

Web Accessibility & Design Tutorials

Using WAI-ARIA Roles with JSON-LD

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Application

This is a technique that is used to incorporate WAI-ARIA Role attributes with JSON-LD in a web page.

- It promotes and aids the indexing of accessible web pages by search engine crawlers and scrapers.
- It enables these JSON-LD-modified accessible web pages to join the universe of Linked Data.

Actions

1. Create a JSON-LD data island by writing W3C WAI-ARIA Roles in JSON-LD (JSON for Linked Data).
2. In the JSON-LD data island, reference the W3C: Accessible Rich Internet Applications (WAI-ARIA) 1.0 as its ontology.
3. Add this JSON-LD data island to the metadata section (<head></head> element) of an accessible web page.

Intended result

These actions will elevate a WAI-ARIA Role-equipped web page to Linked Data status, enabling it to be crawled, scraped, and indexed by all major search engines for its W3C WAI-ARIA accessibility features.

Description

Advantages

This technique enables accessible HTML web pages and other mediums whose markup is annotated with WAI-ARIA Role attributes and values the following advantages:

- To be easily identified by search engines for indexing as sources of accessible linked data, thus raising the SEO of the documents.
- To establish an accessible JSON-LD Linked Data capability as used by other ontology/vocabulary types like schema.org properties and values.

JSON-LD "keyname" : "value" pairs

Each role is broken down into the following JSON-LD "keyname" : "value" pairs:

- "@type" : *"the name of the role"*
- "@value" : *"a link to the role in the W3C WAI-ARIA Recommendation"*
- "category" : *"a link to the role's category in the W3C WAI-ARIA Recommendation, i.e., Landmark, Widget, Document Structure, and Abstract role categories"*
- "description" : *"a short description of the role"*

Linking ontologies/vocabularies

Each role is directly linked to its specific place within the W3C WAI-ARIA Recommendation. This Recommendation accordingly serves as the W3C WAI-ARIA Roles ontology/vocabulary.

- Including this WAI-ARIA Roles JSON-LD data island in the metadata of a web page will:
 - Immediately identify it to search engine crawlers as an accessible document.
 - Be indexed by search engines as an accessible document.
 - Its relationship via embedded WAI-ARIA Roles with the W3C WAI-ARIA Recommendation will be pointed to and recorded for future reference by search engines.
- A web author can keep all of it, or edit and limit it to the specific roles they are using throughout the DOM of the page.
- Note the "**application/ld+json**" Internet media type declaration to be used for JSON-LD.
- The JSON Schema and JSON-LD code examples have been tested and validate as semantically correct.

Interactive code examples

The following code examples are interactive/editable and illustrate the format and structure used in building the JSON Schema and JSON-LD.

- **Example 1:** This is the JSON Schema used to programmatically define the structure the JSON-LD WAI-ARIA Roles data island.
- **Example 2:** This is the JSON-LD data island containing the WAI-ARIA **Landmark** Role model. WAI-ARIA Roles are listed in alphabetical order in a JSON-LD data island within the HTML5 <head> element of a web page.
- **Example 3:** This is the JSON-LD data island containing **all** of the WAI-ARIA Roles. All WAI-ARIA roles are listed in alphabetical order in a JSON-LD data island within the HTML5 <head> element of a web page.

Code Example 1: JSON Schema for WAI-ARIA Roles in JSON-LD

This is the JSON Schema that specifies the programmatic structure of the JSON-LD used in the following Example 2 and 3.

```
1  {
2    "$schema": "http://json-schema.org/schema#",
3    "type": "object",
4    "required": false,
5    "properties": {
6      "@context": {
7        "type": "string",
8        "id": "http://jsonschema.net/@context",
9        "required": false
10     },
11     "@type": {
12       "type": "string",
13       "id": "http://jsonschema.net/@type",
14       "required": false
15     },
16     "@value": {
17       "type": "string",
18       "id": "http://jsonschema.net/@value",
19       "required": false
20     },
21     "category": {
22       "type": "string",
23       "id": "http://jsonschema.net/category",
24       "required": false
25     },
26     "role": {
27       "type": "array",
28       "id": "http://jsonschema.net/role",
29       "required": false,
30       "items": {
31         "type": "object",
32         "id": "http://jsonschema.net/role/0",
33         "required": false,
34         "properties": {
35           "@type": {
36             "type": "string",
37             "id": "http://jsonschema.net/role/0/@type",
38             "required": false
39           },
40           "@value": {
41             "type": "string",
42             "id": "http://jsonschema.net/role/0/@value",
43             "required": false
44           },
45           "category": {
46             "type": "string",
47             "id": "http://jsonschema.net/role/0/category",
48             "required": false
49           },
50           "description": {
51             "type": "string",
52             "id": "http://jsonschema.net/role/0/description",
```

```
52 |                                     "required": false
53 |                                     }
54 |                                 }
55 |                             }
56 |                         }
57 |                     }
58 |                 }
59 |             }
```

Code Example 2: WAI-ARIA Roles in JSON-LD - specific roles

As mentioned earlier, a web author does not need to include all of the roles; only those roles used throughout the scope of the page's DOM.

For example, if a web author is only adding WAI-ARIA Landmark Role attributes and values to a DOM, i.e., `role="main"`, `role="navigation"`, `role="banner"`, etc., then they can eliminate all other roles in the JSON-LD `"role": array` that are not being used.

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <title>WAI-ARIA Roles in JSON-LD</title>
5 <script type="application/ld+json">
6 {
7   "@context": "http://www.w3.org/TR/wai-aria/",
8   "@type": "WAI-ARIA Roles",
9   "@value": "http://www.w3.org/TR/wai-aria/roles",
10  "category": "http://www.w3.org/TR/wai-aria/roles#roles_categorization",
11  "role": [
12    {
13      "@type": "application",
14      "@value": "http://www.w3.org/TR/wai-aria/roles#application",
15      "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
16      "description": "A region declared as a web application, as opposed
17        to a web document."
18    },
19    {
20      "@type": "banner",
21      "@value": "http://www.w3.org/TR/wai-aria/roles#banner",
22      "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
23      "description": "A region that contains mostly site-oriented content,
24        rather than page-specific content."
25    },
26    {
27      "@type": "complementary",
28      "@value": "http://www.w3.org/TR/wai-aria/roles#complementary",
29      "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
30      "description": "A supporting section of the document, designed to be
31        complementary to the main content at a similar level in the
32        DOM hierarchy, but remains meaningful when separated from
33        the main content."
34    },
35    {
36      "@type": "contentinfo",
37      "@value": "http://www.w3.org/TR/wai-aria/roles#contentinfo",
38      "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
39      "description": "A large perceivable region that contains information
40        about the parent document."
41    },
42    {
43      "@type": "form",
44      "@value": "http://www.w3.org/TR/wai-aria/roles#form",
45      "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
46      "description": "A landmark region that contains a collection of items
        and objects that, as a whole, combine to create a form."
```

```
47     },
48     {
49         "@type": "main",
50         "@value": "http://www.w3.org/TR/wai-aria/roles#main",
51         "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
52         "description": "The main content of a document."
53     },
54     {
55         "@type": "navigation",
56         "@value": "http://www.w3.org/TR/wai-aria/roles#navigation",
57         "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
58         "description": "A collection of navigational elements (usually links)
59         for navigating the document or related documents."
60     },
61     {
62         "@type": "search",
63         "@value": "http://www.w3.org/TR/wai-aria/roles#search",
64         "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
65         "description": "A landmark region that contains a collection of items
66         and objects that, as a whole, combine to create a search facility."
67     }
68 ]
69 }
70 </script>
71 </head>
72 <body>
73 ...
74 </body>
75 </html>
76
```

Code Example 3: WAI-ARIA Roles in JSON-LD - all roles

This is the complete WAI-ARIA Roles in JSON-LD code example whose structure programmatically maps to the preceding JSON Schema. For reference purposes, all of the WAI-ARIA Roles are included in this example.

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <title>WAI-ARIA Roles in JSON-LD</title>
5 <script type="application/ld+json">
6 {
7   "@context": "http://www.w3.org/TR/wai-aria/",
8   "@type": "WAI-ARIA Roles",
9   "@value": "http://www.w3.org/TR/wai-aria/roles",
10  "category": "http://www.w3.org/TR/wai-aria/roles#roles_categorization",
11  "role": [
12    {
13      "@type": "alert",
14      "@value": "http://www.w3.org/TR/wai-aria/roles#alert",
15      "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
16      "description": "A message with important, and usually
17        time-sensitive, information."
18    },
19    {
20      "@type": "alertdialog",
21      "@value": "http://www.w3.org/TR/wai-aria/roles#alertdialog",
22      "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
23      "description": "A type of dialog that contains an alert message,
24        where initial focus goes to an element within the dialog."
25    },
26    {
27      "@type": "application",
28      "@value": "http://www.w3.org/TR/wai-aria/roles#application",
29      "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
30      "description": "A region declared as a web application, as opposed
31        to a web document."
32    },
33    {
34      "@type": "article",
35      "@value": "http://www.w3.org/TR/wai-aria/roles#article",
36      "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
37      "description": "A section of a page that consists of a composition
38        that forms an independent part of a document, page, or site."
39    },
40    {
41      "@type": "banner",
42      "@value": "http://www.w3.org/TR/wai-aria/roles#banner",
43      "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
44      "description": "A region that contains mostly site-oriented content,
45        rather than page-specific content."
46    },
47    {
48      "@type": "button",
49      "@value": "http://www.w3.org/TR/wai-aria/roles#button",
50      "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
```

```
51     "description": "An input that allows for user-triggered actions when
52         clicked or pressed."
53     },
54     {
55         "@type": "checkbox",
56         "@value": "http://www.w3.org/TR/wai-aria/roles#checkbox",
57         "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
58         "description": "A checkable input that has three possible values:
59             true, false, or mixed."
60     },
61     {
62         "@type": "columnheader",
63         "@value": "http://www.w3.org/TR/wai-aria/roles#columnheader",
64         "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
65         "description": "A cell containing header information for a column."
66     },
67     {
68         "@type": "combobox",
69         "@value": "http://www.w3.org/TR/wai-aria/roles#combobox",
70         "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
71         "description": "A presentation of a select; usually similar to a
72             textbox where users can type ahead to select an option, or type
73             to enter arbitrary text as a new item in the list."
74     },
75     {
76         "@type": "command",
77         "@value": "http://www.w3.org/TR/wai-aria/roles#command",
78         "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
79         "description": "A form of widget that performs an action but does
80             not receive input data."
81     },
82     {
83         "@type": "complementary",
84         "@value": "http://www.w3.org/TR/wai-aria/roles#complementary",
85         "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
86         "description": "A supporting section of the document, designed
87             to be complementary to the main content at a similar level in
88             the DOM hierarchy, but remains meaningful when separated from
89             the main content."
90     },
91     {
92         "@type": "composite",
93         "@value": "http://www.w3.org/TR/wai-aria/roles#composite",
94         "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
95         "description": "A widget that may contain navigable descendants
96             or owned children."
97     },
98     {
99         "@type": "contentinfo",
100        "@value": "http://www.w3.org/TR/wai-aria/roles#contentinfo",
101        "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
102        "description": "A large perceivable region that contains information
103            about the parent document."
104    },
105    {
106        "@type": "definition",
107        "@value": "http://www.w3.org/TR/wai-aria/roles#definition",
```



```
108     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
109     "description": "A definition of a term or concept."
110 },
111 {
112     "@type": "dialog",
113     "@value": "http://www.w3.org/TR/wai-aria/roles#dialog",
114     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
115     "description": "A dialog is an application window that is designed
116     to interrupt the current processing of an application in order to
117     prompt the user to enter information or require a response."
118 },
119 {
120     "@type": "directory",
121     "@value": "http://www.w3.org/TR/wai-aria/roles#directory",
122     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
123     "description": "A list of references to members of a group, such
124     as a static table of contents."
125 },
126 {
127     "@type": "document",
128     "@value": "http://www.w3.org/TR/wai-aria/roles#document",
129     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
130     "description": "A region containing related information that is
131     declared as document content, as opposed to a web application."
132 },
133 {
134     "@type": "form",
135     "@value": "http://www.w3.org/TR/wai-aria/roles#form",
136     "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
137     "description": "A landmark region that contains a collection of
138     items and objects that, as a whole, combine to create a form."
139 },
140 {
141     "@type": "grid",
142     "@value": "http://www.w3.org/TR/wai-aria/roles#grid",
143     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
144     "description": "A grid is an interactive control which contains
145     cells of tabular data arranged in rows and columns, like a table."
146 },
147 {
148     "@type": "gridcell",
149     "@value": "http://www.w3.org/TR/wai-aria/roles#gridcell",
150     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
151     "description": "A cell in a grid or treegrid."
152 },
153 {
154     "@type": "group",
155     "@value": "http://www.w3.org/TR/wai-aria/roles#group",
156     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
157     "description": "A set of user interface objects which are not
158     intended to be included in a page summary or table of contents
159     by assistive technologies."
160 },
161 {
162     "@type": "heading",
163     "@value": "http://www.w3.org/TR/wai-aria/roles#heading",
164     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
```

```
165     "description": "A heading for a section of the page."
166   },
167   {
168     "@type": "img",
169     "@value": "http://www.w3.org/TR/wai-aria/roles#img",
170     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
171     "description": "A container for a collection of elements that
172       form an image."
173   },
174   {
175     "@type": "input",
176     "@value": "http://www.w3.org/TR/wai-aria/roles#input",
177     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
178     "description": "A generic type of widget that allows user input."
179   },
180   {
181     "@type": "link",
182     "@value": "http://www.w3.org/TR/wai-aria/roles#link",
183     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
184     "description": "An interactive reference to an internal or
185       external resource that, when activated, causes the user agent
186       to navigate to that resource."
187   },
188   {
189     "@type": "list",
190     "@value": "http://www.w3.org/TR/wai-aria/roles#list",
191     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
192     "description": "A group of non-interactive list items."
193   },
194   {
195     "@type": "listbox",
196     "@value": "http://www.w3.org/TR/wai-aria/roles#listbox",
197     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
198     "description": "A widget that allows the user to select one
199       or more items from a list of choices."
200   },
201   {
202     "@type": "listitem",
203     "@value": "http://www.w3.org/TR/wai-aria/roles#listitem",
204     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
205     "description": "A single item in a list or directory."
206   },
207   {
208     "@type": "log",
209     "@value": "http://www.w3.org/TR/wai-aria/roles#log",
210     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
211     "description": "A type of live region where new information
212       is added in meaningful order and old information may disappear."
213   },
214   {
215     "@type": "main",
216     "@value": "http://www.w3.org/TR/wai-aria/roles#main",
217     "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
218     "description": "The main content of a document."
219   },
220   {
221     "@type": "marquee",
```

```
222     "@value": "http://www.w3.org/TR/wai-aria/roles#marquee",
223     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
224     "description": "A type of live region where non-essential
225         information changes frequently."
226 },
227 {
228     "@type": "math",
229     "@value": "http://www.w3.org/TR/wai-aria/roles#math",
230     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
231     "description": "Content that represents a mathematical expression."
232 },
233 {
234     "@type": "menu",
235     "@value": "http://www.w3.org/TR/wai-aria/roles#menu",
236     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
237     "description": "A type of widget that offers a list of choices
238         to the user."
239 },
240 {
241     "@type": "menubar",
242     "@value": "http://www.w3.org/TR/wai-aria/roles#menubar",
243     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
244     "description": "A presentation of menu that usually remains
245         visible and is usually presented horizontally."
246 },
247 {
248     "@type": "menuitem",
249     "@value": "http://www.w3.org/TR/wai-aria/roles#menuitem",
250     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
251     "description": "An option in a set of choices contained by a
252         menu or menubar."
253 },
254 {
255     "@type": "menuitemcheckbox",
256     "@value": "http://www.w3.org/TR/wai-aria/roles#menuitemcheckbox",
257     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
258     "description": "A menuitem with a checkable state whose possible
259         values are true, false, or mixed."
260 },
261 {
262     "@type": "menuitemradio",
263     "@value": "http://www.w3.org/TR/wai-aria/roles#menuitemradio",
264     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
265     "description": "A checkable menuitem in a set of elements with
266         role menuitemradio, only one of which can be checked at a time."
267 },
268 {
269     "@type": "navigation",
270     "@value": "http://www.w3.org/TR/wai-aria/roles#navigation",
271     "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
272     "description": "A collection of navigational elements (usually links)
273         for navigating the document or related documents."
274 },
275 {
276     "@type": "note",
277     "@value": "http://www.w3.org/TR/wai-aria/roles#note",
278     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
```

```
279     "description": "A section whose content is parenthetic or ancillary to the
280     main content of the resource."
281   },
282   {
283     "@type": "option",
284     "@value": "http://www.w3.org/TR/wai-aria/roles#option",
285     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
286     "description": "A selectable item in a select list."
287   },
288   {
289     "@type": "presentation",
290     "@value": "http://www.w3.org/TR/wai-aria/roles#presentation",
291     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
292     "description": "An element whose implicit native role semantics will not be
293     mapped to the accessibility API."
294   },
295   {
296     "@type": "progressbar",
297     "@value": "http://www.w3.org/TR/wai-aria/roles#progressbar",
298     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
299     "description": "An element that displays the progress status for
300     tasks that take a long time."
301   },
302   {
303     "@type": "radio",
304     "@value": "http://www.w3.org/TR/wai-aria/roles#radio",
305     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
306     "description": "A checkable input in a group of radio roles,
307     only one of which
308     can be checked at a time."
309   },
310   {
311     "@type": "radiogroup",
312     "@value": "http://www.w3.org/TR/wai-aria/roles#radiogroup",
313     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
314     "description": "A group of radio buttons."
315   },
316   {
317     "@type": "range",
318     "@value": "http://www.w3.org/TR/wai-aria/roles#range",
319     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
320     "description": "An input representing a range of values that can be
321     set by the user."
322   },
323   {
324     "@type": "region",
325     "@value": "http://www.w3.org/TR/wai-aria/roles#region",
326     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
327     "description": "A large perceivable section of a web page or document,
328     that is important enough to be included in a page summary or table of
329     contents, for example, an area of the page containing live sporting
330     event statistics."
331   },
332   {
333     "@type": "roletype",
334     "@value": "http://www.w3.org/TR/wai-aria/roles#roletype",
335     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
```

```
336     "description": "The base role from which all other roles in this
337     taxonomy inherit."
338   },
339   {
340     "@type": "row",
341     "@value": "http://www.w3.org/TR/wai-aria/roles#row",
342     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
343     "description": "A row of cells in a grid."
344   },
345   {
346     "@type": "rowgroup",
347     "@value": "http://www.w3.org/TR/wai-aria/roles#rowgroup",
348     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
349     "description": "A group containing one or more row elements in a grid."
350   },
351   {
352     "@type": "rowheader",
353     "@value": "http://www.w3.org/TR/wai-aria/roles#rowheader",
354     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
355     "description": "A cell containing header information for a row in a grid."
356   },
357   {
358     "@type": "scrollbar",
359     "@value": "http://www.w3.org/TR/wai-aria/roles#scrollbar",
360     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
361     "description": "A graphical object that controls the scrolling
362     of content within a viewing area, regardless of whether the content
363     is fully displayed within the viewing area."
364   },
365   {
366     "@type": "search",
367     "@value": "http://www.w3.org/TR/wai-aria/roles#search",
368     "category": "http://www.w3.org/TR/wai-aria/roles#landmark_roles",
369     "description": "A landmark region that contains a collection of items
370     and objects that, as a whole, combine to create a search facility."
371   },
372   {
373     "@type": "section",
374     "@value": "http://www.w3.org/TR/wai-aria/roles#section",
375     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
376     "description": "A renderable, structural containment unit in a
377     document or application."
378   },
379   {
380     "@type": "sectionhead",
381     "@value": "http://www.w3.org/TR/wai-aria/roles#sectionhead",
382     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
383     "description": "A structure that labels or summarizes the topic of
384     its related section."
385   },
386   {
387     "@type": "select",
388     "@value": "http://www.w3.org/TR/wai-aria/roles#select",
389     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
390     "description": "A form widget that allows the user to make
391     selections from a set of choices."
392   },

```

```
393 {
394     "@type": "separator",
395     "@value": "http://www.w3.org/TR/wai-aria/roles#separator",
396     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
397     "description": "A divider that separates and distinguishes
398         sections of content or groups of menuitems."
399 },
400 {
401     "@type": "slider",
402     "@value": "http://www.w3.org/TR/wai-aria/roles#slider",
403     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
404     "description": "A user input where the user selects a value from
405         within a given range."
406 },
407 {
408     "@type": "spinbutton",
409     "@value": "http://www.w3.org/TR/wai-aria/roles#spinbutton",
410     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
411     "description": "A form of range that expects the user to select
412         from among discrete choices."
413 },
414 {
415     "@type": "status",
416     "@value": "http://www.w3.org/TR/wai-aria/roles#status",
417     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
418     "description": "A container whose content is advisory information
419         for the user but is not important enough to justify an alert,
420         often but not necessarily presented as a status bar."
421 },
422 {
423     "@type": "structure",
424     "@value": "http://www.w3.org/TR/wai-aria/roles#structure",
425     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
426     "description": "A document structural element."
427 },
428 {
429     "@type": "tab",
430     "@value": "http://www.w3.org/TR/wai-aria/roles#tab",
431     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
432     "description": "A grouping label providing a mechanism for
433         selecting the tab content that is to be rendered to the user."
434 },
435 {
436     "@type": "tablist",
437     "@value": "http://www.w3.org/TR/wai-aria/roles#tablist",
438     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
439     "description": "A list of tab elements, which are references to
440         tabpanel elements."
441 },
442 {
443     "@type": "tabpanel",
444     "@value": "http://www.w3.org/TR/wai-aria/roles#tabpanel",
445     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
446     "description": "A container for the resources associated with a tab,
447         where each tab is contained in a tablist."
448 },
449 {
```

```
450     "@type": "textbox",
451     "@value": "http://www.w3.org/TR/wai-aria/roles#textbox",
452     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
453     "description": "Input that allows free-form text as its value."
454 },
455 {
456     "@type": "timer",
457     "@value": "http://www.w3.org/TR/wai-aria/roles#timer",
458     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
459     "description": "A type of live region containing a numerical counter
460     which indicates an amount of elapsed time from a start point, or the
461     time remaining until an end point."
462 },
463 {
464     "@type": "toolbar",
465     "@value": "http://www.w3.org/TR/wai-aria/roles#toolbar",
466     "category": "http://www.w3.org/TR/wai-aria/roles#document_structure_roles",
467     "description": "A collection of commonly used function buttons
468     or controls represented in compact visual form."
469 },
470 {
471     "@type": "tooltip",
472     "@value": "http://www.w3.org/TR/wai-aria/roles#tooltip",
473     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
474     "description": "A contextual popup that displays a description
475     for an element."
476 },
477 {
478     "@type": "tree",
479     "@value": "http://www.w3.org/TR/wai-aria/roles#tree",
480     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
481     "description": "A type of list that may contain sub-level
482     nested groups that can be collapsed and expanded."
483 },
484 {
485     "@type": "treegrid",
486     "@value": "http://www.w3.org/TR/wai-aria/roles#treegrid",
487     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
488     "description": "A grid whose rows can be expanded and collapsed
489     in the same manner as for a tree."
490 },
491 {
492     "@type": "treeitem",
493     "@value": "http://www.w3.org/TR/wai-aria/roles#treeitem",
494     "category": "http://www.w3.org/TR/wai-aria/roles#widget_roles",
495     "description": "An option item of a tree. This is an element
496     within a tree that may be expanded or collapsed if it contains a
497     sub-level group of treeitem elements."
498 },
499 {
500     "@type": "widget",
501     "@value": "http://www.w3.org/TR/wai-aria/roles#widget",
502     "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
503     "description": "An interactive component of a
504     graphical user interface (GUI)."
505 },
506 {
```

```
507         "@type": "window",
508         "@value": "http://www.w3.org/TR/wai-aria/roles#window",
509         "category": "http://www.w3.org/TR/wai-aria/roles#abstract_roles",
510         "description": "A browser or application window."
511     }
512 ]
513 }
514 </script>
515 </head>
516 <body>
517 ...
518 </body>
519 </html>
```

Resources

- W3C: WAI-ARIA Overview
- W3C: Accessible Rich Internet Applications (WAI-ARIA) 1.0
- W3C: 5. The Roles Model
- W3C: JSON-LD 1.0 A JSON-based Serialization for Linked Data
- json-schema.org - The home of JSON Schema
- JSON for Linking Data (JSON-LD)
- JSONLint - The JSON Validator
- Google Structured Data Testing Tool

Related Techniques

JSON-LD Added To List of Formats Recommended For Use With Schema.org

Tests

Test 1

Objective: Using the Google Structured Data Testing Tool, validate the JSON-LD data island, then transform and render it into a HTML search results card or rich snippet.

Instructions

1. Copy the JSON-LD code block in the Example 2: WAI-ARIA Roles in JSON-LD - specific roles topic.
2. On the web, go to and open the Google Structured Data Testing Tool .
3. Paste the code block into the left window of the Testing Tool.
4. Click "Validate".
5. View the right window to examine the HTML transformed JSON-LD with WAI-ARIA Roles data island.

Expected Results

The JSON-LD code block will be transformed into HTML and rendered in the right window of the Testing Tool. This establishes the programmatic association between the data island and a search engine's crawler, and allows the immediate search engine indexing and identification of the WAI-ARIA Roles within this web document.

Test 2

Objective: Load the JSON-LD with WAI-ARIA Roles prepared web page into a website. Observe its escalation in SEO stature and the recognition of the viability of its Linked Data web-accessible nature in the card/rich snippet produced after a search.

Instructions

1. Apply WAI-ARIA Role attributes and values to elements of a web page.
2. Write and validate the WAI-ARIA Role attributes and values in JSON-LD.
3. Place the JSON-LD within the <head></head> element of the web page.
4. Reload or upload the accessible web page to its website.
5. Allow sufficient time for search engine crawlers to discover, then index the accessible web page.

Expected Results

- The web page's accessibility is now enhanced to assistive technologies by the WAI-ARIA Roles exposed in the JSON-LD data island.
 - The web page with its accessibility features identified in JSON-LD is now part of universal Linked-Data.
 - The accessible web page's Search Engine Optimization and visibility should improve via crawling and indexing of the JSON-LD by search engines.
-

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Frank is an American living and working in Silicon Valley, California as a Senior Technical Writer, Information Architect/Developer. He authors all content, markup, presentation, behavior code using HTML5, CSS, RDFa 1.1, JSON, JSON-LD, Schema.org and Dublin Core Metadata Initiative (DCMI) ontologies, and Unobtrusive DOM/JavaScript. His technical writing incorporates web standards, accessibility, and linked/structured data.

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