

UWeng Mobile App + Environment

UNIVERSITY OF
WATERLOO

uwaterloo.ca

Erick Engelke
Director

Engineering Computing

Need

- Students request/demand mobile access
- Jan 2013: 85% have a mobile phone/tablet/pc in use on campus wifi. Actual numbers likely higher.
- MacLeans, students, parents and others judge us on issues like this
- Regular web pages don't cut it on phones these days
- Mobile: one has to start somewhere, better get started

Engineering Vision 2015

- *“..to take ... a great school of engineering and move it even further forward”*
- *“..offering excellent academic programs and services... promoting collaboration... providing world-class facilities”*
- *“...we will invest ...in key areas, including... communications”*
- i.e. this is our business, we must engage.

Technologies

- Many available technologies
 - Reviewed many, tried several
- Most people write for one brand (Apple, Android, Blackberry, MS Phone)
- Chose open technologies: HTML5, JavaScript, CSS, AJAX which work on almost all smartphones (*almost* perfectly)
- Embarcadero framework helped with speed to deploy

Rules

- Each **screen** is implemented as a separate web page
- Each page 120kB or less (typically 13kB):
 - sort of OK: 3G, but fast: LTE/wifi
- Whenever possible, use same libraries
 - Downloaded first time, cached for other pages
- Each page supports a *back* button
- Follow Apple's iOS style guide as much as possible

iOS Style Guide

- Lots of wisdom: why iOS is successful
- Mobile \neq desktop/laptop
 - Windows 8 may not agree... successful?
 - Pared down / simplistic / clean / intuitive
 - Limited space... live within it, embrace it
 - Gestures, which degrade gracefully to keystrokes

Organize Content

- Places – eg. maps, parking, food
- Ref – Reference Material – dictionary, scientific constants, etc.
- Happens
 - current events, blogs, eating, weather, etc.
- Courses – course related – exams, etc.
- Other – semi random: games, etc.

Result: UWeng

- Is a web page, could also be native app
- Is highly modular
 - Screens can be any technology, + back btn
 - Screens can be iFrame – load in window
 - Or can be entire screen, eg. google scholar
- Screen can be navigated with thumb
- Relatively intuitive for the intended audience: engineering students, expected to be sophisticated enough to operate a web app
 - Less success with general public who do not know enough to press buttons and just wait for something to happen

Problems

- Many devices have small incompatibility with Internet standards. Coded around most of these issues before beta.
- Different devices have different screen dimensions, people have different sized fingers. Eg. some small android demands larger buttons.
- Some blackberry specific issues:
 - Some older BBs do not actually use WiFi, this is a known bug, they do all communication by slower 3G, do not always work inside buildings
 - Older blackberries run out of memory often
 - Pre Z10 BBs do not implement text edit's properly, had to replace with multi-line
 - Newer models of BB (Q10, Z10) seem to work perfectly
- Android and iPhones of all generations appear to work. Some small Androids have smaller display areas and may require scrolling.
- Only discover issues by having testers

Schedule – Core System

- Feb. 1, 2013 – started
- Apr. 12, 2013 – beta released (test server)
 - Issues discovered (some bugs, some compatibility issues, some inter-app issues)
- Apr. 15, 2013 – production hardware arrives
- Apr. 19, 2013 – second beta
- Apr. 29, 2013 – production release

What does it mean?

- Anyone can create mobile apps from same backend data
- As long as they don't store the data, it remains current... not stale
- Can often cache data for 1 day simply for speed.
- We can have a variety of interfaces
 - Akin to GM, Ford, Honda, etc. different feel, different market, same essential functionality

What UWeng Means

- Open standards for maximum portability
- Usability on variety of topics - small screen
- Proves useful mobile systems can be produced relatively quickly – 1-2 months
- Emphasizes need for Open Data and Open Enterprise Data – enable developers

What Open Data Means

- Lose some control of data
 - Central orgs often resist
- Big investment – documenting... must first understand data
- Requires some sanitization to remove or make opaque confidential data
- People allowed to access for one reason but often come up with better ideas later, but very different from original
- Allows mash-ups – combining two or more sources of data to do new things

UWeng Next Steps

- Complete missing section in present app - courses, CAS/OAuth2
 - Began discussion with various parties to get permission
 - Display student timetable, ask to add to device calendar
 - Display exam timetable, ask to add to device calendar
 - Do prof lookup based on enrolled course: phone #, Email, office
- Add some engineering-specific content – ideas next term or two
 - Ask an Engineering (contact with alumni)
 - Add *surveyor* system, profs use smart devices for impromptu, anonymous quizzes
 - Look up student department, then list available machines in labs
 - Continue with prototype for prof evaluations