Advanced Cluster Part 3

In part 3 of this Best Practice the Custom_Gauge control will be further customized adding controls:

- A **TextValue control** to display the gauge's current value numerically
- A **Text control** above of the numeric value to display the gauge's scope (e.g. speed)
- Another **Text control** below the numeric value, which can be used to display the unit (e.g. km/h)

In order to make our control more versatile, various properties of our configured Custom_Gauge (like all images and text styles) will be made public.

> **Public Control Properties** are those that can be configured when using a Custom_Gauge in a scene.

Create and Configure Two TextNodes and a TextValue Node

1. In Scene Composer's Solution Explorer navigate to the path below and double-click on the "Custom_Gauge" control.
   - The Scene Tree panel shows the Custom_Gauge control's tree.
   - Scene editor displays the Custom_Gauge control.

Path in Solution Explorer	Control
Solution/Controls	Custom_Gauge

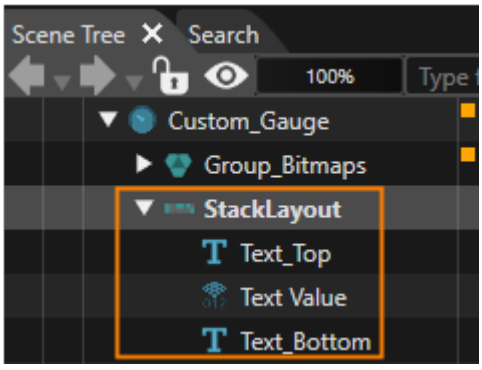
2. From the **Toolbox** panel's **Nodes 2D** section drag and drop a **StackLayout** into the Scene Tree panel directly onto the Custom_Gauge node.
   - In the Scene Tree panel you can see that a **StackLayout** has been created directly under the Custom_Gauge node.

3. From the **Toolbox** panel's **Controls** section under Common drag and drop **2 Text** controls and **1 Text Value** control into the Scene Tree panel directly onto the StackLayout.
   - In the Scene Tree panel you can see the **2 Text** controls and the **Text Value** control directly under the StackLayout.

4. In the Scene Tree panel select the **StackLayout** as well as the **2 Text** controls one after the other and rename them according to the table below either via the context menu entry "Rename" or by pressing <F2> on your keyboard.
   - In the Scene Tree panel you can see that the Controls have been renamed.

Target Item	New Name
StackLayout	StackLayout_Texts
Text	Text_Top
Text_1	Text_Bottom

5. In the Scene Tree panel re-arrange StackLayout_Texts and its contents via drag and drop until it looks like in the image below.
   - The Scene Tree looks as in the image below.



6. In the Scene Tree panel select StackLayout_Texts controls. In the **Properties** panel under **Layouter** and **Layout** adjust the properties as in the table below.
   - In the Properties panel you can see that the correct values are set.

Property	Value	
Layouter		
Arrangement	Vertical	
Layout		
Vertical Alignment	VCenter	
MinimumSize	**X**	250.00
	Y	0.00

7. In the Scene tree panel select **Text_Top**, **Text Value** and **Text_Bottom** one after the other. In the **Properties** panel under Layout and Control configure the properties as in the table below.
   - In the Properties panel you can see that the correct values are set.
   - In the Scene Editor the texts are centered and the Text Value appears in a bigger font.

Property	Text_Top	Text Value	Text_Bottom
Layout			
VerticalAlignment	VCenter	VCenter	VCenter
HorizontalAlignment	HCenter	HCenter	HCenter
Control			
Text	RPM	-	<empty String>
Text Style	OpenSans35	Vera96	OpenSans35
Text Alignment	Center	Center	Center
Text Format	-	%04d	-

Configure the TextNodes' and TextValue Node's Position

1. In the Scene Tree panel select **StackLayout_Texts**. In the Scene Tree panel's right side click on the **[Fusion...]** button.
   - Fusion will be opened covering the Scene Editor.
   - StackLayout_Texts Fusion diagram will be displayed. It only has one Fusion Node.

2. In Fusion use the StackLayout_Texts' "Behaviors" connector to add 2 new Fusion Nodes: Connect **2 Value Processing > Value** behaviors to the StackLayout_Texts Fusion Node.

   > Please check Fusion's Basic Operations documentation on how to add Fusion Nodes.

   - In Fusion 2 new Fusion Nodes "**Value**" and "**Value_1**" have been created.

3. In Fusion select and right-click on the behavior nodes and rename them according to the table below.
   - In Fusion the Value behavior fusion nodes have been renamed.

Target Item	New Name
Value	Value_TextPos_X
Value_1	Value_TextPos_Y

4. In Fusion use the Value behaviors' "Receivers" connectors to add a **Value Processing > Transformation > SetPosition** Fusion Node to each of them.
   - In Fusion 2 new Fusion Nodes "**Set Position**" have been created, one of which is connected to Value_TextPos_X, the other to Value_TextPos_Y.

5. In Fusion select and right-click on the behavior nodes and rename them according to the table below.

- In Fusion the **Set Position** behavior fusion nodes have been renamed.

Target Item	New Name
Value_TextPos_X > Set Position	Set Position_X
Value_TextPos_Y > Set Position	Set Position_Y

6. In Fusion configure the behaviors' Fusion Nodes according to the table below.
   - In Fusion the Fusion Nodes' Properties have been changed.
   - In Scene Editor the position of StackLayout_Texts has been changed. The texts are now neatly placed inside the Custom_Gauge control as you can see in the image below.

	Fusion Node	
Property	**Set Position_X**	**Set Position_Y**
TargetNode	Custom_Gauge > StackLayout_Texts	Custom_Gauge > StackLayout_Texts
TranslationAxis2D	AxisX	AxisY
Property	**Value_TextPosX**	**Value_TextPosY**
Variant	(Float) 205	(Float) 230



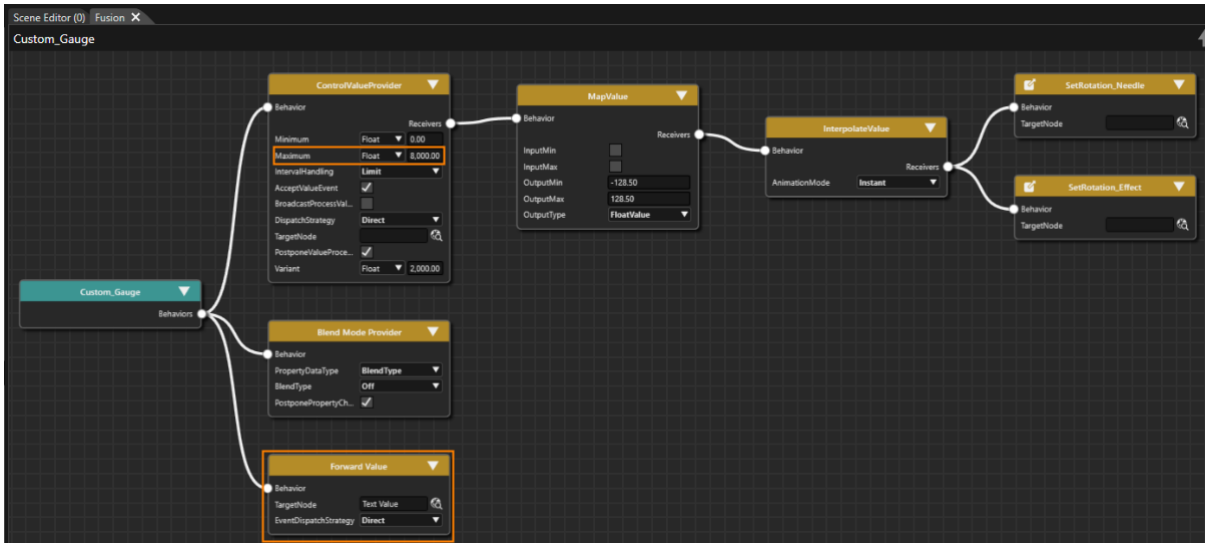
Configure Value Forwarding and Maximum Value

1. In Fusion add a **Value Processing > Forward Value** behavior to the **Behaviors** connector of the **Custom_Gauge** Fusion Node. Configure its **TargetNode** according to the table below.
   - In Fusion the property will be changed accordingly.

Forward Value Fusion Node	
Property	**Value**
TargetNode	Custom_Gauge > StackLayout_Texts > Text Value

2. In Fusion in the **ControlValueProvider** Fusion Node configure the property **Maximum** according to the table below.
   - In Fusion the the property is changed accordingly.
   - Custom_Gauge's Fusion diagram will look as in the image below.

ControlValueProvider	
Property	**Value**
Maximum	(Float) 8000.00



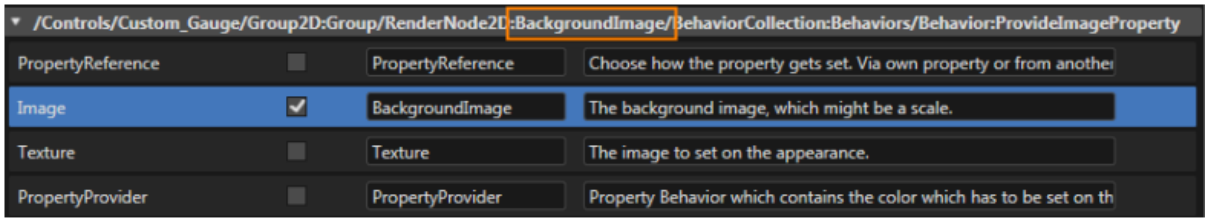
Configure Public Control Properties

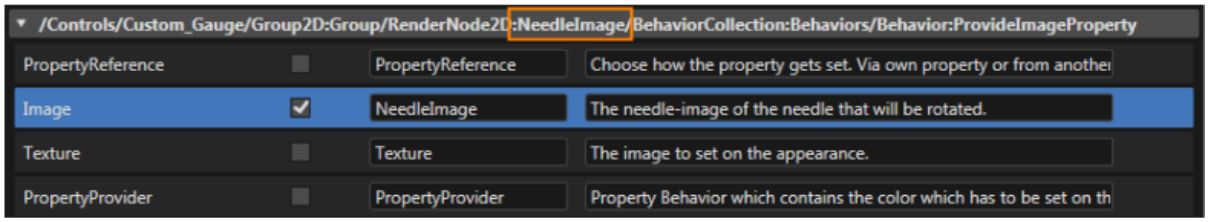
1. In the Scene Tree panel right click "Custom_Gauge" and select "**Control Properties...**" from the context menu.
   - The Configure Public Control Properties dialog will be opened.

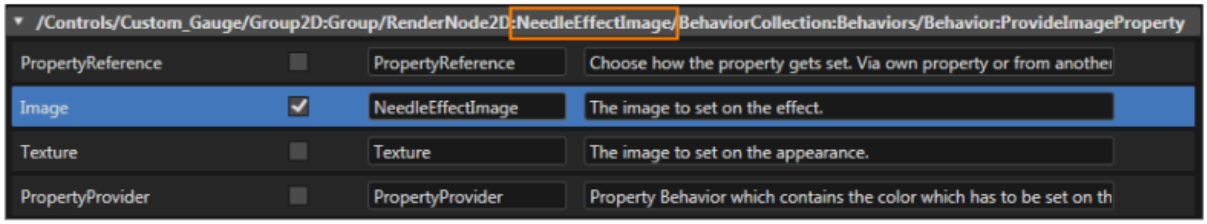
2. In the Configure Public Properties dialog the Properties which should be public to the user of the Custom_Gauge control need to be marked with the "Is Public" checkbox. Check the "Is Public" checkbox and eventually change the image properties' names according to the table and images below.
   - Image properties necessary for using and configuring the Custom_Gauge will be made public.
   - The Custom_Gauge control is now fully configured and ready to use.

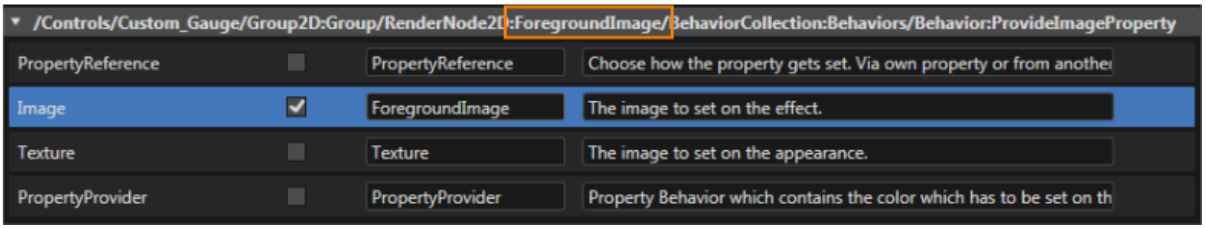
Custom_Gauge > Group_Bitmaps >			
Property	**Is Public**	**Source**	**Name**

BackgroundImage > ProvideImageProperty	x	Image	BackgroundImage
NeedleImage > ProvideImageProperty	x	Image	NeedleImage
NeedleEffectImage > ProvideImageProperty	x	Image	NeedleEffectImage
ForegroundImage > ProvideImageProperty	x	Image	ForegroundImage







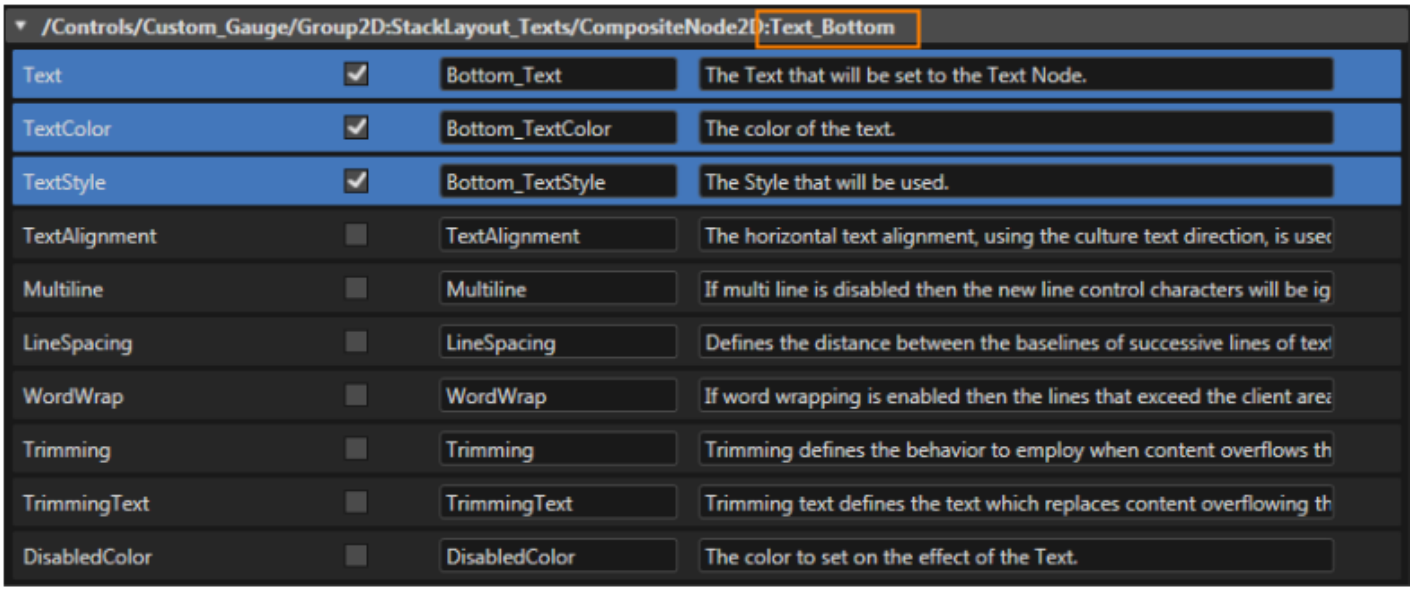


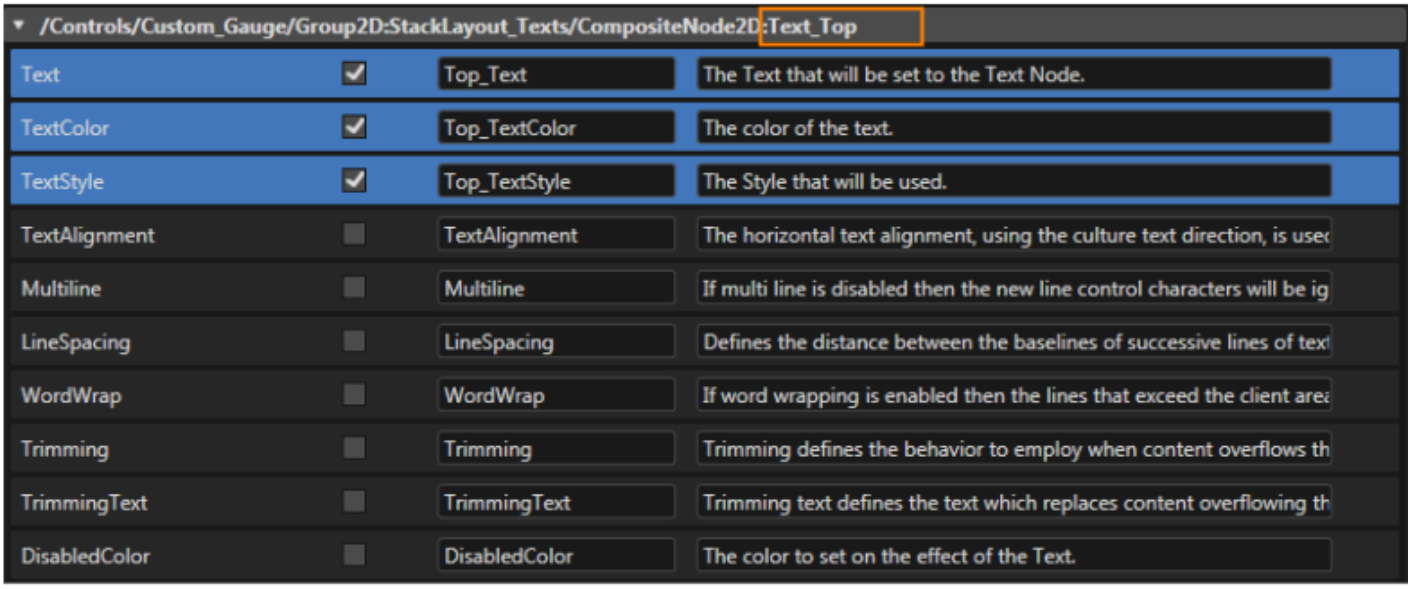
3. In the Configure Public Properties dialog check the "Is Public" checkbox and perform other configurations according to the table and images below.
   - Image properties necessary for using and configuring the Custom_Gauge will be made public.
   - The Custom_Gauge control is now fully configured and ready to use.

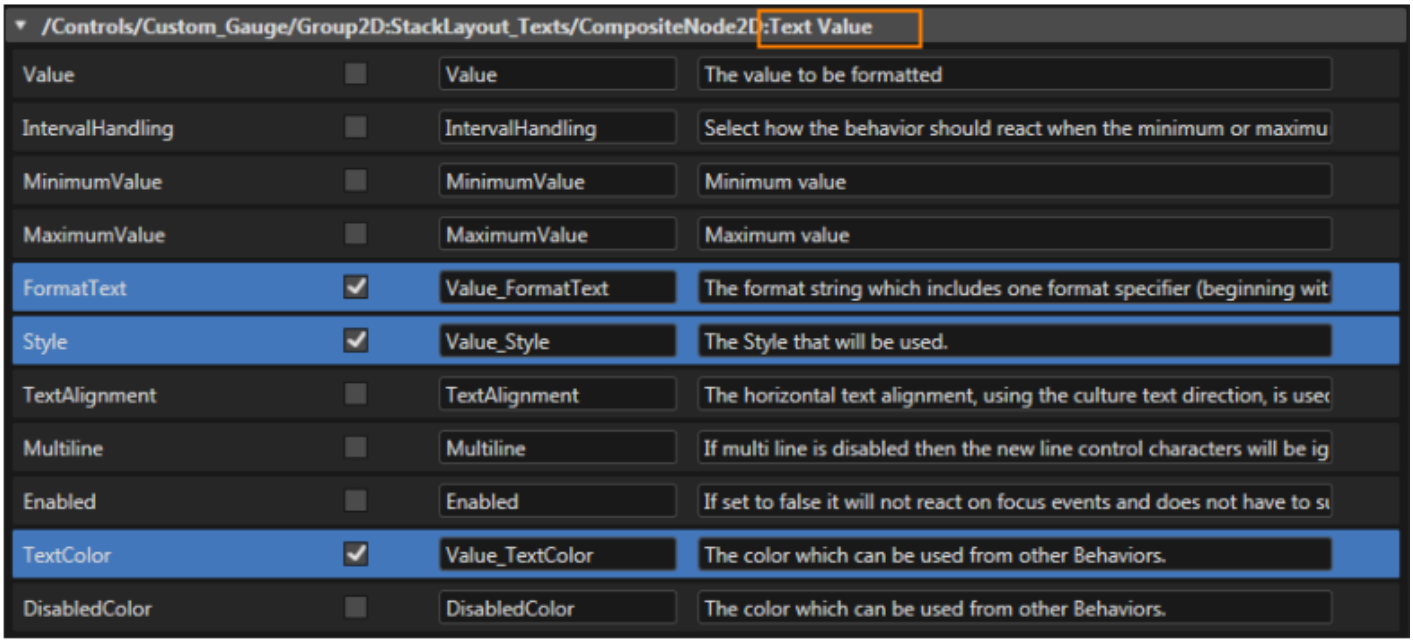
   > The properties made public in this **Configure Public Properties** dialog will be configurable in the **Properties panel's Controls section**.

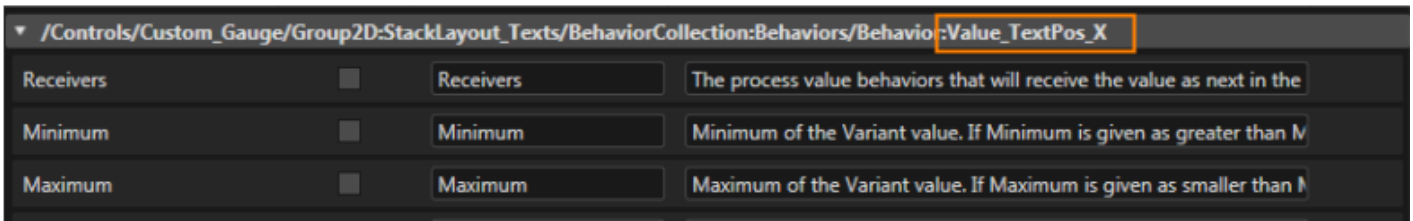
Custom_Gauge > StackLayout_Texts >			
Property	**IsPublic**	**Source**	**Name**

TextBottom	x	Text	Bottom_Text
	x	TextColor	Bottom_TextColor
	x	TextStyle	Bottom_TextStyle
Text_Top	x	Text	Top_Text
	x	TextColor	Top_TextColor
	x	TextStyle	Top_TextStyle
Text Value	x	FormatText	Value_FormatText
	x	Style	Value_Style
	x	TextColor	Value_TextColor
Behaviors > Value_TextPos_X	x	Variant	TextPosX
Behaviors > Value_TextPos_Y	x	Variant	TextPosY


/Controls/Custom_Gauge/Group2D:StackLayout_Texts/CompositeNode2D:Text_Bottom
Text
Bottom_Text
The Text that will be set to the Text Node.
TextColor
Bottom_TextColor
The color of the text.
TextStyle
Bottom_TextStyle
The Style that will be used.
TextAlignment
TextAlignment
The horizontal text alignment, using the culture text direction, is usec
Multiline
Multiline
If multi line is disabled then the new line control characters will be ig
LineSpacing
LineSpacing
Defines the distance between the baselines of successive lines of text
WordWrap
WordWrap
If word wrapping is enabled then the lines that exceed the client area
Trimming
Trimming
Trimming defines the behavior to employ when content overflows th
TrimmingText
TrimmingText
Trimming text defines the text which replaces content overflowing th
DisabledColor
DisabledColor
The color to set on the effect of the Text.


/Controls/Custom_Gauge/Group2D:StackLayout_Texts/CompositeNode2D:Text_Top
Text
Top_Text
The Text that will be set to the Text Node.
TextColor
Top_TextColor
The color of the text.
TextStyle
Top_TextStyle
The Style that will be used.
TextAlignment
TextAlignment
The horizontal text alignment, using the culture text direction, is usec
Multiline
Multiline
If multi line is disabled then the new line control characters will be ig
LineSpacing
LineSpacing
Defines the distance between the baselines of successive lines of text
WordWrap
WordWrap
If word wrapping is enabled then the lines that exceed the client area
Trimming
Trimming
Trimming defines the behavior to employ when content overflows th
TrimmingText
TrimmingText
Trimming text defines the text which replaces content overflowing th
DisabledColor
DisabledColor
The color to set on the effect of the Text.


/Controls/Custom_Gauge/Group2D:StackLayout_Texts/CompositeNode2D:Text Value
Value
Value
The value to be formatted
IntervalHandling
IntervalHandling
Select how the behavior should react when the minimum or maximu
MinimumValue
MinimumValue
Minimum value
MaximumValue
MaximumValue
Maximum value
FormatText
Value_FormatText
The format string which includes one format specifier (beginning wit
Style
Value_Style
The Style that will be used.
TextAlignment
TextAlignment
The horizontal text alignment, using the culture text direction, is usec
Multiline
Multiline
If multi line is disabled then the new line control characters will be ig
Enabled
Enabled
If set to false it will not react on focus events and does not have to st
TextColor
Value_TextColor
The color which can be used from other Behaviors.
DisabledColor
DisabledColor
The color which can be used from other Behaviors.


/Controls/Custom_Gauge/Group2D:StackLayout_Texts/BehaviorCollection:Behaviors/Behavio:Value_TextPos_X
Receivers
Receivers
The process value behaviors that will receive the value as next in the
Minimum
Minimum
Minimum of the Variant value. If Minimum is given as greater than M
Maximum
Maximum
Maximum of the Variant value. If Maximum is given as smaller than M

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