



Game Design and Development for iPhone OS

Part One

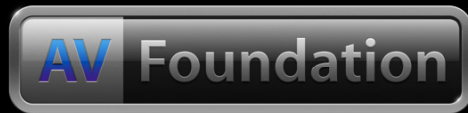
Graeme Devine
iPhone Game Technologies

iPhone OS

Incredible platform for game development



Technologies



Games Are Pretty Popular

50,000

Game and Entertainment Titles on App Store

iOS 4

Game Design

- Why are we here talking to you today?

Game Design

- Our platform is unique and in this session we will explore how to take advantage of that uniqueness

Agenda

Part one

- Making games for the platform
- The golden number is 30 fps
- User interface
- Managing the asset pipeline
- Controls



Agenda

Part two

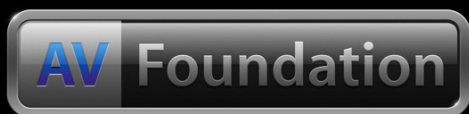
- A walk down our graphic pipeline
- Check in with the art department
- One dozen things we learnt





Two months of work
Three programmers
One artist
iPod Touch
iPad
iPhone

QUESTO



Demo

Quest

Jeff Ruediger
iPhone Game Technologies

Making Games for the Platform

Not just one platform anymore



Making Games for the Platform



Quest Design Philosophy



Quest Design Philosophy

- RPG
- Real time 3D world
- Rich environment
- Touching the world



Quest Design Philosophy

- UI overlay
- Initial touch design



Quest Design Philosophy

- iPad!
- Data driven content



Quest Design Philosophy

- AVFoundation and OpenAL
- Sounds makes the world real



Quest Design Philosophy

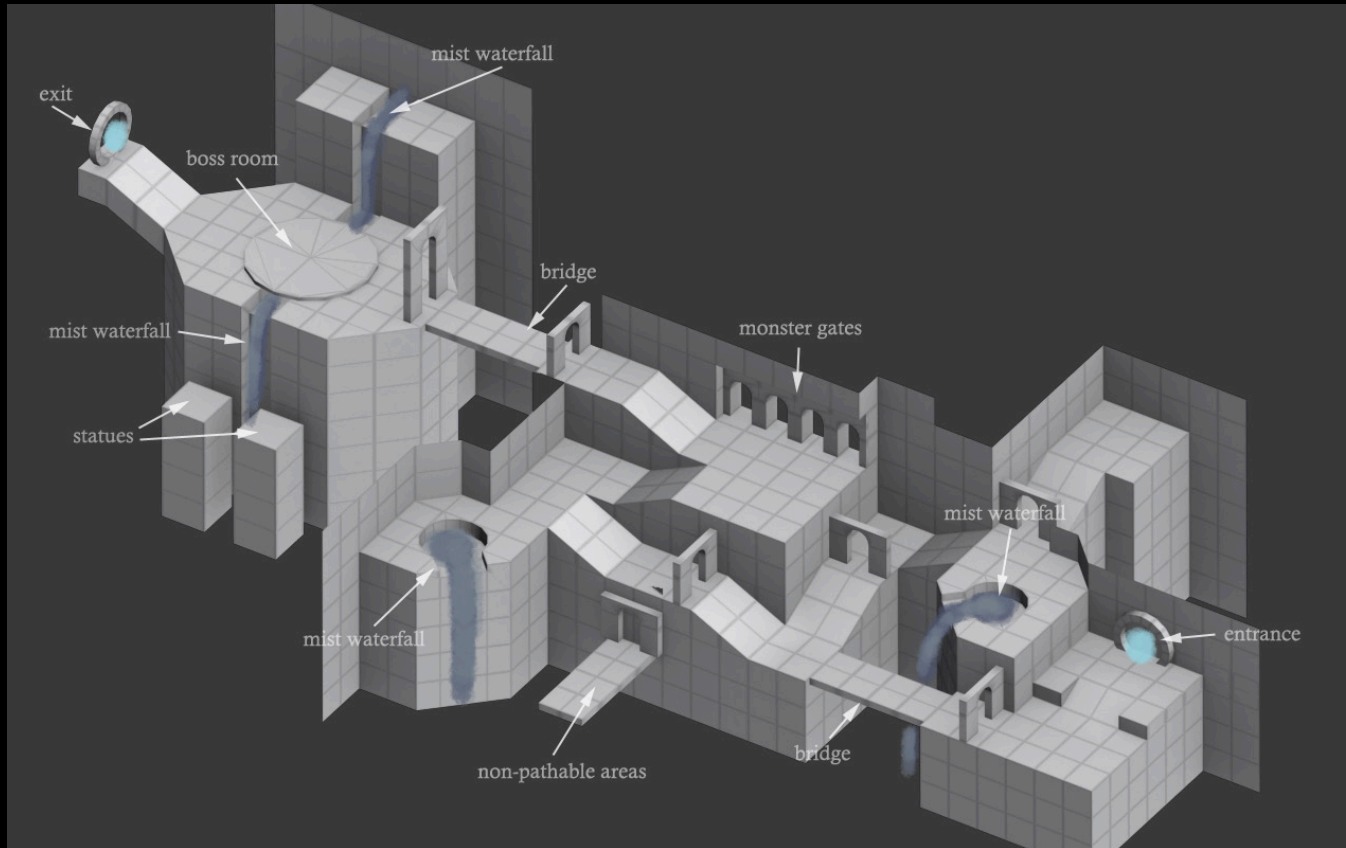
- Game Center
 - Leaderboards
 - Achievements
 - Networking



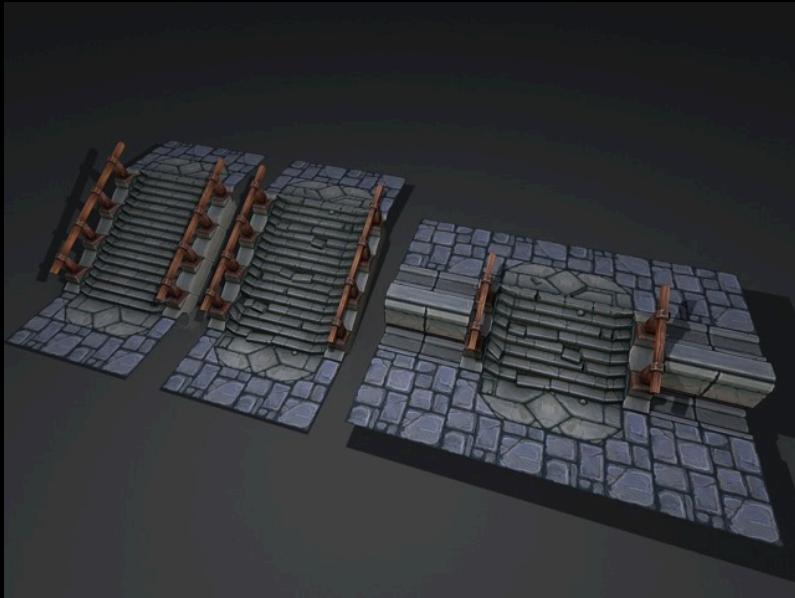
Quest Design Philosophy



Quest Design Philosophy



Quest Design Philosophy



Quest Team Approach

- Scoping our prototype



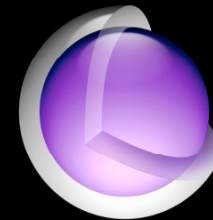
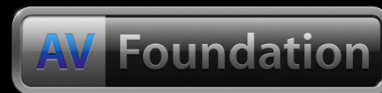
Quest Team Approach

- Game design document
- Approach design as work, assign priority
- Feature creep



A Quick Note About 30 FPS

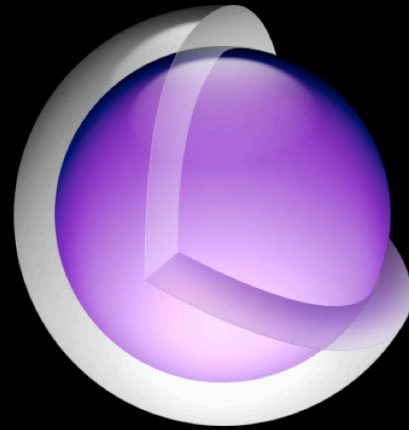
Use Apple Technologies



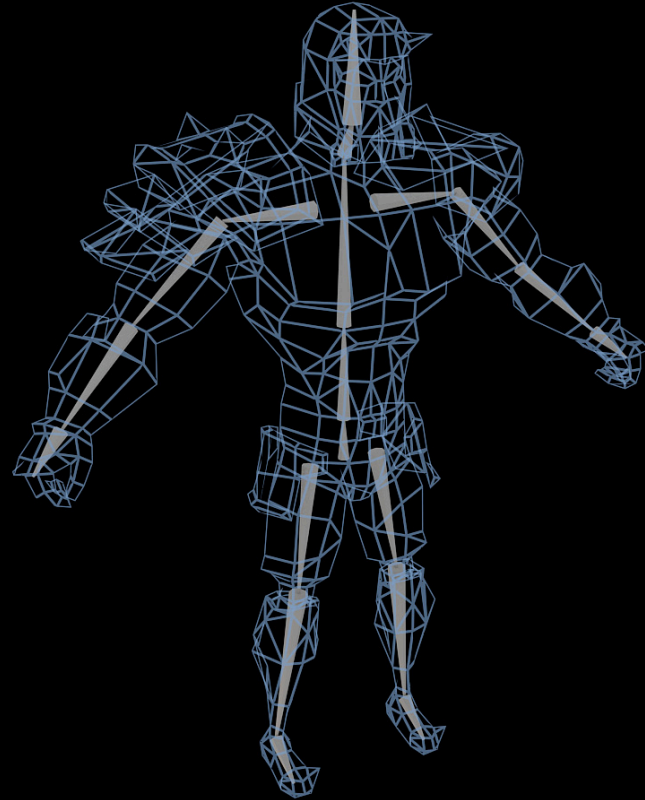
UIKit



Core Animation

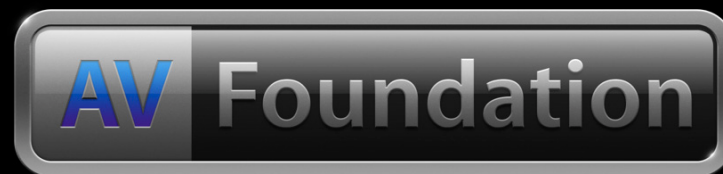


OpenGL ES 2.0



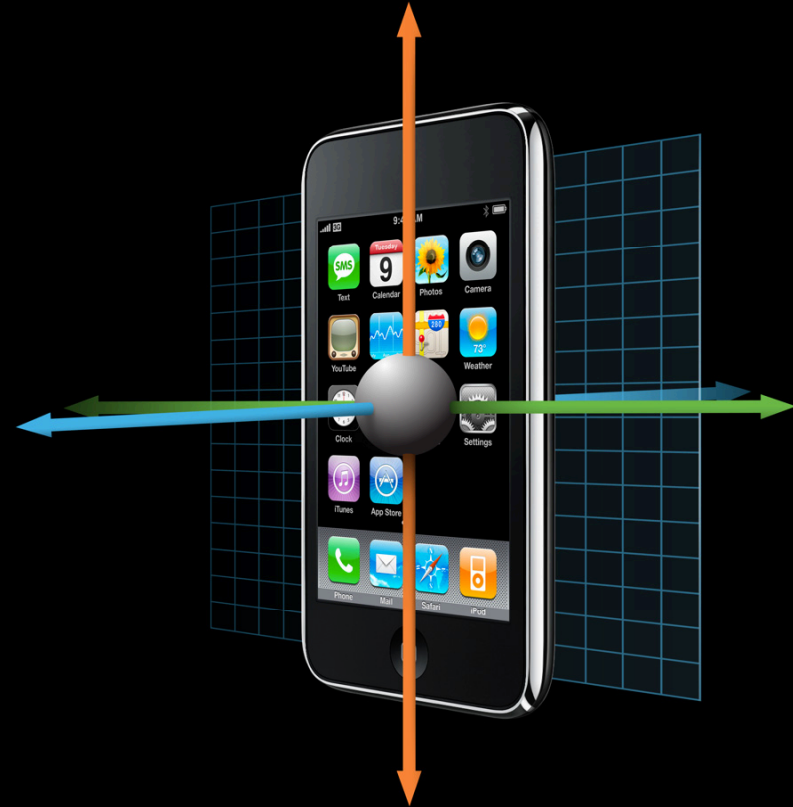
HTTP





```
[[[AVAudioPlayer alloc] initWithContentsOfURL:url error:&err] play];
```

Accelerometer



Game Center



LEADERBOARDS				
Friends	Everyone	Today	This Week	All Time
Zaphod	Lvl 23	230487pts	1	
FatPickles	Lvl 22	210423pts	2	
DrJest	Lvl 21	202003pts	3	
Ennoia	Lvl 18	22003pts	4	
Lintilla	Lvl 17	12078pts	5	
Ethlite	Lvl 15	12050pts	6	

User Interface

Helen Ma

iPhone Game Technologies

User Interface and Games

- Apple is passionate about UI
- Games are about creating experiences
- UIKit can help you create great UI
- Works beautifully with other Apple technologies



Your Finger Is Not a Mouse Button

Leave the desktop where it belongs

- Desktop metaphor does not translate well to mobile devices
- New metaphors are now possible with multitouch and core motion
- Still early days



“Through a Looking Glass”

- Great for games
- Direct interaction with objects in your game
- It's FUN!



Extending the Metaphor

Contextual controls

- Visible only when needed
- Easily discoverable
- Intuitive to use



Maintaining the Illusion

- Direct manipulation is key
- 30 fps
- Avoid abstractions



Demo

Jeff Ruediger
iPhone Game Technologies

I Can't Believe It's UIKit



- Countless hours of engineering and QA
- Far easier than rolling your own
- Huge amount of functionality "for free"
- Takes full advantage of CoreAnimation
- Bottom line—less code for you to write and debug!

Character Info Sheet Spin Animation

Simple use of CoreAnimation

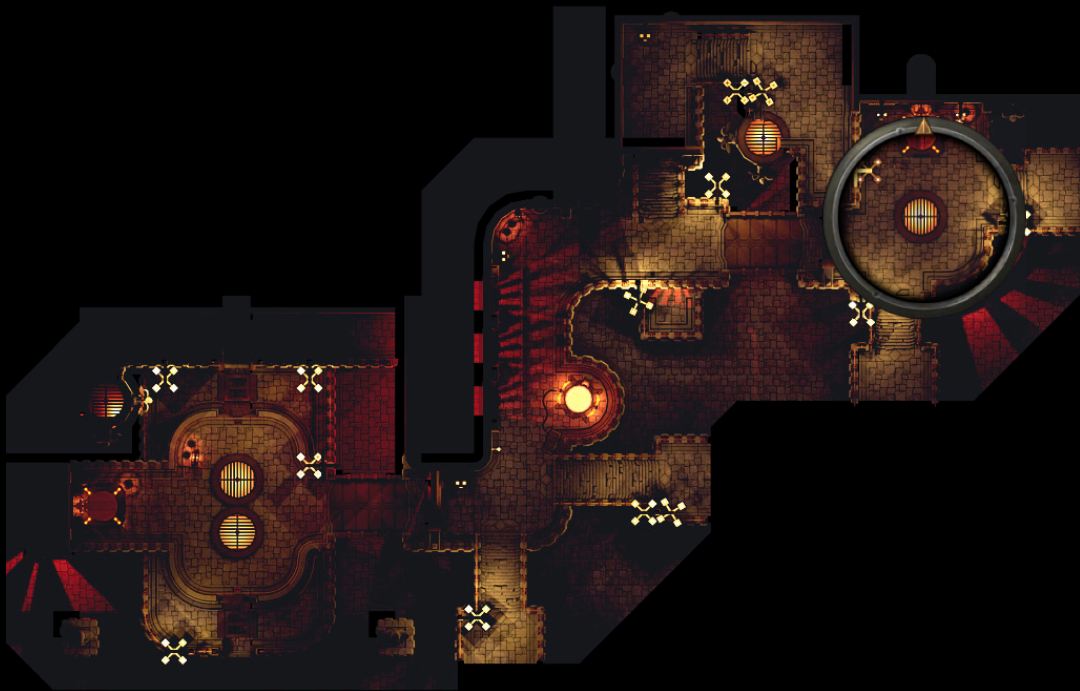
```
[UIView beginAnimations:@"Spin" context:NULL];  
[UIView setAnimationDuration:duration];
```

```
CGAffineTransform rotate = CGAffineTransformMakeRotation(-1.3);  
CGAffineTransform scale = CGAffineTransformMakeScale(0.01, 0.01);  
self.view.transform = CGAffineTransformConcat(scale, rotate);
```

```
[UIView commitAnimations];
```


Anatomy of the Minimap

Not your average UIScrollView



Anatomy of the Minimap

Not your average UIScrollView



Programmer's UI

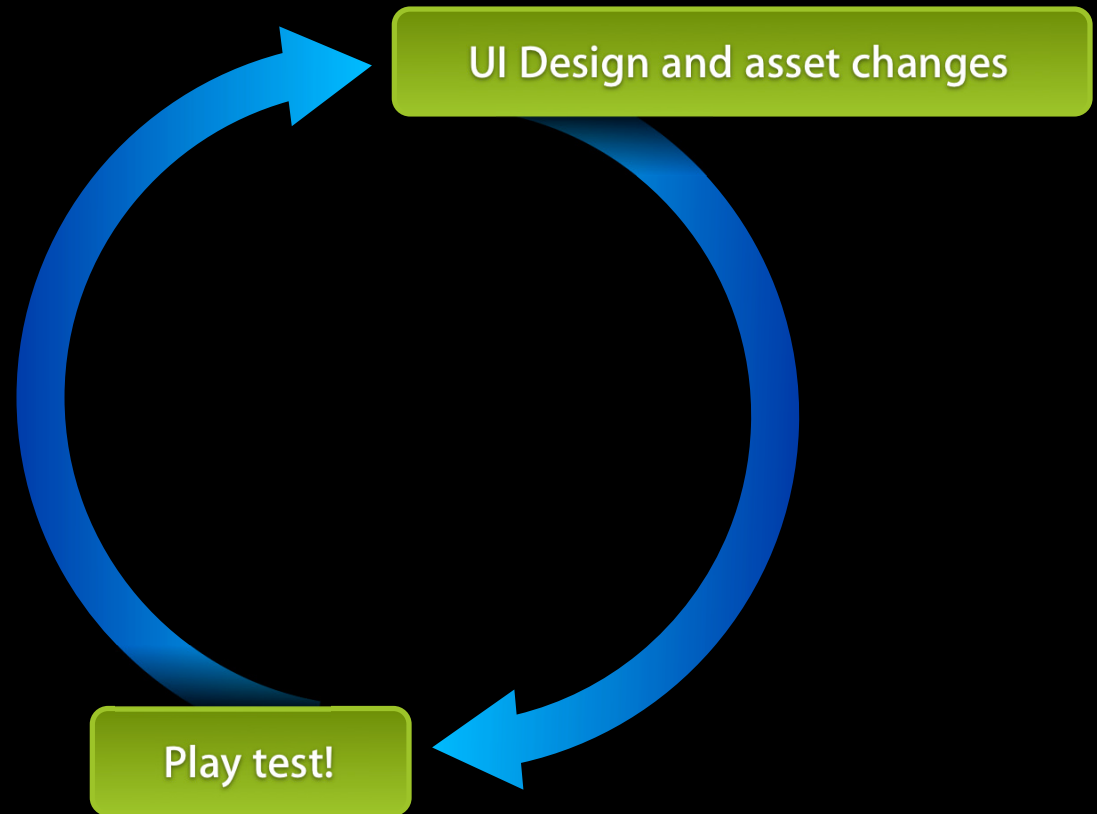
Window dressing does not make a good UI

- "First thing that comes to mind"
- Tends to be needlessly complicated
- Think about UI from the beginning
- Make UI an integral part of development



Rapid Iteration

- Data driven UI
- Wi-fi asset loading



Data Driven UI

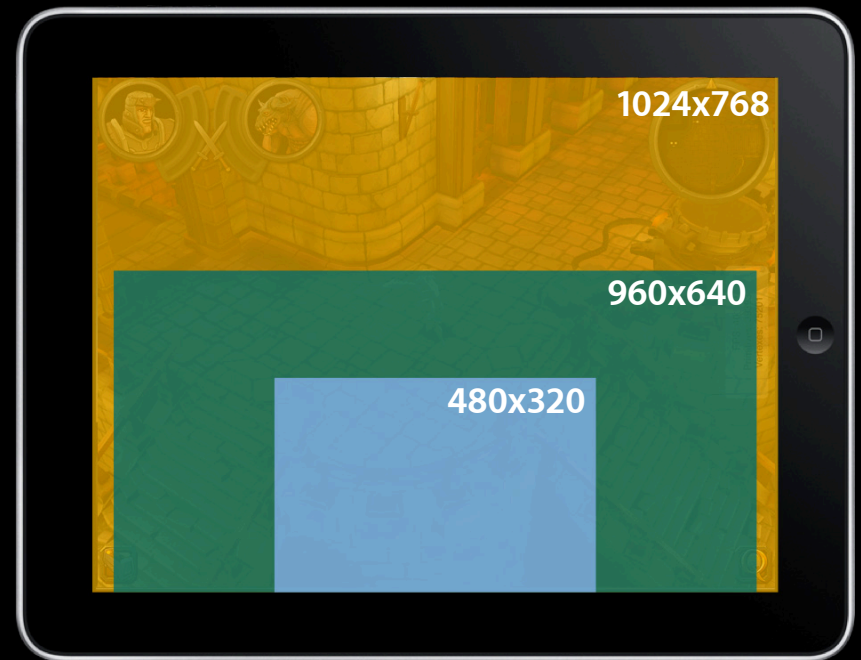
- Code reuse
- Easy experimentation with layouts and resolutions
- Non-programmers can tweak UI



Root	Dictionary	7 key/value pairs
Animations	Array	3 ordered objects
ControllerClass	String	MenuViewController
DefaultState	Dictionary	3 key/value pairs
ScreenName	String	Menu
Sounds	Dictionary	1 key/value pairs
Subviews	Array	6 ordered objects
0	Dictionary	5 key/value pairs
1	Dictionary	10 key/value pairs
BackgroundImages	Dictionary	4 key/value pairs
ButtonFont	String	Georgia
ButtonFontSize	Number	24
DefaultAction	String	startGame
DefaultState	Dictionary	2 key/value pairs
center	Dictionary	2 key/value pairs
size	Dictionary	2 key/value pairs
height	String	112
width	String	448
Groups	Array	1 ordered objects
Title	String	PLAY
ViewClass	String	UIButton
ViewName	String	startButton
Z-order	Number	2
2	Dictionary	6 key/value pairs
3	Dictionary	5 key/value pairs

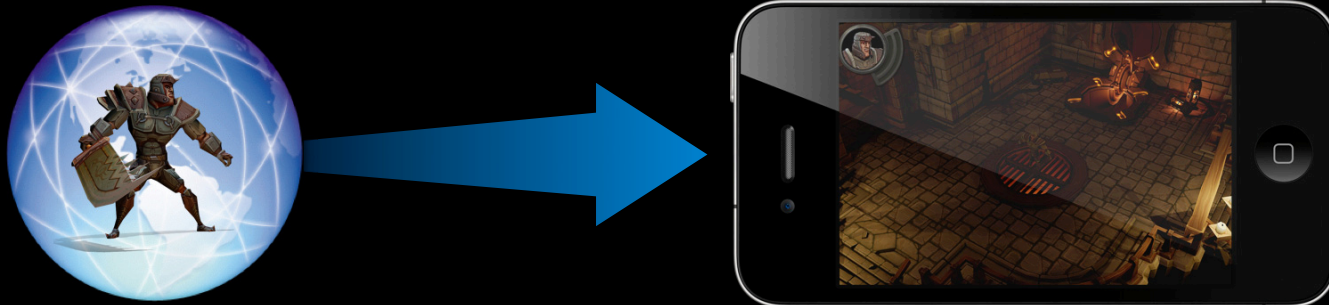
Size Does Matter

- Targeting multiple devices
- Simple scaling is not ideal
- Taking full advantage => happy users



Wi-fi Loading

- No work for you to change assets
- Easy to set up
- Artists and designers will love you for this!



Don't Forget

- UIKit is great for your games, use it!
- Rapid iteration is essential for great user experience
- Don't forget to turn OFF wi-fi loading and console before you ship!

Making Quest

Graeme Devine
iPhone Game Technologies

The Game Designers Nitty Gritty

Game design on iPhone



1 Controls



2 Dual D-Pads



3 Playtesting

- Watch people
- Play it yourself
- Do this all the time



3 Startup/Shutdown

- One second is a long time
- Load the assets you need interactively with the player
- Optimize load times
- Playing again and again and again



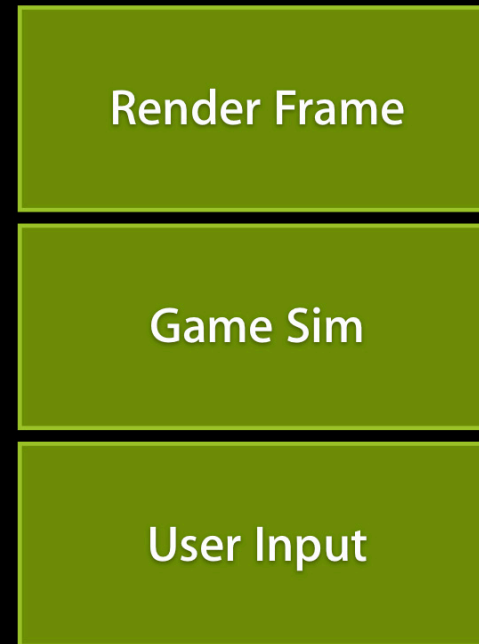
4 While You Were Running

Anything can happen at any time

- Backgrounded
- Phone call
- Home button pressed
- SMS message

5 The Game Loop

- The way games work



5 The Game Loop

- But do it the RIGHT way

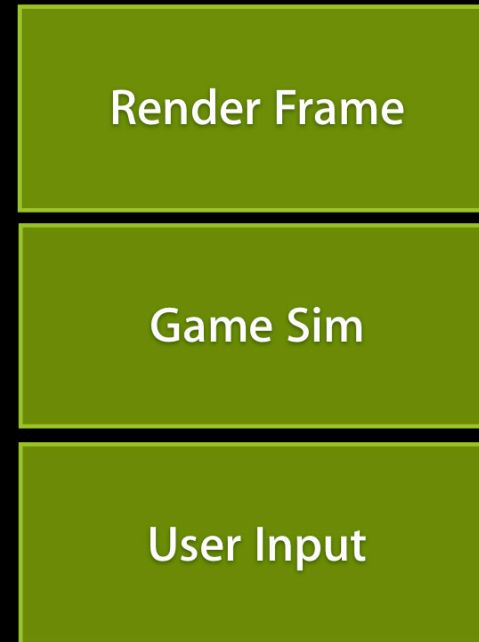
Render Frame

Game Sim

User Input

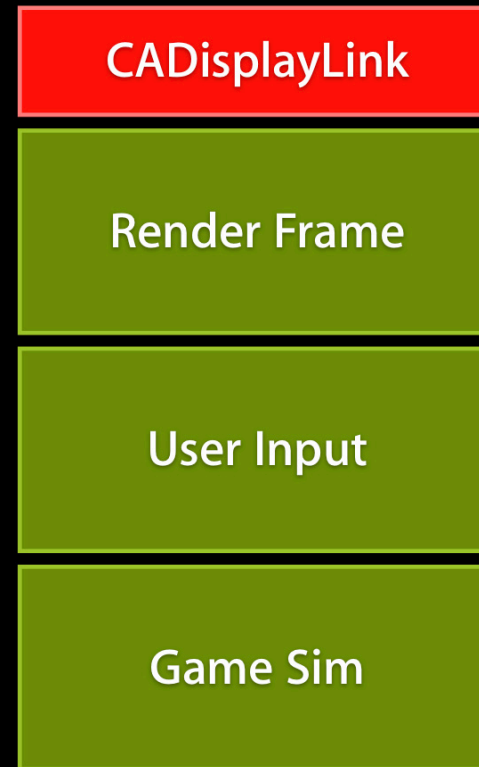
5 The Game Loop

- The way games work



5 The Game Loop

- CADisplayLink



After the Break

- OpenGL ES 2.0 rendering
- Artist's perspective
- The dozen things you must do





