

# **PRIME JavaScript User Guide**

## Version 5.1

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# JavaScript Introduction

## Description

JavaScript is a robust scripting language capable of executing advanced control over multiple scopes; Scene level, Project Level, Application Level, or Master Control Panels.

## ECMA Scripting Language

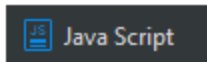
JavaScript component uses the ECMAScript Language standard as defined by the links below.

<https://developer.mozilla.org/en-US/docs/Web/JavaScript>

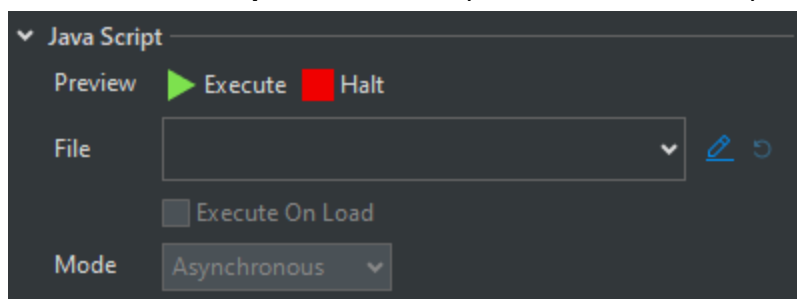
<https://tc39.es/ecma262/>

## Java Script Effect and Resource

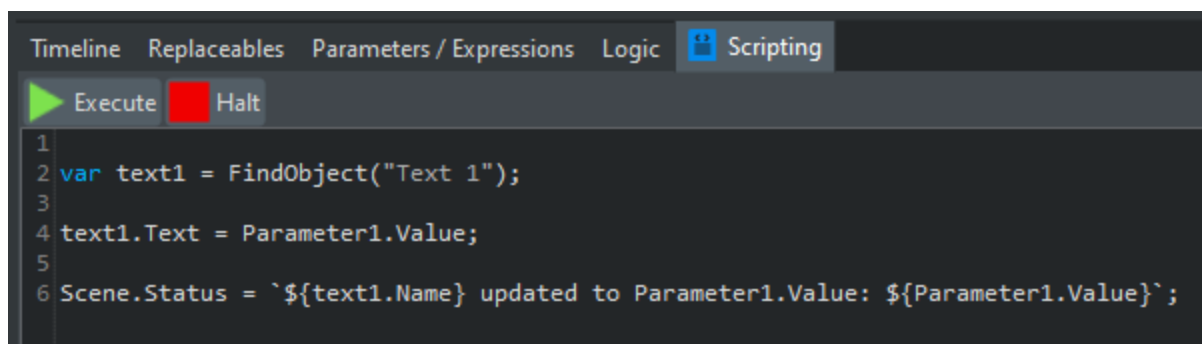
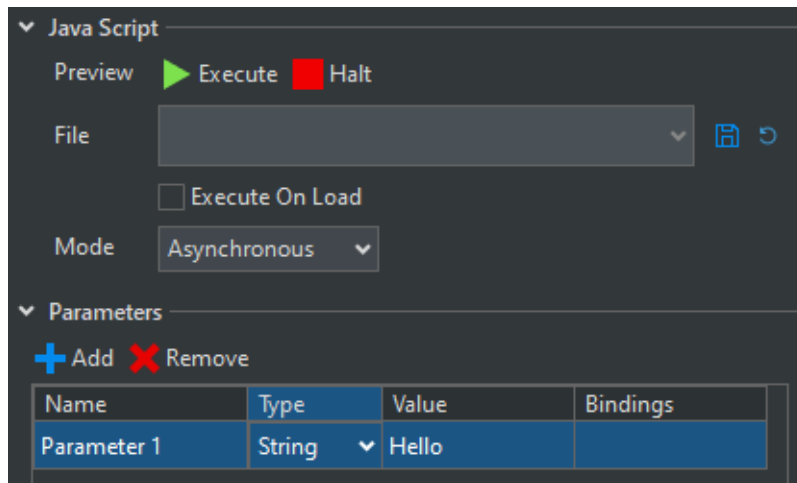
- Java Script Effect can be applied to any scene Graphic Object.
- Java Script Resource can be applied to the Scene, Project, and Application levels as well as Master Control Panels.



**To edit a JavaScript:** click the edit pencil icon. This will open the Scripting panel within Prime.

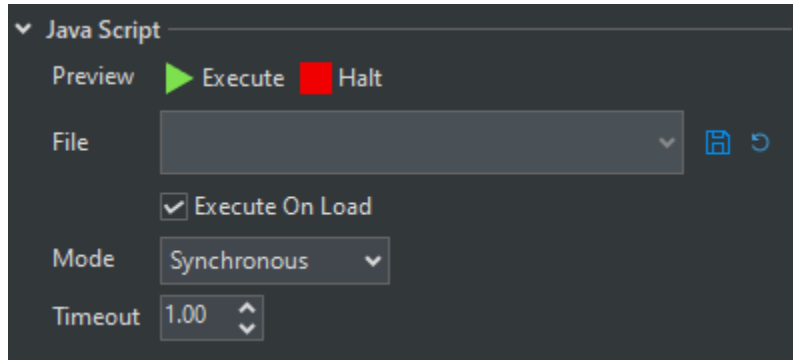


From here, you can set options, add parameters, edit the code in the Scripting window, and Execute or Halt scripts for testing.



## Execute On Load

Checking this option will cause the script to execute automatically when the scene is loaded in playout



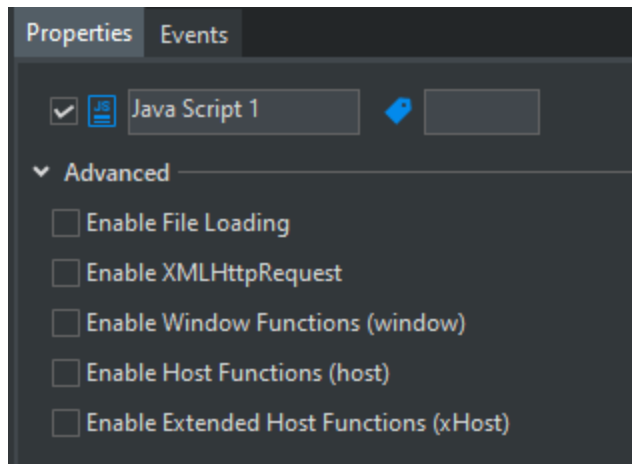
## Mode

Allows changing whether the script is run in Asynchronous mode (on a background thread), or in Synchronous mode (blocking until finished). Changing to Synchronous Mode will enable the Timeout property

## Timeout

Specifies the number of seconds that will run in Synchronous mode before timing out.

## JavaScript Advanced Options



### Enable File Loading

Allows code defined in external .js files to be imported into the script using the import keyword. The default location of module files is the Scripts folder of the Project folder belonging to the current project.

### Enable XMLHttpRequest

Allows creating a new XMLHttpRequest object that can be used for downloading data from a server.

### Enable Window Functions

Enables window functions within the script. For example alert, confirm, prompt, MsgBox and InputBox.

### Enable Host functions

Enables the host keyword within the script.  
See the HostFunctions section below for more info.

### Enable Extended Host functions

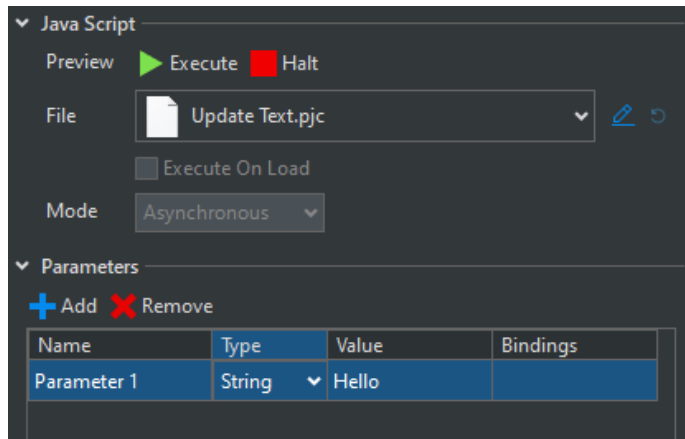
Enables the xHost keyword within the script. See the ExtendedHostFunctions section below for more info.

## Java Script Parameters

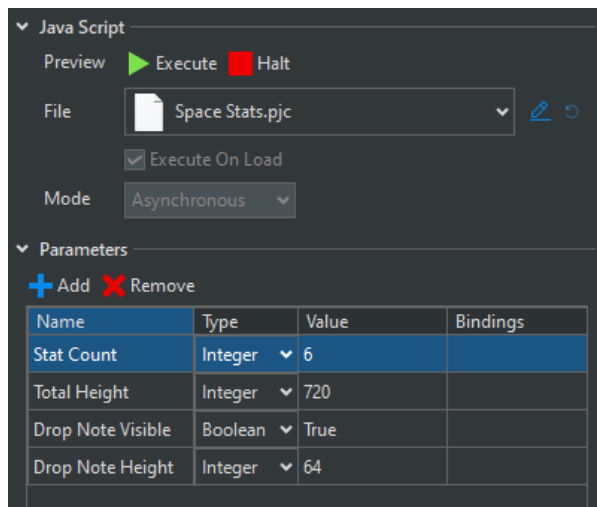
Click Add and Remove to edit the parameters of the selected JavaScript object. Any Parameters added to the JavaScript effect will be saved with the effect. All child parameter objects are natively accessible from within the script code.

### To Save a new script:

Click the disk icon and select Save or Save As.



**To import an existing JavaScript:** Navigate to script file using the File browser



# Keywords

The following keywords are available to use in all JavaScript objects running within the application

| Keywords                       | Type                   | Description                                                                                                                                                                                         |
|--------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Scene</b>                   | Scene                  | Represents the scene object that the script is apart of                                                                                                                                             |
| <b>Parent</b>                  | SceneObject            | Represents the parent object to which the JavaScript object belongs                                                                                                                                 |
| <b>This</b>                    | JavaScript             | Represents the actual JavaScript object itself                                                                                                                                                      |
| <b>Project</b>                 | Project                | Represents the project that the scene is apart of                                                                                                                                                   |
| <b>Channel</b>                 | Channel                | Represents the channel that the scene is loaded on                                                                                                                                                  |
| <b>Playout</b>                 | Playout                | Represents an object that can access all channels and clip players that are configured                                                                                                              |
| <b>window</b>                  | Window                 | Represents an object that can be used to invoke window functions (alert, confirm, prompt, MsgBox and InputBox). Note: Enable Window Functions must be checked in the advanced section of the script |
| <b>host</b>                    | HostFunctions          | Represents an object that can be used to invoke host functions within the script. Note: Enable Host Functions must be checked in the advanced section of the script                                 |
| <b>xHost</b>                   | ExtendedHost Functions | Represents an object that can be used to invoke extended host functions within the script. Note: Enable Extended Host Functions must be checked in the advanced section of the script               |
| <b>FindObject(string name)</b> | SceneObject            | Returns the nearest object to the parent JavaScript that matches the name argument                                                                                                                  |

All parameters defined in the JavaScript object are also natively available as keywords to be used within the script.

# Properties

The following types are common to object properties

## Size

| Name          | Type   | Description                             |
|---------------|--------|-----------------------------------------|
| <b>Width</b>  | double | Gets or sets Width value of the vector  |
| <b>Height</b> | double | Gets or sets Height value of the vector |

## Point

| Name     | Type   | Description                       |
|----------|--------|-----------------------------------|
| <b>X</b> | double | Gets or sets X value of the point |
| <b>Y</b> | double | Gets or sets Y value of the point |

## Vector

| Name        | Type   | Description                                                                                                       |
|-------------|--------|-------------------------------------------------------------------------------------------------------------------|
| <b>X</b>    | double | Gets or sets X value of the vector                                                                                |
| <b>Y</b>    | double | Gets or sets Y value of the vector                                                                                |
| <b>Z</b>    | double | Gets or sets Z value of the vector                                                                                |
| <b>Link</b> | bool   | Gets or sets a value that links the axis values together proportionally. This is only used for the Scale property |

## Color

| Name     | Type | Description                       |
|----------|------|-----------------------------------|
| <b>R</b> | byte | Gets the red value of the color   |
| <b>G</b> | byte | Gets the green value of the color |
| <b>B</b> | byte | Gets the blue value of the color  |
| <b>A</b> | byte | Gets the alpha value of the color |

Note: colors can be assigned by setting a hex code string: `text1.Color = "#FF0000"`

## Font

| Name              | Type   | Description                                     |
|-------------------|--------|-------------------------------------------------|
| <b>Name</b>       | string | Gets or sets the name of the font               |
| <b>Size</b>       | double | Gets or sets size of the font                   |
| <b>Color</b>      | Color  | Gets or sets the color of the text object       |
| <b>Kerning</b>    | double | Gets or sets the kerning of the text object     |
| <b>Leading</b>    | double | Gets or sets the leading of the text object     |
| <b>SpaceWidth</b> | double | Gets or sets the space width of the text object |
| <b>FixedPitch</b> | double | Gets or sets the fixed pitch of the text object |

## Outline

| Name           | Type  | Description                                      |
|----------------|-------|--------------------------------------------------|
| <b>Enabled</b> | bool  | Gets or sets the enabled property of the outline |
| <b>Color</b>   | Color | Gets or sets the color property of the outline   |
| <b>Size</b>    | int   | Gets or sets the size of the outline             |

## Shadow

| Name           | Type   | Description                                                   |
|----------------|--------|---------------------------------------------------------------|
| <b>Enabled</b> | bool   | Gets or sets the enabled property of the shadow               |
| <b>Color</b>   | Color  | Gets or sets the color property of the shadow                 |
| <b>Blur</b>    | int    | Gets or sets the blur of the shadow                           |
| <b>Offset</b>  | Vector | Gets a Vector object that represents the offset of the shadow |

## TimeCode

| Name                | Type   | Description                                                                                                                               |
|---------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interlaced</b>   | bool   | Gets a value that represents the interlaced value of the timecode                                                                         |
| <b>Rate</b>         | double | Gets the rate of the timecode (25, 29.97, 50, 59.94, ...)                                                                                 |
| <b>TotalFrames</b>  | int    | Gets the total number of frames represented by the timecode                                                                               |
| <b>TotalFields</b>  | int    | Gets the total number of fields represented by the timecode. This value will be the same as TotalFrames if the timecode is not interlaced |
| <b>TotalSeconds</b> | double | Gets the total number of seconds represented by the timecode                                                                              |
| <b>Fields</b>       | int    | Gets the number of truncated fields represented by the timecode. This value will be the same as Frames if the timecode is not interlaced  |

|                |        |                                                                      |
|----------------|--------|----------------------------------------------------------------------|
| <b>Frames</b>  | int    | Gets the number of truncated frames represented by the timecode      |
| <b>Seconds</b> | int    | Gets the number of truncated seconds represented by the timecode     |
| <b>Minutes</b> | int    | Gets the number of truncated minutes represented by the timecode     |
| <b>Hours</b>   | int    | Gets the number of hours represented by the timecode                 |
| <b>Text</b>    | string | Gets a string representation of the timecode in "hh:mm:ss.ff" format |

## Resolution

| Name              | Type      | Description                                                         |
|-------------------|-----------|---------------------------------------------------------------------|
| <b>Width</b>      | double    | Gets or sets Width value of the resolution                          |
| <b>Height</b>     | double    | Gets or sets Height value of the resolution                         |
| <b>FrameRate</b>  | FrameRate | Gets an object that represents the Frame Rate of the resolution     |
| <b>Interlaced</b> | bool      | Gets a value that represents the interlaced value of the resolution |

## Bindings

| Name                          | Type        | Description                                                                                        |
|-------------------------------|-------------|----------------------------------------------------------------------------------------------------|
| <b>Count</b>                  | int         | Gets the bindings count                                                                            |
| <b>Text</b>                   | string      | Gets or sets the text representation of the binding. Multiple bindings are separated by semicolons |
| <b>Add(string binding)</b>    | void        | Adds a binding to the object                                                                       |
| <b>Remove(string binding)</b> | void        | Removes a binding from the object                                                                  |
| <b>Clear()</b>                | void        | Clears all bindings from the object                                                                |
| <b>GetTargetObject()</b>      | SceneObject | Gets the first object referenced in the bindings                                                   |
| <b>GetTargetProperty()</b>    | string      | Gets the the property of the first object referenced in the bindings                               |
| <b>GetTargetValue()</b>       | object      | Gets the value of the property of the first object referenced in the bindings                      |

# Objects

## SceneObject

The following properties and methods are common to all objects within the scene tree

| Name                                           | Type        | Description                                                                                    |
|------------------------------------------------|-------------|------------------------------------------------------------------------------------------------|
| <b>Name</b>                                    | string      | Gets or sets the name of the scene                                                             |
| <b>Type</b>                                    | string      | Gets the type of the object (Text, Image, Clip,...)                                            |
| <b>Tag</b>                                     | string      | Gets or sets the Tag property which can be used mark objects to be designated for custom logic |
| <b>Parent</b>                                  | SceneObject | Gets the parent of the object                                                                  |
| <b>GetValue(string property)</b>               | object      | Returns the value of the specified property                                                    |
| <b>SetValue(string property, object value)</b> | void        | Sets the specified property to the value argument                                              |
| <b>FindObject(string name)</b>                 | SceneObject | Returns the nearest object that matches the name argument                                      |

## SceneObjectList

Represents a list of child objects

| Name                                              | Type        | Description                                                                                                                                                     |
|---------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Count</b>                                      | int         | Gets the count of objects in the list                                                                                                                           |
| <b>New(string type)</b>                           | SceneObject | Creates and returns a new SceneObject based on the provided type ("Text", "Image", "Clip", "Group"...). Note this object is not automatically added to the list |
| <b>Add(SceneObject sceneObject)</b>               | void        | Adds the specified object to the end of the list                                                                                                                |
| <b>Insert(int index, SceneObject sceneObject)</b> | void        | Inserts the specified object at the specified index location                                                                                                    |
| <b>Remove(SceneObject sceneObject)</b>            | bool        | Removes the specified object from the list. Returns value based on success                                                                                      |

## Scene

Scene include all fields from SceneObject and the following fields

| Name                              | Type                     | Description                                                                                              |
|-----------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------|
| Description                       | string                   | Gets or sets the scene description                                                                       |
| Keywords                          | string                   | Gets or sets the keywords for the scene                                                                  |
| Style                             | string                   | Gets or sets the style of the scene                                                                      |
| Layer                             | int                      | Gets or sets the layer of the scene                                                                      |
| EffectIn                          | TriggerList              | Gets the trigger list object that represents Effect In                                                   |
| EffectOut                         | TriggerList              | Gets the trigger list object that represents Effect Out                                                  |
| LayerIn                           | TriggerList              | Gets the trigger list object that represents Layer In                                                    |
| LayerOut                          | TriggerList              | Gets the trigger list object that represents Layer Out                                                   |
| PreviewIn                         | TriggerList              | Gets the trigger list object that represents Preview In                                                  |
| Resolution                        | Resolution               | Gets the resolution of the scene                                                                         |
| FrameRate                         | FrameRate                | Gets the frame rate of the scene                                                                         |
| FilePath                          | string                   | Gets the full path of the scene                                                                          |
| Directory                         | string                   | Gets the directory that contains the scene file                                                          |
| Active                            | bool                     | Gets or sets value that indicates if the scene is the active scene of the channel                        |
| Status                            | string                   | Sets a status message that will be displayed in the status bar of the scene in the playout panel         |
| Loaded                            | bool                     | Gets a value that indicates if the scene is loaded                                                       |
| Playing                           | bool                     | Gets a value that indicates if the scene is playing                                                      |
| Updating                          | bool                     | Gets a value that indicates if the scene is updated by a matching scene from preview                     |
| Closed                            | bool                     | Gets a value that indicates if the scene is closed                                                       |
| Project                           | Project                  | Gets the project that contains the scene                                                                 |
| Canvas                            | Canvas                   | Gets the canvas object used for the display of graphics and effects.                                     |
| Resources                         | SceneResources           | Gets the list of resources defined for this scene such as DataObjects,                                   |
| Parameters                        | ParameterList            | Gets the list of parameters defined for the scene.                                                       |
| Expressions                       | ExpressionList           | Gets the list of expressions defined for the scene.                                                      |
| Conditions                        | ConditionList            |                                                                                                          |
| Replaceables                      | ReplaceableList          |                                                                                                          |
| Actions                           | ActionList               | Gets the list of Actions defined for this scene.                                                         |
| AllObjects                        | Enumerable<Scene Object> | Gets the list of all objects including graphics, controls, resources and effects that the scene contains |
| Play()                            | void                     | Plays the scene                                                                                          |
| Stop()                            | void                     | Stops the scene                                                                                          |
| Close()                           | void                     | Closes the scene                                                                                         |
| Update(string name, string value) | bool                     | Attempts to update the default value of an object matching the name argument with the value              |

|                                                                   |              |                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                   |              | arguments. Returns true if successful, and false otherwise                                                                                                                                                                                                                    |
| <b>GetObjectValue(string name, string property)</b>               | object       | Gets the value of the property argument that matches an object in the scene that matches the name argument                                                                                                                                                                    |
| <b>SetObjectValue(string name, string property, object value)</b> | void         | Sets the value of a the property argument that matches an object in the scene that matches the name argument                                                                                                                                                                  |
| <b>Execute(string command)</b>                                    | void         | Executes a command as if it was a logic statement. For instance: Scene.Execute("Image1.Opacity = 100")                                                                                                                                                                        |
| <b>Evaluate(string expression)</b>                                | object       | Evaluates an expression as if it was in a logic statement and returns the result. For instance: Scene.Evaluate("Text1.Text")                                                                                                                                                  |
| <b>QueueUpdates()</b>                                             | QueueCommand | <p>Puts the scene into Queue Mode and returns a QueueCommand that can be used to apply all queued updates simultaneously. For example:</p> <pre>var updates = Scene.QueueUpdates();  try {     // update multiple objects in scene } finally {     updates.Execute(); }</pre> |
| <b>SaveMessage()</b>                                              | string       | Saves the current state of the scene to a message file in the Messages folder of the Project of the scene. The first available message number will be used as the name of the message. The path of the message file will be returned.                                         |
| <b>SaveMessage(string message)</b>                                | string       | Saves the current state of the scene to a message file in the Messages folder of the Project of the scene. The message argument can be the name of the message or the message path. The path of the message file will be returned.                                            |
| <b>LoadedChanged</b>                                              | SceneEvent   | <p>Represents an event that can be connected to a function to be run every time the Loaded property changes. For example</p> <pre>Scene.LoadedChanged.connect(OnLoadedChanged);  function OnLoadedChanged(scene)</pre>                                                        |

|                        |            |                                                                                                                             |
|------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------|
|                        |            | <pre>{   // react to loaded changed }</pre>                                                                                 |
| <b>PlayingChanged</b>  | SceneEvent | Represents an event that can be connected to a function to be run every time the Playing property changes.                  |
| <b>UpdatingChanged</b> | SceneEvent | Represents an event that can be connected to a function to be run every time the Updated property changes.                  |
| <b>StyleChanged</b>    | SceneEvent | Represents an event that can be connected to a function to be run every time the Style property changes.                    |
| <b>AfterLoad</b>       | SceneEvent | Represents an event that can be connected to a function to be run after the scene has finished loading.                     |
| <b>BeforePlay</b>      | SceneEvent | Represents an event that can be connected to a function to be run before the scene has started playing.                     |
| <b>AfterPlay</b>       | SceneEvent | Represents an event that can be connected to a function to be run after the scene has finished playing.                     |
| <b>BeforeUpdate</b>    | SceneEvent | Represents an event that can be connected to a function to be run before the scene has started updating replaceable values. |
| <b>AfterUpdate</b>     | SceneEvent | Represents an event that can be connected to a function to be run after the scene has finished updating replaceable values. |
| <b>BeforeStop</b>      | SceneEvent | Represents an event that can be connected to a function to be run before the scene has started stopping.                    |
| <b>AfterStop</b>       | SceneEvent | Represents an event that can be connected to a function to be run after the scene has finished stopping.                    |
| <b>BeforeClose</b>     | SceneEvent | Represents an event that can be connected to a function to be run before the scene has started closing.                     |

## Action

Represents a collection of animations

| Name                    | Type                  | Description                                                               |
|-------------------------|-----------------------|---------------------------------------------------------------------------|
| <b>Name</b>             | string                | Gets or sets the name of the action                                       |
| <b>Length</b>           | TimeCode              | Gets an object representing the length of the action                      |
| <b>Loop</b>             | bool                  | Gets or sets the loop property for all of the associated animations       |
| <b>Animations</b>       | Enumerable<Animation> | Gets an object that can be used to iterate over all associated animations |
| <b>Play()</b>           | void                  | Plays the animation                                                       |
| <b>Play(int offset)</b> | void                  | Plays the animation after the specified offset                            |
| <b>Stop()</b>           | void                  | Stops the animation                                                       |

## Animation

Represents a child animation of an object

| Name                                                | Type | Description                                                           |
|-----------------------------------------------------|------|-----------------------------------------------------------------------|
| <b>Play()</b>                                       | void | Plays the animation                                                   |
| <b>Play(int offset)</b>                             | void | Plays the animation after the specified offset                        |
| <b>Stop()</b>                                       | void | Stops the animation                                                   |
| <b>Animate(SceneObject sceneObject)</b>             | void | Plays the animation on the provided object                            |
| <b>Animate(SceneObject sceneObject, int offset)</b> | void | Plays the animation on the provided object after the specified offset |

## AnimationList

Represents the list of child animations of an object

| Name                     | Type      | Description                                                                       |
|--------------------------|-----------|-----------------------------------------------------------------------------------|
| <b>Default</b>           | Animation | Returns the Default animation                                                     |
| <b>Find(string name)</b> | Animation | Returns the animation specified by the provided name if it exists, or null if not |

## DynamicObject

DynamicObject includes all fields from SceneObject and the following fields

| Name                    | Type          | Description                                        |
|-------------------------|---------------|----------------------------------------------------|
| <b>DefaultAnimation</b> | Animation     | Gets or sets the Default animation                 |
| <b>Animations</b>       | AnimationList | Gets an object representing the animations defined |

## Graphic

Graphic includes all fields from DynamicObject and the following fields

| Name            | Type                        | Description                                                      |
|-----------------|-----------------------------|------------------------------------------------------------------|
| <b>Enabled</b>  | bool                        | Gets or sets whether the graphic is visible or not               |
| <b>Opacity</b>  | double                      | Gets or sets the opacity of the graphic                          |
| <b>Position</b> | Vector                      | Gets a vector object that represents the Position of the graphic |
| <b>Scale</b>    | Vector                      | Gets a vector object that represents the Scale of the graphic    |
| <b>Rotation</b> | Vector                      | Gets a vector object that represents the Rotation of the graphic |
| <b>Pivot</b>    | Vector                      | Gets a vector object that represents the Pivot of the graphic    |
| <b>Effects</b>  | SceneObject<br>List<Effect> | Gets an object that represents the child effects of the graphic  |

## 2D Graphic

2D Graphic includes all fields from Graphic and the following fields

| Name          | Type   | Description                                                   |
|---------------|--------|---------------------------------------------------------------|
| <b>Width</b>  | double | Gets or sets the width of the graphic                         |
| <b>Height</b> | double | Gets or sets the height of the graphic                        |
| <b>Size</b>   | Size   | Gets a size object that represents the size of the graphic    |
| <b>Origin</b> | Point  | Gets a point object that represents the origin of the graphic |

## Text

Text objects include all fields from 2D Graphic and the following fields

| Name                                | Type                | Description                                                                                                            |
|-------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Text</b>                         | string              | Gets or sets the Text of the text object                                                                               |
| <b>HorizontalAlignment</b>          | HorizontalAlignment | Gets or sets the horizontal alignment of the text object: "Left", "Center", "Right", "FirstCharacter", "LastCharacter" |
| <b>HorizontalAlignmentCharacter</b> | string              |                                                                                                                        |
| <b>VerticalAlignment</b>            | VerticalAlignment   | Gets or sets the vertical alignment of the text object: "Top", "First", "Middle", "Last", "Bottom"                     |
| <b>WordWrap</b>                     | WordWrap            | Gets or sets the word wrap of the text object: "Off", "Wrap" or "UniformScale"                                         |
| <b>HorizontalScale</b>              | HorizontalScale     | Gets or sets the horizontal scale of the text object: "Off", "ScaleToFit" or "KernToFit"                               |
| <b>VerticalScale</b>                | VerticalScale       | Gets or sets the vertical scale of the text object: "Off", "ScaleToFit" or "FillToFit"                                 |
| <b>AllCaps</b>                      | bool                | Gets or sets the all caps property of the text object                                                                  |
| <b>CapsRatio</b>                    | double              | Gets or sets the caps ratio of the text object                                                                         |
| <b>Numeric</b>                      | bool                | Gets or sets the numeric property of the text object                                                                   |
| <b>Number</b>                       | double              | Gets or sets the number property of the text object                                                                    |
| <b>Format</b>                       | string              | Gets or sets the format property of the text object when Numeric is enabled                                            |
| <b>Font</b>                         | Font                | Gets an object that represents the font text object containing the following properties:                               |
| • <b>Name</b>                       | string              | Gets or sets the name of the font                                                                                      |
| • <b>Size</b>                       | double              | Gets or sets size of the font                                                                                          |
| • <b>Color</b>                      | Color               | Gets or sets the color of the text object                                                                              |
| • <b>Kerning</b>                    | double              | Gets or sets the kerning of the font                                                                                   |
| • <b>Leading</b>                    | double              | Gets or sets the leading of the text object                                                                            |
| • <b>SpaceWidth</b>                 | double              | Gets or sets the space width of the text object                                                                        |
| • <b>FixedPitch</b>                 | double              | Gets or sets the fixed pitch of the text object                                                                        |
| <b>TextMode</b>                     | TextMode            | Gets or sets the mode of the text object ("_2d" or "_3d")                                                              |
| <b>_2d</b>                          | _2dTextProperties   | Gets an object that represents the 2D text properties containing the following properties:                             |

|                                   |                    |                                                                                                                          |
|-----------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------|
| • <b>Resolution</b>               | double             | Gets or sets resolution of the 2D font                                                                                   |
| • <b>LockResolution</b>           | bool               | Gets or sets a value that locks the resolution to the font size                                                          |
| • <b>ColorMode</b>                | ColorMode          | Gets or sets the color mode of the 2D font ("Solid", "Linear", "Quad" or "DoubleVertical")                               |
| • <b>GradientTarget</b>           | GradientTargetMode | Gets or sets the gradient target of the 2D font used for non Solid color modes ("Character", "Row" or "Object")          |
| • <b>StartColor</b>               | Color              | Gets or sets the linear start color used for the Linear color mode                                                       |
| • <b>FinishColor</b>              | Color              | Gets or sets the linear finish color used for the Linear color mode                                                      |
| • <b>GradientAngle</b>            | double             | Gets or sets the angle direction of start and finish colors when ColorMode is Linear                                     |
| • <b>GradientColor1</b>           | Color              | Gets or sets the first color used when ColorMode is set to Quad or DoubleVertical                                        |
| • <b>GradientColor2</b>           | Color              | Gets or sets the second color used when ColorMode is set to Quad or DoubleVertical                                       |
| • <b>GradientColor3</b>           | Color              | Gets or sets the third color used when ColorMode is set to Quad or DoubleVertical                                        |
| • <b>GradientColor4</b>           | Color              | Gets or sets the fourth color used when ColorMode is set to Quad or DoubleVertical                                       |
| • <b>Outline</b>                  | Outline            | Gets an object that represents the Outline edge of the text object                                                       |
| • <b>Shadow</b>                   | Shadow             | Gets an object that represents the Shadow edge of the text object                                                        |
| <b>Style</b>                      | string             | Gets or sets a file that represents the Mode, Font, 2D and 3D properties of the text object                              |
| <b>LinkStyle</b>                  | bool               | Gets or sets a value that represents whether the text object style is linked to the file specified in the Style property |
| <b>LineCount</b>                  | int                | Gets the line count of the text object                                                                                   |
| <b>UpdateTextSize</b>             | bool               | Gets or sets a value that enables the TextSize property to be updated with text size as the text changes                 |
| <b>TextSize</b>                   | TextSize           | Gets a object that represents                                                                                            |
| <b>GetTextBounds(string text)</b> | Rectangle          | Returns a rectangle object that represents the bounds that the provided text would occupy                                |
| <b>TextChanged</b>                | SceneObjectEvent   | Represents an event that can be connected to a function to be run every time the Text property changes.                  |

|  |  |                                                                                                                                                                                 |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>For example</p> <pre> var text = FindObject("Text 1");  text.TextChanged.connect(OnTextChanged);  function OnTextChanged(textObject) {     // react to text changed } </pre> |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Image

Image objects include all fields from 2D Graphic and the following fields

| Name                  | Type             | Description                                                                                           |
|-----------------------|------------------|-------------------------------------------------------------------------------------------------------|
| <b>File</b>           | string           | Gets or sets the file of the image object                                                             |
| <b>HideOnClear</b>    | bool             | Gets or sets a value that causes the image to disappear when the File property set to an empty string |
| <b>ColorMode</b>      | ColorMode        | Gets or sets the color mode of the image ("Solid", "Linear", "Quad" or "DoubleVertical")              |
| <b>Color</b>          | Color            | Gets or sets the color of the image object                                                            |
| <b>StartColor</b>     | Color            | Gets or sets the linear start color used for the Linear color mode                                    |
| <b>FinishColor</b>    | Color            | Gets or sets the linear finish color used for the Linear color mode                                   |
| <b>GradientAngle</b>  | double           | Gets or sets the angle direction of start and finish colors when ColorMode is Linear                  |
| <b>GradientColor1</b> | Color            | Gets or sets the first color used when ColorMode is set to Quad or DoubleVertical                     |
| <b>GradientColor2</b> | Color            | Gets or sets the second color used when ColorMode is set to Quad or DoubleVertical                    |
| <b>GradientColor3</b> | Color            | Gets or sets the third color used when ColorMode is set to Quad or DoubleVertical                     |
| <b>GradientColor4</b> | Color            | Gets or sets the fourth color used when ColorMode is set to Quad or DoubleVertical                    |
| <b>Shadow</b>         | Shadow           | Gets an object that represents the Shadow edge of the imageobject                                     |
| <b>FileChanged</b>    | SceneObjectEvent | Represents an event that can connected to a function to be run every time the File property changes   |

## Clip

Clip objects include all fields from 2D Graphic and the following fields

| Name                   | Type             | Description                                                                                                                                   |
|------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>File</b>            | string           | Gets or sets the file of the clip                                                                                                             |
| <b>Color</b>           | Color            | Gets or sets the color of the clip                                                                                                            |
| <b>Loop</b>            | bool             | Gets or sets the loop value of the clip                                                                                                       |
| <b>LoopCount</b>       | int              | Gets or sets the count for looping                                                                                                            |
| <b>Speed</b>           | double           | Gets or sets the speed of the clip                                                                                                            |
| <b>Volume</b>          | double           | Gets or sets the volume of the clip                                                                                                           |
| <b>Muted</b>           | bool             | Gets or sets whether the clip is muted                                                                                                        |
| <b>HoldLastFrame</b>   | bool             | Gets or sets a value that controls the behavior that occurs after the clip is finished: the last frame is held if true, or clip goes if false |
| <b>Length</b>          | TimeCode         | Gets an object representing the length of the clip                                                                                            |
| <b>CurrentFrame</b>    | TimeCode         | Gets an object representing the current frame of the clip                                                                                     |
| <b>Cue()</b>           | void             | Sets the clip to the first frame                                                                                                              |
| <b>Play()</b>          | void             | Plays the clip from the beginning                                                                                                             |
| <b>Stop()</b>          | void             | Stops and hides the clip                                                                                                                      |
| <b>Pause()</b>         | void             | Pauses the clip at the current frame                                                                                                          |
| <b>Resume()</b>        | void             | Resumes the clip from the current frame                                                                                                       |
| <b>End()</b>           | void             | Sets the clip to the last frame                                                                                                               |
| <b>Jog(int frames)</b> | void             | Offsets the clip by the specified number of frames                                                                                            |
| <b>Mute()</b>          | void             | Mutes the clip                                                                                                                                |
| <b>Unmute()</b>        | void             | Unmutes the clip                                                                                                                              |
| <b>FileChanged</b>     | SceneObjectEvent | Represents an event that can be connected to a function to be run every time the File property changes                                        |

## Group

Group objects include all fields from Graphic and the following fields

| Name                    | Type                     | Description                                                                                                                                                                                                                                                                                        |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Graphics</b>         | SceneObjectList<Graphic> | Gets an object representing the list of child graphics                                                                                                                                                                                                                                             |
| <b>ObjectsRecursive</b> | Enumerable<SceneObject>  | <p>Gets an object that can be used to iterate over all children objects recursively. This will include both graphics and effects. For example:</p> <pre>var sceneGroup = Scene.SceneGroup;<br/><br/>for (var object in sceneGroup.ObjectsRecursive)<br/>{<br/>    // operate on object<br/>}</pre> |

## Control

Controls include all fields from Scene Object and the following fields

| Name                       | Type             | Description                                                                                            |
|----------------------------|------------------|--------------------------------------------------------------------------------------------------------|
| <b>Enabled</b>             | bool             | Gets or sets the enabled property of the control                                                       |
| <b>Visible</b>             | bool             | Gets or sets the visible property of the control                                                       |
| <b>X</b>                   | int              | Gets or sets the X position of the control                                                             |
| <b>Y</b>                   | int              | Gets or sets the Y position of the control                                                             |
| <b>Width</b>               | int              | Gets or sets the width of the control                                                                  |
| <b>Height</b>              | int              | Gets or sets the height of the control                                                                 |
| <b>Location</b>            | Point            | Gets the location of the control                                                                       |
| <b>Size</b>                | Size             | Gets the size of the control                                                                           |
| <b>BackColor</b>           | Color            | Gets the back color of the control                                                                     |
| <b>ForeColor</b>           | Color            |                                                                                                        |
| <b>Text</b>                | string           | Gets the text of the control                                                                           |
| <b>Bindings</b>            | Bindings         | Gets the bindings of the control                                                                       |
| <b>GetTargetObject()</b>   | SceneObject      | Gets the first object referenced in the bindings                                                       |
| <b>GetTargetProperty()</b> | string           | Gets the the property of the first object referenced in the bindings                                   |
| <b>GetTargetValue()</b>    | object           | Gets the value of the property of the first object referenced in the bindings                          |
| <b>TextChanged</b>         | SceneObjectEvent | Represents an event that can be connected to a function to be run every time the Text property changes |

## Control Panel

Control Panels include all fields from Control and the following fields

| Name                 | Type                      | Description                                            |
|----------------------|---------------------------|--------------------------------------------------------|
| <b>ActiveControl</b> | Control                   | Gets or sets the active control of the Control Panel   |
| <b>Controls</b>      | SceneObjectList<Controls> | Gets an object representing the list of child controls |

## Button

Buttons include all fields from Control and the following fields

| Name         | Type             | Description                                                                                                                                                                                                                                                                                                           |
|--------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Click</b> | SceneObjectEvent | <p>Represents an event that can be connected to a function to be run every time the button is clicked. For example</p> <pre>var button = FindObject("Button 1");<br/><br/>button.Click.connect(OnButtonClicked);<br/><br/>function OnButtonClicked(buttonObject)<br/>{<br/>    // react to button clicked<br/>}</pre> |

## Check Box

Check boxes include all fields from Control and the following fields

| Name                  | Type             | Description                                                                                               |
|-----------------------|------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Checked</b>        | bool             | Gets or sets the Checked property of the text box                                                         |
| <b>CheckedChanged</b> | SceneObjectEvent | Represents an event that can be connected to a function to be run every time the Checked property changes |

## Text Box

Text boxes include all fields from Control and the following fields

| Name                   | Type   | Description                                                |
|------------------------|--------|------------------------------------------------------------|
| <b>Multiline</b>       | bool   | Gets or sets the Multiline property of the text box        |
| <b>SelectedText</b>    | string | Gets or sets the selected text of the text box             |
| <b>SelectionStart</b>  | int    | Gets or sets the beginning index of the text box selection |
| <b>SelectionLength</b> | int    | Gets or sets the length of the text box selection          |

## Combo Box

Combo boxes include all fields from Control and the following fields

| Name         | Type          | Description                                 |
|--------------|---------------|---------------------------------------------|
| <b>Items</b> | ComboBoxItems | Gets an object representing combo box items |

## Parameter

Includes all fields from SceneObject plus the following fields

| Name                 | Type             | Description                                                                                                                                                                                                                                                                                               |
|----------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enabled</b>       | bool             | Gets or sets a value representing the enabled property of the parameter                                                                                                                                                                                                                                   |
| <b>Value</b>         | object           | Gets or sets the value of the parameter                                                                                                                                                                                                                                                                   |
| <b>PreviousValue</b> | object           | Gets the previous value of the parameter                                                                                                                                                                                                                                                                  |
| <b>Bindings</b>      | Bindings         | Gets the bindings for the parameter                                                                                                                                                                                                                                                                       |
| <b>ValueChanged</b>  | SceneObjectEvent | <p>Represents an event that can be connected to a function to be run every time the Value property changes. For example</p> <pre>var text = FindObject("Text 1");  Parameter1.ValueChanged.connect(OnValueChanged);  function OnValueChanged(parameter) {     // react to parameter value changed }</pre> |

## JavaScript

Includes all fields from SceneObject plus the following fields

| Name              | Type           | Description                                                                                                                                                              |
|-------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sync</b>       | bool           | Gets or sets the Sync property of the script that determines whether the script is run synchronously or asynchronously. For example, to enable:<br><br>This.Sync = true; |
| <b>Timeout</b>    | double         | Gets or sets the timeout in seconds that is used to wait for synchronous scripts to finish. The default value is 1 second                                                |
| <b>Parameters</b> | ParametersList | Gets an object representing the list of child parameters                                                                                                                 |

## Project

Includes all fields from Scene plus the following fields

| Name        | Type   | Description                            |
|-------------|--------|----------------------------------------|
| <b>Path</b> | string | Gets the directory path of the Project |

## Channel

Represents an object that can be used to affect the scenes loaded and played in a channel

| Name                      | Type              | Description                                                                                |
|---------------------------|-------------------|--------------------------------------------------------------------------------------------|
| <b>Index</b>              | int               | Gets the 0 based index of the channel as defined by the order in the playout configuration |
| <b>Number</b>             | int               | Gets the 1 based index of the channel as defined by the order in the playout configuration |
| <b>Name</b>               | string            | Gets the name of the channel as defined by the order in the playout configuration          |
| <b>Resolution</b>         | Size              | Gets the resolution of the channel as defined by the playout configuration                 |
| <b>ActivePreviewScene</b> | Scene             | Gets the active scene in preview                                                           |
| <b>ActiveProgramScene</b> | Scene             | Gets the active scene in program                                                           |
| <b>OpenScenes</b>         | Enumerable<Scene> | Gets an object that can be used to iterate over all of the open scenes in the channel      |

|                                                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GetScene(string name)</b>                                                   | Scene  | Returns the scene in the channel that matches the name argument if it exists, or null if not                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>LoadScene(string name)</b>                                                  | bool   | Loads the specified scene name into the channel. Returns the success of finding the scene. Note: the name can be a file name within the current project, or a full file path                                                                                                                                                                                                                                                                                                               |
| <b>PlayScene(string name)</b>                                                  | bool   | Plays the specified scene name on the channel. Returns the success of finding the scene                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>StopScene(string name)</b>                                                  | bool   | Stops the specified scene name on the channel. Returns the success of finding the scene                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>CloseScene(string name)</b>                                                 | bool   | Closes the specified scene name on the channel. Returns the success of finding the scene                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>RenderImage(string path = null)</b>                                         | string | <p>Renders a scene to an image file.</p> <p>If the provided path is an image file extension, then the playing scene(s) on the Render channel will be rendered to this image path.</p> <p>If the provided path is a scene or message extension, then this asset will be rendered to a temporary image path.</p> <p>If a path is not provided, then the playing scene(s) on the Render channel will be rendered to a temporary image path.</p> <p>Returns the location of the image file</p> |
| <b>RenderImage(string scenePath, string imagePath)</b>                         | string | Renders a scene to an image file. Renders the provided scenePath to the provided imagePath. Returns the imagePath                                                                                                                                                                                                                                                                                                                                                                          |
| <b>RenderClip(string scenePath, clipPath = null, object parameters = null)</b> | string | <p>Renders a scene to a clip file.</p> <p>If the scenePath is empty, then the playing scene on the Render channel will be rendered. Otherwise, the scenePath asset will be used as the scene to be rendered.</p> <p>If the clipPath is empty, then a temporary path will be assigned. Otherwise, this</p>                                                                                                                                                                                  |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>argument will be the output location of the rendered clip.</p> <p>An optional parameters argument can be provided for additional control over the rendered clip. The argument can either be JSON text or a JavaScript object with any of the following properties:</p> <ul style="list-style-type: none"> <li>• Size - parent object with integer Width and Height child properties to specify the output size of the clip</li> <li>• TotalFields - integer property used to specify the number of fields the output clip should contain</li> <li>• CropRectangle - parent object with integer Left, Top, Right and Bottom child properties to specify the number of pixels to crop from each side</li> <li>• EnforceEffectOut - bool property used to specify whether the Effect Out of the scene should be rendered</li> <li>• Timeout - integer property used to specify the number of milliseconds allowed for the render before timing out</li> <li>• Encoding - string property used to set the encoding of the clip: <ul style="list-style-type: none"> <li>○ Gtc,</li> <li>○ GtcJpeg,</li> <li>○ GtcLzo,</li> <li>○ QuicktimeRle,</li> <li>○ MotionJpeg,</li> <li>○ DnxHdHq,</li> <li>○ DnxHdSq,</li> <li>○ DnxHdLb,</li> <li>○ DnxHrHq,</li> <li>○ DnxHrHqAlpha,</li> <li>○ DnxHrSq,</li> <li>○ DnxHrSqAlpha,</li> <li>○ DnxHrLb,</li> <li>○ DnxHrLbAlpha,</li> <li>○ Vp9</li> </ul> </li> </ul> |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |  |                                                |
|--|--|------------------------------------------------|
|  |  | Returns the location of the rendered clip file |
|--|--|------------------------------------------------|

## ClipPlayer

Represents an object that can be used to affect the clips cued and played in a clip player

| Name                           | Type   | Description                                                                                                                                                                  |
|--------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Index</b>                   | int    | Gets the 0 based index of the clip player as defined by the order in the playout configuration                                                                               |
| <b>Number</b>                  | int    | Gets the 1 based index of the clip player as defined by the order in the playout configuration                                                                               |
| <b>Name</b>                    | string | Gets the name of the clip player as defined by the order in the playout configuration                                                                                        |
| <b>CuedClip</b>                | Scene  | Gets the cued clip scene                                                                                                                                                     |
| <b>PlayingClip</b>             | Scene  | Gets the playing clip scene                                                                                                                                                  |
| <b>ClipExists(string name)</b> | bool   | Returns true if the specified clip name exists within the project, false if not                                                                                              |
| <b>CueClip(string name)</b>    | bool   | Loads the specified scene file into the channel. Returns the success of finding the scene. Note: the file can be a file name within the current project, or a full file path |
| <b>PlayCued()</b>              | void   | Plays the current cued clip                                                                                                                                                  |
| <b>ClearCued()</b>             | void   | Clears the current cued clip                                                                                                                                                 |
| <b>PausePlaying()</b>          | void   | Pauses the playing clip                                                                                                                                                      |
| <b>ResumePlaying()</b>         | void   | Resumes the playing clip                                                                                                                                                     |
| <b>StopPlaying()</b>           | void   | Stops the playing clip                                                                                                                                                       |
| <b>ClearPlaying()</b>          | void   | Clears the playing clip                                                                                                                                                      |
| <b>JogPlaying(int frames)</b>  | void   | Jogs the playing clip by the specified number of frames                                                                                                                      |

## Playout

Represents an object that can access all channels and clip players that are configured

| Name                                 | Type                     | Description                                                                                         |
|--------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Channels</b>                      | ReadOnlyList<Channel>    | Gets a read only list that represents the channels defined in the current playout configuration     |
| <b>ClipPlayers</b>                   | ReadOnlyList<ClipPlayer> | Gets a read only list that represents the clip players defined in the current playout configuration |
| <b>ChannelExists(int number)</b>     | bool                     | Returns true if a channel exists at this number                                                     |
| <b>ChannelExists(string name)</b>    | bool                     | Returns true if a channel exists at this name                                                       |
| <b>GetChannel(int number)</b>        | Channel                  | Returns the channel object at the specified number                                                  |
| <b>GetChannel(string name)</b>       | Channel                  | Returns the channel object at the specified name                                                    |
| <b>ClipPlayerExists(int number)</b>  | bool                     | Returns true if a clip player exists at this number                                                 |
| <b>ClipPlayerExists(string name)</b> | bool                     | Returns true if a clip player exists at this name                                                   |
| <b>GetClipPlayer(int number)</b>     | ClipPlayer               | Returns the clip player object at the specified number                                              |
| <b>GetClipPlayer(string name)</b>    | ClipPlayer               | Returns the clip player object at the specified name                                                |

## Window

Represents an object that can be used to display popup message boxes

| Name                                                                                                    | Type   | Description                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>alert(string message)</b>                                                                            | void   | Displays an OK message box with the provided message text<br><br><a href="https://developer.mozilla.org/en-US/docs/Web/API/Window/alert">https://developer.mozilla.org/en-US/docs/Web/API/Window/alert</a>                                                                                                                 |
| <b>confirm(string message)</b>                                                                          | bool   | Displays an OK/Cancel message box with the provided message text. Returns true if OK is clicked and false if Cancel is clicked<br><br><a href="https://developer.mozilla.org/en-US/docs/Web/API/Window/confirm">https://developer.mozilla.org/en-US/docs/Web/API/Window/confirm</a>                                        |
| <b>prompt(string message, string defaultValue = "")</b>                                                 | string | Displays an OK/Cancel input box with the provided message text and optional default input value. Returns the input text if OK is clicked, or blank if Cancel is clicked<br><br><a href="https://developer.mozilla.org/en-US/docs/Web/API/Window/prompt">https://developer.mozilla.org/en-US/docs/Web/API/Window/prompt</a> |
| <b>MsgBox(string message)</b>                                                                           | void   | Displays an OK message box with the provided message text                                                                                                                                                                                                                                                                  |
| <b>InputDialog(string message, string title = "", string defaultValue = "", int x = -1, int y = -1)</b> | string | Displays an OK/Cancel input box with the provided message text, optional title and optional default input value. Returns the input text if OK is clicked, or blank if Cancel is clicked                                                                                                                                    |

# HostFunctions

The HostFunctions object provides access to basic .NET functionality as defined here:

[https://microsoft.github.io/ClearScript/Reference/html/T\\_Microsoft\\_ClearScript\\_HostFunctions.htm](https://microsoft.github.io/ClearScript/Reference/html/T_Microsoft_ClearScript_HostFunctions.htm)

For example, a .NET array can be created if necessary:

```
var array = host.newArr(10);
```

## ExtendedHostFunctions

The ExtendedHostFunctions object provides access to extended .NET functionality as defined here:

[https://microsoft.github.io/ClearScript/Reference/html/T\\_Microsoft\\_ClearScript\\_HostFunctions.htm](https://microsoft.github.io/ClearScript/Reference/html/T_Microsoft_ClearScript_HostFunctions.htm)

For example, the .NET File class can be referenced to access file information on disk:

```
var File = xHost.type("System.IO.File");  
  
var text = File.ReadAllText(filePath);
```

Other libraries can be accessed for specific classes:

```
var DrawingLib = xHost.lib("System.Drawing");  
  
var Color = DrawingLib.System.Drawing.Color;
```

## ABOUT US

Chyron is ushering in the next generation of storytelling in the digital age. Founded in 1966, the company pioneered broadcast titling and graphics systems. With a strong foundation built on over 50 years of innovation and efficiency, the name Chyron is synonymous with broadcast graphics. Chyron continues that legacy as a global leader focused on customer-centric broadcast solutions. Today, the company offers production professionals the industry's most comprehensive software portfolio for designing, sharing, and playing live graphics to air with ease. Chyron products are increasingly deployed to empower OTA & OTT workflows and deliver richer, more immersive experiences for audiences and sports fans in the arena, at home, or on the go.

## CONTACT SALES

EMEA • North America • Latin America • Asia/Pacific  
+1.631.845.2000 • [sales@chyron.com](mailto:sales@chyron.com)

