

Mobile Web Applications: Bringing Mobile Apps and Web Together

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ABSTRACT

The popularity of mobile applications is very high and still growing rapidly. These applications allow their users to stay connected with a large number of service providers in seamless fashion, both for leisure and productivity. But service providers suffer from the high fragmentation of mobile development platforms that force them to develop, maintain and deploy their applications in a large number of versions and formats. The Mobile Web Applications (MobiWebApp [1]) EU project aims to build on Europe's strength in mobile technologies to enable European research and industry to strengthen its position in Web technologies to be active and visible on the mobile applications market.

Categories and Subject Descriptors

D.3 [Programming Languages]: Standards

Keywords

Mobile Web Applications, HTML5, Web Standards, MobiWebApp, Device APIs, Training, Testing, Outreach

1. INTRODUCTION

With technologies such as HTML5, Web technology is currently undergoing a sea change that makes it a strong contender for becoming an open, royalty-free standards-based platform for mobile applications.

The MobiWebApp project has the following key goals:

- **Standardisation:** Increase the features available to Web applications to match the ability of native applications developed using proprietary technologies.
- **Testing:** Increase the interoperability of Web technologies on mobile devices, to make true the promise of cross-platform development.
- **Training:** Increase the number of developers capable of developing Web-based mobile applications.
- **Outreach:** Increase awareness of W3C mobile Web applications work in Europe.

2. WORK PERFORMED AND RESULTS ACHIEVED

2.1 Standardization

2.1.1 Development of device APIs for the Web

To match the capabilities of native applications on mobile devices, the Web needs to provide ways for closer integration between the browser and the underlying device, allowing for instance interactions with the user's camera, reading and writing from her address book or her agenda, or adapting the user experience based on the battery level or the capabilities of the network. Thanks to the work done within the W3C Device APIs Working Group [2], Web developers will be able to gain access to the above-mentioned features from the browser, using JavaScript.

2.1.2 Standardization Roadmap

Beyond device APIs, W3C is in charge of producing a large number of specifications that are relevant to Web applications. To make it easier to identify which specifications are relevant to mobile Web applications developers, the MobiWebApp project has developed and released a standardisation state of the art and roadmap [3] that covers more than 50 specifications published by 16 W3C Working Groups. This document summarizes the various technologies developed in W3C that increase the capabilities of Web applications, and how they apply more specifically to the mobile context. The February 2012 edition of the roadmap features for the first time detailed information on which mobile browser implements what specification, based on data collected from existing on-line sources. The document also has the latest information about the status of specifications, their expected evolution, the state of their accompanying test suites, etc.

The features that the technologies add to the Web platform are organized under the following categories: graphics, multimedia, device adaptation, forms, user interactions, data storage, personal information management, sensors and hardware integration, network, communication and discovery, packaging, performance & optimization (see Figure 1 below).

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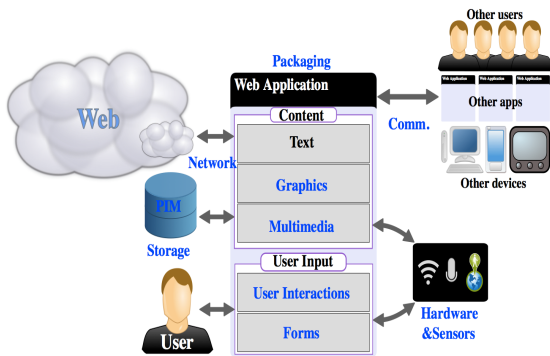


Figure 1: The Web as an application development platform

2.2 Testing framework

One of the strengths of Web applications over their native counterparts is that they make it possible for service providers to develop their applications once, and have it run on any mobile device. To keep that promise, mobile browsers need to provide a strong level of interoperability in their implementations of the relevant specifications.

To that end, the MobiWebApp project is involved in the deployment of a mobile-friendly testing framework (see Figure 2 below) that allows all the relevant W3C Working Groups to publish their test suites and make them available through a single point of entry. The data collected by the testing framework will be usable to identify what browser implements which technology and how well. The testing framework will also make it easier to identify which specifications need more test development efforts.

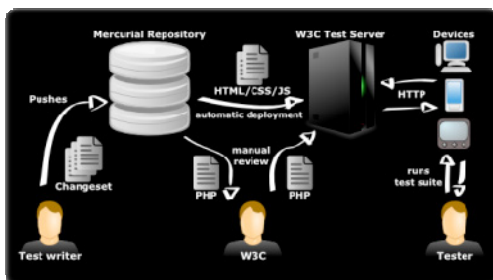


Figure 2: W3C test server

So far, a testing-dedicated server has been deployed, **hosting 1500 test cases** from 5 Working Groups, with a specific review process that guarantees security while allowing contributions from the community at large (a Web server dedicated to serving these test cases was deployed at [4]).

To ensure the successful development of test cases across the relevant W3C Working Groups, the MobiWebApp project has also contributed to the set up of a W3C group dedicated to testing. That group will develop guidance on the development of mobile-friendly test cases that will work in the proposed testing framework.

2.3 Training

To make sure that Web developers in Europe have the knowledge to develop mobile Web applications, the MobiWebApp project has developed two online training courses introducing the specificities of developing Web content and Web applications targeting mobile devices. The two courses, each 8-week long, are:

- **“Mobile Web 1: Best Practices”**: this course is based on best practices, particularly the W3C Mobile Web Best Practices and the W3C Mobile Web Application Best Practices, both W3C standards.
- **“Mobile Web 2: Applications”**: this course provides all the knowledge needed to write mobile Web applications that can ship both online and in application stores, using today’s advanced technologies.

More detailed information about the courses’ description is available at [5] and [6].

2.4 Outreach

Service providers and Web developers need to better understand what Web technologies can provide in stead or in complement of native applications on mobile.

To that end, the MobiWebApp project has dedicated outreach effort [7] to disseminate the results of W3C’s mobile Web application work to a European audience.

The following results have been achieved:

- MobiWebApp-funded W3C staff members gave presentations on W3C mobile Web application activities at high-profile events, increasing the visibility of W3C’s mobile work in Europe;
- Effective media outreach (press releases and organized press briefings);
- Production of successful outreach material (such as the Mobile Web Applications Best Practices cards - see Figure 3 below).

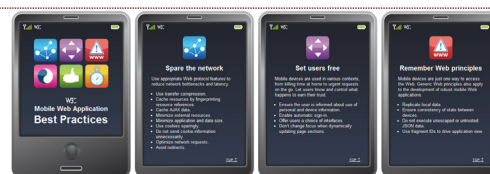


Figure 3: Mobile Web Application Best Practices cards

3. EXPECTED FINAL RESULTS, THEIR POTENTIAL IMPACT AND USE

To make it possible for European research, industry and SMEs to take advantage of the ubiquity of Web technologies, several blocking factors need to be lift:

- Web browsers provide less features than what proprietary platforms, making it harder to mobile applications that integrate well with their devices,
- Service providers often lack knowledge of what current and upcoming Web technologies allow to build for their content and services,

- Web developers lack expertise in adapting their skills to mobile devices, and to Web applications in particular.

MobiWebApp is expected to significantly reduce these barriers.

The development, standardisation and interoperability of new features for mobile browsers will reduce the gap between the Web platform and proprietary platforms to the point where most mobile applications can be developed using Web technologies.

Outreach on Web standards in European events, completed with a complete up-to-date standardisation state of the art and roadmap provides greater visibility and understanding of what Web technologies enable on mobile devices.

The development and running of training courses allows Web developers to adapt their skills and expertise to the growing demand for Web-based mobile applications.

4. COLLABORATION WITH OTHER ICT PROJECTS


Using the Web for developing mobile applications matches the goals and needs of various other ICT projects that wants to reach their users on many devices, and in particular on mobile phones. The project has established working relationship with 3 other ICT projects in Europe (Webinos, Mosquito, and Serenoa) to coordinate on their work toward deploying applications on mobile devices using Web technologies.

The MobiWebApp project is also co-chairing the standardisation coordination group of the Service and Software Architectures and Infrastructures cluster of projects, assisting other projects in their strategy to bring work to standardisation.

5. ACKNOWLEDGMENTS

The World Wide Web Consortium (W3C) is an international consortium where Member organizations, a full-time staff, and the

public work together to develop Web standards. W3C primarily pursues its mission through the creation of Web standards and guidelines designed to ensure long-term growth for the Web. Over 340 organizations are Members of the Consortium. Sir Tim Berners-Lee, the inventor of the Web, directs W3C. W3C's European branch is hosted by ERCIM.

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