A Study On WAI–ARIA :

An initiative by W3C to develop disable friendly websites

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Abstract:

A serious concern in today's scenario is to provide a universal access to a website i.e. web accessibility. There are certain functionalities used in multiple websites which are not accessible to a ton of users incurring disabilities. These restrictions infer a barrier in web accessibility for a group of people. In our manuscript, I and my co –author have focused on an emerging technique that will enhance the accessibility and interoperability of the content available on the web and the web applications. The main goal of this paper is to enlighten the Web accessibility initiative – ACCESIBLE RICH INTERNET APPLICATION (WAI- ARIA) which defines a way to make the web content and web applications more accessible and interoperable. The technical documents of WIA- ARIA are developed by Protocols and formats working group i.e.PFWG,underlying as a part of W3C (WORLD WIDE WEB CONSORTIUM) WAI. This developing technique mainly deals with the dynamic content and the advanced user interface controls which are developed using Ajax , HTML, Javascript and other dynamic technologies. This technology not only make the website universally accessible but also provide multiple additional benefits.

I. INTRODUCTION

All the content on the web must be accessible easily and universally. But presently there are certain functionalities used in websites that are not available globally to some users with disabilities, especially people who rely on screen readers and people who cannot use a mouse. WAI-ARIA addresses these accessibility challenges, by defining new ways for functionality to be provided to assistive technology. With WAI-ARIA, developers can make advanced Web applications accessible and usable to people with disabilities. So, WAI –ARIA is an initiative for the people with special needs. It will definitely provide an equal access and opportunities to disabled people for sharing the web information.

In this paper, we have discussed about different versions, components, technical solutions, different roles, wai – aria suite, its states and properties.

II. WAI–ARIA - WEB ACCESSIBILITY INITIATIVE – ACCESIBLE RICH INTERNET APPLICATION

Client-side scripting has helped developers to create user interface controls that can be easily done by HTML that can easily update some sections of a page without requesting a completely new page from a web server. Such aspects on techniques are called rich Internet applications. It results in accessibility problem that are particular bad for users who rely on screen readers and who can't use mouse.

This problem is being solved by the WIA-ARIA(Web Accessibility Initiative-Accessible Rich Internet Application). It is a prior technology which creates rich web applications also produced by the Protocols and Formats Working Group(PFWG) a part of World Wide Web Consortium (W3C) that defines a way to make web content and web applications more accessible to the people with disabilities. It provides several certain ways to assistive technology that includes:-

- Widgets which are built in such a way which are rarely accessible.
- Navigation Landmarks.
- Live contents updates.

Following figure illustrates document object model in model view controller architecture. The accessibility to assistive technology is done only by HTML elements. The document element is managed by the user agent based on the default behavior of the element. It forms the controller.
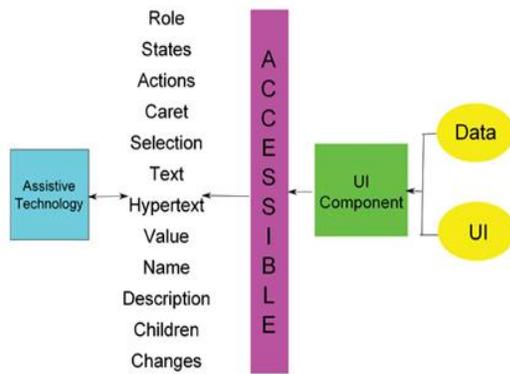
WIA-ARIA

The box between data node and assistive technology carries the contract provided by the user agent to the assistive technology. It consists of typical assistive information found in API for various platforms for GUIs.

III. WIA-ARIA VERSIONS

WIA-ARIA has two versions named as WIA-ARIA 1.0 and WIA-ARIA 1.1. These versions are developed by W3C Recommendation on 20 March 2014.

III.I WIA-ARIA 1.0

WIA-ARIA 1.0 provides technical specification that consists of WIA-ARIA roles and WIA-ARIA states and properties. It includes developers for accessing problem that it can solve such as technical problem, fundamental concepts, etc… There is a WIA-ARIA roadmap that defines path for making rich web content accessible which includes steps to have

already been taken and those which are about to be taken.

III.II WIA-ARIA 1.1

The version 1.1 is an extended version of WIA-ARIA 1.0 with some more additional features to complete HTML + ARIA accessibility model. The WIA-ARIA1.1 technical specification gives some additional features to define accessible user interface elements so that accessibility and interoperability of web applications can be easily improved. It is basically for web developers, other user agents, technician and developers of accessibility evaluation tools.

Here is an example that describes that how a content can be easily accessed between developers and users.
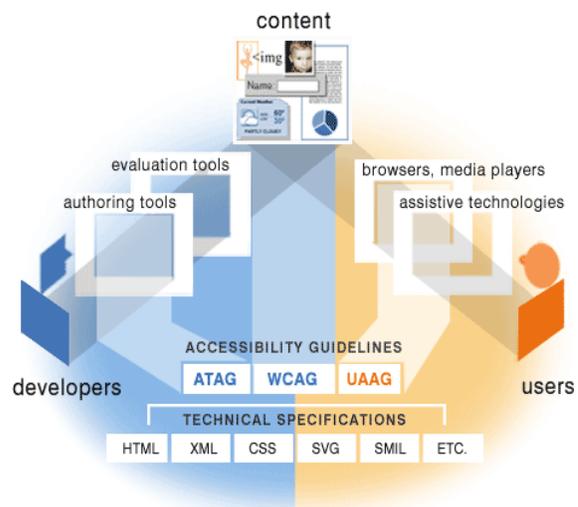
IV. BUILDING ACCESSIBLE APPLICATIONS WITH WAI-ARIA

Under this, we provide a brief introduction to the process of building application accessible using WIA-ARIA. It can provide an outlay on the implementation methodology and reference to sample code as well. *Here are some steps for making an application accessible:*

1. Each element or widget has correct and complete semantics that fully describe its behavior (using element names or roles);
2. The relationships between elements and groups are defined;

3. States, properties, and container relationships are valid for each element's behavior and are accessible via the *Document Object Model* [*DOM*] and the platform accessibility API; and

4. Keyboard focus should be maintained for the duration of the user's interaction with the application.

5. All interactive components should be keyboard operable.

We use accessibility API to make rich application. Each platform accessibility API has the notion of a "role" attribute for a GUI object. It is used in case of Java Accessibility API [JAPI], MAC OS X Accessibility Protocol [AXAPI] and many more… The "role" attribute consists of qname which enables authors to reference the role attribute. Consider an example, where we use qname to reference the menu role in the WAI-ARIA specification.

```
<?xml version="1.1" encoding="us-ascii"?>
<!DOCTYPE html PUBLIC "Accessible Adaptive
Applications//EN"
   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml"
```

```
>
  <body>
    <div role="menu">
      File
    </div>
  </body>
</html>
```

V.   CONCLUSION

The new approach to rich web applications- WIA-ARIA has no adverse effects. Using WIA-ARIA has saved much time and cost. Thus, however in creating web applications, web developers use WIA-ARIA to provide better approach to the people with disabilities. In fact, it entertains user with some additional benefits such as search engine optimization, increased usability, reduced time and cost, reputation. WAI-ARIA also includes technologies to map controls, Ajax live regions, and events to accessibility application programming interfaces (APIs), including custom controls used for rich Internet applications. WAI-ARIA techniques apply to widgets such as buttons, drop-down lists, calendar functions, tree controls (for example, expandable menus), and others. Thus, it is a greatest approach towards today's scenario.