Graphics and Games

#WWDC15

What's New in SpriteKit

Session 604

Tim Oriol
Norman Wang
Tyler Casella

What is SpriteKit?

What is SpriteKit?

2D graphics framework for games

Super easy to use

Lets you design your game in the most natural way possible

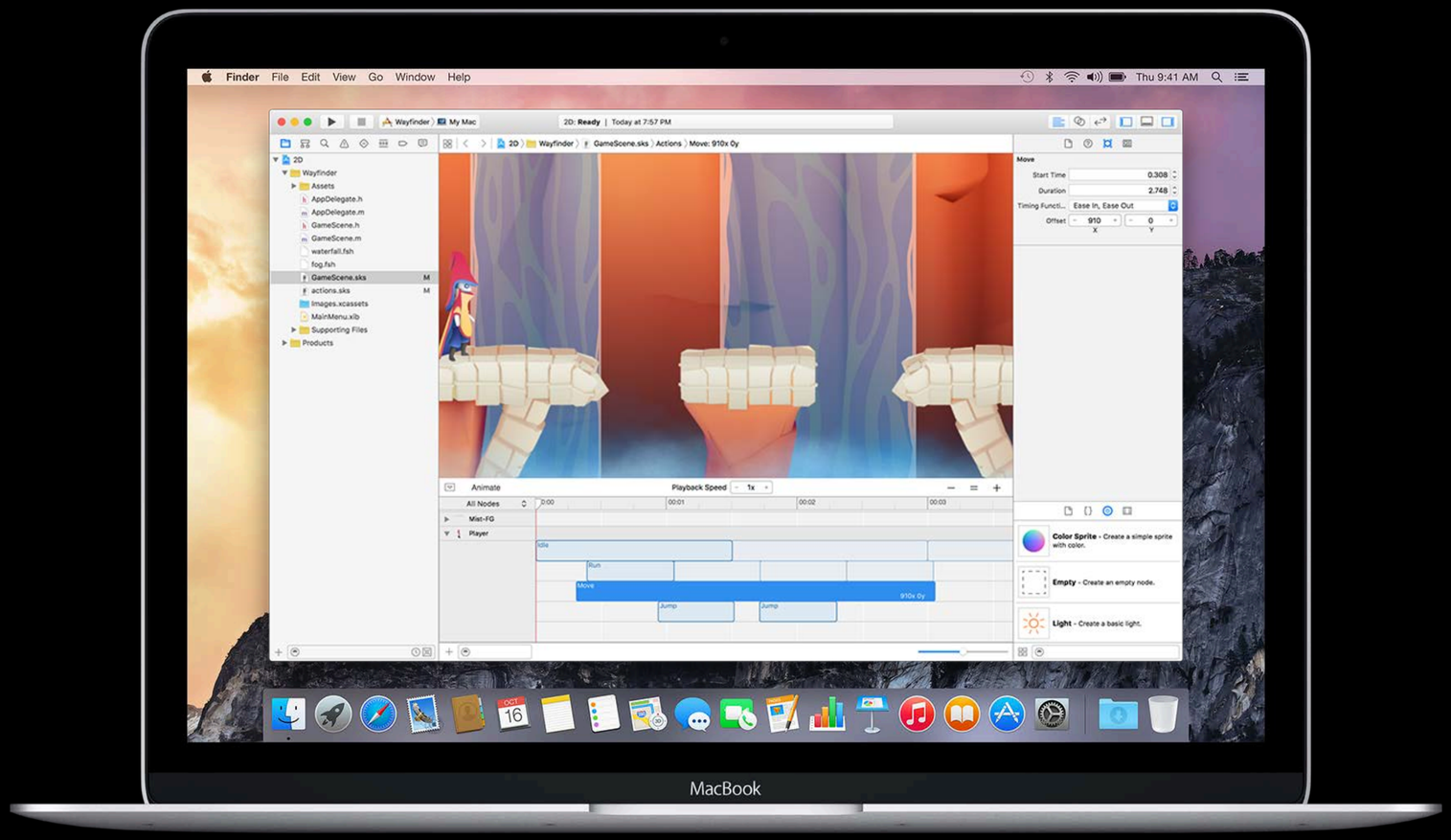
Automatic access to the latest and greatest

What is SpriteKit?

Supported across iOS and OS X

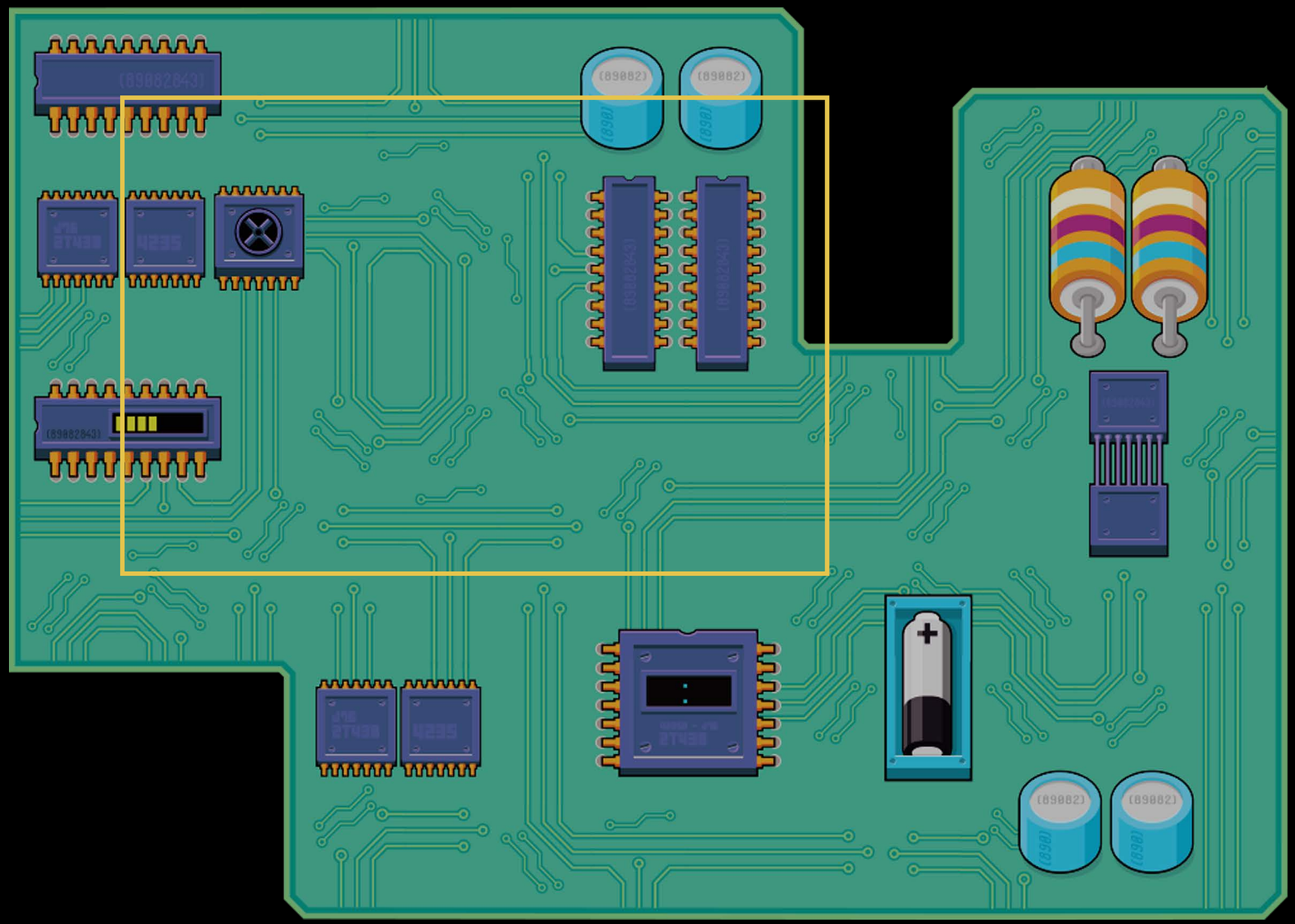
What is SpriteKit?

Xcode integrated live editor



New Additions

Viewport



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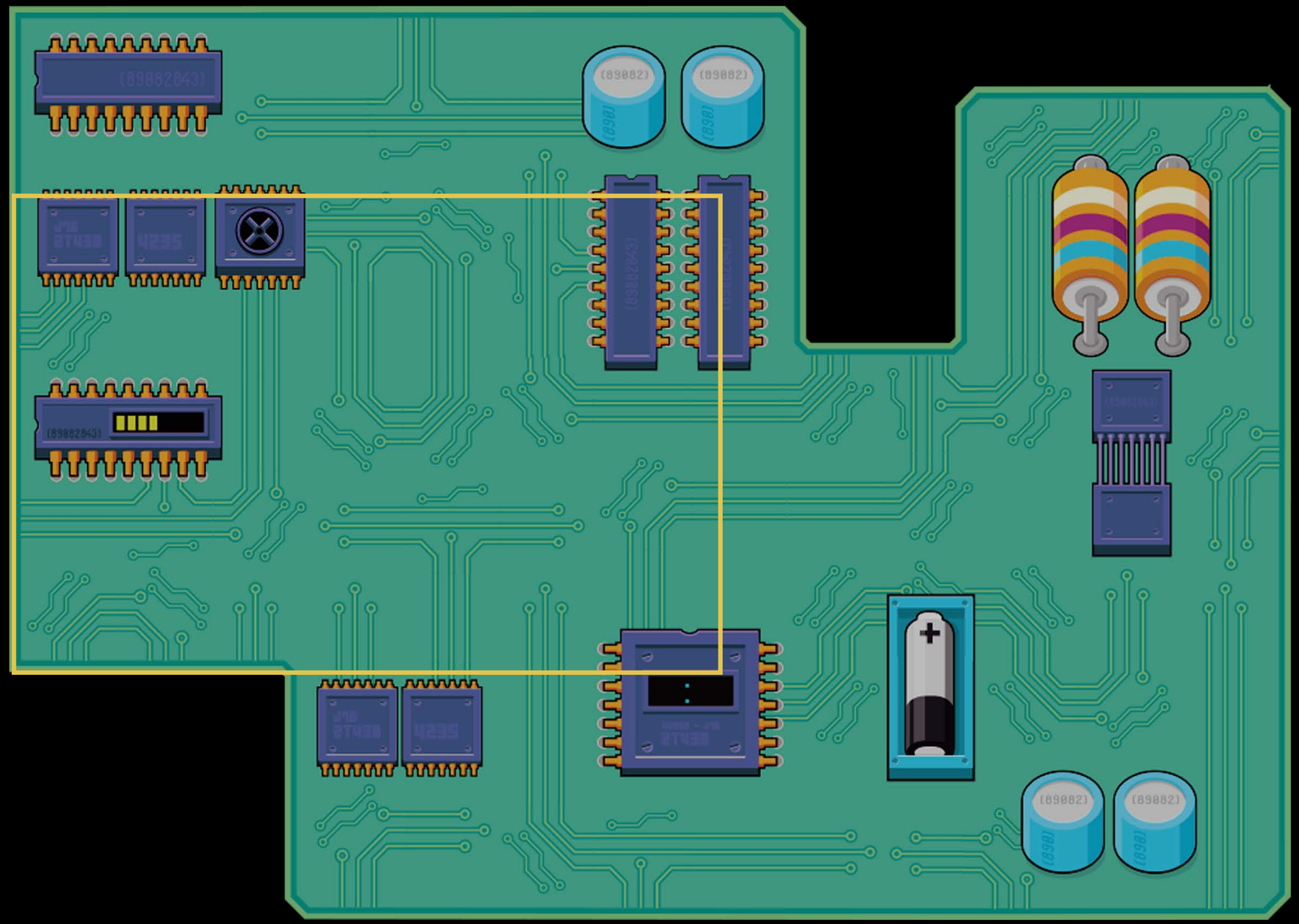


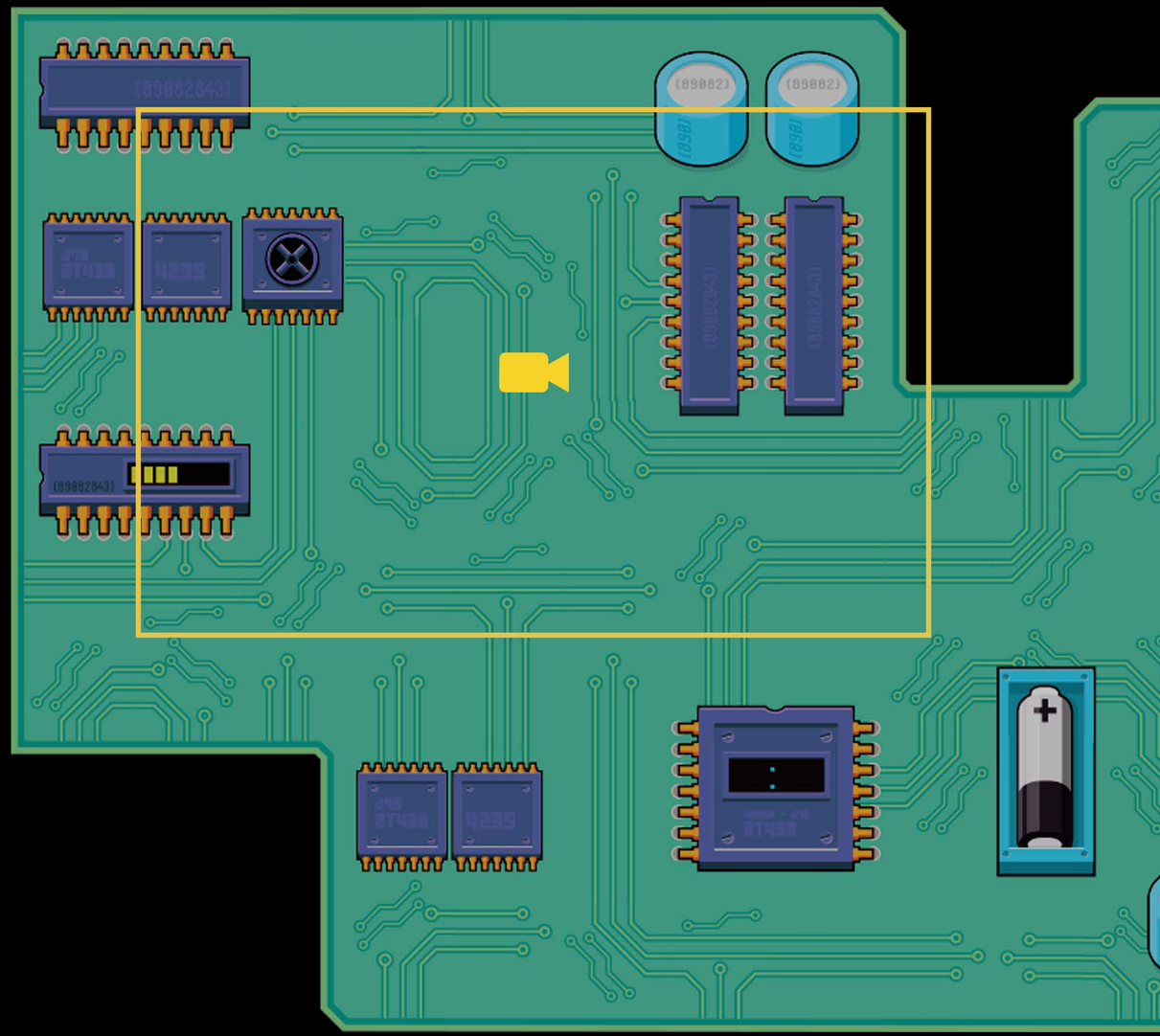
SKCameraNode

Represents the center of the viewport

SKScene property

Move the camera not the world

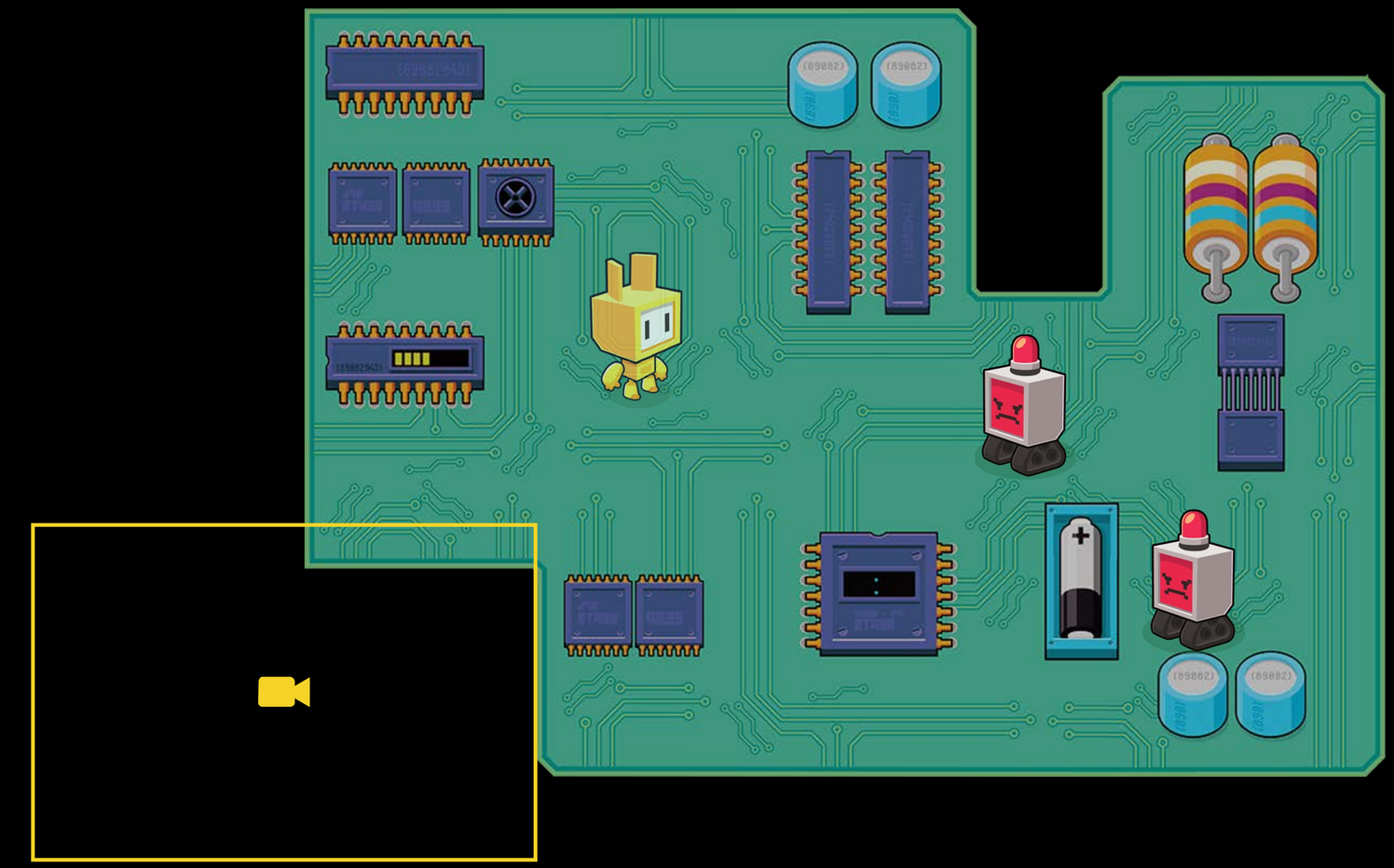
Static elements can be moved with the camera



SKCameraNode

SKCameraNode is a SKNode

- Actions
- Constraints
- Rotation
- Scale



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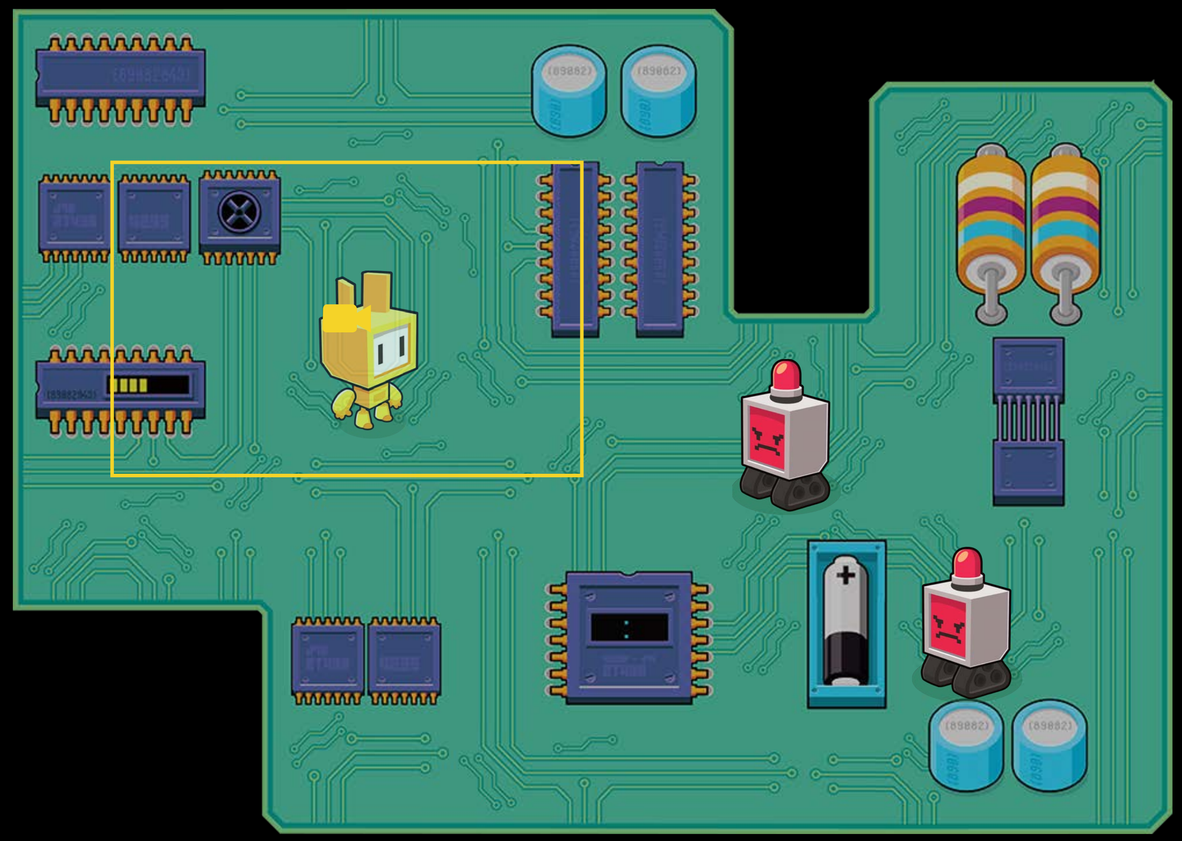

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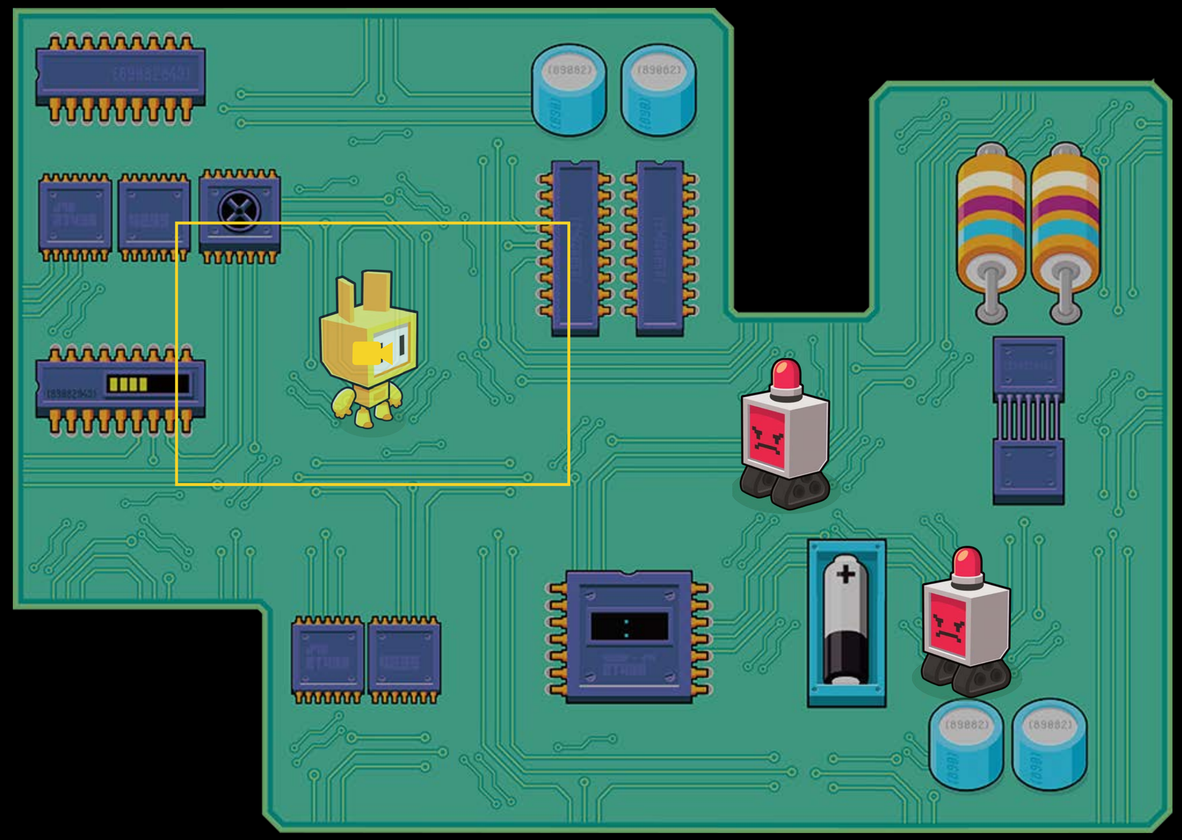

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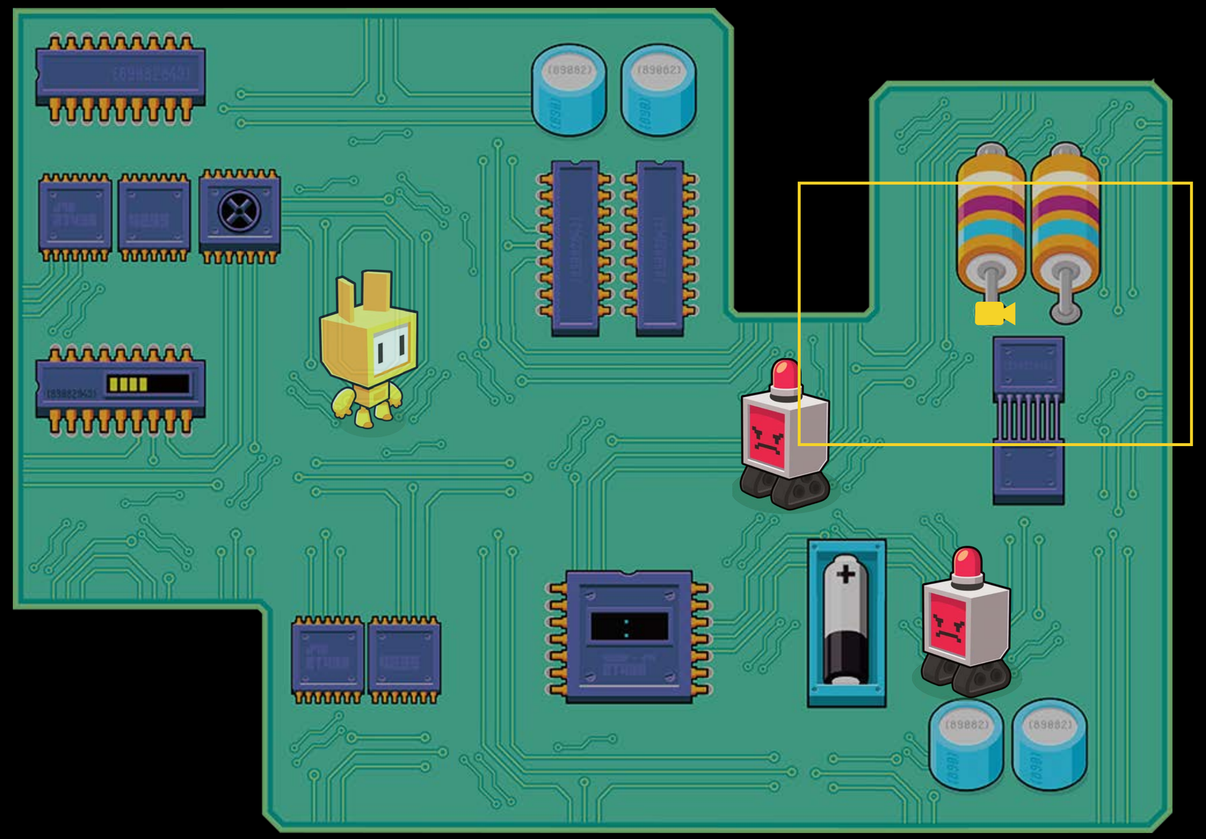

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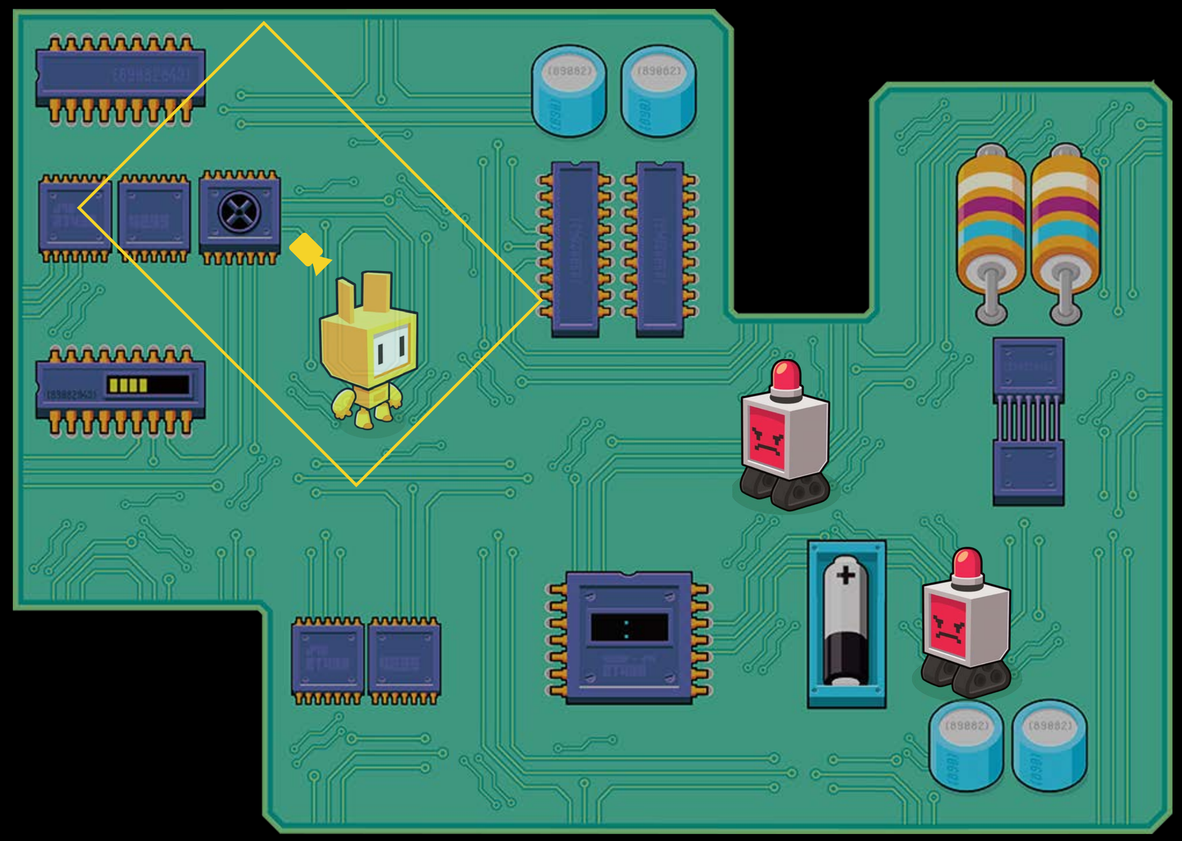


SKAudioNode

Positional audio

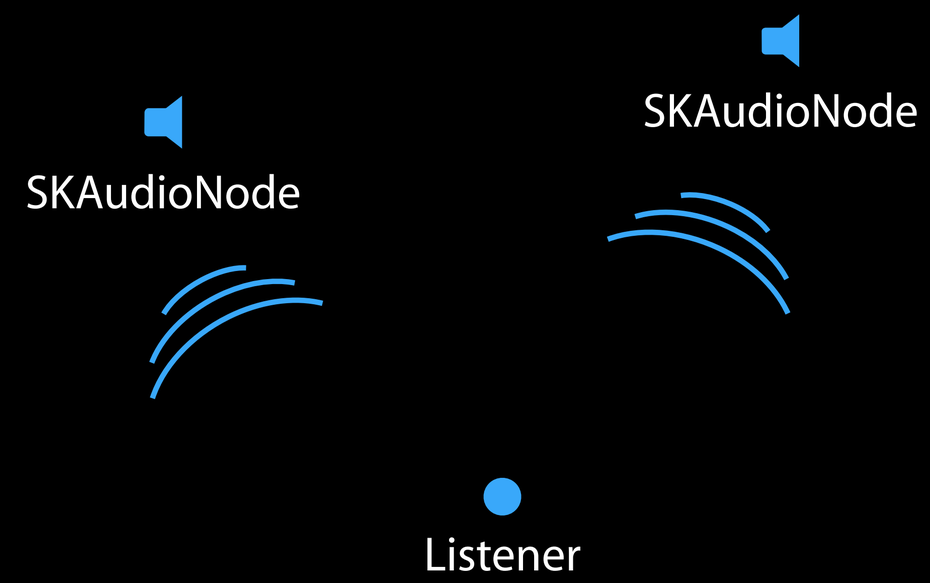
Leveraging AVAudioEngine

Position calculated via node position

Listener node property on SKScene

Create with filename or URL

Full control via `avAudioNode` property



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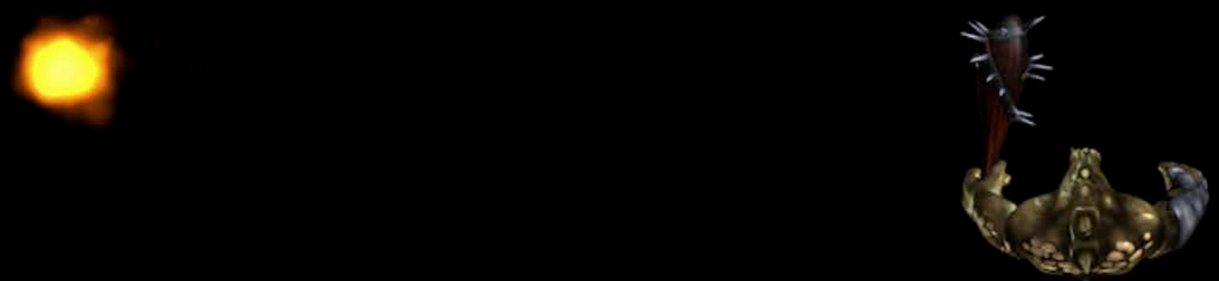

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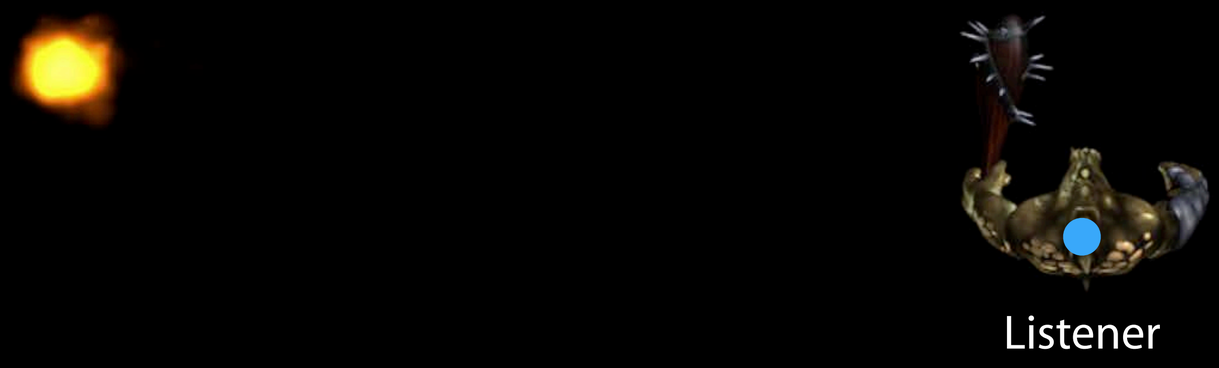
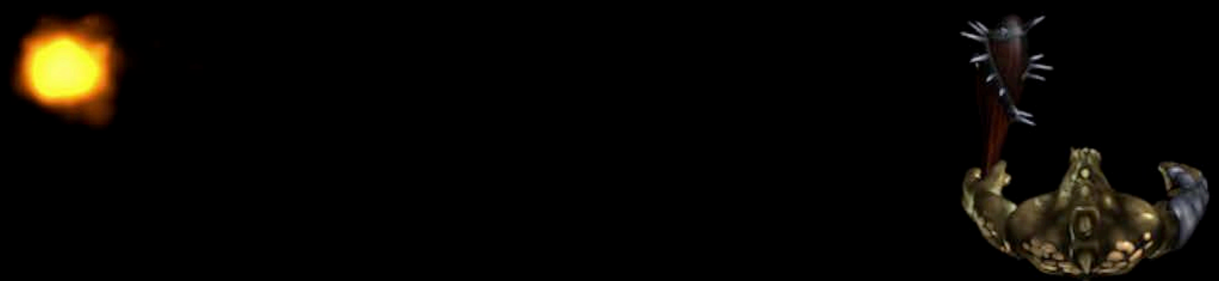


SKAudioNode

SKAudioNode

Listener

SKAudioNode



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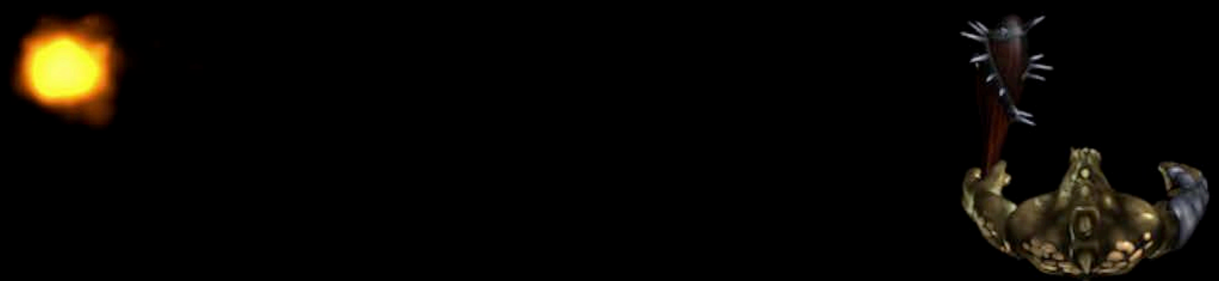


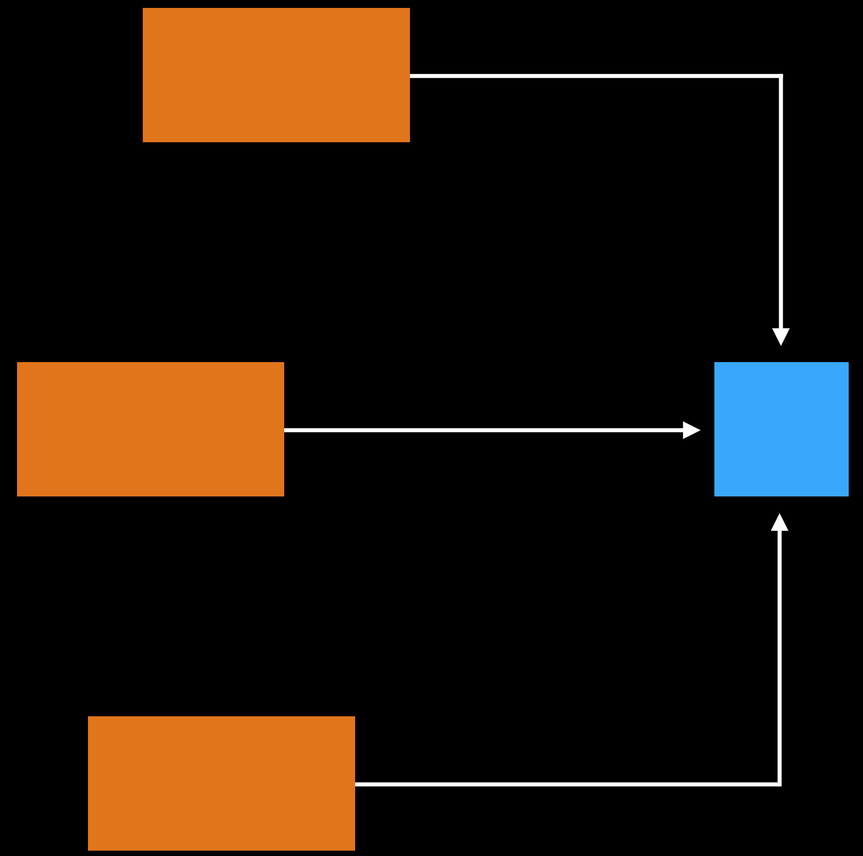
References and Instancing

Leverage the NSCoding capability

Instances of SKAction and SKNode

Reusable components

Share across multiple projects

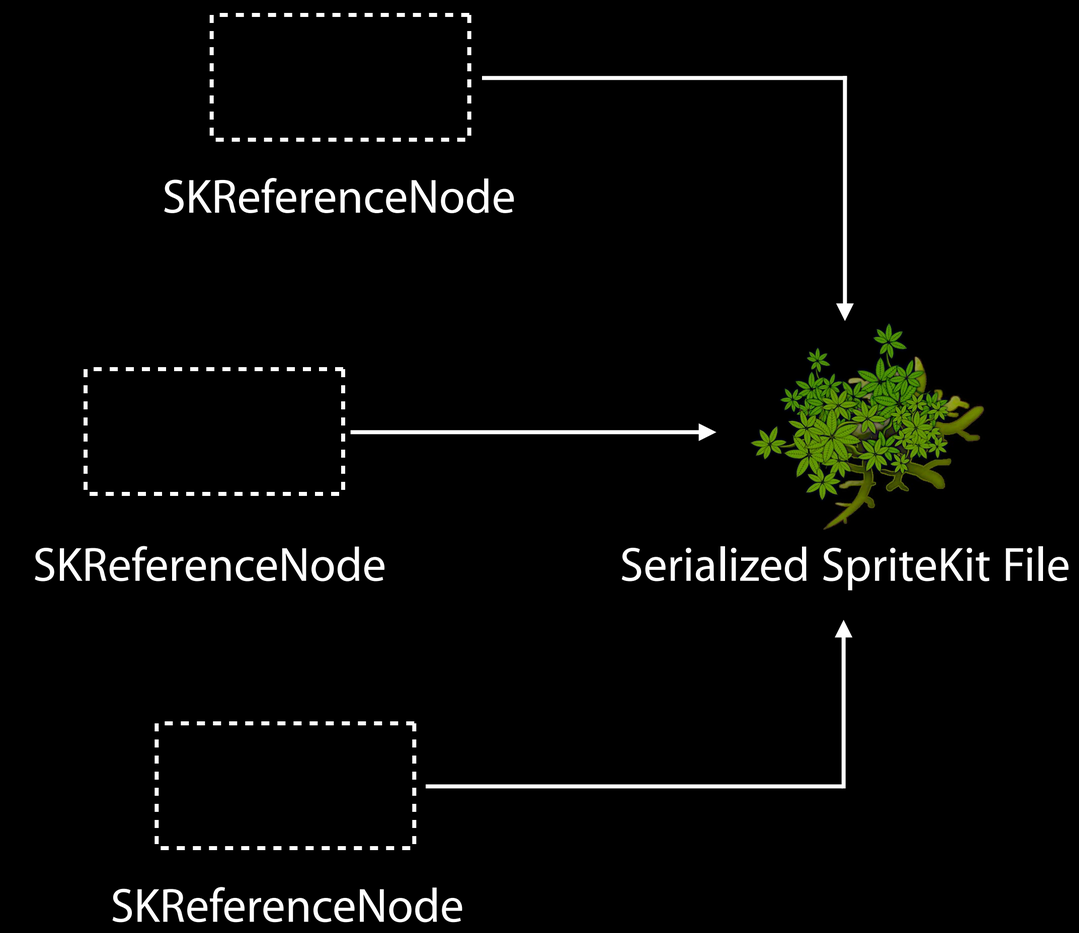


SKReferenceNode

Place reference nodes

Bundle based filename or any URL

Editor supported



Named SKActions

Create in Xcode

Share and reuse action files

```
[SKAction actionNamed:]
[SKAction actionNamed:duration:]
```

SpriteKit Action Files

New SKActions

Playback control actions

```
play, pause
changePlaybackRateTo: duration:
changeVolumeTo: duration:
```

Normal texture animation

```
animateWithNormalTextures:
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System Integration

Metal Backed

iOS and Mac

Metal backed on devices that support it

OpenGL on systems that don't

Zero action required for developers

All SpriteKit apps automatically upgraded

SKShaders automatically upgraded

We Speak Swift and Objective-C

Nullability enhancements

Objective-C generics

Enhanced type safety

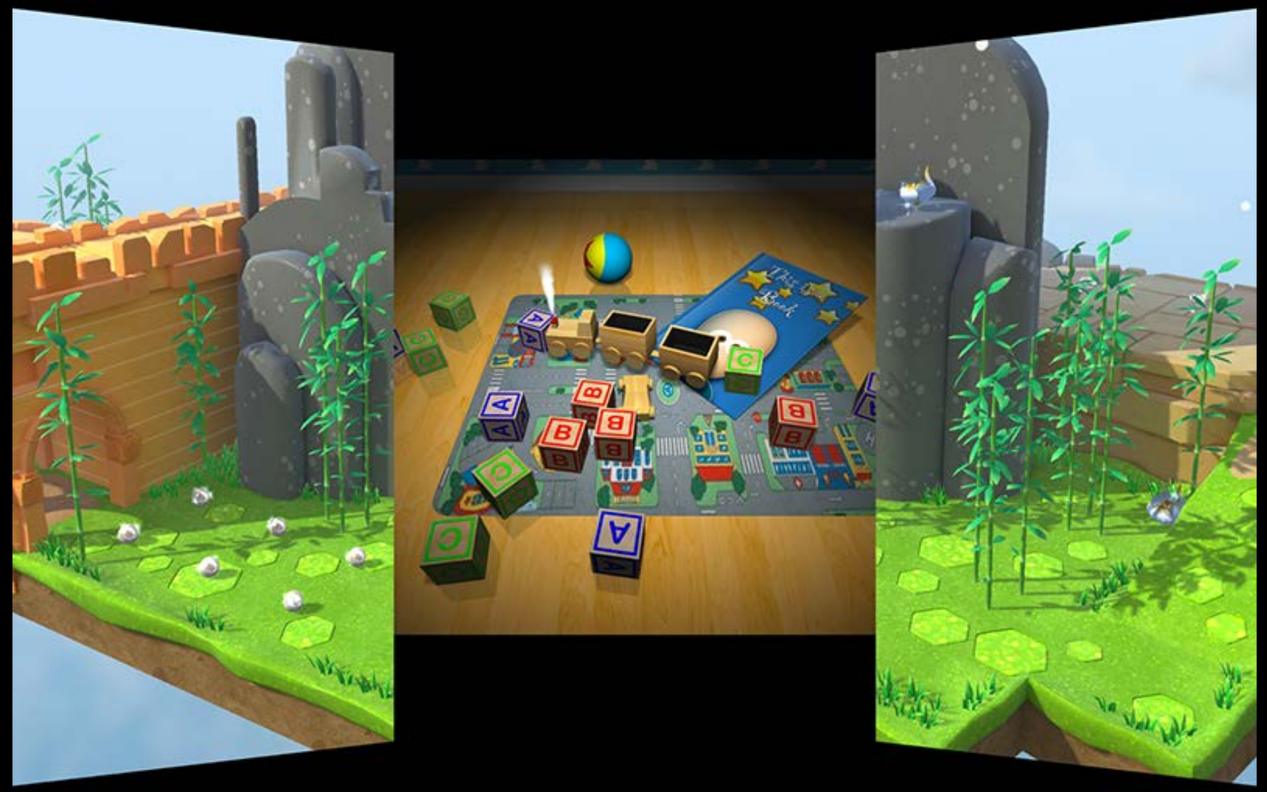
SceneKit

SKTransitions

Use SKTransitions in SceneKit

SceneKit Metal support

Automatic context matching



GameplayKit

Step up your game

Entity/Component systems

State machines

Agents and behaviors

Pathfinding

AI strategists

Random sources

Rule systems

GameplayKit

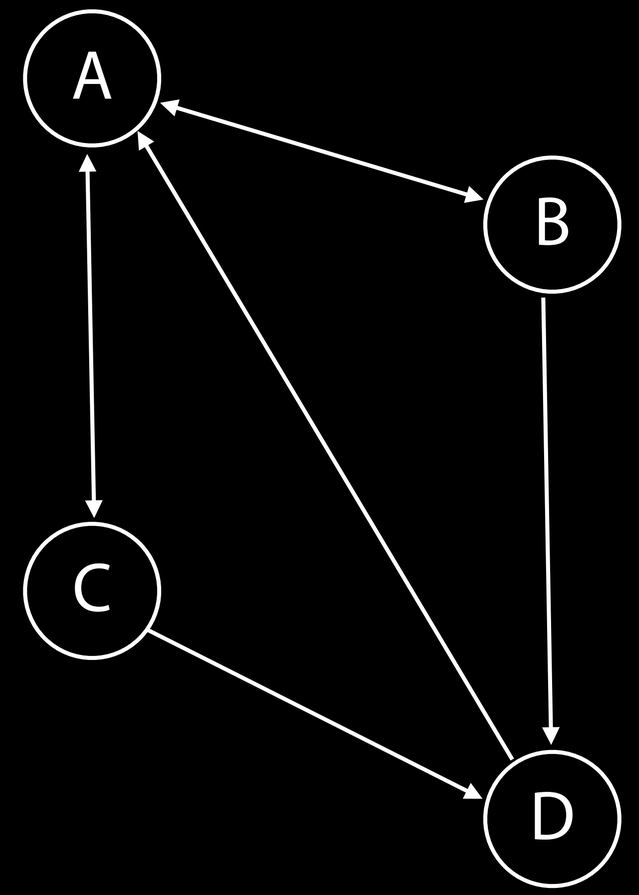
Pathfinding

Pathfinding operates on a navigation graph

Graphs are collections of nodes

Nodes are joined by connections

Each connection has an associated cost



GameplayKit

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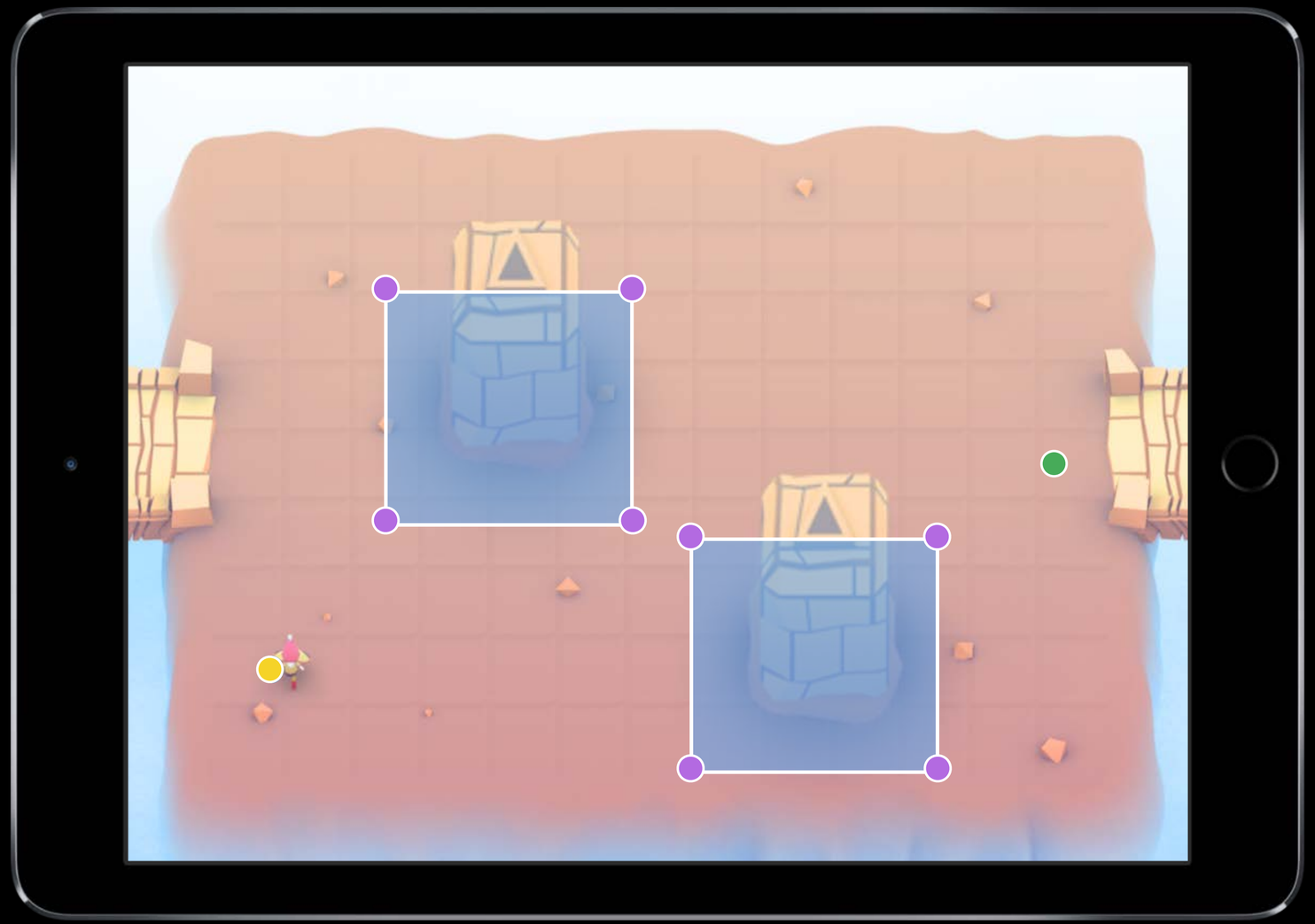

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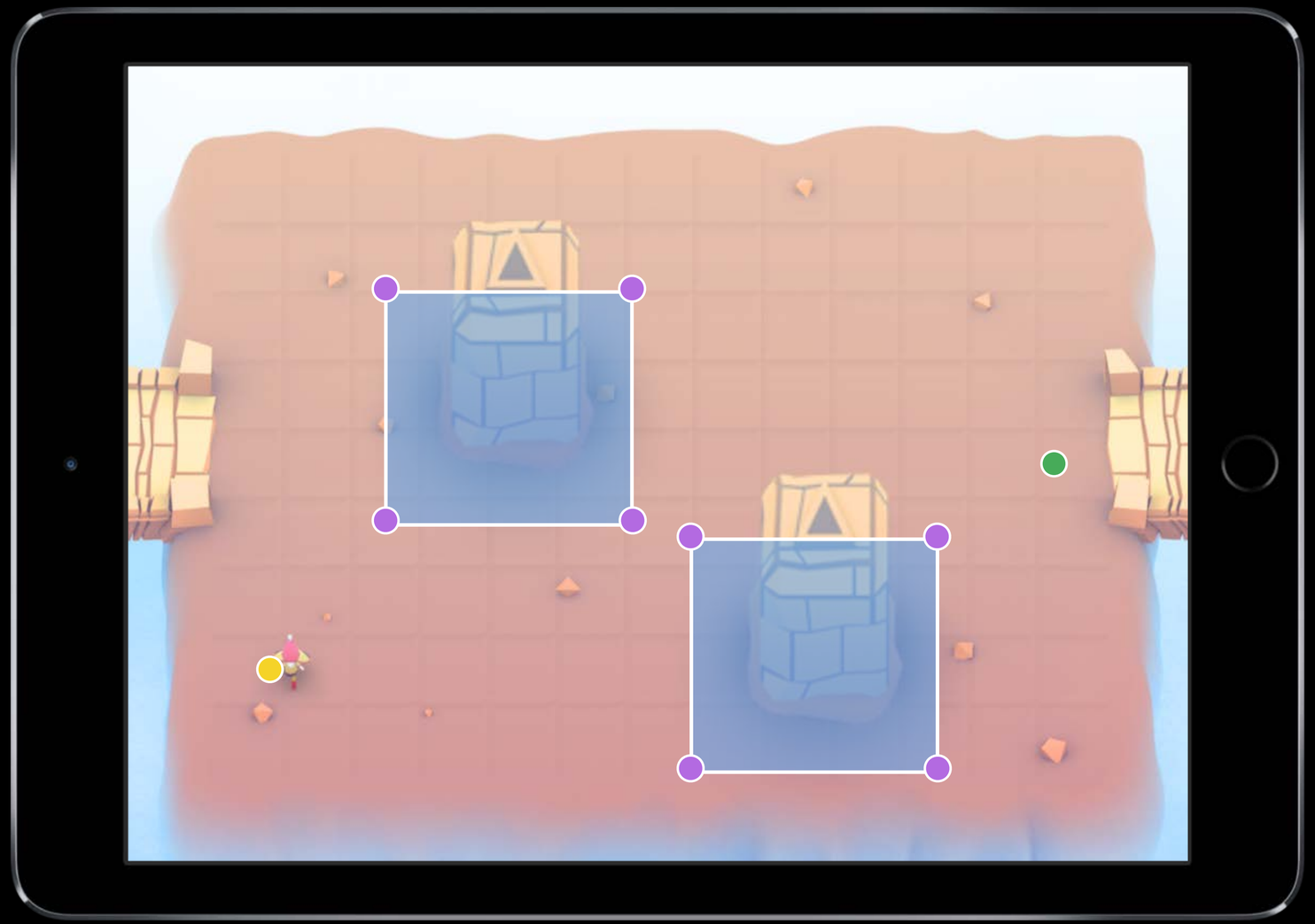

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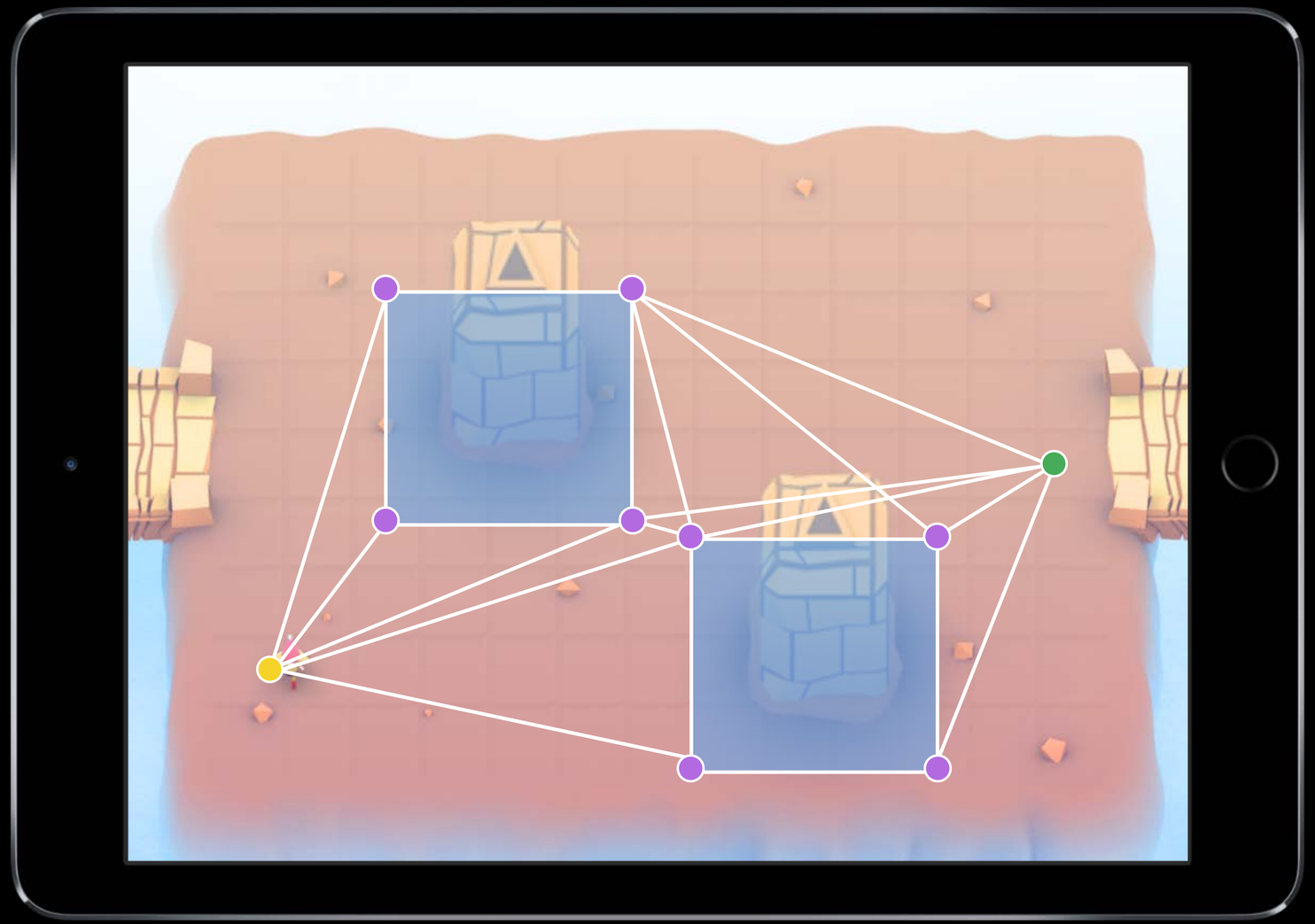

GameplayKit

Automatic graph generation

If you're using SpriteKit, we have provided a set of functions to automatically generate these from existing SKNodes.

PhysicsBody, texture, or bounds.

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[SKNode obstaclesFromNodeBounds: nodes]
[SKNode obstaclesFromNodePhysicsBodies: nodes]
[SKNode obstaclesFromSpriteTextures: nodes accuracy: accuracy]
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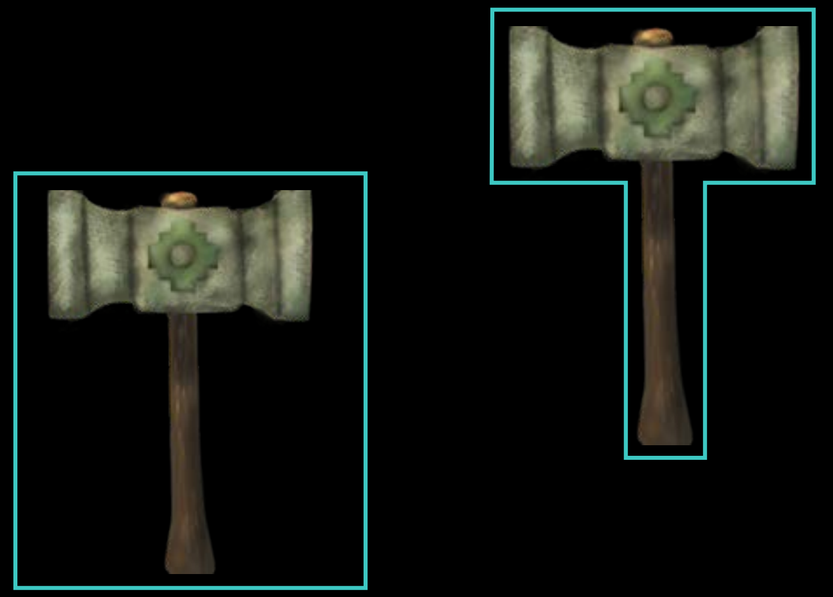

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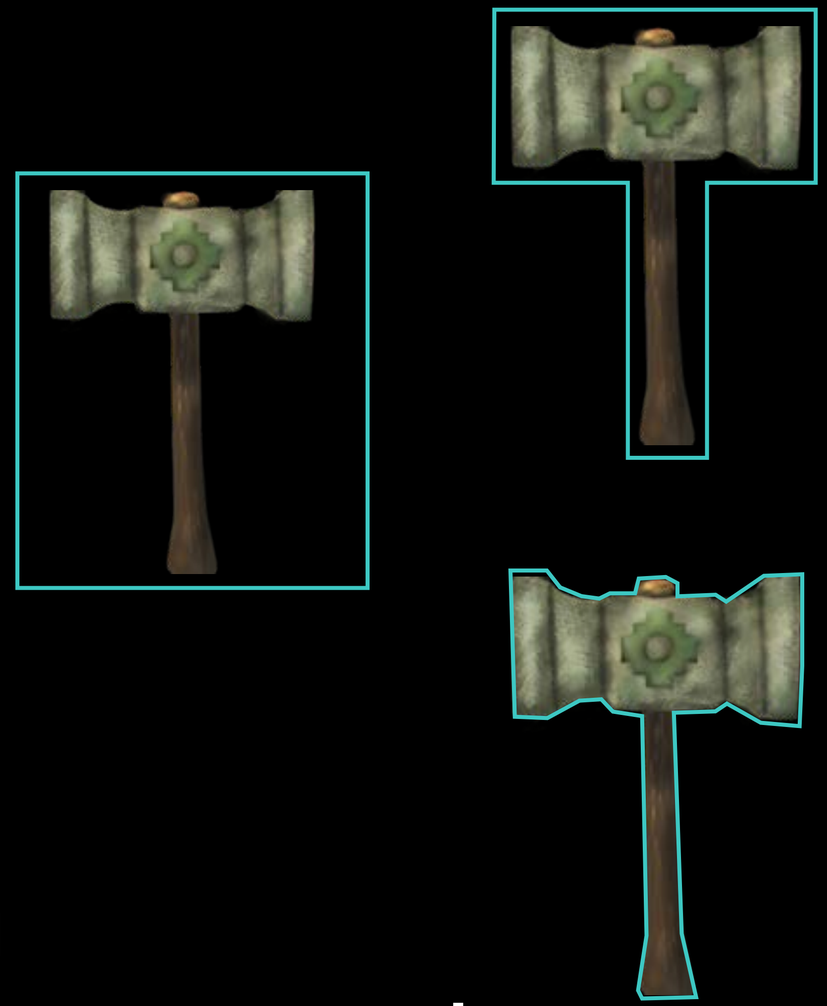

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SpriteKit Tools

Norman Wang

SpriteKit Tools

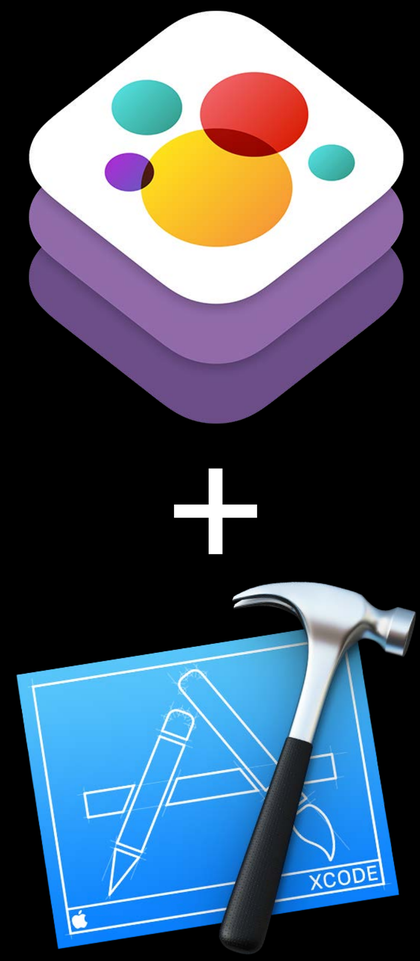
Introduction

Games rely on tools for iteration and scalability

- Game logic, animation, or art assets

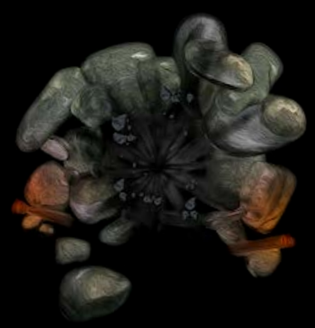
Improve work flow and build game faster

Focus on building the gameplay



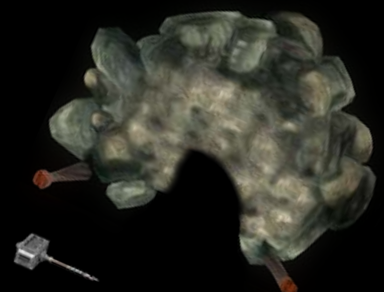
SpriteKit Tools

Texture atlas



cave_destroyed.png

big_tree_base.png



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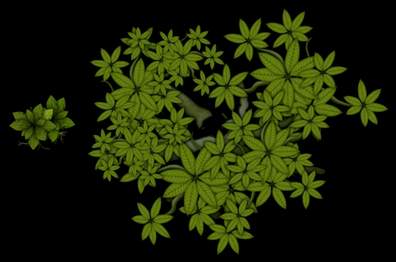
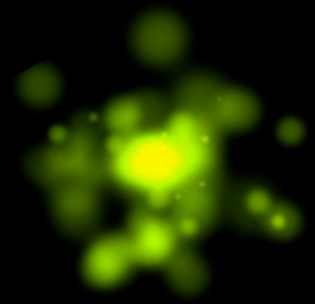
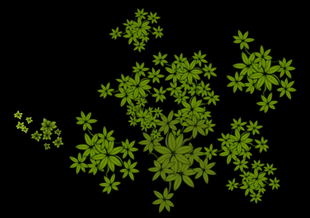


big_tree_middle.png

cave_top.png



minionSplort.png



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SpriteKit Tools

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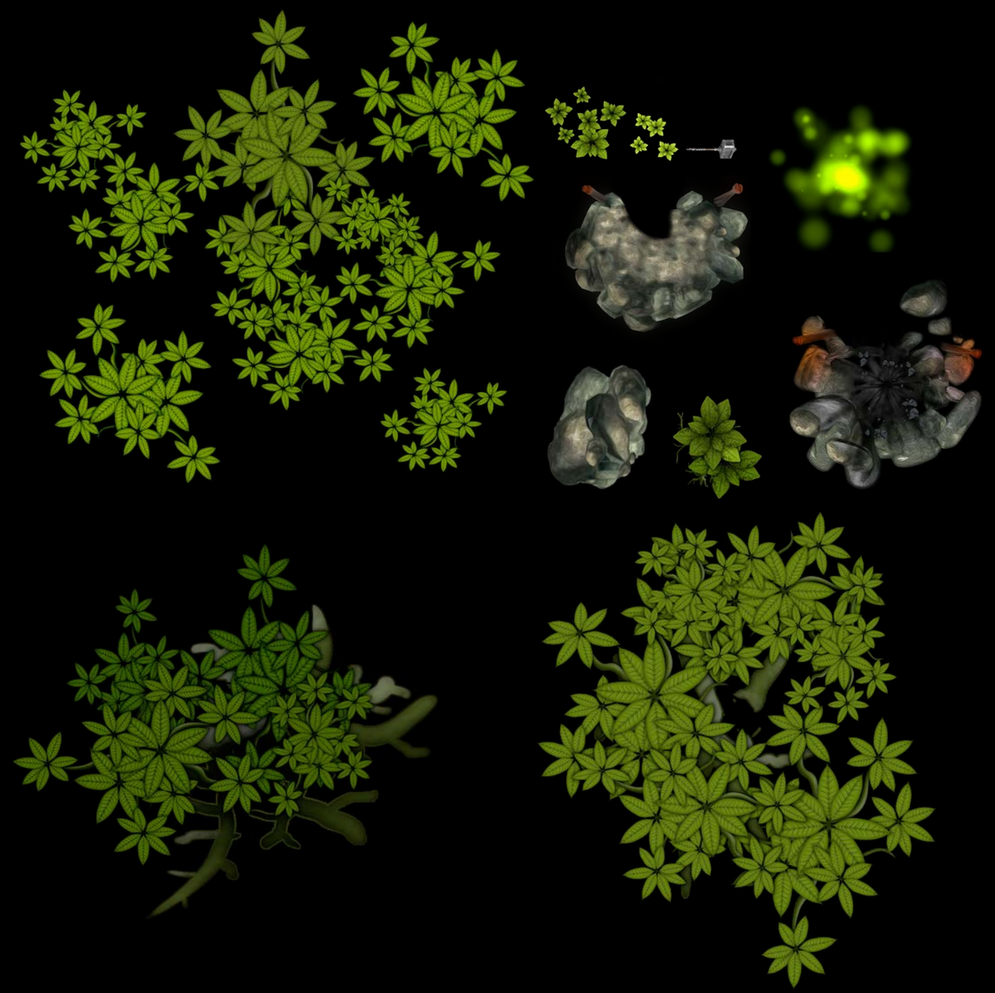

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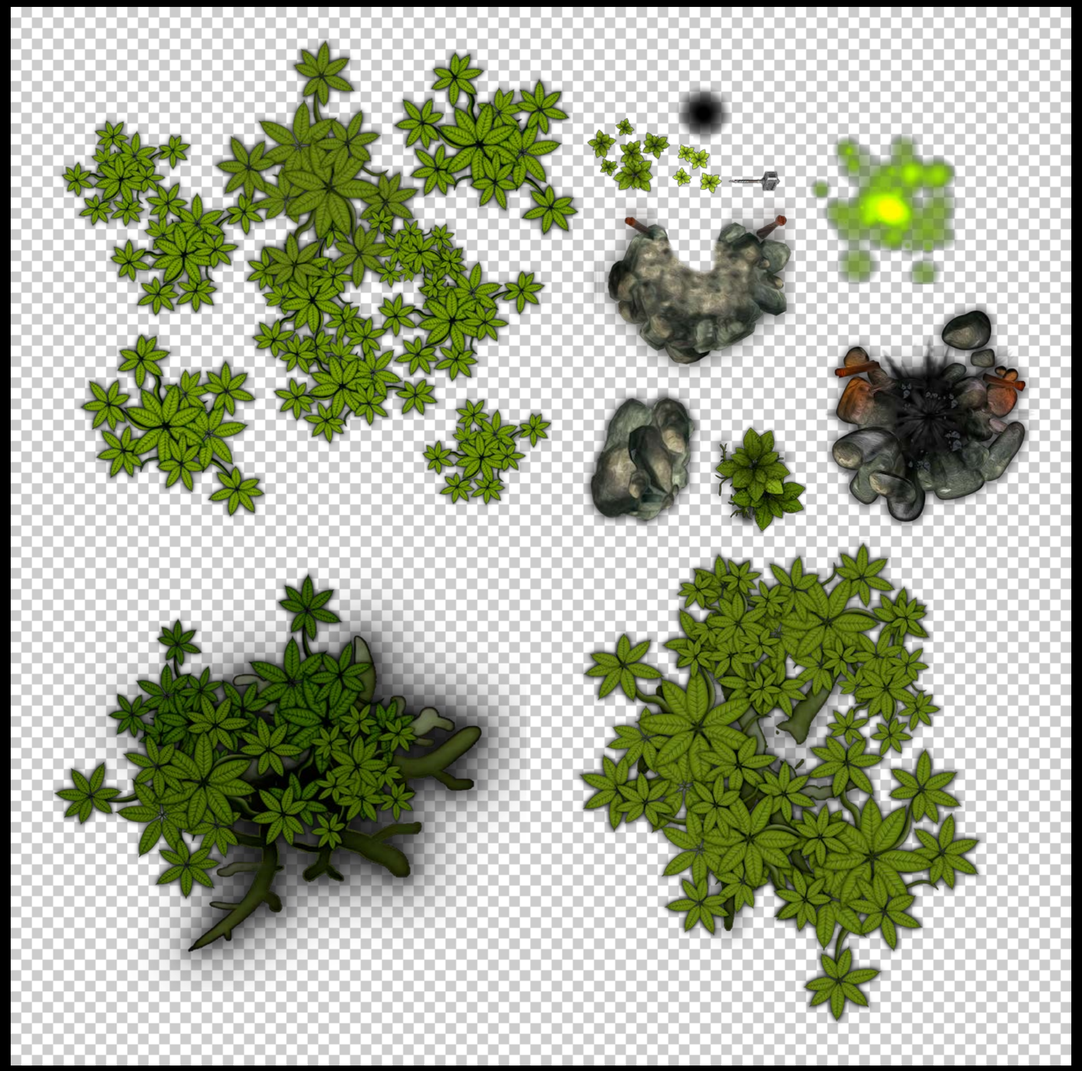
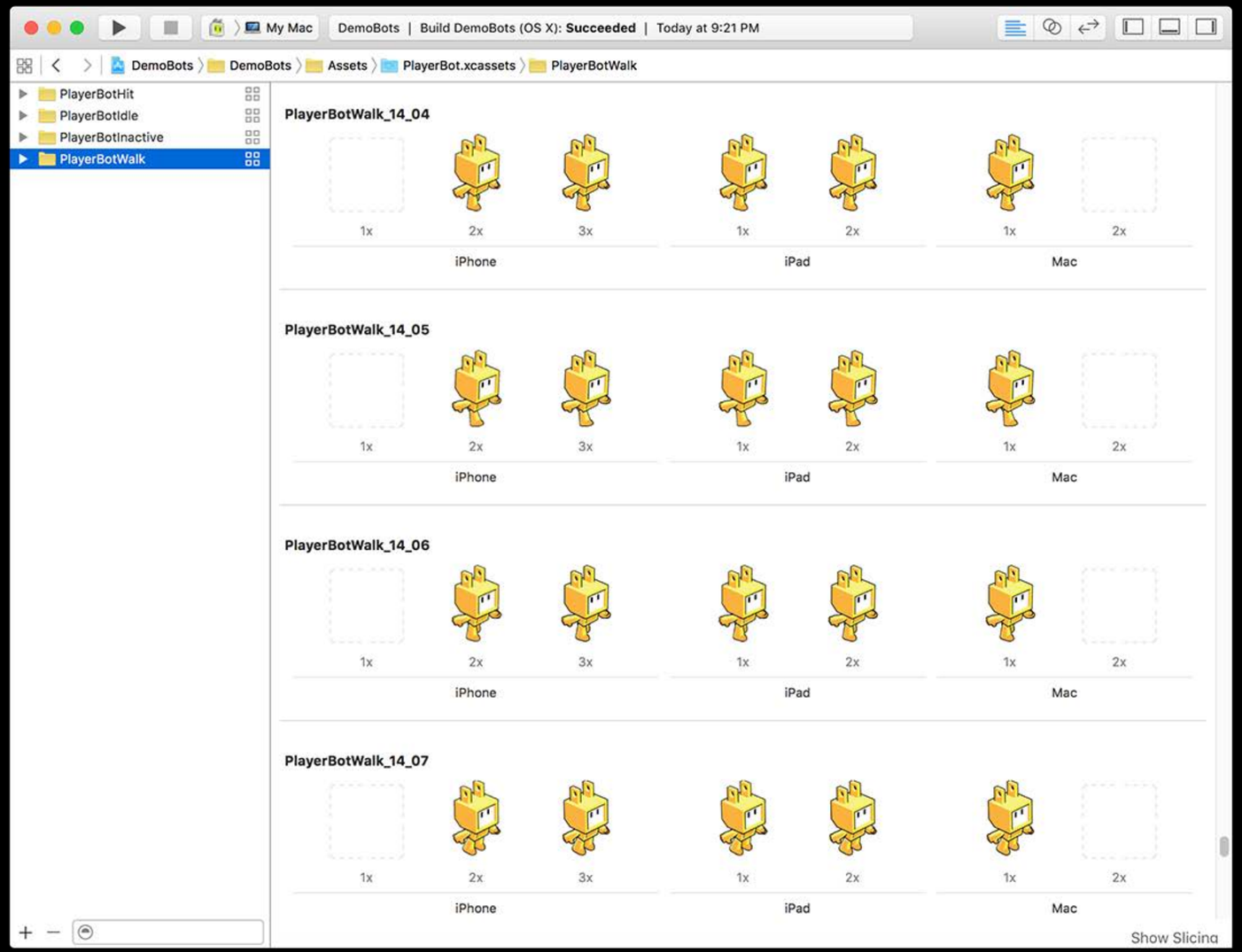


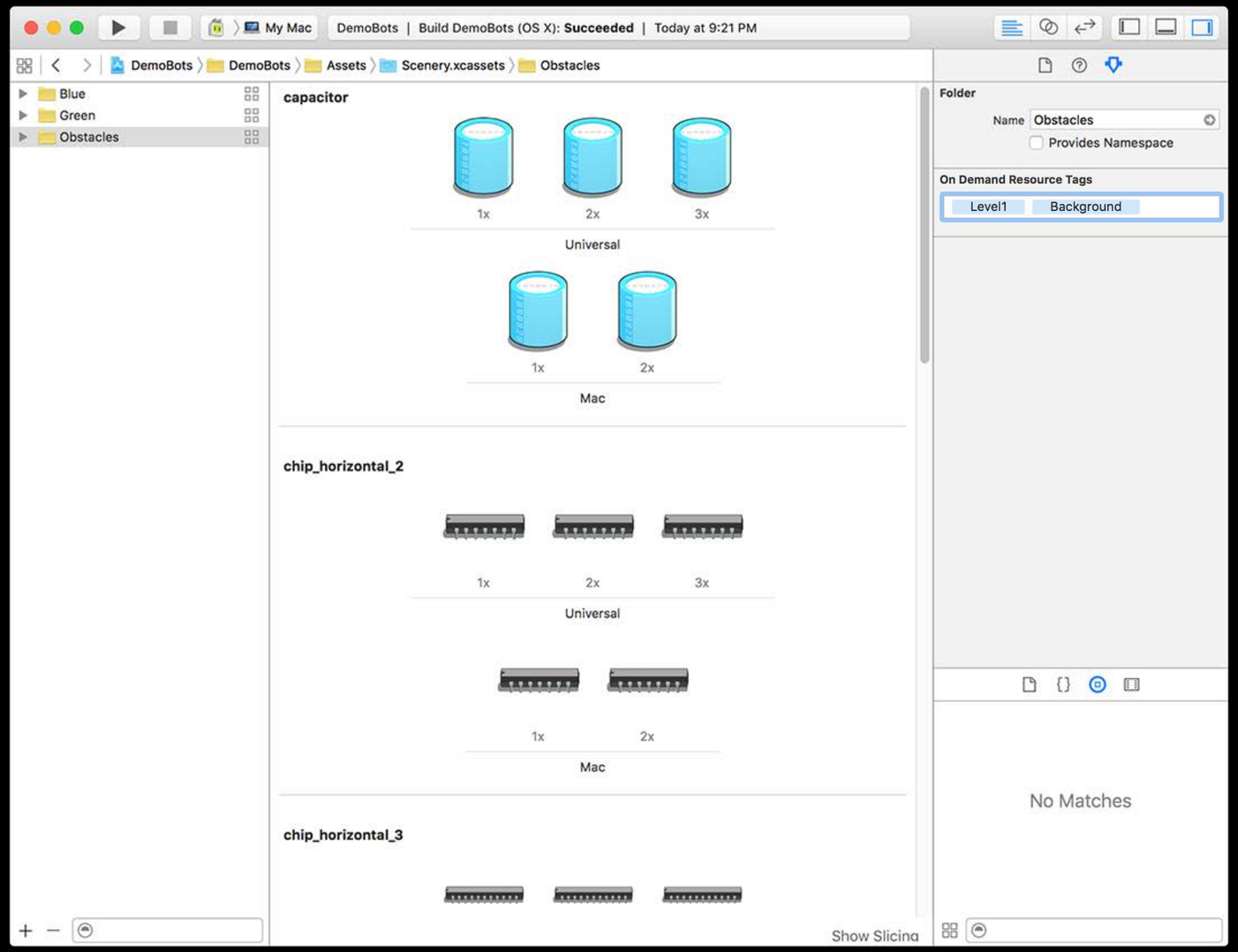
SpriteKit Tools

Texture atlas in Asset Catalog



SpriteKit Tools

Texture atlas with On Demand Resources



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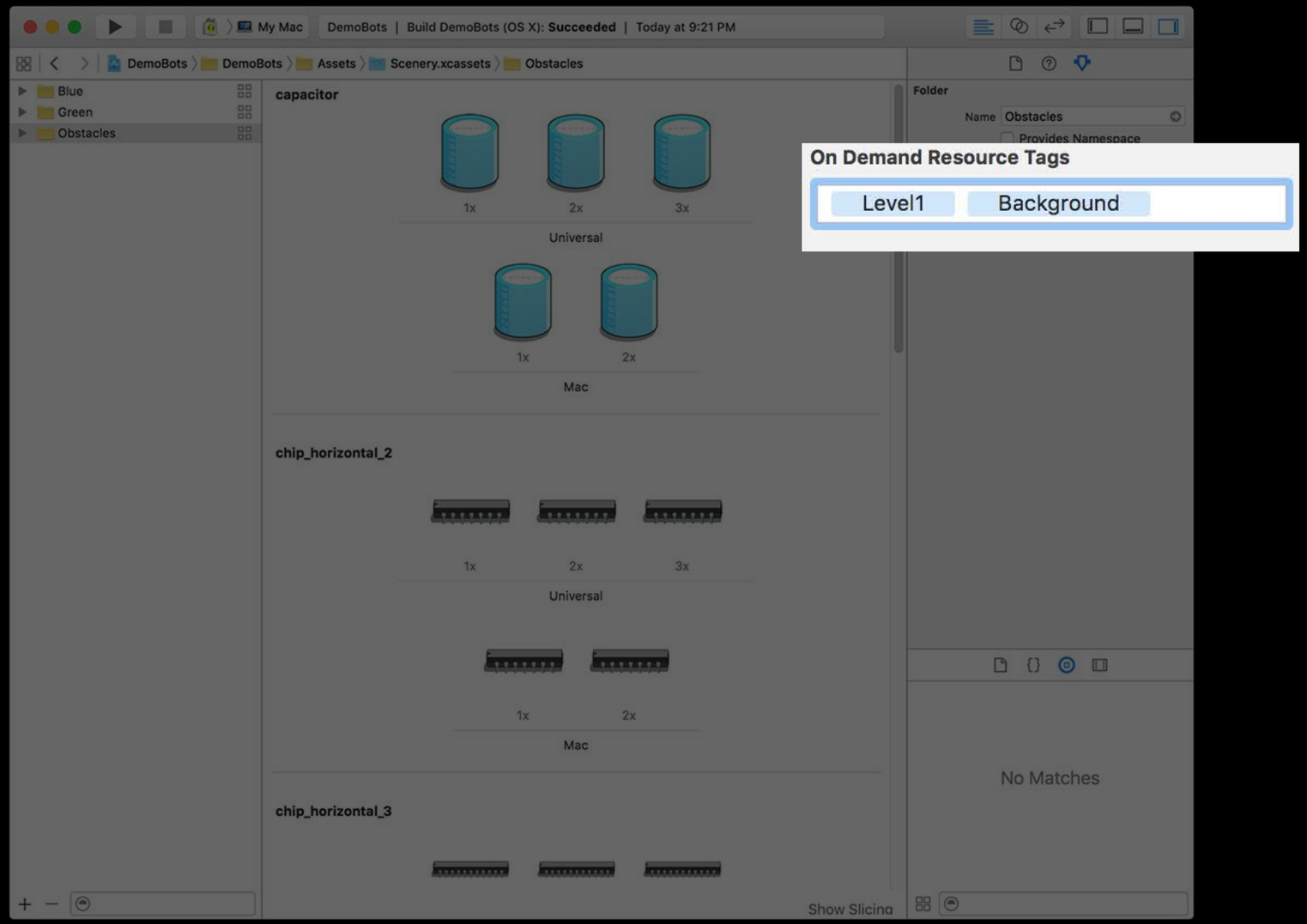
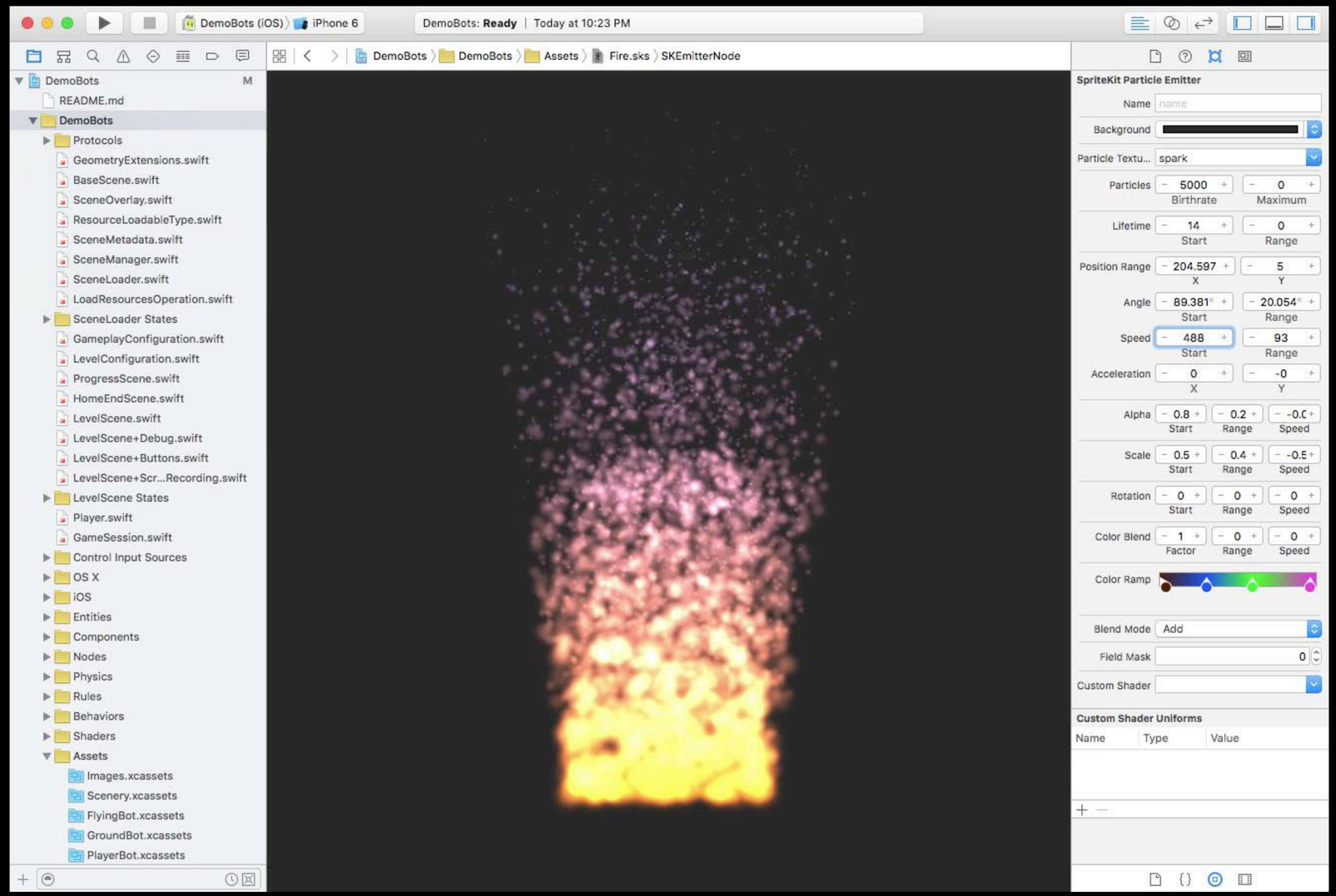


SpriteKit Tools

Particle editor



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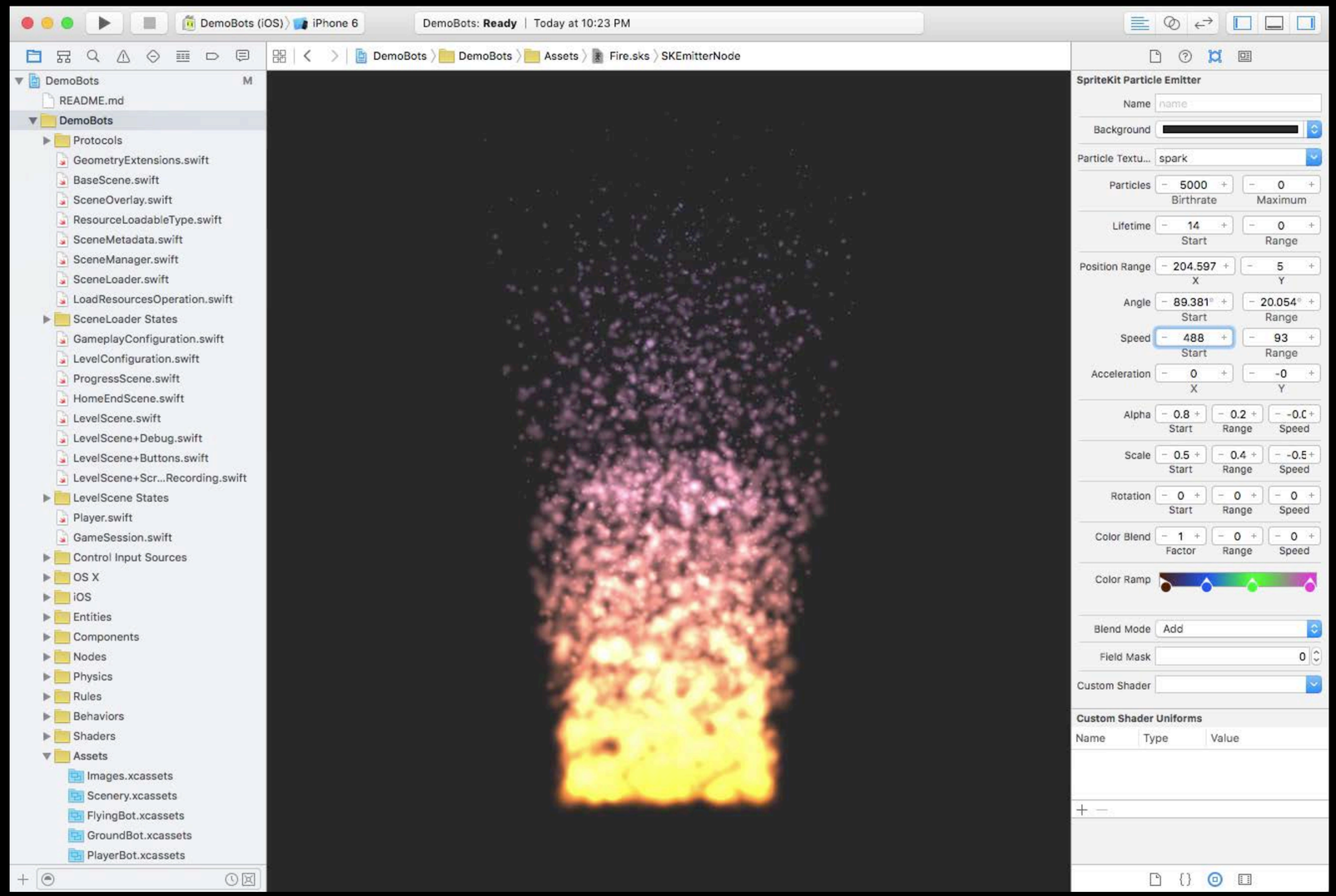
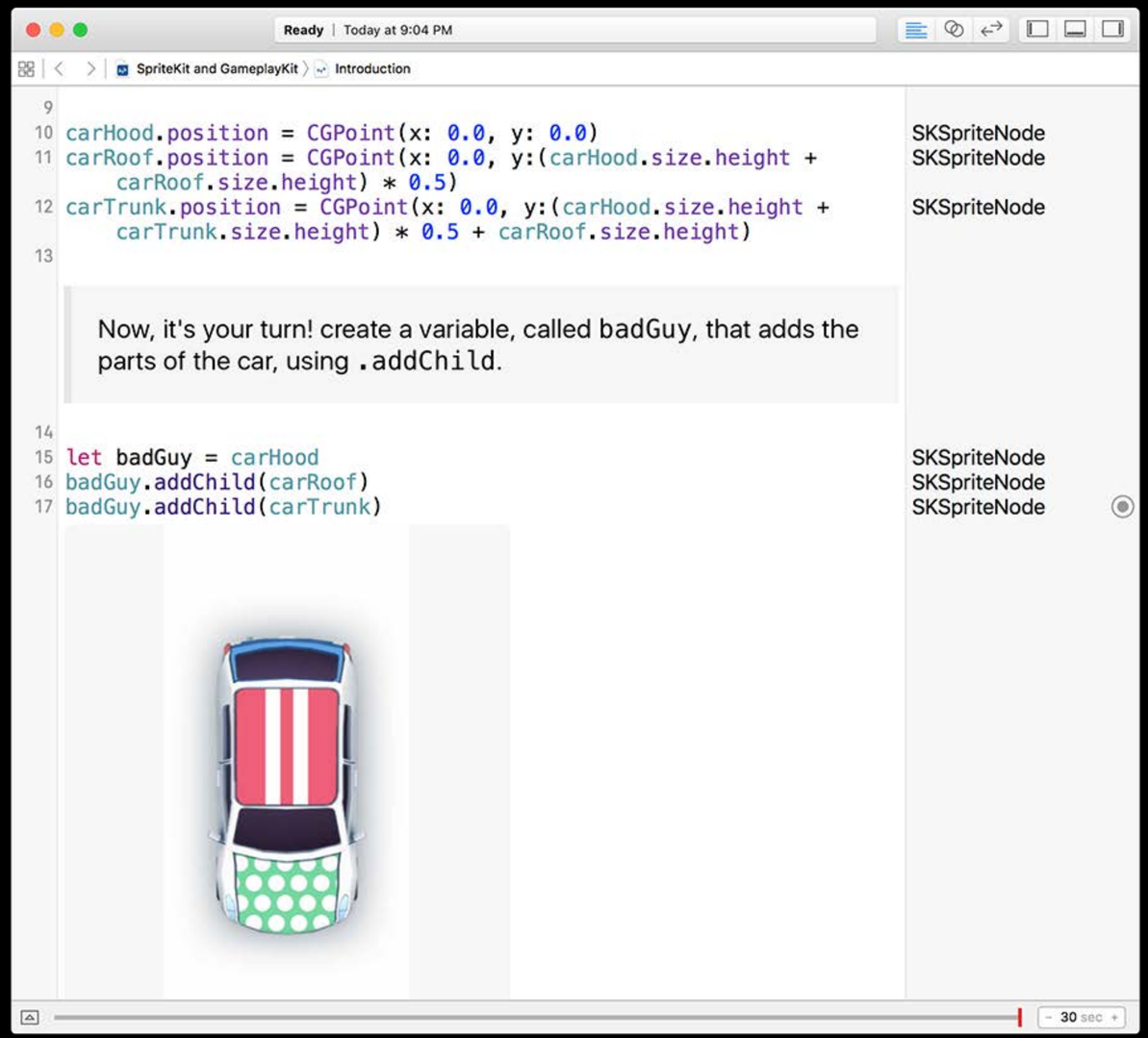


SpriteKit Tools

Xcode Quicklook



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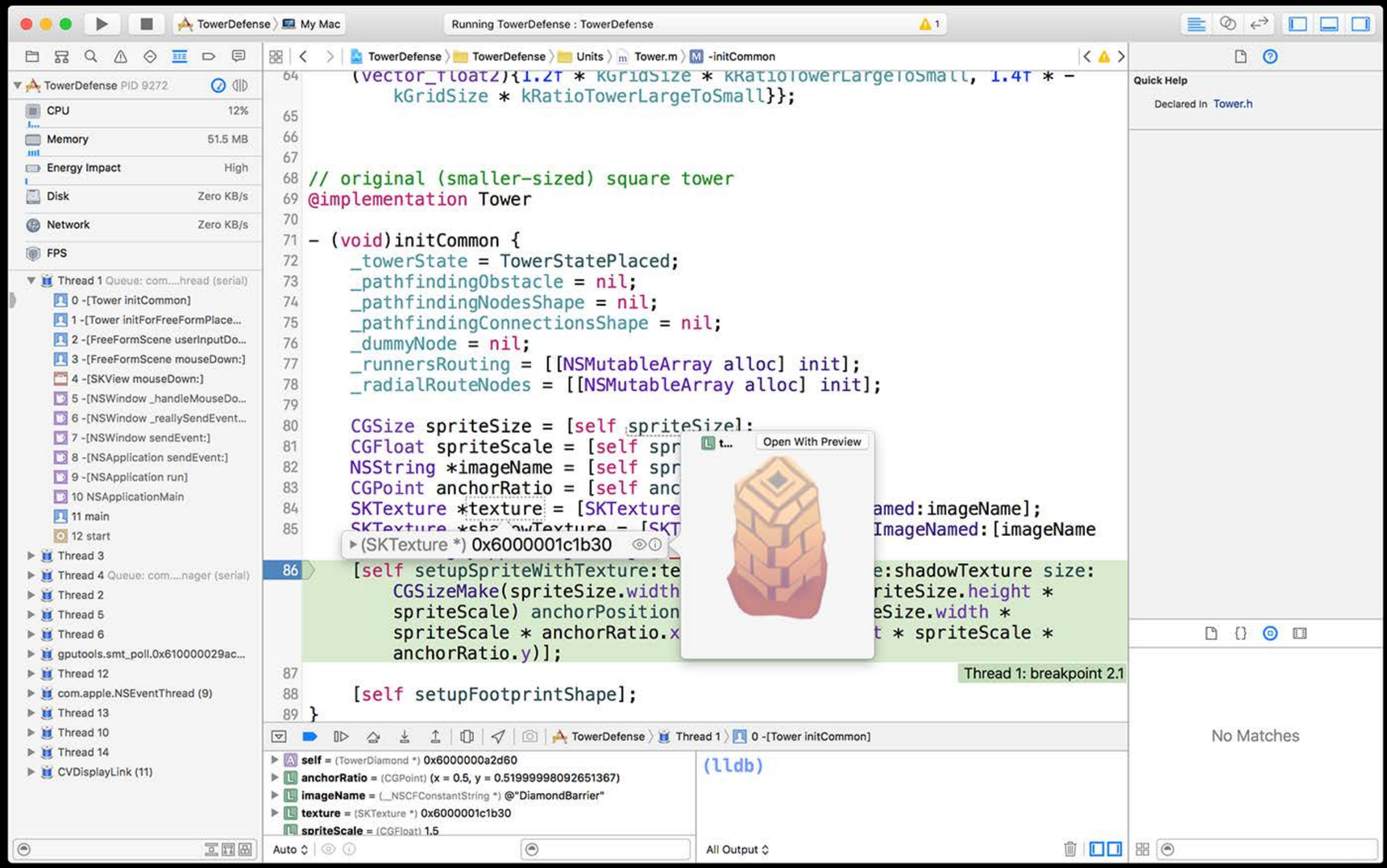


SpriteKit Tools

2D editor

Full visual editor for 2D games

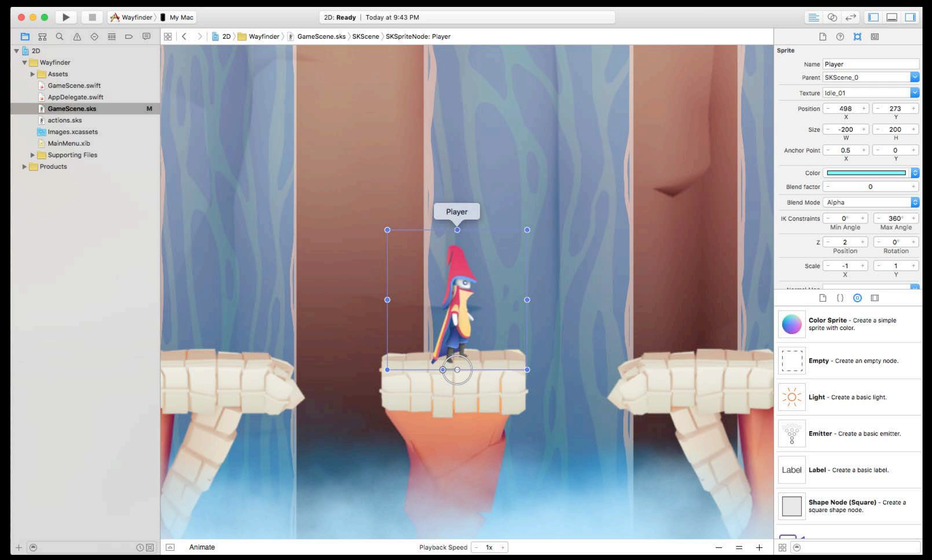
No more compile and check

No code required

Visual layout

Live physics simulation

Live shader editing



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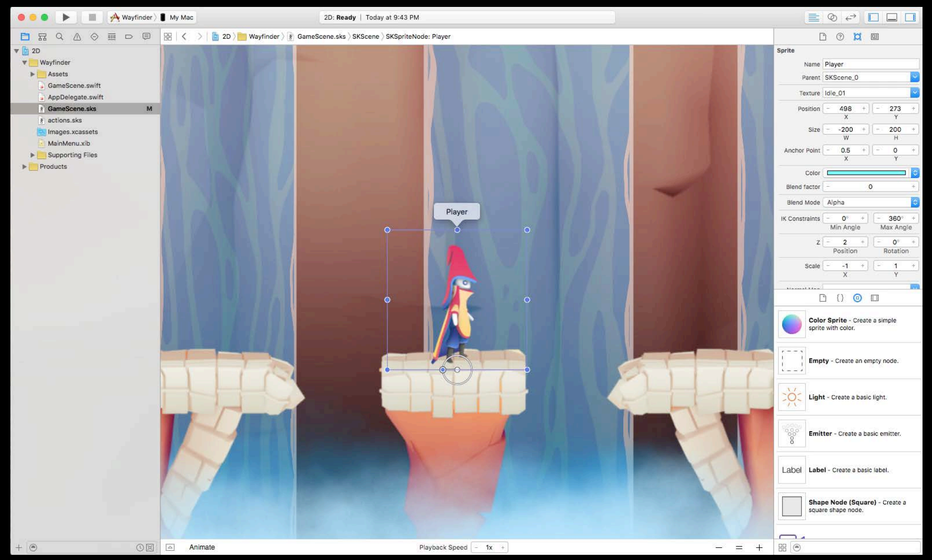


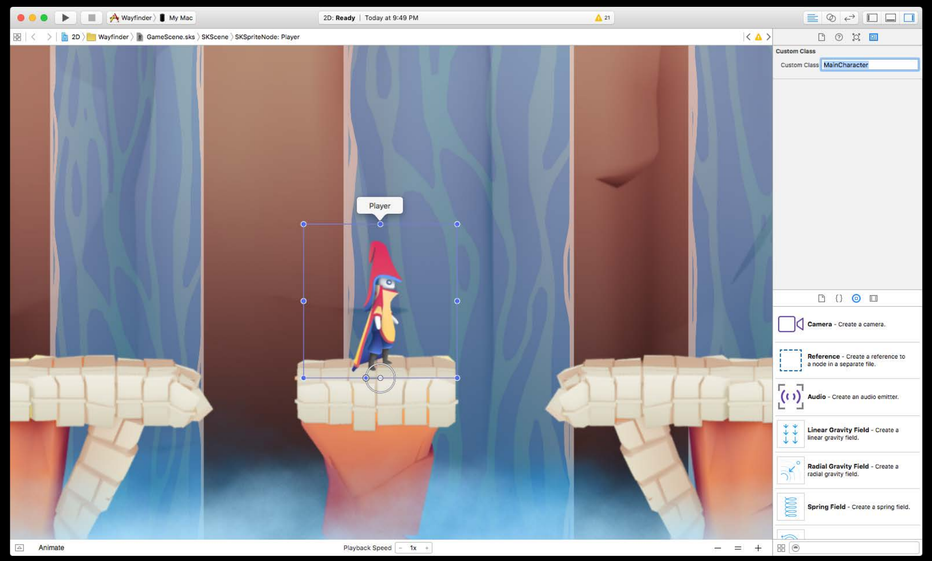
SpriteKit Tools

New features

More editor features this year

- Custom classes
- Camera
- Audio node
- Reference node

Increased collaboration and reusability



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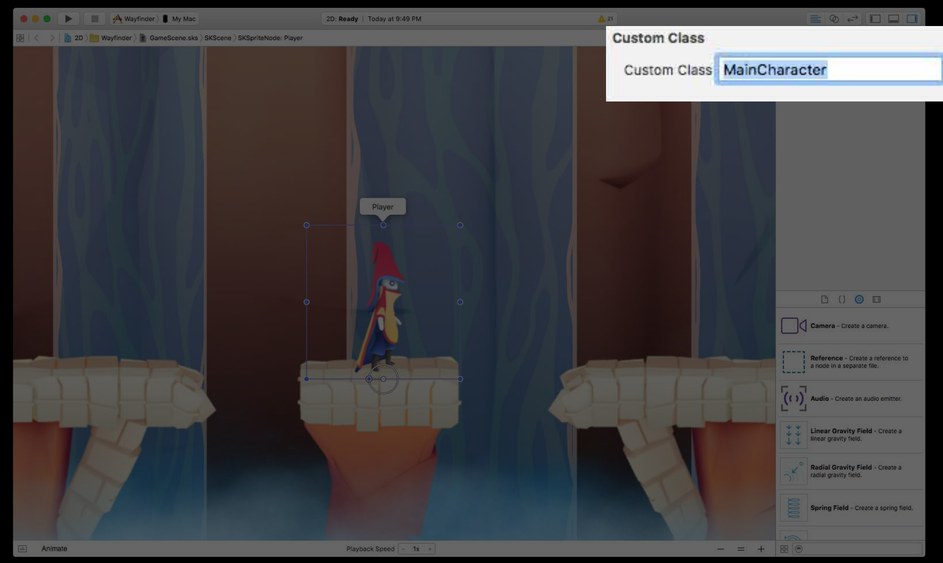

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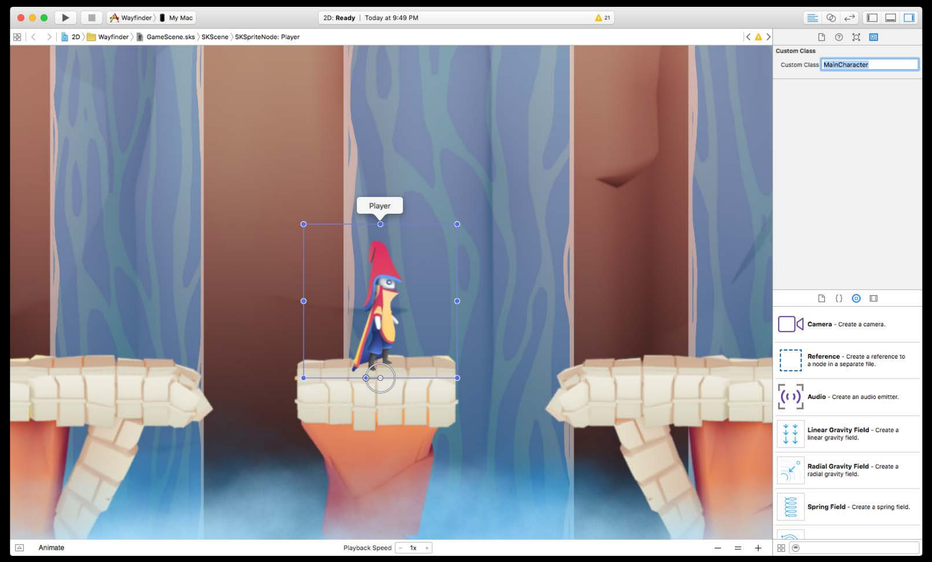

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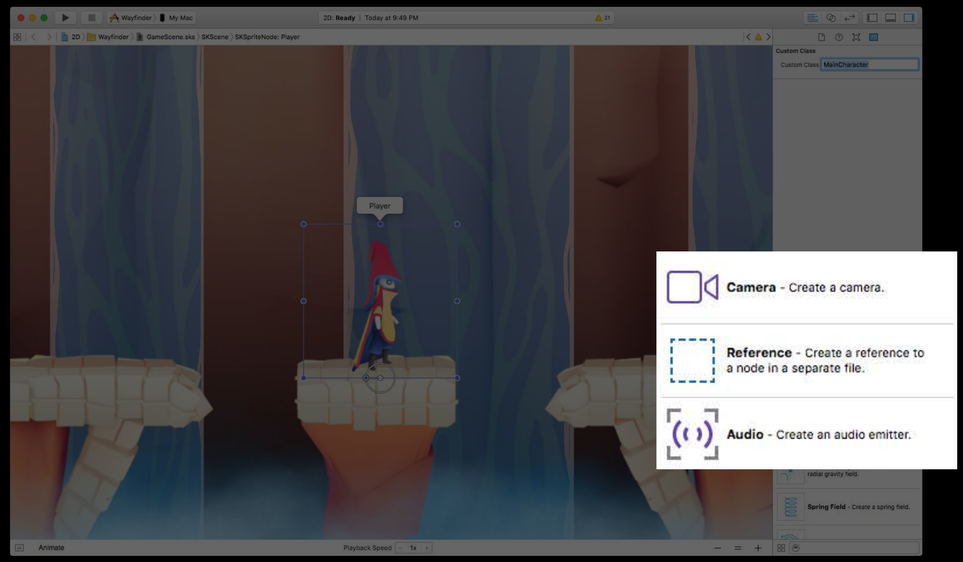


SpriteKit Tools

Action editor

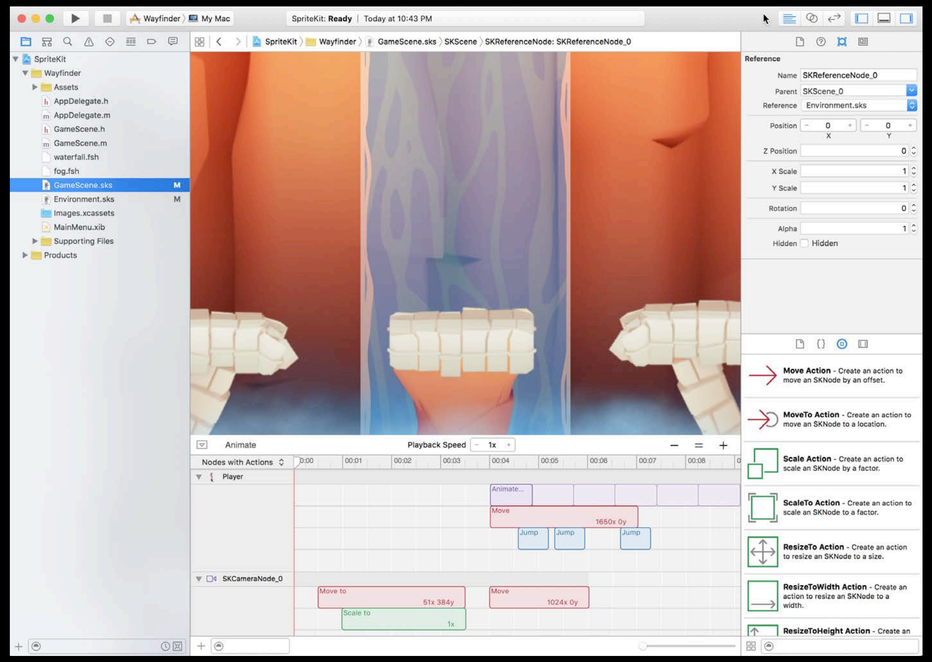
All new action editor

Timeline based

Realtime preview

2D and 3D support

Cinematic and Interactive animations



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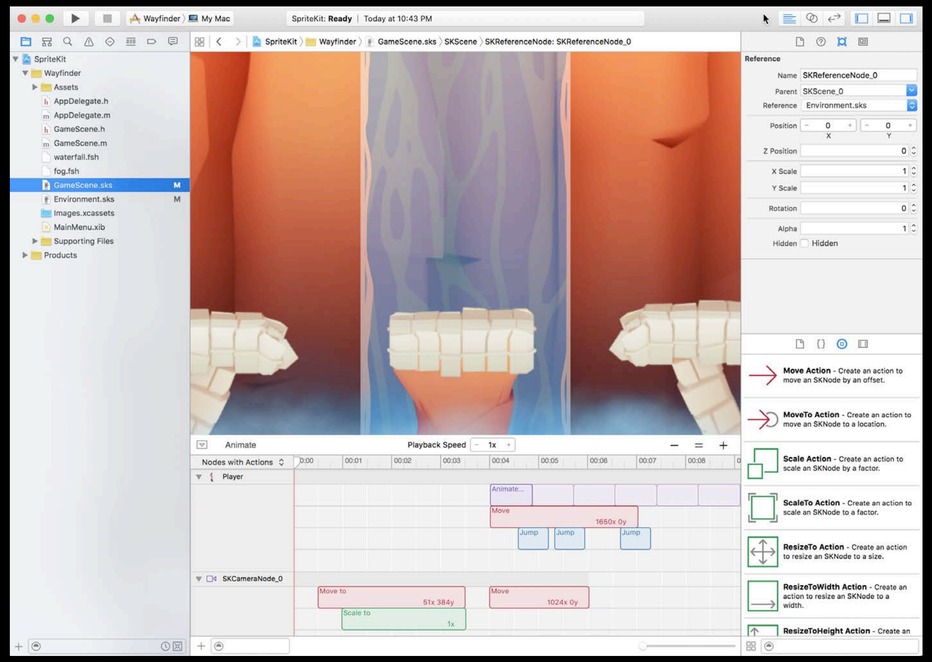


SpriteKit Tools

References and instancing

Instances of SKAction and SKNode

Reusable components

Data-driven model

Share across multiple projects

Separate resource files

No code required

SpriteKit Tools

Referenced actions

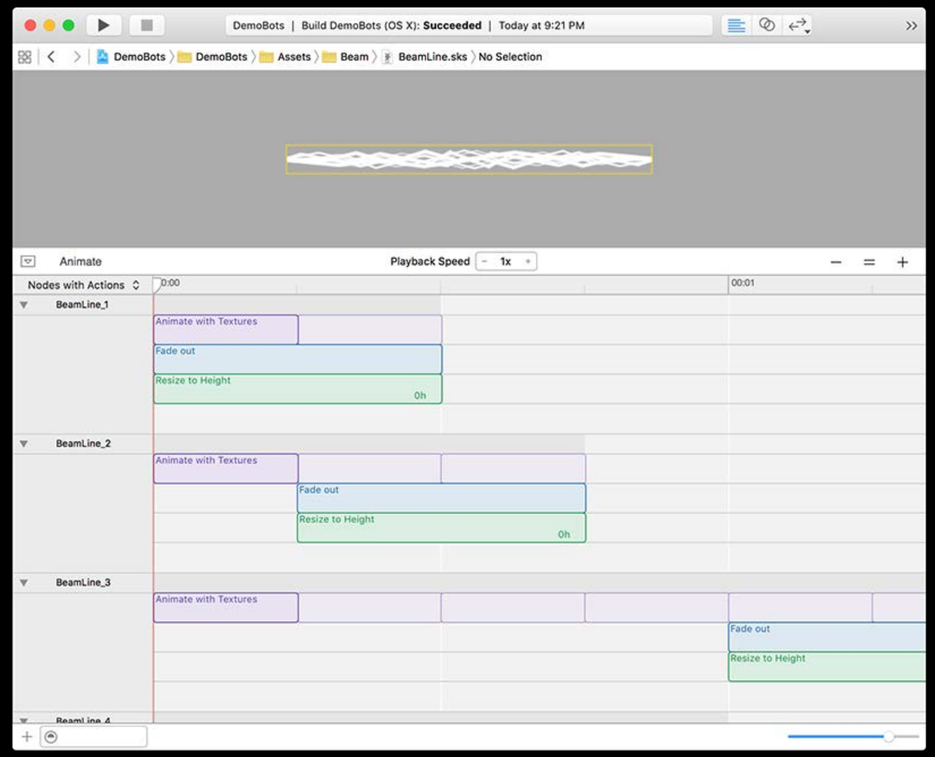
Create once, reuse on multiple nodes, projects

Reference via editor or code

Leveraging the new `SKAction actionNamed:`

Build a custom library of actions

Build very complex actions



SpriteKit Tools

Referenced nodes

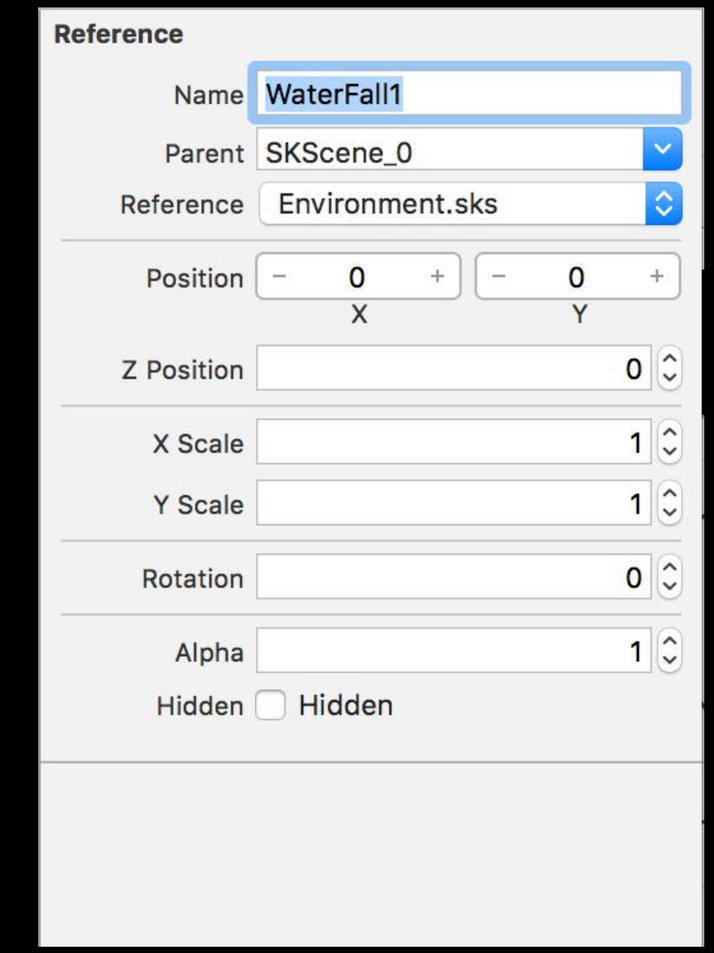
Create once, reuse on multiple nodes, projects

Reference via editor or code

Leveraging the new SKReferenceNode API

Build a custom library of nodes

Share between multiple scenes, and projects



SpriteKit Tools

Referenced nodes

Create once, reuse on multiple nodes, projects

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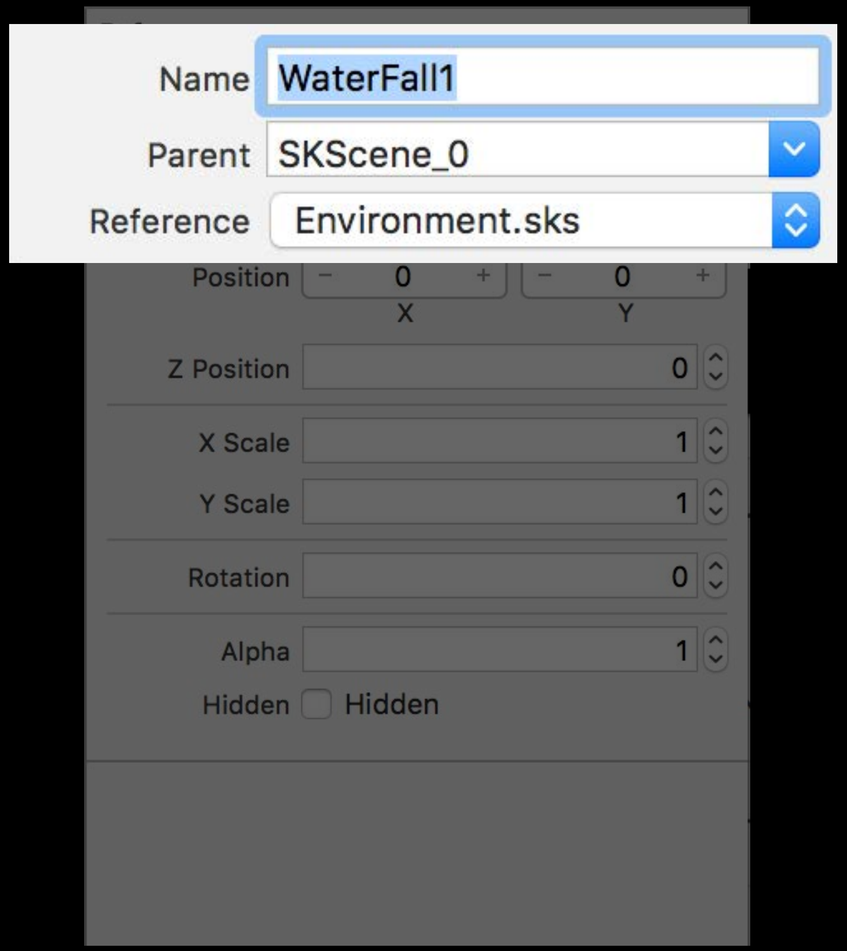

Demo

Building a SpriteKit game

Tyler Casella

Summary

Exciting year for SpriteKit developers

- Audio node, Camera node, Reference node, Reference action
- All new timeline based action editor
- Asset Catalog integration
- App Thinning
- On Demand Resources
- Metal integration
- GameplayKit integration

More Information

SpriteKit Documentation and Videos
http://developer.apple.com/spritekit

Apple Developer Forums
http://developer.apple.com/forums

Developer Technical Support
http://developer.apple.com/support/technical

General Inquiries
Allan Schaffer, Game Technologies Evangelist
aschaffer@apple.com

Related Sessions

Going Social with ReplayKit and Game Center	Mission	Wednesday 1:30PM
Enhancements to SceneKit	Mission	Wednesday 2:30PM
Introducing GameplayKit	Mission	Thursday 11:00AM
Deeper into GameplayKit with DemoBots	Mission	Thursday 1:30PM

Related Labs

SpriteKit Lab	Graphics B	Wednesday 11:00AM
Game Controllers Lab	Graphics D	Thursday 2:30PM
GameplayKit Lab	Graphics B	Thursday 2:30PM
SpriteKit Lab	Graphics C	Friday 10:00AM

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