

Namespace MB.Common.Aspects

Classes

[LogAspect](#)

An aspect that logs method entry, exit, and exceptions using Serilog. This aspect can be applied to methods to automatically log their execution lifecycle.

Class LogAspect

Namespace: [MB.Common.Aspects](#)

Assembly: MB.Common.dll

An aspect that logs method entry, exit, and exceptions using Serilog. This aspect can be applied to methods to automatically log their execution lifecycle.

```
public sealed class LogAspect : OnMethodBoundaryAspect, _Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← OnMethodBoundaryAspect ← LogAspect

Implements

[Attribute](#)

Inherited Members

[OnMethodBoundaryAspect.CompileTimeValidate\(MethodBase\)](#) ,
[OnMethodBoundaryAspect.AttributeTargetMemberAttributes](#) ,
[OnMethodBoundaryAspect.NamespaceFilter](#) , [OnMethodBoundaryAspect.TypeNameFilter](#) ,
[OnMethodBoundaryAspect.MethodNameFilter](#) , [Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo\)](#) , [Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type\)](#) , [Attribute.IsDefined\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type, bool\)](#) ,
[Attribute.IsDefined\(Module, Type\)](#) , [Attribute.IsDefined\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) , [Attribute.Equals\(object\)](#) ,

[Attribute.GetHashCode\(\)](#) , [Attribute.Match\(object\)](#) , [Attribute.IsDefaultAttribute\(\)](#) ,
[Attribute.TypeId](#) , [object.ToString\(\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetType\(\)](#)

Constructors

LogAspect()

```
public LogAspect()
```

Methods

OnEntry(MethodExecutionArgs)

Called before the execution of the target method. Logs the entry into the method with timestamp.

```
public override void OnEntry(MethodExecutionArgs args)
```

Parameters

args MethodExecutionArgs

Provides context about the method being executed.

OnException(MethodExecutionArgs)

Called when an exception is thrown during method execution. Logs the exception details.

```
public override void OnException(MethodExecutionArgs args)
```

Parameters

args MethodExecutionArgs

Provides context about the method and the thrown exception.

OnExit(MethodExecutionArgs)

Called after the successful execution of the target method. Logs the exit of the method with timestamp.

```
public override void OnExit(MethodExecutionArgs args)
```

Parameters

args MethodExecutionArgs

Provides context about the method that was executed.

Namespace MB.Common.Attributes

Classes

[ErrorInformationAttribute](#)

An attribute used to annotate fields with additional error information. This is useful for attaching meaningful error messages or metadata to enum fields or other constants.

[GuidAttribute](#)

Represents a custom attribute that can be applied to fields to associate them with a specific GUID.

[RequiredSharedParametersAttribute](#)

Represents an attribute to specify required shared parameters for a given target.

[RevitCategoriesAttribute](#)

Represents an attribute to associate a target with a set of Revit built-in categories.

[SharedParameterTypeAttribute](#)

Represents an attribute to specify the type of a shared parameter.

Class ErrorInformationAttribute

Namespace: [MB.Common.Attributes](#)

Assembly: MB.Common.dll

An attribute used to annotate fields with additional error information. This is useful for attaching meaningful error messages or metadata to enum fields or other constants.

```
[AttributeUsage(AttributeTargets.Field)]
public class ErrorInformationAttribute : Attribute, _Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← ErrorInformationAttribute

Implements

[Attribute](#)

Inherited Members

[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo\)](#) , [Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type\)](#) , [Attribute.IsDefined\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type, bool\)](#) ,
[Attribute.IsDefined\(Module, Type\)](#) , [Attribute.IsDefined\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) , [Attribute.Equals\(object\)](#) ,
[Attribute.GetHashCode\(\)](#) , [Attribute.Match\(object\)](#) , [Attribute.IsDefaultAttribute\(\)](#) ,

[Attribute.TypeId](#) , [object.ToString\(\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Constructors

ErrorInformationAttribute(string)

Initializes a new instance of the [ErrorInformationAttribute](#) class with the specified error information string.

```
public ErrorInformationAttribute(string errorInformation)
```

Parameters

errorInformation [string](#)

The error information to associate with the field.

Properties

ErrorInformation

Gets the error information message associated with the field.

```
public string ErrorInformation { get; }
```

Property Value

[string](#)

Class GuidAttribute

Namespace: [MB.Common.Attributes](#)

Assembly: MB.Common.dll

Represents a custom attribute that can be applied to fields to associate them with a specific GUID.

```
[AttributeUsage(AttributeTargets.Field)]
public class GuidAttribute : Attribute, _Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← GuidAttribute

Implements

[Attribute](#)

Inherited Members

[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo\)](#) , [Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type\)](#) , [Attribute.IsDefined\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type, bool\)](#) ,
[Attribute.IsDefined\(Module, Type\)](#) , [Attribute.IsDefined\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) , [Attribute.Equals\(object\)](#) ,
[Attribute.GetHashCode\(\)](#) , [Attribute.Match\(object\)](#) , [Attribute.IsDefaultAttribute\(\)](#) ,
[Attribute.TypeId](#) , [object.ToString\(\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Remarks

This attribute allows developers to tag fields with a GUID value, which can then be used for identification, serialization, or other purposes where a globally unique identifier is required.

Constructors

GuidAttribute(string)

Initializes a new instance of the [GuidAttribute](#) class with the specified GUID string.

```
public GuidAttribute(string guid)
```

Parameters

guid [string](#)

The GUID string to associate with the field. Must be in a valid GUID format.

Exceptions

[FormatException](#)

Thrown when the provided string is not in a valid GUID format.

Properties

Guid

Gets the GUID associated with the field to which this attribute is applied.

```
public string Guid { get; }
```

Property Value

[string](#)

Class RequiredSharedParametersAttribute

Namespace: [MB.Common.Attributes](#)

Assembly: MB.Common.dll

Represents an attribute to specify required shared parameters for a given target.

```
[AttributeUsage(AttributeTargets.Field)]
public class RequiredSharedParametersAttribute : Attribute, _Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← RequiredSharedParametersAttribute

Implements

[Attribute](#)

Inherited Members

[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo\)](#) , [Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type\)](#) , [Attribute.IsDefined\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type, bool\)](#) ,
[Attribute.IsDefined\(Module, Type\)](#) , [Attribute.IsDefined\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) , [Attribute.Equals\(object\)](#) ,
[Attribute.GetHashCode\(\)](#) , [Attribute.Match\(object\)](#) , [Attribute.IsDefaultAttribute\(\)](#) ,
[Attribute.TypeId](#) , [object.ToString\(\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Remarks

This attribute allows developers to declare a set of shared parameters that are required for the functionality or configuration of a specific target (e.g., class, method, or property).

Constructors

RequiredSharedParametersAttribute(params ToolsSharedParameter[])

Initializes a new instance of the [RequiredSharedParametersAttribute](#) class.

```
public RequiredSharedParametersAttribute(params ToolsSharedParameter[] sharedParameters)
```

Parameters

sharedParameters [ToolsSharedParameter\[\]](#)

A variable-length array of [ToolsSharedParameter](#) objects that represent the required shared parameters.

Exceptions

ArgumentNullException

Thrown if the provided `sharedParameters` array is null.

Properties

SharedParameters

Gets the array of shared parameters that are required.

```
public ToolsSharedParameter[] SharedParameters { get; }
```

Property Value

[ToolsSharedParameter\[\]](#)

Class RevitCategoriesAttribute

Namespace: [MB.Common.Attributes](#)

Assembly: MB.Common.dll

Represents an attribute to associate a target with a set of Revit built-in categories.

```
[AttributeUsage(AttributeTargets.Field)]
public class RevitCategoriesAttribute : Attribute, _Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← RevitCategoriesAttribute

Implements

[Attribute](#)

Inherited Members

[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo\)](#) , [Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type\)](#) , [Attribute.IsDefined\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type, bool\)](#) ,
[Attribute.IsDefined\(Module, Type\)](#) , [Attribute.IsDefined\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) , [Attribute.Equals\(object\)](#) ,
[Attribute.GetHashCode\(\)](#) , [Attribute.Match\(object\)](#) , [Attribute.IsDefaultAttribute\(\)](#) ,
[Attribute.TypeId](#) , [object.ToString\(\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Remarks

This attribute can be used to declare which Revit built-in categories are relevant for a specific class, method, or property. It allows for filtering or categorization based on Revit's predefined categories.

Constructors

RevitCategoriesAttribute(params BuiltInCategory[])

Initializes a new instance of the [RevitCategoriesAttribute](#) class.

```
public RevitCategoriesAttribute(params BuiltInCategory[] categories)
```

Parameters

categories BuiltInCategory[]

A variable-length array of BuiltInCategory enums that represent the relevant Revit categories.

Exceptions

ArgumentNullException

Thrown if the provided **categories** array is null.

Properties

Categories

Gets the array of Revit built-in categories associated with the target.

```
public BuiltInCategory[] Categories { get; }
```

Property Value

BuiltInCategory[]

Class SharedParameterTypeAttribute

Namespace: [MB.Common.Attributes](#)

Assembly: MB.Common.dll

Represents an attribute to specify the type of a shared parameter.

```
[AttributeUsage(AttributeTargets.Class|AttributeTargets.Property|AttributeTargets.Field)]
public class SharedParameterTypeAttribute : Attribute, _Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← SharedParameterTypeAttribute

Implements

[Attribute](#)

Inherited Members

[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo\)](#) , [Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type\)](#) , [Attribute.IsDefined\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type, bool\)](#) ,
[Attribute.IsDefined\(Module, Type\)](#) , [Attribute.IsDefined\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) , [Attribute.Equals\(object\)](#) ,
[Attribute.GetHashCode\(\)](#) , [Attribute.Match\(object\)](#) , [Attribute.IsDefaultAttribute\(\)](#) ,
[Attribute.TypeId](#) , [object.ToString\(\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Remarks

This attribute is used to associate a target (e.g., a class, method, or property) with a specific shared parameter type. It helps define the type of shared parameter in a structured and reusable way.

Constructors

SharedParameterTypeAttribute(SharedParameterType)

Initializes a new instance of the [SharedParameterTypeAttribute](#) class.

```
public SharedParameterTypeAttribute(SharedParameterType type)
```

Parameters

type [SharedParameterType](#)

The [SharedParameterType](#) to associate with the target.

Exceptions

ArgumentNullException

Thrown if the provided **type** is null (only if SharedParameterType is a reference type).

Properties

Type

Gets the type of the shared parameter associated with this attribute.

```
public SharedParameterType Type { get; }
```

Property Value

[SharedParameterType](#)

Namespace MB.Common.Comparers

Classes

[BoundingBoxComparer](#)

A utility class for comparing and resolving bounding box coordinates from multiple points.

Class BoundingBoxComparer

Namespace: [MB.Common.Comparers](#)

Assembly: MB.Common.dll

A utility class for comparing and resolving bounding box coordinates from multiple points.

```
public class BoundingBoxComparer
```

Inheritance

[object](#) ← BoundingBoxComparer

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

BoundingBoxComparer()

Initializes a new instance of the [BoundingBoxComparer](#) class. Sets initial values for bounds: maximum values for minimum bounds and minimum values for maximum bounds.

```
public BoundingBoxComparer()
```

Methods

Compare(XYZ)

Compares the given point with the current bounds and updates the bounds accordingly.

```
public void Compare(XYZ point)
```

Parameters

point XYZ

The 3D point to compare.

Resolve()

Resolves the current bounds into a minimum and maximum point, extending them by a fixed tolerance.

```
public (XYZ min, XYZ max) Resolve()
```

Returns

(XYZ [min](#), XYZ [max](#))

A tuple containing:

- The minimum point (Autodesk.Revit.DB.XYZ) of the bounding box.
- The maximum point (Autodesk.Revit.DB.XYZ) of the bounding box.

Namespace MB.Common.Constants

Classes

[FilePaths](#)

Contains static file paths and predefined constants used throughout the application. Paths are based on the user's local application data folder.

[MbErrorMessages](#)

Contains predefined error message constants used throughout the application. Helps maintain consistency and manageability of user-facing messages.

[MbfFiles](#)

Provides constants and utility properties for MBF-related file paths.

[MbfGroups](#)

Provides constant values for MBF parameter groups.

Class FilePaths

Namespace: [MB.Common.Constants](#)

Assembly: MB.Common.dll

Contains static file paths and predefined constants used throughout the application. Paths are based on the user's local application data folder.

```
public static class FilePaths
```

Inheritance

[object](#) ← FilePaths

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Fields

Elbows

Constant for identifying elbow elements.

```
public const string Elbows = "Elbows"
```

Field Value

[string](#)

FlexPipes

Constant for identifying flexible pipe elements.

```
public const string FlexPipes = "Flex Pipes"
```

Field Value

[string](#)

Others

Constant for identifying miscellaneous or other elements.

```
public const string Others = "Others"
```

Field Value

[string](#)

Outlets

Constant for identifying outlet elements.

```
public const string Outlets = "Outlets"
```

Field Value

[string](#)

PipeAccessories

Constant for identifying pipe accessory elements.

```
public const string PipeAccessories = "Pipe Accessories"
```

Field Value

[string](#)

Pipes

Constant for identifying pipe elements.

```
public const string Pipes = "Pipes"
```

Field Value

[string](#) ↗

Sprinklers

Constant for identifying sprinkler elements.

```
public const string Sprinklers = "Sprinklers"
```

Field Value

[string](#) ↗

Tees

Constant for identifying tee elements.

```
public const string Tees = "Tees"
```

Field Value

[string](#) ↗

Properties

CoverageExcel

Gets the full path to the Coverage Excel file.

```
public static string CoverageExcel { get; }
```

Property Value

[string](#) ↗

CoverageJson

Gets the full path to the Coverage JSON file.

```
public static string CoverageJson { get; }
```

Property Value

[string ↗](#)

MapperJsons

Gets the path to the directory containing Mapper JSON files.

```
public static string MapperJsons { get; }
```

Property Value

[string ↗](#)

WorksetsExcel

Gets the full path to the Worksets Excel file.

```
public static string WorksetsExcel { get; }
```

Property Value

[string ↗](#)

WorksetsJson

Gets the full path to the Worksets JSON file.

```
public static string WorksetsJson { get; }
```

Property Value

[string ↗](#)

Class MbErrorMessages

Namespace: [MB.Common.Constants](#)

Assembly: MB.Common.dll

Contains predefined error message constants used throughout the application. Helps maintain consistency and manageability of user-facing messages.

```
public static class MbErrorMessages
```

Inheritance

[object](#) ← MbErrorMessages

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Fields

MoreThanOneSpaceSelected

Error message displayed when more than one space is selected.

```
public const string MoreThanOneSpaceSelected = "Please select only one space."
```

Field Value

[string](#)

NoSpaceSelected

Error message displayed when no space is selected.

```
public const string NoSpaceSelected = "Please select the space."
```

Field Value

[string](#)

NoSprinklerSelected

Error message displayed when no sprinkler is selected.

```
public const string NoSprinklerSelected = "Please select at least one sprinkler."
```

Field Value

[string](#)

SprinklerNotInsideSpace

Error message displayed when a sprinkler is not located within the selected space.

```
public const string SprinklerNotInsideSpace = "Sprinkler is not inside the selected space."
```

Field Value

[string](#)

Class Mbffiles

Namespace: [MB.Common.Constants](#)

Assembly: MB.Common.dll

Provides constants and utility properties for MBF-related file paths.

```
public static class Mbffiles
```

Inheritance

[object](#) ← Mbffiles

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Properties

AddinDirectory

Gets the directory of the currently executing assembly (Add-in directory).

```
public static string AddinDirectory { get; }
```

Property Value

[string](#)

Remarks

This property dynamically resolves the directory path where the executing assembly is located.

ToolsSharedParameter

Gets the full path to the shared parameter file (3dfirespf.txt) used by MBF.

```
public static string ToolsSharedParameter { get; }
```

Property Value

[string](#) ↗

Class MbGroups

Namespace: [MB.Common.Constants](#)

Assembly: MB.Common.dll

Provides constant values for MBF parameter groups.

```
public static class MbGroups
```

Inheritance

[object](#) ← MbGroups

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Remarks

This class contains group names for organizing parameters used in the MBF suite. These constants can be used to ensure consistent naming throughout the application.

Fields

Fittings

Represents the group name for pipe accessory fittings parameters.

```
public const string Fittings = "MBFire-Pipes-Accessory-Fittings-Parameters"
```

Field Value

[string](#)

Namespace MB.Common.Errors

Classes

[MbErrorExtensions](#)

Enums

[MbError](#)

Defines a list of error codes used throughout the application. Each enum value is annotated with [ErrorInformationAttribute](#) to provide a user-friendly error message.

Enum MbError

Namespace: [MB.Common.Errors](#)

Assembly: MB.Common.dll

Defines a list of error codes used throughout the application. Each enum value is annotated with [ErrorInformationAttribute](#) to provide a user-friendly error message.

```
public enum MbError
```

Extension Methods

[MbErrorExtensions.GetErrorMessage\(MbError\)](#)

Fields

[[ErrorInformation\("Please select only one space."\)](#)] MultipleSpacesSelected = 2

Error when more than one space is selected, but only one is expected.

[[ErrorInformation\("Please select the space."\)](#)] NoSpaceSelected = 1

Error when no space is selected by the user.

[[ErrorInformation\("Please select at least one sprinkler."\)](#)] NoSprinklerSelected = 3

Error when no sprinkler is selected.

[[ErrorInformation\("Sprinkler is not inside the selected space."\)](#)] SprinklersNotInsideSpace = 4

Error when selected sprinklers are not located inside the selected space.

Class MbErrorExtensions

Namespace: [MB.Common.Errors](#)

Assembly: MB.Common.dll

```
public static class MbErrorExtensions
```

Inheritance

[object](#) ← MbErrorExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetErrorMessage(MbError)

Retrieves the error information associated with the specified [MbError](#).

```
public static string GetErrorMessage(this MbError error)
```

Parameters

error [MbError](#)

The [MbError](#) instance for which the error message is retrieved.

Returns

[string](#)

Namespace MB.Common.Errors.Exceptions

Classes

[MbException](#)

Represents a custom exception type used within the MicroBIM system. Wraps an [MbError](#) and provides a description derived from it.

Class MbException

Namespace: [MB.Common.Errors.Exceptions](#)

Assembly: MB.Common.dll

Represents a custom exception type used within the MicroBIM system. Wraps an [MbError](#) and provides a description derived from it.

```
public class MbException : Exception, ISerializable, _Exception
```

Inheritance

[object](#) ← [Exception](#) ← MbException

Implements

[ISerializable](#), [Exception](#)

Inherited Members

[Exception.GetBaseException\(\)](#), [Exception.ToString\(\)](#),
[Exception.GetObjectData\(SerializationInfo, StreamingContext\)](#), [Exception.GetType\(\)](#),
[Exception.Message](#), [Exception.Data](#), [Exception.InnerException](#), [Exception.TargetSite](#),
[Exception.StackTrace](#), [Exception.HelpLink](#), [Exception.Source](#), [Exception.HResult](#),
[Exception.SerializeObjectState](#), [object.Equals\(object\)](#), [object.Equals\(object, object\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.MemberwiseClone\(\)](#)

Constructors

MbException(MbError)

Represents a custom exception type used within the MicroBIM system. Wraps an [MbError](#) and provides a description derived from it.

```
public MbException(MbError mbError)
```

Parameters

mbError [MbError](#)

Properties

Description

Gets or sets the human-readable description of the error. This is generated from the associated [MbError](#) using its `GetErrorMessage` method.

```
public string Description { get; set; }
```

Property Value

[string](#) ↗

MbError

Gets or sets the [MbError](#) associated with this exception. This holds structured error information relevant to the exception.

```
public MbError MbError { get; set; }
```

Property Value

[MbError](#)

Namespace MB.Common.Parameters

Classes

[RevitParameterManager](#)

Manages shared parameters in a Revit document, ensuring required parameters exist and are properly configured.

Class RevitParameterManager

Namespace: [MB.Common.Parameters](#)

Assembly: MB.Common.dll

Manages shared parameters in a Revit document, ensuring required parameters exist and are properly configured.

```
public class RevitParameterManager
```

Inheritance

[object](#) ← RevitParameterManager

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

RevitParameterManager()

```
public RevitParameterManager()
```

Methods

EnsureParameters(Document, ToolsSharedParameter[])

Ensures that a set of shared parameters exists in the given Revit document. If any of the parameters are missing, they will be added during the transaction.

```
public static void EnsureParameters(Document doc, ToolsSharedParameter[] parameters)
```

Parameters

doc Document

The Revit Autodesk.Revit.DB.Document in which the parameters should be ensured.

parameters [ToolsSharedParameter\[\]](#)

An array of [ToolsSharedParameter](#) representing the shared parameters to verify or add.

EnsureParameters(Document, Mbftool)

Ensures that all required shared parameters for a specific tool exist in the Revit document.

```
public static void EnsureParameters(Document doc, Mbftool tool)
```

Parameters

doc Document

The Revit document.

tool [Mbftool](#)

The tool requiring the shared parameters.

Namespace MB.Common.Services

Classes

[MailService](#)

Provides methods for sending emails, including support for attachments and both synchronous and asynchronous operations.

Class MailService

Namespace: [MB.Common.Services](#)

Assembly: MB.Common.dll

Provides methods for sending emails, including support for attachments and both synchronous and asynchronous operations.

```
public static class MailService
```

Inheritance

[object](#) ← MailService

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

Send(string, List<string>)

Sends an email synchronously with optional attachments. Uses a predefined sender and receiver email configuration.

```
[LogAspect]  
public static void Send(string msg, List<string> attachmentPaths = null)
```

Parameters

msg [string](#)

The body of the email message.

attachmentPaths [List](#)<[string](#)>

Optional list of file paths to attach to the email.

SendAsync(string, List<string>)

Sends an email asynchronously with optional attachments. Useful for avoiding UI blocking during email transmission.

```
[LogAspect]  
public static Task SendAsync(string msg, List<string> attachmentPaths = null)
```

Parameters

msg [string](#)

The body of the email message.

attachmentPaths [List](#)<[string](#)>

Optional list of file paths to attach to the email.

Returns

[Task](#)

Namespace MB.Common.SharedParameters

Classes

[ElementExtensions](#)

Provides extension methods for working with Revit Element objects.

[SharedParameterExtensions](#)

Provides extension methods for the [ToolsSharedParameter](#) class.

Enums

[SharedParameterType](#)

Represents the types of shared parameters that can be used in Revit.

[ToolsSharedParameter](#)

Defines shared parameters for use within Revit, including metadata such as GUIDs, descriptions, parameter types, and applicable categories.

Class ElementExtensions

Namespace: [MB.Common.SharedParameters](#)

Assembly: MB.Common.dll

Provides extension methods for working with Revit Element objects.

```
public static class ElementExtensions
```

Inheritance

[object](#) ← ElementExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

MbGetParameter(Element, ToolsSharedParameter)

Retrieves a Revit Autodesk.Revit.DB.Parameter associated with the specified shared parameter from the given Element.

```
public static Parameter MbGetParameter(this Element element, ToolsSharedParameter  
sharedParameter)
```

Parameters

element Element

The Revit Element to retrieve the parameter from.

sharedParameter [ToolsSharedParameter](#)

The [ToolsSharedParameter](#) to retrieve.

Returns

Parameter

The Autodesk.Revit.DB.Parameter object associated with the specified shared parameter. Returns `null` if the parameter is not found.

MbSetParameter<T>(Element, ToolsSharedParameter, T)

Sets the value of a Revit Autodesk.Revit.DB.Parameter associated with a specified shared parameter.

```
public static void MbSetParameter<T>(this Element element, ToolsSharedParameter  
sharedParameter, T value)
```

Parameters

element Element

The Revit Element to set the parameter for.

sharedParameter [ToolsSharedParameter](#)

The [ToolsSharedParameter](#) whose value is to be set.

value T

The value to assign to the parameter.

Type Parameters

T

The type of the value to set (e.g., int, double, string, ElementId).

Exceptions

ArgumentException

Thrown if the parameter value type is unsupported or the parameter cannot be set with the specified type.

Class SharedParameterExtensions

Namespace: [MB.Common.SharedParameters](#)

Assembly: MB.Common.dll

Provides extension methods for the [ToolsSharedParameter](#) class.

```
public static class SharedParameterExtensions
```

Inheritance

[object](#) ← SharedParameterExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetCreationOptions(ToolsSharedParameter)

Creates an instance of ExternalDefinitionCreationOptions for a [ToolsSharedParameter](#).

```
public static ExternalDefinitionCreationOptions GetCreationOptions(this  
ToolsSharedParameter sharedParameter)
```

Parameters

sharedParameter [ToolsSharedParameter](#)

The shared parameter.

Returns

ExternalDefinitionCreationOptions

An ExternalDefinitionCreationOptions instance.

GetDisplayName(ToolsSharedParameter)

Retrieves the display name of a [ToolsSharedParameter](#).

```
public static string GetDisplayName(this ToolsSharedParameter sharedParameter)
```

Parameters

sharedParameter [ToolsSharedParameter](#)

The shared parameter.

Returns

[string](#)

The display name of the shared parameter.

GetGuid(ToolsSharedParameter)

Retrieves the GUID associated with a [ToolsSharedParameter](#).

```
public static string GetGuid(this ToolsSharedParameter sharedParameter)
```

Parameters

sharedParameter [ToolsSharedParameter](#)

The shared parameter.

Returns

[string](#)

The GUID of the shared parameter.

GetIncludedCategories(ToolsSharedParameter)

Retrieves the list of categories included in a [ToolsSharedParameter](#).

```
public static List<BuiltInCategory> GetIncludedCategories(this  
ToolsSharedParameter sharedParameter)
```

Parameters

sharedParameter [ToolsSharedParameter](#)

The shared parameter.

Returns

[List](#) <BuiltInCategory>

A list of BuiltInCategory values.

GetSharedParameterType(ToolsSharedParameter)

Retrieves the type of [ToolsSharedParameter](#).

```
public static SharedParameterType GetSharedParameterType(this ToolsSharedParameter  
sharedParameter)
```

Parameters

sharedParameter [ToolsSharedParameter](#)

The shared parameter.

Returns

[SharedParameterType](#)

The [SharedParameterType](#) of the shared parameter.

Enum SharedParameterType

Namespace: [MB.Common.SharedParameters](#)

Assembly: MB.Common.dll

Represents the types of shared parameters that can be used in Revit.

```
public enum SharedParameterType
```

Fields

Area = 3

Represents an area parameter type, used for values that define area measurements.

Integer = 2

Represents an integer parameter type, used for whole number values.

Text = 1

Represents a text parameter type, used for string values.

YesOrNo = 0

Represents a Yes/No parameter type, typically used for boolean values.

Enum ToolsSharedParameter

Namespace: [MB.Common.SharedParameters](#)

Assembly: MB.Common.dll

Defines shared parameters for use within Revit, including metadata such as GUIDs, descriptions, parameter types, and applicable categories.

```
public enum ToolsSharedParameter
```

Extension Methods

[SharedParameterExtensions.GetCreationOptions\(ToolsSharedParameter\)](#) ,
[SharedParameterExtensions.GetDisplayName\(ToolsSharedParameter\)](#) ,
[SharedParameterExtensions.GetGuid\(ToolsSharedParameter\)](#) ,
[SharedParameterExtensions.GetIncludedCategories\(ToolsSharedParameter\)](#) ,
[SharedParameterExtensions.GetSharedParameterType\(ToolsSharedParameter\)](#).

Fields

[Guid("9fdf6b2a-2772-4194-969c-f46d6e6ab866")]
[SharedParameterType(SharedParameterType.Area)] [RevitCategories] ActualCoverage = 1

Represents the "MBF_ActualCoverage" shared parameter. This shared parameter is applicable to pipe curves, pipe fittings, sprinklers, and pipe accessories. It is of type [Area](#).

[Guid("282d1a77-f651-4479-b6eb-85d84361c615")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] AddFitToId = 10

Represents the "MBF_AddFitToID" shared parameter. This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

[Guid("40221BB0-FFFE-42C6-BFF1-F1048AFA0664")]
[SharedParameterType(SharedParameterType.Integer)] [RevitCategories] Allowance = 18

Represents the "MBF_Allowance" shared parameter. This shared parameter is applicable to flex pipe curves. It is of type [Integer](#).

[Guid("6BEC8CDC-378E-4389-A7D6-EAF2493CEB9A")]
[SharedParameterType(SharedParameterType.YesNo)] [RevitCategories] CalculateSum =

Represents the "MBF_IsFitting" shared parameter.This shared parameter is used for flex pipe curves and is of type [YesOrNo](#).

```
[Guid("14fca12a-1224-41e5-a8a6-d4c0af178974")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] Color = 7
```

Represents the "MBF_Color" shared parameter.This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("27e7c7ba-40cc-4ca6-b0c3-07a8e537a3bb")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories]
DescriptionAndAbbreviationListNo = 12
```

Represents the "MBF_Desc_Abbrv_ListNo" shared parameter.This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("d94545bc-4956-411d-a6bc-9ec96101d350")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories]
ExportedPackageName = 13
```

Represents the "MBF_Exported_PakageName" shared parameter.This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("83d4381a-bfe9-450e-9364-c44036e81756")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] ExportedPdfName = 15
```

Represents the "MBF_Exported_PDFName" shared parameter.This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("1bf7feba-7bca-40c9-8ca0-8365574c2648")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories]
FabricationGroupName = 17
```

Represents the "MBF_FabGroupName" shared parameter.This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("15b2c379-8df6-4f2d-8499-9883e0256663")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] Finish = 8
```

Represents the "MBF_Finish" shared parameter.This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("72f35e3d-3bd7-4169-b3c0-c6485cdd39c4")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] HandTight = 11
```

Represents the "MBF_HandTight" shared parameter.This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("8495409d-c110-4685-b548-2f1440fa7307")]
[SharedParameterType(SharedParameterType.YesNo)] [RevitCategories]
IgnoreInCalculation = 3
```

Represents the "MBF_IgnoreInCalculation" shared parameter.This shared parameter is applicable to pipe fittings, sprinklers, pipe accessories, mechanical equipment, and fire alarm devices. It is of type [YesOrNo](#).

```
[Guid("e87615ee-c2b0-4f93-9194-8ffda612cdf6")]
[SharedParameterType(SharedParameterType.YesNo)] [RevitCategories]
IncludeInCalculation = 2
```

Represents the "MBF_IncludeInCalcs" shared parameter.This shared parameter is applicable to pipe fittings, sprinklers, pipe accessories, mechanical equipment, and fire alarm devices. It is of type [YesOrNo](#).

```
[Guid("997C72F0-F375-439E-9AD1-BC2570651E42")]
[SharedParameterType(SharedParameterType.YesNo)] [RevitCategories] IsFitting = 20
```

Represents the "MBF_IsFitting" shared parameter.This shared parameter is used for flex pipe curves and is of type [YesOrNo](#).

```
[Guid("b06ebb90-4f1e-4881-bfb5-fef6f7a64909")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] MinimumFlow = 5
```

Represents the "MBF_Min_Flow" shared parameter.This shared parameter is applicable to pipe fittings, sprinklers, and pipe accessories. It is of type [Text](#).

```
[Guid("467a1334-8e46-4d4d-bf22-0bd377ff6be5")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] MinimumPressure =
```

Represents the "MBF_Min_Pressure" shared parameter. This shared parameter is applicable to pipe fittings, sprinklers, and pipe accessories. It is of type [Text](#).

```
[Guid("c4347a82-7375-42aa-ad1a-96ba6212f122")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] PipeCode = 9
```

Represents the "MBF_PipeCode" shared parameter. This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("2e83bba8-8d6e-4a90-a29f-108c705a7661")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] ProtectionArea = 6
```

Represents the "MBF_ProtectionArea" shared parameter. This shared parameter is applicable to pipe fittings, sprinklers, and pipe accessories. It is of type [Text](#).

```
[Guid("5f2c6451-0d24-4421-b3f8-02386c2cd60b")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] RealGroupSize = 19
```

Represents the "MBF_Allowance" shared parameter. This shared parameter is applicable to flex pipe curves. It is of type [Text](#).

```
[Guid("9d698cc7-3c6d-466e-9f89-ee1baf1326a2")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] RealFittingSizes = 14
```

Represents the "MBF_RealFittingSizes" shared parameter. This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

```
[Guid("9d698cc7-3c6d-466e-9f89-ee1baf1326a2")]
[SharedParameterType(SharedParameterType.Text)] [RevitCategories] SubType = 16
```

Represents the "MBF_Subtype" shared parameter. This shared parameter is applicable to pipe curves, pipe fittings, pipe accessories, generic models, model groups, mechanical equipment, sprinklers, fire alarm devices, and flex pipe curves. It is of type [Text](#).

Namespace MB.Common.Tools

Classes

[MbftoolExtensions](#)

Provides extension methods for the [Mbftool](#) class.

Enums

[Mbftool](#)

Enum representing various tools in the MBF (MicroBIM Fire) suite. Each tool is decorated with descriptive metadata and optional shared parameter requirements.

Enum Mbftool

Namespace: [MB.Common.Tools](#)

Assembly: MB.Common.dll

Enum representing various tools in the MBF (MicroBIM Fire) suite. Each tool is decorated with descriptive metadata and optional shared parameter requirements.

```
public enum Mbftool
```

Extension Methods

[MbftoolExtensions.GetRequiredSharedParameters\(Mbftool\)](#)

Fields

ApplyParameters = 4

Represents the Apply Parameters tool.

AssemblyManager = 2

Represents the Assembly Manager tool.

CutLengthPipeOptimization = 3

Represents the Cut Length Pipe Optimization tool.

```
[RequiredSharedParameters(new ToolsSharedParameter[] { ToolsSharedParameter.Color,
ToolsSharedParameter.Finish, ToolsSharedParameter.PipeCode,
ToolsSharedParameter.AddFitToId, ToolsSharedParameter.HandTight,
ToolsSharedParameter.DescriptionAndAbbreviationListNo,
ToolsSharedParameter.ExportedPackageName, ToolsSharedParameter.RealFittingSizes,
ToolsSharedParameter.ExportedPdfName, ToolsSharedParameter.SubType,
ToolsSharedParameter.FabricationGroupName, ToolsSharedParameter.Allowance,
ToolsSharedParameter.RealGroupSize, ToolsSharedParameter.IsFitting,
ToolsSharedParameter.CalculateSum })] Mapper = 5
```

Represents the Mapper tool, used to assign various metadata and fabrication-related properties. This tool requires several shared parameters including: [Color](#), [Finish](#), [PipeCode](#), and many others used for downstream fabrication and reporting.

```
[RequiredSharedParameters(new ToolsSharedParameter[] {  
ToolsSharedParameter.ActualCoverage, ToolsSharedParameter.ProtectionArea })]  
SprinklerVoronoi = 1
```

Represents the Sprinkler Voronoi tool. This tool requires the [ActualCoverage](#) and [ProtectionArea](#) shared parameters.

Remarks

Tools are annotated with [DescriptionAttribute](#) for display purposes, and with [RequiredSharedParametersAttribute](#) to define necessary shared parameters.

Class MbftoolExtensions

Namespace: [MB.Common.Tools](#)

Assembly: MB.Common.dll

Provides extension methods for the [Mbftool](#) class.

```
public static class MbftoolExtensions
```

Inheritance

[object](#) ← MbftoolExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetRequiredSharedParameters(Mbftool)

Retrieves the required shared parameters associated with the specified [Mbftool](#).

```
public static ToolsSharedParameter[] GetRequiredSharedParameters(this Mbftool tool)
```

Parameters

tool [Mbftool](#)

The [Mbftool](#) instance for which the required shared parameters are retrieved.

Returns

[ToolsSharedParameter\[\]](#)

An array of [ToolsSharedParameter](#) objects if the [RequiredSharedParametersAttribute](#) is found; otherwise, an empty array.

Namespace MB.Common.Utils.Attributes

Classes

[AttributeUtils](#)

Provides utility methods for working with custom attributes in .NET.

Class AttributeUtils

Namespace: [MB.Common.Utils.Attributes](#)

Assembly: MB.Common.dll

Provides utility methods for working with custom attributes in .NET.

```
public static class AttributeUtils
```

Inheritance

[object](#) ← AttributeUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetAttribute<T>(object)

Retrieves a custom attribute of the specified type **T** applied to a given enum value or field.

```
public static T GetAttribute<T>(object value) where T : Attribute
```

Parameters

value [object](#)

The target enum value or field.

Returns

T

The attribute of type **T** if it is applied; otherwise, throws an exception.

Type Parameters

T

The type of the attribute to retrieve.

GetFieldAttribute<T, TType>(string)

Retrieves a custom attribute of the specified type **T** applied to a given field in a class or struct.

```
public static T GetFieldAttribute<T, TType>(string fieldName) where T : Attribute
```

Parameters

fieldName [string](#)

The name of the field in the class or struct.

Returns

T

The attribute of type **T** if it is applied; otherwise, throws an exception.

Type Parameters

T

The type of the attribute to retrieve.

TType

The type of the target class or struct.

TryGetAttribute<T>(object, out T)

Attempts to retrieve a custom attribute of the specified type **T** applied to a given enum value or field without throwing an exception if it is not found.

```
public static bool TryGetAttribute<T>(object value, out T attribute) where T : Attribute
```

Parameters

value [object](#)

The target enum value or field.

attribute T

When this method returns, contains the attribute of type **T** if found; otherwise, **null**.

Returns

[bool](#) ↗

True if the attribute is found; otherwise, false.

Type Parameters

T

The type of the attribute to retrieve.

Namespace MB.Common.Utils.Handlers

Classes

[MbHandlers](#)

Provides static access to Revit external event handlers used across the application.

Class MbHandlers

Namespace: [MB.Common.Utils.Handlers](#)

Assembly: MB.Common.dll

Provides static access to Revit external event handlers used across the application.

```
public static class MbHandlers
```

Inheritance

[object](#) ← MbHandlers

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Remarks

This utility class simplifies the management of Revit's Nice3point.Revit.Toolkit.External.Handlers.Action EventHandler and Nice3point.Revit.Toolkit.External.Handlers.AsyncEventHandler instances, allowing them to be globally registered and reused.

Properties

AsyncExternalEventHandler

Gets or sets the asynchronous external event handler for executing asynchronous Revit commands.

```
public static AsyncEventHandler AsyncExternalEventHandler { get; set; }
```

Property Value

AsyncEventHandler

ExternalEventHandler

Gets or sets the synchronous external event handler for executing Revit commands.

```
public static ActionEventHandler ExternalEventHandler { get; set; }
```

Property Value

ActionEventHandler

Methods

RegisterHandlers()

Registers and initializes the external event handlers used by the application. Call this method during application startup or initialization.

```
public static void RegisterHandlers()
```

Namespace MB.Common.Utils.Image

Classes

[ImageUtils](#)

Provides utility functions for working with images, such as resizing with high-quality settings.

Class ImageUtils

Namespace: [MB.Common.Utils.Image](#)

Assembly: MB.Common.dll

Provides utility functions for working with images, such as resizing with high-quality settings.

```
public static class ImageUtils
```

Inheritance

[object](#) ← ImageUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

ResizeImage(Image, int, int)

Resizes an image to the specified dimensions while preserving visual quality using advanced graphics settings.

```
public static Bitmap ResizeImage(Image image, int width, int height)
```

Parameters

image [Image](#)

The source [Image](#) to be resized.

width [int](#)

The target width of the resized image.

height [int](#)

The target height of the resized image.

Returns

[Bitmap](#)

A new [Bitmap](#) instance containing the resized image.

Namespace MB.Common.Utils.Result

Classes

[MbResult<T>](#)

Represents the result of an operation, encapsulating the success status, value, and error message.

Class MbResult<T>

Namespace: [MB.Common.Utils.Result](#)

Assembly: MB.Common.dll

Represents the result of an operation, encapsulating the success status, value, and error message.

```
public class MbResult<T>
```

Type Parameters

T

The type of the result value.

Inheritance

[object](#) ← MbResult<T>

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Properties

ErrorMessage

Gets the error message if the operation failed.

```
public string ErrorMessage { get; }
```

Property Value

[string](#)

IsSuccess

Gets a value indicating whether the operation was successful.

```
public bool IsSuccess { get; }
```

Property Value

[bool](#)

Value

Gets the value of the result if the operation was successful.

```
public T Value { get; }
```

Property Value

T

Methods

Failure(string)

Creates a failure result containing the specified error message.

```
public static MbResult<T> Failure(string errorMessage)
```

Parameters

errorMessage [string](#)

The error message describing the failure.

Returns

[MbResult](#) <T>

A failed [MbResult](#) instance containing the specified error message.

Success(T)

Creates a successful result containing the specified value.

```
public static MbResult<T> Success(T value)
```

Parameters

value T

The value of the result.

Returns

[MbResult](#)<T>

A successful [MbResult<T>](#) instance containing the specified value.

Namespace MB.Common.ViewLoader

Classes

[IsolatedViewLoader](#)

Provides extension methods for loading XAML views manually and in isolation from a URI. This is used as a workaround for known issues in some WPF/Revit XAML loading contexts.

Class IsolatedViewLoader

Namespace: [MB.Common.ViewLoader](#)

Assembly: MB.Common.dll

Provides extension methods for loading XAML views manually and in isolation from a URI. This is used as a workaround for known issues in some WPF/Revit XAML loading contexts.

```
public static class IsolatedViewLoader
```

Inheritance

[object](#) ← IsolatedViewLoader

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

LoadViewFromUri(FrameworkElement, string)

Loads a XAML view from a given base URI into a [FrameworkElement](#). Uses reflection to bypass internal WPF methods and load XAML manually.

```
public static void LoadViewFromUri(this FrameworkElement view, string baseUri)
```

Parameters

view [FrameworkElement](#)

The view instance into which the XAML will be loaded.

baseUri [string](#)

The relative URI to the XAML file (e.g. "/AssemblyName;component/ViewFolder/View.xaml").

LoadView<T>(T)

Loads the corresponding XAML view based on the type of the view instance. Infers the URI automatically from the view's type and namespace.

```
public static void LoadView<T>(this T view) where T : FrameworkElement
```

Parameters

view **T**

The view instance to load.

Type Parameters

T

The type of the view, must inherit from [FrameworkElement](#).

Namespace MBF.Revit.Data.SelectionFilters

Classes

[DynamicCategorySelectionFilter](#)

A dynamic selection filter that allows only elements belonging to specified BuiltInCategory values.
Useful for restricting user selection to a specific set of categories.

Class DynamicCategorySelectionFilter

Namespace: [MBF.Revit.Data.SelectionFilters](#)

Assembly: MBF.Revit.Data.dll

A dynamic selection filter that allows only elements belonging to specified BuiltInCategory values. Useful for restricting user selection to a specific set of categories.

```
public class DynamicCategorySelectionFilter : ISelectionFilter
```

Inheritance

[object](#) ← DynamicCategorySelectionFilter

Implements

ISelectionFilter

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

DynamicCategorySelectionFilter(params BuiltInCategory[])

Initializes a new instance of the [DynamicCategorySelectionFilter](#) class with the specified categories that should be allowed during selection.

```
public DynamicCategorySelectionFilter(params BuiltInCategory[] categories)
```

Parameters

categories BuiltInCategory[]

An array of BuiltInCategory values to allow.

Methods

AllowElement(Element)

Determines whether a specific element is allowed for selection.

```
public bool AllowElement(Element element)
```

Parameters

element Element

The element being evaluated.

Returns

bool ↗

true if the element belongs to one of the allowed categories; otherwise, **false**.

AllowReference(Reference, XYZ)

Determines whether a reference (face, edge, etc.) is allowed for selection. This implementation disallows reference-based selection and only allows full element selection.

```
public bool AllowReference(Reference reference, XYZ position)
```

Parameters

reference Reference

The reference being evaluated.

position XYZ

The 3D position associated with the reference.

Returns

bool ↗

Always returns **false** to disable reference selection.

Namespace MBF.Revit.Data.Utils

Classes

[MbFlexPipesUtils](#)

[MbParameterUtils](#)

Provides utility methods for working with Revit parameters.

[MbPipeAccessoriesUtils](#)

[MbPipeFittingsUtils](#)

Provides utility methods for working with pipe fittings in Revit.

[MbPipesUtils](#)

[MbSprinklersUtils](#)

[MbUnitUtils](#)

Provides utility methods for retrieving and converting Revit units to standard textual representations.

[MbViewUtils](#)

Provides utility methods for interacting with Revit views, including view type checking and zooming to elements.

Class MbFlexPipesUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

```
public static class MbFlexPipesUtils
```

Inheritance

[object](#) ← MbFlexPipesUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetFlexPipeInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all flex pipes.

```
public static IEnumerable<FlexPipe> GetFlexPipeInstances(IEnumerable<Element>  
selectedElements)
```

Parameters

selectedElements [IEnumerable](#)<Element>

A collection of Revit elements to filter.

Returns

[IEnumerable](#)<FlexPipe>

An [IEnumerable](#)<T> of Autodesk.Revit.DB.Plumbing.FlexPipe objects.

Remarks

This method ensures that only elements categorized as flex pipes (`BuiltInCategory.OST_FlexPipeCurves`) are returned.

Class MbParameterUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

Provides utility methods for working with Revit parameters.

```
public static class MbParameterUtils
```

Inheritance

[object](#) ← MbParameterUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetParameterValue(StorageType, Parameter)

Retrieves the string representation of a parameter's value based on its Autodesk.Revit.DB.StorageType.

```
public static string GetParameterValue(StorageType storageType, Parameter instanceParameter)
```

Parameters

storageType StorageType

The storage type of the parameter (e.g. Double, Integer, String, ElementId).

instanceParameter Parameter

The parameter from which to extract the value.

Returns

[string](#)

A string representation of the parameter's value. If the storage type is unsupported, returns "Unsupported Type".

Class MbPipeAccessoriesUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

```
public static class MbPipeAccessoriesUtils
```

Inheritance

[object](#) ← MbPipeAccessoriesUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetPipeAccessoriesInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all family instances that are categorized as "Pipe Accessories".

```
public static IEnumerable<FamilyInstance> GetPipeAccessoriesInstances(IEnumerable<Element>  
selectedElements)
```

Parameters

selectedElements [IEnumerable](#)<Element>

A collection of Revit elements to filter.

Returns

[IEnumerable](#)<FamilyInstance>

An [IEnumerable](#)<T> of FamilyInstance objects representing pipe accessories.

Remarks

This method ensures that only elements categorized as pipe accessories (BuiltInCategory.OST_PipeAccessory) are returned.

Class MbPipeFittingsUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

Provides utility methods for working with pipe fittings in Revit.

```
public static class MbPipeFittingsUtils
```

Inheritance

[object](#) ← MbPipeFittingsUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

FittingSizeIsEqual(FamilyInstance)

Checks if all connectors of a given fitting have equal sizes (radius).

```
public static MbResult<bool> FittingSizeIsEqual(FamilyInstance instance)
```

Parameters

instance FamilyInstance

The FamilyInstance of the fitting to check.

Returns

[MbResult](#)<[bool](#)>

Returns an [MbResult<T>](#) where T is [bool](#):

- If [IsSuccess](#) is [true](#), the operation completed successfully.
- If [Value](#) is [true](#), all connectors have equal sizes or there are fewer than two connectors.
- If [Value](#) is [false](#), connectors have different sizes.
- If [IsSuccess](#) is [false](#), an error occurred, and [ErrorMessage](#) provides details.

GetAngleBetweenLargestRadiusConnectors(FamilyInstance)

Calculates the angle between the two connectors with the largest radius in the given FamilyInstance.

```
public static MbResult<double> GetAngleBetweenLargestRadiusConnectors(FamilyInstance instance)
```

Parameters

instance FamilyInstance

The FamilyInstance containing connectors to analyze.

Returns

[MbResult](#) <[double](#)>

Returns an [MbResult<T>](#) where T is [double](#):

- If [IsSuccess](#) is [true](#), the operation completed successfully.
- If [Value](#) is a valid angle, it represents the computed angle between the two connectors with the largest radius.
- If [IsSuccess](#) is [false](#), an error occurred, and [ErrorMessage](#) provides details.

GetAngleBetweenLargestRadiusConnectors(List<Connector>)

Calculates the angle between the two connectors with the largest radius in the given list of connectors.

```
public static MbResult<double> GetAngleBetweenLargestRadiusConnectors(List<Connector> connectors)
```

Parameters

connectors [List](#)<Connector>

A list of connectors to analyze.

Returns

[MbResult](#) <[double](#)>

Returns an [MbResult<T>](#) where T is [double](#):

- If [IsSuccess](#) is [true](#), the operation completed successfully.

- If `Value` is a valid angle, it represents the computed angle between the two connectors with the largest radius.
- If `IsSuccess` is `false`, an error occurred, and `ErrorMessage` provides details.

GetElbowsFamilyInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all pipe fitting family instances that are categorized as "Elbow" fittings.

```
public static IEnumerable<FamilyInstance> GetElbowsFamilyInstances(IEnumerable<Element>
selectedElements)
```

Parameters

`selectedElements` [IEnumerable](#)<Element>

A collection of Revit elements to filter.

Returns

[IEnumerable](#)<FamilyInstance>

An [IEnumerable](#)<T> of FamilyInstance objects representing elbow fittings.

Remarks

This method ensures that only elements categorized as pipe fittings (`BuiltInCategory.OST_PipeFitting`) and specifically of type `PartType.Elbow` are returned.

GetOrderedConnectorSizesInInch(Element)

Retrieves a sorted list of connector sizes (diameters) in inches for a given Element that is an Autodesk.Revit.DB.MEPCurve.

```
public static MbResult<List<double>> GetOrderedConnectorSizesInInch(Element element)
```

Parameters

`element` Element

The Element representing an Autodesk.Revit.DB.MEPCurve.

Returns

[MbResult](#) <List<double>>

Returns an [MbResult<T>](#) where T is List<double>:

- If `IsSuccess` is `true`, the operation completed successfully.
- The list contains the diameters of all connectors in inches, sorted in ascending order.
- If `IsSuccess` is `false`, an error occurred, and `ErrorMessage` provides details.

GetOrderedConnectorSizesInInch(FamilyInstance)

Retrieves a sorted list of connector sizes (diameters) for a given fitting.

```
public static MbResult<List<double>> GetOrderedConnectorSizesInInch(FamilyInstance instance)
```

Parameters

`instance` FamilyInstance

The Autodesk.Revit.DB.FamilyInstance representing the fitting.

Returns

[MbResult](#) <List<double>>

An [MbResult<T>](#) where T is List<T>:

- If `IsSuccess` is `true`, the operation completed successfully.
- The list contains the diameters of all connectors in ascending order.
- If `IsSuccess` is `false`, an error occurred and `ErrorMessage` provides details.

GetOtherFittingWhichIsNotElbowsOrTeesOrOutletsFamilyInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all pipe fitting family instances that are not categorized as "Tee", "Elbow", or "Outlets" fittings.

```
public static IEnumerable<FamilyInstance>
GetOtherFittingWhichIsNotElbowsOrTeesOrOutletsFamilyInstances(IEnumerable<Element>
selectedElements)
```

Parameters

selectedElements [IEnumerable<Element>](#)

A collection of Revit elements to filter.

Returns

[IEnumerable<FamilyInstance>](#)

An [IEnumerable<T>](#) of FamilyInstance objects representing fittings that are not tee, elbow, or outlet fittings.

Remarks

This method ensures that only elements categorized as pipe fittings (BuiltInCategory.OST_PipeFitting) and excluding types PartType.Tee, PartType.Elbow, or PartType.SpudAdjustable are returned.

GetOutletsFamilyInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all pipe fitting family instances that are categorized as "Outlets" (Spud Adjustable) fittings.

```
public static IEnumerable<FamilyInstance> GetOutletsFamilyInstances(IEnumerable<Element> selectedElements)
```

Parameters

selectedElements [IEnumerable<Element>](#)

A collection of Revit elements to filter.

Returns

[IEnumerable<FamilyInstance>](#)

An [IEnumerable<T>](#) of FamilyInstance objects representing outlet fittings.

Remarks

This method ensures that only elements categorized as pipe fittings (BuiltInCategory.OST_PipeFitting) and specifically of type PartType.SpudAdjustable (representing outlets) are returned.

GetTeeFamilyInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all pipe fitting family instances that are categorized as "Tee" fittings.

```
public static IEnumerable<FamilyInstance> GetTeeFamilyInstances(IEnumerable<Element> selectedElements)
```

Parameters

selectedElements [IEnumerable](#)<Element>

A collection of Revit elements to filter.

Returns

[IEnumerable](#)<FamilyInstance>

An [IEnumerable](#)<T> of FamilyInstance objects representing tee fittings.

Remarks

This method ensures that only elements categorized as pipe fittings (BuiltInCategory.OST_PipeFitting) and specifically of type PartType.Tee are returned.

Class MbPipesUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

```
public static class MbPipesUtils
```

Inheritance

[object](#) ← MbPipesUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetPipeInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all rigid pipes.

```
public static IEnumerable<Pipe> GetPipeInstances(IEnumerable<Element> selectedElements)
```

Parameters

selectedElements [IEnumerable](#)<Element>

A collection of Revit elements to filter.

Returns

[IEnumerable](#)<Pipe>

An [IEnumerable](#)<T> of Autodesk.Revit.DB.Plumbing.Pipe objects.

Remarks

This method ensures that only elements categorized as pipes (BuiltInCategory.OST_PipeCurves) are returned.

Class MbSprinklersUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

```
public static class MbSprinklersUtils
```

Inheritance

[object](#) ← MbSprinklersUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetSprinklerInstances(IEnumerable<Element>)

Filters the provided collection of Revit elements and retrieves all family instances that are categorized as "Sprinklers".

```
public static IEnumerable<FamilyInstance> GetSprinklerInstances(IEnumerable<Element>  
selectedElements)
```

Parameters

selectedElements [IEnumerable](#)<Element>

A collection of Revit elements to filter.

Returns

[IEnumerable](#)<FamilyInstance>

An [IEnumerable](#)<T> of FamilyInstance objects representing sprinklers.

Remarks

This method ensures that only elements categorized as sprinklers (BuiltInCategory.OST_Sprinklers) are returned.

Class MbUnitUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

Provides utility methods for retrieving and converting Revit units to standard textual representations.

```
public static class MbUnitUtils
```

Inheritance

[object](#) ← MbUnitUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetLengthUnitSymbol()

Retrieves the unit symbol used for length in the active Revit document.

```
public static string GetLengthUnitSymbol()
```

Returns

[string](#)

A string representing the standardized symbol of the length unit (e.g., "mm", "ft", "in", etc.). If the unit type cannot be identified, returns "Unknown".

GetStandardUnitSymbol(object)

Maps Revit unit types to standardized short symbols.

```
public static string GetStandardUnitSymbol(object unitTypeId)
```

Parameters

unitTypeId [object ↗](#)

The unit type identifier, either a ForgeTypeId or DisplayUnitType, depending on Revit version.

Returns

[string ↗](#)

A short string symbol representing the unit (e.g., "mm", "cm", "ft-in"). Returns a user-readable label from Revit's Autodesk.Revit.DB.LabelUtils as a fallback. Returns "Unknown" if mapping cannot be resolved.

Class MbViewUtils

Namespace: [MBF.Revit.Data.Utils](#)

Assembly: MBF.Revit.Data.dll

Provides utility methods for interacting with Revit views, including view type checking and zooming to elements.

```
public class MbViewUtils
```

Inheritance

[object](#) ← MbViewUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

MbViewUtils()

```
public MbViewUtils()
```

Methods

IsGraphicalView(View)

Determines if a given view is a graphical view (e.g., plan, section, 3D).

```
public static bool IsGraphicalView(View view)
```

Parameters

view View

The Autodesk.Revit.DB.View to check.

Returns

bool ↗

true if the view is a graphical type (e.g., FloorPlan, 3D, Section); otherwise, **false**.

ZoomToElement(Element)

Zooms into a specified Element in the currently active view. Displays a message if the view is not graphical or the bounding box is invalid.

```
public static void ZoomToElement(Element element)
```

Parameters

element Element

The Revit element to zoom to.

ZoomToElement(FamilyInstance)

Zooms into a specified FamilyInstance element in the currently active view. Displays a message if the view is not graphical or the bounding box is invalid.

```
public static void ZoomToElement(FamilyInstance instnace)
```

Parameters

instnace FamilyInstance

The family instance to zoom to.

Namespace MBFWpfToolkit

Classes

[MbWindow](#)

Represents a custom window with additional properties and functionalities.

Class MbWindow

Namespace: [MBFWpfToolkit](#)

Assembly: MBFWpfToolkit.dll

Represents a custom window with additional properties and functionalities.

```
public class MbWindow : Window
```

Inheritance

[object](#) ← MbWindow

Derived

[HelpWizard](#), [MbMessageBox](#)

Constructors

MbWindow()

Initializes a new instance of the [MbWindow](#) class. Subscribes to [Loaded](#) and Window.Closed events to handle resource initialization and cleanup.

```
public MbWindow()
```

Fields

IsThemeToggleVisibleProperty

Identifies the [IsThemeToggleVisible](#) dependency property.

```
public static readonly DependencyProperty IsThemeToggleVisibleProperty
```

Field Value

[DependencyProperty](#)

PluginDescriptionProperty

Identifies the PluginDescription dependency property.

```
public static readonly DependencyProperty PluginDescriptionProperty
```

Field Value

[DependencyProperty](#)

PluginNameProperty

Identifies the PluginName dependency property.

```
public static readonly DependencyProperty PluginNameProperty
```

Field Value

[DependencyProperty](#)

PluginVersionProperty

Identifies the PluginVersion dependency property.

```
public static readonly DependencyProperty PluginVersionProperty
```

Field Value

[DependencyProperty](#)

PrimaryBrushProperty

Identifies the PrimaryBrush dependency property.

```
public static readonly DependencyProperty PrimaryBrushProperty
```

Field Value

[DependencyProperty](#)

ShowLanguagesComboBoxProperty

Identifies the ShowLanguagesComboBox dependency property.

```
public static readonly DependencyProperty ShowLanguagesComboBoxProperty
```

Field Value

[DependencyProperty](#)

ShowLogoProperty

Identifies the [ShowLogo](#) dependency property.

```
public static readonly DependencyProperty ShowLogoProperty
```

Field Value

[DependencyProperty](#)

ShowPluginNameProperty

Identifies the [ShowPluginName](#) dependency property.

```
public static readonly DependencyProperty ShowPluginNameProperty
```

Field Value

[DependencyProperty](#)

ShowPluginVersionProperty

Identifies the [ShowPluginVersion](#) dependency property.

```
public static readonly DependencyProperty ShowPluginVersionProperty
```

Field Value

[DependencyProperty](#)

Properties

IsThemeToggleVisible

Gets or sets a value indicating whether the theme toggle button (light/dark mode switch) is visible in the window's title bar.

```
public bool IsThemeToggleVisible { get; set; }
```

Property Value

[bool](#)

MainResources

Gets or sets the main shared resource dictionary used across all [MbWindow](#) instances. This allows consistent styling and resource reuse throughout the application.

```
public static ResourceDictionary? MainResources { get; set; }
```

Property Value

[ResourceDictionary](#)

PluginDescription

Gets or sets the description of the plugin.

```
public string PluginDescription { get; set; }
```

Property Value

[string](#)

PluginName

Gets or sets the name of the plugin.

```
public string PluginName { get; set; }
```

Property Value

[string](#) ↗

PluginVersion

Gets or sets the version of the plugin.

```
public string PluginVersion { get; set; }
```

Property Value

[string](#) ↗

PrimaryBrush

Gets or sets the primary brush as a Color.

```
public Color PrimaryBrush { get; set; }
```

Property Value

[Color](#) ↗

ShowLanguagesComboBox

Gets or sets a value indicating whether to show the ComboBox for languages.

```
public bool ShowLanguagesComboBox { get; set; }
```

Property Value

[bool](#) ↗

ShowLogo

Gets or sets a value indicating whether the logo should be displayed in the window's header.

```
public bool ShowLogo { get; set; }
```

Property Value

[bool](#)

ShowPluginName

Gets or sets a value indicating whether the plugin name should be displayed in the window's header.

```
public bool ShowPluginName { get; set; }
```

Property Value

[bool](#)

ShowPluginVersion

Gets or sets a value indicating whether the plugin version should be displayed in the window's header.

```
public bool ShowPluginVersion { get; set; }
```

Property Value

[bool](#)

Methods

GetPrimaryBrush()

Gets the primary brush color.

```
protected static Color GetPrimaryBrush()
```

Returns

[Color](#) ↗

The primary brush color.

InitializeWindow()

Performs static initialization for the [MbWindow](#). Applies the primary brush color, sets window properties, configures non-client UI content, and ensures shared resources are loaded into [MainResources](#).

```
protected void InitializeWindow()
```

ShowSprite()

Displays the [MicroBimSprite](#) overlay window (e.g., a floating mascot or animation). Stores the instance internally and calls its [Show\(\)](#) method to render it on screen.

```
public void ShowSprite()
```

Namespace MBFWpfToolkit.AttachedProperties

Classes

[ComboBoxSearchBehavior](#)

Provides an attached behavior to enable live search filtering on a [ComboBox](#).

[HelpAssistant](#)

Provides attached properties to define step-based help or onboarding instructions for UI elements. Elements can be dynamically registered and retrieved in a specific order based on their step number.

[LocalizationHelper](#)

Provides localization support for WPF controls using attached properties. When [LangKeyProperty](#) is set on a control, the corresponding localized value will be applied automatically.

Class ComboBoxSearchBehavior

Namespace: [MBFWpfToolkit.AttachedProperties](#)

Assembly: MBFWpfToolkit.dll

Provides an attached behavior to enable live search filtering on a [ComboBox](#).

```
public static class ComboBoxSearchBehavior
```

Inheritance

[object](#) ← ComboBoxSearchBehavior

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Fields

IsSearchEnabledProperty

Identifies the IsSearchEnabled attached property. When set to true, enables live search/filtering within the ComboBox.

```
public static readonly DependencyProperty IsSearchEnabledProperty
```

Field Value

[DependencyProperty](#)

Methods

GetIsSearchEnabled(DependencyObject)

Gets the value of the IsSearchEnabled attached property.

```
public static bool GetIsSearchEnabled(DependencyObject obj)
```

Parameters

obj [DependencyObject](#)

Returns

[bool](#)

GetOriginalItemsSource(DependencyObject)

Gets the original unfiltered [IEnumerable](#) item source.

```
public static IEnumerable GetOriginalItemsSource(DependencyObject obj)
```

Parameters

obj [DependencyObject](#)

Returns

[IEnumerable](#)

SetIsSearchEnabled(DependencyObject, bool)

Sets the value of the IsSearchEnabled attached property.

```
public static void SetIsSearchEnabled(DependencyObject obj, bool value)
```

Parameters

obj [DependencyObject](#)

value [bool](#)

Class HelpAssistant

Namespace: [MBFWpfToolkit.AttachedProperties](#)

Assembly: MBFWpfToolkit.dll

Provides attached properties to define step-based help or onboarding instructions for UI elements. Elements can be dynamically registered and retrieved in a specific order based on their step number.

```
public class HelpAssistant
```

Inheritance

[object](#) ← HelpAssistant

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

HelpAssistant()

```
public HelpAssistant()
```

Fields

AutoRegisterProperty

Identifies the AutoRegister attached property. This property is used only to trigger element registration dynamically.

```
public static readonly DependencyProperty AutoRegisterProperty
```

Field Value

[DependencyProperty](#)

StepNumberProperty

Identifies the StepNumber attached property. Represents the sequence order of the help step.

```
public static readonly DependencyProperty StepNumberProperty
```

Field Value

[DependencyProperty](#)

StepTextProperty

Identifies the StepText attached property. Describes the instructional text for the help step.

```
public static readonly DependencyProperty StepTextProperty
```

Field Value

[DependencyProperty](#)

Methods

GetAutoRegister(DependencyObject)

Gets the AutoRegister value of the element.

```
public static bool GetAutoRegister(DependencyObject obj)
```

Parameters

obj [DependencyObject](#)

Returns

[bool](#)

GetOrderedSteps()

Retrieves all registered UI elements with valid step numbers, sorted in ascending order.

```
public static List<FrameworkElement> GetOrderedSteps()
```

Returns

[List](#) <[FrameworkElement](#)>

A sorted list of registered [FrameworkElement](#)s for the help assistant.

GetStepNumber(DependencyObject)

Gets the step number of the element.

```
public static int GetStepNumber(DependencyObject obj)
```

Parameters

obj [DependencyObject](#)

Returns

[int](#)

GetStepText(DependencyObject)

Gets the step text of the element.

```
public static string GetStepText(DependencyObject obj)
```

Parameters

obj [DependencyObject](#)

Returns

[string](#)

SetAutoRegister(DependencyObject, bool)

Sets the AutoRegister value of the element.

```
public static void SetAutoRegister(DependencyObject obj, bool value)
```

Parameters

obj [DependencyObject](#)

value [bool](#)

SetStepNumber(DependencyObject, int)

Sets the step number of the element.

```
public static void SetStepNumber(DependencyObject obj, int value)
```

Parameters

obj [DependencyObject](#)

value [int](#)

SetStepText(DependencyObject, string)

Sets the step text of the element.

```
public static void SetStepText(DependencyObject obj, string value)
```

Parameters

obj [DependencyObject](#)

value [string](#)

Class LocalizationHelper

Namespace: [MBFWpfToolkit.AttachedProperties](#)

Assembly: MBFWpfToolkit.dll

Provides localization support for WPF controls using attached properties. When [LangKeyProperty](#) is set on a control, the corresponding localized value will be applied automatically.

```
public static class LocalizationHelper
```

Inheritance

[object](#) ← LocalizationHelper

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Fields

LangKeyProperty

Identifies the [LangKey](#) attached property. This property is used to bind a localization key to a control.

```
public static readonly DependencyProperty LangKeyProperty
```

Field Value

[DependencyProperty](#)

Methods

GetLangKey(DependencyObject)

Gets the value of the [LangKey](#) attached property.

```
public static string GetLangKey(DependencyObject obj)
```

Parameters

obj [DependencyObject](#) ↗

Returns

[string](#) ↗

SetLangKey(DependencyObject, string)

Sets the value of the [LangKey](#) attached property.

```
public static void SetLangKey(DependencyObject obj, string value)
```

Parameters

obj [DependencyObject](#) ↗

value [string](#) ↗

Namespace MBFWpfToolkit.Constants

Enums

[MbMessageIcon](#)

Defines icons that can be displayed in a custom message box. These icons represent different statuses or types of feedback for the user.

[SkinType](#)

Defines available theme skins for the application UI.

Enum MbMessageIcon

Namespace: [MBFWpfToolkit.Constants](#)

Assembly: MBFWpfToolkit.dll

Defines icons that can be displayed in a custom message box. These icons represent different statuses or types of feedback for the user.

```
public enum MbMessageIcon
```

Fields

Error = 16

A white X in a circle with a red background, indicating an error or failure.

Information = 64

An exclamation point in a triangle with a yellow background, providing informational feedback.

New = 512

A trash bin or cross symbol, indicating the creation of a new item.

None = 0

No icon is displayed.

Question = 48

A question mark in a circle, prompting the user for confirmation or input.

Remove = 1024

A trash bin or cross symbol, indicating the removal or deletion of an item.

Sound = 32

A bold white X in a circle with a darker red background, indicating a critical error.

Success = 256

A lowercase letter 'i' in a circle with a green background, indicating success or completion.

Warning = 128

An exclamation point in a triangle with an orange background, warning about a potential issue.

Enum SkinType

Namespace: [MBFWpfToolkit.Constants](#)

Assembly: MBFWpfToolkit.dll

Defines available theme skins for the application UI.

```
public enum SkinType
```

Fields

Dark = 1

A dark theme with a darker background and lighter foreground elements.

Default = 0

The default (light or system-defined) application theme.

Violet = 2

A violet-colored theme for a more vibrant visual experience.

Namespace MBFWpfToolkit.Controls

Classes

[MbMessageBox](#)

A custom message box window that supports HandyControl theming, icon display, and multiple button configurations.

[MicroBimSprite](#)

Represents the MicroBIM Sprite window used for displaying custom interactive UI elements.

Class MbMessageBox

Namespace: [MBFWpfToolkit.Controls](#)

Assembly: MBFWpfToolkit.dll

A custom message box window that supports HandyControl theming, icon display, and multiple button configurations.

```
public class MbMessageBox : MbWindow
```

Inheritance

[object](#) ← [MbWindow](#) ← MbMessageBox

Inherited Members

[MbWindow.IsThemeToggleVisibleProperty](#), [MbWindow.ShowLanguagesComboBoxProperty](#),
[MbWindow.PluginNameProperty](#), [MbWindow.PluginDescriptionProperty](#),
[MbWindow.PluginVersionProperty](#), [MbWindow.PrimaryBrushProperty](#), [MbWindow.ShowLogoProperty](#),
[MbWindow.ShowPluginNameProperty](#), [MbWindow.ShowPluginVersionProperty](#),
[MbWindow.InitializeWindow\(\)](#), [MbWindow.ShowSprite\(\)](#), [MbWindow.GetPrimaryBrush\(\)](#),
[MbWindow.IsThemeToggleVisible](#), [MbWindow.ShowLanguagesComboBox](#), [MbWindow.PluginName](#),
[MbWindow.PluginDescription](#), [MbWindow.PluginVersion](#), [MbWindow.PrimaryBrush](#),
[MbWindow.ShowLogo](#), [MbWindow.ShowPluginName](#), [MbWindow.ShowPluginVersion](#),
[MbWindow.MainResources](#)

Methods

Show(string, MessageBoxButton, MbMessageIcon)

Displays the message box with the specified message and button configuration.

```
public static MessageBoxResult Show(string message, MessageBoxButton button =  
MessageBoxButton.OK, MbMessageIcon icon = MbMessageIcon.None)
```

Parameters

message [string](#)

The message to display.

button [MessageBoxButton](#)

The button configuration.

icon [MbMessageIcon](#)

The icon to display.

Returns

[MessageBoxResult](#)

The result of the button clicked.

Class MicroBimSprite

Namespace: [MBFWpfToolkit.Controls](#)

Assembly: MBFWpfToolkit.dll

Represents the MicroBIM Sprite window used for displaying custom interactive UI elements.

```
public class MicroBimSprite : Window, IComponentConnector
```

Inheritance

[object](#) ← MicroBimSprite

Implements

[IComponentConnector](#)

Remarks

This window is styled using HandyControl and can be used to provide compact, reusable, or themed dialogs/popups.

Constructors

MicroBimSprite()

Initializes a new instance of the [MicroBimSprite](#) window. Loads the associated XAML and prepares the window for display.

```
public MicroBimSprite()
```

Methods

InitializeComponent()

InitializeComponent

```
public void InitializeComponent()
```

Namespace MBFWpfToolkit.Controls.Help

Classes

[HelpWizard](#)

Represents an interactive in-app help wizard that guides users through UI elements step-by-step.

Class HelpWizard

Namespace: [MBFWpfToolkit.Controls.Help](#)

Assembly: MBFWpfToolkit.dll

Represents an interactive in-app help wizard that guides users through UI elements step-by-step.

```
public class HelpWizard : MbWindow, IComponentConnector
```

Inheritance

[object](#) ← [MbWindow](#) ← HelpWizard

Implements

[IComponentConnector](#)

Inherited Members

[MbWindow.IsThemeToggleVisibleProperty](#), [MbWindow.ShowLanguagesComboBoxProperty](#),
[MbWindow.PluginNameProperty](#), [MbWindow.PluginDescriptionProperty](#),
[MbWindow.PluginVersionProperty](#), [MbWindow.PrimaryBrushProperty](#), [MbWindow.ShowLogoProperty](#),
[MbWindow.ShowPluginNameProperty](#), [MbWindow.ShowPluginVersionProperty](#),
[MbWindow.InitializeWindow\(\)](#), [MbWindow.ShowSprite\(\)](#), [MbWindow.GetPrimaryBrush\(\)](#),
[MbWindow.IsThemeToggleVisible](#), [MbWindow.ShowLanguagesComboBox](#), [MbWindow.PluginName](#),
[MbWindow.PluginDescription](#), [MbWindow.PluginVersion](#), [MbWindow.PrimaryBrush](#),
[MbWindow.ShowLogo](#), [MbWindow.ShowPluginName](#), [MbWindow.ShowPluginVersion](#),
[MbWindow.MainResources](#)

Constructors

HelpWizard(MbWindow)

Initializes a new instance of the [HelpWizard](#) class.

```
public HelpWizard(MbWindow mainWindow)
```

Parameters

mainWindow [MbWindow](#)

The main application window hosting the UI elements to be highlighted in the help wizard.

Properties

CurrentStep

Gets or sets the index of the currently active help step.

```
public int CurrentStep { get; set; }
```

Property Value

[int](#)

Steps

Gets or sets the list of all help steps.

```
public List<HelpStep> Steps { get; set; }
```

Property Value

[List](#) <[HelpStep](#)>

Methods

InitializeComponent()

InitializeComponent

```
public void InitializeComponent()
```

Namespace MBFWpfToolkit.Convertisers

Classes

[BooleanToStringConverter](#)

Converts a [bool](#) value to a [string](#) based on a semicolon-delimited parameter string.

[BooleanToVisibilityWithInverseConverter](#)

Converts a [bool](#) value to a [Visibility](#) value. Supports optional inversion using a converter parameter.

[EnumDisplayNameConverter](#)

A value converter for converting between enum values and their display names specified by the [DisplayAttribute](#).

[ValidationMultiConverter](#)

A multi-value converter that validates a group of input values (typically bound from multiple [TextBox](#) elements). It checks for empty input and validation errors to determine whether a button (or any control) should be enabled.

Class Boolean2StringConverter

Namespace: [MBFWpfToolkit.Converters](#)

Assembly: MBFWpfToolkit.dll

Converts a [bool](#) value to a [string](#) based on a semicolon-delimited parameter string.

```
public class Boolean2StringConverter : IValueConverter
```

Inheritance

[object](#) ← Boolean2StringConverter

Implements

[IValueConverter](#)

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Remarks

Used to convert a boolean to two possible string values (e.g., "Off;On") for UI display.

Constructors

Boolean2StringConverter()

```
public Boolean2StringConverter()
```

Methods

Convert(object, Type, object, CultureInfo)

Converts a boolean value to a string.

```
public object Convert(object value, Type targetType, object parameter, CultureInfo culture)
```

Parameters

value [object](#)

The boolean value to convert.

targetType [Type](#)

The target type (should be [string](#)).

parameter [object](#)

A semicolon-separated string representing the two output values (e.g., "FalseValue;TrueValue").

culture [CultureInfo](#)

The current culture (not used).

Returns

[object](#)

Returns the second string (after semicolon) if **value** is **true**, or the first string if **false**. Returns an empty string if input is invalid.

ConvertBack(object, Type, object, CultureInfo)

Not implemented. Conversion back is not supported.

```
public object ConvertBack(object value, Type targetType, object parameter,  
CultureInfo culture)
```

Parameters

value [object](#)

targetType [Type](#)

parameter [object](#)

culture [CultureInfo](#)

Returns

[object](#)

[DoNothing](#)

Class BooleanToVisibilityWithInverseConverter

Namespace: [MBFWpfToolkit.Converters](#)

Assembly: MBFWpfToolkit.dll

Converts a [bool](#) value to a [Visibility](#) value. Supports optional inversion using a converter parameter.

```
public class BooleanToVisibilityWithInverseConverter : IValueConverter
```

Inheritance

[object](#) ← BooleanToVisibilityWithInverseConverter

Implements

[IValueConverter](#)

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Remarks

If the parameter is set to "Inverse" (case-insensitive), the visibility result will be inverted. Useful for showing or hiding UI elements based on boolean flags with optional inversion.

Constructors

BooleanToVisibilityWithInverseConverter()

```
public BooleanToVisibilityWithInverseConverter()
```

Methods

Convert(object, Type, object, CultureInfo)

Converts a [bool](#) to [Visibility](#).

```
public object Convert(object value, Type targetType, object parameter, CultureInfo culture)
```

Parameters

value [object](#)

The boolean value to convert.

targetType [Type](#)

The target type (expected to be [Visibility](#)).

parameter [object](#)

Optional parameter. If set to "Inverse", the result will be inverted.

culture [CultureInfo](#)

Culture info (not used).

Returns

[object](#)

Returns [Visible](#) if **value** is true, or [Collapsed](#) if false. If "Inverse" is passed as a parameter, the logic is flipped.

ConvertBack(object, Type, object, CultureInfo)

Converts a [Visibility](#) value back to [bool](#).

```
public object ConvertBack(object value, Type targetType, object parameter,  
CultureInfo culture)
```

Parameters

value [object](#)

The visibility value to convert.

targetType [Type](#)

The target type (expected to be [bool](#)).

parameter [object](#)

Optional parameter (not used in ConvertBack).

culture [CultureInfo](#)

Culture info (not used).

Returns

[object](#)

Returns **true** if **value** is [Visible](#), otherwise **false**.

Class EnumDisplayNameConverter

Namespace: [MBFWpfToolkit.Converters](#)

Assembly: MBFWpfToolkit.dll

A value converter for converting between enum values and their display names specified by the [Display Attribute](#).

```
public class EnumDisplayNameConverter : IValueConverter
```

Inheritance

[object](#) ← EnumDisplayNameConverter

Implements

[IValueConverter](#)

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

EnumDisplayNameConverter()

```
public EnumDisplayNameConverter()
```

Methods

Convert(object, Type, object, CultureInfo)

Converts an [Enum](#) value to its display name specified in the [DisplayAttribute](#).

```
public object Convert(object value, Type targetType, object parameter, CultureInfo culture)
```

Parameters

value [object](#)

The enum value to be converted.

targetType [Type](#)

The target type of the binding (not used).

parameter [object](#)

An optional parameter for the converter (not used).

culture [CultureInfo](#)

The culture to be used in the converter (not used).

Returns

[object](#)

The display name of the enum value, or its string representation if no [DisplayAttribute](#) is found.

ConvertBack(object, Type, object, CultureInfo)

Converts a display name back to the corresponding [Enum](#) value.

```
public object ConvertBack(object value, Type targetType, object parameter,  
CultureInfo culture)
```

Parameters

value [object](#)

The display name to be converted back to the enum value.

targetType [Type](#)

The target enum type.

parameter [object](#)

An optional parameter for the converter (not used).

culture [CultureInfo](#)

The culture to be used in the converter (not used).

Returns

[object](#)

The corresponding enum value that matches the display name or field name.

Exceptions

[ArgumentException](#)

Thrown if no matching enum value is found for the display name.

Class ValidationMultiConverter

Namespace: [MBFWpfToolkit.Converters](#)

Assembly: MBFWpfToolkit.dll

A multi-value converter that validates a group of input values (typically bound from multiple [TextBox](#) elements). It checks for empty input and validation errors to determine whether a button (or any control) should be enabled.

```
public class ValidationMultiConverter : IMultiValueConverter
```

Inheritance

[object](#) ← ValidationMultiConverter

Implements

[IMultiValueConverter](#)

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Remarks

This converter expects alternating values: [Text, HasError, Text, HasError, ...]. If any Text is null/empty or any HasError is true, the result is false.

Constructors

ValidationMultiConverter()

```
public ValidationMultiConverter()
```

Methods

Convert(object[], Type, object, CultureInfo)

Validates a group of values to determine if a control (e.g., a button) should be enabled.

```
public object Convert(object[] values, Type targetType, object parameter,  
CultureInfo culture)
```

Parameters

values [object](#)[]

An array of values from multiple bindings. Alternating pattern: Text, HasError, Text, HasError...

targetType [Type](#)

The target type of the binding (usually [bool](#)).

parameter [object](#)

Optional parameter (not used).

culture [CultureInfo](#)

The culture info (not used).

Returns

[object](#)

Returns [true](#) if all inputs are non-empty and have no validation errors; otherwise [false](#).

ConvertBack(object, Type[], object, CultureInfo)

ConvertBack is not implemented. Returns [DoNothing](#).

```
public object[] ConvertBack(object value, Type[] targetTypes, object parameter,  
CultureInfo culture)
```

Parameters

value [object](#)

targetTypes [Type](#)[]

parameter [object](#)

culture [CultureInfo](#)

Returns

[object](#)[]

An array of [DoNothing](#).

Namespace MBFWpfToolkit.Extensions

Classes

[ListExtensions](#)

Provides extension methods for [List<T>](#) to support additional operations.

Class ListExtensions

Namespace: [MBFWpfToolkit.Extensions](#)

Assembly: MBFWpfToolkit.dll

Provides extension methods for [List<T>](#) to support additional operations.

```
public static class ListExtensions
```

Inheritance

[object](#) ← ListExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

Move<T>(List<T>, int, int)

Moves an item within a [List<T>](#) from one index to another.

```
public static void Move<T>(this List<T> list, int oldIndex, int newIndex)
```

Parameters

list [List](#)<T>

The list in which the item will be moved.

oldIndex [int](#)

The current index of the item.

newIndex [int](#)

The target index to move the item to.

Type Parameters

T

The type of elements in the list.

Remarks

If `oldIndex` and `newIndex` are equal, or if either index is out of range, the method does nothing.

Namespace MBFWpfToolkit.Helpers

Classes

[MbNotification](#)

Provides utility methods to display styled notifications using HandyControl's HandyControl.Controls.Growl system.

[MbResourceHelper](#)

Provides helper methods for retrieving theme and skin resources in a WPF application.

[PasswordHelper](#)

Provides attached properties and helper methods to enable binding for the Password property of PasswordBox controls.

Class MbNotification

Namespace: [MBFWpfToolkit.Helpers](#)

Assembly: MBFWpfToolkit.dll

Provides utility methods to display styled notifications using HandyControl's HandyControl.Controls.Growl system.

```
public static class MbNotification
```

Inheritance

[object](#) ← MbNotification

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

ShowError(string, int)

Displays an error notification with a red cross icon.

```
public static void ShowError(string message, int waitTime = 2)
```

Parameters

message [string](#)

The message to be shown in the notification.

waitTime [int](#)

The duration (in seconds) the notification remains visible. Default is 2 seconds.

ShowInfo(string, int)

Displays an informational notification with a blue info icon.

```
public static void ShowInfo(string message, int waitTime = 2)
```

Parameters

message [string](#)

The message to be shown in the notification.

waitTime [int](#)

The duration (in seconds) the notification remains visible. Default is 2 seconds.

ShowSuccess(string, int)

Displays a success notification with a green check icon.

```
public static void ShowSuccess(string message, int waitTime = 2)
```

Parameters

message [string](#)

The message to be shown in the notification.

waitTime [int](#)

The duration (in seconds) the notification remains visible. Default is 2 seconds.

Class MbResourceHelper

Namespace: [MBFWpfToolkit.Helpers](#)

Assembly: MBFWpfToolkit.dll

Provides helper methods for retrieving theme and skin resources in a WPF application.

```
public class MbResourceHelper
```

Inheritance

[object](#) ← MbResourceHelper

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

MbResourceHelper()

```
public MbResourceHelper()
```

Methods

GetResource<T>(string)

Retrieves a resource from the application's merged resource dictionaries by key.

```
public static T GetResource<T>(string key)
```

Parameters

key [string](#)

The key of the resource to retrieve.

Returns

T

The resource cast to type T if found; otherwise, the default value of T.

Type Parameters

T

The expected type of the resource.

GetSkin(SkinType)

Loads a built-in HandyControl skin resource dictionary by skin type.

```
public static ResourceDictionary GetSkin(SkinType skin)
```

Parameters

skin [SkinType](#)

The [SkinType](#) indicating which skin to load.

Returns

[ResourceDictionary](#)

The loaded [ResourceDictionary](#).

GetSkin(Assembly, string, SkinType)

Loads a skin resource dictionary from a specified assembly and path.

```
public static ResourceDictionary GetSkin(Assembly assembly, string themePath, SkinType skin)
```

Parameters

assembly [Assembly](#)

The assembly containing the skin resources.

`themePath` [string](#)

The path to the skin directory inside the assembly.

`skin` [SkinType](#)

The [SkinType](#) indicating which skin to load.

Returns

[ResourceDictionary](#)

The loaded [ResourceDictionary](#) for the specified skin.

GetStandaloneTheme()

Loads the standalone HandyControl theme resource dictionary.

```
public static ResourceDictionary GetStandaloneTheme()
```

Returns

[ResourceDictionary](#)

The loaded [ResourceDictionary](#).

GetTheme()

Retrieves the current theme resource dictionary. If not already loaded, it loads the standalone HandyControl theme.

```
public static ResourceDictionary GetTheme()
```

Returns

[ResourceDictionary](#)

The [ResourceDictionary](#) representing the current theme.

Class PasswordHelper

Namespace: [MBFWpfToolkit.Helpers](#)

Assembly: MBFWpfToolkit.dll

Provides attached properties and helper methods to enable binding for the Password property of PasswordBox controls.

```
public static class PasswordHelper
```

Inheritance

[object](#) ← PasswordHelper

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Fields

AttachProperty

Attached property to enable or disable binding functionality for PasswordBox.

```
public static readonly DependencyProperty AttachProperty
```

Field Value

[DependencyProperty](#)

PasswordProperty

Attached property to bind the password value.

```
public static readonly DependencyProperty PasswordProperty
```

Field Value

Methods

GetAttach(DependencyObject)

Gets the value of the Attach property.

```
public static bool GetAttach(DependencyObject dp)
```

Parameters

dp [DependencyObject](#)

Returns

[bool](#)

GetPassword(DependencyObject)

Gets the bound password string from the attached property.

```
public static string GetPassword(DependencyObject dp)
```

Parameters

dp [DependencyObject](#)

Returns

[string](#)

SetAttach(DependencyObject, bool)

Sets the Attach property to enable password binding on the given object.

```
public static void SetAttach(DependencyObject dp, bool value)
```

Parameters

dp [DependencyObject](#)

value [bool](#)

SetPassword(DependencyObject, string)

Sets the bound password string on the attached property.

```
public static void SetPassword(DependencyObject dp, string value)
```

Parameters

dp [DependencyObject](#)

value [string](#)

Namespace MBFWpfToolkit.MbViewModel

Classes

[MbBaseViewModel](#)

Base ViewModel class providing theme and language management functionality.

Class MbBaseViewModel

Namespace: [MBFWpfToolkit.MbViewModel](#)

Assembly: MBFWpfToolkit.dll

Base ViewModel class providing theme and language management functionality.

```
public class MbBaseViewModel : ObservableValidator
```

Inheritance

[object](#) ← MbBaseViewModel

Constructors

MbBaseViewModel()

Initializes a new instance of the [MbBaseViewModel](#) class.

```
public MbBaseViewModel()
```

Properties

Culture

Gets or sets the current culture.

```
public CultureInfo Culture { get; set; }
```

Property Value

[CultureInfo](#)

IsDark

```
public bool IsDark { get; set; }
```

Property Value

[bool](#) ↗

this[string]

Indexer to access localized values dynamically.

```
public string this[string key] { get; }
```

Parameters

key [string](#) ↗

The key of the localized value.

Property Value

[string](#) ↗

The localized value or a placeholder if not found.

MbWindow

Gets or sets the associated MbWindow.

```
public MbWindow? MbWindow { get; set; }
```

Property Value

[MbWindow](#)

OpenLinkCommand

Gets an CommunityToolkit.Mvvm.Input.IRelayCommand<> instance wrapping MBFWpfToolkit.MbView Model.MbBaseViewModel.OpenLink(System.Object).

```
public IRelayCommand<object> OpenLinkCommand { get; }
```

Property Value

IRelayCommand<[object](#)>

SelectedLanguage

Gets or sets the selected language for the application.

```
public CultureInfo SelectedLanguage { get; set; }
```

Property Value

[CultureInfo](#)

SupportedLanguages

Supported languages for the application.

```
public ObservableCollection<CultureInfo> SupportedLanguages { get; }
```

Property Value

[ObservableCollection](#)<[CultureInfo](#)>

SwitchThemeCommand

Gets an CommunityToolkit.Mvvm.Input.I RelayCommand<> instance wrapping MBFWpfToolkit.MbView Model.MbBaseViewModel.SwitchTheme(System.Windows.Controls.Primitives.ToggleButton).

```
public I RelayCommand<ToggleButton> SwitchThemeCommand { get; }
```

Property Value

IRelayCommand<[ToggleButton](#)>

Methods

GetLang(string)

Retrieves a localized string by its key.

```
public string GetLang(string key)
```

Parameters

key [string](#)

The key of the string to retrieve.

Returns

[string](#)

The localized string or a placeholder if not found.

InitializeViewModel(MbWindow)

Initializes the ViewModel with the provided window and sets default values.

```
public void InitializeViewModel(MbWindow mbWindow)
```

Parameters

mbWindow [MbWindow](#)

The window associated with this ViewModel.

SetLang(DependencyObject, DependencyProperty, string)

Binds a dependency property to a language resource key.

```
public void SetLang(DependencyObject dependencyObject, DependencyProperty dependencyProperty, string key)
```

Parameters

dependencyObject [DependencyObject](#)

The target dependency object.

dependencyProperty [DependencyProperty](#)↗

The target dependency property.

key [string](#)↗

The key of the language resource.

Namespace MBFWpfToolkit.Models

Classes

[HelpStep](#)

Represents a help step in the UI help wizard with an associated UI element, descriptive text, and order.

Class HelpStep

Namespace: [MBFWpfToolkit.Models](#)

Assembly: MBFWpfToolkit.dll

Represents a help step in the UI help wizard with an associated UI element, descriptive text, and order.

```
public class HelpStep
```

Inheritance

[object](#) ← HelpStep

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Constructors

HelpStep()

```
public HelpStep()
```

Properties

Element

Gets or sets the UI element associated with this help step.

```
public UIElement Element { get; set; }
```

Property Value

[UIElement](#)

Remarks

This UI element is used to anchor tooltips or visual guidance during the help walkthrough.

StepNumber

Gets or sets the order number of the step in the help sequence.

```
public int StepNumber { get; set; }
```

Property Value

[int](#)

StepText

Gets or sets the textual description of the step to be shown to the user.

```
public string StepText { get; set; }
```

Property Value

[string](#)

Namespace MBFWpfToolkit.Properties.Langs

Classes

[Lang](#)

A strongly-typed resource class, for looking up localized strings, etc.

Class Lang

Namespace: [MBFWpfToolkit.Properties.Langs](#)

Assembly: MBFWpfToolkit.dll

A strongly-typed resource class, for looking up localized strings, etc.

```
public class Lang
```

Inheritance

[object](#) ← Lang

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Properties

About

Looks up a localized string similar to About.

```
public static string About { get; }
```

Property Value

[string](#)

Culture

Overrides the current thread's CurrentUICulture property for all resource lookups using this strongly typed resource class.

```
public static CultureInfo Culture { get; set; }
```

Property Value

ResourceManager

Returns the cached ResourceManager instance used by this class.

```
public static ResourceManager ResourceManager { get; }
```

Property Value

[ResourceManager](#)

Namespace MBFWpfToolkit.Utils

Classes

[WindowUtils](#)

Provides utility functions for managing windows and processes in a WPF application.

Class WindowUtils

Namespace: [MBFWpfToolkit.Utils](#)

Assembly: MBFWpfToolkit.dll

Provides utility functions for managing windows and processes in a WPF application.

```
public static class WindowUtils
```

Inheritance

[object](#) ← WindowUtils

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

OpenLink(object)

Opens a link in the default web browser or associated application.

```
public static void OpenLink(object url)
```

Parameters

`url` [object](#)

The URL or file path to open. This should be a valid string representation of the resource.

Exceptions

[ArgumentNullException](#)

Thrown when the `url` is null.

[InvalidOperationException](#)

Thrown when the `url` is not a valid string.

Namespace MBFWpfToolkit.ValidationRules

Classes

[DecimalValidationRule](#)

Validation rule for decimal input with localization support.

[DoubleValidationRule](#)

Validation rule for double input with localization support.

[IntegerValidationRule](#)

Validation rule for integer input with localization support.

[StringValidationRule](#)

Validation rule for string input with localization support.

Class DecimalValidationRule

Namespace: [MBFWpfToolkit.ValidationRules](#)

Assembly: MBFWpfToolkit.dll

Validation rule for decimal input with localization support.

```
public class DecimalValidationRule : ValidationRule
```

Inheritance

[object](#) ← [ValidationRule](#) ← DecimalValidationRule

Inherited Members

[ValidationRule.Validate\(object, CultureInfo, BindingExpressionBase\)](#) ,
[ValidationRule.Validate\(object, CultureInfo, BindingGroup\)](#) , [ValidationRule.ValidationStep](#) ,
[ValidationRule.ValidatesOnTargetUpdated](#) , [object.ToString\(\)](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Constructors

DecimalValidationRule()

```
public DecimalValidationRule()
```

Properties

IsRequired

Gets or sets a value indicating whether the input is required.

```
public bool IsRequired { get; set; }
```

Property Value

[bool](#)

Maximum

Gets or sets the maximum allowable value.

```
public decimal Maximum { get; set; }
```

Property Value

[decimal](#)

Minimum

Gets or sets the minimum allowable value.

```
public decimal Minimum { get; set; }
```

Property Value

[decimal](#)

Methods

Validate(object, CultureInfo)

Validates the input value.

```
public override ValidationResult Validate(object value, CultureInfo cultureInfo)
```

Parameters

value [object](#)

The value to validate.

cultureInfo [CultureInfo](#)

The culture information.

Returns

ValidationResult

A [ValidationResult](#) indicating whether the value is valid.

Class DoubleValidationRule

Namespace: [MBFWpfToolkit.ValidationRules](#)

Assembly: MBFWpfToolkit.dll

Validation rule for double input with localization support.

```
public class DoubleValidationRule : ValidationRule
```

Inheritance

[object](#) ← [ValidationRule](#) ← DoubleValidationRule

Inherited Members

[ValidationRule.Validate\(object, CultureInfo, BindingExpressionBase\)](#) ,
[ValidationRule.Validate\(object, CultureInfo, BindingGroup\)](#) , [ValidationRule.ValidationStep](#) ,
[ValidationRule.ValidatesOnTargetUpdated](#) , [object.ToString\(\)](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Constructors

DoubleValidationRule()

```
public DoubleValidationRule()
```

Properties

IsRequired

Gets or sets a value indicating whether the input is required.

```
public bool IsRequired { get; set; }
```

Property Value

[bool](#)

Maximum

Gets or sets the maximum allowable value.

```
public double Maximum { get; set; }
```

Property Value

[double](#)

Minimum

Gets or sets the minimum allowable value.

```
public double Minimum { get; set; }
```

Property Value

[double](#)

Methods

Validate(object, CultureInfo)

Validates the input value.

```
public override ValidationResult Validate(object value, CultureInfo cultureInfo)
```

Parameters

value [object](#)

The value to validate.

cultureInfo [CultureInfo](#)

The culture information.

Returns

ValidationResult

A [ValidationResult](#) indicating whether the value is valid.

Class IntegerValidationRule

Namespace: [MBFWpfToolkit.ValidationRules](#)

Assembly: MBFWpfToolkit.dll

Validation rule for integer input with localization support.

```
public class IntegerValidationRule : ValidationRule
```

Inheritance

[object](#) ← [ValidationRule](#) ← IntegerValidationRule

Inherited Members

[ValidationRule.Validate\(object, CultureInfo, BindingExpressionBase\)](#) ,
[ValidationRule.Validate\(object, CultureInfo, BindingGroup\)](#) , [ValidationRule.ValidationStep](#) ,
[ValidationRule.ValidatesOnTargetUpdated](#) , [object.ToString\(\)](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Constructors

IntegerValidationRule()

```
public IntegerValidationRule()
```

Properties

IsRequired

Gets or sets a value indicating whether the input is required.

```
public bool IsRequired { get; set; }
```

Property Value

[bool](#)

Maximum

Gets or sets the maximum allowable value.

```
public int Maximum { get; set; }
```

Property Value

[int](#)

Minimum

Gets or sets the minimum allowable value.

```
public int Minimum { get; set; }
```

Property Value

[int](#)

Methods

Validate(object, CultureInfo)

Validates the input value.

```
public override ValidationResult Validate(object value, CultureInfo cultureInfo)
```

Parameters

value [object](#)

The value to validate.

cultureInfo [CultureInfo](#)

The culture information.

Returns

ValidationResult

A [ValidationResult](#) indicating whether the value is valid.

Class StringValidationRule

Namespace: [MBFWpfToolkit.ValidationRules](#)

Assembly: MBFWpfToolkit.dll

Validation rule for string input with localization support.

```
public class StringValidationRule : ValidationRule
```

Inheritance

[object](#) ← [ValidationRule](#) ← StringValidationRule

Inherited Members

[ValidationRule.Validate\(object, CultureInfo, BindingExpressionBase\)](#) ,
[ValidationRule.Validate\(object, CultureInfo, BindingGroup\)](#) , [ValidationRule.ValidationStep](#) ,
[ValidationRule.ValidatesOnTargetUpdated](#) , [object.ToString\(\)](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#)

Constructors

StringValidationRule()

```
public StringValidationRule()
```

Properties

IsRequired

Gets or sets a value indicating whether the input is required.

```
public bool IsRequired { get; set; }
```

Property Value

[bool](#)

MaximumLength

Gets or sets the maximum allowable length.

```
public int MaximumLength { get; set; }
```

Property Value

[int](#)

MinimumLength

Gets or sets the minimum allowable length.

```
public int MinimumLength { get; set; }
```

Property Value

[int](#)

Pattern

Gets or sets the regular expression pattern for validation.

```
public string Pattern { get; set; }
```

Property Value

[string](#)

Methods

Validate(object, CultureInfo)

Validates the input value.

```
public override ValidationResult Validate(object value, CultureInfo cultureInfo)
```

Parameters

value [object](#)

The value to validate.

cultureInfo [CultureInfo](#)

The culture information.

Returns

[ValidationResult](#)

A [ValidationResult](#) indicating whether the value is valid.

Namespace OnMethodBoundaryAspect

Compile

Classes

[MethodInfos](#)

Class MethodInfos

Namespace: [OnMethodBoundaryAspectCompile](#)

Assembly: MB.Common.dll

```
public static class MethodInfo
```

Inheritance

[object](#) ← MethodInfo

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Fields

methodInfo

A71B48C493D29E2B8313E53FD0672C4DBA5A075AF264536B3A
67D76FBCE1A69E

```
public static readonly MethodBase  
_methodInfo_A71B48C493D29E2B8313E53FD0672C4DBA5A075AF264536B3A67D76FBCE1A69E
```

Field Value

[MethodBase](#)

methodInfo

C4071C8024CEA028B080B887AE95502EE04771BA7A3F0711DA
C2B879E57DD7E6

```
public static readonly MethodBase  
_methodInfo_C4071C8024CEA028B080B887AE95502EE04771BA7A3F0711DAC2B879E57DD7E6
```

Field Value

[MethodBase](#) ↗

Namespace Revit.Extensions.Extensions

Classes

[CollectionExtensions](#)

Provides extension methods for working with collections.

[DocumentExtensions](#)

Provides extension methods for the Autodesk Revit API with the result pattern for better error handling.

[PipeExtensions](#)

Provides extension methods for Pipe elements in Revit.

[SpaceExtensions](#)

Provides extension methods for Space elements in Revit.

[ViewExtensions](#)

Provides extension methods for Revit views.

Class CollectionExtensions

Namespace: [Revit.Extensions.Extensions](#)

Assembly: Revit.Extensions.dll

Provides extension methods for working with collections.

```
public static class CollectionExtensions
```

Inheritance

[object](#) ← CollectionExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

ToObservableCollection<T>(IEnumerable<T>)

Converts an enumerable collection to an ObservableCollection.

```
public static ObservableCollection<T> ToObservableCollection<T>(this IEnumerable<T> source)
```

Parameters

[source](#) [IEnumerable](#)<T>

The source enumerable collection to convert.

Returns

[ObservableCollection](#)<T>

An ObservableCollection containing the elements from the source.

Type Parameters

T

The type of elements in the collection.

Class DocumentExtensions

Namespace: [Revit.Extensions.Extensions](#)

Assembly: Revit.Extensions.dll

Provides extension methods for the Autodesk Revit API with the result pattern for better error handling.

```
public static class DocumentExtensions
```

Inheritance

[object](#) ← DocumentExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

CreateAndPlaceColumnAtPoint(Document, XYZ, FamilySymbol, Level, Level)

Creates and places a column at a specified point in the Revit document.

```
public static MbResult<FamilyInstance> CreateAndPlaceColumnAtPoint(this Document doc, XYZ  
point, FamilySymbol columnType, Level baseLevel, Level topLevel)
```

Parameters

doc Document

The Revit document where the column will be placed.

point XYZ

The XYZ point where the column will be placed.

columnType FamilySymbol

The FamilySymbol representing the column type.

baseLevel Level

The base level of the column.

topLevel Level

The top level of the column.

Returns

[MbResult](#) <FamilyInstance>

An [MbResult<T>](#) containing:

- The created FamilyInstance if successful.
- An error message if any input is invalid or column creation fails.

GetFamilyTypesByCategoryOrderedByName(Document, BuiltInCategory)

Retrieves all family types of the specified category from the given Revit document as an ObservableCollection.

```
public static MbResult<ObservableCollection<FamilySymbol>>
GetFamilyTypesByCategoryOrderedByName(this Document doc, BuiltInCategory category)
```

Parameters

doc Document

The Revit document to search for family types.

category BuiltInCategory

The BuiltInCategory to filter family types.

Returns

[MbResult](#) <[ObservableCollection](#)> <FamilySymbol>

An [MbResult<T>](#) containing:

- An ObservableCollection of FamilySymbol objects if successful.
- An error message if the document or category is invalid.

GetLevelsOrderedByProperty<TKey>(Document, Func<Level, TKey>, bool)

Retrieves all levels from the specified Revit document as an ObservableCollection, ordered dynamically by a specified property.

```
public static MbResult<ObservableCollection<Level>> GetLevelsOrderedByProperty<TKey>(this  
Document doc, Func<Level, TKey> keySelector, bool ascending = true)
```

Parameters

doc Document

The Revit document to search for levels.

keySelector [Func](#)<Level, TKey>

A function to extract a key from a Level for ordering.

ascending [bool](#)

If true, orders levels in ascending order; otherwise, descending.

Returns

[MbResult](#)<[ObservableCollection](#)<Level>>

An [MbResult](#)<T> containing:

- An ObservableCollection of Level objects if successful.
- An error message if the document or keySelector is null.

Type Parameters

TKey

The type of the property used for ordering.

GetRebarBarTypes(Document)

Retrieves all rebar bar types from the specified Revit document as an ObservableCollection.

```
public static MbResult<ObservableCollection<RebarBarType>> GetRebarBarTypes(this
```

```
Document doc)
```

Parameters

doc Document

The Revit document to retrieve rebar bar types from.

Returns

[MbResult](#) <[ObservableCollection](#) <RebarBarType>>

An [MbResult<T>](#) containing:

- An ObservableCollection of RebarBarType objects if successful.
- An error message if the document is null.

GetRebarShapes(Document)

Retrieves all rebar shapes from the specified Revit document.

```
public static MbResult<List<RebarShape>> GetRebarShapes(this Document doc)
```

Parameters

doc Document

The Revit document to retrieve rebar shapes from.

Returns

[MbResult](#) <[List](#) <RebarShape>>

An [MbResult<T>](#) containing:

- A list of RebarShape objects if successful.
- An error message if the document is null.

SearchOrCreate3DView(Document, string, bool)

Searches for a 3D view with the specified name. If it exists, returns it. Optionally, creates a new 3D view if specified.

```
public static MbResult<View3D> SearchOrCreate3DView(this Document doc, string viewName, bool  
createView = false)
```

Parameters

doc Document

The Revit document to search or create the 3D view in.

viewName [string](#)

The name of the 3D view to search for or create.

createView [bool](#)

If [true](#), creates a new 3D view if one does not exist.

Returns

[MbResult](#)<View3D>

An [MbResult<T>](#) containing:

- The existing or newly created Autodesk.Revit.DB.View3D object if successful.
- An error message if the document is null, the view name is invalid, or creation fails.

Class PipeExtensions

Namespace: [Revit.Extensions.Extensions](#)

Assembly: Revit.Extensions.dll

Provides extension methods for Pipe elements in Revit.

```
public static class PipeExtensions
```

Inheritance

[object](#) ← PipeExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetEndPoints(Pipe)

Retrieves the endpoints of a pipe as a list of XYZ points.

```
public static MbResult<List<XYZ>> GetEndPoints(this Pipe pipe)
```

Parameters

pipe Pipe

The pipe to get the endpoints for.

Returns

[MbResult](#)<[List](#)<XYZ>>

An [MbResult<T>](#) containing the list of endpoints or an error message. Possible error messages:

- "The pipe cannot be null." - Returned if the input pipe is null.
- "The pipe does not have a valid LocationCurve." - Returned if the pipe's location is not a valid curve.

GetLineOfPipe(Pipe)

Gets the line representing the pipe's geometry.

```
public static MbResult<Line> GetLineOfPipe(this Pipe pipe)
```

Parameters

pipe Pipe

The pipe to retrieve the line from.

Returns

[MbResult](#)<Line>

An [MbResult](#)<T> containing the line or an error message. Possible error messages:

- "The pipe cannot be null." - Returned if the input pipe is null.
- "The pipe does not have a valid LocationCurve." - Returned if the pipe's location is not a valid curve.

GetNearestEndPoints(Pipe, XYZ)

Finds the nearest and farthest endpoints of a pipe relative to a specified point.

```
public static MbResult<List<XYZ>> GetNearestEndPoints(this Pipe pipe, XYZ point)
```

Parameters

pipe Pipe

The pipe to find endpoints for.

point XYZ

The reference point for distance comparison.

Returns

[MbResult](#)<[List](#)<XYZ>>

An [MbResult<T>](#) containing a list of nearest and farthest endpoints or an error message. Possible error messages:

- "The pipe cannot be null." - Returned if the input pipe is null.
- "The reference point cannot be null." - Returned if the input point is null.
- "The pipe does not have a valid LocationCurve." - Returned if the pipe's location is not a valid curve.

GetNearestOneSideConnector(Pipe, XYZ)

Finds the nearest one-side connector on a pipe to a specified point.

```
public static MbResult<Connector> GetNearestOneSideConnector(this Pipe pipe, XYZ point)
```

Parameters

pipe Pipe

The pipe to search for connectors.

point XYZ

The point to measure the distance from.

Returns

[MbResult<Connector>](#)

An [MbResult<T>](#) containing the nearest connector or an error message. Possible error messages:

- "The pipe cannot be null." - Returned if the input pipe is null.
- "The reference point cannot be null." - Returned if the input point is null.
- "No connectors found on the pipe." - Returned if the pipe does not have any valid connectors.
- "An error occurred while finding the nearest connector: {ErrorMessage}" - Returned if an unexpected exception occurs.

GetPipeCurve(Pipe)

Gets the curve representing the pipe's geometry.

```
public static MbResult<Curve> GetPipeCurve(this Pipe pipe)
```

Parameters

pipe Pipe

The pipe to retrieve the curve from.

Returns

[MbResult](#) <Curve>

An [MbResult<T>](#) containing the curve or an error message. Possible error messages:

- "The pipe cannot be null." - Returned if the input pipe is null.
- "The pipe does not have a valid LocationCurve." - Returned if the pipe's location is not a valid curve.

GetPipingSystemType(Pipe, Document)

Gets the piping system type associated with a pipe.

```
public static MbResult<PipingSystemType> GetPipingSystemType(this Pipe pipe,  
Document document)
```

Parameters

pipe Pipe

The pipe to retrieve the piping system type for.

document Document

The Revit document containing the pipe.

Returns

[MbResult](#) <PipingSystemType>

An [MbResult<T>](#) containing the piping system type or an error message. Possible error messages:

- "The pipe cannot be null." - Returned if the input pipe is null.
- "The document cannot be null." - Returned if the input document is null.
- "The pipe is not associated with a piping system." - Returned if the pipe is not part of a piping system.

- "Failed to retrieve the piping system type." - Returned if the piping system type cannot be retrieved.
- "An error occurred while retrieving the piping system type: {ErrorMessage}" - Returned if an unexpected exception occurs.

Class SpaceExtensions

Namespace: [Revit.Extensions.Extensions](#)

Assembly: Revit.Extensions.dll

Provides extension methods for Space elements in Revit.

```
public static class SpaceExtensions
```

Inheritance

[object](#) ← SpaceExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetBoundarySegment(Space)

Retrieves the boundary segments of a space as a list of curves.

```
public static MbResult<List<Curve>> GetBoundarySegment(this Space space)
```

Parameters

space Space

The space to get the boundary segments for.

Returns

[MbResult](#)<[List](#)<Curve>>

An [MbResult<T>](#) containing:

- A list of boundary curves if the operation is successful.
- An error message if the operation fails. Possible error messages include:

Validate(Space)

Validates the space object to ensure it is valid and has a positive area.

```
public static MbResult<bool> Validate(this Space space)
```

Parameters

space Space

The space to validate.

Returns

[MbResult](#) <bool>

An [MbResult<T>](#) containing:

- true if the space is valid.
- An error message if the validation fails. Possible error messages include:

Class ViewExtensions

Namespace: [Revit.Extensions.Extensions](#)

Assembly: Revit.Extensions.dll

Provides extension methods for Revit views.

```
public static class ViewExtensions
```

Inheritance

[object](#) ← ViewExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetVisibleElements(View, Document)

Retrieves all elements that are visible in the specified Revit view.

```
public static MbResult<List<Element>> GetVisibleElements(this View view, Document document)
```

Parameters

view View

The Revit view to search for visible elements.

document Document

The Revit document containing the view.

Returns

[MbResult](#)<[List](#)<Element>>

An [MbResult<T>](#) object containing:

- A list of elements visible in the specified view if the operation is successful.
- A failure result with the following error messages for invalid parameters:
 - "The view parameter cannot be null."
 - "The document parameter cannot be null."

Namespace Revit.Extensions.Selections

Classes

[SelectionExtensions](#)

Provides extension methods for retrieving selected elements of specific types from a UIDocument.

Class SelectionExtensions

Namespace: [Revit.Extensions.Selections](#)

Assembly: Revit.Extensions.dll

Provides extension methods for retrieving selected elements of specific types from a UIDocument.

```
public static class SelectionExtensions
```

Inheritance

[object](#) ← SelectionExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Methods

GetSelectedElements<T>(UIDocument)

Gets the selected elements of the specified type from the document.

```
public static List<T> GetSelectedElements<T>(this UIDocument uiDocument) where T : Element
```

Parameters

uiDocument UIDocument

The UIDocument to get the selected elements from.

Returns

[List](#)<T>

A list of the selected elements of the specified type.

Type Parameters

T

The type of elements to get.

GetSelectedFamilyInstances(UIDocument)

Gets the selected family instances from the document.

```
public static List<FamilyInstance> GetSelectedFamilyInstances(this UIDocument uiDocument)
```

Parameters

uiDocument UIDocument

The UI document to get the selected family instances from.

Returns

[List](#) <FamilyInstance>

A list of the selected family instances.

GetSelectedPipes(UIDocument)

Gets the selected pipes from the document.

```
public static List<Pipe> GetSelectedPipes(this UIDocument uiDocument)
```

Parameters

uiDocument UIDocument

The UI document to get the selected pipes from.

Returns

[List](#) <Pipe>

A list of the selected pipes.

GetSelectedSpaces(UIDocument)

Gets the selected spaces from the document.

```
public static List<Space> GetSelectedSpaces(this UIDocument uiDocument)
```

Parameters

uiDocument UIDocument

The UI document to get the selected spaces from.

Returns

[List](#)<Space>

A list of the selected spaces.

GetSelectedSprinklers(UIDocument)

Gets the selected sprinklers from the document. Filters the selected FamilyInstance elements to return only those categorized as BuiltInCategory.OST_Sprinklers.

```
public static List<FamilyInstance> GetSelectedSprinklers(this UIDocument uiDocument)
```

Parameters

uiDocument UIDocument

The UI document to get the selected sprinklers from.

Returns

[List](#)<FamilyInstance>

A list of the selected sprinkler family instances.

Namespace Revit.Extensions.Unit

Classes

[MbUnitExtensions](#)

Provides utility methods and properties for working with Revit units, including conversion to and from internal units and determining document unit type.

Class MbUnitExtensions

Namespace: [Revit.Extensions.Unit](#)

Assembly: Revit.Extensions.dll

Provides utility methods and properties for working with Revit units, including conversion to and from internal units and determining document unit type.

```
public static class MbUnitExtensions
```

Inheritance

[object](#) ← MbUnitExtensions

Inherited Members

[object.ToString\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#)

Fields

Accuracy

The accuracy used in the current document's unit formatting options.

```
public static double Accuracy
```

Field Value

[double](#)

IsImperial

Indicates whether the current document uses imperial units.

```
public static bool IsImperial
```

Field Value

[bool](#)

Methods

ConvertFromInternalUnits(double)

Converts a value from Revit's internal length units to millimeters.

```
public static double ConvertFromInternalUnits(this double value)
```

Parameters

[value](#) [double](#)

The value in internal units.

Returns

[double](#)

The converted value in millimeters.

ConvertToInternalLength(double)

Converts a value from millimeters to Revit's internal length units.

```
public static double ConvertToInternalLength(this double value)
```

Parameters

[value](#) [double](#)

The value in millimeters.

Returns

[double](#)

The converted value in internal units.

IdentifyDocument(Document)

Identifies and sets the [Accuracy](#) and [IsImperial](#) properties based on the unit settings of the given Revit Autodesk.Revit.DB.Document.

```
public static void IdentifyDocument(Document document)
```

Parameters

document Document

The Revit document to analyze.