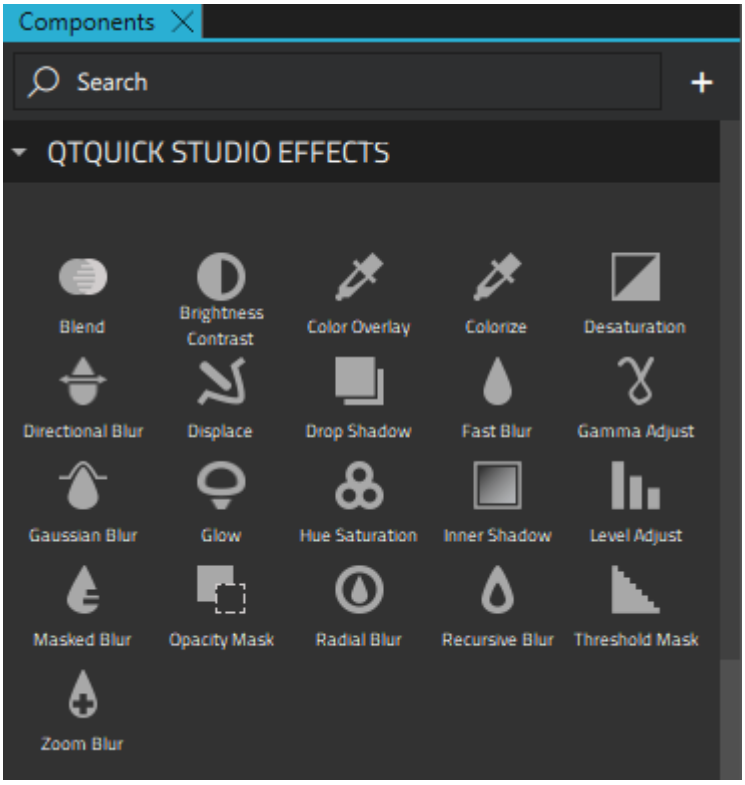
2D 效果

Qt 设计工作室提供了一组效果，您可以通过将组件从**组件**拖放到"导航> Qt **快速工作室效果**"中的组件来将这些效果应用于组件。



注意： 效果的可用性取决于您在创建项目时是选择了 Qt 5 还是 Qt 6。

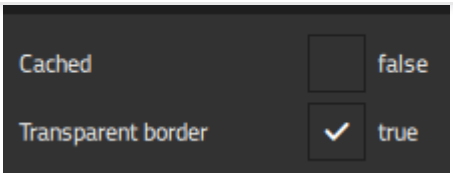
效果具有一个或多个源属性，用于指定将效果应用于组件的可视输入。然后，更改后的视觉输出将显示在效果组件本身中。源可以是场景中另一个通常隐藏的组件。更复杂的效果可以有多个源。源组件可以是任何组件，甚至是视频或其他效果。将多个效果流水线连接在一起是创建更令人印象深刻的输出的简单方法。

每个效果都有一组可用于配置效果输出的属性。它们可以像任何其他属性一样进行动画处理。组件文档包含属性说明和基本用法示例。

除了本主题中介绍的效果之外，还可以设置线性、径向和圆锥渐变。有关详细信息，请参阅拾取渐变。

缓存和边框

在"缓存"或"缓存和边框"部分中指定 2D 效果的通用属性



Cached 属性允许缓存效果输出像素，以提高渲染性能。每次更改源或效果属性时，都必须更新缓存中的像素。内存消耗增加，因为存储效果输出需要额外的内存缓冲区。我们建议您在对源或效果属性进行动画处理时禁用缓存。

"**透明边框**"属性确定组件边缘附近的模糊行为，其中像素模糊受源边缘外的像素影响。

如果该属性设置为 ，则源外部的像素被解释为透明，这类似于 OpenGL 钳位到边框的扩展。模糊在效果组件区域之外略微展开。`true`

如果该属性设置为 ，则源外部的像素被解释为包含与元件边缘的像素相同的颜色，这类似于 OpenGL 钳位到边缘的行为。模糊不会扩展到效果组件区域之外。`false`

2D 效果摘要

下表总结了可用的效果，并包含指向继承组件的开发人员文档的链接。Qt 6 列指示 Qt 6 项目可用的效果。

> **注意：** 使用 OpenGL 运行时，这些效果可用。

图标	影响	第6季度	描述: _____
	混合		使用混合模式合并两个源组件。 默认**模式**为 ，其中，从**"前景源"**字段中指定的组件中减去像素值，该像素值将混合到源组件上，然后写入源。`subtract` 有关可能的**模式**值及其用法示例的列表，请参阅 Blend.mode。
	亮度对比度	✓	调整**亮度**和**对比度**。
	颜色叠加	✓	通过应用叠加颜色来更改源组件**的颜色**。可以使用颜色选取器来选择颜色。
	着色	✓	通过指定"**色相**"、"**亮度**"**和**"**饱和度**"值来设置 HSL 颜色空间中的颜色。
	Desaturation	✓	Reduces the saturation of the colors by the value set in the **Desaturation** field. The value ranges from (no change) to (desaturated). Desaturated pixel values are calculated as averages of the original RGB component values of the source component.`0.0` `1.0`
	Directional Blur	✓	Applies a blur effect to the specified direction. The value of the **Angle** field defines the direction of the blur. This effect makes the source component appear to be moving in the direction of the blur. Blur is applied to both sides of each pixel, and therefore setting the direction to and provides the same result.0180 The value of the **Length** field specifies the perceived amount of movement for each pixel. The movement is divided evenly to both sides of each pixel. The quality of the blur depends on the value of the **Samples** field. If the **Length** value is large, more samples are needed to preserve high visual quality.
图标	影响	第6季度	描述: _____
	Displace	✓	Moves the pixels of the source component according to the displacement map specified in the **Displacement source** field. The value of the **Displacement** field specifies the scale for the displacement. The larger

	Drop Shadow	✓	Generates a soft shadow behind the source component using a gaussian blur. This effect blurs the alpha channel of the input and colorizes the result, which it then places behind the source component to create a soft shadow. You can set the shadow's color in the **Drop shadow color** field and change its location in the horizontal (**H**) and vertical (**V**) **Offset** fields. The value of the **Radius** field specifies the softness of the shadow. A larger radius causes the edges of the shadow to appear more blurry. The ideal blur is achieved by setting the value of the **Samples** field to twice as large as the highest required radius value plus one ().`samples = 1 + radius * 2` The soft shadow is created by blurring the image live using a gaussian blur, which is a costly operation. Fullscreen gaussian blur with even a moderate number of samples will only run at 60 FPS on high-end graphics hardware.
	Fast Blur	✓	Applies a fast blur effect to one or more source components. **Fast Blur** offers lower blur quality than **Gaussian Blur**, but it is faster to render. This effect softens the source content by blurring it with an algorithm that uses source content downscaling and bilinear filtering. Use this effect if the source content is rapidly changing and the highest possible blur quality is not needed. The value of the **Radius** field specifies the distance of the neighboring pixels that affect the blurring of an individual pixel. A larger radius increases the blur effect. The fast blur algorithm may internally reduce the accuracy of the radius in order to provide good rendering performance.
	Gamma Adjust	✓	Alters the luminance of the source component. This effect is applied to each pixel according to the curve that is pre-defined as a power-law expression, where the value of the **Gamma** field is used as the reciprocal scaling exponent.
	Gaussian Blur		Applies a gaussian blur effect to one or more source components. The effect softens the image by blurring it with an algorithm that uses the gaussian function to calculate the effect. The effect produces higher quality than **Fast Blur**, but is slower to render. Performing blur live is a costly operation. Fullscreen gaussian blur with even a moderate number of **Samples** will only run at 60 FPS on high-end graphics hardware. The value of the **Radius** field specifies the distance of the neighboring pixels that affect the blurring of an individual pixel. The value of the **Distance** field is a parameter to the gaussian function that is used when calculating neighboring pixel weights for the blurring. A larger deviation causes an image to appear more blurry, but it also reduces the quality of the blur. A very large deviation value causes the effect to look a bit similar to what, for exmple, a box blur algorithm produces. A too small deviation value makes the effect insignificant for the pixels near the radius.
	Glow	✓	Generates a halo-like glow around the source component. This effect blurs the alpha channel of the source and colorizes it with **Glow color**. It then places the alpha channel behind the source, resulting in a halo or glow around the component. The quality of the blurred edge can be controlled by using the values of the **Samples** and **Radius** and the strength of the glow can be changed using the value of the **Spread** field.
	Hue Saturation	✓	Alters the source component colors in the HSL color space. This effect is similar to the **Colorize** effect, but the **Hue** and **Saturation** values are handled differently. This effect always shifts these values, as well as the **Lightness** value from the original, instead of setting them.
	Inner Shadow		Generates a colorized and blurred shadow inside the source using the color that you specify in the **Inner shadow color** field. The quality of the shadow can be controlled by the values of the **Samples** and **Radius** fields. Ideally, the sample value should be twice as large as the highest required radius value. For example, if the radius is animated between and , samples should be set to .0.04.08
图标	**影响**	**第6季度**	**描述:**

			rendering speed is reduced especially if the shadow edges are heavily softened. For use cases that require faster rendering speed at the cost of high visual quality, select the **Fast** check box.
	Level Adjust	✓	Adjusts color levels in the RGBA color space. This effect adjusts the source component colors separately for each color channel. Source component contrast can be adjusted and color balance altered. The value of the **Gamma** field specifies the change factor for how the value of each pixel color channel is altered according to the equation. Setting the gamma values under makes the image darker, whereas the values above lighten it. The value ranges from (darkest) to (lightest).`QtVector3d(1.0, 1.0, 1.0)QtVector3d(1.0, 1.0, 1.0)QtVector3d(0.0, 0.0, 0.0)inf` You can specify the maximum and minimum **Input** and **Output** levels for each color channel. **Maximum** input sets the white-point, which means that all pixels with a higher value are rendered as white (per color channel). Decreasing this value lightens the light areas. To darken the light areas and to increase the contrast, decrease the value of the **Maximum** output field. The value of the **Minimum** input field sets the minimum input level for each color channel. It sets the black-point, which means that all pixels with a lower value are rendered as black (per color channel). Increasing this value darkens the dark areas. To lighten the dark areas and to reduce the contrast, increase the value of the **Minimum** output field.
	Masked Blur		Softens the image by blurring it. The intensity of the blur can be controlled for each pixel by specifying a **Mask source**, so that some parts of the source are blurred more than others. The value of the **Radius** field specifies the distance of the neighboring pixels that affect the blurring of an individual pixel. The value of the **Samples** field specifies, how many samples are taken per pixel when blur calculation is done. Larger samples produce better quality, but are slower to render.
	Opacity Mask	✓	Masks the source component with another component specified in the **Mask source** field. The mask component gets rendered into an intermediate pixel buffer and the alpha values from the result are used to determine the visibility of the source component's pixels in the display. Select the **Invert** check box to specify that the resulting opacity is the source alpha multiplied with the inverse of the mask alpha: . When this property is , the resulting opacity is the source alpha multiplied with the mask alpha: .`As * (1 - Am)falseAs * Am`
	Radial Blur		Applies a directional blur effect in a circular direction around the component's center point. This effect makes the source component appear to be rotating into the direction of the blur. Other available motionblur effects are **Zoom Blur** and **Directional Blur**. The value of the **Angle** field specifies both the direction of the blur and the level of blurring. The larger the angle, the more blurred the result. The quality of the blur depends on the value or the **Samples** field. If the angle is large, more samples are needed to preserve high visual quality.
	Recursive Blur		Blurs repeatedly, providing a strong blur effect. This effect softens the image by blurring it with an algorithm that uses a recursive feedback loop to blur the source as many times as set in the **Loops** field. The value of the **Radius** field specifies the distance of the neighboring pixels that affect the blurring of an individual pixel. The effect may produce more blurred results than **Fast Blur** or **Gaussian Blur**, but the result is produced asynchronously and takes more time.
图标	影响	第6季度	描述
	Threshold Mask	✓	Masks the source component with another component specified by **Mask source**. The value of the **Spread** field determines the smoothness of the mask edges near the **Threshold** alpha value. Setting spread to uses the mask with the specified threshold

	Zoom Blur		Applies a directional blur effect towards source component's center point. This effect makes the source component appear to be moving towards the center point in Z-direction or the camera appear to be zooming rapidly. The value of the **Length** field specifies the maximum perceived amount of movement for each pixel. The amount is smaller near the center specified by the horizontal (**H**) and vertical (**V**) **Offset** fields and reaches the specified value at the edges. The quality of the blur depends on the value of the **Samples** field. If the length value is large, more samples are needed to preserve high visual quality. Other available motion blur effects are **Directional Blur** and **Radial Blur**.

‹ Lists and Other Data Models

Logic Helpers ›