

In 2004, at the previous W3C workshop hosted by MobileAware in Dublin, it was concluded that “[t]echnology to represent and process [Roles and Relationships] within an adaptation framework will be required. [DIMCA]” It was agreed that semantic enrichment of content would make it possible to create adaptable representations to support the growing diversity of Web-enabled devices.

In 2005, the published draft of XHTML 2.0 contained the Role Access Module [Role], in which the role attribute was described as something that could be “used by applications and assistive technologies to determine the purpose of UI widgets. In the case of a web page it may be declarative as a function of particular elements or it may be an attribute which is configurable by the page author.” The use of semantic enrichment to enable better Web accessibility is laudable, but the absence of a strong commercial driver has meant the uptake is not as strong as it should be. In contrast, the increasing demand for Web content on mobile devices (and the associated commercial opportunities) can provide the necessary impetus.

Aftermath of DIMCA

Fresh from the positive results of the 2004 workshop, MobileAware worked with other industry representatives in the W3C DIWG to help create a technology that could be context-aware. MobileAware shared its experience in this area, having released an XHTML based solution four years previously. That technology embedded conditional logic within standard markup, making it possible for contextual influence over the selection of content resources, prior to transcoding to target markup languages. Other technologies also exhibited this ability, such as the JSTL Core tags [JSTL] released in 2002, and the switch element from the W3C SMIL Recommendation (as early as 1998) [SMIL].

In effect, conditional markup was already a well-established technology in 2004. By 2005, DIWG had learnt from the experience of many contributors (including MobileAware) and published the first draft of Content Selection for Device Independence [DSelect], and later included it in a compound document format called DIAL, a draft of which was first published in 2006 [DIAL].

MobileAware, as an active participant, applauds the development of these W3C technologies. The results bear similarities to aspects of the products the company has been offering to the market for many years. It has been a rewarding experience to be working in concert with many partners (and competitors) to achieve a consensus of approach. However, the new W3C technologies are significant but they are not the conclusion of the evolution of adaptable Web solutions.

Beyond programmatic authoring

In 2004 MobileAware was already acknowledging that there are better ways to capture the author’s intentions than requiring the author to express decisions in formats more familiar to programmers than to artists. At that time, expressions within the content resembled the complex constructs of



programming languages, rather than the simple presentation markup favoured by non-technical authors. It was clear that as device diversity increased, the conditional expressions would become more complex, requiring ever-increasing technical expertise on the part of the author. Eventually, there would be a need for higher levels of abstraction. These in turn could be mapped to adaptable representations, including MobileAware's XHTML-based language, the proposed DIAL, and many more. In essence, the "programmable" authoring approach is reaching its plateau, and a higher level of authoring is emerging.

MobileAware notes a particular problem standing in the way of this goal: the absence of a common means to represent context upon which selection decisions can be made. The publication of DSelect raised the possibility of using the device context properties previously defined for CSS Media Queries [CSSMQ], originally proposed in 2001. The limitation with the DSelect "starter set" is that this falls far short of the hundreds of device properties available to users of commercial (proprietary) solutions. Certainly, DSelect was designed to be extensible, but where and how would it extend? In 2005, the W3C launched the Mobile Web Initiative, with MobileAware as one of the founding sponsors, and also chairing the new Device Descriptions Working Group. Within this group, the issue of common access to device-related contextual information was discussed. When the group was rechartered in 2006, it was with the specific aim of making such common access a reality. Among the group's deliverables is a core vocabulary of (static) device properties, forming part of a common repository of values drawn from many sources.

First step

A common vocabulary is an essential first step to extending the conditional logic/expressions in technology such as DSelect, JSTL, WALL, ASP.NET [ASP] and (of course) MobileAware's own technologies. Other commercial solutions also feel this need, as do other groups such as those in the OMA. This is a ubiquitous requirement of any successful adaptation solution, and for this reason the UWA is seen as the natural home for a common ontology comprising the various domain-specific vocabularies. When there is agreement on how conditional expressions will access/use contextual information, the focus (one hopes) will shift towards the representation of author-specific intentions, and how these intentions can be mapped to expressions using the common ontology. In effect, it is MobileAware's expectation that the next step after an agreement on the representation of contextual information will be a return to considering the representation of Role and Relationship, as suggested by the 2004 workshop.

Declarative approaches are an essential part of this goal. These approaches should capture the intent of the content author, the presentation stylist, the solution designer and other members of the Web development community. This high-level metadata will drive the adaptation process, possibly through mapping to the programmable authoring we have today, or possibly to some other adaptation process we have yet to imagine. It may be necessary to develop the means to translate statements of intent into the selection/manipulation expressions that will be made possible by a common ontology. In this way, the creators of content will be able to focus on their creativity and avoid (as much as possible) the complex formalism of much of today's content. The 2007 workshop



will be an opportunity for these ideas to be voiced and discussed, and hopefully provide ideas to guide the future work of the UWA, to which MobileAware will continue to contribute.

Summary

In summary, MobileAware expects the use of adaptable representations to evolve from conditional markup to high-level semantically-rich compositions. The current focus on the execution of fine-grained concrete conditional logic embedded within content shall shift towards interpretive processes that map intentions within a contextual framework to various delivery modalities and content structures. Content creation will be more declarative, and less “programmatically”. In its move away from the desktop, the Web shall not only embrace new delivery devices, but shall also re-enfranchise content authors.

References

- [DIMCA] <http://www.w3.org/2004/06/DI-MCA-WS/execreport.html>
- [Role] http://www.w3.org/TR/2005/WD-xhtml2-20050527/mod-role.html#col_Role
- [JSTL] <http://java.sun.com/j2ee/1.3/docs/tutorial/doc/JSTL5.html#wp65106>
- [SMIL] <http://www.w3.org/TR/REC-smil/#switch>
- [DIAL] <http://www.w3.org/TR/dial/>
- [DSelect] <http://www.w3.org/TR/cselection/>
- [CSSMQ] <http://www.w3.org/TR/css3-mediaqueries/>
- [MWI] <http://www.w3.org/Mobile/>
- [ASP] [http://msdn2.microsoft.com/en-us/library/wa9x6tza\(VS.80\).aspx](http://msdn2.microsoft.com/en-us/library/wa9x6tza(VS.80).aspx)