

# RowList

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### Extends:

[ArrayGrid](#)

### Also See Related Page:

[List and Grids Markup - RowList Markup](#)

# RowList

## Overview

The **RowList** node class provides a vertically-scrollable list, containing rows of independent horizontally-scrollable individual items. Each item in a row can include a poster, but can also include much more complex sub-elements defined in an item component file, in the same way that items are defined in the **MarkupList** and **MarkupGrid** node classes.

Like those node classes, the **RowList** node class provides special interface fields to the item components to allow custom appearance and animations as the user scrolls left and right through the items in a row.

### Special Feature

**RowList** node class includes even more interface fields to provide a customized appearance as the user scrolls up and down through the rows.

## Guidelines

The following are guidelines for use of rows and images.

- The items in any single row must be the same size, however different rows in the list can have different item sizes (see sample image below).
- Each row may include a left-justified title label at the top of the row, and a right-justified label at the top that displays a message of the format "*item\_number of total\_number\_of\_items*", indicating which item in the row currently has focus.

## Horizontal Row Scrolling

There are two horizontal item scrolling options for the **RowList** node class controlled by the `rowFocusAnimationStyle` field.

- Setting the `rowFocusAnimationStyle` field to `floatingFocus` causes the focus indicator to float left or right until it reaches the end of the row, at which point the focus will stay fixed on the first or last item in the row, and the items will scroll left or right.
- Setting the `rowFocusAnimationStyle` field to `fixedFocusWrap` causes each row to wrap around when navigation reaches the first or last item in the row, as long as the row contains enough items to fill the row. If the row does not contain enough items to fill the row, the focus will float left and right.

## Vertical Row Scrolling

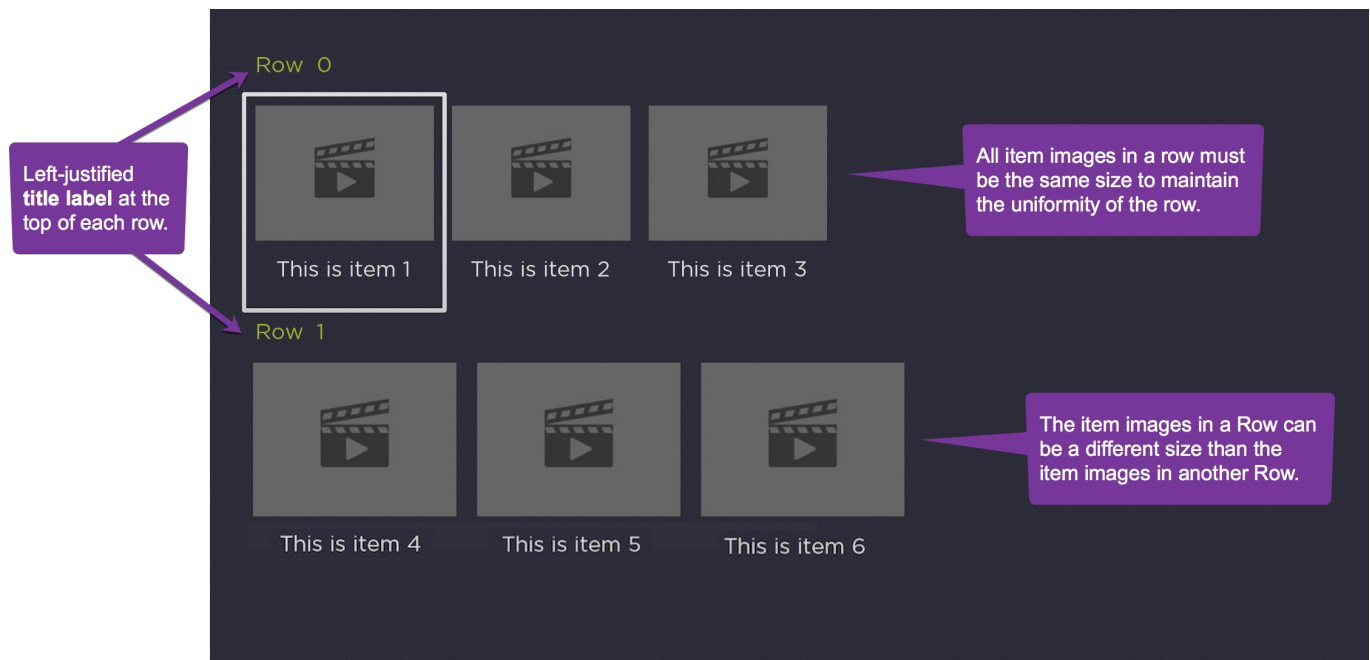
The vertical row scrolling options are controlled by the `vertFocusAnimationStyle` field, and behave in the same way for rows as they do for list items as described in [ArrayGrid](#).

The **RowList** node class supports two types of item definitions.

- The first type provides a simple option for the common case where each item in each row is displayed as a single poster.
- The second variation allows the contents of each item in each row to be an instance of a SceneGraph component that defines a set of interface fields that provide for communication between the **RowList** node and the items it displays (similar to that used by the **MarkupList** and **MarkupGrid** node classes).

## Example

The following is a sample screenshot of RowList based on SimpleRowlist sample code:



In the field descriptions below, the first type is referred to as *simple*, and the second type is referred to as *component*. Most of the field descriptions below apply to both simple and component types.

## Behavior Changes

The following changes are to be noted for firmware 7.7 or later:

Whenever all the items in a **RowList** row are visible, the focus will step one-by-one across the items, rather than step once, then smooth scroll.

Each time the RowList focus animation completes a step, the RowList's **rowItemFocused** field will be set. This allows the Bob to be immediately updated. This will happen when long press scrolling after the initial step ends prior to the smooth scrolling. It will also happen when long press scrolling across a short RowList row as the focus now steps one-by-one across the items in a short row. Previously, the rowItemFocused field was only set once after a long press scrolling key release event.

## Fields

Field	Type	Default	Simple/Component	Use
itemComponentName	string	""	component	Specifies the name of an XML component for the items in each row. An instance of this component is created on demand for each visible item of each row. The XML component must define a specific interface as detailed in <a href="#">RowList XML Component</a> below.
rowTitleComponentName	string	""	component	Specifies the name of an XML component to render titles in place of the row label. This component must extend from <b>Group</b> . If this component defines a "content" field, it will be set to the row's content. If this component defines a "rowCounterVertAlign" field (possible values are "top", "center", and "bottom"), the row counter's vertical alignment is respective of the row title component. <i>Available since firmware version 7.5</i>
content	<b>ContentNode</b>	none	both	Specifies the content for the list. The content should be a single <b>ContentNode</b> that has one child <b>ContentNode</b> for each row. These child <b>ContentNodes</b> for each row should themselves contains child <b>ContentNodes</b> for each item in the row. See <a href="#">Data Bindings</a> below for more details.
itemSize	vector2d	[0,0]	both	Specifies the width and height of rows in the list. Note that this the width of the entire row, not the width of the posters in the row.
itemSpacing	vector2d	[0,0]	both	Specifies the spacing between rows in the list. The y-dimension of the vector specifies the vertical spacing between rows, and the x-dimension is ignored.
numRows	integer	0	both	Specifies the number of visible rows in the list. Note that the actual number of rows may be more or less than the number of visible rows depending on the number of items in the list content.
rowHeights	array of floats	[]	both	Specifies the heights of each row of the list. This allows the height of each row of the list to vary from row to row. The values override the height specified in the y-dimension value of the <code>itemSize</code> field. If the array contains fewer elements than the number of rows in the data model, the y-dimension value of the <code>itemSize</code> field is used as the height of the extra rows.
rowSpacings	array of floats	[]	both	Specifies the spacing after each row of the list. This allows the spacing between rows to vary from row to row. The values override the vertical spacing specified in y-dimension value of the <code>itemSpacing</code> field. If the array contains fewer elements than the number of rows in the data model, the y-dimension value of the <code>itemSpacing</code> field is used as the spacing after the extra rows.
rowItemSize	array of vector2d	[]	both	Specifies the width and height of the items in each row. The array of values must include at least one element. If the array contains fewer elements than the number of rows in the data model, the last value in the array is used as the size for the extra rows.

rowItemSpacing	array of vector2d	[]	both	Specifies the spacing between items in each row. The x-dimension of each array value specifies the horizontal spacing between list items in the corresponding row. If the array contains fewer elements than the number of rows in the data model, the last value in the array is used as the spacing for the extra rows. If the array contains no values, no space will be included between list items in all rows.
focusXOffset	array of floats	[]	both	Specifies the x-dimension offset of the first fully visible item in each row relative to the left edge of the list. In most cases, the first fully visible item in each row will be positioned at the left edge of the list, so this field does not need to be specified. If the array contains fewer elements than the number of rows in the data model, the last value in the array is used as the x-dimension offset for the extra rows. If the array contains no values, the default x-dimension offset of 0.0 is used.
rowLabelOffset	array of vector2d	[0,0]	both	Specifies the offset of the row label for each row. The x-dimension specifies the horizontal offset of the label from the left edge of the row. The y-dimension component specifies the vertical spacing between the label and the list items in the row. If the array contains fewer elements than the number of rows in the data model, the last value in the array is used as the offset for the labels of the extra rows. If the array specified contains no values, a default offset value of [0,0] is used.
showRowLabel	array of Boolean	[]	both	Specifies whether the row label on the left edge of each row is displayed. If the array contains fewer elements than the number of rows in the data model, the last value in array is used to control the display of the row label for the extra rows. If the array contains no values, no row labels are displayed.
showRowCounter	array of Boolean	[]	both	Specifies whether the "item_number of total_number_of_items" label on the right edge of each row is displayed. Note that the "item_number of total_number_of_items" label is only displayed for the focused row even if the showRowCounter field value for that row is set to true. If the array contains fewer elements than the number of rows in the data model, the last value in array is used to control the display of the "item_number of total_number_of_items" label for the extra rows. If the array contains no values, no "item_number of total_number_of_items" labels are displayed.
variableWidthItems	array of Boolean	[]	both	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>This field is only supported when rowFocusAnimationStyle = "fixedFocusWrap"</p> </div> <p>By default, all items in a row of the RowList node have the same width and height. By setting variableWidthItems to true for a row, the items in the row will continue to have the same height, but the width will be taken from the [SD/HD/FHD]ItemWidth field of the ContentNode associated with each item. See <a href="#">Data Bindings</a> below for more details.</p> <p>variableWidthItems is an array with one element per row in the RowList. If there are fewer elements than rows in the RowList, the last value in the array is repeated. If all rows of the RowList have variable widths, you can set variableWidthItems = "[true]" or variableWidthItems="true".</p> <p>The [SD/HD/FHD]ItemWidth values specified should match the ui_resolutions attribute in the manifest.</p> <p>Example: If you only specify ui_resolutions=fhd, you should only set FHDItemWidth and allow the device to autoscale when rendering for HD and SD display modes. If you specify ui_resolutions=hd, fhd, you can set HDItemWidth and FHDItemWidth.</p> <p>If any item does not specify the [SD/HD/FHD]ItemWidth in its ContentNode for a variable width row, the x value of the RowList's rowItemSize field for that row is used as the width for that item.</p>

rowFocusAnimationStyle	option string	floatingFocus	both	<p>Specifies the how the focus indicator moves in a row of items in response to the remote direction pad <b>Left</b> and <b>Right</b> key presses. The possible values are:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Effect</th> </tr> </thead> <tbody> <tr> <td>floatingFocus</td> <td>Causes the focus indicator to float left or right until it reaches the end of the row, at which point the focus indicator will stay fixed on the first or last item in the row, and the items will scroll left or right if there were items that were not visible.</td> </tr> <tr> <td>fixedFocusWrap</td> <td>Causes the row to wrap around when the focus indicator reaches the first or last item in the row, as long as the row contains enough items to fill the row. If the row does not contain enough items to fill the row, the focus indicator will float left and right.</td> </tr> </tbody> </table>	Option	Effect	floatingFocus	Causes the focus indicator to float left or right until it reaches the end of the row, at which point the focus indicator will stay fixed on the first or last item in the row, and the items will scroll left or right if there were items that were not visible.	fixedFocusWrap	Causes the row to wrap around when the focus indicator reaches the first or last item in the row, as long as the row contains enough items to fill the row. If the row does not contain enough items to fill the row, the focus indicator will float left and right.		
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vertFocusAnimationStyle	option string	"fixedFocus"	both	<p>Specifies the how the focus indicator moves in a list or a column of grid items in response to the remote direction pad <b>Up</b> and <b>Down</b> key presses. The possible values are:</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Effect</th> </tr> </thead> <tbody> <tr> <td>floatingFocus</td> <td>Causes the focus indicator to float up or down until it reaches the end of the list, at which point the focus indicator will stay fixed on the first or last row in the list, and the rows will scroll up or down if there are rows that were not visible.</td> </tr> <tr> <td>fixedFocusWrap</td> <td>Causes the column to wrap around when the focus indicator reaches the first or last row in the list, as long as the list contains enough rows to fill the list. If the list does not contain enough rows to fill the list, the focus indicator will float up and down.</td> </tr> <tr> <td>fixedFocus</td> <td>Causes the focus to stay fixed on the upper row. As the user scrolls down, the row containing the previously selected item scrolls up off screen. Scrolling continues until the last row is reached.</td> </tr> </tbody> </table>	Option	Effect	floatingFocus	Causes the focus indicator to float up or down until it reaches the end of the list, at which point the focus indicator will stay fixed on the first or last row in the list, and the rows will scroll up or down if there are rows that were not visible.	fixedFocusWrap	Causes the column to wrap around when the focus indicator reaches the first or last row in the list, as long as the list contains enough rows to fill the list. If the list does not contain enough rows to fill the list, the focus indicator will float up and down.	fixedFocus	Causes the focus to stay fixed on the upper row. As the user scrolls down, the row containing the previously selected item scrolls up off screen. Scrolling continues until the last row is reached.
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rowLabelColor	color	0xffffffff	both	Specifies the color of the row and "item_number of total_number_of_items" labels.								
rowLabelFont	font	system default	both	Specifies the font for the row and "item_number of total_number_of_items" labels.								
rowCounterRightOffset	float			<p><i>This function is available in firmware 7.7 or later.</i></p> <p>Field provides greater control over the UX.</p> <p>When set, this value specifies the location of the right edge of the row counter relative to right edge of the RowList's clipping rectangle. If not set, the right edge of the row counter is positioned to equal the left offset of the row title.</p>								
showRowCounterForShortRows	Boolean	true		<p><i>This function is available in firmware 7.7 or later.</i></p> <p>Field provides greater control over the UX.</p> <p>When set to true, the row counter is shown for all rows. When set to false, the row counter is not shown for rows where all items fit onscreen.</p>								
fadeFocusFeedbackWhenAutoScrolling	Boolean	false		<p><i>This function is available in firmware 7.7 or later.</i></p> <p>When set to true, the focus feedback indicator will quickly fade out when scrolling multiple items and fade back in when the scrolling ends. The focus feedback indicator will also after in and out when using the FFW/Rewind keys to scroll a page at a time.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Note:</b> This field is defined on <code>ArrayGrid</code> and thus is inherited by all of the following components: <code>LabelList</code>, <code>MarkupList</code>, <code>PosterGrid</code>, <code>MarkupGrid</code>, <code>RowList</code>, <code>CheckList</code>, and <code>RadioButtonList</code>.</p> </div>								

currFocusFeedbackOpacity	float			<p><i>This function is available in firmware 7.7 or later.</i></p> <p>This field is read-only. This field provides access to the current opacity of the focus feedback indicator. It can be used to have other items on the screen fade in/out when the focus feedback indicator fades in/out.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Note:</b> This field is defined on <code>ArrayGrid</code> and thus is inherited by all of the following components: <code>LabelList</code>, <code>MarkupList</code>, <code>PosterGrid</code>, <code>MarkupGrid</code>, <code>RowList</code>, <code>CheckList</code>, and <code>RadioButtonList</code>.</p> </div>
drawFocusFeedbackOnTop	Boolean	false	both	Specifies whether the focus indicator bitmap is drawn below or on top of the list items.
drawFocusFeedback	Boolean	true	both	Specifies whether or not the focus indicator bitmap is displayed.
imageWellBitmapUri	uri	""	simple	Specifies the bitmap file to use to suggest where images would appear for empty lists.
focusBitmapUri	uri	""	both	Specifies the bitmap file used for the focus indicator when the list has focus. In most cases, this should be a 9-patch image that specifies both expandable regions as well as margins. Only set this field to specify a custom bitmap that differs in appearance from the default bitmap.
focusFootprintBitmapUri	uri	""	both	Specifies the bitmap file used for the focus indicator when the list does not have focus. In most cases, this should be a 9-patch image that specifies both expandable regions as well as margins. Only set this field to specify a custom bitmap that differs in appearance from the default bitmap.
focusBitmapBlendColor	color	0xFFFFFFFF	both	Blend the graphic image specified by <code>focusBitmapUri</code> with the specified color. If set to the default, 0xFFFFFFFF, no color blending will occur. Set this field to show a focus indicator graphic image with a different color than the image specified by <code>focusBitmapUri</code> .
focusFootprintBlendColor	color	0xFFFFFFFF	both	Blend the graphic image specified by <code>focusFootprintBitmapUri</code> with the specified color. If set to the default, 0xFFFFFFFF, no color blending will occur. Set this field to show a focus footprint indicator graphic image with a different color than the image specified by <code>focusFootprintBitmapUri</code> .
loadingBitmapUri	uri	""	simple	Specifies a bitmap file to display while a list item poster is loading.
loadingBitmapOpacity	float	1.0	simple	Specifies an opacity value used to render the loading bitmap.
failedBitmapUri	uri	""	simple	Specifies a bitmap file to display when a list item poster fails to load.
failedBitmapOpacity	float	1.0	simple	Specifies an opacity value used to render the failed bitmap.
wrapDividerBitmapUri	uri	""	both	Specifies the bitmap file to use as a visual separator between the last and first list items when the list wraps. In most case, this should be a 9-patch image that specifies both expandable regions. Only set this field to specify a custom bitmap that differs in appearance from the default bitmap.
wrapDividerHeight	float	0	both	Specifies the height of the divider. The wrap divider bitmap will be scaled to this height. The width of the wrap divider is set to the width of the list items (that is, the <code>x-dimension</code> value of the <code>itemSize</code> field).
rowItemSelected	array of integer	[ ]	both	<b>Read-Only</b> When an item is selected, set to a 2-element array, where element 0 contains the index of the row containing the selected item, and element 1 contains the index of the selected item in that row.
rowItemFocused	array of integer	[ ]	both	<b>Read-Only</b> When an item gains the key focus, set to a 2-element array, where element 0 contains the index of the focused row, and element 1 contains the index of the focused item in that row.
itemSelected	integer	0	both	<b>Read-Only</b> When an item is selected, set to the index of the selected row.
itemFocused	integer	0	both	<b>Read-Only</b> When a row gains the key focus, set to the index of the focused row.
itemUnfocused	integer	0	both	<b>Read-Only</b> When a row loses the key focus, set to the index of the unfocused row.

jumpToItem	integer	0	both	<b>Write-Only</b> When set to a valid item index, causes the list to immediately update so that the specified row moves into the focus position.
jumpToRowItem	array of integer	[ ]	both	<b>Write-Only</b> When set to a valid [ row, col ] index pair, causes the list to immediately update so that the specified row, col item moves into the focus position.
animateToItem	integer	0	both	<b>Write-Only</b> When set to a valid item index, causes the list to quickly scroll so that the specified row moves into the focus position.

## RowList XML Component

If the **RowList** node is to use an XML component, the `itemComponentName` field value should be set to the name of an XML component used to display each item in the row list. An instance of this component is created for each visible item in each row of the list.

If the XML component contains interface fields that match the names shown in the table below, those fields will be updated by the **RowList** node. This allows the XML component to alter the item appearance based on changes to these interface fields.

Note that the fields are updated in the order presented in the table below. Any layout scripting you write based on these fields should be done in that order to avoid updating your layout based on a field that has not been updated yet.

Field Name	Field Type	Description
width	float	<b>Read-Only</b> Set to the width of the item.
height	float	<b>Read-Only</b> Set to the height of the item
index	integer	<b>Read-Only</b> Set to the data model index within the data for the row that contains this item. For example, if this appeared in row 2, then the field is set to 0 for the first item in row 2, 1 for the second item in row 2, and so on.
rowIndex	integer	<b>Read-Only</b> Set to the data model index of the row that contains this item
rowHasFocus	Boolean	<b>Read-Only</b> Set to true if the row that contains this item has focus, false otherwise.
rowListHasFocus	Boolean	<b>Read-Only</b> Set to true if the row list that contains this item has focus, false otherwise.
itemContent	<b>ContentNode</b>	Contains the data to be displayed by the row list item. The relationship between data in the <b>ContentNode</b> node and the visual elements of the row list item is determined by the scripts in the item XML component. Typically, an observer callback function of the <code>itemContent</code> field is used to update the row list item when the content changes.
focusPercent	float	<b>Read-Only</b> The fractional value, from 0.0 to 1.0, of a time delay after focus has moved from one item in a row to the next. The fractional value increases incrementally from 0.0 to 1.0 for the newly-focused item, while simultaneously decreasing from 1.0 to 0.0 for the previously-focused item. This value can be used as a timing key to smoothly animate the appearance of the focused item as well as the previously-focused item, to indicate the movement of focus to the user.

rowFocusPercent	float	<p><b>Read-Only</b></p> <p>The fractional value, from 0.0 to 1.0, of a time delay after focus has moved from an item in one row to an item in an adjacent row, either above or below the previously-focused row. The fractional value increases incrementally from 0.0 to 1.0 for the newly-focused row, while simultaneously decreasing from 1.0 to 0.0 for the previously-focused row. This value can be used as a timing key to smoothly animate the appearance of the focused row as well as the previously-focused row, to indicate the movement of focus to the user.</p>
itemHasFocus	Boolean	<p><i>Available since firmware version 8.</i></p> <p><b>Read-Only</b></p> <p>Indicates whether the item component currently is the RowList's focused item. When scrolling starts, the itemHasFocus field for the currently focused item is set to false. When scrolling ends, the itemHasFocus field for the newly focused item is set to true. During the scrolling animation, all itemHasFocus fields are set to false.</p> <p>Only one item component of any RowList should have itemHasFocus set to true. If the RowList does not focus, all itemHasFocus fields of their item components should be set to false.</p>

## Data Bindings

A **RowList** node should have a single **ContentNode** node as the root node in its content field. One child **ContentNode** node should be added to the root node for each row in the list (these nodes can be thought of as *row nodes*). Each row node should contain one child **ContentNode** node for each item in the row (these nodes can be thought of as *item nodes*).

### Row Node Data Bindings

Attribute	Type	Description
TITLE	string	The label for the row

### Item Node Data Bindings

Attribute	Type	Description
FHDGRIDPOSTERURL / FHDPOSTERURL	uri	The image file for the item poster when the screen resolution is set to FHD. FHDGRIDPOSTERURL is used if non-empty. FHDPOSTERURL is used otherwise.
HDGRIDPOSTERURL / HDPOSTERURL	uri	The image file for the item poster when the screen resolution is set to HD. HDGRIDPOSTERURL is used if non-empty. HDPOSTERURL is used otherwise.
SDGRIDPOSTERURL / SDPOSTERURL	uri	The image file for the item poster when the screen resolution is set to SD. SDGRIDPOSTERURL is used if non-empty. SDPOSTERURL is used otherwise.
FHDItemWidth	float	<p>The width for the FHD item. This value is used in conjunction with <code>variableWidthItems</code> and should only be set if the associated <code>ui_resolutions</code> attribute is also specified.</p> <p>This field must be added to the ContentNode via <code>addField()</code> prior to setting a value. Ex. <code>ContentNode.addField("FHDItemWidth", "float", false)</code></p>



HDItemWidth	float	<p>The width for the HD item. This value is used in conjunction with <code>variableWidthItems</code> and should only be set if the associated <code>ui_resolutions</code> attribute is also specified.</p> <p>This field must be added to the <code>ContentNode</code> via <code>addField()</code> prior to setting a value. Ex. <code>ContentNode.addField("HDItemWidth", "float", false)</code></p>
SDItemWidth	float	<p>The width for the SD item. This value is used in conjunction with <code>variableWidthItems</code> and should only be set if the associated <code>ui_resolutions</code> attribute is also specified.</p> <p>This field must be added to the <code>ContentNode</code> via <code>addField()</code> prior to setting a value. Ex. <code>ContentNode.addField("SDItemWidth", "float", false)</code></p>

## RowList Sample Channels

The follow sample channels can be installed on your local device for testing and reviewing the code.

Sample Download	Description
<a href="#">SimpleRowList.zip</a>	Simple example channel using the <b>RowList</b> node class. This sample creates a two row <b>RowList</b> node using an item component definition, that is, it specifies custom markup for the individual items in the row.
<a href="#">RowListFocusStyleTest.zip</a>	A more complex example channel that demonstrates a number of different focus styles, as well as ways to mix different sized images in different <b>RowList</b> rows.
<a href="#">AdvancedRowList.zip</a>	Example demonstrating use of <b>RowList</b> in a <b>PanelSet</b> . This example includes <b>RowList</b> loading real data from a JSON file, mixed aspect ratio posters, and the use of <code>focusPercent</code> to overlay annotations.
<a href="#">variableWidthRowList.zip</a>	A simple example demonstrating variable width items. The first row in the <b>RowList</b> contains large hero artwork and each subsequent row contains a mix of different aspect ratio posters for TV and Movie artwork.