

# Mobile Web: Reinventing the Wheel?

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Tagline: Reusing the lessons learnt in achieving Web accessibility can speed the Mobile Web to fruition.

It shouldn't come as any shock to realise that the Mobile Web doesn't really work just yet. However, mobile content is currently under intense development as the drive toward the mobile Web is pushed by both the World Wide Web Consortium (W3C) and mobile service providers; with an eye on increasing mobile content sales.

We ask, will this drive lead to a race toward techniques, best practice, and technologies; miss those already developed in different domains? Are we in danger of repeating the same old mistakes by ignoring research and development from other fields? If we don't take a more holistic view, we think that we are.

Web based mobile content has no fixed structure and has no fixed target. It can consist of many different elements that are not of the same kind or nature, and needs to be displayed on many different types of devices all with their own egocentricity's. These issues form both the problem, and point to the universality of the solution required.

One of the key ideas of the Web, as articulated by Tim BernersLee, is exactly this idea of universality, many different kinds of Web pages viewable on many different devices. Indeed this vision so pervades the Web ethos that it also extends into the real world by suggesting that every Web page should be designed so that not just all devices, but all people, can access content regardless of any sensory or cognitive impairments.

But there is a Web outthere characterised by devices with small to nonexistent screen size, low bandwidth, and different operating modalities. It too doesn't work properly just yet but it's a lot further along the path to universality than we may imagine. It's called the 'Accessible Web' and its had its own share of setbacks and successes that we can all learn from. Indeed, it is important in the context of the Mobile Web because with the move to mobile technologies, devices are, in effect, simulating the problems faced by disabled users within the wider population of mobile users.

So what can the Mobile Web, learn from the Web accessibility, and what resources created to support Web accessibility can be used by designers in their support of the Mobile Web? To cross-pollinate we need to rethink our view of accessibility and begin to realise that 'accessibility' is in effect a misnomer; what we really mean is 'completeness'<sup>1</sup> of the content to enable complete content to be rendered on any device. Indeed the Web accessibility rests on the twin pillars of completeness and standardisation and these concepts are key to how accessibility practitioners build their Web sites. As the number of mobile devices increases and the Web evolves to be truly mobile we think these twin pillars will become the two most important concepts for the Mobile Web practitioner too.

The Mobile Web Initiative [2] is still in its infancy. Views common in general mobile device design are still prevalent and the device (ergo user agent) itself is still the focus of many

manufacturers. In an area where corporate interests still weigh heavy 'How can Web content be accessed *on MY device?*' is often the question being considered. However, when the aspiration of the Web is truly understood the only question to ask is 'How can the content of the entire Web be accessed *by ALL devices?*' Paradoxically, finding the solution to this question is exactly how a commercial advantage could be achieved.

Bespoke solutions of the kind currently under investigation by the fledgling Mobile Web community, suggesting Web content can be tailored serverside [3], is not the path to follow. While trying to make information universally usable through bespoke device descriptions seems reasonable on first inspection

*Completeness (as in 'integrity') n. : the state of being complete and entire; having everything that is needed.*

it is not and cannot be supported in practice. Building device descriptions is a risky strategy at best and by trying to address all device needs in one design the technologist is apt to address non. Indeed, if Web accessibility is any indicator, device descriptions will become less desirable due to both cost of maintenance and increasing client side support requirements. While it may be possible for mobile device manufacturers to provide highly tailored client solutions for their specific device, painful experience has taught accessibility professionals that bespoke clientside solutions are often created when an area is en vogue but support dwindles as products move into the mainstream.

This is exactly our experience with common accessibility technologies which cannot keep pace with mainstream browsers. The answer, that is beginning to dawn on certain parts of the accessibility community, is to forget accessibility persay and concentrate on building complete documents while moving accessibility into the browser, in effect choosing the generic over the bespoke. Web accessibility professionals know that complete but device neutral information is the only sustainable development route. Indeed, many have already tried creating separate information resources, subsites, and accesstechnology friendly areas, all with limited success. Infact so limited has their success been that most practitioners have now moved to a 'one document' solution and rely on the ability of user agents to use each Web document as required.

One complete document following the current standard is the only workable solution. This approach is supported by researchers in the Computer Human Interaction field who have long expounded the principle of 'Universal Usability'. A universality which suggests to most designers and engineers that the solutions they come up with must best fit most of the population most of the time. Indeed, many practitioners follow the viewpoint that universal usability means designing to support all users and devices [1]. Indeed if we do not heed their call the Mobile Web stands to be mired in the retrofitting and rehashing common in Web accessibility. Interestingly we can see this view being adopted by progressive mobile companies already. With the launch of the Nokia S60 mobile browser, which is really a user-agent with a built in screen magnifier, we can see that device independent content can be accurately rendered on a small screened device.

To create universal documents by including complete information involves making no-generalisations regarding users or devices. Indeed, it is precisely because previous models made so many generalisations that users not fitting these assumptions have been excluded from the technological world in the first place. Do not misunderstand, visual and auditory styles

are quite acceptable as long as they are overlays and do not alter the document or its objects, singularly or in combination.

So how can the Mobile Web mirror the completeness and standardisation of Web accessibility without 'reinventing the wheel', so to speak? Help is at hand. Enter the 'Web Content Accessibility Guidelines' (WCAG) [4] which we could call 'Web Content Completeness Guidelines' because in reality they do not discuss accessibility but more accurately completeness. Completeness of the foundational models, completeness at the metadata level, completeness of the information (or Document Objects), and finally limited semantic completeness.

By using these guidelines along with general good practice and validation of the Web foundational, core, and domain technologies and standards, Mobile Web practitioners can ensure that documents are complete, standard, and device neutral.

In practice there is a tremendous commonality between the Mobile Web and Web accessibility, and this is why lessons learned creating Web accessibility are important for the Mobile Web. Accessibility practitioners have been researching, innovating, and building device independent resources for years and their expertise can, and should, be leveraged into the Mobile Web effort. Conversely, the Mobile Web is important from an accessibility standpoint because the Mobile Web is Web accessibility but with a stronger business case. Therefore, by building the Mobile Web we can also ensure that the entire Web, mobile or desk bound, is accessible.

Building content that allows for heterogeneity, flexibility, and device independence is incredibly difficult, incredibly challenging, but incredibly necessary. This looks good for the Web accessibility practitioner who may find new avenues opening up for their skills in Mobile Web content creation. But we must remember that we will never accomplish the task if we forget the first rule of the software engineer, reuse.

## References

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### About the author



*Simon Harper* has been a Lecturer in the Information Management Group of the School of Computer Science at the University of Manchester since 2006, and Research Lead for the Human Centred Web Laboratory since 2001. He is interested in how disabled users interact with the Web and how the Web, through its design and technology, enables users to interact with it. He believes that by understanding disabled--users' interaction we enhance our understanding of all users operating in constrained modalities where the user is handicapped by both environment and technology.