

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.

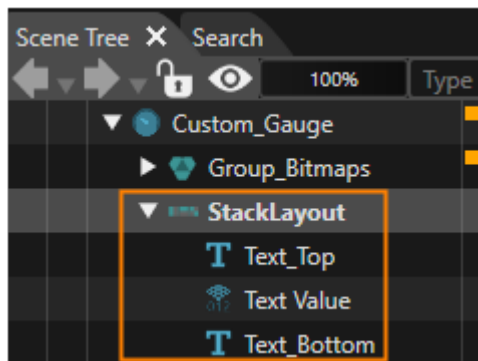
Path in Solution Explorer	Control
Solution/Controls	Custom_Gauge

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 **Layout** and **Layouter** 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

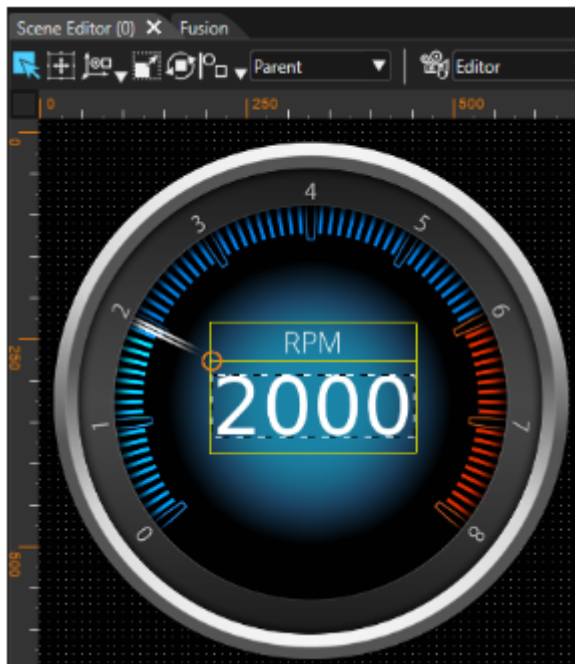
4. In Fusion use the Value behaviors' "Receivers" connectors to add a **Value Processing > Transformation > SetPosition** Fusion Node to each of them.
 - In Fusion 2 new Fusion Nodes "**Set Position**" have been created, one of which is connected to Value_TextPos_X, the other to Value_TextPos_Y.
5. In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



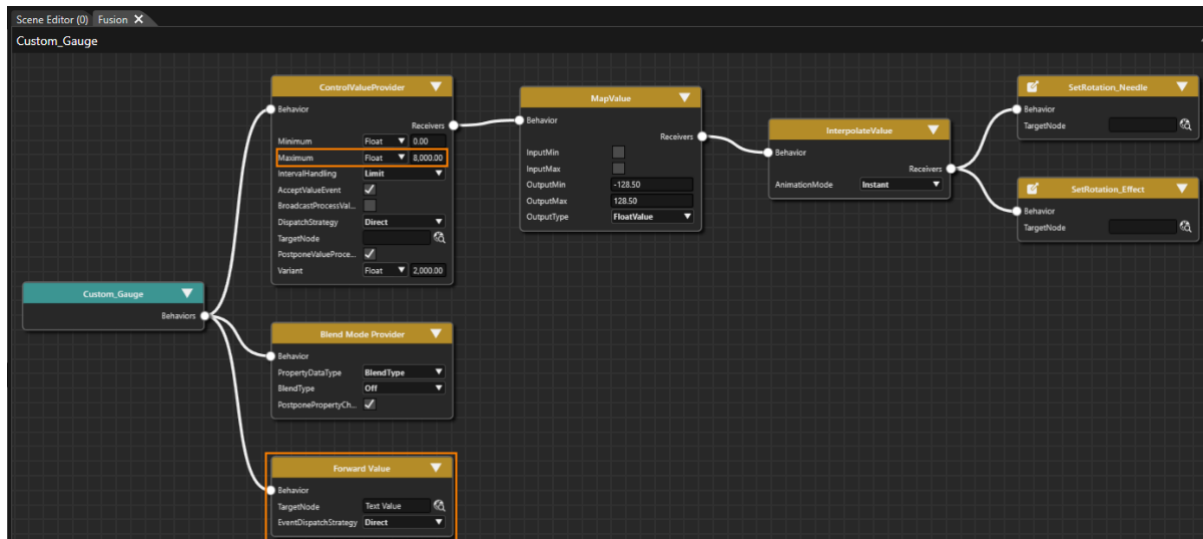
Configure Value Forwarding and Maximum Value

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

- 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

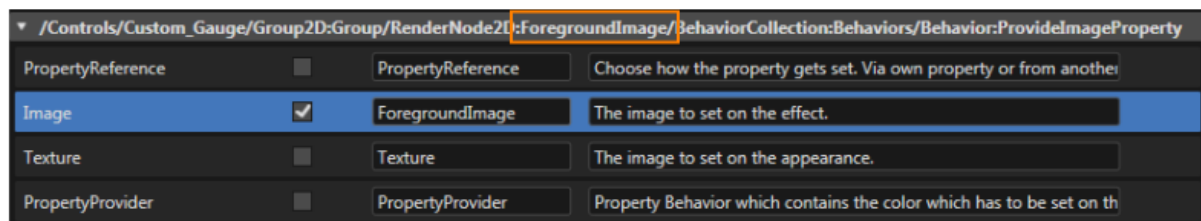
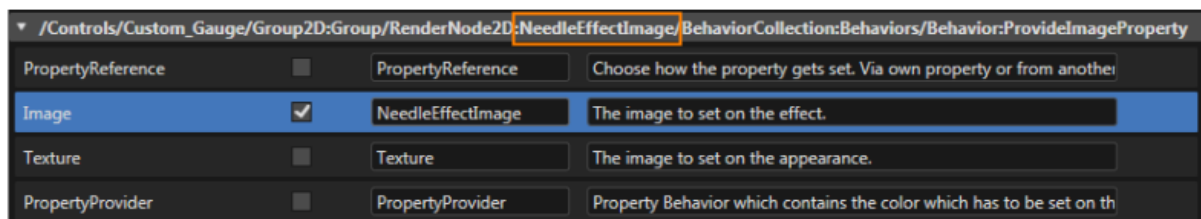
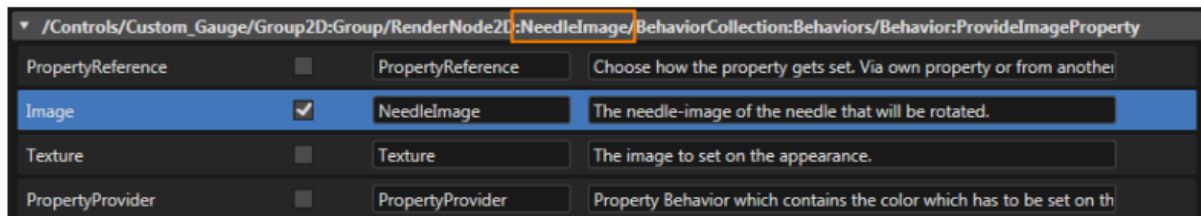
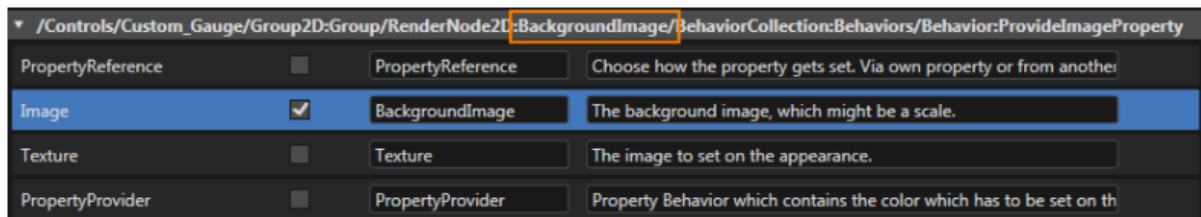


Configure Public Control Properties

- 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.
- 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
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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 used.
Multiline	☐	Multiline	If multi line is disabled then the new line control characters will be ignored.
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 will be wrapped.
Trimming	☐	Trimming	Trimming defines the behavior to employ when content overflows the client area.
TrimmingText	☐	TrimmingText	Trimming text defines the text which replaces content overflowing the client area.
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 used.
Multiline	☐	Multiline	If multi line is disabled then the new line control characters will be ignored.
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 will be wrapped.
Trimming	☐	Trimming	Trimming defines the behavior to employ when content overflows the client area.
TrimmingText	☐	TrimmingText	Trimming text defines the text which replaces content overflowing the client area.
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 maximum value is reached.
MinimumValue	☐	MinimumValue	Minimum value.
MaximumValue	☐	MaximumValue	Maximum value.
FormatText	☒	Value_FormatText	The format string which includes one format specifier (beginning with {0}).
Style	☒	Value_Style	The Style that will be used.
TextAlignment	☐	TextAlignment	The horizontal text alignment, using the culture text direction, is used.
Multiline	☐	Multiline	If multi line is disabled then the new line control characters will be ignored.
Enabled	☐	Enabled	If set to false it will not react on focus events and does not have to be focused.
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/Behavior:Value_TextPos_X			
Receivers	☐	Receivers	The process value behaviors that will receive the value as next in the sequence.
Minimum	☐	Minimum	Minimum of the Variant value. If Minimum is given as greater than Maximum, the behavior will be disabled.
Maximum	☐	Maximum	Maximum of the Variant value. If Maximum is given as smaller than Minimum, the behavior will be disabled.

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