# UCLA Mobile Web Framework Pilot

## The increasing trend of mobile learning

At UCLA and across the country, an increasing trend exists toward mobile learning. By recent estimation, over half of college students have internet-capable handheld devices. The Stanford Dean of Students recently cited a finding from his research that “students were more likely to remember their phone than their wallet when heading out”. This the case, a mobile presence for UCLA is not only a desire, but an expectation.

## Native apps versus web apps

Generally, two types of applications exists for mobile devices:

- **Native Applications** are platform-specific applications that run natively on specific device hardware, generally with low portability, central distribution and robust hardware interfaces.
- **Web Applications** are Internet applications that run on any device that has a browser, with superior portability but an apparent lack of hardware interfaces. As a note, device browsers and interface still vary enough to require variations in styling.

The mobile device platform market is rapidly and continually expanding. With students as early and frequent adopters of new technologies such as mobile devices, developing a native application that serves a substantial number of devices on campus quickly becomes a challenge. Therefore, the UCLA Mobile Web Framework instead focuses on providing a web-based platform that can adequately serve a vast majority of mobile devices on campus.

## A federated mobile identity

As opposed to the traditional web, which is a collection of disparate content linked by page hops and searches, the mobile web focuses on an integrated experience categorized by portals, menus, and directed content. The UCLA Mobile Web Framework pilot will establish a unified identity for the campus’ mobile presence through CSS, Javascript libraries, and other resources and tools, while leaving applications hosted by and under the direct control of their respective departments.

## Strategy

The UCLA Mobile Web Framework pilot has several primary objectives:

- Create a device-agnostic mobile framework capable of dealing with the increasing variation in handheld devices.
- Serve as a resource for building mobile applications, providing styling and scripts that take advantage of device-specific features, yet degrade semantically for the vast majority of devices.
- Facilitate a federated UCLA mobile identity: one outward presence comprised of many individual applications.
- Conform to mobile web standards such as W3C Mobile Web Best Practices and the Global Authoring Practices for the Mobile Web.

## Anatomy

The framework itself is a library of CSS, Javascript and other assets. By providing markup standards, CSS definitions, Javascript functions, and utility scripts, the framework allows a developer to write a single set of markup that works on all devices supported by the framework, while still leveraging device specific features when available.

The framework, at this time, distinguishes between four different types of phones: WebKit-based (iOS, Android, WebOS, etc.), other rich user interfaces (mouse or touch screen), linear browsing (T9 phones), and no-CSS phones. Then, the page is styled completely differently based on the viewing device. Below is a single markup example page that is rendered on phones that fall under the three different CSS classifications:
In addition to styling, the framework will also allow an application developer a standardized way to interface with phone-specific features such as gestures, geo-location, and more, all through Javascript.

**Implementation**

One of the greatest challenges for mobile developers is the rapidly changing landscape of devices. In the past, applications have had to accommodate this individually. This has added a lot of overhead, both upfront in development and in maintenance later on. The UCLA Mobile Web Framework will allow developers to avoid device-by-device planning completely, instead providing an abstraction layer for developers, the framework itself the only piece that must make device-by-device determinations as long as developers employ its standards.

A central server will host the front splash page, as well as CSS, Javascript and image libraries, and the scripts that serve them to client applications.

The splash page will act as a portal for various mobile sites at UCLA, each hosted and run under their respective department but tied together through a central look and feel. To this end, each application will reference the framework's CSS and Javascript libraries, maintaining a consistent UCLA mobile identity and providing the applications with an enhanced level of rich functionality.

To implement the framework, a developer will primarily need only to implement HTML entity classes (```<...class="attr"...>```); these classes will, though CSS and Javascript, deliver functionality defined through the framework for each device classification. Some classes will create mobile-styled menus, buttons, and content areas, while others will enable interactive capabilities like Javascript element toggling, touch screen gesture detection, and even geo-location and address book functionality.

The framework documentation will also provide comprehensive information on developing UCLA mobile applications, including specifications for both styling and interface classes in the framework, as well as general HTML recommendations necessary for semantic degradation on non-CSS devices.

**Prototype**

UCLA has begun development of a prototype for the framework. Among the mobile apps used by many surveyed universities, the pilot collaborators have selected several key applications that they believe are essential for the success of the application pilot; as such, in the prototype, intended for launch by Fall 2010, the framework team hopes to have applications in the framework including directory, news, events (Happenings), campus map, campus tour, library and iTunes U, as well as any other applications that have an interest in participating.

**More Information**

Mobile computing mailing list: uclamobile@lists.ucla.edu

Planning and collaboration site: http://ccle.ucla.edu/course/view/Mobile

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