HTML5 Games in 2013

Nice to meet you!

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Disclaimer: I'm presenting my own opinions not those of Nickelodeon or Viacom

The Promise of HTML5 Games

- Reach
- Ease of Development
- Flash Replacement in Mobile Browsers
- Quick iteration in mobile app stores

What does that look like?

- …

Reach : Huge Addressable Market

- iOS : 575 Million Users
- Android : 900 Million Users
- HTML5 : 1.4 Billion Mobile Browsers

+ 75% of Desktop Browsers

+ Tizen, Firefox OS, Smart TVs, Cars, etc.

BUT, are the HTML5 users monetizable?

Ease of Development : JavaScript

- HUGE developer community
- VERY easy to learn
- Great language for creating web pages
- Cross-platform (w/o ObjC, Java, C#, AS3)

- *BUT, is it a good language for games?*

Flash is Dead. Long live HTML5

- Adobe won't be updating Flash Player
- Flash Player not supported on mobile
- Flash Player has limited support in Win 8
- HTML5 *should* work where Flash used to

Quick Iteration in Stores

- Native apps updates require store approval
- Slows down iteration. Hard to be agile

- Hybrid apps can be updated instantly
- Instant updates = better content
- Fix bugs, A/B Test and Optimize Flows

Main Challenges of HTML5 Games

- Content creation : Viable, not Mature
- Distribution : Hard without Hybrid
- Monetization : Hard without Hybrid

Importance of Hybrid Apps

- Want to make $ now? Make a Hybrid Game
- Browser-only distribution currently limited
- IAP monetization requires native code
- Key Plugins: IAP, Ads, Push Notifications
- HTML5 Game Native Wrappers
  - CocoonJS (Ludei)
  - Phonegap (Adobe) / Cordova (Apache)
  - Appmobi (Intel)
  - Ejecta (ImpactJS)
  - Chrome Packaged Apps (Google)

HTML5 Game Distribution

- Mobile App Stores (Hybrid)
  - iTunes, Google Play, Amazon, Windows, Nook
- More App Stores
  - Chrome Store, Firefox Store
  - AT&T, Verizon, Samsung, etc.
- Social Networks
  - Facebook, MocoSpace, WeChat? Kik?
- Arcade Portals
  - AddictingGames.com

HTML5 Game Monetization

- Ads
- Game Contests
- In App Purchases （Hybrid）
- Licensing
  - Addicting Games, FGL, MarketJS
- Consulting Services : Work for Hire
  - Nickelodeon is looking for HTML5 Game Devs!

Mobile Ad Revenue Explosion

Global Mobile Internet Ad Revenue 2013 : $16 billion (eMarketer)

Net Mobile Internet Ad Revenues Worldwide, by Company, 2011-2013

billions

	2011	2012	2013
Google	$1.53	$4.61	$8.85
Facebook	-	$0.47	$2.04
Pandora	$0.12	$0.24	$0.40
YP	$0.09	$0.25	$0.38
Twitter	-	$0.14	$0.31
Millennial Media	$0.04	$0.07	$0.12
Other	$2.23	$3.02	$3.72
Total	**$4.02**	**$8.80**	**$15.82**

Note: net ad revenues after companies pay traffic acquisition costs (TAC) to partner sites; includes display (banners and other, rich media and video) and search; ad spending on tablets is included; excludes SMS, MMS and P2P messaging-based advertising; numbers may not add up to total due to rounding
Source: company reports, 2012 & 2013; eMarketer, June 2013

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www.**eMarketer**.com

400% Growth in next 3 years

- Revenue from Global Mobile Advertising to Grow 400 Percent Between 2011 and 2016
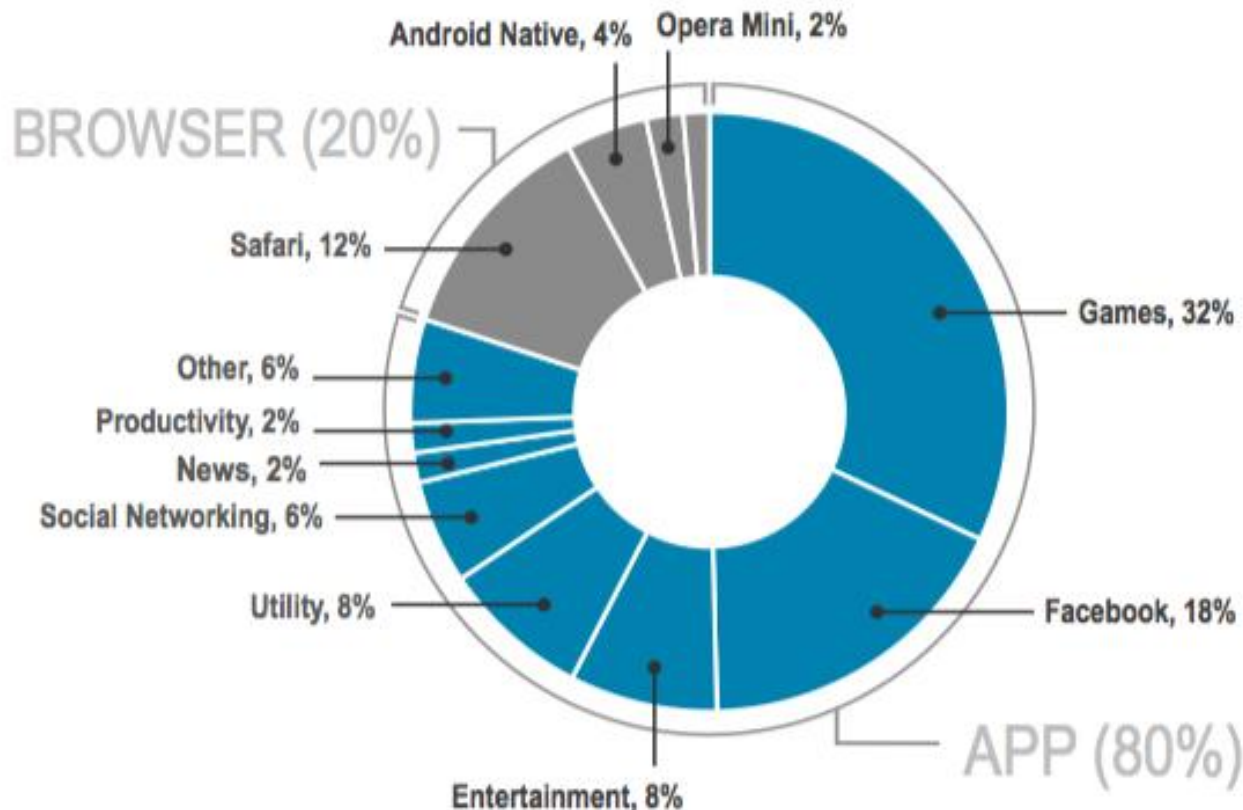- $24.5 billion in 2016

Mobile Advertising Revenue by Region, Worldwide, 2012-2016 (Millions of Dollars)
Source: Gartner (November 2012)

	2012	2013	2014	2016
North America	3,181.5	3,825.7	4,694.9	8,866.2
Western Europe	1,600.5	1,941.4	2,367.8	4,445.4
Asia/Pacific and Japan	4,333.0	4,864.9	5,506.7	9,480.2
Rest of the World	644.1	788.0	960.6	1,768.3
Total	**9,759.1**	11,420.0	**13,530.0**	**24,560.1**

Where will advertisers spend $25.5 billion?

Time Spent on iOS & Android Connected Devices

Android Native, 4%   Opera Mini, 2%

BROWSER (20%)

Safari, 12%

Other, 6%
Productivity, 2%
News, 2%
Social Networking, 6%

Utility, 8%

Entertainment, 8%

Games, 32%

Facebook, 18%

APP (80%)

FLURRY

Source: Flurry Analytics, comScore, NetMarketShare

Why should game developers even consider ad-based revenue?

- IAP is great but consider …
- Rise of low ARPU game players.
- Smartphones are cheap now
- 98% of players don't pay
- Some mobile ad networks reporting very high eCPM : $5-40
- Ad-based model fits nicely with HTML5

State of HTML5 Game Technology

- Changing : Dom > Canvas > WebGL
- Fragmented
- Still very few examples of *real* games
- Distribution limitations magnify tech issues
- No big success story yet :
  - Farmville (Facebook)
  - Angry Birds (iTunes)
- Challenges : large animation, mobile memory
- But it's better now! Web Audio, Canvas GPU

"How do I make my HTML5 game?"

- Consider …
- Target platforms? Mobile Web? Android?
- Business goals
- Team size?
- Team Tech DNA? Java? Flash? JS? Cocos?

"There are more HTML5 game engines than HTML5 games" - Oliver Marsh, Tresensa

Evaluation Criteria

- Traction - Growth in real projects in production?
- Team - Smart, 100% committed engineers?
- Toolchain - IDE, Visual Editors, Debugging
- Features - Canvas, Web Audio, Physics
- Reach - Cross-platform? Flash? iOS? Android?
- Language - Java, Lua, JavaScript, Haxe
- Pricing - Free, Licensing, Rev Share
- License - MIT, GPL, etc

Top 10 Dealbreakers

- No links to *real* games - demo? video? no
- Single platform - need multiplatform
- No WebAudio - audio spritesheets? no
- No Canvas - DOM? Past. WebGL? Future.
- No Lazy Loading – No one waits 5 min to load all levels
- No Flash animation integration: TexturePacker, etc
- Closed Source - need to modify engine
- Unresponsive development team - let's talk!
- Big-ass Sprite Sheets - need hyper optimized
- JavaScript Only - need strongly typed option

10 More Dealbreakers

- Doesn't scale to fit screen maintaining aspect ratio
- Bloated keyframe animation: Texture Atlas
- No cutscenes : Video cutscenes don't count (Cut The Rope IE)
- No object pooling
- Inefficient memory management
- Inefficient JavaScript : need dead code elim, method inlining
- Missing abstractions to insulate dev from browser quirks
- Lacks multiple renderers : Want WebGL, Canvas, DOM
- No Localization
- No "Embeddable" entry point js file – iframe game? NO

JavaScript: 10 Reasons to Compile

- No strong typing
- Can't cross compile to Native -- not future proof
- Code logic in games too complex
- Big games built by big teams, need clarity
- No compile time error checking
- No code auto-completion in IDE
- No code navigation in IDE
- Need abstraction layer to insulate game dev from browser quirks
- Difficult to debug
- Efficient JS is very, very ugly

PlayN – GWT for Games

PlayN Overview

- GWT for Games

- Cross-platform game engine

- Features - Excellent
  - Java (GWT Closure compiled)
  - Box2DGWT
  - HTML5 Optimized for Android Browsers

- Reach - Android, HTML5, iOS?, Flash?

- Language - Java > GWT > JavaScript, Haxe

- Pricing – Free, Open Source

PlayN Team

- Old Core Team : Google
  - o Lilli Thompson, Developer Advocate
  - o Seth Ladd, Dart
  - o Ray Cromwell, GWT

- New Core Team : Sega / Three Rings
  - o Michael Bayne, CTO, Sega / Three Rings
  - o PlayN Community
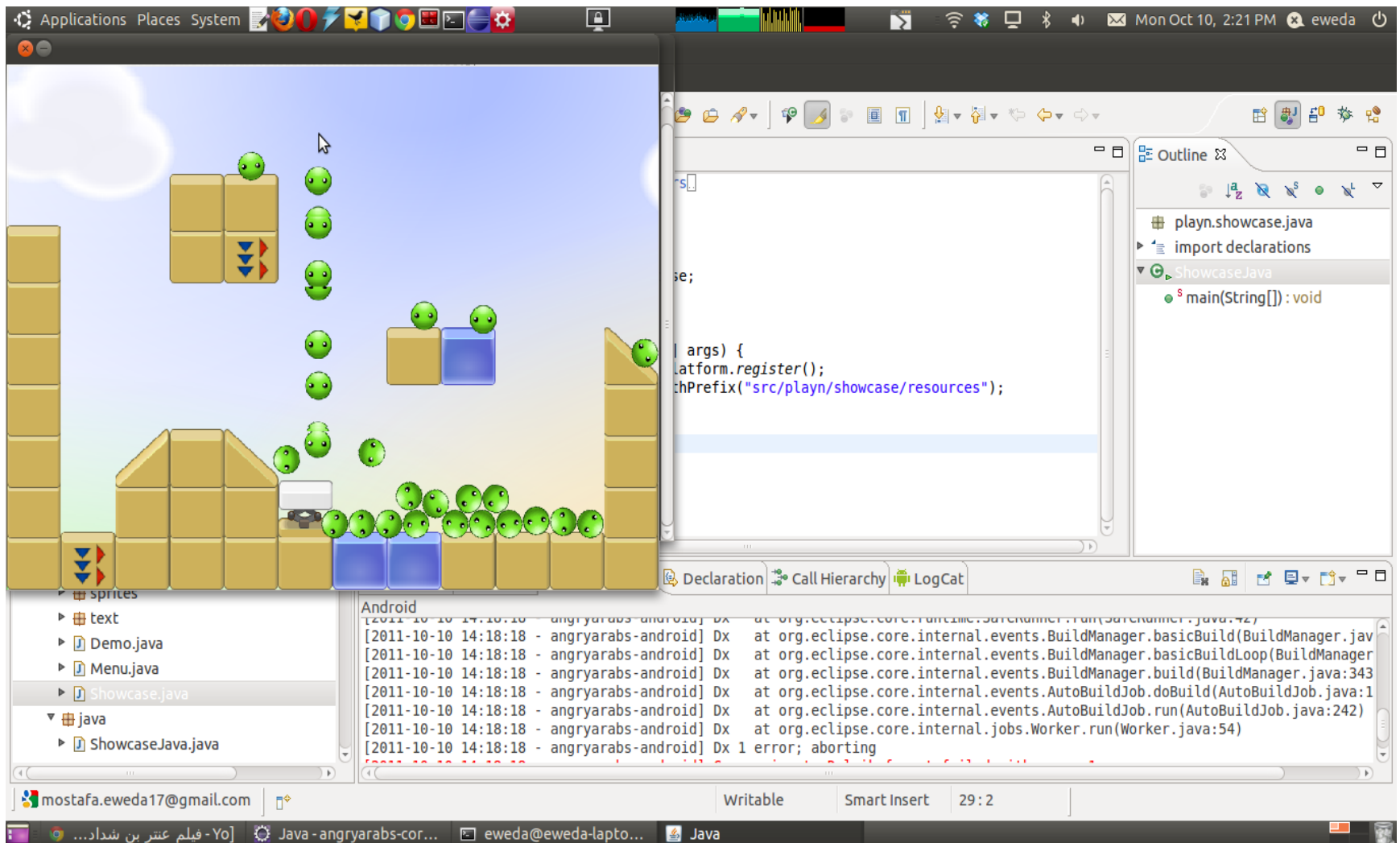 - o Some spare time Google folks

PlayN Traction

- Real Games
  - Rovio's Angry Birds Chrome
  - King.com's Pyramid Solitaire Saga
- Google Promoted in 2011

PlayN Toolchain

- Eclipse
- Flash Animation Integration via Texture Atlases
- Libs : GWT / Box2dGWT / MonoTouch
- Libs : Sega / Three Rings Open Source

PlayN Eclipse IDE

PlayN Gotchas

- Flash backend buggy
- iOS backend buggy
- Installation and setup are a challenge
- No more Google support
- Bloated with GWT overhead
- Boilerplate = 2x num of lines of code

PlayN Recommendation

- Java game developers
- Large team
- Android games
- HTML5 games (esp. if Android browser)
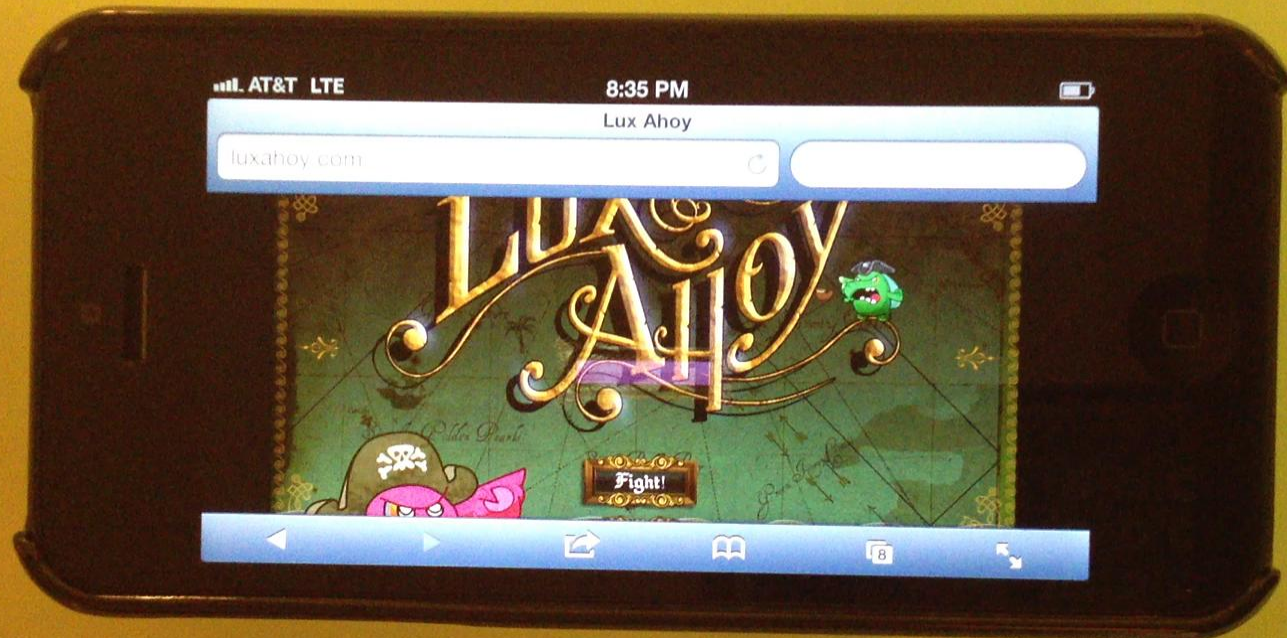- Don't use for Flash or iOS

CreateJS

CreateJS Overview

- Features – Deep Adobe CS Integration
- Reach - HTML5 compliant browsers
- Language – JavaScript, TypeScript, Haxe
- Pricing – Free
- License - MIT

CreateJS Game : LuxAhoy

CreateJS Team

- Grant Skinner – talented ex-Flash guy
- Adobe-endorsed

CreateJS Traction

- Real Games
  - Atari Arcade
  - Lux Ahoy
- Growing base of former Flash developers

CreateJS Toolchain

- Adobe Flash CS6
- Zoe Spritesheet Exporter
- EaselJS
- PreloadJS
- SoundJS
- TweenJS
- TypeScript

CreateJS Gotchas

- Zoe's Fullframe Spritesheets are BIG
- Single platform - HTML5 only
- No SWF or AS3 despite Flash CS integration
- Flash DisplayList metaphor creates bloat
- DragonBones isn't complete:no playback
- Blitted vectors = new memory issues?

CreateJS Recommendation

- Flash game developers, technical artists
- HTML5 Browser Games (Desktop)
- Want deep Adobe CS6 integration
- Don't use yet if you have lots of character animation

ImpactJS

ImpactJS Overview

- Features - Canvas, Web Audio, Physics
- Reach - HTML5 browsers,Wrapped Mobile Apps
- Language – JavaScript
- Excellent JavaScript performance
- Excellent Box2D JS lib
- Pricing - $100

ImpactJS Game : Biolab Disaster

ImpactJS Team

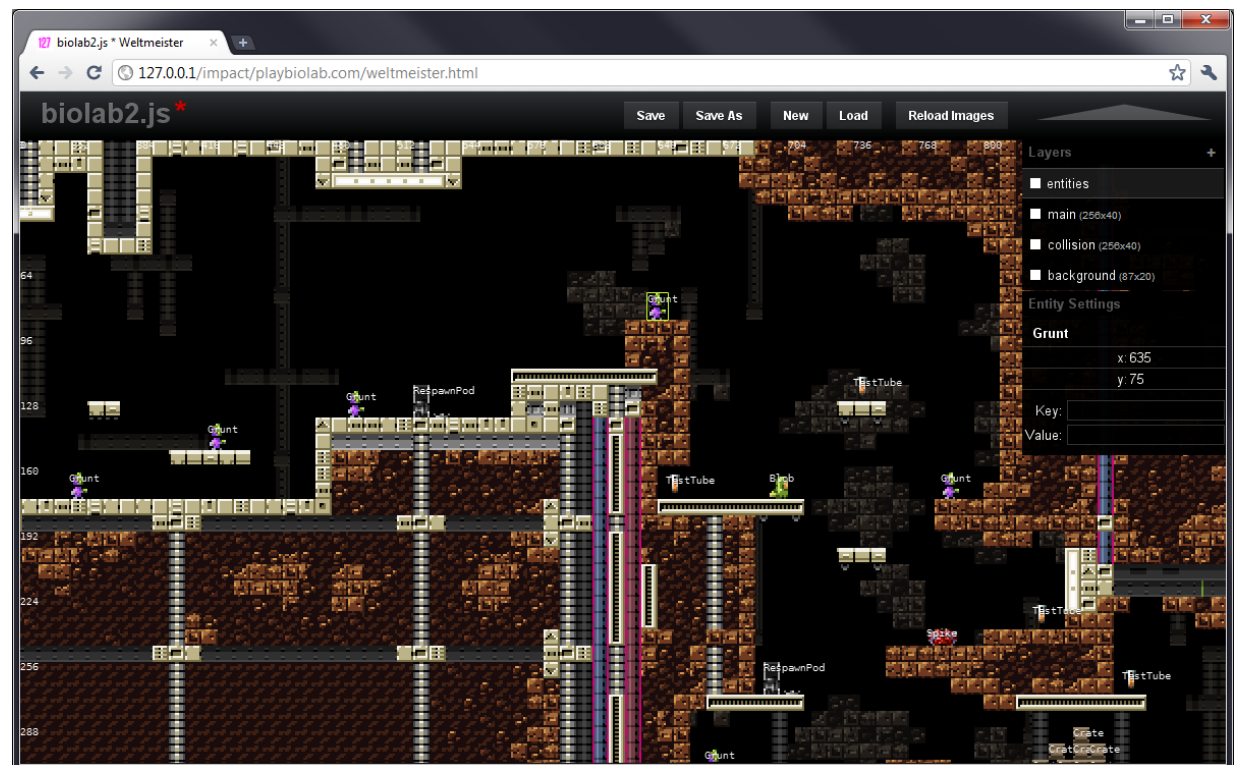- Dominic Szablewski
- Support from Intel (AppMobi), Microsoft

ImpactJS Traction

- No professional games
- Lots of indie games
- Majority of Ludum Dare entries
- Growing indie developer base

ImpactJS Toolchain

- Weltmeister visual editor
- Ejecta iOS Wrapper, not Android

ImpactJS Gotchas

- Large animation file sizes
- Limited dimensions - small, not full screen
- Small team
- Not open source
- Weltmeister should look like Construct 2
- Current games don't show professional capabilities – overlay controls, pixel art

ImpactJS Recommendation

- JavaScript developers
- Side-scrolling platformers
- Prototyping
- Small teams
- Indie games
- Mobile not desktop

Scirra Construct 2

Construct 2 Overview

- Features –
  - Best Visual Editor
  - Excellent JavaScript performance
- Reach - HTML5 browsers,Wrapped Mobile Apps
- Language – JavaScript
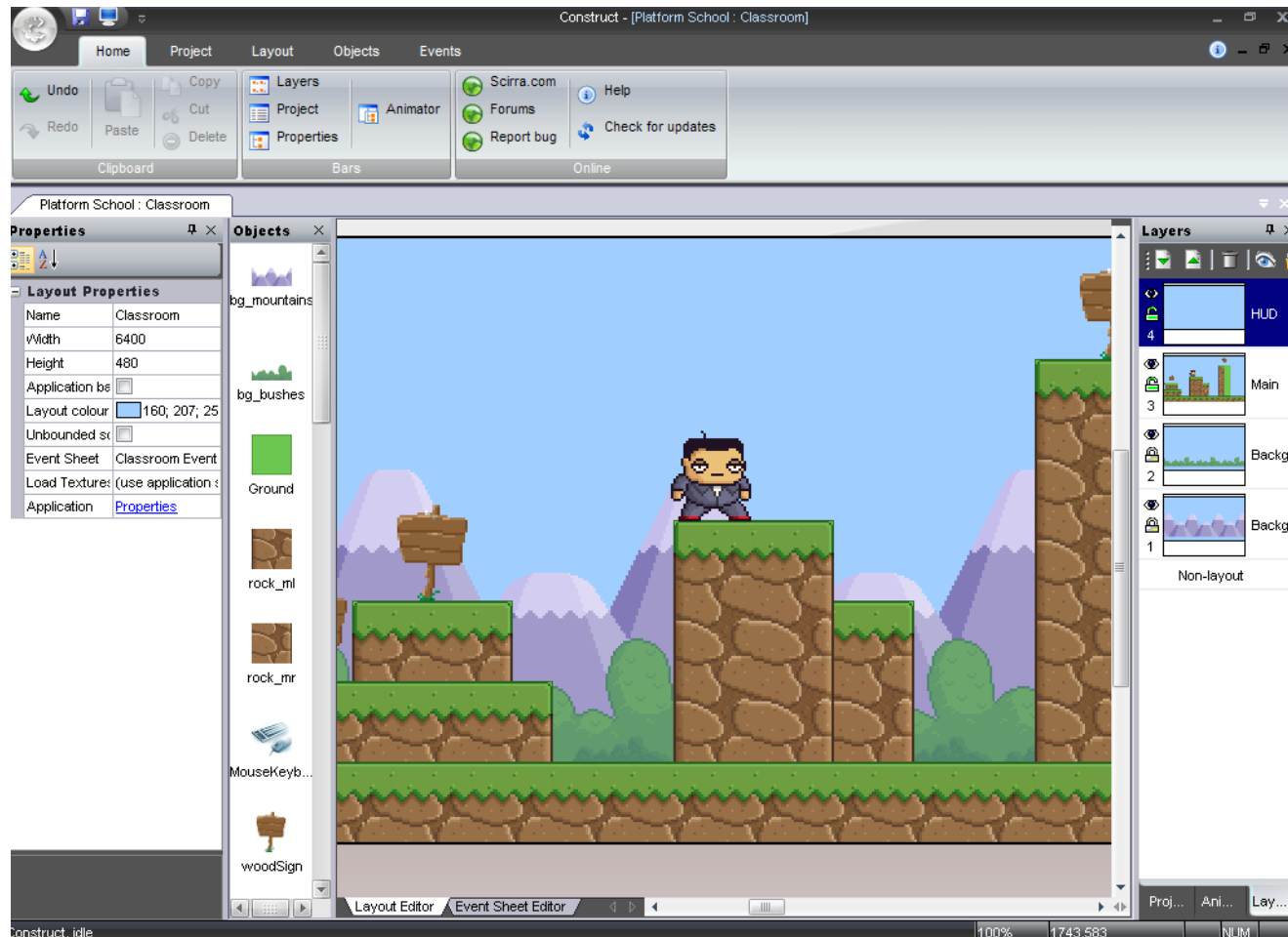- Pricing - $390 / L259

Construct 2 Team

- Tom and Ashley Gullen
- Support from Intel (AppMobi), Microsoft

Construct 2 Traction

- Few professional games
- Lots of indie games @ scirraarcade
- Growing developer base
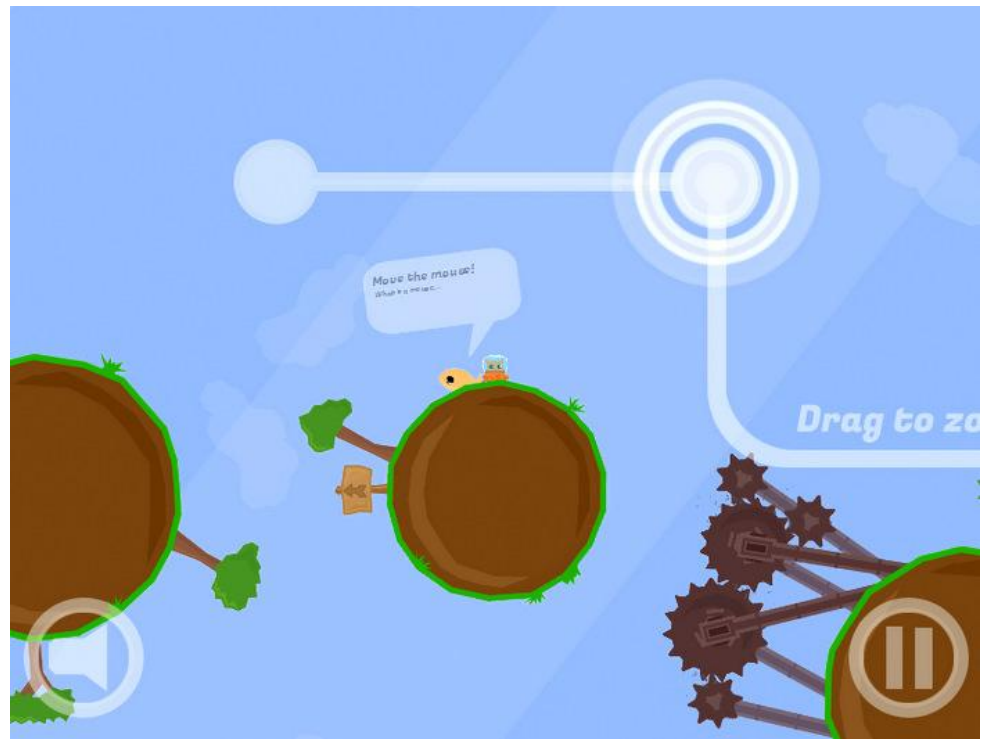
Construct 2 Toolchain

Construct 2 Gotchas

- Lack of fine control
- Hard to optimize
- Large Animation file sizes

Construct 2 Recommendation

- Non-programmers, creatives
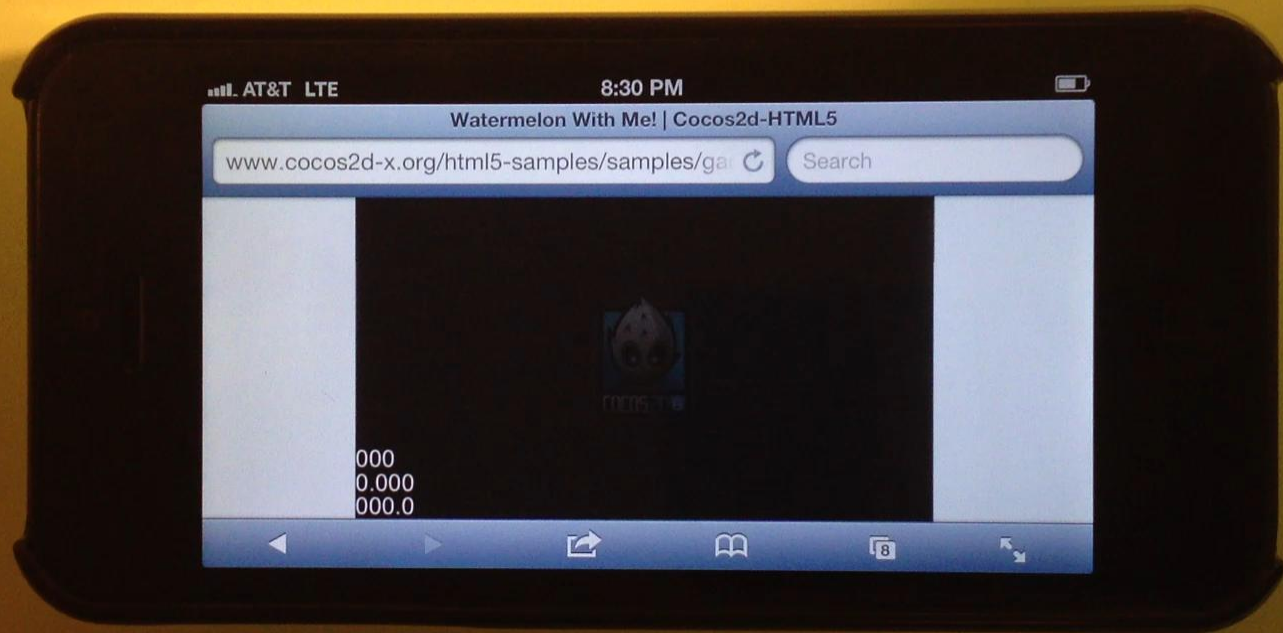- High-performance HTML5 games

Cocos2d HTML5

Cocos2d HTML5 Overview

- Cross-Platform Game Engine
- Features - Familiar API, Great Tools
- Reach - HTML5 browsers, iOS, Android
- Language – JavaScript, Haxe (Alpha)
- Pricing - Free

Cocos2d HTML5 Game : Watermelon
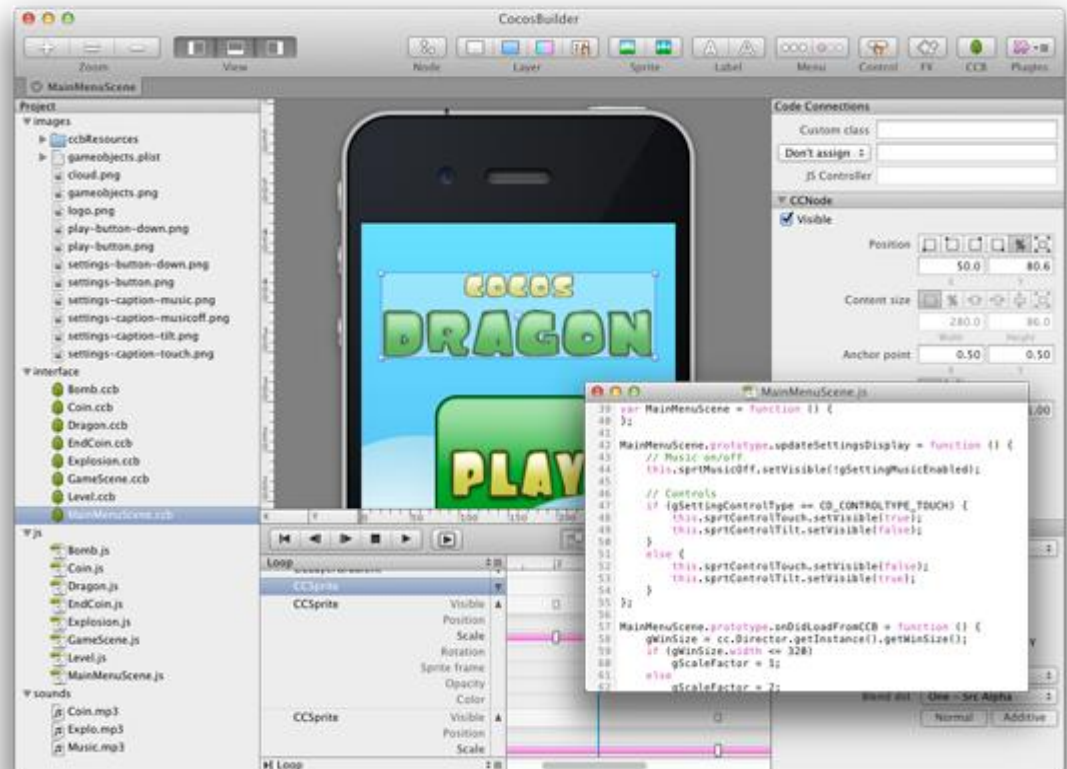
Cocos2d HTML5 Team

- Zynga supported
- Ricardo Quesada, Zynga, Cocos2d-iphone
- Shun Lin (Sean Lin)
- Hao Wu (WuHao)
- Dingping Lv (David Lv)
- Shengxiang Chen (Nero Chan)

Cocos2d HTML5 Traction

- No professional games yet in HTML5
- Expect growth – lots of cocos2d users
- 4000+ Cocos2D apps in iTunes store

Cocos2d HTML5 Toolchain

- Cocos Builder
- Physics Editor
- TexturePacker
- Many more!

Cocos2d HTML5 Gotchas

- Early
- Very large animation file sizes
- Cocos2d HTML5 not Cocos2d iPhone yet
- Poor performance on mobile

Cocos2d HTML5 Recommendation

- Cocos2d developers
- Future-proof with Cocos2d-JS
- Prepare for HTML5 version of native game
- Don't use to ship HTML5 game now

Spaceport.io

Spaceport.io Overview

- Features - Over the air updates, Vectors
- Reach - Native iOS, Native Android
- Language - ActionScript 3, Haxe

Spaceport.io Team

- Ben Savage
- YouWeb Incubator funded
- BBC funded

Spaceport.io Traction

- Real games – CrowdStar, BBC
- Small developer community
- Was in private beta for a long time

Spaceport.io Toolchain

- Adobe Flash CS6
- Flash Builder
- Flash Develop

Spaceport.io Gotchas

- No HTML5 browser support
- Can't make HTML5 games with it anymore
- Will support HTML5 via Emscripten / WebGL
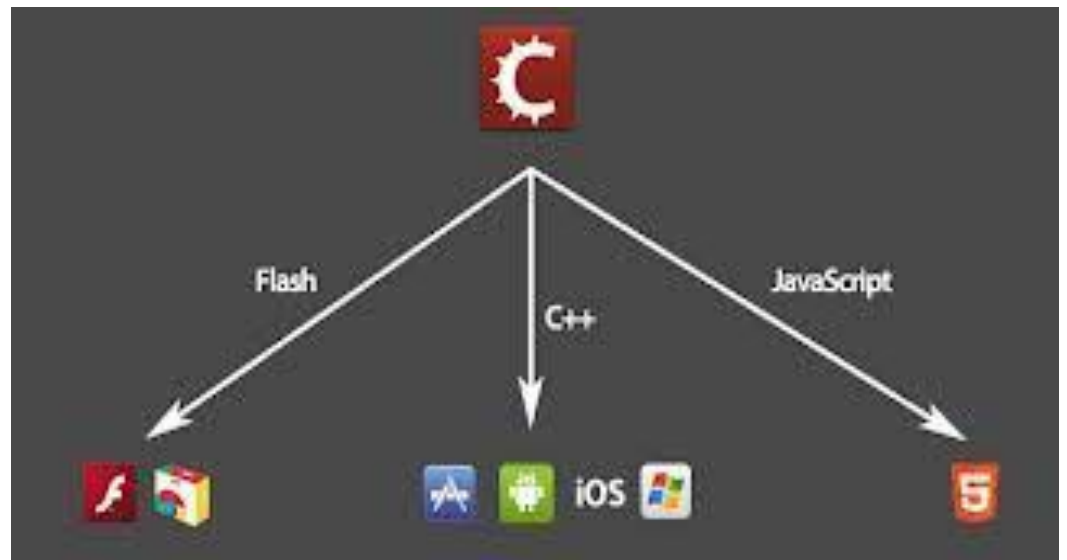
Spaceport.io Recommendation

- Adobe AIR developers
- Need to quickly iterate native mobile game
- Need vector graphics that work on mobile
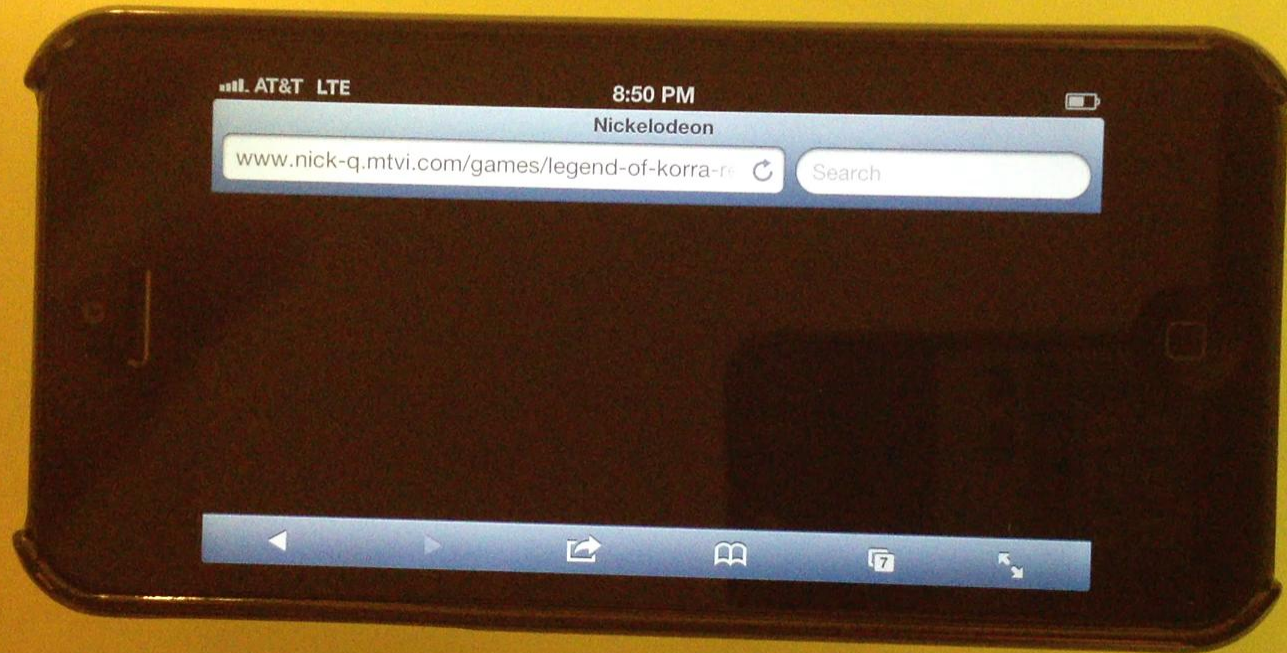- "Wait and see" approach to HTML5

Haxe

Haxe Overview

- Cross-platform SDK
- Started 2005
- Reach - HTML5, Flash, iOS, Android, Win8
- Language - Haxe (ECMAScript like AS3)
- Pricing - Free

Haxe Game: Korra

Haxe Features

- Truly Multiplatorm : 90+% code reuse
- Only technology supporting all of the following-
  - Browser - HTML5, Flash
  - Native - iOS, Android, Win8, BB, Desktop
  - Modules – JS, AS3, Dart, Java, C#, C++, Node.js PHP, etc
- Interoperability – no lock in (C#>Haxe>AS3)
- Open Source
- Easy learning curve for Flash, Java, JS devs
- Great Workflow and Tools
- Flash CS5/6 > HTML5 Cutscenes

Haxe Team

- Nicolas Canasse
- Blackberry-backed
- Haxe Foundation
- 30+ active committers

Haxe Traction

- Sega, Sony, Nickelodeon, Star Wars, Lego, BBC, Adidas, Spaceport.io, Lanica, CreateJS, Google, Zynga
- 10,000+ active devs
- Growing user base
- Has its own Conference – WWX Paris

Haxe Games

Haxe Toolchain

- IntelliJ, FlashDevelop, FDT, Sublime Text
- Adobe CS6 Integration
- Stencyl Visual Editor
- SpriteLoq, Texture Packer, Zoe
- Libs : AS3, jquery, node.js
- Engines: Cocos2d Haxe, CreateJS, Spaceport.io, PBE, Flixel, HaxePunk, Awe6, Flambe, Citrus, AS3IsoLib, etc

Haxe Gotchas

- Too many libraries
- Lack of documentation

Haxe Recommendation

- Flash, Java, or JavaScript game devs making high-performance cross-platform games
- Or just HTML5 games

Honorable Mention

- Tresensa Game Engine
- Ludei CAAT
- Lanica / Appcelerator
- Playcraft
- Turbulenz
- Emscripten – can't ship to real users yet
- TypeScript
- Dart
- Loom- For-Profit Haxe?
- Pixi.js
- Lime.js

The Future

- Faster Game Engines
- Faster Devices
- Faster Browsers
- Faster Internet Connections
- Mature Tools
- WebGL
- Vector Graphics (Adobe, Ludei, Spaceport)
- WebWorkers for Physics, Image Processing
- WebSockets
- WebRT

Questions?

JSEmbed - SWFObject for Games

Appendix 1 : Summary Slides

PlayN - GWT for Games

- Traction - Angry Birds Chrome, King.com

- Team - Formerly Google backed, Now Sega

- Toolchain - Eclipse, Adobe CS, Custom Tools

- Features - Java, Box2D, Battle-Tested

- Reach - Android, HTML5

- Language - Java > GWT > JavaScript

- Potential Gotchas : Flash support buggy, No more Google support, bloated

- Recommend for : Java game devs making Android/HTML5 games

CreateJS - AS3 in JS for HTML5 Browser Games

- Traction - Atari Arcade , LuxAhoy

- Team - Grant Skinner, Adobe-endorsed

- Toolchain - Adobe CS, Zoe, Omega,

- Features - Adobe CS Integration

- Reach - HTML5 compliant browsers

- Language - JavaScript

- Potential Gotchas : No SWF, Large file sizes, HTML5 only

- Recommend for : Flash game devs making

ImpactJS - JS to win Ludum Dare

- Traction - None? But lots of indie games
- Team - Support from Intel (AppMobi), Microsoft
- Toolchain - Weltmeister Editor, Ejecta
- Features - Canvas, Web Audio, Physics
- Reach - HTML5 browsers,Wrapped Mobile Apps
- Language - JavaScript
- Potential Gotchas : Large animation file sizes
- Recommend for : Indie JavaScript game

Scirra Construct 2 - HTML5 games for creatives

- Traction - None? But lots of indie games
- Team - Support from Intel (AppMobi), Microsoft
- Toolchain - Construct 2 Visual Editor
- Features - Great Visual Editor, Performs well
- Reach - HTML5 browsers,Wrapped Mobile Apps
- Language - JavaScript
- Potential Gotchas : Lack of fine control
- Recommend for : Non-programmers interested in making high-performance HTML5 games using WYSIWYG editor

Cocos2d HTML5 -- not there ... yet.

- Traction - No pro games? Based on SDK with 4K iphone games
- Team - Zynga-backed
- Toolchain - Cocos Builder, Physics Editor
- Features - Familiar API, Great Tools
- Reach - HTML5 browsers, iOS, Android
- Language - JavaScript
- Potential Gotchas : Very large animation file sizes, Cocos2d HTML5 not Cocos2d iPhone
- Recommend for : Cocos2d devs interesting in

Spaceport.io - Adobe AIR with over the air updates

- Traction - CrowdStar, BBC

- Team - BBC-backed

- Toolchain - Adobe CS, Flash Develop

- Features - Over the air updates, Vectors

- Reach - Native iOS, Native Android

- Language - ActionScript 3

- Potential Gotchas : No HTML5 browser support

- Recommend for : Adobe AIR devs who want to quickly iterate on their native mobile game

Haxe - like Flash, but Cross-Platform

- Traction - Sega, Sony, Nickelodeon, Star Wars, Lego, BBC, Adidas, 10,000+ active devs
- Team - Blackberry-backed, Haxe Foundation
- Toolchain - IntelliJ, FlashDevelop, Adobe CS, Stencyl Visual Editor
- Features - 90+% code reuse, high performance, optimized cutscenes and character animation
- Reach - HTML5, Flash, iOS, Android, Win8
- Language - Haxe (ECMAScript like AS3)
- Potential Gotchas : Too many libraries, lack of documentation

PlayN : How to get Flash working

Bonus Points

- Truly Multiplatform : 90+% code resuse
- Scales to fit screen maintaining aspect ratio
- Loads quickly : Lazy-loading, asset packs
- Optimized keyframe animation: Texture Atlas
- Efficient memory management
- Efficient JS : dead code elim, method inlining
- Abstractions insulate dev from browser quirks
- Multiple renderers : WebGL, Canvas, DOM
- Flash animation integration : TexturePacker, etc
- Localization
- Language is strongly typed, not JavaScript
- "Embeddable" entry point js file

Multiplatform - Worth it?

Just because you can use multiplatform technology doesn't mean it's worth it.

Litmus Test - Is it faster or cheaper to create or update your game?

If it's more work to setup, configure, and maintain your cross-platform framework than it is to write a version of the game for each platform then well