

A Position Paper from ACCESS for W3C Ubiquitous Web Workshop

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Abstract

ACCESS describes some of the real-world ubiquitous web issues and challenges in a soft-interaction ubiquitous web perspective.

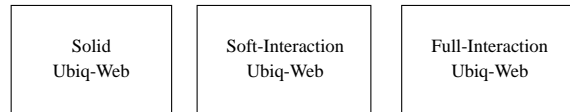


Figure 1. Three categories of ubiquitous web

1 Introduction

The mobile Internet was launched in Japan in 1999. Since then, they witness the rapid penetration into the every day's life. As the mobile Internet users reached 70 millions, a large portion of the Internet content was converted to be mobile-enabled. In addition, a large portion of mobile-specific content was created. ACCESS has skills in developing porting web-enabled software to digital appliances since 1995. We have leveraged Internet-TV, mobile handsets, game consoles, and other office machines and home appliances using NetFront. NetFront shipped in 214 million licenses in 721 products until September 2005. Recent porting experience includes portable game consoles, copy machines, electronic music instruments, digital TV, automotive navigation systems, and so on. NetFront can cover both of context-specific languages (like Compact HTML or WML) and general purpose languages (HTML4 or XHTML1).

2 Challenges

There are challenges from diversity of execution environments and device capabilities. Considering the nature of the ubiquitous web, our feeling is that this diversity will persist. It is not useful to tailor this diversity at the moment from the content perspective. Even PDF and Macromedia FLASH are ported to mobile handsets. The lessons tell us that the PC Internet convergence will persist even with difference in adoption speed and adoption methodologies.

3 Real-world Challenges

The emergence of mobile web highlighted the importance of interoperability and conformance. When we consider interoperability and conformance, we need to consider three types of ubiquitous web, depicted in Fig. 3. In the solid ubiquitous web, the devices for ubiquitous web are completely embedded in each environment. They make device-to-device communication only. In the soft-interaction ubiquitous web, the devices are restricted by a variety of capabilities. The human users make use of web access using these restrictions. In the full-interaction ubiquitous web, the device for ubiquitous web provides a pipe to the Internet. The real user interface can be constructed by separate wide-screen or wireless keyboards. From our experience with network software for the digital appliances, we focus on the soft-interaction ubiquitous web to consider interoperability and conformance. In this domain, the variety of the capabilities and contexts make challenges for interoperability. A minimum requirement based approach taken in the early mobile Internet age is not appropriate in many cases. Each device is enhanced according to use scenes for each application domain.

It is different from telephony where purchasing devices automatically lead to an interoperable system. With the tight relationship with content diversity, interoperability continues to be a vital challenge. In addition, with penetrating ubiquitous web, we have to pay attention to the following three aspects of interoperability. Technical challenges include protocols and content formats as well as capabil-

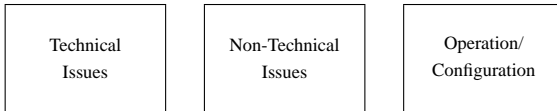


Figure 2. Three issues in interoperability and conformance

ity description to ensure interoperability. The second one is that non-technical obstacles beyond technical specification. They are non-technical issues of interoperability, which is a real challenge for real-world ubiquitous web. Vocabulary management for device capability description resides both in technical and non-technical aspects. For example, the number of SSL certificates, the size of cache, the minimum length of supported URL, and so on. It needs an in-depth consideration, both from technical and service integration perspectives. The third one is non-technical issue on operation and configuration. Wireless carriers well recognize this issues and extensively explore configuration issues. However, not all devices are covered by this type of efforts. Operation is a critical component of ubiquitous web. This leads to the three different aspects of interoperability in the soft-interaction ubiquitous web, outlined in Fig. 3

The rapid penetration in the Non-PC Internet in Japan evoked awareness in this domain. There is Ubiquitous Open Platform Forum (UOPF) in Japan and extensively studies in these issues. It has the working experience in digital TV. Configuration includes:

- IP address
- proxy, firewall setup
- ISP-related contract and configuration

The home network environment witnesses emerging radical changes:

- Broadband networks
- Digital Broadcasting: TV and radio
- High speed near distance communication

The easy configuration and set-up is an emerging challenge for network-enabled home appliances.

4 Conclusion

ACCESS encourages W3C to identify technical and non-technical interoperability issues in the ubiquitous web and pay appropriate attention and collaboration in that domain.

5 References

UOPF(Ubiquitous Open Platform Forum)
<http://www.uopf.org/en/>