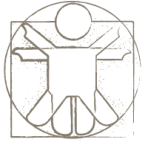
- **Creating Images**
 - **Background Image**
 - **Images in Active Regions**
- Graphical Transformations
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Creating Background Image

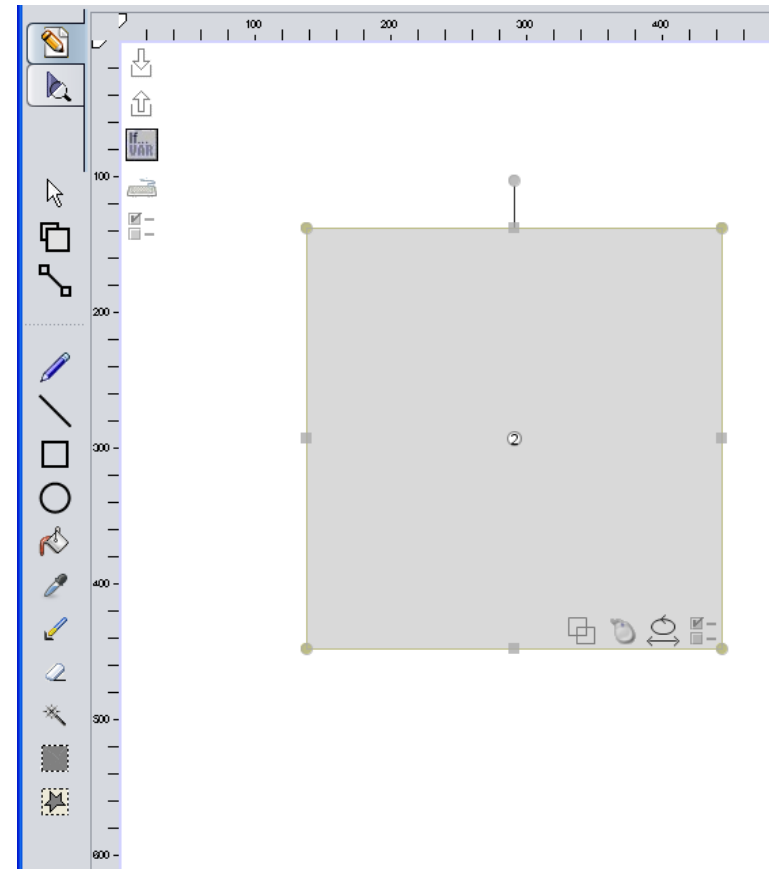
- You can use simple drawing tools to create bitmap images, import a file from the file, or open it in the external editor for more complex processing.

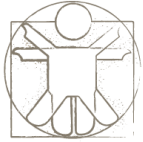




Active Regions

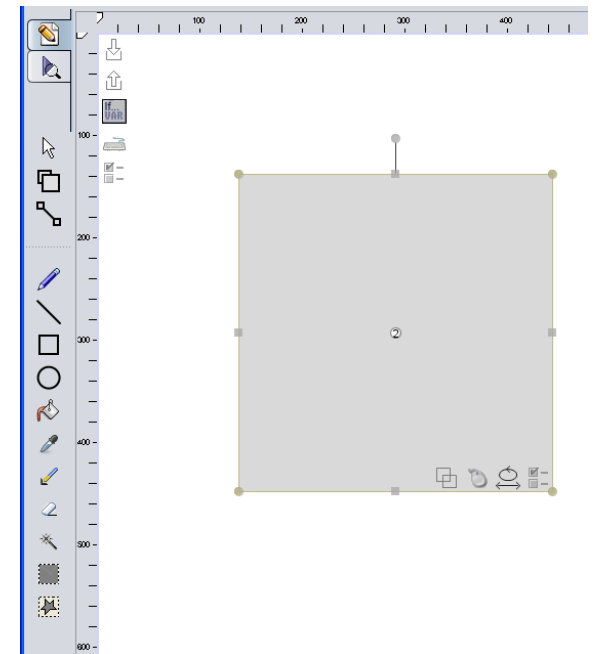
- An *active region* is a rectangular region in the sketch that can display drawings and text, but can also capture user events and that can be graphically transformed (translated and rotated).
- An active region may also embed one or more other sketches (with other active regions).





Active Regions

- Active regions allow to easily creating a multitude of interactive effects within sketches. They can, for example, detect mouse events, such as mouse clicks or mouse movement, or overlap of the regions.
- We can directly, or through variables, control most properties of an active region,
 - geometrical properties, transparency, the path to the image file that is associated with it, textual label...





Select regions tool

Create new regions

Create region connector (line between regions)

Resize points

Rotation point
(you can also rotate the region by dragging it with the right mouse button)

Center of rotation
(you can change it by pressing CTRL on the keyboard, and then dragging it with the left mouse button)

An active region

Detailed description: The image shows a software interface with a vertical toolbar on the left and a central workspace. The toolbar contains various icons for editing regions, including a selection tool, a connector tool, and several resize handles. The workspace features a gray square region with a central rotation point and four corner handles. A ruler at the top indicates coordinates from 0 to 400. Blue arrows point from text labels to specific tools and features: 'Select regions tool' points to the top selection icon; 'Create new regions' points to the second icon; 'Create region connector (line between regions)' points to the connector icon; 'Resize points' points to the four corner handles of the square; 'Rotation point' points to the central dot; 'Center of rotation' points to the central dot; and 'An active region' points to the gray square itself. A small floating toolbar at the bottom right of the square contains icons for copy, rotate, and other actions.

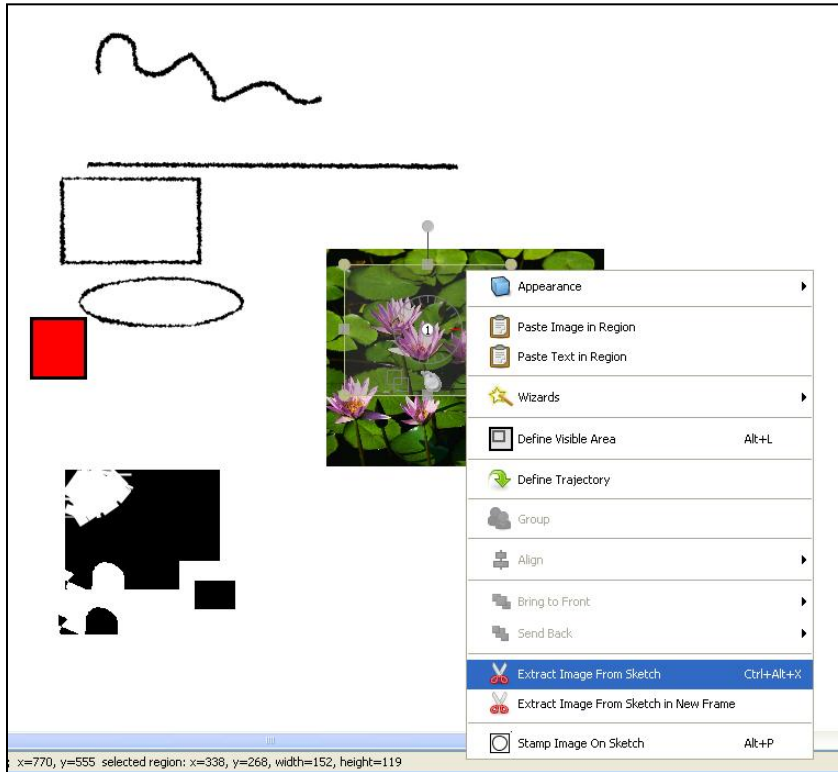


Images in Active Regions

- Extracting from the background image
- Drawing
- From URL
- Screen Capture
- Text
- Shape
- HTML
- SVG



Image in Active Region: Extracting image from the background sketch



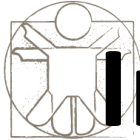


Image in Active Region: Drawing in Simple Image Editor

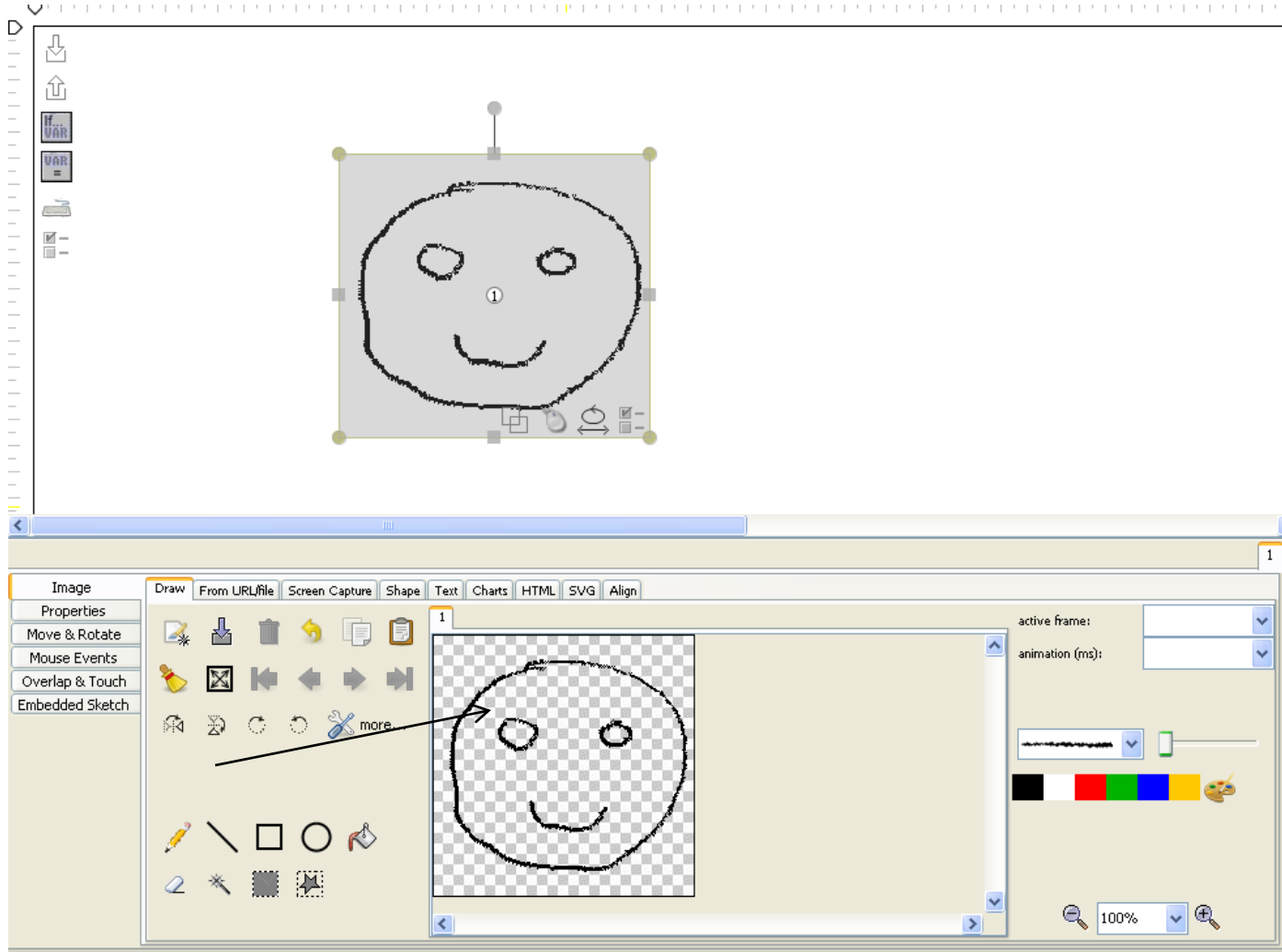




Image in Active Region: From URL

The screenshot shows a software interface with a central workspace. In the workspace, a Vitruvian Man logo is displayed within a square frame, surrounded by a semi-transparent gray selection box with corner handles. A small circle with the number '1' is centered on the figure. To the left of the workspace is a vertical toolbar with icons for download, upload, fill, stroke, and other drawing tools. Below the workspace is a properties panel. The panel has a tabbed interface with 'Image' selected. Under the 'Image' tab, there are sub-tabs: 'Draw', 'From URL/file', 'Screen Capture', 'Shape', 'Text', 'Charts', 'HTML', 'SVG', and 'Align'. The 'From URL/file' sub-tab is active. In this sub-tab, there is a 'URL/path:' label followed by a text input field containing the URL 'www.vip.id.tue.nl/sketchify/images/logo_small.png'. To the right of the input field is a dropdown arrow and an ellipsis button. A blue arrow points from the text 'URL of the image' to the input field. On the far right of the properties panel, there is a small box containing the number '1'.

URL of the image

URL/path:



Image in Active Region: Screen Capture

Sketch 4

Sketchlet Variable I/O Service Script External Tools Settings View Blog

100%

Google - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.google.com/

Most Visited TED E. Edge Strips News ABN Amro TU/e Transport Srpski

TED: Ideas ... Zeljko Obren... BBC News - ... Video: Opera... Google

Web Images Videos Maps News Shopping Gmail more

Google | Search settings | Sign in

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Google Search I'm Feeling Lucky

Magnitude 8.8 earthquake in Chile - [Help and learn more](#)

[Advertising Programs](#) - [Business Solutions](#) - [About Google](#) - [Go to Google Nederland](#)

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Done

Image

Draw From URL/file Screen Capture Shape Text Charts HTML SVG Align

Properties

Move & Rotate

Mouse Events

Overlap & Touch

Embedded Sketch

Capture Part of the Screen

Define capturing area

X (left): 1068

Y (top): 270

Width: 489

Height: 224

set region width = capture width

set capture width = r

set region height = capture height

set capture height = r

Map Mouse Clicks to Screen

Active regions mode: x=738, y=363 selected region: x=119, y=88, width=483, height=247



Image in Active Region: Text

The screenshot displays a software interface for editing text. At the top, a grey rectangular text box contains the letters 'ABCDEF' in a decorative, black, serif font. The text box has a thin border and several small square handles at its corners and midpoints for resizing. A small circle with the number '1' is positioned below the text. To the left of the text box is a vertical toolbar with various icons, including a ruler and a list of font styles. Below the text box is a properties panel with a tabbed interface. The 'Text' tab is selected, showing a font dropdown menu with 'Harrington' selected. Below the font list, there is a 'Text file' input field and a 'Text file' button. At the bottom of the panel, there are checkboxes for 'Trim' and 'Wrap text', and input fields for 'characters per line' and 'Show at most' lines.

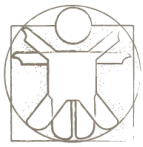
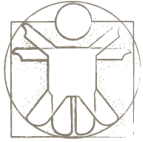


Image in Active Region: Shape

The screenshot displays a software interface for drawing. On the left, a vertical toolbar contains icons for drawing tools. Below it, a menu is open, listing various shapes: None, Rectangle, Oval (highlighted in blue), Rounded Rectangle, Triangle, Triangle, Line, Line, Horizontal Line, and Vertical Line. Below the menu, a dropdown menu shows 'Oval' selected. To the right of the menu, a properties panel is visible, showing settings for the selected shape: Line style (dashed 1), Line thickness (25), Line Color (yellow), and Fill Color (green). On the right side of the interface, a canvas shows a green oval with a yellow dashed border, centered within a gray square frame. The canvas also features a small '1' icon in the center and a set of alignment and rotation controls at the bottom right.

Property	Value
Line style	dashed 1
Line thickness	25
Line Color	yellow
Fill Color	green



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Transforming Regions by Mouse

- Change position, size, and orientation

Rotation point
(you can also rotate the region by dragging it with the right mouse button)

Center of rotation
(you can change it by pressing CTRL on the keyboard, and than dragging it with the left mouse button)

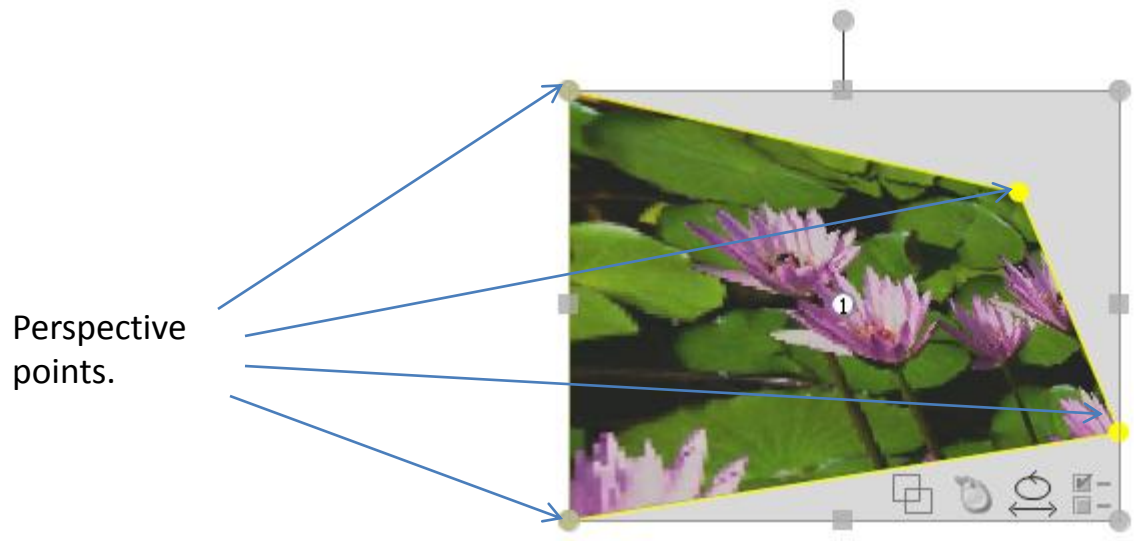
An active region

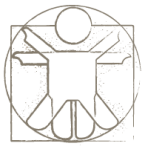
Resize points



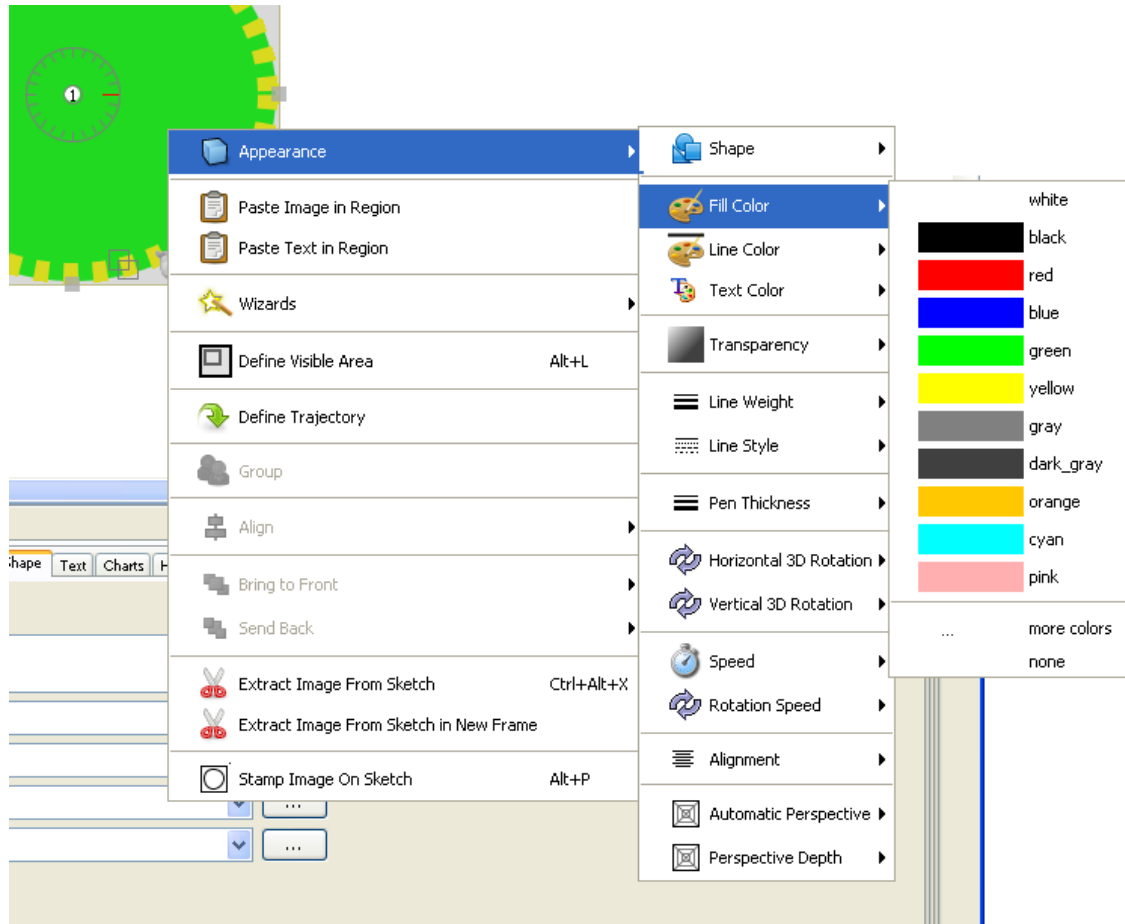
Transforming Regions by Mouse

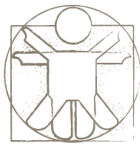
- If you try to resize the active region with the CTRL key pressed on the keyboard, you can set the perspective points of the region:





Shortcuts for Some Properties: Right Mouse Click on the Region

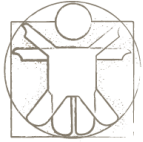




More Region Transformations

Position	
position x	horizontal position (left, 0 to 1000)
position y	vertical position (top, 0 to 1000)
relative x	relative horizontal position (0.0 to 1.0)
relative y	vertical position (0.0 to 1.0)
trajectory position	0.0 to 1.0
Size	
width	region width
height	region height
Orientation	
rotation	angle
Transparency	
transparency	0.0 to 1.0
Visible area	
visible area x	
visible area y	
visible area width	
visible area height	
Motion	
speed	pixels per second
direction	angle
Pen	
pen thickness	0, 1, 2...

Advanced / Coordinates	
x1	
y1	
x2	
y2	
Advanced / Sheer	
shear x	0.0 to 1.0
shear y	0.0 to 1.0
Advanced / 3D	
horizontal 3d rotation	0 to 360
vertical 3d rotation	0 to 360
Advanced / Perspective	
perspective x1	0 to 1, x top left corner
perspective y1	0 to 1, y top left corner
perspective x2	0 to 1, x top right corner
perspective y2	0 to 1, y top right corner
perspective x3	0 to 1, x bottom right corner
perspective y3	0 to 1, y bottom right corner
perspective x4	0 to 1, x bottom left corner
perspective y4	0 to 1, y bottom left corner
automatic perspective	left, right, top, bottom, parallel
perspective depth	relative perceptive depth 0.0 to 1.0



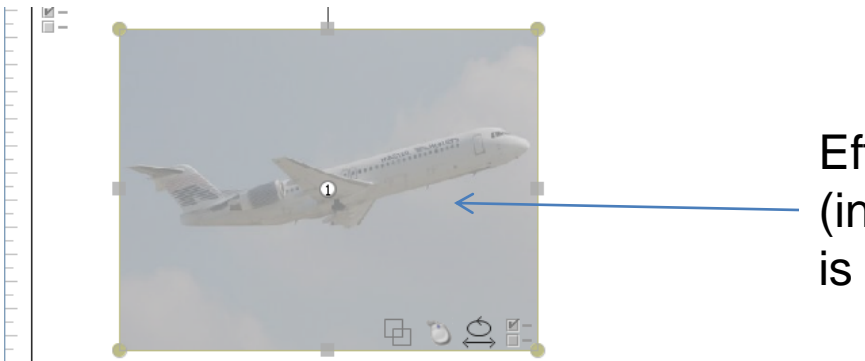
Setting Properties

- **Expressions in properties**
 - Literals
 - 90
 - Formulas
 - =variable
 - =a + (b-c) / 50
 - String templates
 - You said <%=text%>
- Values may be given directly, for example "**120**" or indirectly through variables. For example, the expression "**=a**", means that the value will be taken from the variable "a".
- More on variables comes later in separate tutorial...



Exploring Effects of Properties

- You can also explore the effects of transformations in the properties tab using a simple slider interface



Effect of changing property
(in this example changing transparency)
is immediately visible in the sketch.

Property	Value	Description
Position		
position x		horizontal position (left, 0 ...
position y		vertical position (top, 0 to ...
relative x		relative horizontal position ...
relative y		vertical position (0.0 to 1.0)
trajectory position		0.0 to 1.0
Size		
width		region width
height		region height
Orientation		
rotation		angle
Transparency	0.5	0.0 to 1.0
transparency	0.5	0.0 to 1.0

- Maximal value for the property
- Current value for the property.
You can change it by moving the slider
- Minimal value for the property
- Selected property (in this case transparency)



Region Transformations:

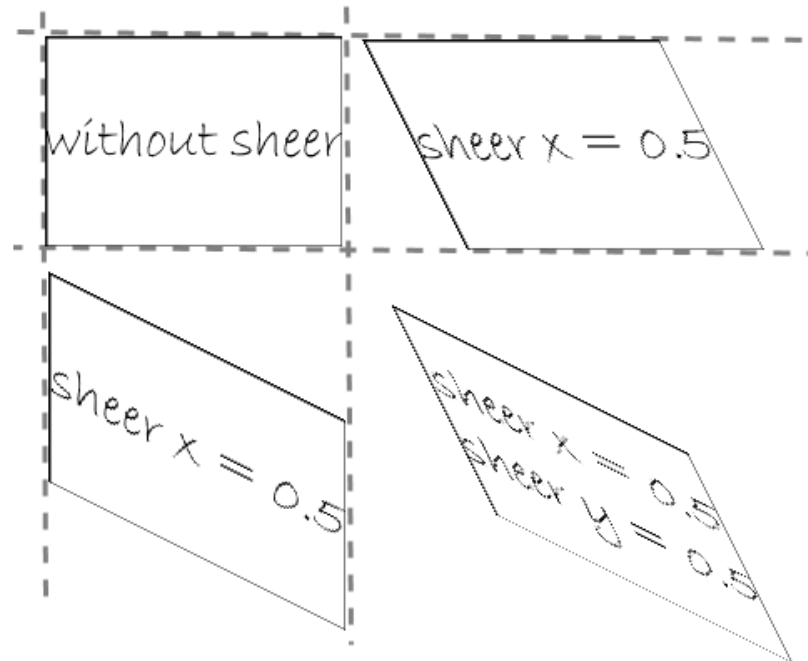
Position, Size Orientation

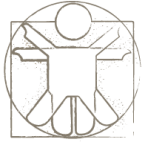
- **position x** - horizontal position, in pixels, from 0 to image width
- **position y** - vertical position, in pixels, from 0 to image width
- **relative x** - relative horizontal position from 0.0 to 1.0. For example, 0.5 means that the region will be positioned in the middle of its interaction space (also depends on motion limits).
- **relative y** - relative vertical position from 0.0 to 1.0
- **trajectory position** - if the trajectory is defined, you can define the relative position of the region on the trajectory from 0.0 to 1.0 (to define a trajectory, go to main window, right-click on the active region and select "Start Defining Trajectory...")
- **width** - region width
- **height** - region height
- **rotation** - the region orientation, from 0 to 360. May also have the value "random", which means that the region will randomly rotate when its position is animated (it is used only in the combination with "speed" parameter)



Region Transformations: Shear

- **shear x** - horizontal shear transformations (for details see <http://mathworld.wolfram.com/Shear.html>)
- **shear y** - vertical shear transformations (for details see <http://mathworld.wolfram.com/Shear.html>)

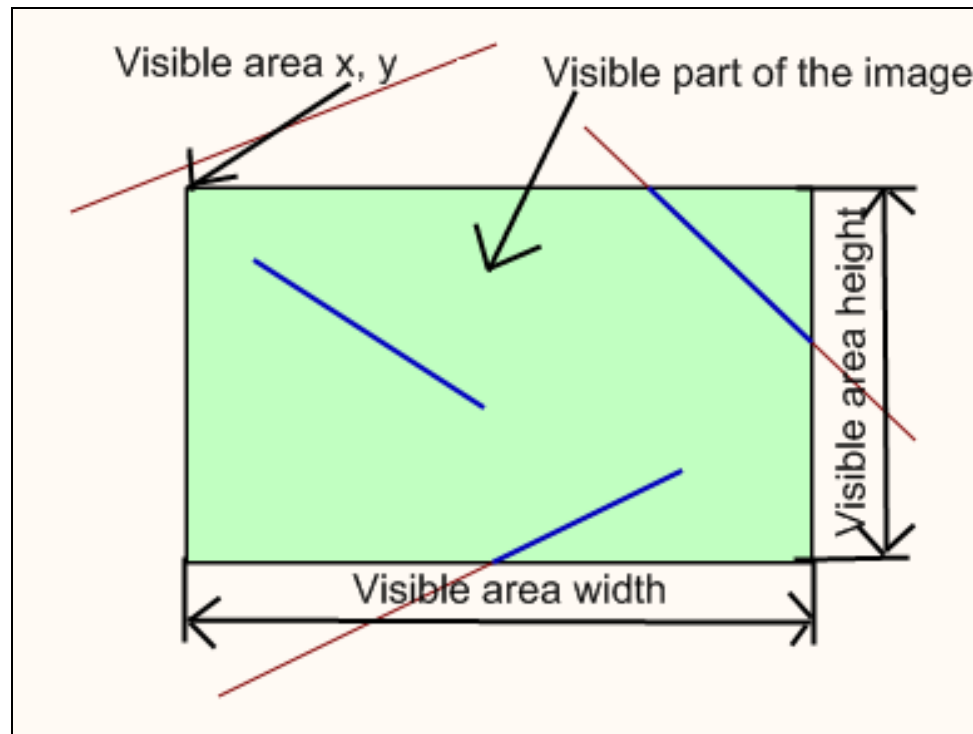




Region Transformations:

Visible Area

- **visible area x** - horizontal position of the visible area of the
- **visible area y** - vertical position of the visible area of the
- **visible area width** - width of the visible area of the image
- **visible area height** - height of the visible area of the image





Region Transformations: Transparency

- **transparency** - from 0.0 to 1.0 (for details see <http://en.wikipedia.org/wiki/Transparent>)

Transparency 0.1

Transparency 0.3

Transparency 0.5

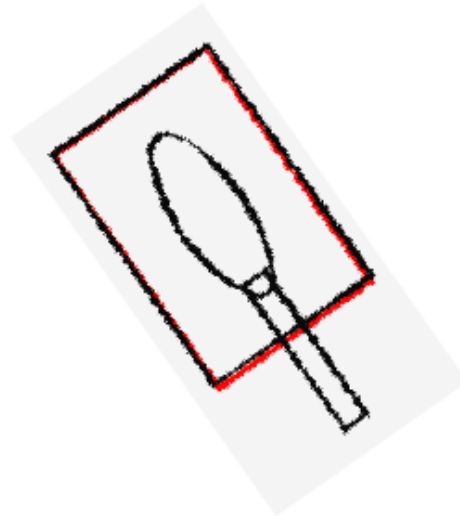
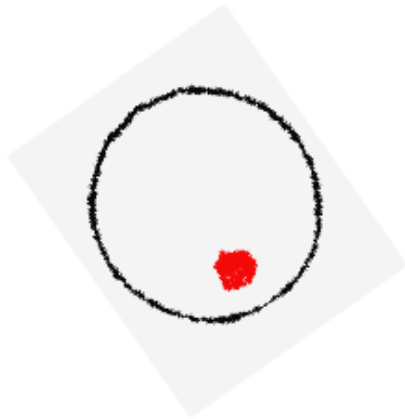
Transparency 0.8

Transparency 1.0



Region Transformations: **Motion**

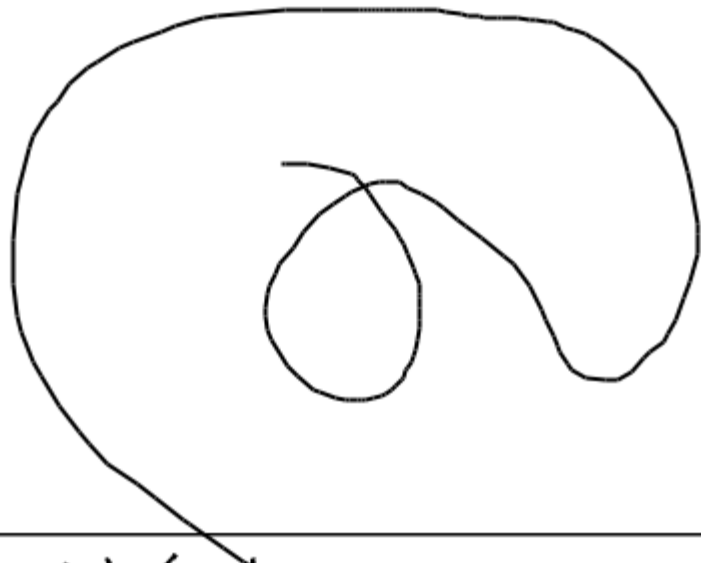
- **speed** - in pixels per second, in the playback mode, the region will move in the direction of current
- **direction** - direction of the motion (used in combination with "speed"). Can also have the value "random". If it is not defined, that "rotation" parameter is used to define the direction of the movement.





Region Transformations: **Pen**

- **pen thickness** - if region is moved around, it can leave the trace, and here you can define the thickness of the pen

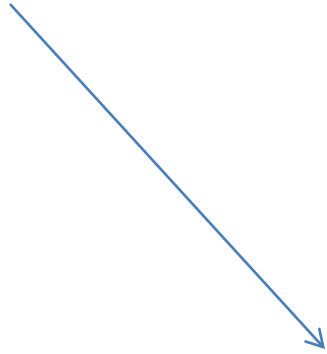


Pen thickness = 2



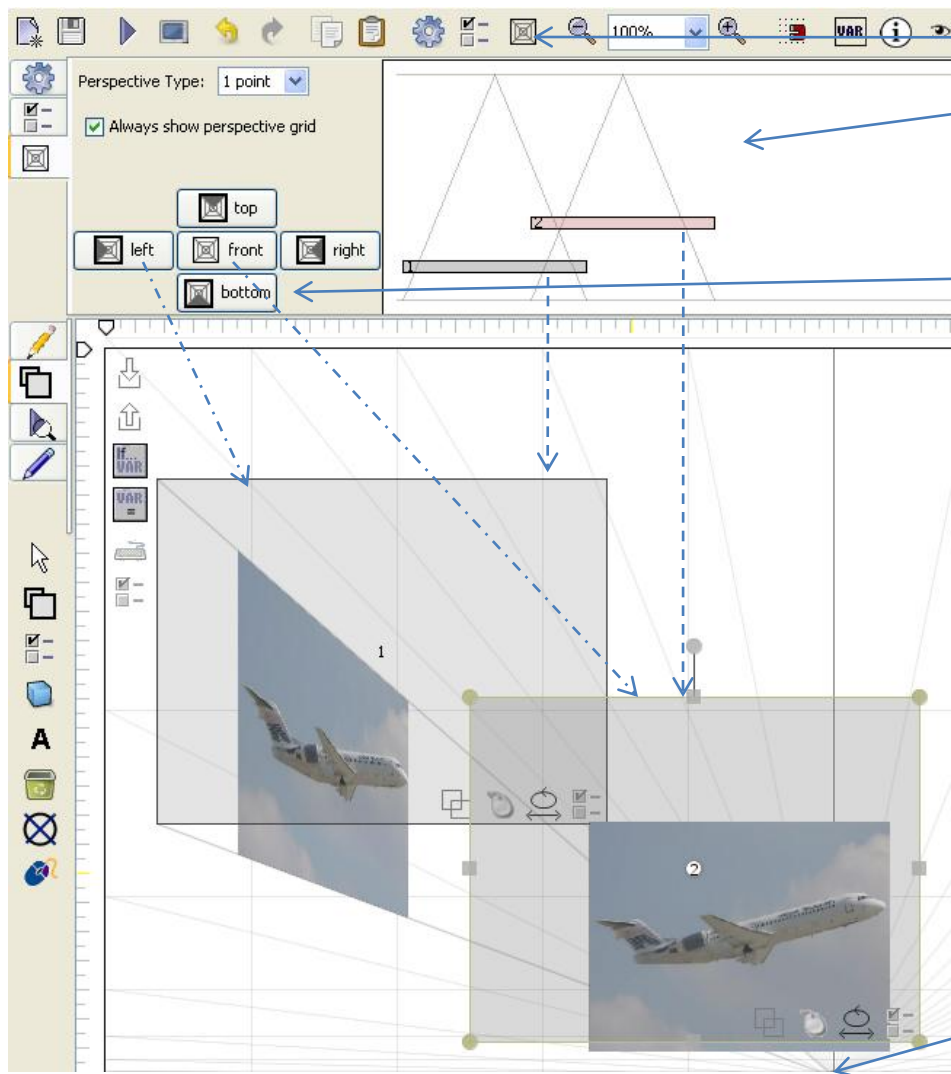
Region Transformations: **3D rotation**

- horizontal 3D rotation
- vertical 3D rotation





Region Transformations: Perspective Depth

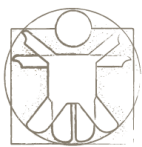


Toolbar icon for opening the perspective tab

Changing the perceptual depth of regions

Changing the side on which the image will be shown in the perspective

Perspective point. You can drag it and change.



Sketch Properties/ Transformations

Set Properties | Animate Properties | Map to Numeric Variables

Property	Value	Description
Color		
background color		red, blue, green, gray, yellow...
transparency		0.0 .. 1.0
Zoom		
		1.0 means 100%
zoom		1.0 means 100%
zoom center x		default is 0
zoom center y		default is 0
Offset		
background offset x		
background offset y		
regions offset x		
regions offset y		
Perspective		
perspective type		1 point or two point
perspective y		horizon
perspective x1		point 1 on the horizon
perspective x2		point 2 on the horizon

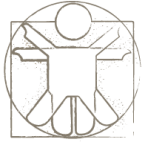
Explore

Clear



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Simple Animation

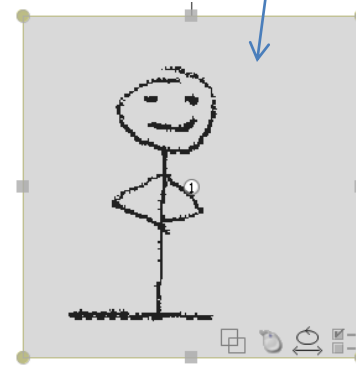
- **Flip Book Animation in Active Regions**
 - Analogous to traditional flipbook animation
 - Creating multiple frames with different images, and changing the image periodically
- **Build-In Properties Animation**
 - You can animate any property of the active region or sketch
- Animation start automatically when you open a sketch in preview or playback mode



Flip Book Animation in Active Regions

- You can create more than one image in an active region
- You can then specify which of them will be shown or define animation by defining pause between them

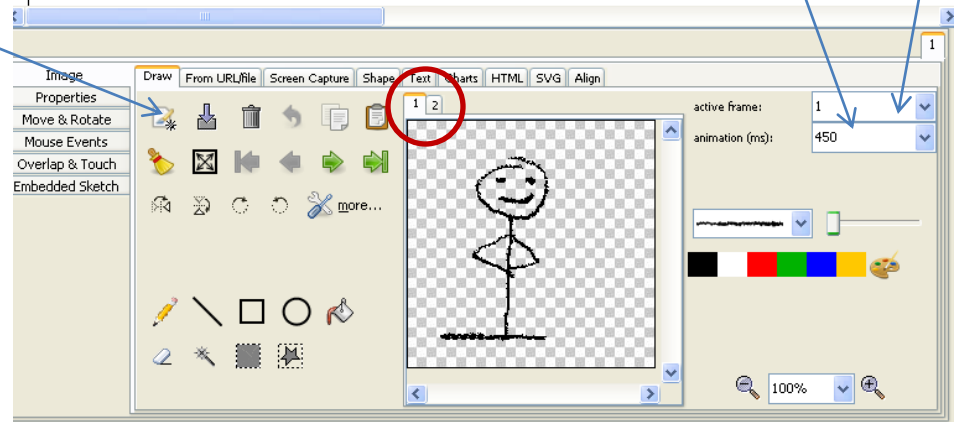
Active frame is shown in the sketch



Define animation by setting pause between frames

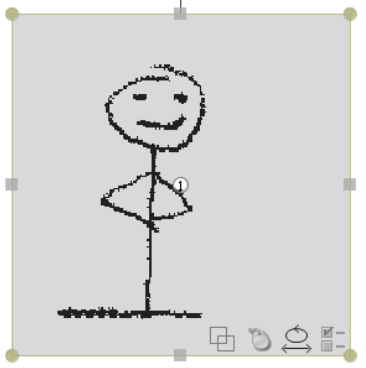
Active frame

Create a new frame within the region

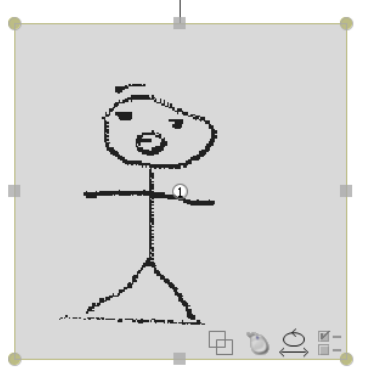




Frame 1



Frame 2



Image

Draw From URL/file Screen Capture Shape Text Charts HTML SVG Align

Properties

Move & Rotate

Mouse Events

Overlap & Touch

Embedded Sketch

1 2

active frame: 1

animation (ms): 450

100%

Image

Draw From URL/file Screen Capture Shape Text Charts HTML SVG Align

Properties

Move & Rotate

Mouse Events

Overlap & Touch

Embedded Sketch

1 2

active frame: 2

animation (ms): 450

100%



Build-In Properties Animation

- You can animate any property of the active region or sketch, by defining
 - **Type of Animation**
 - Loop Once, Loop Forever
 - Pulse Once, Pulse Forever
 - **Start Value**
 - **End Value**
 - **Cycle Duration** (in seconds)



Build-In Properties Animation

In this example, four properties are animated simultaneously:
position x, width, height, and transparency

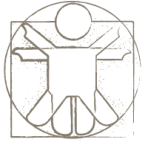
Animate Properties Tab

Explore the effects of the properties value with slider

Use current value as start value for animation

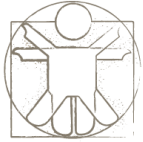
Use current value as end value for animation

Dimension	Animation Type	Start Value	End Value	Cycle Duration	Curve
Position					
position x	Loop Forever	50	500	1.0	
position y					
relative x					
relative y					
trajectory position					
Size					
width	Puls Forever	50	100	1.0	
height	Puls Forever	50	100	1.0	
Orientation					
rotation					
Transparency					
transparency	Puls Forever	0.0	1.0	1.0	
Visible area					
visible.area.x					



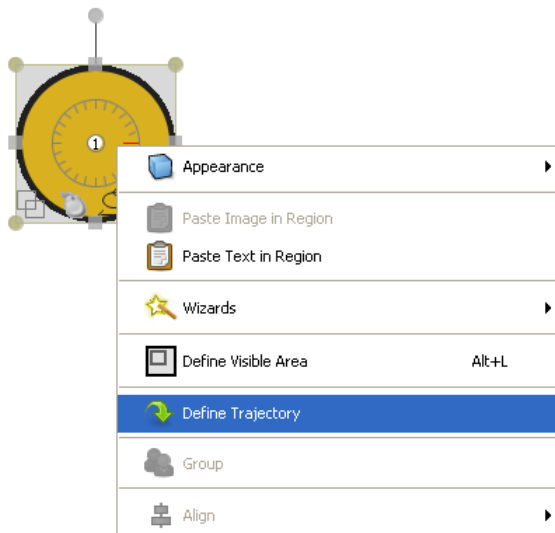
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 - **Defining Trajectory and Timers through Gesture**



Freehand Gesture Support

- You can also limit a motion of the region to a freehand sketched trajectory
 - Right-click on the active region and select “Define Trajectory”





Saving Gesture Data

- In addition to creating trajectory, you can also use gesture timing to create a timer and timer curve
- This means that timer can repeat your gesture with the same timing as you
- More on timers and timer curves in a separate tutorial...

