

## Chapter 5

# Web Applications on the Move: Opening Up New Opportunities for Mobile Developers

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### **ABSTRACT**

*As a new platform for mobile applications the “Mobile Web” has recently gained importance. However, the Web as an application platform presents a number of limits to the application developer when compared to other application platforms, e.g. limited access to the local functionality of the mobile device. Those limits can be addressed through so-called “hybrid” application platforms which combine the best from the worlds of Web applications and locally installed applications. We believe that such hybrid applications will gain a significant market share in the nearby future. In this chapter we reflect the current state of those hybrid application platforms and analyze their advantages: After deriving general requirements for future mobile application platforms, we discuss the promises and limits of the Mobile Web platform and describe recent activities of public bodies addressing the discussed limits through “hybrid” extensions. Finally, we discuss the FOKUS Mobile Widget Runtime as a prototype for a hybrid application platform, and propose future research directions in this field.*

### **INTRODUCTION**

The market for mobile end-user applications is rapidly growing while still being shaped both in

terms of new business models and underlying technologies. The interconnected questions that hereby arise are: What new kind of mobile applications will emerge in the future, as mobile devices are qualitatively different from stationary devices, and what engineering approaches and development and

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execution platforms are appropriate to enable that new kind of applications and to promote further innovation in the field.

As a new platform for mobile applications the “Mobile Web” has recently gained importance, in particular through the market appearance of a new generation of richly equipped smartphone devices. Driven by their Web access friendly hardware and software, faster mobile data networks and falling online costs, the amount of people using a mobile phone for daily Web access is constantly growing. Here, the appeal of the mobile Web is not only fuelled through a better mobile browsing experience of static Web content, but also significantly through an increasing range of user appealing innovative Web applications.

The term “mobile Web application” is often used broadly for any type of application that connects to content or services on the Web, no matter how the application is programmed, deployed and accessed, and therefore including “fat clients”, that is, local, installed applications, and “thin clients”, that is, applications based on the Web browser, where the bigger part of the application logic (and therefore the bigger part of the footprint) resides in the network.

Both types of applications have their specific strengths and weaknesses:

On the one side, using the Web browser provides the application developer with a ubiquitous client and opens up the possibilities of “zero install” and “zero config” as applications are accessed through simple URL browsing. Also, the usage of established Web technologies with a low learning curve (like HTML or AJAX) lowers the entry barrier for application developers both in the technological and the cost-related sense. Besides, the Web serves as a low-cost distribution platform.

On the other side, locally installed applications are usually better integrated into the target platform, allowing for example access to the data stored on the device or its sensory equipment, and allowing a more efficient execution. Equivalent

possibilities for browser-based applications are still in their infancy, because the classical Web browser is a much more restricted environment.

However, the borders between browser-based and local applications are getting blurred already: On Personal Computers, browser-based applications are already provided with a set of “local” features like offline storage and offline execution (e.g. through Google’s Gears), and vice versa local applications are being connected to the Web (e.g. Adobe’s AIR). In the mobile field, the needs of browser-based applications to access mobile device functionalities have also been already recognized, e.g. through so-called Web widgets, that is, small, packaged Web applications running on specialized Web runtimes which are similar to a Web browser, but are more application-centric, and are better integrated into the underlying platform [Figure 1].

The result of those developments are “hybrid” application platforms profiting from both worlds.

The objective of this chapter is to reflect the current state of hybrid application platforms for mobile devices and show future market and research directions.

The outline of the chapter is the following: First, we discuss the qualitative difference of mobile devices and its influence on upcoming innovative applications and derive general requirements for a mobile applications platform. In the next step we discuss the advantages of the Web based approach, and analyze the promises and limits of the “Mobile Web platform” when compared to other application platforms. We then describe recent activities of public bodies addressing the limits of the Web as an application platform, namely, activities pursued by the W3C, the OpenAjax Alliance and OMTP BONDI. At last, we present and discuss in detail the FOKUS Mobile Widget Runtime as a prototype for a hybrid applications platform in the light of the requirements derived in the first chapter and two sample applications. Finally, we discuss future research directions.

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