Widgets v2 Instance API

The functions in this API can be used for the instance of a widget that you created using the **Widgets v2 Class API** either at runtime (execution of the code) or in your custom widget's **widget.js** file.

All the functions can be used either at runtime or in your custom widget's code as shown below:

At Runtime:

```
$$('customWidget1').addClass('mycssclass');
```

Code for your widget:

```
CustomWidget.prototype.init = function () {
    this.addClass('mycssclass');
};
```

MultiContainer

The following functions are in the **waf-behavior/layout/multicontainer** behavior.

You can create a widget and use this behavior for it by writing the following:

```
WAF.define('CustomWidget', ['waf-core/widget'], function(widget) {
    var CustomWidget = widget.create('CustomWidget', {
        init: function() { }
    });
    CustomWidget.inherit('waf-behavior/layout/multicontainer');

    return CustomWidget;
});
```

Applying other functions

You can also apply the **Container** functions to a container in the MultiContainer widget, like **attachWidget( )** and **widgets( )**.

If you have a composed widget in the Container, you can use **children( )** to retrieve all the widgets. Otherwise, you can use **widgets( )** to retrieve just the main widgets.

For example, you can write the following to get all the widgets in the first container:

```
var allContainerWidgets = $$('customWidget').container(0).widgets();
```

addContainer( )

Number **addContainer**([Object *options*])

Parameter	Type	Description
options	Object	Options for the Container class to apply to the new container
Returns	Number	Index number of the container added

Description

addContainer( ) allows you to add a new container to your multi-container widget. You can specify any ***options*** that you defined for your custom widget.

Example

In this example, we create a new container:

```
var indexNewContainer = $$("customWidget1").addContainer({color:"red", title: "My Title"});
```

container( )

Widget **container**(Number *index*)

Parameter	Type	Description
index	Number	Index number of the container
Returns	Widget	Container widget defined by index

Description

container( ) allows you to get the container widget specified by ***index***.

You can apply the **Container** functions to a container in the MultiContainer widget, like **attachWidget( )** and **widgets( )**.

If you have a composed widget in the Container, you can use **children( )** to retrieve all the widgets. Otherwise, you can use **widgets( )** to retrieve just the main widgets.

Example

For example, you can write the following to get all the widgets in the first container:

```
var allFirstContainerWidgets = $$('customWidget').container(0).widgets();
```

containers( )

Array **containers**( )

Returns	Array	All the container widgets

Description

containers( ) allows you to retrieve all the containers in the multi-container widget.

Example

In this example, retrieve all the container widgets for your multi-container widget:

```
var allContainers = $$('customWidget').containers();
```

countContainers( )

Number **countContainers**( )

Returns	Number	Total number of containers

Description

countContainers( ) allows you to retrieve the number of containers in your multi-container widget.

currentContainer( )

Widget **currentContainer**( )

Returns	Widget	Current container widget

Description

currentContainer( ) returns the current Container widget.

currentContainerIndex( )

Number **currentContainerIndex**([Number *index*])

Parameter	Type	Description
index	Number	Select the container specified by its index
Returns	Number	Currently selected container's index

Description

currentContainerIndex( ) allows you to select the current container and retrieve the index for the currently selected container.

defaultContainerClass( )

String **defaultContainerClass**([String *containerClass*])

Parameter	Type	Description
containerClass	String	Default Container class
Returns	String	Default Container class

Description

defaultContainerClass( ) allows you to get or set the default Container's class when creating new containers.

Example

In the following example, when a container is added to the widget, its class will be "MyContainerClass":

```
init: function() {
    this.defaultContainerClass(MyContainerClass);
}
```

insertContainer( )

Number **insertContainer**(Number *index* [, Object *options*])

Parameter	Type	Description
index	Number	Index number where the new Container is inserted
options	Object	Options for the Container class to apply to the new container
Returns	Number	Index number of the container inserted

Description

insertContainer( ) allows you to add a new container at ***index*** to your multi-container widget. You can specify any ***options*** that you defined for your custom widget.

Example

In this example, we insert a new container at the third position:

```
var indexNewContainer = $$("customWidget1").insertContainer(2, {color:"red", title: "My Title"});
```

lastContainer( )

Widget **lastContainer**( )

Returns	Widget	The last widget container added/inserted

Description

lastContainer( ) allows you to retrieve the last container ***widget*** added or inserted into the multi-container widget.

Example

In this example, we insert a new container at the third position:

```
var indexNewContainer = $$("customWidget1").insertContainer(2, {color:"red", title: "My Title"});
```

Then, we call lastContainer( ) to retrieve it:

```
var lastContainer = $$("customWidget1").lastContainer();
```

removeAllContainers( )

void **removeAllContainers**( )

Description

removeAllContainers( ) allows you to remove all the containers in the multi-container widget. All the widgets inside each container are also removed.

removeContainer( )

void **removeContainer**(Number *index*)

Parameter	Type	Description
index	Number	Index number of the container to remove

Description

removeContainer( ) allows you to remove a specific container that you specify by its ***index***. All the widgets inside the container are also removed.

setLastContainerAsCurrent( )

void **setLastContainerAsCurrent**( )

Description

setLastContainerAsCurrent( ) allows you to set the last container as the current one.

Example

In this example, we create a new container and then select it immediately afterwards:

```
var indexNewContainer = $$("customWidget1").addContainer({color:"green"});
$$("customWidget1").setLastContainerAsCurrent();
```

Composed

The following functions are in the **waf-behavior/layout/composed** behavior.

getPart( )

Widget **getPart** (partName)

Parameter	Type	Description
partName	String	Part name
Returns	Widget	Widget for partName

Description

getPart( ) allows you to get the widget for a part.

Example

The following example retrieves the widget that is passed as the part to get for the composed widget:

```
var myPart = $$('composedWidget1').getPart('part1');
```

getParts( )

Array **getParts**( )

Returns	Array	Parts for the widget

Description

getParts( ) returns the parts of the widget in an array.

Example

For example, if you write the following:

```
var myParts = $$("composedWidget1").getParts();
```

The *myParts* array contains the names of all the composed widget's parts.

removePart( )

void **removePart** (part)

Parameter	Type	Description
part	String	Part name

Description

removePart( ) allows you to remove a part. This part will not be destroyed completely, so you could add it back to the composed widget using the **setPart( )** function.

Example

In this example, we remove one of the parts:

```
$$('composedWidget1').removePart('part1');
```

setPart( )

void **setPart**(String *part* [, Widget *widget*])

Parameter	Type	Description
part	String	Part name
widget	Widget	Widget to set

Description

setPart( ) allows you to set the part for a widget by defining the part's name and an actual widget. If you do not specify a ***widget*** to set, the ***part*** will be removed.

Example

In the following example, we set a part defined by a name and an existing widget:

```
$$('composedWidget1').setPart('part1',$$('partWidget1'));
```

Container

The following functions are in the **waf-behavior/layout/container** behavior.

You can create a widget and use this behavior for it by writing the following:

```
WAF.define('CustomWidget', ['waf-core/widget'], function(widget) {
    var CustomWidget = widget.create('CustomWidget', {
        init: function() { }
    });
    CustomWidget.inherit('waf-behavior/layout/container');

    return CustomWidget;
});
```

detachWidget

Description

detachWidget is an event that is triggered each time a widget is detached from a Container. You can detach a widget by using the **detachWidget( )**, **detachAllWidgets( )**, and **detachAndDestroyAllWidgets( )** functions. You can also detach a widget from a Container by selecting a widget and dragging it out of the Container.

This event is also triggered when you use the **widget( )** function to replace an attached widget in the Container.

In the **event.data** object, you can retrieve the following two attributes:

Attribute	Description
widget	The widget that was detached from the Container.
index	Index number of the detached widget.

Example

Below is an example of how to intercept this event for the Container widget:

```
var MyContainer = widget.create('MyContainer', {
    init: function() {
        this.subscribe('detachWidget',function(event) {
                //do something here with the event.data object
        });
    }
});
```

moveWidget

Description

moveWidget is an event that is triggered when a widget is moved from one position to another in the index list of the Container's attached widgets using the **moveWidget( )** function.

In the **event.data** object, you can retrieve the following attributes:

Attribute	Description
widget	The attached widget.
from	Previous index number of the attached widget.
to	New index number of the attached widget.

The *from* and *to* attributes are the values you passed as parameters to the **moveWidget( )** function.

Example

Below is an example of how to intercept this event for a Container widget:

```
var MyContainer = widget.create('MyContainer', {
    init: function() {
        this.subscribe('moveWidget',function(event) {
                //do something here with the event.data object
        });
    }
});
```

insertWidget

Description

insertWidget is an event that is triggered each time a widget is attached to a Container using either **insertWidget( )** or **attachWidget( )**. You can also attach a widget in the GUI Designer by dropping it into the Container.

This event also occurs if you replace an existing attached widget using the **widget( )** function.

In the **event.data** object, you can retrieve the following two attributes:

Attribute	Description
widget	The widget that was attached from the Container.

index	Index number of the attached widget.

Example

Below is an example of how to intercept this event for the Container widget:

```
var MyContainer = widget.create('MyContainer', {
    init: function() {
        this.subscribe('insertWidget',function(event) {
                //do something here with the event.data object
        });
    }
});
```

attachWidget( )

Number **attachWidget**(Widget *widget*)

Parameter	Type	Description
widget	Widget	Widget to attach to the container
Returns	Number	Index of the widget attached

Description

attachWidget( ) allows you to attach a widget to a Container. The widget will be added to the end of the Container's list and its index number will be returned after you call this function.

Example

This example allows you to attach a widget to the Container widget:

```
var widgetIndex = $$("container1").attachWidget($$('customWidget1'));
```

countWidgets( )

Number **countWidgets**( )

Returns	Number	Number of widgets attached to the container

Description

countWidgets( ) allows you to returns the number of widgets attached to the container.

Example

In the following example, where there are four widgets and two label widgets:

A call to countWidgets( ), returns 6:

```
var attWidgets = $$("container1").countWidgets();
```

detachAllWidgets( )

void **detachAllWidgets**( )

Description

detachAllWidgets( ) allows you to detach all the widgets attached to the container. The **detachWidget** event is executed for each detached widget.
The widgets are detached from the Container, but still exist. To delete them as well, you can use the **detachAndDestroyAllWidgets( )** function.

Example

This example detaches all the widgets previously attached to a Container:

```
$$("myContainer1").detachAllWidgets();
```

detachAndDestroyAllWidgets( )

void **detachAndDestroyAllWidgets**( )

Description

detachAndDestroyAllWidgets( ) allows you to detach all the widgets attached to the container and destroy them. The **detachWidget** event is executed for each detached widget.

If you want to just detach the widgets from the Container widget, you can use the **detachAllWidgets( )** function.

Example

This example detaches and destroys all the widgets previously attached to a Container:

```
$$("myContainer1").detachAndDestroyAllWidgets();
```

detachWidget( )

Widget **detachWidget**(Number *index*)

Parameter	Type	Description
index	Number	Index of the widget to detach
Returns	Widget	Widget detached from Container

Description

detachWidget( ) allows you to detach a widget from the container by passing either it's ***index***, which is the widget's index number defined by the **widgets( )** function, or the widget itself. In both cases, the actual widget is returned and the **detachWidget** event is executed.

If you want to detach all the widgets, you can use the **detachAllWidgets( )** function.

Example

In the following example, we detach a specific widget.

Either by passing the widget itself:

```
var detachedWidget = $$('myContainer1').detachWidget($$('customWidget1'));
```

Or by passing the widget's index number in the Container:

```
var detachedWidget = $$('myContainer1').detachWidget(2); //it's the third widget attached to the myContainer1 widget
```

indexOfWidget( )

Number **indexOfWidget**(Widget *widget*)

Parameter	Type	Description
widget	Widget	Widget attached to container
Returns	Number	Widget index or -1 if widget was not found

Description

The **indexOfWidget( )** function returns the attached widget's index number in the Container or -1 if the widget is not attached to the Container.

You can insert a widget into the Container or attach it to the Container by using **attachWidget( )** or **insertWidget( )**. In the GUI Designer, you attach a widget to the Container by dropping it inside of the Container.

Example

In the following example, we retrieve the index of the widget inside the container:

```
var indexButton = $$('container1').indexOfWidget($$('button3'));
```

insertWidget( )

Number **insertWidget**(Number *index*, Widget *widget*)

Parameter	Type	Description
index	Number	Index number where to insert the widget in the container
widget	Widget	Widget to insert in the container
Returns	Number	Index number of the widget inserted in the container

Description

insertWidget( ) allows you to insert a widget in the container in the ***index*** position.

Example

The following example attaches a widget at ***index*** to the Container widget:

```
var attachedWidget = $$('myContainer1').insertWidget(2,$$('customWidget1'));
```

invoke( )

Array **invoke**(String *functionName* [, String *argument*,..., String *argument*N])

Parameter	Type	Description
functionName	String	Name of the function
argument	String	Arguments for functionName
Returns	Array	Results for the function invoked for each widget it was applied to

Description

invoke( ) allows you to call a function on all the container's attached widgets. *functionName* returns an array with the results. *functionName* is applied to all the widgets that are returned by **widgets( )** and not the actual widget for which you're calling it.

Example

Our example applies the style function on the widgets inside of *the container1* widget (which are *customWidget2* and *customWidget3*):

```
var resultsInvoke = $$('container1').invoke('style', 'background-color', 'red')
```

Only widgets *customWidget2* and *customWidget3* have a red background. The result of the invoke( ) function is:

```
["red", "red"]
```

lastWidget( )

Widget **lastWidget**( )

Returns	Widget	Last widget attached to the container

Description

lastWidget( ) allows you to return the last widget attached to the Container either by dropping it into the Container or by adding it using either the **insertWidget( )** or **attachWidget( )** functions. The last widget attached can also occur when you replace an existing widget by using the **widget( )** function.
The widget must still be attached to the Container when you call this function. Otherwise, an error will be returned.

Example

In our example, we test for the last widget attached to the Container:

```
var MyContainer = widget.create('MyContainer', {
    init: function() {
        this.subscribe('insertWidget',function(event) {
            var thisLast = this.lastWidget();
            // do something with thisLast (which is the last widget attached to the Container)
        }, this);
    }
});
```

***Note**: The **event.data.widget** attribute also returns the last attached widget.*

moveWidget( )

void **moveWidget**(Number *element*, Number *newPosition*)

Parameter	Type	Description
element	Number	Element to move
newPosition	Number	New position for element

Description

moveWidget( ) allows you to move *element* to *newPosition*. If there is a widget in the *newPosition*, the other widgets are moved accordingly.
The **moveWidget** event is triggered after you call this function.

Example

In the following example, we first obtain the widgets in a container widget:

```
var myWidgets = $$('container1').widgets(); // returns [$$('widget1'), $$('widget2'), $$('widget3'), $$('widget4')]
```

If we call the following code:

```
$$('container1').moveWidget(0,2);
```

If we call this line of code again, the results are different:

```
var myWidgets = $$('container1').widgets(); // returns  [$$('widget2'), $$('widget3'), $$('widget1'), $$('widget4')]
```

restrictWidget( )

void **restrictWidget**(Widget *widgetClass*)

Parameter	Type	Description
widgetClass	Widget	Widget class

Description

restrictWidget( ) allows you to restrict the widget class (v2 only) that can be attached to the container. Once you define the widget class to restrict, no other widget classes can be attached to the Container using either **insertWidget( )** or **attachWidget( )**, or by dropping it into the Container in the GUI Designer.

The widget class you specify also applies to widgets that inherit that widget class.

***Note**: You must also include the widgets you restrict in the **WAF.define()** as shown in the example for the **restrictWidget( )** class function.*

widget( )

Widget **widget**(Number *index* [, Widget *widgetToReplace*])

Parameter	Type	Description
index	Number	Index of the widget
widgetToReplace	Widget	If specified, the widget replaces the widget at index
Returns	Widget	Widget at the index position or widgetToReplace

Description

widget( ) allows you to either retrieve the widget at the ***index*** position or replace it with the widget passed as the second parameter.

The widget that was in the ***index*** position is detached and destroyed by ***widgetToReplace***, if passed. The **detachWidget** and **insertWidget** events occur if you replace one widget with another. The first event occurs for the widget detached from the Container and the second event is triggered for the widget attached to the Container.

Example

In the example below, we replace the widget at the ***index*** position with another widget:

```
var newWidget = $$('container1').widget(1,$$('text1'));
```

Example

In this example, we retrieve the widget at the first position in the Container where ***index*** is equal to 0:

```
var firstWidget = $$('container1').widget(0); //get first widget
```

To get the last widget in the index list attached to the Container:

```
var count = $$('container1').countWidgets();
var lastWidget = $$('container1').widget(count-1); //get last widget
```

widgets( )

Array **widgets**( )

Returns	Array	Array of the container's attached widgets

Description

With the **widgets( )** function, you retrieve an array of all the attached widgets. Each widget has its own ***index*** number that can be used by other functions.

***Note**: For all v1 widgets, the "kind" is "OldWidget" instead of the widget's class name.*

Example

In the following example, we first obtain the widgets in a container widget:

```
var myWidgets = $$('container1').widgets(); // returns [$$('widget1'), $$('widget2'), $$('widget3'), $$('widget4')]
```

If we call the following code:

```
$$('container1').moveWidget(0,2);
```

If we call this line of code again, the results are different:

```
var myWidgets = $$('container1').widgets(); // returns  [$$('widget2'), $$('widget3'), $$('widget1'), $$('widget4')]
```

Observable

These functions allow you to define or execute an event as well as subscribe to and unsubscribe from an event.

fire( )

void **fire**(String *event* [,String *target*] [,Object *data*] [,Object *options*])

Parameter	Type	Description
event	String	Event name
target	String	Target expressed in RegEx
data	Object	Optional data
options	Object	Event options

Description

fire( ) allows you to declare or fire an event.

options

The *options* parameter contains the following attributes:

Attribute	Description
deferred	timeout to launch the callback
animationFrame	launch the callback during an animation frame
once	discard previous pending events if true
onlyRealEvent	launch callback only when the fired event is the subscribed event

Example

In the following example, we create a custom event attached to the standard DOM "click" event. In the widget.js file, we write the following:

```
CustomWidget.prototype.init = function() {
    this.fire('myEvent');
};
CustomWidget.mapDomEvents( { 'click': 'myEvent' } );
```

You can customize how the event appears in the GUI Designer even though it's not necessary, by writing:

```
CustomWidget.addEvent({
    'name':'myEvent',
    'description':'On My Event',
    'category':'My Custom Events'
});
```

When you click on your custom widget, the "myEvent" event will be launched.

removeSubscriber( )

void **removeSubscriber**(Object *subscriber*)

Parameter	Type	Description
subscriber	Object	Subscriber object

Description

With **removeSubscriber( )**, you can remove a subscriber that was created with **subscribe( )**.

Example

If you subscribe to an event, as shown below:

```
var mySubcriber = $$('customWidget1').subscribe('click', function() {
    //do something
});
```

You can remove the subscriber from it in the following manner:

```
$$('customWidget1').removeSubscriber(mySubcriber);
```

subscribe( )

Object **subscribe**(String *event*[, String *target*], Function *callback*[, String *observer*][, Object *userData*])

Parameter	Type	Description
event	String	Event to which to subscribe
target	String	Target filtering for the event
callback	Function	Callback after the event is fired
observer	String	Object subscribing to the event
userData	Object	Data passed to the callback
Returns	Object	Subscriber object

Description

subscribe( ) allows you to subscribe to an event and execute a ***callback*** asynchronously. The event must have already been defined for the custom widget by using

mapDomEvents( ).

Example

If you subscribe to an event, as shown below:

```
var mySubcriber = $$('customWidget1').subscribe('click', function() {
    //do something
}, this);
```

***Note**: The **this** variable added as a parameter to the subscribe() function means that **this** will be the custom widget and not the subscriber.*
You can unsubscribe from it in the following manner:

```
$$('customWidget1').unsubscribe({
    event: 'click'
});
```

unsubscribe( )

void **unsubscribe**(Object *subscriber*)

Parameter	Type	Description
subscriber	Object	Object defining the event, target, callback, and observer

Description

unsubscribe( ) allows you to unsubscribe a subscriber from an event.

Example

If you subscribe to an event, as shown below:

```
var mySubcriber = $$('customWidget1').subscribe('click', function() {
    //do something
}, this);
```

***Note**: The **this** variable added as a parameter to the subscribe() function means that **this** will be the custom widget and not the subscriber.*
You can unsubscribe from it in the following manner:

```
$$('customWidget1').unsubscribe({
    event: 'click'
});
```

Pagination

You can enable the pagination of data for your custom widget by including the "waf-behavior/navigationSource" library into your "widget.js" file.
You include this library with your custom widget, you can write the following:

```
WAF.define('CustomWidget', ['waf-core/widget'], function(widget) {
    var sourceNavigation = WAF.require('waf-behavior/navigationSource');
    var CustomWidget = widget.create('CustomWidget', {
            //place the rest of the code for your widget here
    });
    CustomWidget.inherit(sourceNavigation);
    return CustomWidget;
});
```

Otherwise, you can include this information directly in the **define( )** function when you include the library:

```
WAF.define('CustomWidget', ['waf-core/widget', 'waf-behavior/source-navigation'], function(widget, sourceNavigation) {
    var CustomWidget = widget.create('CustomWidget', {
        //place the rest of the code for your widget here
    });
    CustomWidget.inherit(sourceNavigation);
    return CustomWidget;
});
```

You can define the default pageSize in the **pageSize property** when declaring the property of type datasource.

Properties

You can define the following properties, which are also defined as functions below:

- **start**: The number of the element displayed at the top of the page.
- **currentPage**: The current page of the paginated data displayed.
- **navigationMode**: The navigation mode that is either 'loadmore' or 'pagination'.
- **totalPages**: Total number of pages of the paginated data.
- **pageSize**: Number of elements currently displayed on the page.

currentPage( )

void **currentPage**(Number *page*)

Parameter	Type	Description
page	Number	Page number of the page to display

Description

currentPage( ) allows you to either set the page of the paginated data to display or get the number of the currently displayed page.

linkDatasourcePropertyToNavigation( )

void **linkDatasourcePropertyToNavigation**(String *datasourceProperty*)

Parameter	Type	Description
datasourceProperty	String	Custom widget's property of type Datasource

Description

With **linkDatasourcePropertyToNavigation( )**, you define the custom widget's property of type Datasource, which contains the data to be paginated.

Example

In the example below, we create the property of type Datasource and assign it to our custom widget so that we can page the data.

```
var CustomWidget = widget.create('CustomWidget', {

    dsProperty: widget.property({
        type: 'datasource'
    }),

    init: function() {
        this.linkDatasourcePropertyToNavigation('dsProperty');
    }

});
```

linkParentElementToNavigation( )

void **linkParentElementToNavigation**(Object *domElement*)

Parameter	Type	Description
domElement	Object	Parent DOM element

Description

linkParentElementToNavigation( ) allows you to define the parent DOM event in which to return the data (which will be in a separate DOM node for each element).

Example

The following example defines the parent DOM element to be a <ul>:

```
init: function() {
    this.linkDatasourcePropertyToNavigation('dsProperty');
    var ulElement = document.createElement('ul');
    this.node.appendChild(ulElement);
    this.linkParentElementToNavigation(ulElement);
}
```

loadMore( )

void **loadMore**( )

Description

loadMore( ) allows you to load another page of data as defined by the *pageSize* property.

navigationMode( )

void **navigationMode**(String *mode*)

Parameter	Type	Description
mode	String	Paging mode: "pagination" or "loadmore"

Description

navigationMode( ) allows you to either get or set the pagination mode (either "pagination" or "loadmore").
The two modes are:

- **pagination**: Change pages with the data.
- **loadmore**: Allows you to load more data that is appended to the data already displayed on the page.

nextPage( )

void **nextPage**( )

Description

nextPage( ) allows you to retrieve the next page of the paginated data. The number of entities displayed depends on what is currently being displayed.

pageSize( )

void **pageSize**(Number *size*)

Parameter	Type	Description
size	Number	Number of elements to display on the page

Description

pageSize( ) allows you to set the number of elements to display on the page or get the number of elements currently displayed on the page.

prevPage( )

void **prevPage**( )

Description

prevPage( ) allows you to retrieve the previous page of the paginated data. The number of entities displayed depends on what is currently being displayed.

renderElement( )

Object **renderElement**( )

Returns	Object	Each entity in the paginated data

Description

renderElement( ) allows you to define a function in which the current entity is returned. The parameters received by this function are explained below.

Parameters

In the function you create for renderElement( ), you receive two parameters:

Parameter	Description
element	Datasource entity. You can use the **getAttributeValue( )** function to access data from a specific attribute in the datasource element.
position	Position of the entity in the entity collection.

Example

In the following example, the renderElement( ) function returns one of the attributes, in our case "name", from the current entity in the <li> DOM element after we defined the parent DOM element with **linkParentElementToNavigation( )**:

```
var CustomWidget = widget.create('CustomWidget', {

        dsProperty: widget.property({
            type: 'datasource',
            pageSize: Infinity
        }),


        init: function() {
            this.buildContainer();
            this.linkDatasourcePropertyToNavigation('dsProperty');
        },

        buildContainer: function() {
            var ulElement = document.createElement('ul');
            this.node.appendChild(ulElement);
            this.linkParentElementToNavigation(ulElement);
        },

        renderElement: function(element, position) {
            return '<li>' + position + " - " + element.getAttributeValue('name') + '</li>';
        }

    });
```

start( )

void **start**

Description

start( ) allows you to either set or get the entity number at the beginning of the paginated data.

totalPages( )

Number **totalPages**( )

Returns	Number	Total number of pages of paginated data

Description

totalPages( ) allows you to get the total number of pages of paginated data.

Position

To retrieve the positions of the top, left, bottom, and right coordinates after having setting them using the functions below, you can do so by writing:

```
var rightCoord = $$('customWidget1').getNode().style.right;
```

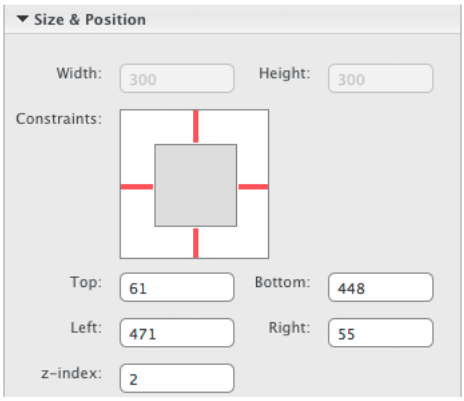
rightCoord is equal to "33px" if we wrote the following code beforehand:

```
$$('customWidget1').right(33);
```

Each coordinate is a property in the "style" object: top, left, bottom, and right.

Constraints

If you set the constraints for your custom widget in the Styles tab, the widget will grow and shrink depending on the values you pass to the **top( )**, **left( )**, **right( )**, and **bottom( )**.
In the GUI Designer, you can set the constraints:



For more information, refer to **Constraints** section in Wakanda Studio's GUI Designer.

absolutePosition( )

Object **absolutePosition**

Returns	Object	Absolute position of the widget

Description

absolutePosition( ) returns the widget's absolute position. In the object that it returns, you can retrieve the top and left coordinates:

```
var position =$$('customWidget1').absolutePosition();
```

The two properties below define the left and top coordinates of the widget's absolute position:

Property	Description
left	Left offset
top	Top offset

bottom( )

void **bottom** (offset)

Parameter	Type	Description
offset	Number	Widget's bottom offset in pixels

Description

bottom( ) allows you to set the widget's bottom offset in pixels.

fitToBottom( )

void **fitToBottom**( )

Description

fitToBottom( ) allows you to fit the widget to the bottom of the Page or Container in which it is located. Consequently, the width and height of the widget will be modified.

fitToLeft( )

void **fitToLeft**( )

Description

fitToLeft( ) allows you to fit the widget to the left of the Page or Container in which it is located. Consequently, the width and height of the widget will be modified.

fitToRight( )

void **fitToRight**( )

Description

fitToRight( ) allows you to fit the widget to the right of the Page or Container in which it is located. Consequently, the width and height of the widget will be modified.

fitToTop( )

void **fitToTop**( )

Description

fitToTop( ) allows you to fit the widget to the top of the Page or Container in which it is located. Consequently, the width and height of the widget will be modified.

left( )

void **left** (position)

Parameter	Type	Description
position	Number	Widget's left offset in pixels

Description

left( ) allows you to set the widget's left offset in pixels.

position( )

Object **position**

Returns	Object	Position of the widget

Description

position( ) returns the widget's position depending on its location (if it's in a Container). In the object that it returns, you can retrieve the top and left coordinates:

```
var position =$$('customWidget1').position();
```

The two properties below define the left and top coordinates of the widget's position:

Property	Description
left	Left offset
top	Top offset

right( )

void **right** (position)

Parameter	Type	Description
position	Number	Widget's right offset in pixels

Description

right( ) allows you to set the widget's right offset in pixels.

top( )

void **top** (position)

Parameter	Type	Description
position	Number	Widget's top offset in pixels

Description

top( ) allows you to set the widget's top offset in pixels.

Properties

The functions in the Properties category allow you to set or get the value of your widget's property, define a callback when the property changes or bind a datasource attribute to it.

change

Description

change is an event that is triggered when the property's value changes.

Example

The following example shows you how to subscribe to this event:

```
this.subscribe('change', 'test', function() {
    //do something
}, this);
```

datasourceBindingChange

Description

datasourceBindingChange is an event that is triggered when the property's datasource changes. This event is valid for all properties except those of type List.
The datasourceBindingChange event is triggered when you:

1. Modify the datasource in the **Property** tab in the GUI Designer,
2. Change the datasource binding using the **{propertyName}.bindDatasource( )** function for a property (except of type Datasource), or
3. Modify the datasource binding using the **{propertyName}.mapping( )** function for **Properties of type Datasource**.

Example

The following example shows how to intercept the datasourceBindingChange event:

```
var CustomWidget = widget.create('CustomWidget', {
    init: function() {
        this.subscribe('datasourceBindingChange', 'test', function() {
            //do something
        }, this);
    },

    test: widget.property({
        onChange: function(newValue) {
            this.node.innerHTML = this.test();
        }
    })
});
```

{propertyName}.onChange( )

void **{propertyName}.onChange**(Function *callback*)

Parameter	Type	Description
callback	Function	Callback function to call

Description

{propertyName}.onChange( ) allows you to set a callback when the value of the property changes.

event object for onChange event

In the event object are the following properties:

Name	Description
data.oldValue	Previous value for the property
data.value	Actual value for the property
kind	Event type
parentEvent	Event that triggered this event
target	Property name

Example

In the following example, we set a callback function to occur when the value in the *test* property changes:

```
documentEvent.onLoad = function documentEvent_onLoad (event)
{
    $$('customWidget1').test.onChange(function(newValue) {
        //do something here
    });
};
```

The *newValue* parameter contains the new value of the property.

{propertyName}( )

void **{propertyName}**(String | Number | Boolean *value*)

Parameter	Type	Description
value	String, Number, Boolean	Value to set for the property

Description

{propertyName}( ) allows you to get or set the value in the property whose name is the function's name.

Getting the property's value

To retrieve the value in a property you defined as "titleProp", you write the following:

```
var propValue = this.titleProp(); //propValue contains the current value of the titleProp property
```

Setting the property's value

If you want to set the value of the "titleProp" property, you write the following:

```
this.titleProp("New value");
```

bindDatasourceAttribute( )

void **bindDatasourceAttribute**(DataSource *datasource* , String *attribute* [, String *property*])

Parameter	Type	Description
datasource	DataSource	Datasource in which the attribute is located (e.g., sources.company)
attribute	String	Attribute name as defined in the datastore class
property	String	Custom widget's property name to bind to the datasource attribute

Description

With **bindDatasourceAttribute( )**, you bind a datasource attribute to a property and define specific options regarding events, callbacks, etc.

There are two ways in which you can use this function: either by defining the custom widget's property or by defining an event for one or more callbacks.

The syntax in which you pass the *datasource* as a string is the only one you can use in the GUI Designer because the actual datasource does not exist until the Page is run. The property will be modified in the **Properties** panel after you call bindDatasourceAttribute( ).

options parameter

The options parameter is an object in which you can specify the following properties:

Property	Description
datasource	Datasource (i.e., sources.company)
attribute	Attribute name
setCallback	Set callback function (not to be used if the *property* parameter is specified)
getCallback	Get callback function (not to be used if the *property* parameter is specified)
event	Event name
callback	Callback function

***Note**: This syntax cannot be used to change the datasource and attribute when working in the GUI Designer. You must use the other syntax to do so.*

property parameter

The *property* parameter is the custom widget's property. You cannot use the setCallback or getCallback parameters in the *options* property if you specify the custom widget's property in the *property* parameter.

Example

In our example below, we modify the datasource attribute bound to our custom widget's "widgetPropName" property so that it's now bound to the "name" attribute in the "company" datasource:

```
this.bindDatasourceAttribute({
   datasource: sources.company,
   attribute: 'name'
   },
   'widgetPropName'
);
```

Example

The example below allows you to define a callback function that sets the value for the "myProp" property defined for your custom widget:

```
this.bindDatasourceAttribute({
   datasource: sources.company,
   attribute: 'name',
   setCallback: function(value) { this.myProp(value);  }
});
```

Example

This example shows you how to bind a datasource to an attribute when working in the GUI Designer:

```
$$("customWidget1").bindDatasourceAttribute("company.name","nameProp");
```

***Note**: Since the datasource does not yet exist, you cannot use the other syntax in which the datasource is defined in the options parameter.*

bindDatastourceElement( ) **NOT PUBLIC**

void **bindDatastourceElement **NOT PUBLIC****

Description

By default binding is done on the current element. This function allows you to choose which element (based on its number) to bind the datasource to.

Properties of type Datasource

All the functions in this category can be used on a property of type "datasource". For example, if the syntax is {*propertyName*}.attributes( ), you'd write the following if your property's name of type "datasource" is "testProperty":

```
var myAttributes = $$('customWidget1').testProperty.attributes( )
```

or, when in the "widget.js" file:

```
var myAttributes = this.testProperty.testProperty.attributes( )
```

datasourceBindingChange

Description

datasourceBindingChange is an event that is triggered when the property's datasource changes. This event is valid for all properties except those of type List.
The datasourceBindingChange event is triggered when you:

1. Modify the datasource in the **Property** tab in the GUI Designer,
2. Change the datasource binding using the **{propertyName}.bindDatasource( )** function for a property (except of type Datasource), or
3. Modify the datasource binding using the **{propertyName}.mapping( )** function for **Properties of type Datasource**.

Example

The following example shows how to intercept the datasourceBindingChange event:

```
var CustomWidget = widget.create('CustomWidget', {
    init: function() {
        this.subscribe('datasourceBindingChange', 'test', function() {
            //do something
        }, this);
    },

    test: widget.property({
        onChange: function(newValue) {
            this.node.innerHTML = this.test();
        }
    })
});
```

{propertyName}.attributeFor( )

String **{propertyName}.attributeFor**(String *attribute*)

Parameter	Type	Description
attribute	String	Datasource defined for a property in the "attributes" property
Returns	String	Datasource attribute bound to attribute

Description

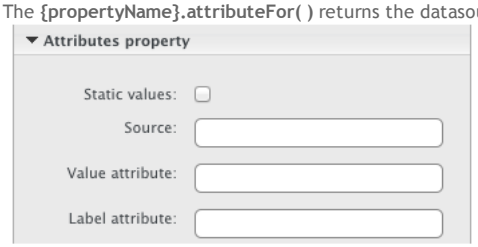
{propertyName}.attributeFor( ) allows you to retrieve the datasource bound to a property's attribute.
For example, if you have created a property of type "datasource":

```
CustomWidget.addProperty('attributes', {
    type: 'datasource',
    attributes: [{
        name: 'value'
    }, {
        name: 'label'
    }]
});
```

If you write:

```
var myds = $$('customWidget1').myAtts.attributeFor('value');
```

The **{propertyName}.attributeFor( )** returns the datasource affected in the "Attribute value" property:



{propertyName}.attributes( )

Array **{propertyName}.attributes**( )

Returns	Array	Attributes defined for the property

Description

{propertyName}.attributes( ) allows you to retrieve the property's attributes.
If you have created your property of type "datasource":

```
CustomWidget.addProperty('myAtts', {
    type: 'datasource',
    attributes: [{
        name: 'value'
    }, {
        name: 'label'
    }]
});
```

In our example above, **{propertyName}.attributes( )** returns an array in which each object is an attribute:

```
[ { name = "value" },  { name = "label" } ]
```

{propertyName}.fetch( )

void **{propertyName}.fetch** (options)

Parameter	Type	Description
options	Object	Object containing the properties to define the start and pageSize

Description

{propertyName}.fetch( ) allows you to fetch a page of data defined by the ***start*** and ***pageSize*** properties.

Property	Description
start	Index of the entity to start the page with
pageSize	Size of the page of entities

{propertyName}.getCollection( )

void **{propertyName}.getCollection**(Function *callback* [, Function *errorCallback*])

Parameter	Type	Description
callback	Function	Callback function
errorCallback	Function	Error callback

{propertyName}.getPage( )

void **{propertyName}.getPage** (start , pageSize , callback , errorCallback)

Parameter	Type	Description
start	Number	Index number of the entity to begin with. By default it is 0.
pageSize	Number	Number of entities to retrieve
callback	Function	Callback function
errorCallback	Function	Error callback

Description

{propertyName}.getPage( ) allows you to retrieve the current collection of the datasource mapped to the property.

```
this.source.getPage(0, 50, function(elements) {
    // do something...
});
```

By default ***start is*** 0 if it has not been defined. The ***pageSize***'s default value is the one defined in the **pageSize property**.
In the callback function's parameter *elements*, we retrieve an array of objects containing the current values for the attributes:

```
[ { company="Apple", url="http://www.apple.com"}, { company="4D", url="http://www.4d.com"} ]
```

{propertyName}.mapElement( )

Object **{propertyName}.mapElement**(Object *map*)

Parameter	Type	Description
map	Object	Map the datasource to the value for each attribute
Returns	Object	Object containing a property for each attribute and its value

Description

{propertyName}.mapElement( ) allows you to map an element in the datasource.
In the ***map*** object, you pass the datasource bound to the property with its value:

```
{ datasourceProperty: "value" }
```

Example

If you have the following property:

```
CustomWidget.addProperty('myAtts', {
    type: "datasource",
    attributes: [{
        name: 'coName'
```

```
    }, {
        name: 'coUrl'
    }]
});
```

The "coName" property's datasource is "name" and the "coUrl" property's datasource is "url":

```
{ coName:"name", coUrl:"url" }
```

If you call the following code:

```
var myMap = $$('customWidget1').myAtts.mapElement({ name: "4D", url: "http://www.4D.com/" })
```

myMap will return the following:

```
{ coName:"4D", coUrl:"http://www.4D.com/" }
```

{propertyName}.mapping( )

void **{propertyName}.mapping**(Object *map*)

Parameter	Type	Description
map	Object	Map for the property's attributes

Description

{propertyName}.mapping( ) allows you to get or set the map of the attributes in the datastore class datasource defined in the "Source" field. If you want to change the datastore class datasource, you must use the **{propertyName}( )** function.

The object you send contains the property and its new datasource attribute. The property (or properties) will be modified in the **Properties** panel after you call {propertyName}.mapping( ). You must set all the attributes at the same time because if not, the omitted attributes will be set to empty string.

If your property does not have any attributes defined, this function will return *undefined*.

The **datasourceBindingChange** event is triggered after calling this function.

Example

For example, if we have two attributes in the myAtts property: "title" and "link", we assign two datasource attributes using this function:

```
var myAttsObject = $$('customWidget1').myAtts.mapping({ title:"fullName", link:"email" });
```

myAttsObject returns the mapping of the attributes after execution.

Example

The following example modifies the datastore class datasource and its attributes:

```
$$('customWidget1').myAtts("company");
var myAttsObject = $$('customWidget1').myAtts.mapping({ title:"name", link:"url" });
```

{propertyName}.onChange( )

void **{propertyName}.onChange**(Function *callback*)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onChange( ) allows you to define a callback that will be executed when the property changes.

```
this.myAtts.onChange(function(event) {
    // do something...
});
```

{propertyName}.onCollectionChange( )

void **{propertyName}.onCollectionChange**(Function *callback* [, Function *errorCallback*])

Parameter	Type	Description
callback	Function	Callback function
errorCallback	Function	Error callback

{propertyName}.onPageChange( )

void **{propertyName}.onPageChange**(Function *callback* [, Function *errorCallback*])

Parameter	Type	Description
callback	Function	Callback function
errorCallback	Function	Error callback

Description

{propertyName}.onPageChange( ) allows you to install a callback to get the mapped collection if the datasource changes.

```
this.myAtts.onPageChange(function(elements) {
    // do something...
});
```

This callback will be called each time:

- data in the current page changes,
- an attribute is changed in the current page,
- each time the current page is changed,
- the first time fetch() is called.

In the callback function's parameter *elements*, we retrieve an array of objects containing the values for the attributes:

```
[ { company="Apple", url="http://www.apple.com"}, { company="4D", url="http://www.4d.com"} ]
```

{propertyName}.pageSize( )

Number **{propertyName}.pageSize**( )

Returns	Number	Page size can either be a number or Infinity

Description

With **{propertyName}.pageSize( )**, you can retrieve the current page size for the datasource property.
You can define this *pageSize* property in the **{propertyName}.fetch( )** function.

{propertyName}.setMapping( )

void **{propertyName}.setMapping**(Object *map*)

Parameter	Type	Description
map	Object	Map for the property's attributes

{propertyName}.start( )

Number **{propertyName}.start**( )

Returns	Number	Start index number

Description

With **{propertyName}.start( )**, you can retrieve the start for the datasource property.
You can define this *start* property in the **{propertyName}.fetch( )** function.

{propertyName}( )

DataSource **{propertyName}**( )

Returns	DataSource	Datasource bound to this property

Description

{propertyName}( ) allows you to retrieve the datasource bound to this property. A property for each attribute that you define is included in this datasource object. For example, if you have defined the "name" attribute from your Company datastore class, the value of the current entity will be in the *mydsName* variable:

```
var mydsName = $$('customWidget1').myds().name;
```

If you want to modify the datasource bound to the property of type Datasource:

```
$$('customWidget1').myds("company");
```

Properties of type List

All the functions in this category can be used on a property of type "list". For example, if the syntax is {*propertyName*}.count( ), you'd write the following if your property's name of type "list" is "listProperty":

```
var myCount = $$('customWidget1').listProperty.count( )
```

or, when in the "widget.js" file:

```
var myCount = this.listProperty.count( )
```

You define **attributes** for the property of type "list". An **element** is the set of values you specify for each set of attributes.

Events fired by function

The following events are fired after each function is called:

{propertyName}.concat( )

- onInsert event for each added attribute
- onChange event

{propertyName}.insert( )

- onInsert event
- onChange event

{propertyName}.move( )

- onRemove event
- onInsert event
- onMove event
- onChange event

{propertyName}.pop( )

- onRemove event
- onChange event

{propertyName}.push( )

- onChange event

{propertyName}.remove( )

- onRemove event
- onChange event

{propertyName}.removeAll( )

- onRemove event for each removed attribute
- onChange event

{propertyName}.shift( )

- onRemove event
- onChange event

insert

Description

insert is an event that is triggered when an element is inserted in the property of type List.
For more information, refer to **{propertyName}.onInsert( )**. To subscribe to this event, use the **subscribe( )** function.

Example

The following example shows you how to subscribe to this event:

```
this.subscribe('insert', function() {
    //do something
}, this);
```

modify

Description

modify is an event that is triggered when the value of an element is modified in the property of type List.
For more information, refer to **{propertyName}.onModify( )**. To subscribe to this event, use the **subscribe( )** function.

Example

The following example shows you how to subscribe to this event:

```
this.subscribe('modify', function() {
    //do something
}, this);
```

move

Description

move is an event that is triggered when an element is moved in the property of type List.
For more information, refer to **{propertyName}.onMove( )**. To subscribe to this event, use the **subscribe( )** function.

remove

Description

remove is an event that is triggered when an element is removed from the property of type List.
For more information, refer to **{propertyName}.onRemove( )**. To subscribe to this event, use the **subscribe( )** function.

{propertyName}( )

Array **{propertyName}**(Number *element*, Object *listElement*)

Parameter	Type	Description
element	Number	Element to insert or modify
listElement	Object	An object defining an element
Returns	Array	Array of objects defining the elements in the list property

Description

{propertyName}( ) allows you to return an array of objects in which each object is an element in the list property.
You can also update an existing element or add a new one by passing the ***element*** and ***listElement*** parameters to **{propertyName}( )**. Afterwards, the array of objects is returned as well. In this case, the following events are fired: *onRemove* (if an element is removed), *onInsert*, *onModify*, and *onChange*.

Example

The following example modifies the first element in the list property:

```
var listElements = $$("customWidget1").listproperty(0, {value: "modifiedValue", label:"Modified Value" });
```

listElements contains an array defining the elements in the list property with the first one modified as specified.

{propertyName}.concat( )

void **{propertyName}.concat**(Array *listElements*)

Parameter	Type	Description
listElements	Array	An array containing multiple objects that define an element

Description

{propertyName}.concat( ) allows you to add an array of elements, ***listElements***, in the property.
The *onInsert* event is fired for each attribute added and then the *onChange* event is fired.

Example

The following example adds two elements in the listProp property:

```
$$("customWidget1").listProp.concat( [ { value: "value1", label: "label1" }, { value: "value2", label: "label2" } ] );
```

{propertyName}.count( )

Number **{propertyName}.count**( )

Returns	Number	Number of elements defined in the list property

Description

{propertyName}.count( ) returns the number of elements in the list property.

{propertyName}.first( )

void **{propertyName}.first**( )

Description

{propertyName}.first( ) allows you to select the first element in the property of type "list".

{propertyName}.insert( )

Number **{propertyName}.insert** (element , listElement)

Parameter	Type	Description
element	Number	Element where listElement is inserted
listElement	Object	An object defining an element
Returns	Number	Index of listElement inserted in the property

Description

{propertyName}.insert( ) allows you to insert a ***listElement*** in the property at ***element***. This function returns the added element's index in the property.
The *onInsert* event is fired and then afterwards the *onChange* event.

Example

The following example inserts ***listElement*** at the first position:

```
var index = $$("customWidget1").listProp.insert(0, { value: "value1", label: "label1" }); //returns 0
```

{propertyName}.last( )

void **{propertyName}.last**( )

Description

{propertyName}.last( ) allows you to select the last element in the property of type "list".

{propertyName}.move( )

void **{propertyName}.move**(Number *element*, Number *newPosition*)

Parameter	Type	Description
element	Number	Element to move
newPosition	Number	New position for element

Description

{propertyName}.move( ) allows you to move ***element*** to ***newPosition***.
The *onRemove*, *onInsert*, and *onMove* events are fired after calling {propertyName}.move( ). As usual, the *onChange* event is fired afterwards.

Example

This example moves the 7th element to the 1st position:

```
$$('customWidget1').listProp.move(6,0);
```

{propertyName}.onChange( )

void **{propertyName}.onChange**(Function *callback*)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onChange( ) allows you to define a ***callback*** that will be executed when the property changes.

```
this.listproperty.onChange(function(event) {
    // do something...
});
```

This ***callback*** is executed after other events occur, like an object being inserted, removed, and moved.

event object

The ***event*** object returns two properties:

Property	Type	Description
index	Number	Element number
value	Array	An array of objects (defining the elements) in the List property that were affected

{propertyName}.onInsert( )

void **{propertyName}.onInsert** (callback)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onInsert( ) allows you to define a callback function when an element is inserted in the property of type List.

event object

The ***event*** object returns two properties:

Property	Type	Description
index	Number	Element number

value	Array	An array of objects (defining the elements) in the List property that were affected

{propertyName}.onModify( )

void **{propertyName}.onModify** (callback)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onModify( ) allows you to define a callback function when the value of an element is modified in the property of type List.
You can modify an element by passing the element number and its new values to the **{propertyName}( )** function.

event object

The *event* object returns two properties:

Property	Type	Description
index	Number	Element number
value	Array	An array of objects (defining the elements) in the List property that were affected

{propertyName}.onMove( )

void **{propertyName}.onMove** (callback)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onMove( ) allows you to define a callback function when an element is moved in the property of type List.

event object

The *event* object returns two properties:

Property	Type	Description
index	Number	Element number
value	Array	An array of objects (defining the elements) in the List property that were affected

{propertyName}.onRemove( )

void **{propertyName}.onRemove**(Function *callback*)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onRemove( ) allows you to define a callback function when an element is removed from the property of type List.
If, for example, you call **{propertyName}.removeAll( )**, the callback defined for {propertyName}.onRemove( ) is called for each object removed.

event object

The *event* object returns two properties:

Property	Type	Description
index	Number	Element number
value	Array	An array of objects (defining the elements) in the List property that were affected

{propertyName}.pop( )

Object **{propertyName}.pop**( )

Returns	Object	Removed element

Description

{propertyName}.pop( ) allows you to remove the last element in the property of type "list". The removed element is returned by this function.
The *onRemove* event is fired after calling {propertyName}.pop( ). As usual, the *onChange* event is fired afterwards.

{propertyName}.push( )

Number **{propertyName}.push**(Object *listElement*)

Parameter	Type	Description
listElement	Object	An object defining an element
Returns	Number	Index of the listElement added

Description

{propertyName}.push( ) allows you to append ***listElement*** to the property. This function returns the added element's index in the property.
The *onChange* event is fired after calling this function.

Example

In the following example, we add ***listElement*** to the end of the elements in the listProp property:

```
var index = $$("customWidget1").listProp.push({ value: "value1", label: "label1" });
```

{propertyName}.remove( )

Object **{propertyName}.remove**(Number *element*)

Parameter	Type	Description
element	Number	Define which object to remove (first element is 0)
Returns	Object	Removed element

Description

{propertyName}.remove( ) allows you to remove a specific object defined by ***element*** in the property. The removed object is returned by this function.
The *onRemove* and *onChange* events are fired after calling this function.

{propertyName}.removeAll( )

void **{propertyName}.removeAll**( )

Description

{propertyName}.removeAll( ) allows you to remove all the elements in the property of type "list".
The *onRemove* is fired after the removal of each element. Afterwards, the *onChange* events is fired.

{propertyName}.shift( )

Object **{propertyName}.shift**( )

Returns	Object	Removed element

Description

{propertyName}.shift( ) allows you to remove the first element defined for the property. The removed element is returned by this function.
The *onRemove* and *onChange* events are fired after calling this function.

Properties of type Template

All the functions in this category can be used on a property of type "template". For example, if the syntax is {*propertyName*}.templates( ), you'd write the following if your property's name of type "list" is "listProperty":

```
var myTemplates = $$('customWidget1').myTemplateProperty.templates( )
```

or, when in the "widget.js" file:

```
var myTemplates = this.myTemplateProperty.templates( )
```

Attributes

All attributes in your template must be in all lowercase letters even if you have included an uppercase letter. For example, if you have named your template's attribute "myAttribute", you must refer to it as "myattribute".

{propertyName}( )

void **{propertyName}**(String *template*)

Parameter	Type	Description
template	String	Template to define for the property

Description

{propertyName}( ) allows you to get or set the definition of the current template. The template definition is specified in this property's **templates object**.

Example

The following example returns the template string:

```
var templateString=$$("customWidget1").templateProperty(); //returns "<h1>{{name}}</h1><p><b>{{revenues}}</b></p>"
```

Example

This example sets the template:

```
$$('customWidget1').templateProperty("<h1>name</h1>");
```

{propertyName}.attributes( )

Array **{propertyName}.attributes**( )

Returns	Array	List of attributes defined for selected template

Description

{propertyName}.attributes( ) allows you to get the attributes defined in the current template.

Example

In this example, we retrieve the attributes defined for our template:

```
var templateAttributes = $$("customWidget1").templateProperty.attributes();
```

{propertyName}.onChange( )

void **{propertyName}.onChange**(Function *callback*)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onChange( ) allows you to define a callback that will be executed when the template or attributes for the template property changes.

```
this.templateProperty.onChange(function(event) {
    // do something...
});
```

event object

If you have not specified the *datasourceProperty* property for the template property, the event object returns only the new template.
If you have specified the *datasourceProperty* property, the event object returns the following properties:

Name	Description
data.oldValue	Previous value for the property
data.value	Actual value for the property

{propertyName}.onDataChange()

void **{propertyName}.onDataChange()**(Function *callback*)

Parameter	Type	Description
callback	Function	Callback function

Description

{propertyName}.onDataChange() allows you to define a ***callback*** that will be executed when the data for the property changes.

```
this.templateProperty.onDataChange(function(rows) {
    // do something...
});
```

rows object

The *rows* object returns an array in which each element contains the data for each template entry. For example, if you define a template like this:

```
{
    name: 'Template 2',
    template: '<h1>{{name}}</h1><p><b>{{revenues}}</b></p>'
}
```

The *rows* object will contain each entity formatted according to the selected template. For our template above, a sample row would be:

```
"<h1>4D</h1><p><b>800000</b></p>"
```

If you have not specified the *datasourceProperty* property for the template property, the *rows* object returns only the current entity and not all the entities in the collection.

Example

In the following example, we retrieve the data for the templateProperty in the parameter for the {propertyName}.onDataChange() callback:

```
var MyTemplate = widget.create('MyTemplate', {
    init: function() {
        this.templateProperty.onDataChange(function(rows) {
            this.node.innerHTML = rows.join(""); //display data
        });
    }
    // define the other properties here
 });
```

In the *rows* parameter, the data appears as shown below for our template, which is "<h1>{{name}}</h1> {{revenues}} ":

```
["<h1>4D</h1><p><b>900000</b></p>", "<h1>Apple</h1><p><b>800000</b></p>", "<h1>Microsoft</h1><p><b>500000</b></p>",
"<h1>Google</h1><p><b>600000</b></p>", "<h1>FaceBook</h1><p><b>700000</b></p>", "<h1>Twitter</h1><p><b>300000</b></p>"]
```

***Note**: The "name" attribute was replaced by the company name and "revenues" attribute was replaced by the company's revenues.*

Example

In the following example, we retrieve the current entity for the templateProperty in the parameter for the {propertyName}.onDataChange() callback:

```
var MyTemplate = widget.create('MyTemplate', {
    init: function() {
        this.templateProperty.onDataChange(function(rows) {
            this.node.innerHTML = rows; //display current entity
        });
    }
    // define the other properties here
 });
```

In the *rows* parameter, the current entity appears as shown below for our template, which is "<h1>{{name}}</h1> {{revenues}} ":

```
"<h1>4D</h1><p><b>900000</b></p>"
```

{propertyName}.render( )

String **{propertyName}.render**(Object *data*)

Parameter	Type	Description
data	Object	Attributes with their values for the template
Returns	String	Data formatted based on template

Description

{propertyName}.render( ) allows you to define data to be applied to the template and get the formatted data based on the template.

Example

If we have the following format in a template:

```
"<h1>{{name}}</h1><p><b>{{revenues}}</b></p>"
```

You can use the {propertyName}.render( ) function to input the data to format it according to the template:

```
var formattedData = $$("customWidget1").templateProperty.render({ name:"New Company", revenues:"990000" });
```

The data returned in *formattedData* will be:

```
"<h1>New Company</h1><p><b>990000</b></p>"
```

{propertyName}.select( )

void **{propertyName}.select**(String *template*)

Parameter	Type	Description
template	String	Select a predefined template

Description

{propertyName}.select( ) allows you to get or set the name of the selected template. The template name is specified in this property's **templates object**.

If a template's attribute wasn't defined in the widget's definition, the format will appear although the data will be empty. For example, if your template is "<h1>{{name}}</h1> {{revenues}} " and you have not defined the revenues attribute, the data returned would be "<h1>Company Name</h1> ".

If you modify the current template by using the **{propertyName}( )** function, this function returns null.

Example

In this example, we retrieve the name of the selected template:

```
var templateName = $$("customWidget1").templateProperty.select(); //returns "Template 1"
```

Example

In this example, we select one of the predefined templates ("Template 1", "Template 2" or "Template 3").

```
$$("customWidget1").templateProperty.select("Template 2");
```

{propertyName}.templates( )

Array **{propertyName}.templates**( )

Returns	Array	Predefined templates for the property

Description

{propertyName}.templates( ) allows you to retrieve an array of objects in which each object defines the predefined template. Each template is defined in this property's **templates object** as shown below.

templates object

In this array of objects, you define two properties in the object for each template:

Property	Description
name	Display name for your template
template	String that defines the template with each attribute defined within {{ and }} characters. No spaces are allowed in the attribute name.

If you have defined a datasource property for your widget and specified it in the template property's *datasourceProperty* property, each attribute will be displayed in the section for the *datasourceProperty* property.

Example

In this example, retrieve the predefined templates:

```
var templates = $$('customWidget1').templateProperty.templates(); //returns an array of objects (one object for each temp
```

Repeater

The following functions are in the **waf-behavior/layout/repeater** behavior.

repeatedWidget( )

void **repeatedWidget**(Widget *widget*)

Parameter	Type	Description
widget	Widget	Set the widget to repeat

Description

With **repeatedWidget( )**, you can either get or set the repeated widget.
For example, you can retrieve the widget that is set to be repeated:

```
var widgetToBeRepeated = $$('mainRepeatingWidget1').repeatedWidget();
```

To set the widget to repeat, you can write:

```
$$('mainRepeatingWidget1').repeatedWidget($$('widgetToRepeat1'));
```

Size

These functions allow you to set the size of the instance of your custom widget.

autoHeight( )

void **autoHeight**( )

Description

autoHeight( ) allows you to set the height to "auto" in the "style" property of the widget.
For example, after calling this function, the "style" property becomes:

```
style="height: auto;"
```

autoWidth( )

void **autoWidth**( )

Description

autoWidth( ) allows you to set the width to "auto" in the "style" property of the widget.
For example, after calling this function, the "style" property becomes:

```
style="width: auto;"
```

height( )

Number **height**( )

Returns	Number	Widget's height

Description

height( ) returns the widget's height in pixels.

size( )

Object **size**( )

Returns	Object	Object containing widget's width and height

Description

size( ) returns the widget's size (height and width) in pixels.
Here's a way to retrieve the widget's size:

```
var widgetSize = $$('customWidget1').size();
        //height = widgetSize.height
        //width = widgetSize.width
```

width( )

Number **width**( )

Returns	Number	Widget's width

Description

width( ) returns the widget's width in pixels.

Style

The functions in the Style category allow you to define the CSS style(s) for the instance of your custom widget.
For information about Wakanda's generic CSS classes, refer to **Using Wakanda's generic CSS classes**.

addClass( )

void **addClass**(String *cssClass*)

Parameter	Type	Description
cssClass	String	CSS class to add to the widget

Description

addClass( ) allows you to define your widget's CSS class by passing it to ***cssClass***.
The ***cssClass*** is added to the widget's DOM node's *class* property:

```
<div id="customWidget1" data-type="CustomWidget" data-lib="WAF" data-package="CustomWidget"
class="waf-widget waf-customwidget customClass1 customClass2" data-constraint-left="true" data-constraint-top="true">
```

For information about Wakanda's generic CSS classes, refer to **Using Wakanda's generic CSS classes**.

bindDatasourceAttributeCSS( )

Object **bindDatasourceAttributeCSS** (datasource , attribute , cssProperty)

Parameter	Type	Description
datasource	DataSource	Datasource to bind to cssProperty
attribute	String	Attribute name
cssProperty	String	CSS property to bind to datasource
Returns	Object	Subscriber object

Description

bindDatasourceAttributeCSS( ) allows you to bind a datasource attribute to a CSS property.
The subscriber object that is returned can be passed to **removeSubscriber( )** to remove it.

Example

In the example below, we bind the *sources.styles.bgcolor* datasource attribute with the "background" property in the OnLoad event of our Page:

```
documentEvent.onLoad = function documentEvent_onLoad (event)
{
    var cssSubscriber = $$('customWidget1').bindDatasourceAttributeCSS(sources.styles,"bgcolor","background");
};
```

Each time the *sources.styles.bgcolor* datasource changes, the background color of our widget changes the value defined in the datasource attribute.

hasClass( )

Boolean **hasClass**(String *cssClass*)

Parameter	Type	Description
cssClass	String	CSS class
Returns	Boolean	True/False = custom widget has cssClass

Description

hasClass( ) allows you to check if ***cssClass*** exists for the custom widget.

hide( )

void **hide**( )

Description

Call the **hide( )** function to hide the widget on the Page.

removeClass( )

void **removeClass**(String *cssClass*)

Parameter	Type	Description
cssClass	String	CSS class to remove

Description

removeClass( ) allows you to remove a CSS class from the custom widget.

show( )

void **show**( )

Description

With the **show( )** function, you can show the widget on the Page.

style( )

void **style**(String *cssProperty*, String *value*)

Parameter	Type	Description
cssProperty	String	CSS property, e.g., "background", "font-size", "border"
value	String	Value for the cssProperty

Description

style( ) allows you to define a value for a CSS property.
For example, you can write the following to set the background of the widget to grey at runtime:

```
$$('customWidget1').style('background','#ccc');
```

***Important**: The style( ) function cannot be used on custom widgets in Wakanda Studio. If you want to modify the CSS styles of a widget, you can modify them directly in the widget's CSS file.*

toggleClass( )

void **toggleClass**(String *cssClass*)

Parameter	Type	Description
cssClass	String	CSS class to toggle

Description

toggleClass( ) allows you to toggle a CSS class for the custom widget. If it exists in the custom widget's "class" property, it will be removed and if it does not exist, it will be added.

Subscriber

The functions in this category allow you to interact with a subscriber that you defined for a specific event by using the functions in the **Observable** category.

isPaused( )

Boolean **isPaused**( )

Returns	Boolean	True/False = event is paused

Description

isPaused( ) allows you to discover if the event is paused.

pause( )

void **pause**( )

Description

pause( ) allows you to temporarily pause the event.

resume( )

void **resume**( )

Description

resume( ) allows you to resume a paused event.

unsubscribe( )

void **unsubscribe**( )

Description

unsubscribe( ) allows you to unsubscribe a subscriber.

Example

If you subscribe to an event, as shown below:

```
var mySubcriber = $$('customWidget1').subscribe('click', function() {
    //do something
});
```

You can also unsubscribe from it in the following manner:

```
$$('customWidget1').unsubscribe({
    event: 'click'
});
```

or

```
mySubscriber.unsubscribe(); //the subscriber object was created with the subscribe() function
```

Widget

These functions allow you to interact with your custom widget's instance.
By default, you can either set or get the value of a property by using the **{propertyName}( )** function.

Widget properties

The following properties are available at runtime for the custom widget:

Property	Description
id	Widget ID
kind	Widget name

options

Description

The **options** property contains an object that contains all the properties that begin with "data-".

Example

For the custom widget whose DOM node is the following:

```
<div id="customWidget1" class="waf-widget waf-widget waf-customwidget" data-constraint-right="false"
data-constraint-bottom="false" data-binding-test="person.lastName" data-constraint-left="true"
data-constraint-top="true" data-lib="WAF" data-package="CustomWidget" data-type="CustomWidget">
```

The **options** property is the following:

```
{
    binding-test: "person.lastName",
    constraint-bottom: "false",
    constraint-left: "true",
    constraint-right: "false",
    constraint-top: "true",
    lib: "WAF",
    package: "CustomWidget",
    type: "CustomWidget"
}
```

parentWidget

Description

The **parentWidget** property returns an object of the widget's parent widget (in which it is contained).
The object for a widget is returned in $$("customWidget1"). If you place customWidget1 inside of customContainer1 and you write the following:

```
var parentWidgetObj = $$("customWidget1").parentWidget;
```

parentWidgetObj will contain the same object returned by $$("customContainer1").

allChildren( )

Array **allChildren**( )

Returns	Array	Children widgets (along with children's children widgets)

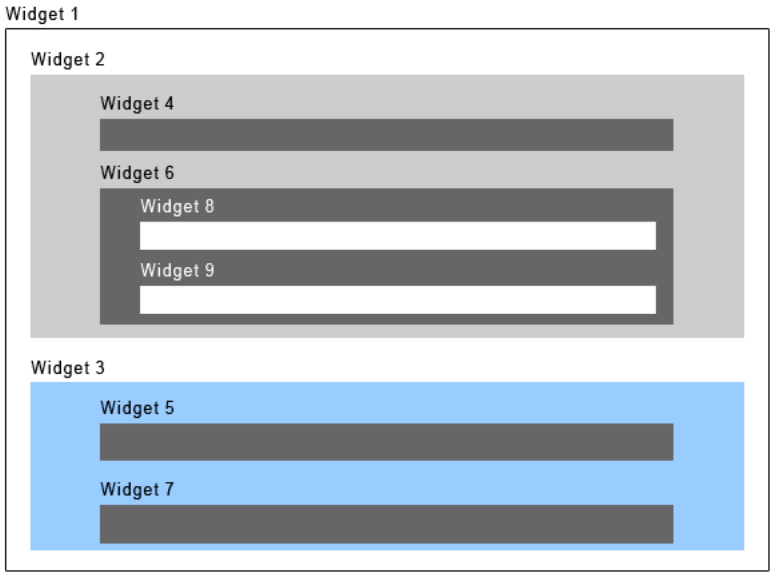
Description

With **allChildren( )**, you can retrieve all the "children" widgets. The "children" widgets are all those that are included in the "parent" widget.
If you call the **allChildren()** function on *widget2* (see screenshot below), an array containing all the children widgets is returned:

```
var myChildren = $$('widget2').allChildren(); //returns [$$('widget4'), $$('widget6'), $$('widget8'), $$('widget9')]
```

If you call the **children()** function on *widget1*, an array containing the children widgets is returned.

```
var myChildren = $$('widget1').children(); //returns [$$('widget2'), $$('widget3')]
```



***Important Note**: This function only returns the widgets that were created with the Widgets v2 architecture.*

children( )

Array **children**( )

Returns	Array	Children widgets (only first level)

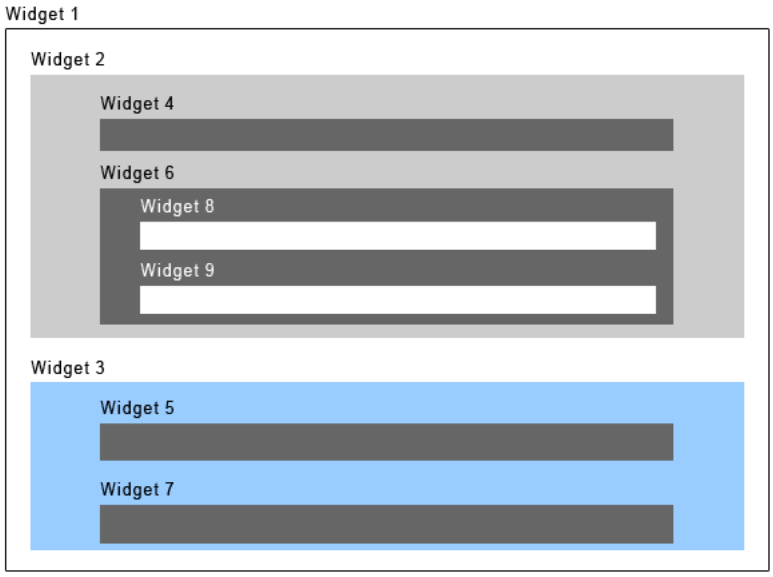
Description

With **children( )**, you can retrieve the "children" widgets for the "parent" widget. The "children" widgets are all those included in the "parent" widget.
If you call the **allChildren()** function on *widget2* (see screenshot below), an array containing all the children widgets is returned:

```
var myChildren = $$('widget2').allChildren(); //returns [$$('widget4'), $$('widget6'), $$('widget8'), $$('widget9')]
```

If you call the **children()** function on *widget1*, an array containing the children widgets is returned.

```
var myChildren = $$('widget1').children(); //returns [$$('widget2'), $$('widget3')]
```



***Important Note**: This function only returns the widgets that were created with the Widgets v2 architecture.*

destroy( )

void **destroy**( )

Description

destroy( ) allows you to delete the widget (along with any of its "children" widgets) from the Page and removes all the listeners associated to it.

disable( )

void **disable**( )

Description

disable( ) allows you to disable the widget.
The "waf-state-disabled" CSS class is added to the widget's "class" property:

```
<div id="customWidget1" class="waf-widget waf-customwidget waf-state-disabled"... >
```

disabled( )

Boolean **disabled**( )

Returns	Boolean	True/False = widget is disabled

Description

With **disabled( )**, you can test if the widget has been disabled or not.

enable( )

void **enable**( )

Description

enable( ) allows you to enable the widget if it had previously been disabled.

getNode( )

String **getNode**( )

Returns	String	Widget's DOM node

Description

With **getNode( )**, you can retrieve the widget's DOM node. The widget's DOM node is also in the *node* property.

```
var myNode = $$('customWidget1').getNode();
```

The node returned looks something like this:

```
<div id="customWidget1" data-type="customWidget"
data-constraint-left="true" data-constraint-top="true" data-label="Label"
data-label-position="top" data-lib="WAF" data-package="customWidget"
class="waf-widget waf-customwidget" >
```