HTML5 Gaming on the mobile web

RICHARD DAVEY, PHOTON STORM LTD.
What we’ll cover

What is HTML5
Why build HTML5 games
Technical Challenges
Back to basics
Production Guidelines
The Future
Getting Started
What is HTML5?

A media buzzword for a group of web technologies:

- JavaScript
- CSS3
- Canvas
- WebGL
- Web Audio

Cross platform - *but only just*

Over-hyped!

Not Flash
Who am I?
Director, Photon Storm
Who we build games for

40+ HTML5 games in 18 months
Why they need HTML5 games
Month on month growth – 9pm peak time
5 million
MONTHLY USERS

300
GAMES – MOST 3rd Party

15
NEW GAMES A MONTH

PREDOMINANTLY EUROPE + SOUTH AMERICA

BoosterMedia.com
HTML5 Gaming Portal Network
### Desktop browsers

- Fast! 😊
- Great audio
- Webcams
- 3D
- Lots of memory
- Wired / broadband
- Great tools

### Mobile browsers

- Slow! 😞
- Terrible legacy audio
- No camera *yet*
- No 3D *yet*
- Very little memory
- Wireless / 3G
- Very few tools
Building on shifting ground

2,200 changes to WebKit and Chromium per week

From Canary to Chrome in 12 weeks

iOS and Android automatic updates over the air

Automatic browser updates

Things you’re told are not possible today might be by the end of the project.

Be prepared to un-learn what you know every 6 months
## Constantly changing hardware

<table>
<thead>
<tr>
<th>4”-5” Smartphones</th>
<th>11”-17” Laptops &amp; Convertibles (Tablet/Laptop)</th>
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<tbody>
<tr>
<td>Apple iPhone 5 (4” Apple iOS 6.0)</td>
<td>13” MacBook Pro with Retina (13” Apple OSX 10.8)</td>
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<td>Nokia Lumia 920 (4.5” Microsoft Windows 8)</td>
<td>Lenovo IdeaPad Yoga 13 (13.3” Microsoft Windows 8)</td>
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<td>HTC Windows Phone 8X (4.3” Microsoft Windows 8)</td>
<td>Lenovo ThinkPad Twist (12.5” Microsoft Windows 8)</td>
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<td>Toshiba Satellite U925T (12.5” Microsoft Windows 8)</td>
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<td>Motorola Droid RAZR HD (4.7” Google Android 4.0)</td>
<td>Dell XPS 12 (12.5” Microsoft Windows 8)</td>
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<td>Motorola Droid RAZR M (4.3” Google Android 4.0)</td>
<td>Lenovo IdeaTab Lynx (11.6” Microsoft Windows 8)</td>
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<tr>
<td>TBD: LG Nexus 4 (4.7” Google Android 4.2)</td>
<td>Samsung ATIV Smart PC 500T/700T (11.6” Microsoft Windows 8)</td>
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<th>9”-10” Tablets</th>
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<td>iPad Gen 4 (9.7” Apple iOS 6.0)</td>
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<td>Kindle Fire HD (7” Google Android 4.0 modified)</td>
<td>Microsoft Surface Tablet (10.6” Microsoft Windows 8)</td>
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<td>Lenovo IdeaTab Lynx (11.6” Microsoft Windows 8)</td>
<td>Acer Iconia W700 (11.6” Microsoft Windows 8)</td>
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<td>Samsung ATIV Smart PC 500T/700T (11.6” Microsoft Windows 8)</td>
<td>Sony Vaio Duo 11 (11.6” Microsoft Windows 8)</td>
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<td>Acer Iconia W700 (11.6” Microsoft Windows 8)</td>
<td>Samsung Chromebook (11.6” Google Chrome OS)</td>
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<th>20”-30” Desktops</th>
<th>5”-6” Phone/Tablet Hybrids</th>
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<td>Sony Tap 20 (20” touch screen Microsoft Windows 8)</td>
<td>Samsung Galaxy Note II (5.5” Google Android 4.0)</td>
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<tr>
<td>21.5-inch iMac (21.5” Apple OSX 10.8)</td>
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DOM, Canvas, SVG, WebGL

DOM can be faster, to a point

Sometimes only canvas works

SVG fits some types of game

Multi-renderer frameworks

Keep an eye on WebGL
There is NO MAGIC BULLET for rendering!

Use common-sense and pick what is suitable not fashionable
Event Lag

Canvas redraws are expensive
iPad 1, Android 2, Kindle = 😞

Makes touch events lag

Dirty Rects & QuadTrees ftw

**Hint:** Avoid stacked canvases
Like, WTF?!

aww.

you make snowball sad.
Audio – Legacy issues

• Performance
• 1 sound channel (yes, really)
• Cellular playback issues
• Codec issues (mp3, ogg, m4a, amr, ac3)
• Web Audio solves all of this
• Until then …

Use these libraries:
- Zynga Jukebox
- Howler.js
Back to basics
“What do you mean I can’t have 500 particles around my lens flare?”

Lack of performance means stripping away the window dressing

When you do this you realise how solid the concept really was in the first place

Ask yourself: “Did the player get a significantly reduced experience because the game didn’t have 3 levels of parallax scrolling and a video intro?"

HTML5 today on mobile limits embellishment, not good ideas
Tree Fu Tom: Magic Dash
Production Guidelines

SANITY CHECKING CLIENT REQUESTS
Warning signs

If the game *genuinely* needs:

- Complex audio or video
- Large areas of movement
- Complex controls
- Advanced physics
- Short delivery deadline!

... then consider carefully if the time is right yet
Test early and test often

User Testing
Device Testing
Combinations of the two

You will never be able to test all combinations
Expect the un-expected

Allow extra time for build even on very basic projects

Prototype all key areas of the project up front

You are breaking new ground
That doesn’t suit all teams or projects
# Flash Conversions

<table>
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<tr>
<th>Yay!</th>
<th>Nay!</th>
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<tbody>
<tr>
<td>Game concept exists</td>
<td>But does it work?</td>
</tr>
<tr>
<td>Assets exist</td>
<td>Can’t be used as is</td>
</tr>
<tr>
<td>Devs recreate it all</td>
<td>Wrong priority</td>
</tr>
<tr>
<td>Sets expectations</td>
<td>Incorrectly</td>
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What about the Future?
Look to the desktop

Issues we face *today* on mobile are solved on the desktop – and are filtering down already

Devices are getting faster

Chrome is now updated in sync with the desktop (although hello Blink)

Firefox OS – Tizen – iOS7 – BlackBerry – Windows 8

Legacy baggage fades quickly
Getting Started

TOOLS AND RESOURCES
TypeScript

http://www.typescriptlang.org/

Static checking!
Classes, modules, interfaces (ES6)
Compile time errors
It makes life sane again

IDE Support
Visual Studio 2012 (Web Express and Pro)
WebStorm
FlashDevelop
Texture Packer, CS6 / CC & Shoe Box

Use Texture Atlases to save http requests and GPU memory

Export MovieClips from Flash, just be careful of creating too many sprite sheets

ShoeBox is a graphical swiss-army knife

http://www.codeandweb.com/texturepacker
http://renderhjs.net/shoebox/
Spine and Spriter

2D skeletal animation for games

Spine: AS3 & JS runtimes
http://esotericsoftware.com/

Spriter:
http://www.brashmonkey.com/
HTML5 Game Devs.com

A forum specifically for HTML5 game developers

News
Code
Game Showcase

Constantly great new content!

http://www.html5gamedevs.com/
Phaser

Extremely fast to get started
TypeScript or JavaScript
Similar concepts to Fixel
It’s a collection of all the most useful functions and HTML5 tricks we’ve learnt in a single framework
< 45KB minified & gzipped
Close to 1.0 release!

http://www.photonstorm.com/phaser
Pixi.js

2D JavaScript renderer
WebGL with canvas fall-back
Borrows heavily from Flash (MovieClips, Stage, etc)
Constantly updated

https://github.com/GoodBoyDigital/pixi.js
Thank you!

Richard Davey

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Twitter: @photonstorm
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