

Mobile Web Development with GWT + GAE

An ongoing project exploring solutions based on
Google Web Toolkit and Google App Engine

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Agenda

- Characteristics of the Mobile Web
- Using GWT for Mobile Web Development

Characteristics of the Mobile Web

- Small screens
- Slow connection / offline use / „on the go“
- Slow CPUs
- Touch Input / Orientation changes
- Good web standards support (HTML5!) – really?



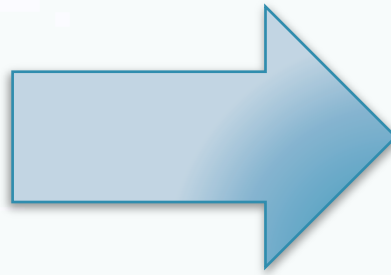
@dalmaer
Dion Almaer

A day in the life of Android WebKit
dealings: Android WebKit is the closest
thing to being the IE6 of mobile dev...

bit.ly/pHtpEL

29 Aug. via [twitterfeed](#)

Putting a 27" flatscreen in your trousers ...



That 's probably not a good idea.

Are we mobile yet?

Levels of Adaptation

- **Responsive Web Design (fairly cheap, client-side)**
CSS Media Queries and non-fixed layouts enable web pages to adopt to different form factors.
<http://www.alistapart.com/articles/responsive-web-design/>
- **Device-dependent Views (fairly complex, server-side)**
Serving separate HTML pages/fragments depending on the client capabilities but keeping the general workflow.
- **Separate Websites / Frontends (highest complexity)**
The best solution, if the need to optimize for mobile usage impacts scope and functionality of the web app.

Look Ma, No Wire!

With wide-spread usage of UMTS and LTE on the horizon – why do I have to care about bandwidth?

- Ever got on a train? Or went to your small home village? Or attended a conference or football match?
- Generally, lower bandwidth, higher latency and smaller web cache than on desktop devices
(might improve somewhat with LTE)



Do not throw the elephant, if a mouse can do the trick.

- Mobile web applications require small footprints:
 - Lightweight resources (CSS3 instead of images, ...)
 - Small amount of files (Image sprites, ...)
 - Local caching strategies (Use Web Storage, ...)
- Mobile applications should work offline
 - Support HTML5 Application Cache

Using GWT for Mobile Web Development

- The GWT model is well poised for app-like web development
- Google advocates the usage of GWT for mobile web development and during the last releases successively improved support for mobile devices and touch input
- The MVP model proposed by Google elegantly supports providing multiple views for the same interaction with a minimum of additional coding

GWT Meets Mobile

The Good

- Transparent optimization of Javascript
- Good tool chain with excellent Eclipse integration
- Out-of-the-box support for some HTML5 features (like Web Storage)
- Many GWT standard components now work well with mobile browsers
 - Since GWT 2.3 ScrollPanel finally supports mobile browsers (using a script approach)
 - Support for Touch Events

GWT Meets Mobile

The Bad

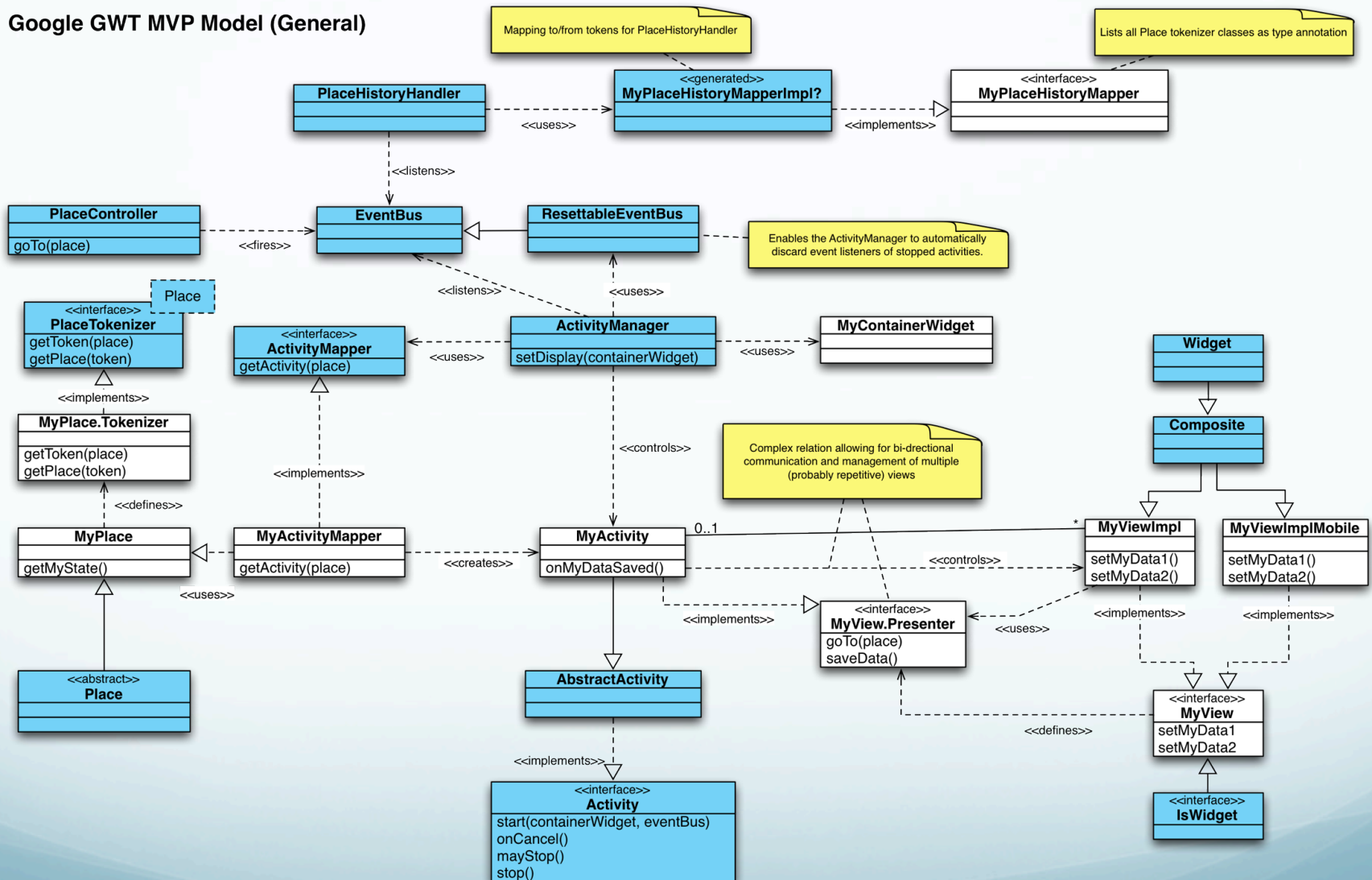
- No hosted mode for browsers of mobile devices results in long feedback cycles
- No out-of-the-box support for implementing UIs with a native app like feel
- Some GWT standard components are (still) not working well with mobile, many are based on heavy-weight old school HTML
- Popular JS frameworks for mobile development are not integrated with GWT yet (SenchaTouch, jQuery mobile)

Benefits of the MVP model advocated by Google

- Transparent History Management
- Lightweight views de-coupled from business logic
=> Simple JUnit testing for most of the code
- Plays nice with UIBinder
- Scaling well for complex applications
(especially with a sequential workflow)
- Spring Roo for productivity? – Hmm ...
(=> generate all boilerplate code)

MVP Class Diagram

Google GWT MVP Model (General)



Commercial Frameworks based on GWT

- Sencha Ext GWT
 - !Supports GWT 2.X only with the next release!
 - No support for (Google) MVP
 - No use of the latest enhancements for mobile
 - No support for RequestFactory
- SmartGWT
 - Supports GWT 2.3
 - ???

Some Provocations

- General Truth:
If you use GWT to avoid learning JS and HTML (perhaps using extGWT or the likes) you will end up with sluggish, unsexy enterprise-style applications (dull and painful, but often acceptable for enterprise environments)
- ⇒ **All the more valid for mobile!**
- Find someone, who knows their way around CSS2/3 and HTML5! Stick to lean, modern constructs, integrate modern techniques and frameworks where not directly supported by GWT.
- Design for mobile first!

Further Reading / Watching

- GWT for Mobile Web Apps

<http://www.google.com/events/io/2011/sessions/using-gwt-and-eclipse-to-build-great-mobile-web-apps.html>

<http://www.google.com/events/io/2011/sessions/html5-versus-android-apps-or-web-for-mobile-development.html>

Good Sample App (as presented on IO 2011):

<http://google-web-toolkit.googlecode.com/svn/trunk/samples/mobilewebapp/>

- Google MVP

<http://code.google.com/webtoolkit/doc/latest/DevGuideMvpActivitiesAndPlaces.html>

<http://www.google.com/events/io/2010/sessions/architecting-production-gwt.html>