



# ADVANCED INSPECTOR

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TECHNICAL DOCUMENTATION (v1.69)

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## Introduction

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You got your hands - somehow - on the Advanced Inspector, and now you're wondering what it can do and how you are supposed to use it.

The Advanced Inspector is our answer to Unity's lacking Inspector. We believe someone should not have to write any Editor, or only in the very rare case of a very specific rendering. Most of the time, the Inspector should display data the way we want it, without a need to rewrite a custom behaviour each time.

While writing this tool, we decided to add numerous other features and it quickly became a huge undertaking. The purpose of this document is to list as much of those features as possible and how they work.

As with any tools we release, we follow the SOLID principle. This means our tools are always closed to changes, but opened to expansion. For this reason, the core of the tool is within a documented library, but every class that has an expansion purpose are left outside.

You can easily add your own attribute or FieldEditor and modify the basic behaviour of this package. You can adapt other package to be friendly to this tool.

If you wish to have access to the library source code, contact us. However, you should not have any need to modify the base classes. Note that our libraries are fully commented with an external .xml. You can browse those comments in the code editor of your choice.

## Supported Unity Version

This tools comes in 3 different package that support different version of Unity. Depending on the version of Unity you use, you may download the proper version. Note that the Asset Store now download the proper version for you, so you no longer need to change compatibility.

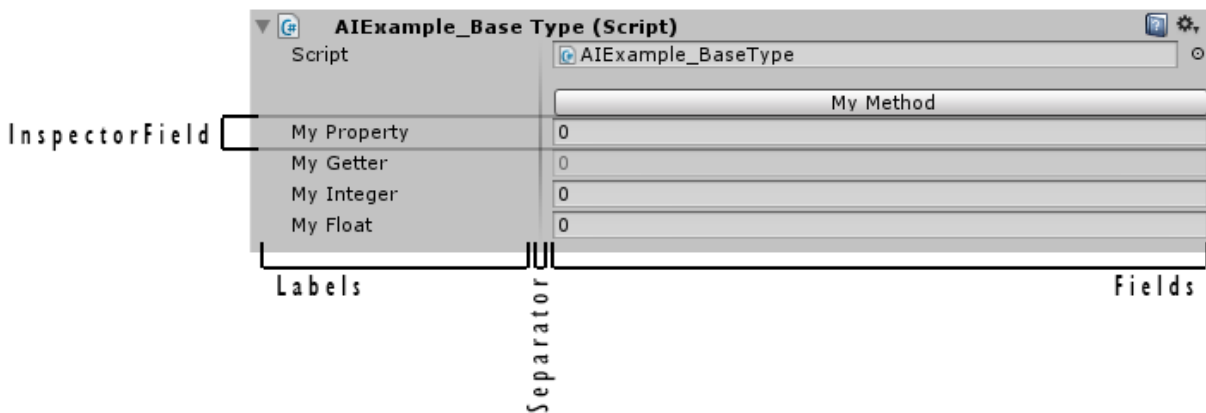
- Unity 4.3.0 up to 4.4 - No longer supported, last version is 1.55 v43
- Unity 4.6.0 up to 4.6.5 - No longer supported, last version is 1.55 v46
- Unity 5.0.0 up to 5.1.x - No longer supported, last version is 1.55 v50
- Unity 5.2.0+ - Advanced Inspector version 1.55+



## Structure

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Unlike Unity's Inspector, Advanced Inspector does not allow free-for-all rendering of items. It has a structured way of displaying data. This limitation, in counter-part, offer the chance of adding feature that would be impossible if no structure existed.



Each item displayed by the Advanced Inspector is represented by an instance of the InspectorField class. Each InspectorField are handled by the AdvancedInspectorControl class and drawn into two specific zone separated by a drag-able separator.

The Labels zone is the name of each InspectorField. The name is selectable and right-clickable for a contextual menu related to that InspectorField's type. It can also be drag to other label to perform a quick copy/paste of the field's value. In front of the label, there's space for contextual icon, such as an expanding arrow, a destructible minus "-" icon, or a draggable icon for re-orderable list.

The Fields zone is where independent FieldEditor are handling how the data is displayed and edited. When a new type is encountered and no FieldEditor is defined for it, the Advanced Inspector falls back to displaying the type's name and assumes it's an object which may or may not be expandable.

## How to Use

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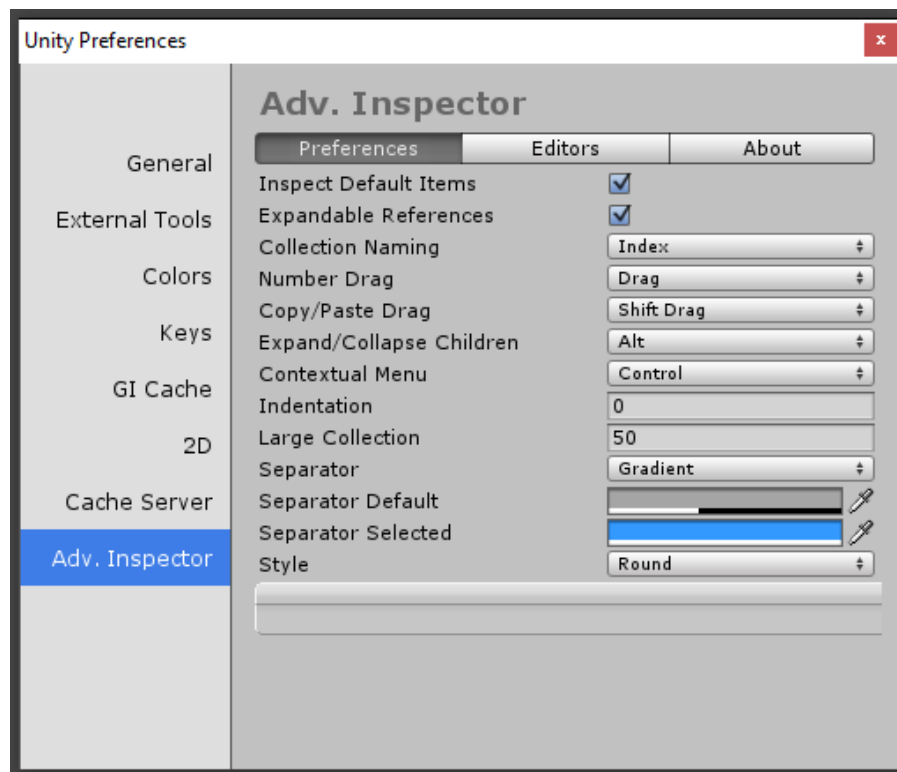
As of 1.51, Advanced Inspector does not require any modification of your existing classes. Any classes that do not have a Custom Editor assigned to them is automatically handled by Advanced Inspector. See the tutorial document for more information.

## Preferences

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Accessible from the menu Edit > Preferences..., in the tab "Adv. Inspector", the preferences let's you change lot of parameters on how Advanced Inspector display and handle controls.

### Preferences



### *Inspect Default Items*

This is turned on by default. It makes the Advanced Inspector handle the display of all class and struct that are within your game. It ignores all classes that are within the UnityEngine namespace, unless a proper InspectorEditor override have been written for them.

If you turn this off, all your class won't be handled by Advanced Inspector unless you explicitly flag them with the [AdvancedInspector] attribute. If you already wrote a custom editor for your class, Advanced Inspector always give it priority.

### *Expandable References*

By default, Advanced Inspector allows you to expand any references, no matter the type involved. For example, if you have a field toward the Transform of another GameObject, it allows you to expand that object from its reference. Disable this if you prefer the Unity's default way of displaying references. Note that this option does not affect ComponentMonoBehaviour, since their existence rely on this feature.

### *Collection Naming*

This allows you to control how a collection indexed item are displayed. Unity default is "Element 0, Element 1, Element x..." or in this case; "Numbered Element". Advanced Inspector default is "Indexed", which shows items as "[0], [1], [x]...".

### *Number Drag*

Unity has a feature where you can "drag" the label of a number field. This feature also exists for Advanced Inspector, but you have the choice of changing the modifying key associated with the drag action. You can also set it to "None" to turn this feature off.

### *Copy/Paste Drag*

Advanced Inspector has an extra feature on all the label, you can drag it to perform a copy-paste of the associated value. This option let's you change the modifying key linked to the drag action. You can also set it to "None" to turn this feature off.

### *Expand/Collapse Children*

This is the shortcut to perform a mass expand or collapse of sub item. A good example is a collection of object. Clicking the arrow to expand the collection while holding this shortcut also expands all its direct child nodes. By default, it's the alt key.

### *Contextual Menu*

This option allows you to access the contextual menu while using the mouse left button. This is useful if your mouse lacks a right button, which really... shouldn't be the case.

### *Indentation*

The Advanced Inspector supports an unlimited depth of object nesting. To support such depth, the inspector have been built with a minimal indentation - 4 pixels - between levels. Some people find it hard to read the different levels and prefer a deeper indentation. This option let's you set the number of extra pixels added to the indentation.

### *Large Collection*

One feature of Advanced Inspector is the handling of very large collection display. Usually, displaying 1000+ items may render Unity's inspector unresponsive. The large collection only displays a restricted number of items, but add an up and down arrow in the inspector to browse in the collection. This option allows you to change the threshold of number of items where this feature is triggered.

### *Separator*

This allows you to change the visual style of the vertical separator.

### *Separator Default*

This allows you to change the default color and transparency of the vertical separator.

### *Separator Selected*

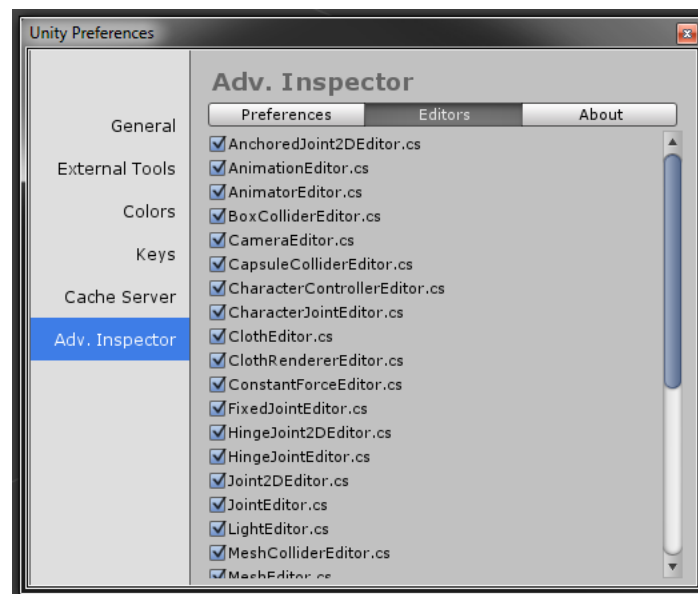
This allows you to change the selected/dragging color and transparency of the vertical separator.

## Style

Since the nesting of object can become problematic to read, Advanced Inspector has a unique boxing of expandable object, which goal is to make it easy to see which fields are associated to which object. However, since everybody has different taste, this option let you change the style of this boxing. Currently, the option are Round, Flat - which is Unity flat box, and "None", which is similar to how Unity usually draw its default inspector.

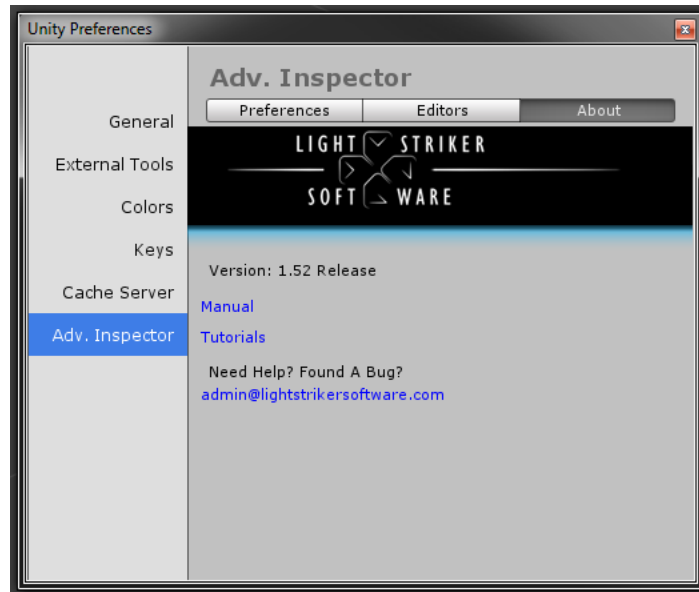
## Editors

Advanced Inspector has a collection of custom editor that overrides Unity's default one. It is a huge task to keep them up to date as Unity is a platform that keeps evolving. It happens that one of those custom editor may become broken, or that you may prefer another custom editor coming from another tool. For example, NGUI overrides the TransformEditor too. This panel let's you turn on and off the different editor packaged with Advanced Inspector.



## About

The about tab contains links to the latest version of this document, to the tutorial document, to the author's email and website.



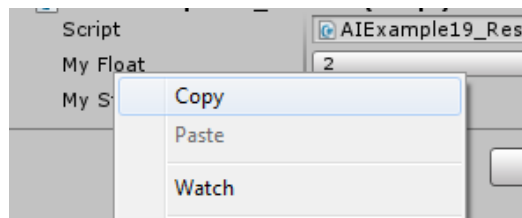
## Tools

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The Advanced Inspector offers a few tools that do not come by default with Unity.

### Copy and Paste

It is possible to copy and paste any kind of value with the Advanced Inspector. Simply right-click the label of the value you want to copy and select "Copy".



The "Paste" contextual menu is grayed out if the currently copied value cannot be pasted in the selected field.

This copy/paste is not limited to numbers or string; complex object and nested object hierarchy can also be copied.

### Drag and Drop Copy

You can drag a label into another label. This automatically copies the content of the first field to the second one, similar as if you had done "right-click > copy, right-click > paste". The dragging method is obviously a lot faster and much more intuitive.

Unity used the dragging of a label to modify float and integer. This feature still exist, however you need to press Shift to access it, instead of the copy by drag.

### Pick Tool

Some field may display a pick icon at their far right:





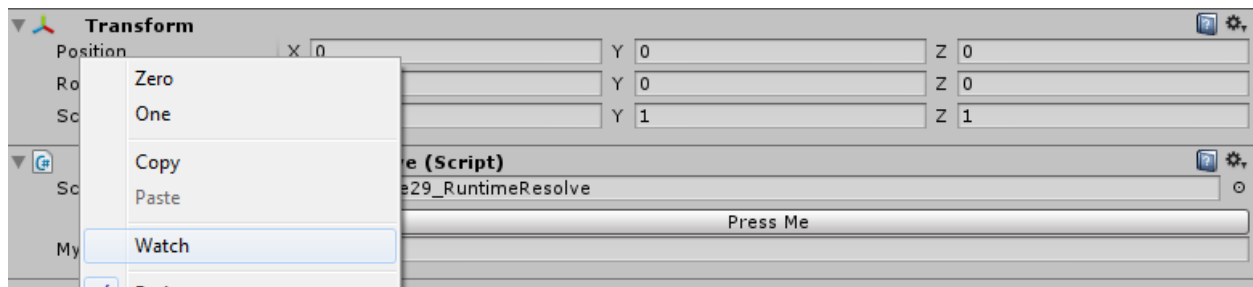
When clicked, the cursor turns into a crosshair and you can "pick" a GameObject from the SceneView. This icon shows up automatically when the following condition are met;

- The field does not have the DontAllowSceneObject attribute
- The field's type is GameObject or
- The field's type derive from Component or can be derived into Component.

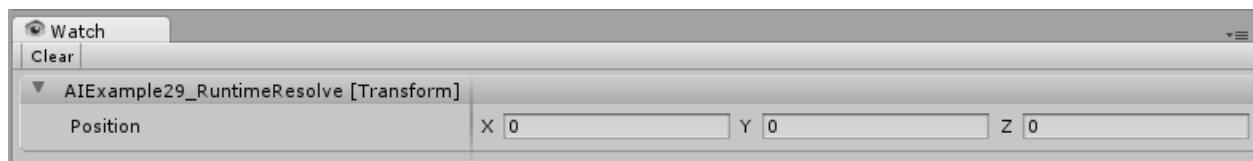
If you want to exit the picking tool, simply press Escape on the keyboard.

## Watch

The watch window is accessible by right-clicking on any label and selecting "Watch" or from the menu Window > Watch.



This panel is similar to the watch feature of Visual Studio or MonoDevelop; it allows you to track a variable - in this case an Inspector Field - while working on something else.



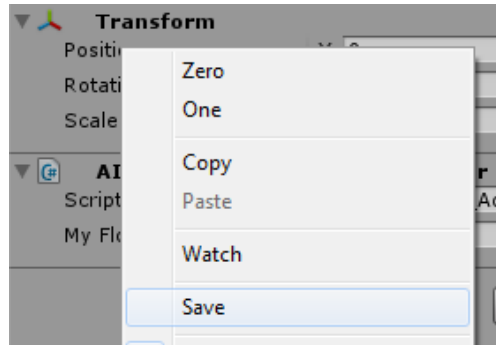
You can remove a single field from the watch window by right-clicking the label again and selectionning "Watch". Or you can use the "Clear" button at the top of the panel to clear all watched fields.

Right-clicking on a watched label shows another contextual option: "Select". This menu item selects the parent serialized object of this label; in most cases being the GameObject in which this field exists.

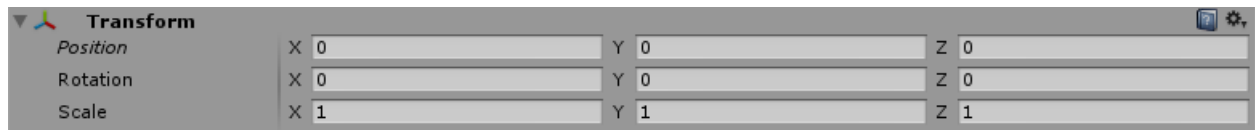
Note that the Watch feature also support multi-selection.

## Save

The "Save" contextual menu item is available up only while you are playing your game in the editor. It allows you to "save" the changes you have done on a specific values.



For example, if you move an object around and stop your game, Unity will bring back the object to its original position. While you have move your object and Unity is still playing, right-click the position label and select "Save". The menu item should now be selected and the label should appear in italic. If you stop Unity, the object will keep his newly saved position.



If you want to revert your "Save", you can select the same menu item again, and it should now be unselected.

Please note that the "Save" feature takes the current value, not the one when you stop Unity playback. If you change your value and want to keep the latest one, you will have to re-save it. Also note that this feature does not work if you load/unload scenes at runtime; it only works if the scene when stopping playmode is the same as the one playing.

## Base Class

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The Advanced Inspector has a few base classes that are used to expand or simply make the system work. Here's a list of the most important one.

### InspectorField

The InspectorField class is the class that replace what in Unity is known as SerializableProperty. It represents a single item drawn on the Inspector. However, unlike Unity, this class is not limited to a single serialization context and is not limited to handling fields. It is similar in aspect to a Tree View Item.

Similar to Unity, InspectorField handles undo, multi-selection, prefabs and so on. Unlike Unity, it also handles properties, method, groups, copy-paste, apply-revert, sorting and many other things.

Also, the InspectorField handles all the data by reflection, and not by serialization. This means non-serializable values are also displayable without custom editor. For this reason, you must understand that the Advanced Inspector is not a view on what is serializable, but a view on the data you choose to display.

***The Advanced Inspector does not modify how Unity serializes (save) its data.***

The InspectorField contains a huge collection of properties and method to handle data and its display. While you may never need to directly handle a InspectorField, you can if you wish from a class deriving from InspectorEditor.

GetMembers, GetIndexedProperties and GetKeyedProperties are three static methods used to create a collection of InspectorField from an object. The standard behaviours of the InspectorField come from those three methods.

However, you can create instances of InspectorField manually and build - by hand - the look you wish for. An example of that is how Unity's internal editor type has been "rewritten" to work with the Advanced Inspector. Since most of Unity's type does not store data in fields, but are only reflection of data stored in Unity's C++ scope, each exposed field must be declared by hand. See the custom InspectorEditor for this task. Here's the reworked TransformEditor;

```

[CanEditMultipleObjects]
[CustomEditor(typeof(Transform), true)]
public class TransformEditor : InspectorEditor
{
    protected override void RefreshFields()
    {
        Type type = typeof(Transform);

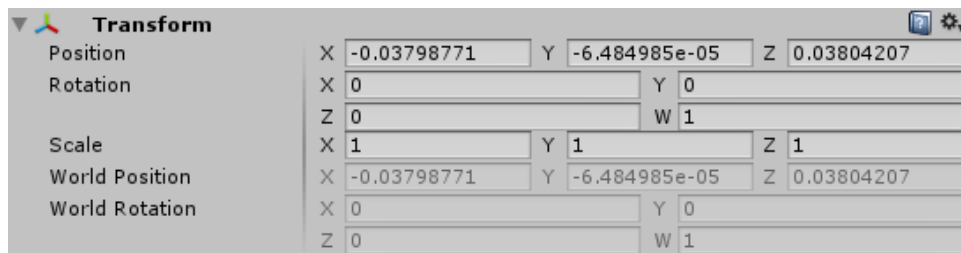
        fields.Add(new InspectorField(type, Instances,
type.GetProperty("localPosition"), new DescriptorAttribute("Position", "Local
Position"))));
        fields.Add(new InspectorField(type, Instances,
type.GetProperty("localRotation"), new DescriptorAttribute("Rotation", "Local
Rotation"))));
        fields.Add(new InspectorField(type, Instances,
type.GetProperty("localScale"), new DescriptorAttribute("Scale", "Local Scale"))));

        fields.Add(new InspectorField(type, Instances,
type.GetProperty("position"), new ReadOnlyAttribute(), new
InspectAttribute(InspectorLevel.Debug),
        new DescriptorAttribute("World Position", "World Position"))));
        fields.Add(new InspectorField(type, Instances,
type.GetProperty("rotation"), new ReadOnlyAttribute(), new
InspectAttribute(InspectorLevel.Debug),
        new DescriptorAttribute("World Rotation", "World Rotation"))));
    }
}

```

### *InspectorLevel*

It's important to note here how the two last "fields.Add" lines create an InspectorField flagged in Debug level. Those fields are only shown up in the Advanced Inspector in debug mode. In this case, it's a binding towards the world-based position and rotation which are not usually exposed in the standard editor. The result is in debug mode;



## InspectorEditor

The entry point of all objects in the Inspector panel is a type deriving from "UnityEngine.Editor". The class "InspectorEditor" is a direct abstract class deriving from Editor. Unlike Editor, it is not limited to Unity's type as object entry point.

From this, we have three other derived classes;

- BehaviourEditor; Handles all the MonoBehaviour
- ScriptableEditor; Handles all the ScriptableObject
- ExternalEditor; Used to draw a full Inspector within the EditorWindow of your choice, no Inspector panel needed. See the EditorWindow example in the package.

If you want to code your own Editor while still using the feature of the Advanced Inspector, you should derive your type from one of the above class if they are from MonoBehaviour or ScriptableObject.

It is also possible to do the same for Unity's internal type. You can see an example in "TransformEditor" which override Unity's own editor for the Transform type. The folder "UnityTypes" is a collection of Editor written using Advanced Inspector for Unity's internal type.

## ExternalEditor

The ExternalEditor is simply a wrapper around the functionality of the AdvancedInspector and expose a IControl interface allowing it to be added to any EditorWindow as a kind of GUI element. It should be created like this;

```
private ExternalEditor editor;

private void OnEnable()
{
    editor = ExternalEditor.CreateInstance<ExternalEditor>();
}
```

To have it display something, you have to pass it objects like this;

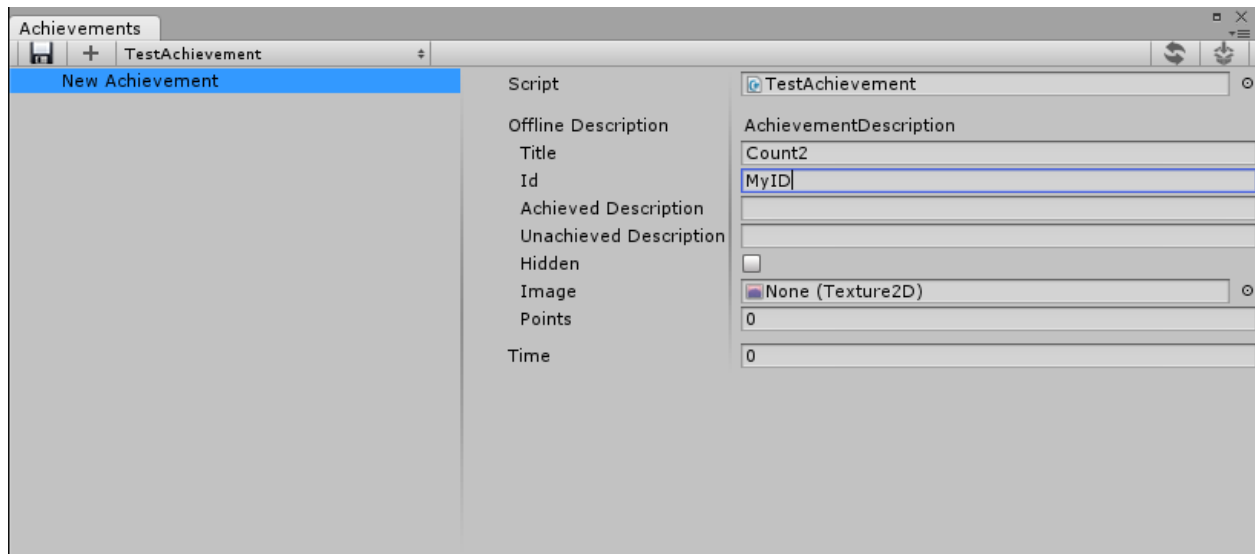
```
editor.Instances = new object[] { selection };
```

Finally, on your EditorWindow's OnGUI call, invoke the editor's "Draw" method;

```
if (editor.Draw(new Rect(100, 100, 250, 250)))  
    Repaint();
```

As per the IControl implementation, the Draw method returns true if the drawn control requires the window to be repainted.

If you did everything properly, you can easily make an EditorWindow like this;



## FieldEditor

The FieldEditor is the base class for all objects that draws on the Field area of the Inspector. All FieldEditor packaged with the Advanced Inspector have their source exposed. You can add new FieldEditor or edit existing one.

At initialization, the Advanced Inspector retrieves all the type deriving from this abstract class and creates an instance of each. For performance reason, FieldEditor are not created and destroyed for each InspectorField. If you display ten floats, the same instance of the FloatEditor will be used to draw them all. For this reason, storing values directly into a FieldEditor is not advised.

Here's an example of a custom FieldEditor made to display a Guid;

```

public class GuidEditor : FieldEditor
{
    public override Type[] EditedTypes
    {
        get { return new Type[] { typeof(Guid) }; }
    }

    public override void Draw(InspectorField field, GUIStyle style)
    {
        // GetValue returns null if multi-selection and different values
        Guid id = field.GetValue<Guid>();
        if (id == Guid.Empty)
            GUILayout.Label("GUID: -----");
        else
            GUILayout.Label("GUID: " + id.ToString());
    }
}

```

You can notice that FieldEditor - unlike PropertyDrawer - fully support Layouting. (GUILayout/EditorGUILayout). Also note that everything drawn in the Fields zone is from a FieldEditor. Every existing Unity types have been re-coded using FieldEditor.

The Draw method also pass any GUIStyle that you may have tagged your fields/properties/methods with using the StyleAttribute.

### *EditedTypes*

A single FieldEditor may handle more than one type. There is no limit of type that can be listed in the "EditedTypes" property. A FieldEditor may also edit a base type and all derived type. However, the Advanced Inspector will always prefer a FieldEditor that has an explicit type over a base type.

```

public override Type[] EditedTypes
{
    get { return new Type[] { typeof(Vector2), typeof(Vector3), typeof(Vector4) }; }
}

```

### *Expandable*

A FieldEditor can also prevent that a specific InspectorField can draw children fields. For a field to be expandable, both the source data and the FieldEditor must "agree" on that field's state.

```

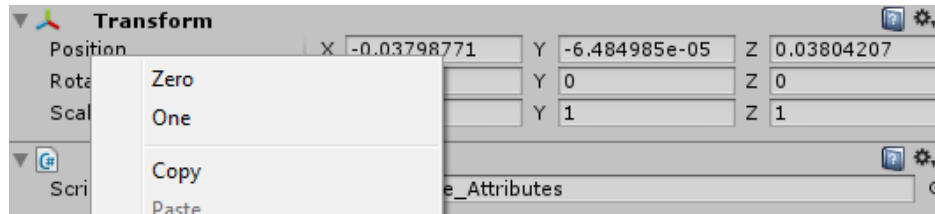
public override bool Expandable
{
    get { return false; }
}

```

This way, someone can prevent a specific type, drawn from a FieldEditor, from being expanded from a misuse of the Expandable attribute.

### *Contextual*

Every FieldEditor has access to adding elements to the contextual menu invoked when right-clicking on the label of their InspectorField. Here's an example of the menu option added when invoking the menu for a Vector3 type;



They are added by doing;

```
public override void OnContextualClick(InspectorField field, GenericMenu menu)
{
    menu.AddItem(new GUIContent("Zero"), false, Zero);
    menu.AddItem(new GUIContent("One"), false, One);

    menu.AddSeparator("");
}
```

Other standard elements, such as copy, paste, apply, revert and so on are added after the type-specific one.

### *InspectorLevel*

The inspector levels are also visible from the FieldEditors. As example, the Quaternion FieldEditor display its data as Euler angles in basic and advanced mode, and in normalized quaternion (X, Y, Z, W) in debug mode.



## ComponentMonoBehaviour

Unity is able to keep proper polymorphism in only two cases; ScriptableObject and MonoBehaviour. Since ScriptableObject cannot exist in a prefab, it leaves us MonoBehaviour to work with for a polymorphic sub-component.

The base abstract class ComponentMonoBehaviour is an important part of the composition/sub-component pattern. You should never apply the CreateDerived attribute on a field or property that does not derive from ComponentMonoBehaviour, otherwise your object will revert to the field type on the next serialization reload.

The goal of this class is to flag an instance made from this specific class hierarchy as being "not-standalone", but as being owned by another MonoBehaviour. For this reason, any ComponentMonoBehaviour found by the Advanced Inspector to not have a valid parent, and said parent to not target the child in one of its fields, is automatically destroyed in a recursive manner.

The Advanced Inspector handles this specific class in a few particular ways compared to other MonoBehaviour;

- Destroyed when the direct parent is destroyed, and destroys children on its own destruction
- A copy/paste doesn't copy the reference, but performs a full recursive deep-copy
- Hidden in the Inspector as being a standalone script, only displayed in its parent
- Can only be referenced by one parent
- Assumes a choice of different derived class

See the "CreateDerived" attribute for more information in creating polymorphic instance directly from the Inspector.

## Interface

---

The Advanced Inspector also automatically recognizes some interfaces and act accordingly. They allow changing the behaviour of attributes or contribute to inter-object communication.

### IDataChanged

This interface is a two-ways binding between an inspected object and the Advanced Inspector. It has one method and one event that are called when internal structures are changed.

```
/// <summary>
/// Fired when the Inspector changed.
/// </summary>
void DataChanged();
```

The method is called by the Advanced Inspector when something occurs on the GUI. Currently, this is fired whenever something changed in the GUI, no matter if a value changed or not. We are aware of this issue.

```
/// <summary>
/// Should be fired internal by the object when the fields structure changed.
/// Ex.: Added an object to a list.
/// </summary>
event GenericEventHandler OnDataChanged;
```

This event should be implemented by the class and should be raised when the internal data of that class has changed without interaction from the Advanced Inspector. As example, if an external editor added an item to a list, the Inspector has no way to know the list has more indexes. Raising this event insure that the data displayed is up to date. Note that data displayed by a field is refreshed when the Inspector is redrawn. This event should only be used when the number of InspectorField changed, such as in a list or a dictionary.

Note that in most cases, you don't have to implement this interface. It exists only when internal processing occurs independently of the Inspector.

## IDescriptor

Interface implementable by an attribute to control the "Description" of an item. It control the name, tooltip, description, help url, icon and color of the item. See the DescriptorAttribute for an example of implementation.

## IExpandable

Interface implementable by an attribute that should define if an item is expandable or if it should be expanded by default. See the ExpandableAttribute for an example of implementation.

## IHelp

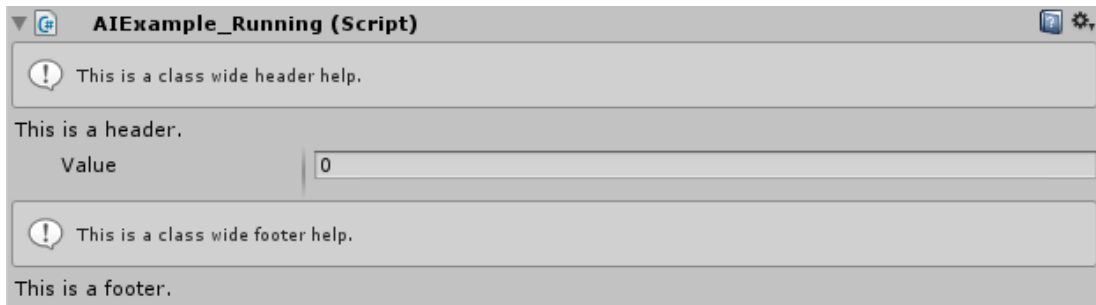
Interface implementable by an attribute to display an help box around a member - field, property, method. See the HelpAttribute for an example of implementation.

## IInspectorRunning

A "running" in a document define the space called "header" and "footer". In the Advanced Inspector, each object inspected has its own header and footer, which you can access and draw on using the IInspectorRunning interface.

```
[AdvancedInspector(false)]
public class AIExample_Running : MonoBehaviour, IInspectorRunning
{
    public void OnHeaderGUI()
    {
        GUILayout.Label("This is a header.");
    }

    public void OnFooterGUI()
    {
        GUILayout.Label("This is a footer.");
    }
}
```



## IListAttribute

This interface should only be implemented by attribute. This interface forces the Advanced Inspector to publish attribute tagged on their parent array/list to the nested InspectorField.

```
[RangeValue(0, 10)]
public float[] range;
```

In the above snippet, the attribute "RangeValue" is flagged with IListAttribute. This attribute is passed down to the InspectorField used to display the different indexes of this array and gives the following result;



## IPreview

This interface expose a single property that is used to return the objects that need to be previews in the Inspector. The Advanced Inspector automatically handle the object to be properly displayed.



An instance of a script is able to preview multiple object. Use the left/right scroll arrow to switch between object being previewed. To switch between script themselves, you have to select the script by clicking on any field currently drawn of that specific script. Unity does not support multiple script accessing the preview zone at the same time.

The currently supported type for the preview is;

- GameObject (Prefab)
- Mesh
- Material
- Texture
- Cubemap

## IReadOnly

Interface implementable by an attribute to control if an item is editable or in "read-only". See the ReadOnlyAttribute for an example of implementation.

## IRuntimeAttribute

This interface is also used by Attributes only. This is probably one of the most powerful features of the Advanced Inspector. An attribute using this interface will see its internal value resolved at runtime by a method or delegate supplied by the creating object.

Usually, attributes can only be initialized by constant or type declaration. It means that a definition cannot change at runtime. To go around this, you can supply a method's name as constructor, or if your inspector is built at runtime, you can give it a delegate using a proper method signature.

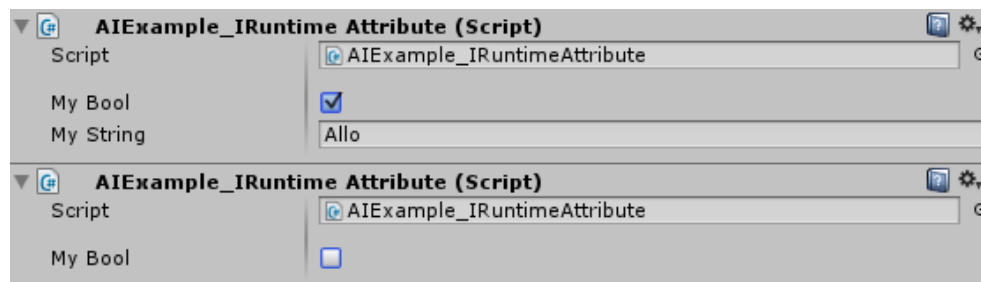
This way, the actual value of this attribute is resolved at runtime and can change based on different condition.

```
[Inspect]
public bool myBool = true;

[Inspect("IsVisible")]
public string myString = "Allo";

private bool IsVisible()
{
    return myBool;
}
```

In the previous snippet, the inspected field "myString" is visible only if the method named "IsVisible" returns true. Since this method returns the value of a member that is also inspected;



Note that InspectorField hidden this way are not destroyed, but simply not drawn. They still exist and can still be accessed.

Lot of attributes in this package are implementing `IRuntimeAttribute`. As example, the `Descriptor` attribute let's you change the name, tooltip, help url or even color of a field. The `Help` attribute is quite useful as it can show up help boxes depending on other values.

## IVisibility

Interface implementable by an attribute to control if an item is visible, its priority and level of inspection. See the `InspectAttribute` for an example of implementation.

## Data Type

---

In some cases, Unity doesn't always offer the base "data" type for all situation and leave lot in your hands. Since the Advanced Inspector is not bound to Unity's serialization, it is also able to display types that are not serializable directly by Unity.

This even truer in Unity 4.5 with the introduction of the `ISerializationCallbackReceiver` interface that allow conversion of data to and from a format Unity is able to understand.

### UDictionary

Standing for Unity-Dictionary, this class is a fully working Unity 4.5 dictionary. It works right out of the box. The only exception is that Unity is still unable to properly serialize generic class; so you will need to create a non-generic top class from the base generic one. Note that this class is not available in the Unity 4.3 version.

Here's an example;

```
[Serializable]
public class SFDictionary : UDictionary<string, float> { }

[RangeValue(0, 100)]
public SFDictionary dictionary1 = new SFDictionary();
```

In the above example, we created a dictionary with string as key and float as value. In Unity, the Advanced Inspector shows types implementing `IDictionary` as followed;



The top field with the "+" sign is used to add a new key to the dictionary. The button remains grayed-out if the key is invalid or already exist in the dictionary. Items in a dictionary cannot be re-ordered as they have no internal order.

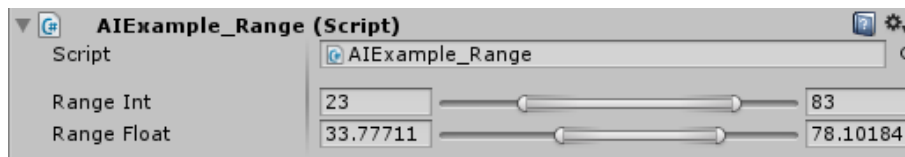
## RangeInt/RangeFloat

Those two types are used as a min/max range struct. In Unity 4.5 and later, those types are structs, but in previous version they are classes. Unity introduced struct serialization only in 4.5.

Those types are only used with the RangeValue attribute. The Advanced Inspector does not display them otherwise. Here's an example of its use;

```
[RangeValue(0, 100)]  
public RangeInt rangeInt = new RangeInt(25, 75);
```

And the result in the inspector;





## Attributes

---

The Advanced Inspector is an attribute-based system. Almost every behaviour can be modified by adding an attribute to an exposed member. Most attributes are also fully combinable. The possibilities are almost endless. On top, the system is made so that you can create your own attributes as easily as possible. InspectorField class has methods to retrieve the current attributes.

### AdvancedInspector

Class only, this attribute is the on/off switch between the default Unity's inspector and the Advanced Inspector.

#### ShowScript

This property is a switch to show or hide the "Script" field at the top of the inspected object. Default value is true.

#### InspectorDefaultItems

Emulate the default inspection pattern used by Unity, on by default. The Inspector displays all the following items; public fields without "HideInInspector" and without "NonSerialized" attribute, and all private field with the "SerializedField" and without "HideInInspector" attribute. Note that item that Unity doesn't usually display can still be inspected with the "Inspect" attribute.

### Angle

Fields and properties only, this attribute turns float or integer fields into a spinning wheel.

#### Snap

This property allows the wheel to "lock" at an increment of a value. For example, with a value of 5, the wheel will "snap" at 0, 5, 10, 15, 20, etc. Default value is -1, for no snap.



## Background

This attribute should only be applied to item that can be expanded, such as Expandable object or collection. Currently it only modifies the color of the background boxing, making it easier to find specific items.

Instance	0 (AIExample_ComponentB)
Script	AIExample_ComponentB
Value Of Class B	0
Value Of Base Class	0

## Bypass

Fields and properties only, this attribute forces a non-advanced inspector type to behave like one, forcefully exposing every public fields and properties. Useful to expose internal Unity type that doesn't have their own Editor. Note that this attribute is passed down to every single child object referenced from the flagged one. ***Use at your own risk, some fields or properties from Unity's types are not safe to modify in some specific context.***

## Collection (attribute)

This attribute is used to control how a collection is displayed.

### Display

The display property allows to change how a collection is displayed. The default value is "Default", which display every item of a collection. Every other option removes the full list and only display one item at a time. In this case, a selection control is shown in the collection display field, so the user can selection which index or key is inspected. The current option are default, buttons and drop down list.

### EnumType

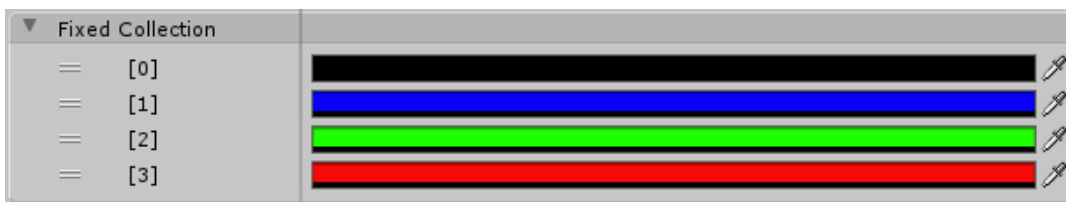
This property allows you to bind the size of a collection to the values of an enumeration. On top, the usual index display "[1]" is replaced by the enum's names; "[My Value]". The type passed to this property must be an enum, otherwise it is set to null.



### Size

This allows to restrict control over the size of the collection. The default value is "-1", which is the normal way of displayed collection. "0" removes the add/remove controls and leaves the size of the collection to the control of your own code. If you add any other positive numbers, the Advanced Inspector will initialize the collection with the specified size.

```
[Size(4)]  
public Color[] fixedCollection;
```



### Sortable

This toggles the "sortable" control, the drag icon that allow the user to reorder a collection.

## Constructor (attribute)

Usually, in Advanced Inspector or Unity's inspector, when you add an item to a collection - list or array - the item's type has to have a parameter-less constructor. Otherwise, the inspector issue errors that an instance cannot be properly created. Unity's usually goes around this by creating a serialized instance anyway. However, this can lead to an item being improperly initialized since the right constructor was not called.

The Constructor attribute should only be placed on collection for now. It offers a delegate from which you can supply a proper instance of the right type. Since you create the object on your own, it allows you to use the proper constructor or even change parameters of your object before giving it to be added to the collection.

```
[Constructor("OnReleaseConstructor")]
public ActionBinding[] onRelease = new ActionBinding[0];

private object OnReleaseConstructor()
{
    return new ActionBinding(new Type[] { typeof(Material) });
}
```

In this example, the ActionBinding instance is supplied manually. The method is invoked anytime a new instance has to be added to the collection. It is also called repeatedly when first initialized a collection with the Size attribute.

## CreateDerived

Fields and properties only, this attribute works in conjunction with the ComponentMonoBehaviour base-class. It turns an object reference field into an object instance creator/destructor field.

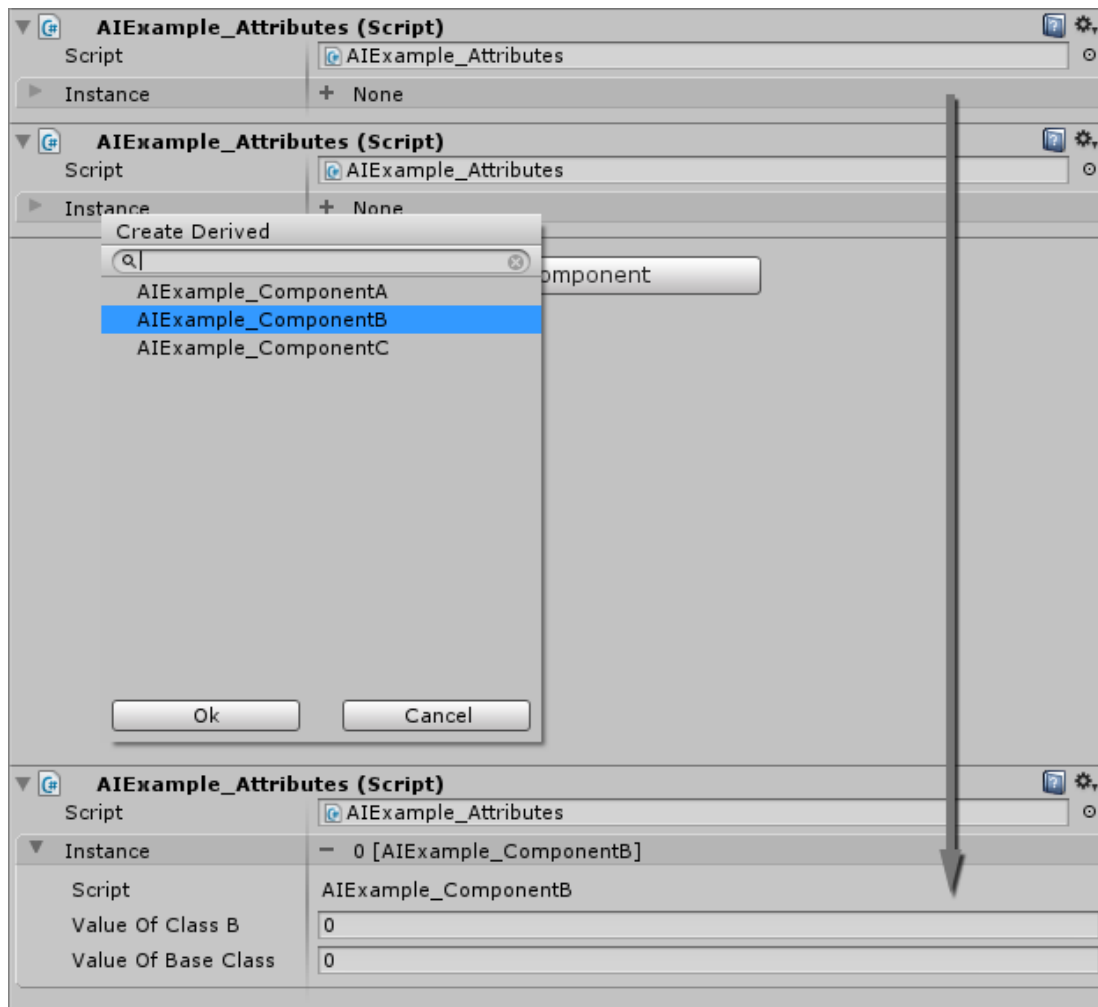
***This attribute should never be placed on a member that is not deriving from ComponentMonoBehaviour.***

This allows the object to act as a polymorphic sub-component of the parent MonoBehaviour. Read more about this in the ComponentMonoBehaviour chapter.

## HideClassName

False by default. By default, AI displayed the type of the current object value in that field or property. It's a very useful information because of the polymorphic nature of this feature. Two objects with the same fields may have drastically different behaviour. Therefore, not knowing what currently reside in a field may be highly problematic. This value is automatically false in advanced or debug mode.

```
[CreateDerived]
public AIExample_ComponentBase instance;
```



## Descriptor

Fields, properties, methods and class attribute, this one allows you to change all the information displayed for this member.

### Name

Change the name displayed on the label.

### Description

Changes the tooltip when the mouse is hovering over the label.

### *URL*

Add a item in the contextual menu of this label. The item invokes a webpage using this URL.

### *Icon*

Not used by the Advanced Inspector, but allow to store an icon for list or tree view.

### *Color*

Change this InspectorField color, label and field. The constructor takes three float since class instance are not allowed in Attribute's constructor. ***Unity Pro only feature.***

## DisplayAsParent

Fields and properties attribute, this forces a nested object to be displayed as being part of the parent itself. Label indentation still occurs.

```
[DisplayAsParent]
public Nested nested = new Nested();

[Expandable]
public class Nested
{
    public float nestedValue;

    [DisplayAsParent]
    public SubNested subNested = new SubNested();

    public class SubNested
    {
        public float subNestedValue;
    }
}
```

Nested	Nested
Nested Value	0
Sub Nested	SubNested
Sub Nested Value	0

## HideParent

When false - default is true - the parent object's name is displayed as a title.

## DontAllowSceneObject

Fields and properties attribute, this prevent Unity's object picker to show the object within the current scene. This is for fields that should only references asset in the project.

## Enum (attribute)

This attribute controls how an enum is displayed and managed.

### Display

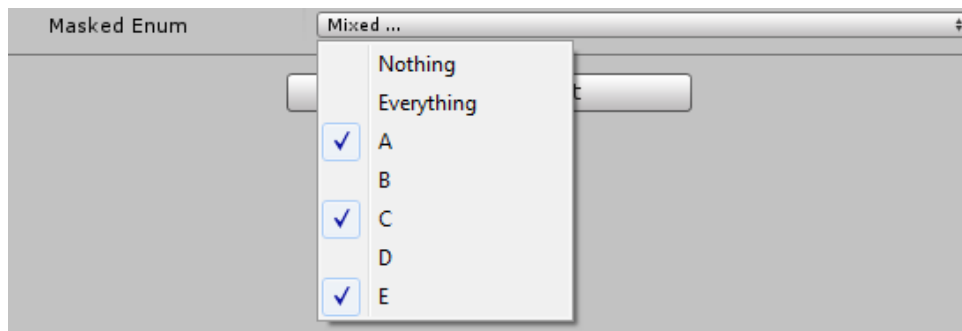
Controls how an enum is displayed. The default value is "DropDown". You have the choice between a drop down list (default), buttons and a checkbox field.

### Masked

Turns a normal enum into a masked enum, also known as "bitfield". It's an enum that can contain multiple choices at the same time. **Important; the specified enum must support bitfield assignment.**

```
[Enum(true)]
public MyMaskedEnum maskedEnum;

public enum MyMaskedEnum
{
    A = 1,
    B = 2,
    C = 4,
    D = 8,
    E = 16
}
```





## Expandable

Class, struct, fields and properties attribute. This attribute is used to override the expandability of an item on a field-by-field basis. It is sometimes useful that a specific object should not be expandable in some context.

```
public NotExpandable notExpandable = new NotExpandable();

public Expandable expandable = new Expandable();

[Expandable]
public NotExpandable forcingExpansion = new NotExpandable();

public class NotExpandable
{
    public float myFloat;
}

[Expandable]
public class Expandable
{
    public float myFloat;
}
```

Not Expandable	
▼ Expandable	
My Float	4
▼ Forcing Expansion	
My Float	5

The expansion behaviour works for any field. As example, you can flag a MonoBehaviour as being expandable, allowing it to be inspected from another MonoBehaviour referencing it. Or you can expand ScriptableObject referenced in a MonoBehaviour.

## Expanded

If true, forces an item to be expanded by default. Note that if someone closes the object, that state is saved. The Expanded property is only used when the item was never collapsed.

### *Expandable*

If true, the item has an arrow on the left of the label and it can be expanded or collapsed. Any object with the `AdvancedInspector` attribute are expandable by default. It is sometimes useful to override this behaviour.

### *AlwaysExpanded*

If true, the class or object cannot be collapsed. The expansion arrow is hidden and the object is always expanded.

## **FieldAttribute (abstract)**

Attribute for fields, properties and methods.

Similar to Unity's attribute-bound `PropertyDrawer`, but with far less limitation because it's based on reflection instead of serialization.

If you create a `FieldEditor` class and flag its "EditedType" property to return the type of your attribute, it will be used to draw that item. See the `AIExample42_FieldAttribute` example and its related classes.

## **FieldEditor (attribute)**

Fields and properties attribute, forces a field to be rendered by a specific `FieldEditor`.

Not to mix up with the `FieldEditor` base class.

***Careful, the Advanced Inspector does not perform any verification as if the requested FieldEditor can support the flagged type. Requesting a FieldEditor that does not support the current type may result in exceptions being thrown.***

### *Type*

Name of the `FieldEditor` needed for displaying this member. The type of passed by name because the `FieldEditor` reside in the Editor side of Unity, which is invisible to the game side.

## Group

Fields, properties and methods attribute. Group different items under a named expandable group. Group members are not indented.

### *Name*

Name of the group. Item having group attribute with similar name are grouped.

### *Style*

Style name. Override the style of the whole group. Allows making group "boxes". Must be a valid GUIStyle name.

### *Priority*

Similar to Inspect attribute's priority value, allow the group to be placed in a specific spot in the list of InspectorFields.

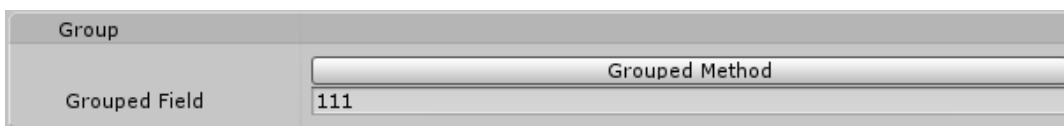
### *Expandable*

If false, removes the foldout control from the group label and make it always expanded. This can

```
[Inspect]
public void GroupedMethod() { }

[Inspect]
public float groupedField;
```

be useful is you want to use the group only as a sorting box.



## Help

Fields, properties, methods and class attribute. This attribute display an help box under the current member or in the header/footer in cases of classes. This is most useful as a `IRuntimeAttribute` since the help message can be modified following internal runtime condition.

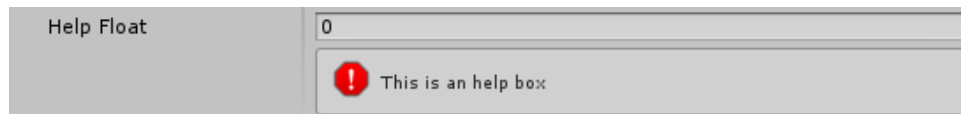
### *HelpType*

The type of the box. Possible value; Error, Warning, Info, None. This changes the icon of the help box.

### *Message*

The message displayed in the box.

```
[Help(HelpType.Error, "This is an help box")]  
public float helpFloat;
```



### *Position*

The position of the helpbox, before or after the member. Default is after. In cases of classes, "before" defines the header while "after" is the footer.

## **IgnoreBase**

This attribute simply prevent Advanced Inspector from digging into parent class for member to display. It only inspects members from the declaring type or child class from this one. It's useful when deriving from Unity's type that have a hard-coded inspector that would prevent you from adding new useful property to it. We advice to display existing valid fields by the help of properties in your derived type. See the "SoundButton" example.

## **Inspect**

Fields, properties and methods attribute. This allows an object member to be displayed by the Advanced Inspector.

### *Condition*

Boolean to inverse the condition received by a runtime method. Only useful if multiple members are using the same method to test their visibility.

### *Level*

Flag an item to be visible only in a specific Inspector Level or above. Example, an "Advanced" item is also visible in "Debug" level.

### *Priority*

When sorting item, priority of this item. Smaller numbers are displayed before larger one. Default is 0, negative value are supported.

## **Method (attribute)**

Methods - functions - are inspectable too. By default, the Advanced Inspector displays a method in the form of a button. Currently, the only limitation is that the method must take no parameters. The Method Attribute is there to modify this default behaviour. For now, the current option allows to turn that button into an automatic invocation of the method on the Inspector redraw.

### *Display*

The options are "Button", which is the default, and "Invoke", which invoke the method every times the Inspector refresh it's view. This allows you to draw whatever you wish on the Inspector without the need to create a dedicated FieldEditor and/or a custom type.

### *IsCoroutine*

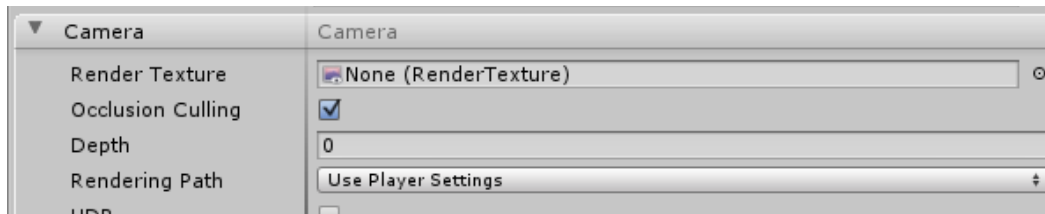
When this is flagged as true, this method is invoked as if it was a coroutine. Which means it has to have a IEnumerator return type. Similar to coroutines, yeilding null skips a frame. WaitForSeconds is supported. However, other Wait type are not since there isn't really a notion of "frame" in the editor.

### *UndoMessageOnClick*

When the method is displayed as a button, if this property is not empty, Advanced Inspector will attempt to record an undo stack of the current object host of this method with the supplied message. This is useful if your method is modifying the object in some way.

### NoPicker

Field and properties attribute, it removes the "picking" tool of a normal UnityEngine.Object field. This is useful when the value behind is read only or set from a different source, such as a dedicated tools or editor. The example in this package shows a property that return Camera.main, which cannot be set, only read.



## RangeValue

Fields and properties attribute, similar to Unity's "Range" attribute. However, unlike Unity's one, this one is not restricted to fields and sports the IListAttribute interface. Turns a integer or float field into a slider.

### *Min*

Minimum value of the slider, left side.

### *Max*

Maximum value of the slider, right side.

```
[RangeValue(0, 10)]  
public float rangeFloat;
```



## ReadOnly

Fields, properties and methods attribute, disable a field from being editable. This is useful to display internal values that you do not wish to be possible to edit from the Inspector. Being a `IRuntimeAttribute`, it can be turned on and off based on internal condition.

Note that this does not prevent value from being modified by code.

```
[ReadOnly]
public float readOnlyFloat;
```

Read Only Float

0

## Restrict

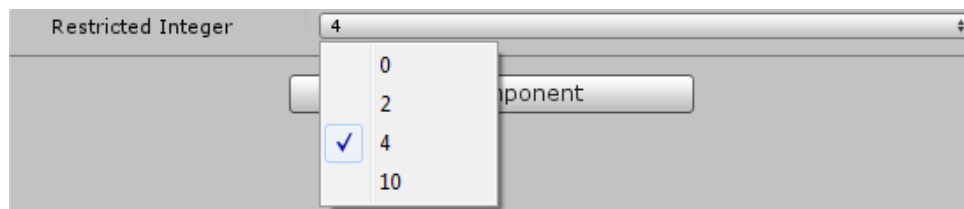
Fields and properties attribute, bypass the `FieldEditor` and turns any field into an enum. This attribute can only work in `IRuntimeAttribute` mode and does not support compile time values. Quite useful when a specific field should not offer endless choices.

```
[Restrict("Restrict")]
public float restrictedInteger;

private IList Restrict()
{
    return new List<object>() { 0, 2, 4, 10 };
}
```

## Display

Controls how the restrict field is displayed. The default choice is "DropDown". The current available options are button and toolbox.





## RuntimeResolve

By default, the Advanced Inspector chooses a Field Editor based on the type of the field or property being displayed. It's faster this way, and prevent issue when a value is null or has no proper field editor.

However, in some cases, it's useful that the Advanced Inspector pick a Field Editor based on the current value's type. For example;

```
[RuntimeResolve]
public object Value
{
    get { ... }
    set { ... }
}
```

In this snippet, the property can be linked to multiple backing field, and the proper type returned is unknown until inspected. In this case, the RuntimeResolve attribute forces the Advanced Inspector to check the value's type and take the proper FieldEditor for it.

RuntimeResolve can also be used to restrict an UnityEngine.Object field to only display a specific subtype.

```
[RuntimeResolve("GetValueType")]
public object Value
{
    get { ... }
    set { ... }
}

private Type GetValueType()
{
    return typeof(Material);
}
```

In this second example, the object picker would only list Material. It is useful for simulating the behaviour of a generic types - which Unity cannot serialize - while not being generic.

## Spacing

Fields, properties and methods attribute, it add a separating space after the current member. A simple attribute that allows to logic separation of exposed members. In case of InspectorField containing nested items, the space is added after the collection.

### *After*

Determine the size - in pixel - of the space added after the current InspectorField.

### *Before*

Determine the size - in pixel - of the space added before the current InspectorField.

```
[Space(Before = 10)]  
public float beforeSpace;  
  
[Spacing(20)]  
public float afterSpace;
```

Before Space	<input type="text" value="0"/>
After Space	<input type="text" value="0"/>

## Style

Fields, properties and methods attribute, this is used to modify the GUIStyle used for drawing the item.

### *Label*

Boolean allowing you to hide the label of a InspectorField. Useful when drawing toolbar. Methods have their label hidden by default.

### Name

Name of the GUIStyle. Internally, we do GUI.skin.FindStyle() to get the named Style.

```
[Style("ToolbarSeachTextField")]  
public float styledFloat;
```

Styled Float

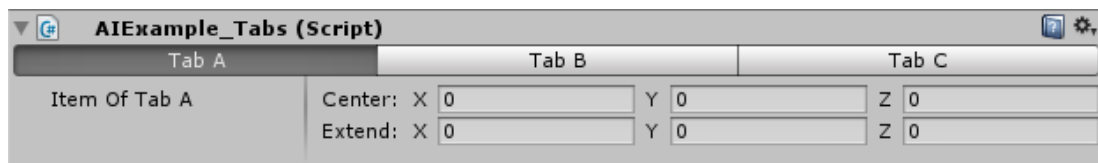
0

### Tab

Fields, properties and methods attributes, links those members to a collection of tab-like item in a toolbar at the top of the script. Similar to the Skinned Cloth component. Takes the value of an enum as input for each items.

```
public class AIExample_Tabs : MonoBehaviour  
{  
    [Tab(MyTabs.TabA)]  
    public Bounds itemOfTabA;  
  
    [Tab(MyTabs.TabB)]  
    public Material itemOfTabB;  
  
    [Tab(MyTabs.TabC)]  
    public string itemOfTabC;  
}  
  
[Descriptor("GetDescriptor")]  
public enum MyTabs  
{  
    TabA,  
    TabB,  
    TabC  
}
```

Which gives;



It is possible to change the tabs name or icon, but it has to be done in a specific way. Please see the example in the package for binding an extension enum method to the Descriptor attribute.

## TextField

Fields and properties attributes, modify how a string field is displayed.

### *Type*

Define how the field is drawn. Options are;

- Standard; default text field.
- Area; expandable text field that react to line break.
- Password; field that display the text as "●●●●●●".
- Tag; drop down list of the existing tags.
- File; button with popup window for selecting file. Store the file path.
- Folder; button with popup window for selecting folder. Store the folder path.

### *Title*

Title of the modal window invoke with File and Folder option.

### *Path*

Default path when invoking File or Folder option.

### *Extension*

Restrict selectable file type in the File option.

## Title

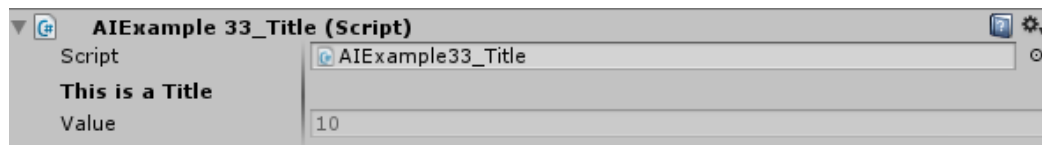
Field, properties and method, allow to display a title above the current item, similar to Unity's Header, but not limited to fields.

## Message

The string that define the message displayed.

## Style

The text style used in the header. By default, the style is "Bold".



## Toolbar

Fields, properties and methods attribute. Similar to a Group, but it draws the nested item as an horizontal toolbar.

***Note that the toolbar does not change the Style of the nested member. For this reason, it is advices to flag the member with a custom Style.***

### *Name*

Name of the toolbar. Item having the same name are grouped.

### *Label*

Draw the label - name - of the toolbar. Default is false.

### *Style*

Style of the GUI group, the toolbar background. Default is "Toolbar".

### *Priority*

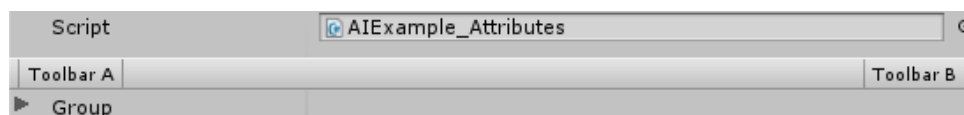
Priority of this toolbar, where it is displayed in the list of InspectorField.

### *Flexible*

Allow an item to add Flexible Space before itself. Allows to stack items on sides of a toolbar and leaving a space in between.

```
[Style("ToolbarButton", false)]
[Toolbar("Toolbar")]
public void ToolbarA() { }

[Style("ToolbarButton", false)]
[Toolbar("Toolbar", Flexible = true, Style = "Toolbar")]
public void ToolbarB() { }
```



## Contact

---

The Advanced Inspector was a huge undertaking, and for that reason the first few versions are expected to have hidden issues that we are not aware of. We will fix those bugs as quickly as we can, however we need to learn about them. To send us any bug report or feature request, contact us at;

Email : [admin@lightstrikersoftware.com](mailto:admin@lightstrikersoftware.com)

Website : [www.lightstrikersoftware.com](http://www.lightstrikersoftware.com)

## Package Revision

---

### 1.0:

- Release

### 1.1

- Fixed the Camera preview (the window can be dragged around)
- Fixed the Camera perspective/orthographic drop down with new `RestrictedAttribute` option.
- Added `SkinnedMeshRenderer` and `Text Mesh` as converted editor.
- Added a way to decouple data from description in the `RestrictedAttribute`. Just pass `DescriptorPair` instead of the object directly.
- Added a missing constructor in `ReadOnlyAttribute`.
- Changed the constraint field in the `RigidBody` because "I prefer the checkboxes".
- Non-editable expandable field - such as object deriving from `System.Object` - now display info in the format `"ToString() [Class Name]"`. Overriding `ToString` becomes useful.
- Fixed a null error in the `Restricted > Toolbox`.
- `SizeAttribute` can now flag a collection as not-sortable. Useful for collection which the order comes from the code and should not be changed.
- Added a new Attribute; `RuntimeResolve` which display a field editor based on the object's type or a type returned by a delegate, instead of the field type.
- It can also be used to restrict a `Object` field to a specific type. For example, you can make a `UnityEngine.Object` field only display `Material`.
- Added a new Attribute; `CollectionConstructor` which let you create a collection item with the constructor and parameter of your choice.
- Moved the asset into `Plugins` and `Plugins/Editor` folder, so other language - like JS - can be supported without modification.
- Copied the `Examples` asset into `JavaScript`, also used to test other language support.
- Added a class named `"ActionBinding"` which is a way to bind an event to a data-driven method invocation. Similar to what Unity will roll out in 4.6 with their new GUI... but better.
- Take a look at the video for more information. It's an example of what the Advanced Inspector can do, as no editor were writing for that class.

### 1.2

- Fixed an issue with `Editor` object showing the log message about no reference towards them when saving a scene. It was harmless, but annoying.
- Fixed an issue with internal texture showing the same log message.



- Fixed a index exception while deleting an item in some specific cases. It was harmless, but annoying.
- Fixed the multi-edition on boolean editor.
- Update some internal icon; +, -, open, closed and the drag icon. They should be easier to see in both light and dark.
- Added IPreview interface that gives control over the preview panel of the inspector. New class in the DLL; InspectorPreview.
- Added a new attribute; "Tab". Draws toolbar-like tabs at the top of a script, similar to the SkinnedCloth component.
- Added the standard "on scene" collider editor on the Box, Capsule, and Sphere collider.
- Added a class named TypeUtility. It is used only to retrieve a type in all loaded assembly based on its name.
- Added SkinnedMeshRenderer, TextMesh and Mesh editor.
- Added "very large array" support. Any collection having over 50 items only displays 50, and have arrows at the top and bottom to navigate in them.
- Added UDictionary, a fully Unity-serializable dictionary for Unity 4.5 and later. Does not work on previous Unity version.
- Added RangeInt/RangeFloat, struct used to set a minimum and a maximum. They use Unity's MinMaxSlider.
- The Space attribute can now add space before an item and/or after it. Before default size is 0, after default size is 1. Does not change existing behaviour.

## 1.3

- **IMPORTANT:** All classes related to the Advanced Inspector have been moved to the AdvancedInspector namespace, for consistency with other assemblies (Ex.: System.Serializable) and not to pollute the global scope.
- The AdvancedInspector Attribute now have "InspectDefaultItem" property, which emulate the way Unity display items without the need to add [Inspect] on all your items. You can still inspect item Unity would not display by adding the Inspect Attribute.
- Help Attribute can now be tagged on a class, giving a help box in the header or footer. You can also place multiple instance of the Help attributes, which displays multiple help box.
- Help Attribute now has the "Position" property, which place the help box before or after the targeted member, or in case of a class, in the header or footer.
- Expandable Attribute now has the "Expanded" property, which forces an item to be expanded by default when first viewed.
- Group Attribute now has the "Expandable" property, which when false, the group is not collapsible and remains open, serving has a dividing box.
- Added a layout "header" and "footer" at the top and bottom of the inspector, before and after all the fields.

- Added an interface; `InspectorRunning`, which gives access to the Header and Footer zone in the form of a `OnHeaderGUI` and `OnFooterGUI` method.
- `InspectorField` now support `SerializableProperties`, but please do not use it, it's most likely full of bug since `SerializedProperty` is anything but generic.
- CTRL + Click expand all the child of the item expanded. (Ex.: All the subobject in a list)
- Removed the "[class name]" part of the label of a list when that item is the same type as the list itself. (Ex.: `List<item>`, no need to tell you it's an item)
- The collection type is now only display in Advanced or Debug mode.
- Removed the "shadows" from the following icon; add, delete, folder open, folder close.
- Fixed a null exception thrown when using enums in a Dictionary.
- Added cubemap to the supported type in the Preview.
- Reworked the layout a lot, such as adding 4 pixel to the left of the fields so they don't stick to the window. Now nested item are "boxed-in", which should make multi-level items easier to read.
- Lined up lot of items and subitem that were not properly lined up in specific case in both their label and fields.
- Fixed the Example6 where nested class where not serialized.
- Added methods "`GetAttributes`" and "`GetAttributes<T>`" to the Inspector field, returning all instance of a multi-attributes.
- Fixed the aspect ratio in the Camera preview on Scene.
- `SkinnedMeshRender` "Bones" property is no longer "read only", but it is now an advanced property.
- Added `LightEditor` to support Unity's Lights.
- Added support for the Gradient type, another of those fancy hidden thing in Unity.
- The cursor is now a "grab hand" when hovering over the drag control.
- Added an `EditorWindow` example of external inspector.

### 1.31

- Added a type-check when displaying an object label to see if the type overload `ToString`, so it would be called only if a proper implementation exist, and not the base - `System.Object` - one.
- Inspector Level and Sorting are now saved in `EditorPrefs`.
- Expansion state are now saved in `EditorPrefs`.
- Dragging a label to another label automatically performs a copy-paste of that field.

### 1.32

- Fixed undo issue with restricted field.
- Fixed undo issue with struct such as `Vector`, `Quaternion`, `Bound`, `Rect`, `RectOffset`.
- Fixed undo issue with string.

- Added some shading to the expandable boxes.
- Added the GameObject/Component picker tool.

## 1.4

- Added a new attribute; Background, which color the box of expandable item.
- MaskedEnum attribute is replaced by the Enum attribute, which also controls how an enum is displayed.
- Merge the Size attribute with the CollectionConstructor attribute into the new Collection attribute.
- Toolbars are no longer using the toolbar style by default. You can do row of buttons this way.
- Toolbars are now drawn on the header, because they collided with the separator.
- Descriptor color now colors field instead of label. It made no sense to color the label, and was often hard to read.
- Descriptor with only a color no longer pass on an empty name to the label.
- Added a missing constructor in AdvancedInspector attribute.
- Expandable attribute now has the InspectDefaultItems similar to the AdvancedInspector attribute.
- Fixed an error raised when encountering a type with multiple overload of ToString.
- Fixed an issue when undoing creation or deletion of an item in a collection was not properly refreshing it.
- Fixed an issue that prevented proper undoing of collection reordering.
- Added multiple display option to the Enum attribute, see the EnumDisplay enum.
- Added multiple display option to the Collection attribute, see the CollectionDisplay enum.
- Added multiple display option to the Restrict attribute, see the RestrictDisplay enum.
- Added a "Collection Locked" option to the contextual menu, it locks every collection from adding/removing/sorting items.
- Added a Tutorial documentation, which gives steps by steps example of implementation.
- Fixed an issue that prevent copy pasting AnimationCurve.

### 1.41

- Fixed a Null Exception on the CameraEditor on Unity 4.6+.
- Fixed a Array initialization issue introduced with the changes to the Collection attribute.
- Fixed a ComponentMonoBehaviour destruction issue. Even while not referenced, the instance would fail to be destroyed.
- Fixed a collection failing to raise the Erase event on ComponentMonoBehaviour.
- Fixed a issue when a Dictionary would contain ComponentMonoBehaviour and would destroy them even when it shouldn't.
- Fixed a 4 pixels layout issue when multiple nested object would be part of a parent collection.

- Fixed an issue where multiple nested instance of the same type would prevent the child node from being expandable.

## 1.42

- Added a new interface; "ICopy" which give an object the power to handle how it should be copied over a targeted field.
- Added a new interface; "ICopiable" which allows an object to decide if it can be copied or not over a targeted field.
- The Inspector now takes the .NET ICloneable interface into account, allowing it to handle the copying. ICopy take priority over ICloneable.
- Fixed a recursive stack overflow in the copy/paste of a self-referenced object.
- Fixed a stack overflow in prefab comparaison with self-referenced object in editor mode.
- Added a "Take Screenshot" option in the Camera editor. It's available in advanced mode.
- The Collection attribute was missing the IRuntimeAttribute interface declaration.
- ActionBinding now properly sorts out properties, ignoring Getter when a Set is needed and vise versa.
- ActionBinging now flags Binding Parameter that are extra - not declared in the constructor - as being external or static, never internal.
- ActionBinging now control if it can be copied over, and what is copied. Same thing for BindingParameters. See ICopy/ICopiable.
- Fixed an issue when reloading the assembly context where Unity would "hang" for a few second while the Inspector rebuilds the type hierarchy tree.
- Added a missing construction in the Space Attribute.
- Fixed the stack overflow in the ComponentMonoBehaviour... again! What was I drinking?
- Fixed a object array initilization issue when using Collection(0) and a inlined field initialization.
- AnimatorEditor no longer display items twice.
- Added to the AdvancedInspector namespace the following; Toolbox, ModalWindow, WindowResult, IModal.
- The modal window are now draggable.
- Fixed the expansion of collection in Button mode.

## 1.43

- Fixed an expansion bug with groups.
- Fixed an expansion bug with multi-edition of collection and dictionary.
- Fixed an issue that would prevent ExternalEditor list from being sortable.
- Added the compile define ADVANCED\_INSPECTOR to detect if the tool is installed or not.
- SHIFT+DRAG on labels of integer or float to change the value.
- DOUBLE+CLICK on labels expends or collapsed the item if it's expandable.
- DescriptorAttribute is now taken into account when affixed to an enum's value.
- The CollectionAttribute now has a "Enum Type" properties, which binds a collection to an enum's names. See the documentation for an example.
- Fixed an invalid index when a small array is turned bigger using the CollectionAttribute size property.
- Added missing attribute targets in a few Attribute so they could be added to structs.

- New Attribute; MethodAttribute, which gives control on how a method is invoked or displayed. For example, you can replace the button and draw whatever you want.
- ExternalEditor got more control over how it can be drawn; fixed separator or no space reserved for expander.
- The separator in the ExternalEditor is now uncoupled from the separator in the Inspector. Previously they shared the same settings.
- Transform's global position/orientation are not read only anymore, and accessible in Advanced mode instead of Debug.
- Expandable attribute can now be placed on Interfaces. See AExample\_Interface for an example of an implementation.
- CollectionDisplay "default" value have been renamed to "List", to better reflect what it does.
- UnityEngine.Component that implement an interface can now be properly drag and dropped in a field of that interface type. See AExample\_Interface.

## 1.44

- Made "SelectedTab" property public in InspectorField.
- Fixed an issue when mixing groups with tabs.
- Optimized the lookup of FieldEditor attribute. If you had slow down with this attribute, it should be fine now.
- Now able to inspect static field, properties and methods. Static fields and properties are read only, except when the game is playing.
- InspectorField now has a Static property.
- Added tooltips and URL to scripting documentation for the Camera, Animator, Light, and many other editors.
- Added editors for Animation, Rigidbody2D, SpringJoint2D, Sprite Renderer, and many other classes.
- Note that editors for 2D Physic (Ex.: HingeJoint2D) requires Unity 4.5 or higher.
- InspectorField now supports SerializedProperty arrays. Try to not break that feature.
- Fixed an issue with IDataChanged when the item inspected is at the root.
- Exception thrown on a method/delegate invocation now returns the inner exception, which would make debugging your own method a lot easier.
- AdvancedInspector attribute are now properly inherited in classes hierarchy.
- Enum drop down now properly uses Descriptor for their names.
- Removed the compile define, it didn't work from within a library.
- Fixed an issue that in some case an enum dropdown would become uneditable.
- Nicify enum variables.

## 1.5

- Now support Unity 5.
- No longer support Unity 4.3, only 4.5+.
- Added the Watch window, which allows you to track inspector values. Right click any value and select "Watch".
- Added the Selected History. Use CTRL+Left Arrow and CTRL+Right Arrow to cycle in your previous selection.

- Added the Runtime Save feature; it allows you to save changed value while playing the game. This feature is in beta and may have issues.
- Redone all the examples, should be way easier to use.
- Added a collection of supported Unity type, like Terrain Collider and Clothes.
- Due to confusion and overlapping functionality, the Expandable attribute is now limited to fields and properties and only override the expandability of an item.
- Fixed an issue where sortable list would fail.
- Fixed an issue of recursivity with self-referencing objects.
- Fixed an issue with RuntimeResolved attribute in non-dynamic mode.
- Fixed the draggable icon in Unity Pro.
- Minor tweak to the expandable boxes visual; should look smoother.

## 1.51

- Added support for nested collection.
- Added support for char, decimal, double, byte, short, long, uint, ushort, ulong, sbyte.
- Note that the above types are not serialized by Unity, so a third party serialization is required.
- IDataChanged and OnValidate are now properly called only when a value change, not only when the GUI is modified.
- Fixed a critical issue in the Animation component.
- Fixed a critical issue with the Material array of the Mesh Renderer component.
- Fixed an issue where some dictionary value type wouldn't be recognized.
- Fixed an issue where sometimes a value could not be removed from a dictionary.
- Fixed an issue where some types might not get expandable.
- Fixed an issue where inspected protected members might show up more than once in derived types.
- Fixed an issue where ComponentMonoBehaviour would be destroyed for no reason.
- Fixed an issue where Unity's internal list by properties might not properly be set.
- Fixed an issue where bitmaps might get downsized or mipmapped in the inspector.
- Fixed an issue where bitmaps might get darker when Unity is set in linear lighting mode.
- Added a preference window where some settings can be modified.
- Added a global "Inspect Default Items" preference in Unity Preferences panel. This allow inspection of class that do not have AdvancedInspector attributes.

## 1.52

- **IMPORTANT:** To avoid conflict with UnityEngine.SpaceAttribute, AdvancedInspector.SpaceAttribute have been renamed to SpacingAttribute.
- Added a new attribute; NoPicker. It removed the picking tools from an object field. Useful when the object should not be modified from the inspector.
- Added a new attribute; Title. It replaces Unity Header attribute but can be placed on properties, methods and can be set at runtime.
- Added support from drag-dropping multiple files, or even a folder of files in a collection.
- Added support for Unity Range, Multiline, TextArea, Header and Space attribute. Note that they still don't work on properties.
- Added "style" choice in the preference panel, you can change how the layout looks like.
- Added support for UnityEvent types.

- "Value Scrolling" and "Copy Paste by Drag" control can now be set in the preference panel.
- The preference panel can now disable specific Advanced Inspector inspector override.
- Value Scrolling now works on composite fields like Vectors, Rect, Bounds, etc.
- Added support for ALL PropertyDrawer that draws a specific type. This does not include property drawer handling PropertyAttribute.
- Runtime Attribute can now refer to a property instead of a method.
- Added the property "MaxDisplayedItems" to the Collection attribute, which trigger the large array display at the size you wish.
- Added the preference "Max Displayed Items" that is similar to the above property, but in the preference panel.
- Added the preference for mass expand/collapse of children item. Default is "Alt" key while pressing an expansion arrow.
- Transform editor shows localEulerAngles instead of localRotation. This property is more friendly with the rotation.
- Fixed a recursion copy/paste issue.
- Fixed an throw exception when entering an invalid value in a int/float field.
- Fixed an issue with the animation component... again.
- Fixed an issue where Collection(0) would sometime override the current collection with a 0-sized one.
- Fixed CharacterControllerEditor and ClothRendererEditor which gave error in Unity 5 beta 20. Unity 5 support is still sketchy.
- Fixed an issue with nested struct. It now works fine, but you should know it's a bad idea performance-wise.
- Fixed an issue with RigidbodyConstraint display.
- Fixed an issue where the "Inspect Default Item" would sometime catch Unity's type while it shouldn't like GUISkin.
- Fixed a layouting issue where a help is applied to an expandable item.
- Fixed an issue where items could show up as being exandable even if they were not. Most in case of UnityEngine.Object.
- Fixed an issue where reordering a list would fail to flag the object dirty.
- Updated the Animator editor to for the new Update Mode property.

## 1.53

- Added support to drag'n'drop component from Project view. Previously only GameObject would work.
- Added option to invoke contextual menu using a modifier key with a left-click.
- Removed the constructor component from the collection attribute. Now this behaviour has its own attribute; Constructor Attribute.
- Fixed an issue for copying ComponentMonoBehaviour with private field in a derived class.
- Fixed an issue where a ComponentMonoBehaviour should not copy its references.
- Brought back 4.3 support since some people are stuck on it for PS/Xbox compatibility. Note that some feature do not work on 4.3.

## 1.54

- Added missing constructors in Collection attribute.
- Asset under source control now shows up as Read Only properly when not checked out.

- External Editor now shows a source control bar at the bottom when an inspected item is under source control.
- Fixed some inspector on the 4.3 version.
- Fixed an issue with struct in Unity type, such as Spring Joint in the Wheel Collider.
- Allow Textures to be dragging in as being a Sprite.
- Multi-drag in array are now ordered by name, to avoid unnecessary sorting.
- Fixed an issue where dragging a single item from the inspector to a collection.

## 1.55

- Added an extra description in Group attribute; this shows up on the right of the separator.
- Fixed a null in watched/saved references.
- Fixed a conversion exception while dragging the label of a ranged float.
- Fixed a cast exception while dragging a component on a collection.
- Fixed an issue while nesting lights, animator, animation and a few other component types.
- Fixed the UV1 warning on Unity 5 meshes.
- Fixed Inspect attribute condition property. It was simply not working.
- Fixed Restrict attribute, for some reason it was ignoring null values.
- Allow overriding OnDisable of InspectorEditor.

## 1.56

- All IRuntimeAttributes can now target a static delegate using a "Class.NestedClass.Method" path to a static method.
- Fixed an issue where protected member would fail to be inspected in default mode even when serialized.
- Background attribute is now a dynamic attribute.
- Fixed an issue with displaying AnimationCurves. Due to Unity limitation, it is impossible to change the curve's color.
- Fixed an issue with field using Property Drawer nested inside non-Unity object.
- Fixed an issue that would make Property Drawer fail in Unity 4.3.
- Unity 5.0 no longer supported because of deprecation in EditorWindow definition. Now requires Unity 5.1+
- Fixed the Watch window which would break down in Unity 5.1
- Fixed obsolete values in Rigidbody2D and Joint2D for Unity 5.1
- For some reason Unity 5.1 dislike indexed PNG, which made some GUI image show as colored.

## 1.57

- Fixed an issue of AnimationCurve not being initialized on creation.
- Fixed an issue where Property Drawer - such as UnityEvent - would fail to draw when nested in a collection.
- Fixed an exception thrown when a base class has no valid derivation while using CreateDerived.
- Found and removed a left-over Debug.LogError in the 5.1 version.
- Fixed an issue where none-Unity object value would not be copied properly when dragged and dropped.



## 1.60 (Unity 5.2+):

- Runtime Help attribute now returns a HelpItem, instead of a HelpAttribute.
- Descriptor attribute now returns a Description object instead of itself.
- Most attributes are now unbound from the class in the DLL. Instead, interfaces are used, which gives you the ability to create your own attributes.
- Fixed an issue when grouped item would be alone in tabs, making nothing showing up.
- UniTools library have been merged with the AdvancedInspector's one and its namespace renamed.
- Fixed a copy/paste stack overflow when encountered nested static field of the same type.
- Fixed some type definition such as HingeJoint and SoftJointLimit.
- Renamed an example material so it doesn't fail compilation on Android.
- Fixed an issue of multiselection of layer masks of different values.
- Removed useless CTRL+E menu item.
- Updated numerous editor towards 5.2 definition.

## 1.61

### [CHANGES]

- Removed the nicifying of dictionary keys when they are string values.
- Added an error while trying to draw a Property Drawer from a non-serializable feature, like a dictionary or a property.
- Added the ADVANCED\_INSPECTOR define back in the DLL, as requested.

### [FIXES]

- Fixed that toolbars or header would fail to draw without tabs.
- Fixed that subobject tabs would show up multiple time when combined with Display As Parent.
- Added a catch on FieldEditor drawing so that any exception wouldn't prevent the inspector from drawing its remaining stuff.
- Added "Use Auto Mass" property on Rigidbody 2D, added in Unity 5.3x.

## 1.62

### [CHANGES]

- Collection Attribute may now take a method name. This allow to manually set the name of each elements. (See example 7)

### [FIXES]

- Compatible with 5.2 again.
- Cleaned and update the examples.
- Added an enum fix submitted by Idhongen1990.
- Test if a type is generic before trying to instance it; some people forget to flag them as being abstract.
- Fixed an issue where hiding the script type would prevent that object from being flagged dirty upon changes.
- Fixed an initialization issue when a collection is "displayed as parent".

## 1.63

### [CHANGES]

- The separator's style can now be change to a solid color, and you can also choose the highlighted color in the preference.

### [FIXES]

- The Collection Attribute item name override wasn't working when displaying a collection in DropDown or Button mode.
- Help boxes on a ReadOnly item doesn't get grayed out anymore.
- Collection of GameObject no longer create new GameObject when adding indexes.
- IDataChanged callback wasn't invoked when using the picking tool, since it was outside the redraw scope of the inspector.
- Rewrote the copy/paste logic, it was a mess with lot of very deep and unique issues.
- Rewrote how the AI gather the object's information. It should be a lot faster now, as it no longer need to test for duplicate items. Contact us if anything isn't showing properly anymore.
- Fixed the cursor picking icon, which for some reason was the wrong one for quite some time.

## 1.64

### [CHANGES]

- DisplayAsParent now have a property named "Hide Parent". When false, the parent field is displayed as a title.
- Expandable attribute now have a property named "Always Expanded", which force an object to be expanded, and prevent it from being collapsible.

### [FIXES]

- MeshRenderer and SkinnedMeshRenderer now properly display reflection probes in range and the probe blending option.
- Updated the TerrainCollider to better follow latest Unity's inspector changes.
- IDataChanged event is now handled on subclass, not only the inspector entry point.
- Preventing a type from being expandable from the AdvancedInspector attribute had been broken for a while. Now, Expandable attribute can be placed on class/struct.
- Fixed a visual lining issue with deep nesting.
- Trap "ExitGUIException" from being thrown by Unity for no reason. Should prevent them from showing up in the console.
- Double-clicking labels was ignoring the mass child expand/collapse feature.
- Expand/Collapse child is now more intuitive as it doesn't expand or collapse the parent, allowing you to see the result.
- Fixed an issue with Copy/Paste where constant field be attempted to be pasted on.

## 1.65:

### [CHANGES]

- New option in the preferences; ability to disable the expansion of references. The exception being ComponentMonoBehaviour.
- New option in the preferences; ability to change the naming pattern of collection.
- Selected tabs are now persistent.

[FIXES]

- Clean up all the example to remove most of the [AdvancedInspector] attributes or redundant [Inspect]
- Hide the ComponentMonoBehaviour's owner. It wasn't supposed to be displayed in the inspector.
- Make float written with a "," automatically convert to "."
- Fixed an issue when Inspect Default Items is false, and the inspector would remember some item as being expanded.
- Fixed issue with Collection in DropDown or Button mode while displaying value type.

## 1.66

[FIXES]

- Removed Light shadow warning about Unity Pro.
- Removed HDR limitation on camera, it's no longer valid.
- Performance issue fixed on the Selection Tracker while duplicating large selection of GameObject.
- Performance issue when entering/exiting play and reloading context.

## 1.67

[CHANGES]

- Added a new attribute; IgnoreBase. Allows deriving from class like Button and ignoring its properties when inspecting.
- The Method attribute now has a property named "UndoMessageOnClick". This attempt to record a undo when pressing the button.
- Added support for attribute-bound PropertyDrawers. Note; since they are Serialization bound, they only works with fields, not Property or Methods.

[FIXES]

- Reworked how IDataChanged works, fixing an issue where the event would not be raised in a Restrict Attribute in Toolbox mode.
- Fixed an issue where the IDataChanged flag would be "eaten" by the wrong class.
- Fixed an issue where tabs would show up in an External Editor where they should not.
- Latest version became increasingly incompatible with Windows Phone 8.0. Fixed the reflection issue in ActionBinding and ComponentMonoBehaviour.

- Insert, Remove, Move Up, Move Down, Move To Top and Move To Bottom on the contextual menu were broken.
- Exceptions caught by the inspector now returns the proper stack trace in the logged error.
- Cleanup done in the Undos. Some functions were not flagging proper undo stacks.
- Rev A: Fixed assert thrown while clicking button of inspected method.
- Rev B: Fixed a null when drawing a Dictionary's new key field.
- Rev B: Fixed an issue where attribute-bound property drawer would not have the "attribute" and "fieldInfo" value set properly.
- Rev C: Managed to shave off 6 pixels off the labels section.
- Rev C: Fixed an issue that prevented inspecting nested Unity type.
- Rev C: Use the object type instead of the declaring type for ToString overload test.

## 1.68

### [CHANGES]

- The Method attribute has a new property named "IsCoroutine", which allows you to invoke coroutines in the editor. WaitForSeconds is supported, but not YieldCustom.
- Added preferences control over the default and playmode color of the inspector boxing, since we cannot access the Unity's one.
- FieldAttribute added, an attribute-bound FieldEditor. It is like PropertyDrawer, but with far less limitation. See the documentations and examples.

### [FIXES]

- Support Unity 5.4;
- Removed some advanced and debug properties from the Animator inspector; Unity had the brilliant idea of spamming warning everytime they are inspected.
- Update Renderes editor for the new 5.4 features.
- Disable contextual collection control when read only.
- Allows custom EditorField being used with CreateDerived fields.
- Prevent drag'n'dropping ComponentMonoBehaviour on other fields.
- Fixed an issue where some properties without a setter would not appear as read only.
- Internal Change; InspectorField.Editor now returns the associated FieldEditor if any.
- Allow to ping the script from a ComponentMonoBehaviour by clicking on it.

## 1.69

### [CHANGES]

- CreateDerived attribute now has HideClassName property, which hide the class name on the left of the "+" sign. False by default.
- Don't pass down FieldInfo to PropertyDrawer if it's not a field. Makes some PropertyDrawer works on properties instead of only fields! (See UnityEvent)
- Added Unity's Audio VU draw at the bottom of MonoBehaviour that have the proper OnAudioFilterRead implementation. Warning; lot of reflection involved.

[FIXES]

- Fixed a null exception when applying a Collection attribute on an empty dictionary.
- Fixed that an object was not properly flagged as dirty when adding a file by drag'n'drop to a inner collection.
- Fixed an issue where collection of ComponentMonoBehaviour would not duplicate properly in a copy/paste operation.
- Fixed that multiple version of the same MonoBehaviour on the same GameObject had duplication issues with UnityEvent.
- Allow copy-pasting objects that don't have a public constructor.
- Fixed a major performance issue when inspecting deep nesting (level 4+)
- Major speed boost when selecting very complex object.