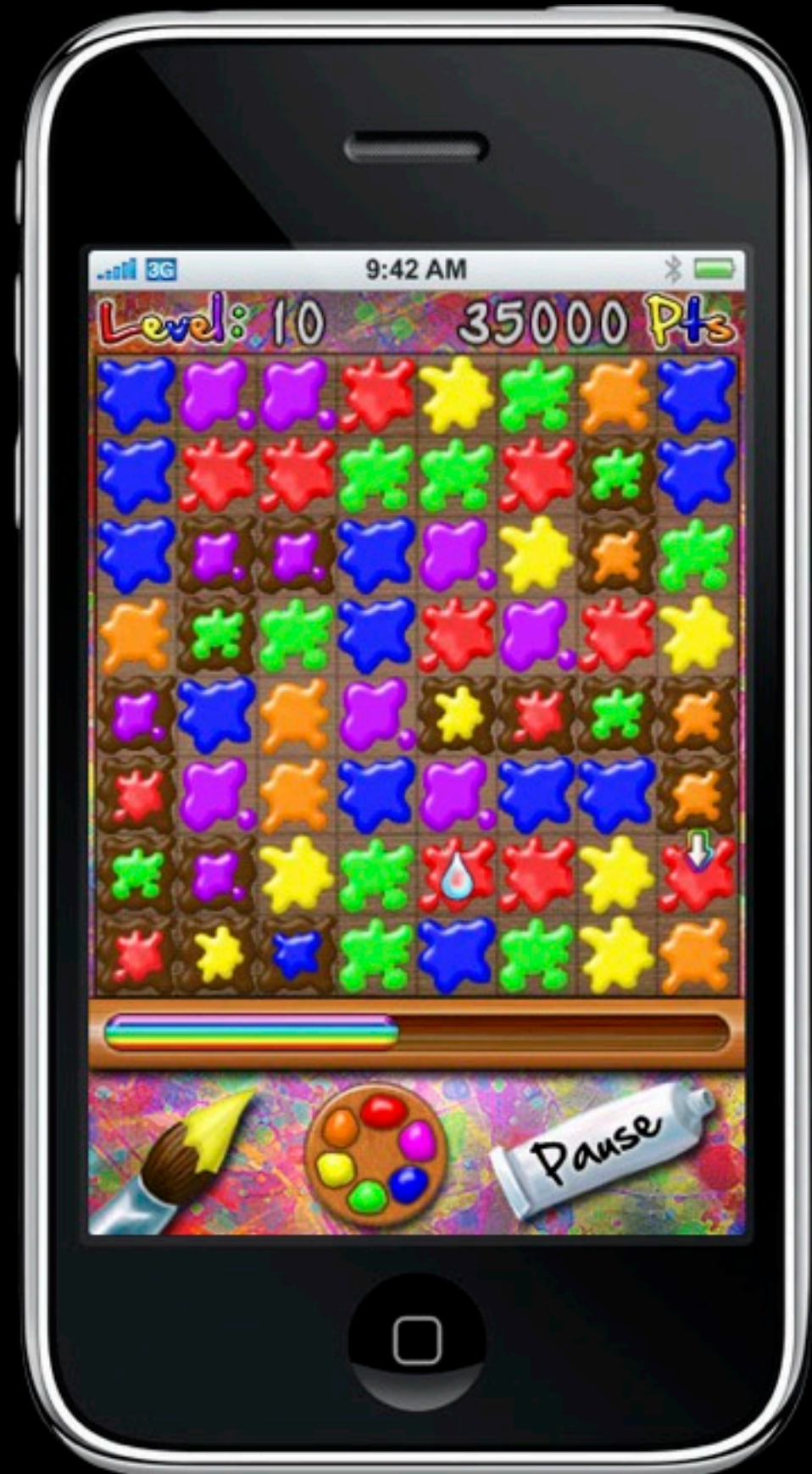




# Creation of an iPhone Game

Process and Lessons

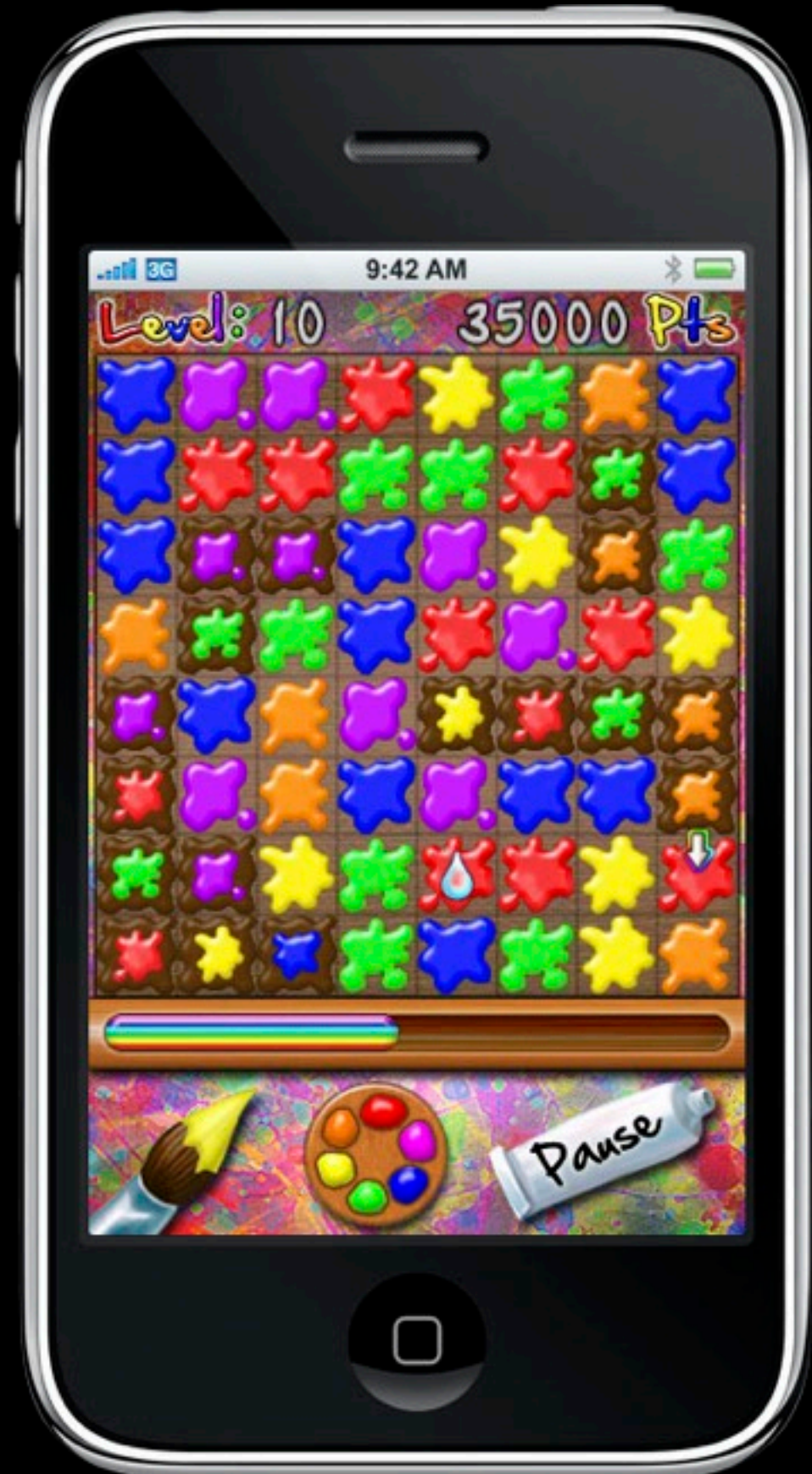
Owen Goss





# What's this all about?

- Dapple
- Processes
- **Lessons Learned**





# Who is this guy?

- Owen Goss
- Streaming Colour Studios
- 5 years in Games Industry
  - EA Canada
  - Propaganda Games (Disney)





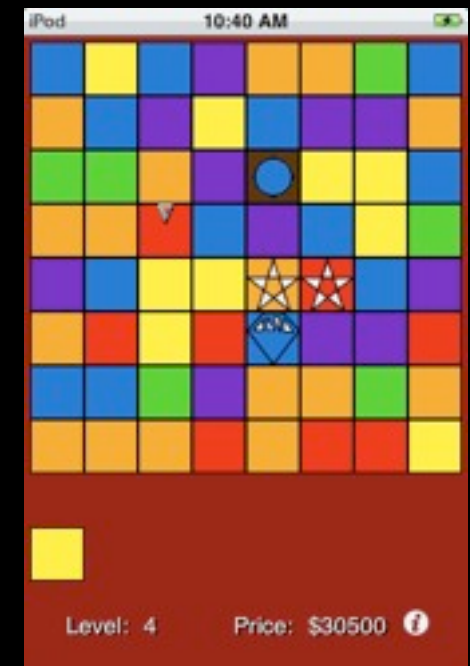
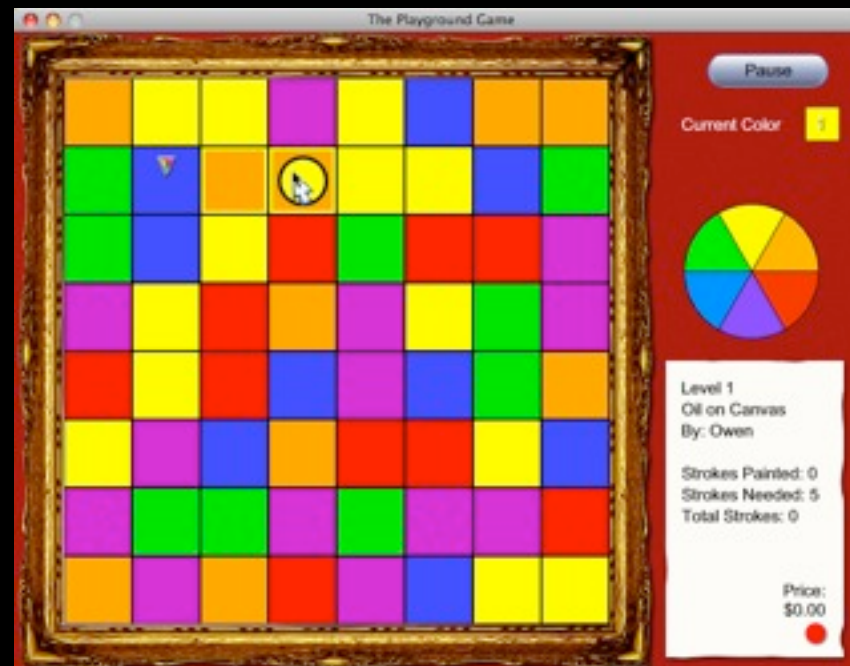
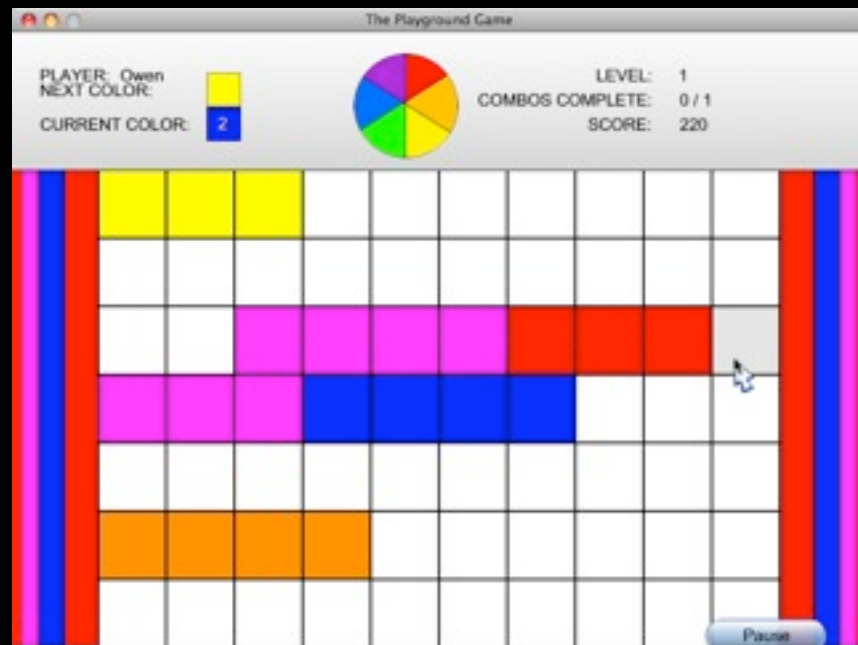
# Development Stages

- Pre-Production
- Production
- Post-Production
- Distribution, Marketing & Sales



# Pre-Production

Prototyping, Planning, Scheduling



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# What is Pre-Pro?

Breakfast:

the most important meal of the day

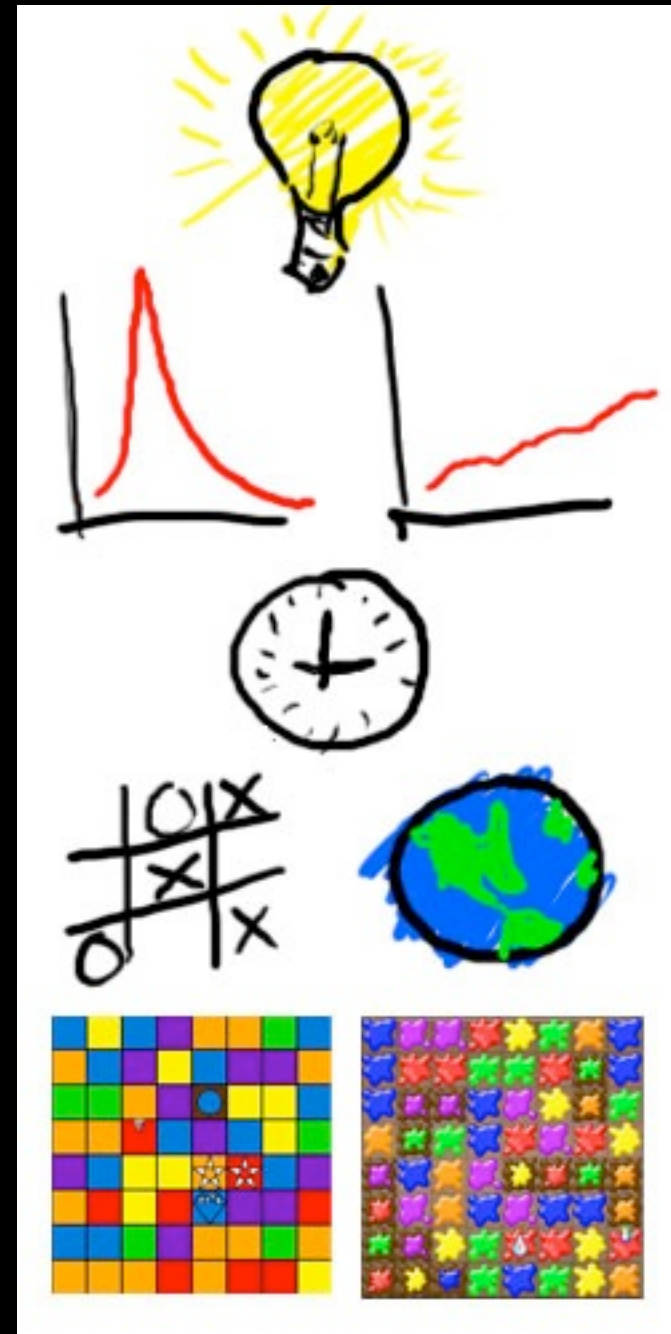
Pre-Pro:

the most important stage of game  
development



# Define Your Goals

The Game  
Business Goals  
Time  
Scope  
Polish

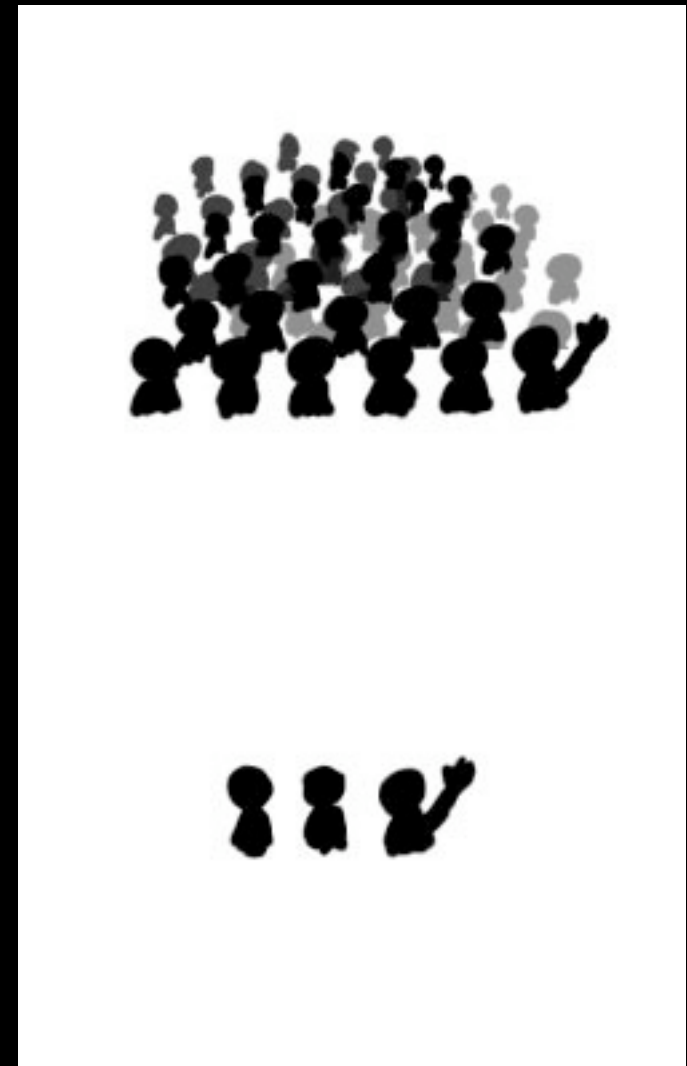




# Realistic Expectations

**Xbox 360/PS3 Game**  
~350,000 person hrs

**Your iPhone Game**  
~2,000 person hrs







Which is more  
“valuable” right now?



# Design Document (4-5 days)

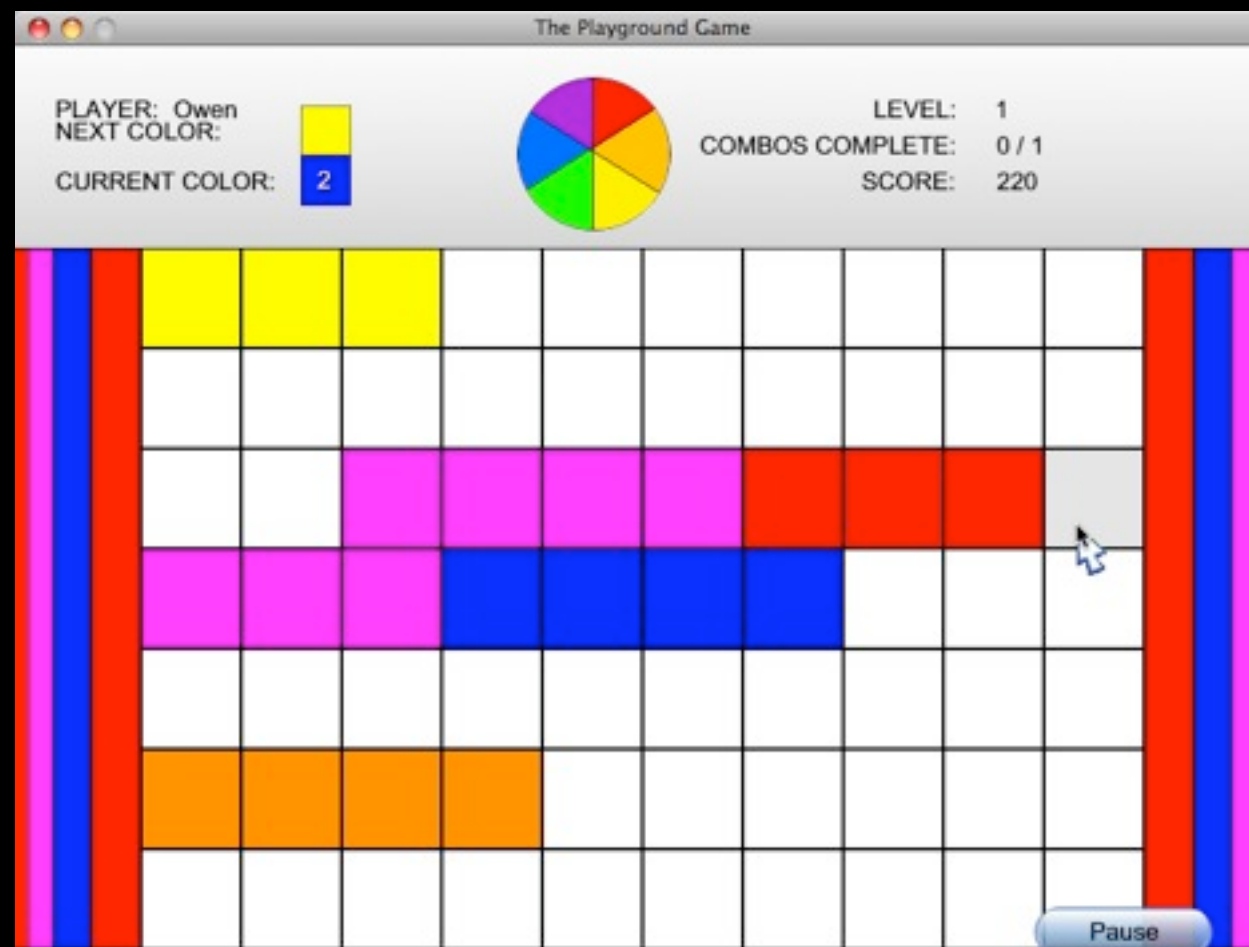
## Gameplay

### Basics

- At each level the player is presented with a required score to advance to the next level. This will be presented either as text or as a progress bar.
- When the player makes the requirement score they advance to the next level.
- Occasionally Brown paint will drop into the board from above.
- Brown paint has a secondary "matchable" colour. Brown can not be matched with other brown pieces. Brown is removed by matching it via its secondary colour.
- You can not mix paint into a brown piece. It must be matched with its secondary colour.
- As player increases in levels, the frequency with which Brown paint appears at the top of the screen increases.
- If Brown paint isn't eliminated from the board within a given number of turns, it will spread to a random adjacent cell (up, down, left or right).
- The player loses the game when there are no longer any valid moves left on the board.
- The game will always make sure that if there is a valid play with any of the three primary colours that the user will be given one of those valid moves (e.g. the player will not be given Blue as the current colour if there are no valid Blue moves, but there are valid Yellow moves).
- When matches are made the stroke is scored.



# Working Prototype (4-5 days)



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# But, what if...





# The prototype isn't fun!



# Prototyping

- Fast
- Any platform
- Physical prototypes
- Quick and dirty!

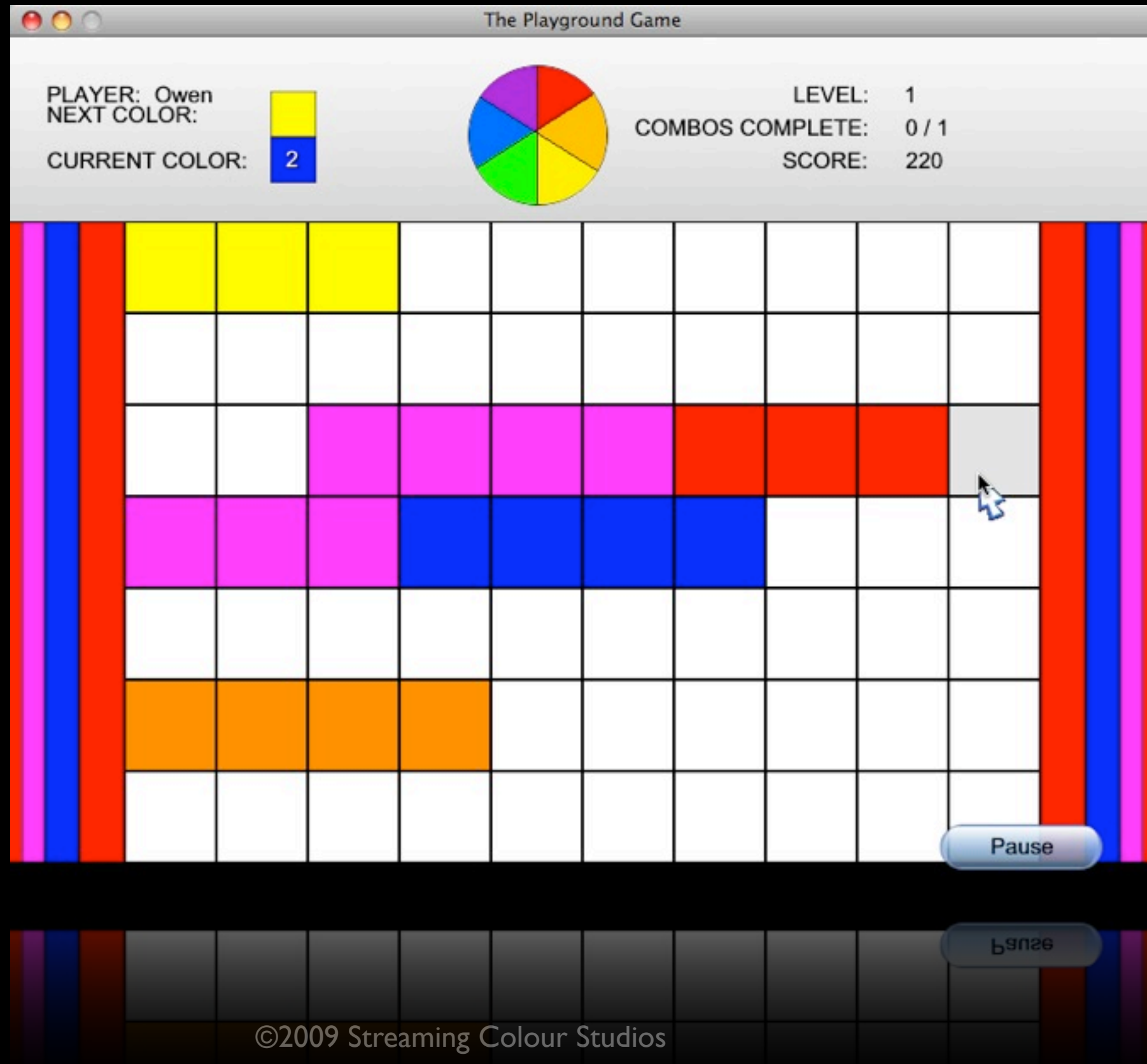


# Prototyping: Lessons Learned

- Prototyping is invaluable!
- Have as many people as possible play the prototypes; don't just rely on your own feelings about the game
- Get honest feedback, early
- When players get confused, find out why



# Dapple - 1st Prototype



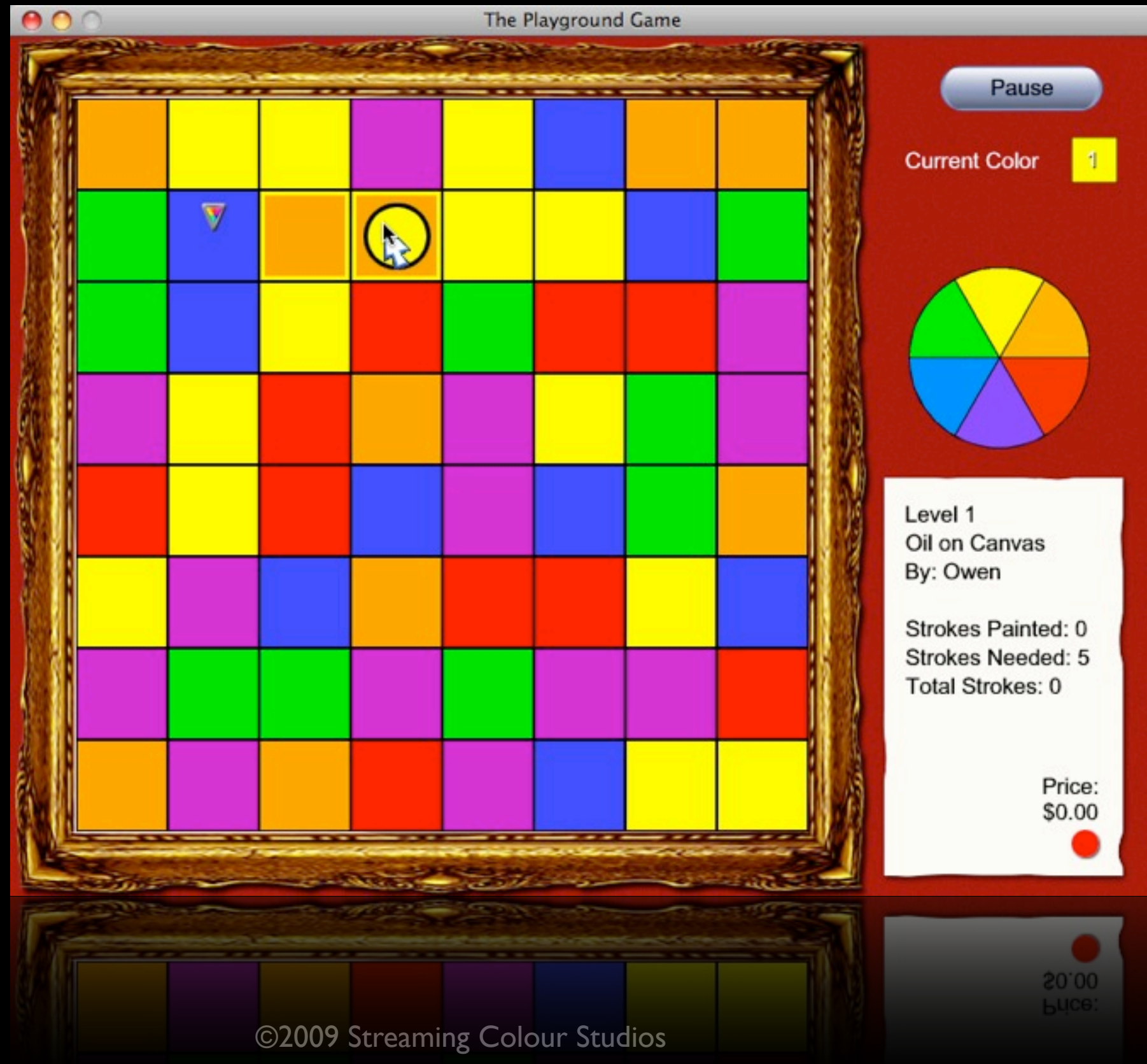


San Jose, CA

360 iDev slide to rock

March 2-4, 2009

# Dapple - 4th Prototype



San Jose, CA

360 iDev slide to rock

March 2-4, 2009



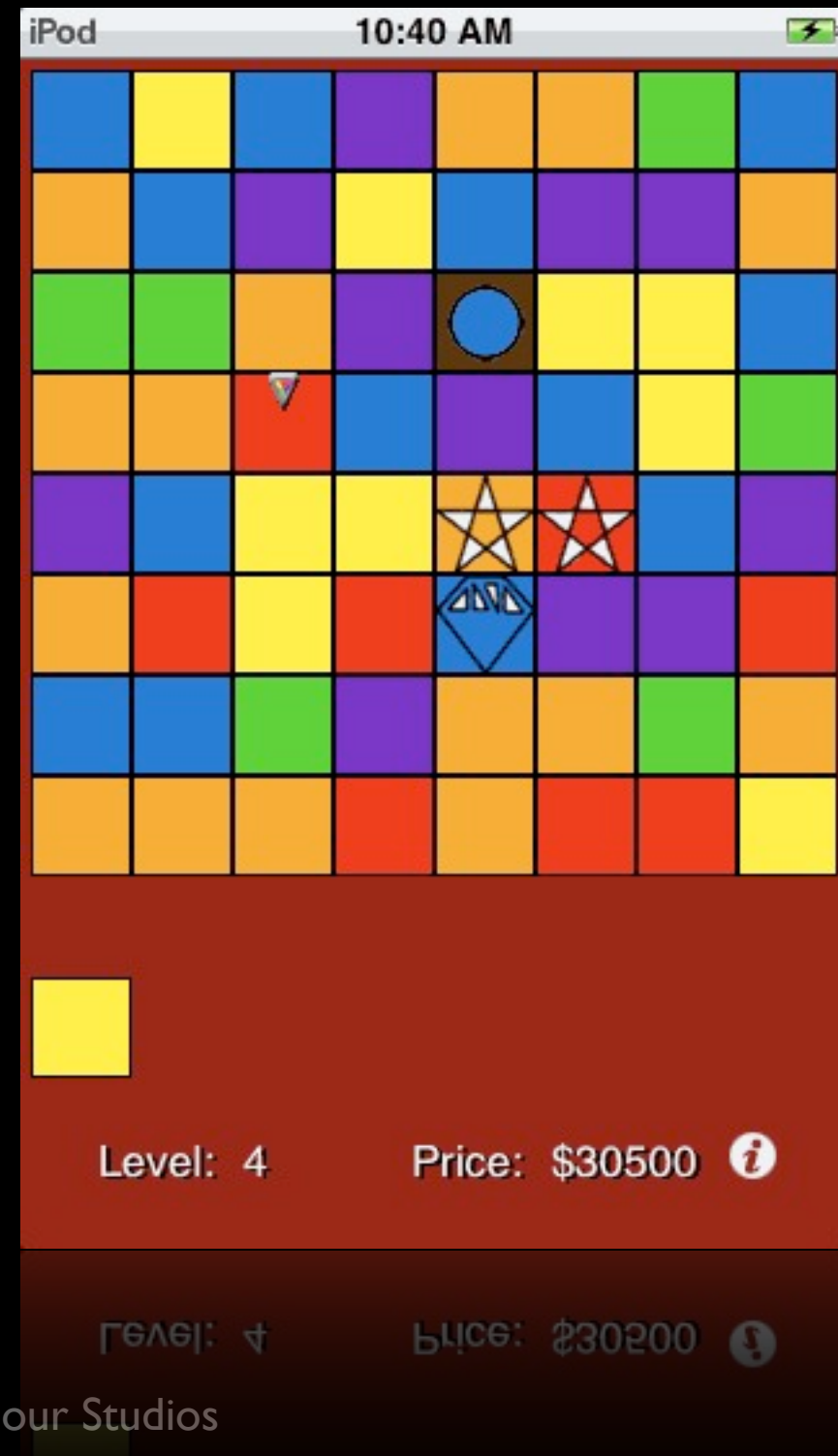
©2009 Streaming Colour Studios

Tuesday, March 3, 2009



# iPhone Prototype

- Port to iPhone
- Fast and dirty
- Track your time!



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# Design Doc

- Optional
- Contractors?
- Cement Ideas





# Technology Choices

- iPhone OS version
- Audio
- Rendering
- UI
- 3rd party engine (see Appendix)



# Scheduling

- Estimates
- Features
- Sub-Tasks
- Infrastructure
- Animation system?
- UI framework?
- UI widgets?
- Rendering API?
- Sound API?
- Handling Audio Sessions?
- Handling low mem warnings?
- Handling device locking?
- Saving game state?
- Custom debugging functions (e.g. custom asserts, logging functions, etc)?



# Scheduling cont

- Bug fixing time
- Ship date
- Enough time?
  - Reduce Scope



# Scheduling cont

- 3rd-party code solutions
- Project management tools
- PM software needed?





# Pre-Pro

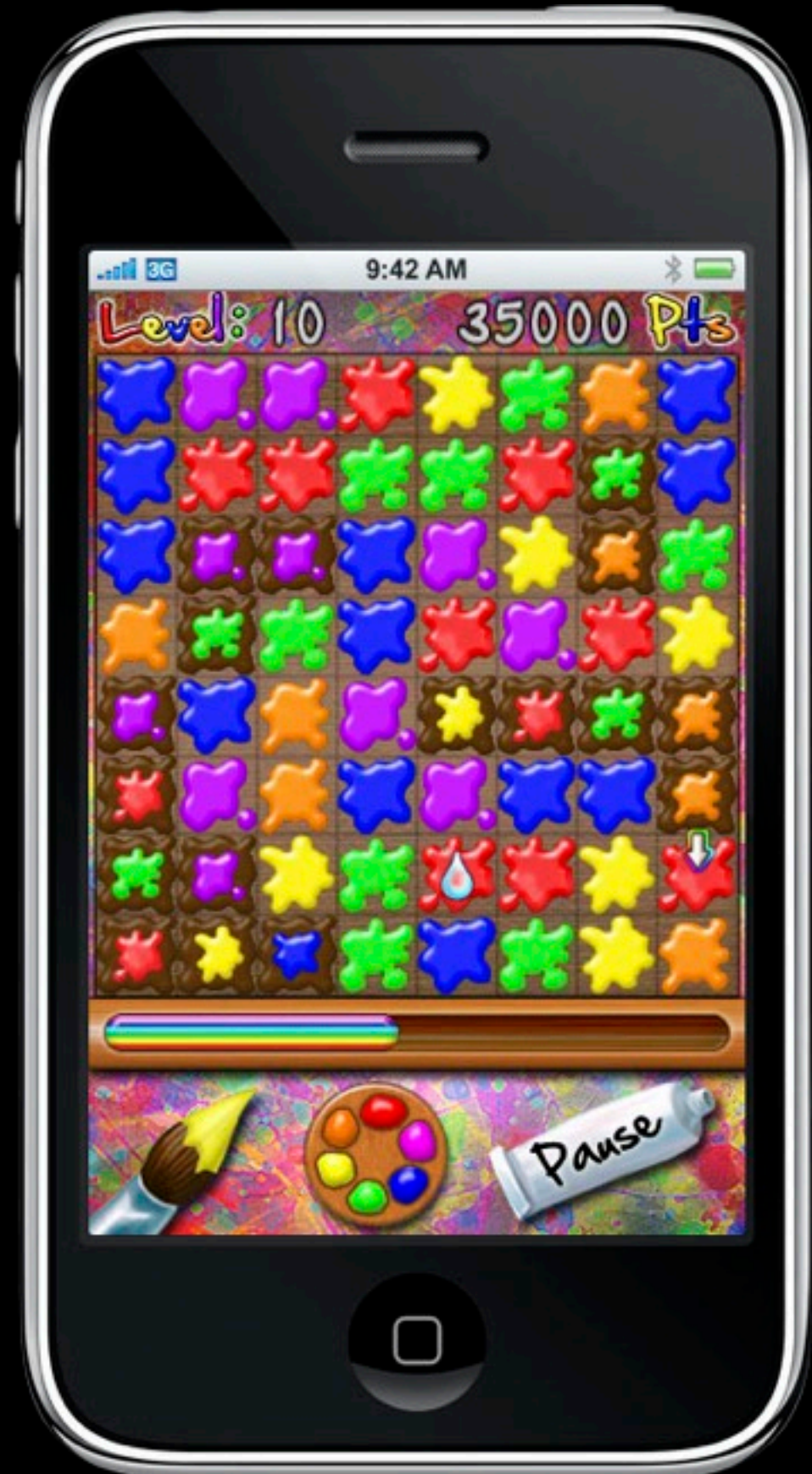
# Lessons Learned

- Get the most out of pre-production when iteration is cheap!
- Reduce scope at this stage, before you waste time and money!



# Production

Let's Build a Game!





# What is Production?

Building the game you planned out in  
Pre-Production.



# Steps for Dapple's Production



# CrashLanding

- OpenGL
- No longer available!



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# Toss the Prototype



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# Developer Application



**Lesson Learned:** Should have done this much earlier! 6 weeks to be approved!



# Hiring Contractors

- 2D artist
- Music composer
- Sound designer
- IndieGamer forums
- Friends
- Other devs



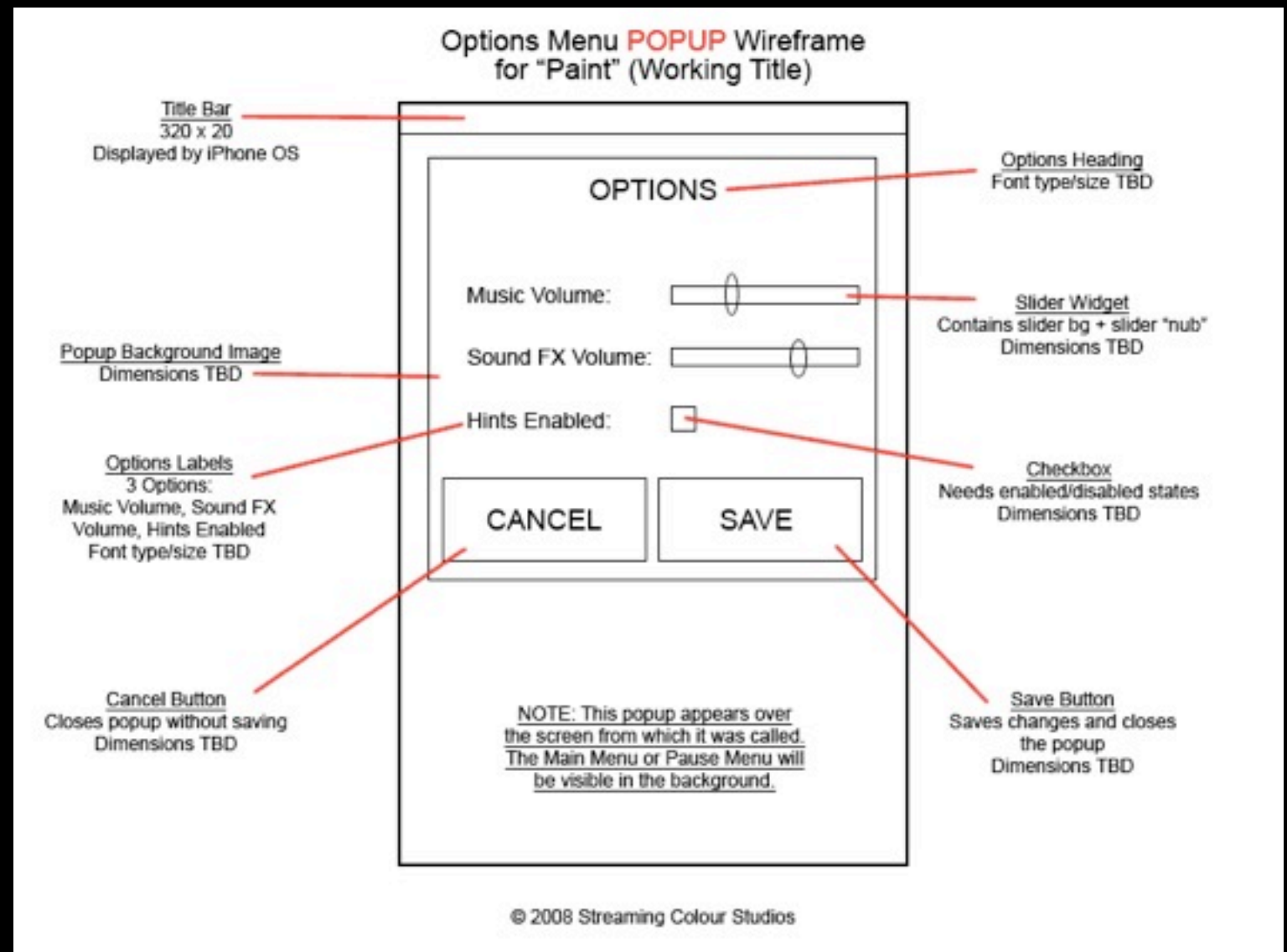
# Hiring cont

- Considerations
- Put it in writing
- **Lesson Learned:** Know what you're good at. Find professionals to do the rest, if you can afford it



# Contractors

- Design doc
- UI wireframes
- Concept
- Iteration
- Final Assets







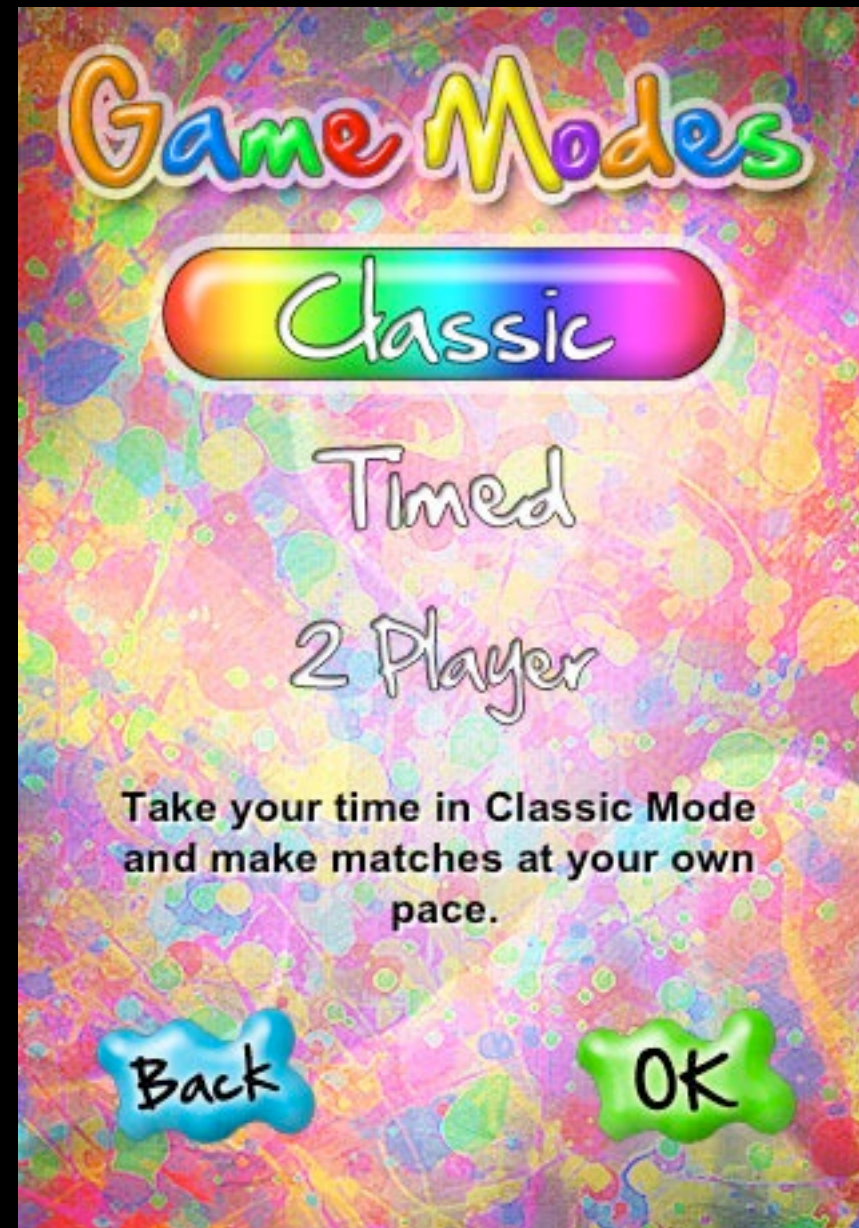
# Meanwhile...

- Recruit volunteers
- Early feedback
- Weekly builds



# Game Modes

- Classic
- Timed
- ~~Puzzle~~
- 2 Player
- Build Classic to *shippable* state





# Systems

## Animation System







# Systems cont

## Loading System



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# Systems cont

## Custom OpenGL UI Framework



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# Systems cont

## Save Game System



**Lesson Learned:** Saving state means the user feels like the game belongs to them





# Systems cont

## SoundEngine



My fixes are on Dev Forums as OTrain13



# Systems cont

## Audio Session System

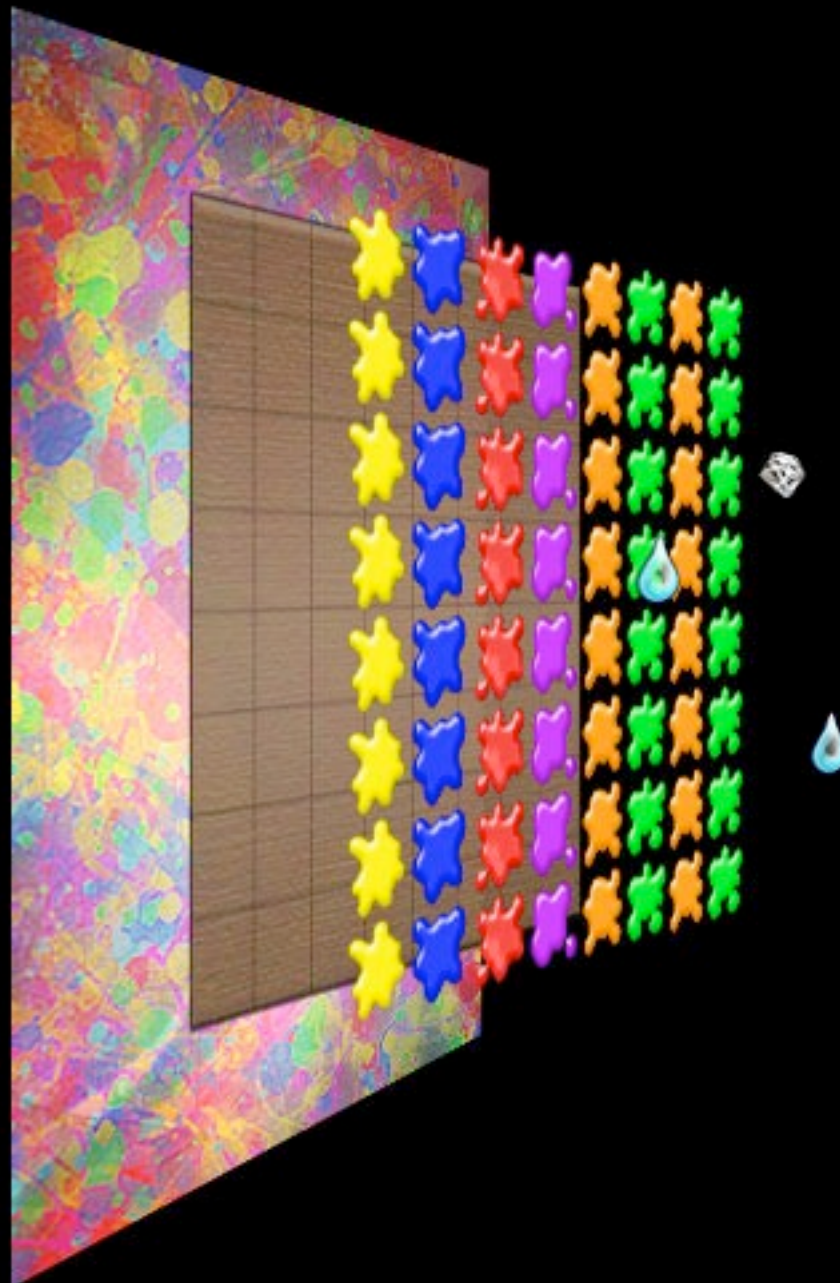


**Lesson Learned:** This was one of the trickiest parts of developing on iPhone. Should have tackled this much earlier in development!



# Systems cont

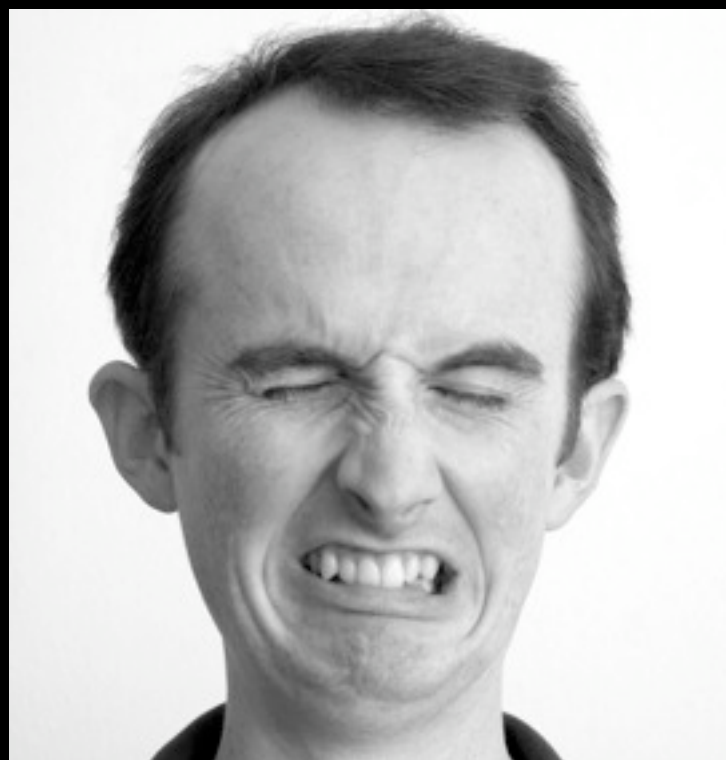
## Rendering System



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# Fonts



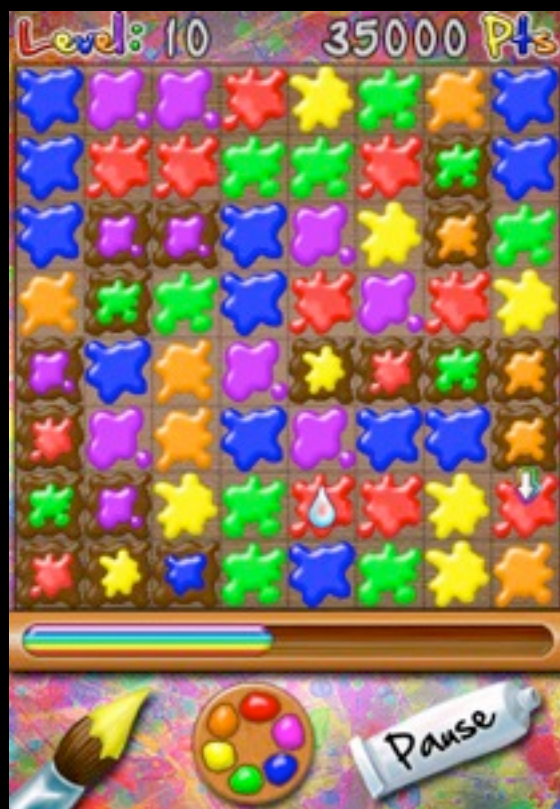
A B C D E F G H I J K L M N O P Q R S  
T U V W X Y Z a b c d e f g h i j k l m n o p q r  
s t u v w x y z 0 1 2 3 4 5 6 7 8 9 ! @ # \$ %

**Lesson Learned:** Make sure you have the font licensing rights!

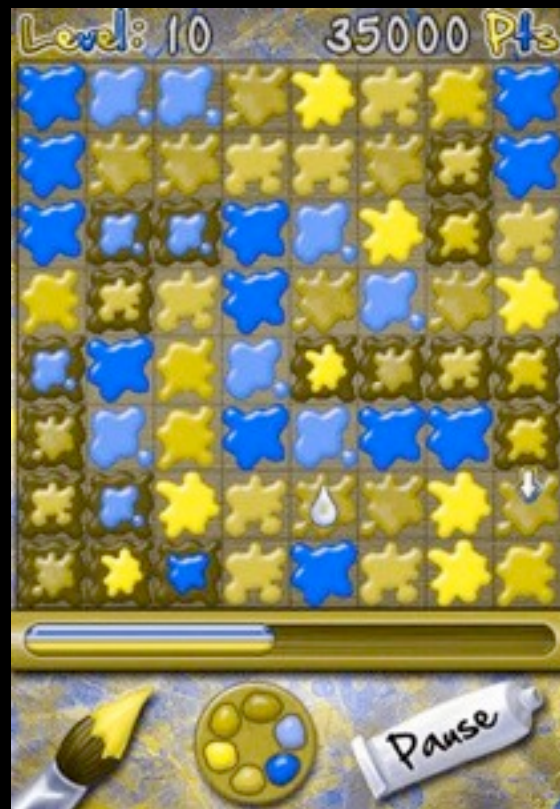




# Colorblind Mode



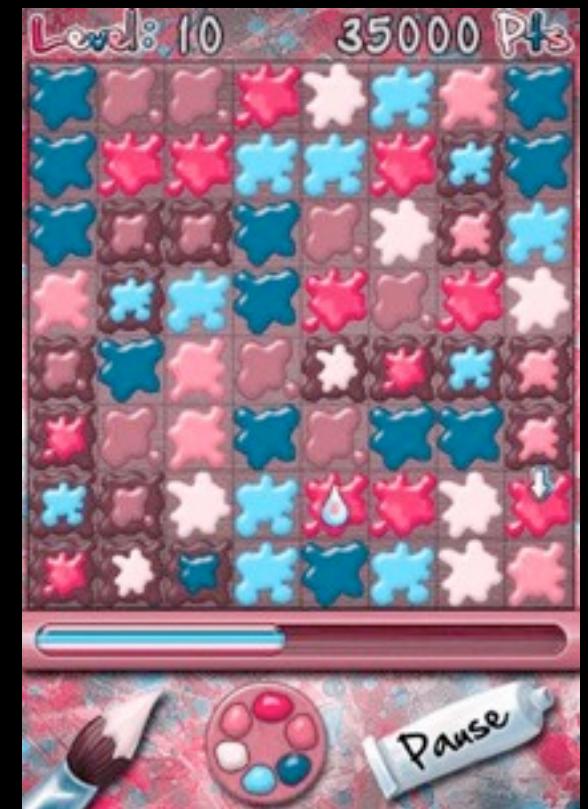
Normal



Deuteranope



Protanope



Tritanope  
(rare)



# iTunes Contracts



**Lesson Learned:** Should have handled this *much* earlier in Production - this nearly caused my release date to slip





# Additional Game Modes

- **Lessons Learned:**
- Single Player is a special case of 2 Player Mode!
- Smart API design
- Extra modes didn't get as much testing



# Pre-Release Promotion

- One month prior to release
- Simulator capture video
- Press releases
- Not much press



# Throughout Production

- Daily play-tests
- Fix bugs
- Weekly memory leak tests
- Weekly performance tests





# Production Lessons Learned

- Test on device early
- Have people play it early and often
- Listen to feedback
- Iteration is good



# Lessons Learned

## cont

- Always move forward
- UI *always* takes longer than you think
- Single player = special case of multiplayer
- Ideas generate ideas



# Post-Production

Alpha, Dev Beta, Beta, Final  
(AKA “The Fun Part”)







# What is Post-Production?

- Bug fixing
- Performance optimization
- Memory optimization
- Memory leak tracking and fixing
- Testing



# Post-Production

## The Goal

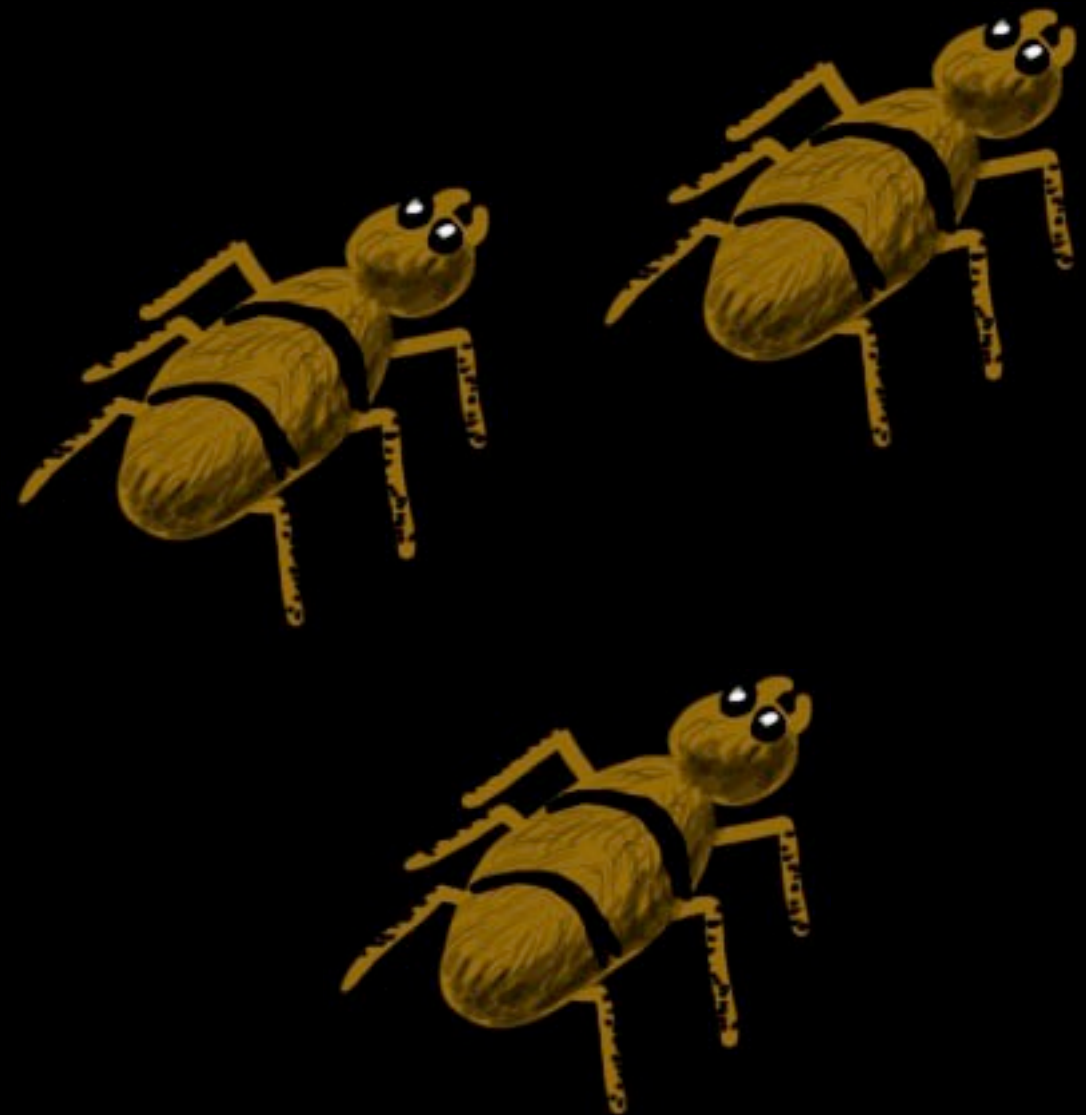
Release a bug-free polished product!





# Alpha

- Feature-complete
- Lots of bugs
- Bug fixing
- Recruit testers





# Dev-Beta

## First zero-bug build





# Beta

X days - no must fix bugs found





# Final

Y days after Beta - no must-fix  
bugs found







# Submission

Upload to the App Store.

Have a drink!

San Jose, CA

360 iDev slide to rock

March 2-4, 2009



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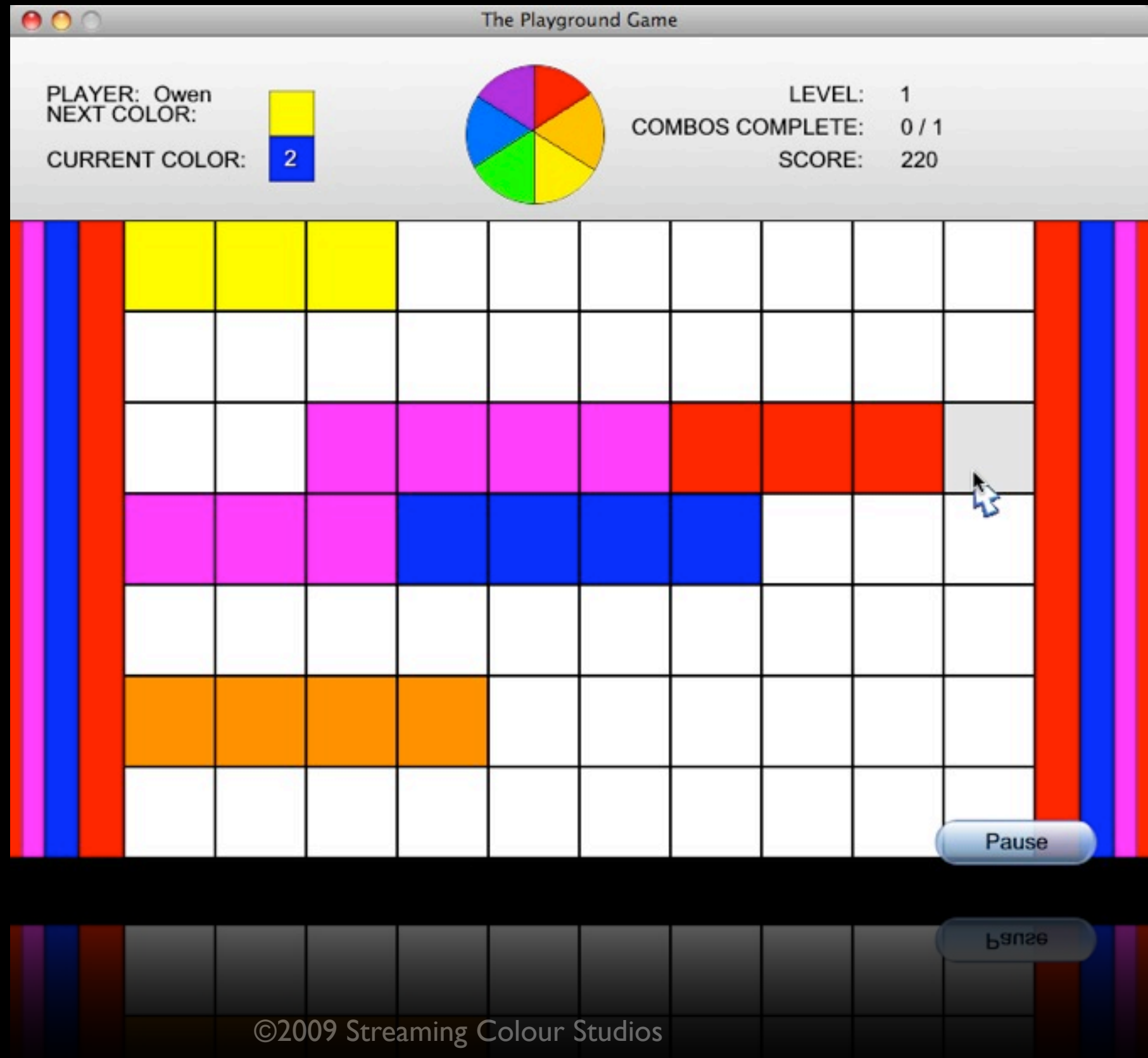


# Post-Production Lessons Learned

- Build number
- Symbol files
- Crash logs
- Follow Apple docs, not website



# Dapple - 1st Prototype



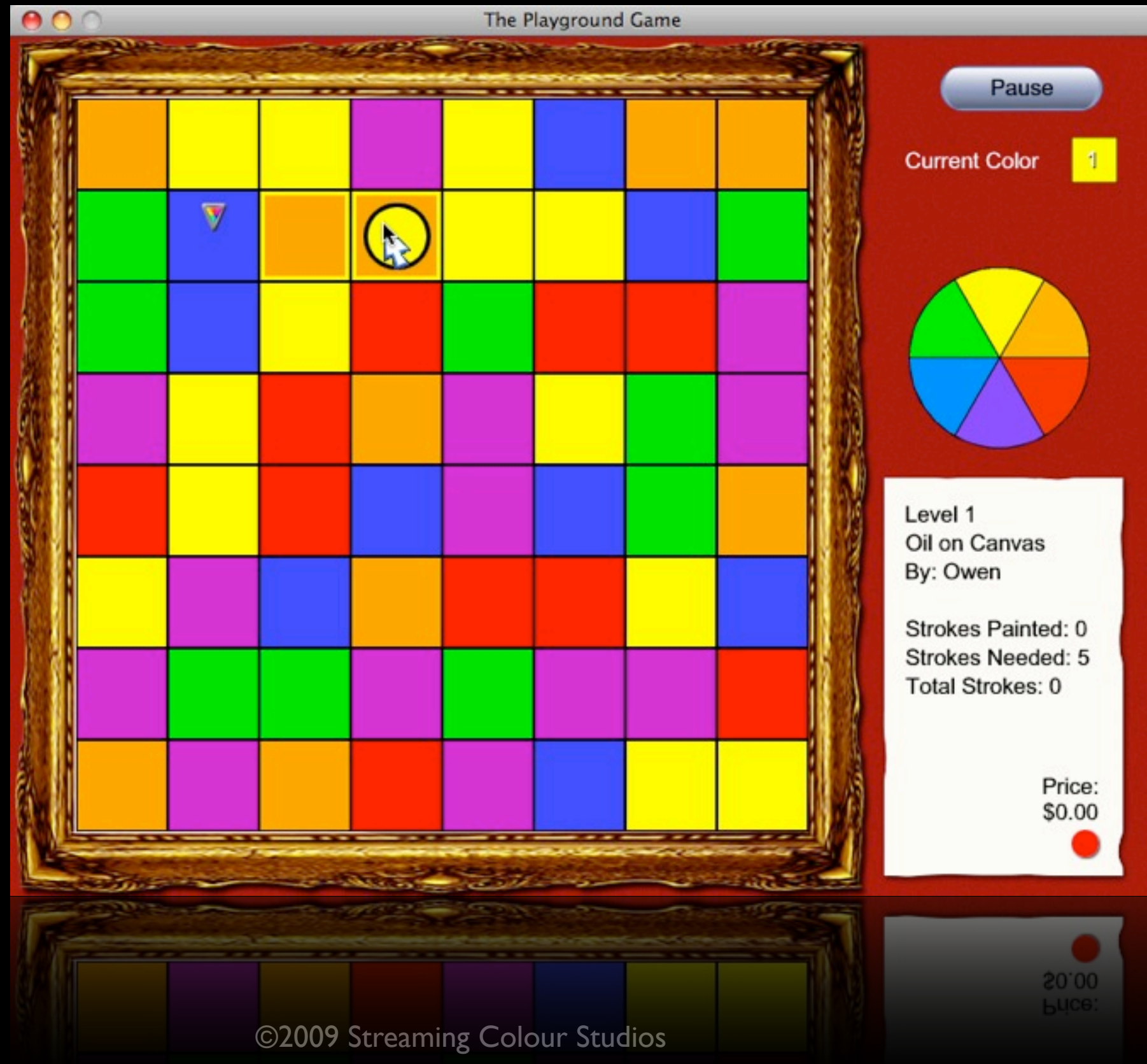


San Jose, CA

360 iDev slide to rock

March 2-4, 2009

# Dapple - 4th Prototype







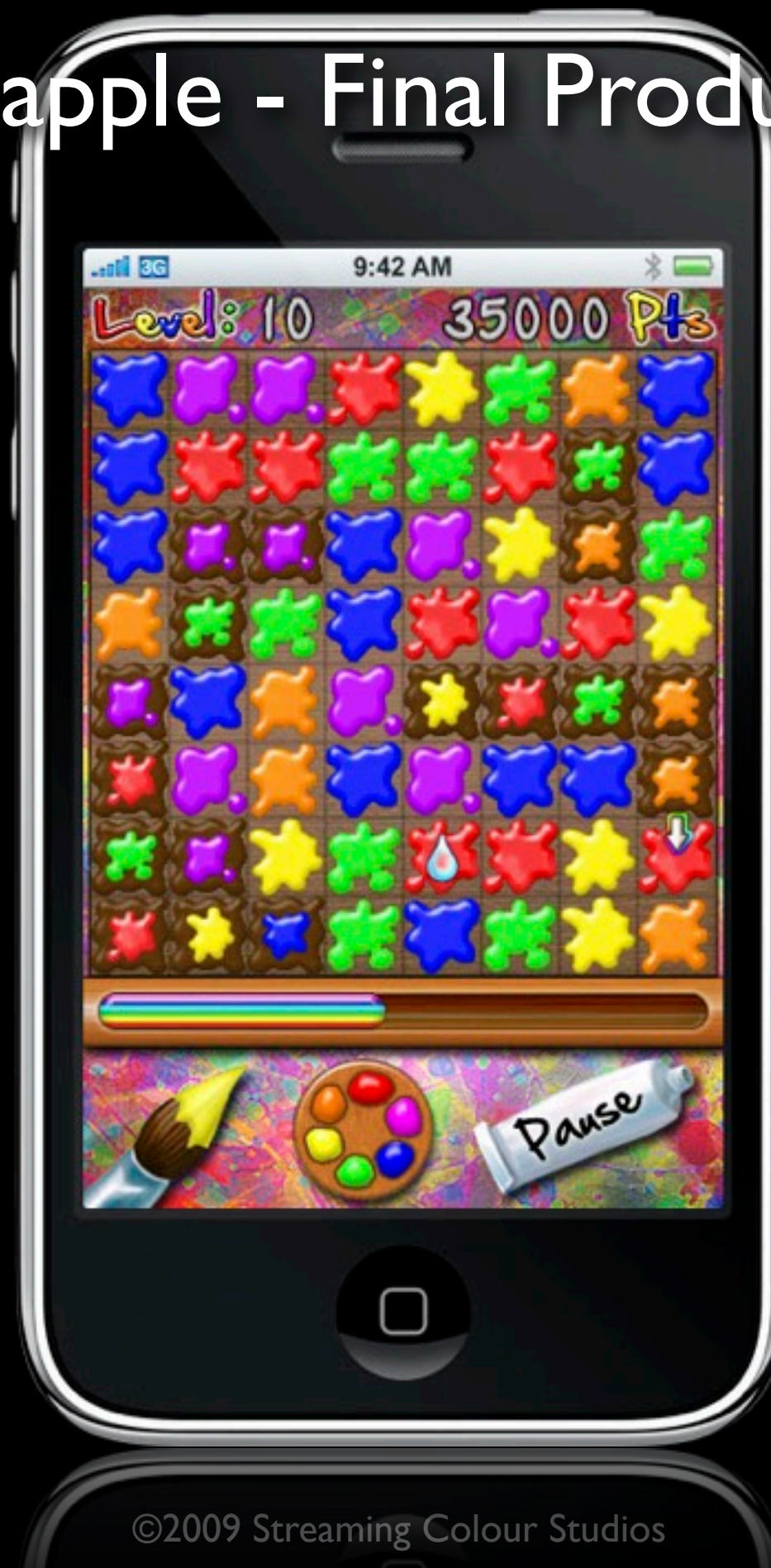
# Dapple - 1st iPhone Prototype



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# Dapple - Final Product



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# Conclusions

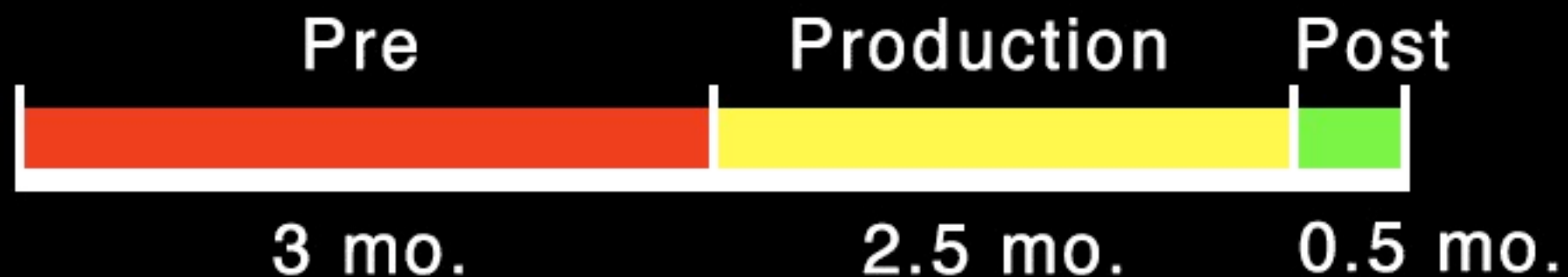
- Dapple:

|                    |     |
|--------------------|-----|
| Unique Textures:   | 172 |
| Unique Sounds:     | 19  |
| Music Tracks:      | 5   |
| Game Modes:        | 3   |
| Unique FE Screens: | 25  |
| Code Classes:      | 67  |



# Conclusions

## Dapple Timeline



Total Dev Time: 6 months

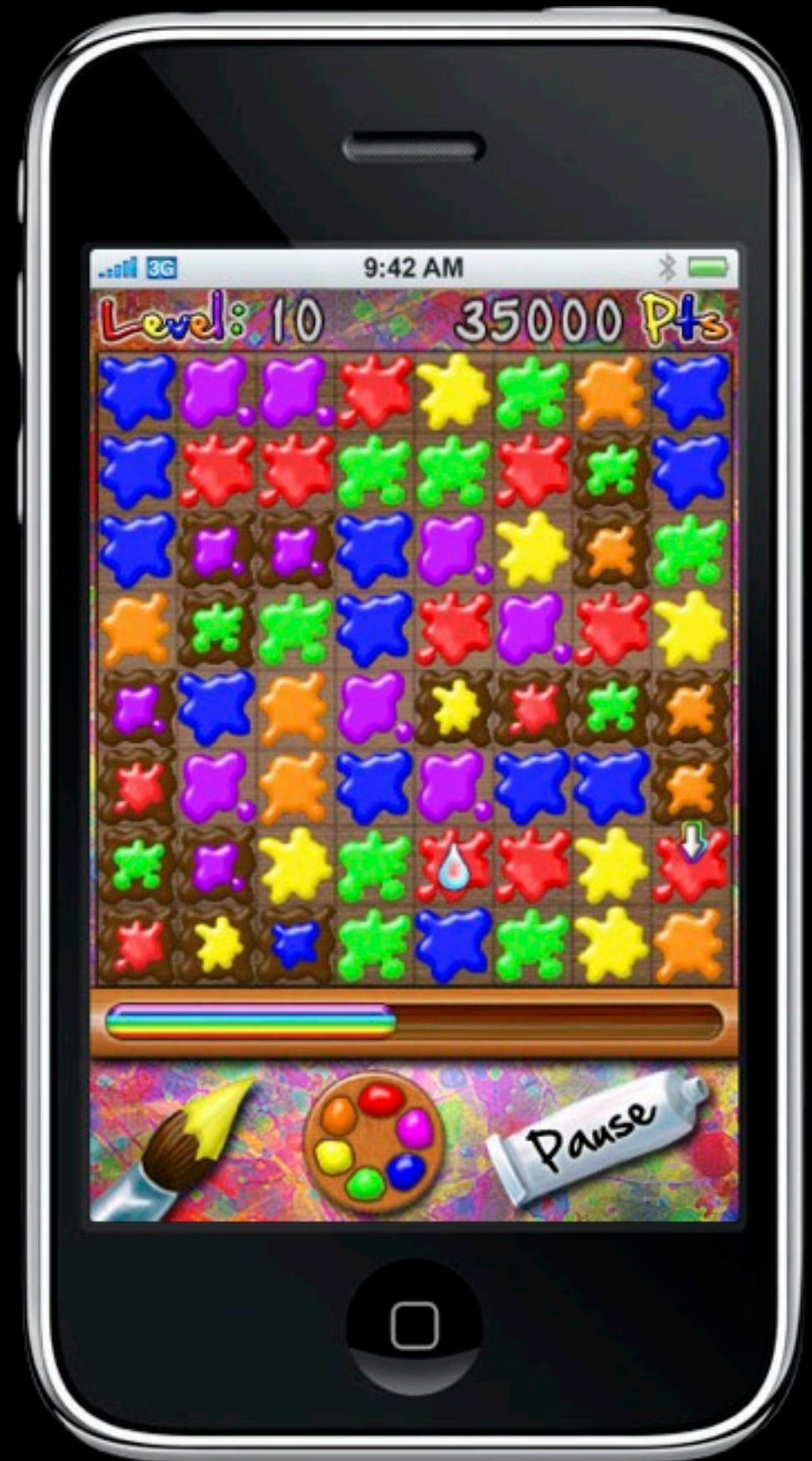
Total Dev Budget: ~\$32,000 USD

Price: \$4.99 USD





# What Questions do you have?







# Appendix



## iPhone Game Engines:

- **Unity** - <http://unity3d.com/unity/features/iphone-publishing>
- **Torque Game Builder (TGB)** - <http://www.garagegames.com/products/torque-2D>
- **Oolong** - <http://oolongengine.com/>

## IndieGamer Forums:

- **Indie Gamer** - <http://forums.indiegamer.com>

## Font Resources:

- **DaFont** - <http://www.dafont.com/>
  - Many free for commercial use, or cheap commercial use licenses. Pay attention to the licensing details!

## Colorblind Resources:

- **Vischeck** - <http://www.vischeck.com/vischeck/>
  - Upload images and see how they look with 3 different kinds of colorblindness
- **Color Vision Test** - [http://www.opticien-lentilles.com/daltonien\\_beta/new\\_test\\_daltonien.php](http://www.opticien-lentilles.com/daltonien_beta/new_test_daltonien.php)
  - Answer this questionnaire to determine your exact type of colorblindness (or determine if you're not at all)



## Texture Pre-Multiplication on iPhone:

- **Forum discussion** - <http://www.idevgames.com/forum/showthread.php?t=15780>

## Screen Capture Tools:

- **Snapz Pro X** - <http://www.ambrosiasw.com/utilities/snapzprox/>
  - Great tool for doing static screenshots or full-motion video captures
- **iShowU** - <http://www.shinywhitebox.com/>
  - Full-motion video captures - I haven't used it personally, but I've heard good things

## Applying for Paid App Contract Outside the U.S.:

- My blog posts on the subject:
  - **Preparation** - <http://www.streamingcolour.com/blog/2009/01/12/preparation/>
  - **Follow Up** - <http://www.streamingcolour.com/blog/2009/01/12/follow-up/>
  - **Ongoing Paperwork** - <http://www.streamingcolour.com/blog/2009/01/12/ongoing-paperwork/>
- Note: The blog posts mention mailing to California - this was incorrect. The forms needed to be mailed to Texas.



## **Tracking Memory Leaks with Instruments:**

- **Tutorial** - <http://www.streamingcolour.com/blog/tutorials/tracking-iphone-memory-leaks/>

## **Recording an iPhone Gameplay Video:**

- **Tutorial** - <http://www.streamingcolour.com/blog/tutorials/creating-an-iphone-game-video/>

## **Crash Logs and Symbolicating:**

- **iPhone Crash Logs** - <http://www.anoshkin.net/blog/2008/09/09/iphone-crash-logs/>



# Thank You!