SaintsField

SaintsField is a Unity Inspector extension tools focusing on script fields like NaughtyAttributes but different.

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Unity Version Requirement: 2020.2 or higher

Highlights

- 1. Use and only use PropertyDrawer and DecoratorDrawer, thus it will be compatible with most Unity Inspector enhancer like Odin & NaughtyAttributes.
- 2. Allow stack on many cases. Only attributes that modified the label itself, and the field itself can not be stacked. All other attributes can mostly be stacked.
- 3. Allow dynamic arguments on many cases

Installation

• Using git upm:

add this line to manifest.json in your project

```
{
    // your other dependencies...
    "today.comes.saintsfield": "https://github.com/TylerTemp/SaintsField.git"
}
```

• Using a unitypackage :

Go to the Release Page to download a desired version of unitypackage and import it to your project

• Using a git submodule:

```
git submodule add https://github.com/TylerTemp/SaintsField.git Assets/SaintsField
```

If you're using unitypackage or git submodule but you put this project under another folder rather than Assets/SaintsField , please also do:

- Create Assets/Editor Default Resources/SaintsField .
- Copy only image files (no .meta files) from project's Editor/Editor Default Resources/SaintsField into your project's Assets/Editor Default Resources/SaintsField .
- Select all the image files you copied, and enable the Advanced Read/Write option for these icons.

Enhancements

Label & Text

RichLabel

string|null richTextXml the content of the label, supported tag:

```
O All Unity rich label tag, like <color=#ff0000>red</color>
O <label /> for current field name
O <icon=path/to/image.png /> for icon
null means no label
```

for icon it will search the following path:

- "Assets/Editor Default Resources/" (You can override things here, or put your own icons)
- "Assets/Editor Default Resources/SaintsField/" (again for override)
- "Assets/SaintsField/Editor/Editor Default Resources/SaintsField/" (this is most likely to be when install using unitypackage)
- "Packages/today.comes.saintsfield/Editor/Editor Default Resources/SaintsField/" (this is most likely to be when install using upm)

for color it supports:

- O Clear , White , Black , Gray , Red , Pink , Orange , Yellow , Green , Blue , Indigo , Violet
- html color which supported by ColorUtility.TryParseHtmlString , like #RRGGBB , #RRGGBBAA , #RGB , #RGBA
- bool isCallback=false

if true, the richTextXml will be interpreted as a property / callback function, and the string value / the returned string value (tag supported) will be used as the label content

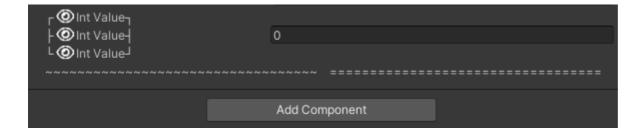
• AllowMultiple: No. A field can only have one RichLabel

```
public class RichLabel: MonoBehaviour
{
     [RichLabel("<color=indigo><icon=eye.png /></color><b><color=red>R</color><color=green>a</color><color=blue>
     public string _rainbow;
     [RichLabel(nameof(LabelCallback), true)]
     public bool _callbackToggle;
     private string LabelCallback() => _callbackToggle ? "<color=green><icon=eye.png /></color> <label/>" : "<ic</pre>
     [Space]
     [RichLabel(nameof(_propertyLabel), true)]
     public string _propertyLabel;
     private string _rainbow;
     [Serializable]
     private struct MyStruct
         [RichLabel("<color=green>HI!</color>")]
         public float LabelFloat;
     }
     [SerializeField]
     [RichLabel("<color=green>Fixed For Struct!</color>")]
     private MyStruct _myStructWorkAround;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/25f6c7cc-ee7e-444e-b078-007dd6df499e

Like RichLabel but it's rendered above/below the field in full width of view.

- string | null richTextXml Same as RichLabel
- bool isCallback=false Same as RichLabel
- string groupBy = "" See GroupBy section
- AllowMultiple: Yes



InfoBox

Draw a info box above/below the field.

• string content

The content of the info box

• EMessageType messageType=EMessageType.Info

Message icon. Options are

- None
- o Info
- Warning
- Error
- string show=null

a callback name or property name for show or hide this info box.

• bool contentIsCallback=false

if true, the content will be interpreted as a property / callback function.

If the value (or returned value) is string, then the content will be changed

If the value is (string content, EMessageType messageType) then both content and message type will be changed

• bool above=false

Draw the info box above the field instead of below

- string groupBy="" See GroupBy section
- AllowMultiple: Yes

```
public class InfoBoxExample : MonoBehaviour
{
    [field: SerializeField] private bool _show;

    [Space]
    [InfoBox("Hi\nwrap long line content content content content content content content content [InfoBox(nameof(DynamicMessage), EMessageType.Warning, contentIsCallback: true, above: true)]
    [InfoBox(nameof(DynamicMessageWithIcon), contentIsCallback: true)]
    [InfoBox("Hi\n toggle content ", EMessageType.Info, nameof(_show))]
    public bool _content;

    private (EMessageType, string) DynamicMessageWithIcon => _content ? (EMessageType.Error, "False!") : (EMessageType string DynamicMessage() => _content ? "False" : "True";
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/03ac649a-9e89-407d-a59d-3e224a7f84c8

SepTitle

A separator with a text

- string title=null title, null for no title at all. Does NOT support rich text
- EColor color , color for title and line separator
- float gap = 2f , space between title and line separator
- float height = 2f , height of this decorator

```
public class SepTitleExample: MonoBehaviour
{
     [SepTitle("Separate Here", EColor.Pink)]
     public string content1;

     [SepTitle(EColor.Green)]
     public string content2;
}
```



General Buttons

There are 3 general buttons:

- AboveButton will draw a button on above
- BelowButton will draw a button on below
- PostFieldButton will draw a button at the end of the field

All of them have the same arguments:

string funcName
 called when you click the button

• string buttonLabel

label of the button, support tags like RichLabel

bool buttonLabelIsCallback = false
 a callback or propery name for button label, same as RichLabel

• string groupBy = ""

See GroupBy section. Does NOT work on PostFieldButton

AllowMultiple: Yes

```
public class ButtonsExample : MonoBehaviour
{
     [SerializeField] private bool _errorOut;
     [field: SerializeField] private string _labelByField;
     [AboveButton(nameof(ClickErrorButton), nameof(_labelByField), true)]
     [AboveButton(nameof(ClickErrorButton), "Click <color=green><icon='eye.png' /></color>!")]
     [AboveButton(nameof(ClickButton), nameof(GetButtonLabel), true, "OK")]
     [AboveButton(nameof(ClickButton), nameof(GetButtonLabel), true, "OK")]
     [PostFieldButton(nameof(ToggleAndError), nameof(GetButtonLabelIcon), true)]
     [BelowButton(nameof(ClickButton), nameof(GetButtonLabel), true, "OK")]
     [BelowButton(nameof(ClickButton), nameof(GetButtonLabel), true, "OK")]
     [BelowButton(nameof(ClickErrorButton), "Below <color=green><icon='eye.png' /></color>!")]
     public int _someInt;
     private void ClickErrorButton() => Debug.Log("CLICKED!");
     private string GetButtonLabel() =>
         _errorOut
             ? "Error <color=red>me</color>!"
             : "No <color=green>Error</color>!";
     private string GetButtonLabelIcon() => _errorOut
         ? "<color=red><icon='eye.png' /></color>"
         : "<color=green><icon='eye.png' /></color>";
     private void ClickButton()
        Debug.Log("CLICKED 2!");
         if(_errorOut)
             throw new Exception("Expected exception!");
         }
     }
     private void ToggleAndError()
         Toggle();
        ClickButton();
     }
```

```
private void Toggle() => _errorOut = !_errorOut;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/f225115b-f7de-4273-be49-d830766e82e7

Field Modifier

GameObjectActive

A toggle button to toggle the GameObject.activeSelf of the field.

This does not require the field is GameObject. It can be a component which already attached to a GameObject.

• AllowMultiple: No

```
public class GameObjectActiveExample : MonoBehaviour
{
    [GameObjectActive] public GameObject _go;
    [GameObjectActive] public GameObjectActiveExample _component;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/ddb0bd02-8869-47b9-aac4-880ab9bfb81a

SpriteToggle

A toggle button to toggle the Sprite of the target.

The field itself must be Sprite .

• string imageOrSpriteRenderer

The target, must be either UI.Image Or SpriteRenderer

• AllowMultiple: Yes

```
public class SpriteToggleExample : MonoBehaviour
{
    [field: SerializeField] private Image _image;
    [field: SerializeField] private SpriteRenderer _sprite;

    [SerializeField
        , SpriteToggle(nameof(_image))
        , SpriteToggle(nameof(_sprite))
    ] private Sprite _sprite1;
    [SerializeField
        , SpriteToggle(nameof(_image))
        , SpriteToggle(nameof(_image))
        , SpriteToggle(nameof(_sprite))
    ] private Sprite _sprite2;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/705498e9-4d70-482f-9ae6-b231cd9497ca

MaterialToggle

A toggle button to toggle the Material of the target.

The field itself must be Material .

• string rendererName=null

The target, must be Renderer (or it's subClass like MeshRenderer). when using null, it will try to get the Renderer component from the current component

• int index=0

which slot index of materials on Renderer you want to swap

AllowMultiple: Yes

```
public class MaterialToggleExample: MonoBehaviour
{
    public Renderer targetRenderer;
    [MaterialToggle(nameof(targetRenderer))] public Material _mat1;
    [MaterialToggle(nameof(targetRenderer))] public Material _mat2;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/00c5702c-a41e-42a4-abb1-97a0713c3f66

Expandable

Make scriptable objects expandable.

• AllowMultiple: No

```
public class ExpandableExample : MonoBehaviour
{
    [Expandable] public ScriptableObject _scriptable;
}
```



Field

FieldType

Ask the inspector to display another type of field rather than the field's original type.

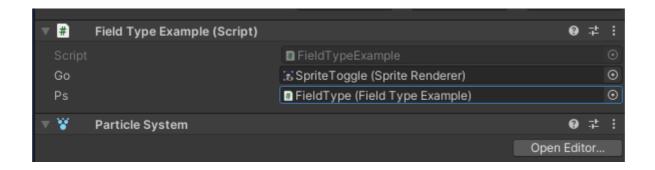
This is useful when you want to have a GameObject of prefab, but you want this target prefab has specific component (e.g. your own MonoScript , or a ParticalSystem). By using this you enforce the inspector to sign the required object that has your expected component, but still give you the original type value to field.

• AllowMultiple: No

```
public class FieldTypeExample: MonoBehaviour
{
    [SerializeField, FieldType(typeof(SpriteRenderer))]
    private GameObject _go;

    [SerializeField, FieldType(typeof(FieldTypeExample))]
    private ParticleSystem _ps;
```

}



Dropdown

A dropdown selector. Supports reference type, sub menu, separator, and disabled select item.

• AllowMultiple: No

```
public class DropdownExample : MonoBehaviour
{
     [Dropdown(nameof(GetDropdownItems))] public float _float;
     public GameObject _go1;
     public GameObject _go2;
     [Dropdown(nameof(GetDropdownRefs))] public GameObject _refs;
     private DropdownList<float> GetDropdownItems()
         return new DropdownList<float>
         {
             { "1", 1.0f },
             { "2", 2.0f },
             { "3/1", 3.1f },
             { "3/2", 3.2f },
         };
     }
     private DropdownList<GameObject> GetDropdownRefs => new DropdownList<GameObject>
         {_go1.name, _go1},
         {_go2.name, _go2},
         {"NULL", null},
     };
}
```



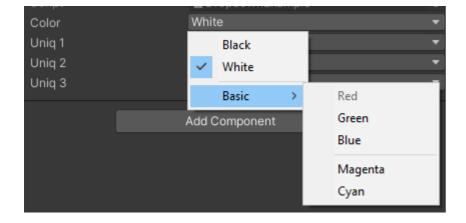
To control separator and disabled item

```
[Dropdown(nameof(GetAdvancedDropdownItems))]
public Color color;

private DropdownList<Color> GetAdvancedDropdownItems()
```

And you can always manually add it:

```
DropdownList<Color> dropdownList = new DropdownList<Color>();
dropdownList.Add("Black", Color.black); # add an item
dropdownList.Add("White", Color.white, true); # and a disabled item
dropdownList.AddSeparator(); # add a separator
```



MinMaxSlider

A range slider for Vector2 or Vector2Int

This Attribute has overrides:

- MinMaxSliderAttribute(float min, float max, float step=-1f, float minWidth=DefaultWidth, float maxWidth=DefaultWidth)
- MinMaxSliderAttribute(int min, int max, int step=1, float minWidth=DefaultWidth, float maxWidth=DefaultWidth)
- MinMaxSliderAttribute(string minCallback, string maxCallback, int step=-1, float minWidth=DefaultWidth, float maxWidth=DefaultWidth)
- MinMaxSliderAttribute(float min, string maxCallback, float step=-1f, float minWidth=DefaultWidth, float maxWidth=DefaultWidth)
- MinMaxSliderAttribute(string minCallback, float max, float step=-1f, float minWidth=DefaultWidth, float maxWidth=DefaultWidth)

For each arguments:

- min : the minimum value of the slider
- max: the maximum value of the slider

- minCallback : use a function or property as the minimum value of the slider
- maxCallback : use a function or property as the maximum value of the slider
- step : the step of the slider, <= 0 means no limit and float type will not be limited
- minWidth: the minimum width of the value label. -1 for default (not recommended)
- maxWidth: the maximum width of the value label. -1 for default (not recommended)
- AllowMultiple: No

a full featured example:

```
public class MinMaxSliderExample: MonoBehaviour
{
     [MinMaxSlider(-1f, 3f, 0.3f)]
     public Vector2 vector2Step03;
     [MinMaxSlider(0, 20, 3)]
     public Vector2Int vector2IntStep3;
     [MinMaxSlider(-1f, 3f)]
     public Vector2 vector2Free;
     [MinMaxSlider(0, 20)]
     public Vector2Int vector2IntFree;
     // not recommended
     [SerializeField]
     [MinMaxSlider(0, 100, minWidth:-1, maxWidth:-1)]
     private Vector2Int _autoWidth;
     [field: SerializeField, MinMaxSlider(-100f, 100f)]
     public Vector2 OuterRange { get; private set; }
     [SerializeField, MinMaxSlider(nameof(GetOuterMin), nameof(GetOuterMax), 1)] public Vector2Int _innerRange;
     private float GetOuterMin() => OuterRange.x;
     private float GetOuterMax() => OuterRange.y;
     [field: SerializeField]
     public float DynamicMin { get; private set; }
     [field: SerializeField]
     public float DynamicMax { get; private set; }
     [SerializeField, MinMaxSlider(nameof(DynamicMin), nameof(DynamicMax))] private Vector2 _propRange;
     [SerializeField, MinMaxSlider(nameof(DynamicMin), 100f)] private Vector2 _propLeftRange;
     [SerializeField, MinMaxSlider(-100f, nameof(DynamicMax))] private Vector2 _propRightRange;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/2ffb659f-a5ed-4861-b1ba-65771db5ab47

ResizableTextArea

This TextArea will always grow it's height to fit the content. (minimal height is 3 rows).

Note: Unlike NaughtyAttributes, this does not have a text-wrap issue.

AllowMultiple: No

```
public class ResizableTextAreaExample : MonoBehaviour
{
    [SerializeField, ResizableTextArea] private string _short;
    [SerializeField, ResizableTextArea] private string _long;
    [SerializeField, RichLabel(null), ResizableTextArea] private string _noLabel;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/64ad9c16-19e2-482d-9186-60d42fb34922

AnimatorParam

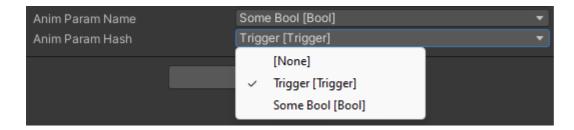
A dropdown selector for animator parameter.

- string animatorName
 name of the animator
- (Optional) AnimatorControllerParameterType animatorParamType type of the parameter to filter

```
public class Anim : MonoBehaviour
{
    [field: SerializeField]
    public Animator Animator { get; private set;}

    [AnimatorParam(nameof(Animator))]
    private string animParamName;

    [AnimatorParam(nameof(Animator))]
    private int animParamHash;
}
```



AnimatorState

A dropdown selector for animator state.

string animatorNamename of the animator

to get more useful info from the state, you can use AnimatorState type instead of string for field.

AnimatorState has the following properties:

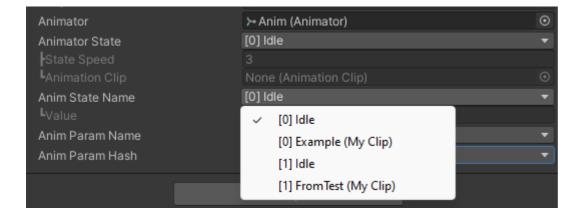
- int layerIndex index of layer
- int stateNameHash hash value of state
- string stateName actual state name
- float stateSpeed the Speed paramater of the state

• AnimationClip animationClip the actual animation clip of the state (can be null). It has length value for the length of the clip. For more detail see Unity Doc of AnimationClip

```
public class Anim : MonoBehaviour
{
    [field: SerializeField]
    public Animator Animator { get; private set; }

    [AnimatorState(nameof(Animator))]
    public AnimatorState animatorState;

    [AnimatorState(nameof(Animator))]
    public string animStateName;
}
```

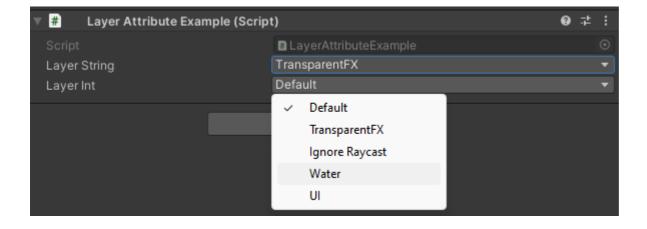


Layer

A dropdown selector for layer.

• AllowMultiple: No

```
public class LayerAttributeExample: MonoBehaviour
{
    [Layer] public string layerString;
    [Layer] public int layerInt;
}
```



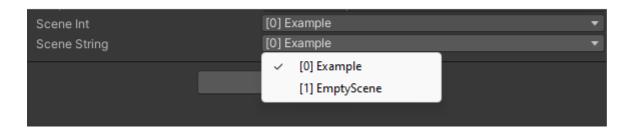
Scene

A dropdown selector for scene in build list.

• AllowMultiple: No

```
public class SceneExample: MonoBehaviour
{
```

```
[Scene] public int _sceneInt;
[Scene] public string _sceneString;
}
```

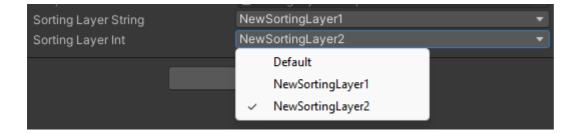


SortingLayer

A dropdown selector for sorting layer.

• AllowMultiple: No

```
public class SortingLayerExample: MonoBehaviour
{
    [SortingLayer] public string _sortingLayerString;
    [SortingLayer] public int _sortingLayerInt;
}
```

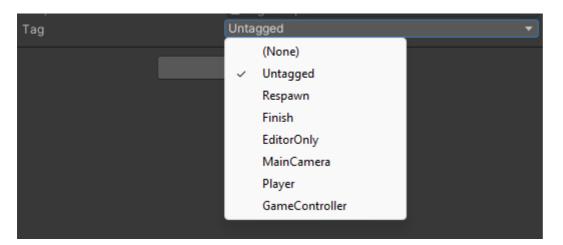


Tag

A dropdown selector for tag.

• AllowMultiple: No

```
public class TagExample: MonoBehaviour
{
    [Tag] public string _tag;
}
```



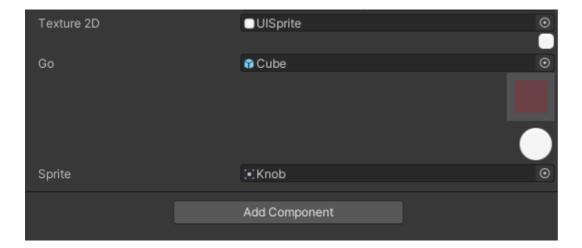
AssetPreview

Show an image preview for prefabs, Sprite, Texture2D etc. (Internally use AssetPreview.GetAssetPreview)

- int maxWidth=-1
 preview max width, -1 for current view width
- int maxHeight=-1

 preview max height, -1 for auto resize (with same aspect) using width
- bool above=false
 if true, render above the field instead of below
- string groupBy=""See GroupBy section
- AllowMultiple: No

```
public class AssetPreviewExample: MonoBehaviour
{
    [AssetPreview(20, 100)] public Texture2D _texture2D;
    [AssetPreview(50)] public GameObject _go;
    [AssetPreview(above: true)] public Sprite _sprite;
}
```



OnValueChanged

Call a function every time the field value is changed

- string callback the callback function name
- AllowMultiple: Yes

```
public class OnChangedExample : MonoBehaviour
{
     [OnValueChanged(nameof(Changed))]
     public int _value;

     private void Changed()
     {
          Debug.Log($"changed={_value}");
     }
}
```

ReadOnly

This has two overrides:

- ReadOnlyAttribute(bool directValue)
- ReadOnlyAttribute(params string[] by)

Each arguemnts:

• bool directValue=false

if true, the field will be readonly

• string[] by

a callback or property name, if ALL the value is truly, the field will be readonly

AllowMultiple: Yes

When use mutiple ReadOnly on a field, the field will be readonly if ANY of them is readonly

```
public class ReadOnlyGroupExample: MonoBehaviour
{
     [ReadOnly(true)] public string directlyReadOnly;
     [SerializeField] private bool _bool1;
     [SerializeField] private bool _bool2;
     [SerializeField] private bool _bool3;
     [SerializeField] private bool _bool4;
     [SerializeField]
     [ReadOnly(nameof(_bool1))]
     [ReadOnly(nameof(_bool2))]
     [RichLabel("readonly=1||2")]
     private string _ro1and2;
     [SerializeField]
     [ReadOnly(nameof(_bool1), nameof(_bool2))]
     [RichLabel("readonly=1&&2")]
     private string _ro1or2;
     [SerializeField]
     [ReadOnly(nameof(_bool1), nameof(_bool2))]
     [ReadOnly(nameof(_bool3), nameof(_bool4))]
     [RichLabel("readonly=(1&&2)||(3&&4)")]
     private string _ro1234;
```

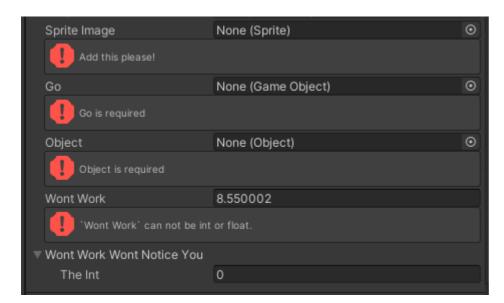
https://github.com/TylerTemp/SaintsField/assets/6391063/6761a0f2-07c2-4252-9dd0-c1a60091a891

Required

Remide a given reference type field to be required.

This will check if the field value is a truly value, that means:

- 1. Won't work for int and float (It'll give an error, asking you to not use on int/float)
- 2. struct value will always be truly because struct is not nullable and Unity will fill a default value for it no matter what
- 3. It works on refenece type and will NOT skip unity's life-circle null check
- string errorMessage = null Error message. Default is {label} is required
- AllowMultiple: No



```
public class RequiredExample: MonoBehaviour
{
    [Required("Add this please!")] public Sprite _spriteImage;
    // works for property field
    [field: SerializeField, Required] public GameObject Go { get; private set; }
    [Required] public UnityEngine.Object _object;
    [SerializeField, Required] private float _wontWork;

[Serializable]
    public struct MyStruct
    {
        public int theInt;
    }

    [Required]
    public MyStruct wontWorkWontNoticeYou;
}
```

ValidateInput

Validate the input of the field when value changed.

• string callback the callback function to validate the data. note: return type is **string** not bool! return null or empty string for valid, otherwise the string will be used as error message

• AllowMultiple: Yes

```
public class ValidateInputExample : MonoBehaviour
{
    [ValidateInput(nameof(OnValidateInput))]
    public int _value;

    private string OnValidateInput() => _value < 0 ? $"Should be positive, but gets {_value}" : null;
}</pre>
```

https://github.com/TylerTemp/SaintsField/assets/6391063/9d52e663-c9f8-430a-814c-011b17b67a86

ShowIf / HideIf

Show or hide the field based on a condition.

For ShowIf:

- string andCallbacks... a list of callback or property name, if **ALL** the value is truly, the field will be shown/hidden
- AllowMultiple: Yes

When use mutiple ShowIf on a field, the field will be shown if ANY of them is shown

HideIf is the oppsite of ShowIf . You can use mutiple ShowIf , HideIf and even the mix of the two

A full futured example:

```
public class ShowHideExample: MonoBehaviour
{
     public bool _bool1;
     public bool _bool2;
     public bool _bool3;
     public bool _bool4;
     [ShowIf(nameof(_bool1))]
     [ShowIf(nameof(_bool2))]
     [RichLabel("<color=red>show=1||2")]
     public string _showIf10r2;
     [ShowIf(nameof(_bool1), nameof(_bool2))]
     [RichLabel("<color=green>show=1&&2")]
     public string _showIf1And2;
     [HideIf(nameof(_bool1))]
     [HideIf(nameof(_bool2))]
     [RichLabel("<color=blue>show=!1||!2")]
     public string _hideIf10r2;
     [HideIf(nameof(_bool1), nameof(_bool2))]
     [RichLabel("<color=yellow>show=!1&&!2")]
     public string _hideIf1And2;
     [ShowIf(nameof(_bool1))]
     [HideIf(nameof(_bool2))]
     [RichLabel("<color=magenta>show=1||!2")]
     public string _showIf10rNot2;
```

```
[ShowIf(nameof(_bool1), nameof(_bool2))]
[ShowIf(nameof(_bool3), nameof(_bool4))]
[RichLabel("<color=orange>show=(1&&2)||(3&&4)")]
public string _showIf1234;

[HideIf(nameof(_bool1), nameof(_bool2))]
[HideIf(nameof(_bool3), nameof(_bool4))]
[RichLabel("<color=pink>show=(!1&&!2)||(!3&&!4)")]
public string _hideIf1234;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/dc7f8b78-de4c-4b12-a383-005be04c10c0

MinValue / MaxValue

Limit for int/float field

They have the same overrides:

- float value : directly limit to a number value
- string valueCallback : a callback or property for limit
- AllowMultiple: Yes

```
public class MinMaxExample: MonoBehaviour
{
    public int upLimit;

    [MinValue(0), MaxValue(nameof(upLimit))] public int min0Max;
    [MinValue(nameof(upLimit)), MaxValue(10)] public float fMinMax10;
}
```

https://github.com/TylerTemp/SaintsField/assets/6391063/ea2efa8d-86e6-46ba-bd7d-23e7577f7604

GroupBy

group with any decorator that has the same groupBy for this field. Same group will share even width of the view width between them.

This only works for decorator draws above or below the field. The above drawer will not grouped with below drawer, and vice versa.

"" means no group.

Known Issues

Because it handle the label drawing process seperated from the actual field drawing, the label is not using Unity's default label. Which lead to the problem:

- 1. Dragging label to change value for int/float field is not very smooth (FIXED)
- 2. Click a label will not focus the field (FIXED)

Note: These issue only affect the fields that uses this project's feature. It won't affect other fields, even it's on the same script. It should be safe enough to use it together with your other inspector enhancement