Android

It’s not (just) a phone.

demos[0] = Lamp

Who We Are

Joe McCann

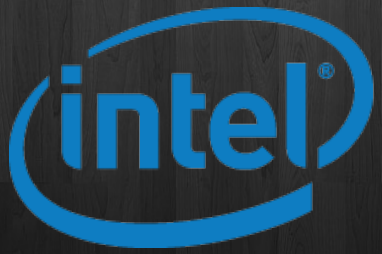
- Senior Technologist

David Wood

- Technical Architect

What We Do

Provide innovative solutions for
Fortune 500 companies



parts[0] = How we did it

Architecture

Architecture: Communication

- WebSocket used for communication between components
- Data passed as JSON
  - Structured as whoopingkof message

Architecture: Android Client

- Native application wrapping a WebView
  - Utilizes our Sigi framework

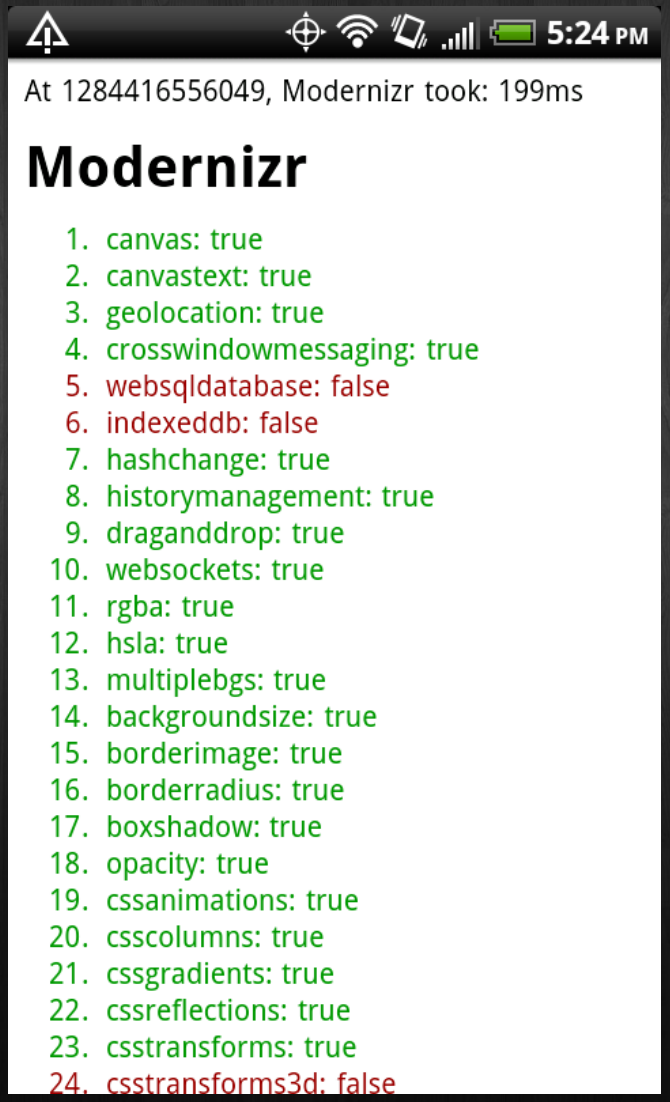
Architecture: Android Client

- Native application wrapping a WebView
- WebSocket implemented in Java

Architecture: Android Client

- Native application wrapping a WebView
- WebSocket implementated in Java
- WebSocket exposed to WebView through JavaScript proxy
  - Proxy provides window.WebSocket that conforms to HTML5 draft spec
  - Passes Modernizr capability detection

Architecture: Android Client



Architecture: Android Client

- Native application wrapping a WebView
- WebSocket implementated in Java
- WebSocket exposed to WebView through JavaScript proxy
- Uses our whoopingkof library for evented WebSocket communcation

Architecture: Broadcast Server

- Built on node.js
  - Express
    - http://github.com/visionmedia/express
  - node-websocket-server
    - http://github.com/miksago/node-websocket-server
  - whoopingkof library for node

Architecture: Broadcast Server

- Built on node.js
- All server code written in JavaScript

Architecture: Lamp

- Ikea Basisk lamp
  - Re-wired and fitted with RGB LED in place of light bulb
    - http://thingm.com/products/blinkm-maxm.html

Architecture: Lamp

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Architecture: Lamp

- Ikea Basisk lamp
- Controlled by Arduino Duemilanove with an Ethernet shield
- WebSocket client implemented using Arduino Ethernet library
  - Using aJSON library for Arduino
    - http://github.com/interactive-matter/aJson

parts[1] = Whoopingkof? Sigi?

What is whoopingkof?

- A client side JavaScript library that provides evented WebSocket communication
  - Requires use of server side whoopingkof library for node.js
  - Server side component could be easily ported to other WebSocket servers
- Usage follows jQuery event bind/unbind syntax

```
whoopingkof.bind(eventType, handler(data));
// Example:
whoopingkof.bind('chatMessage', function(data){
    alert(data.message)
});
```

What is Sigi?

- Android application framework that enables Web stack application development (à la PhoneGap)
  - Focused on rapid prototyping
- Provides mechanism for easily extending WebView
  - WebSocket implemented in WebView using this framework

parts[2] = Why Android?

Rapid Prototyping

- An extension of the design process
- Highly collaborative and iterative
- Allows for quick innovation
- Relatively inexpensive
- Allows for earlier user testing
- Enables bypassing of design artifacts
- Android openness allows for flexibility required in a rapid prototyping platform

Innovation on Android

- Innovation surface has barely been scratched due to Android's infancy in age
- Motorola CEO Sanjay Jha stated that closed phones such as Apple (iPhone) and RIM (Blackberry) work but pace of innovation in open Android is "meaningfully higher in my view"

parts[3] = Why the web stack?

Proving Ideas in Android Can Be Expensive

- Limited number of UI components out of the box

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- Limited number of UI components out of the box
- Time-consuming to build rich UIs
- Integrating with Web services adds additional complexity, scope and time
- Mixing Java and web stack allows for better use of developer expertise

Quick Example

- A late breaking design change requires your application to pull a JSON formatted data file from your domain

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- A late breaking design change requires your application to pull a JSON formatted data file from your domain
- In jQuery, a GET request of JSON data is a very simple task

```
$.getJSON('http://mysite.com/data.json', function(data) {
    // Do something with your JSON data
    alert(data.win);
});
```

Proving Ideas with Web Tech Stack is Cheap and Fast

- HTML5/CSS3/JavaScript

Proving Ideas with Web Tech Stack is Cheap and Fast

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- CSS Media Queries

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- Leverage desktop web development tools and workflow

How Fast?

- All demos developed in our free time over 2 weeks

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- Lamp demo developed in 8 hours
  - WebSocket implementation for Arduino: 1 hour
  - Arduino client: 1 hour
  - Re-wiring lamp / Arduino assembly: 1 hour
  - Web client (JavaScript): 1.5 hour
  - Web client UI (HTML / CSS): 3 hours

demos[0] = Lamp++

Proving Ideas with Web Tech Stack is Cheap and Fast

- HTML5/CSS3/JavaScript
- CSS Media Queries
- Standards-based implementation allow for better adoption across devices
- Leverage desktop web development tools and workflow
- Node.js
  - Non-blocking server that provides a set of bindings to V8
  - WebOS 2.0, which runs on top of WebKit/V8, will ship with node.js

Proving Ideas with Web Tech Stack is Cheap and Fast

- HTML5/CSS3/JavaScript
- CSS Media Queries
- Standards-based implementation allow for better adoption across devices
- Leverage desktop web development tools and workflow
- Node.js
- WebSockets

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- Most Compelling Feature of HTML5 Spec
- Provides near real time communication/data transfer
- Rarely hear about it from designers, marketers, “social media experts”, etc.
- Real engineers know all about it.
  - 3 out of every 4 entries in Node Knockout used WebSockets
  - Nearly all of the finalists used WebSockets (including the winner)

demos[1] = SOS

How Lightweight?

- 55 lines of client side application code (formatted for legibility)
- No application specific server side code
- Uncompressed: 1285 bytes
- Uncompressed + gzip: 484 bytes
- Compressed*: 562 bytes
- Compressed* + gzip: 318 bytes gzipped

* Compressed with Google Closure Compiler service using advanced optimizations

Production Ready

- Web software stack can be production ready, not just for prototyping
  - PhoneGap

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  - PhoneGap
  - Appcelerator Titanium

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  - Adobe AIR

What About Performance?

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- If user experience is not negatively impacted, nanoseconds of performance gains are irrelevant
- Need to balance what lives in web stack and what lives in Java

demos[2] = Chat

Small Amounts of Data

- Impressed--

* BTW, our server (graciously provided by MediaTemple) is located in California

(mt) mediatemple

demos[3] = Paint

Large Amounts of Data

- Impressed++

parts[4] = Creative Business

demos[4] = Annotate

parts[5] = Recap

Abridged Version

- Android is more than just a phone

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- Android is more than just a phone
- Platform is an ideal tool for innovation

Abridged Version

- Android is more than just a phone
- Platform is an ideal tool for innovation
- Rapid prototyping

Abridged Version

- Android is more than just a phone
- Platform is an ideal tool for innovation
- Rapid prototyping
- Web stack

And now the code...

- Whoopingkof
  - http://github.com/voltron/whoopingkof
- Sigi
  - http://github.com/voltron/sigi
- Conference demos
  - http://github.com/voltron/whoopingkof/tree/master/clients/html/
- Conference slides
  - http://github.com/voltron/android-only

Fork the code and get going!