



Connect your device to application

GAME ENGINE ON ANDROID

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Agenda

We Love Game

Why need Game Engine

What is Game Engine

How many Game Engine

Get one for You

Implementation



We Love Game



Do You Love Playing Game?

I DO

Everybody Love Playing Game

- My Father plays Solitaire
- My Sister plays Labyrinth
- My Colleague plays AngryBird
- I play Dracula X, Super Mario III, Final Fantasy III, Tetris, Frozen Bubbles, ZooKeeper, Dragon Ball Z2 Z3, DDR...blah blah



Why Do We Love a Game

- **Art**

- It looks awesome

- **Story**

- It is realistic

- **Social**

- We may make friends via game

- By exchanging information
 - By sharing common experience

- **Fun**

- The most important part of a game



GAME EVERYWHERE



Playing Game Everywhere

- FC
- MD, SFC
- SS, PS
-
- NOW ?

Long time ago we use GameBoy in toilet. Now we use mobile phone.



Why need Game Engine



Create a Game

- Everyone has creativity
- We might want to clone a existing game
- We have a good idea for game
- Writing Game is COOL, and We are COOL!!



Game Engine helps us

- **Faster Development**
- **Easier Development**

You might don't know OpenGL...

- **Abstract Layer**

You might need to port your game to another platform....

- **Focus on FUN**

If you spend more time on fighting with code, you has less time to think about your game, especially most of us are independent programmer.



What is Game Engine



Game Engine might has

- Sprite, Scene, Animation
- Modifier
- Particle System
- Event Handling
- Game Thread
- Renderer
- Physics Engine
- Collision Detection
- Script Language



Normal Android application



An Activity contains some Views. We interactive with some activities



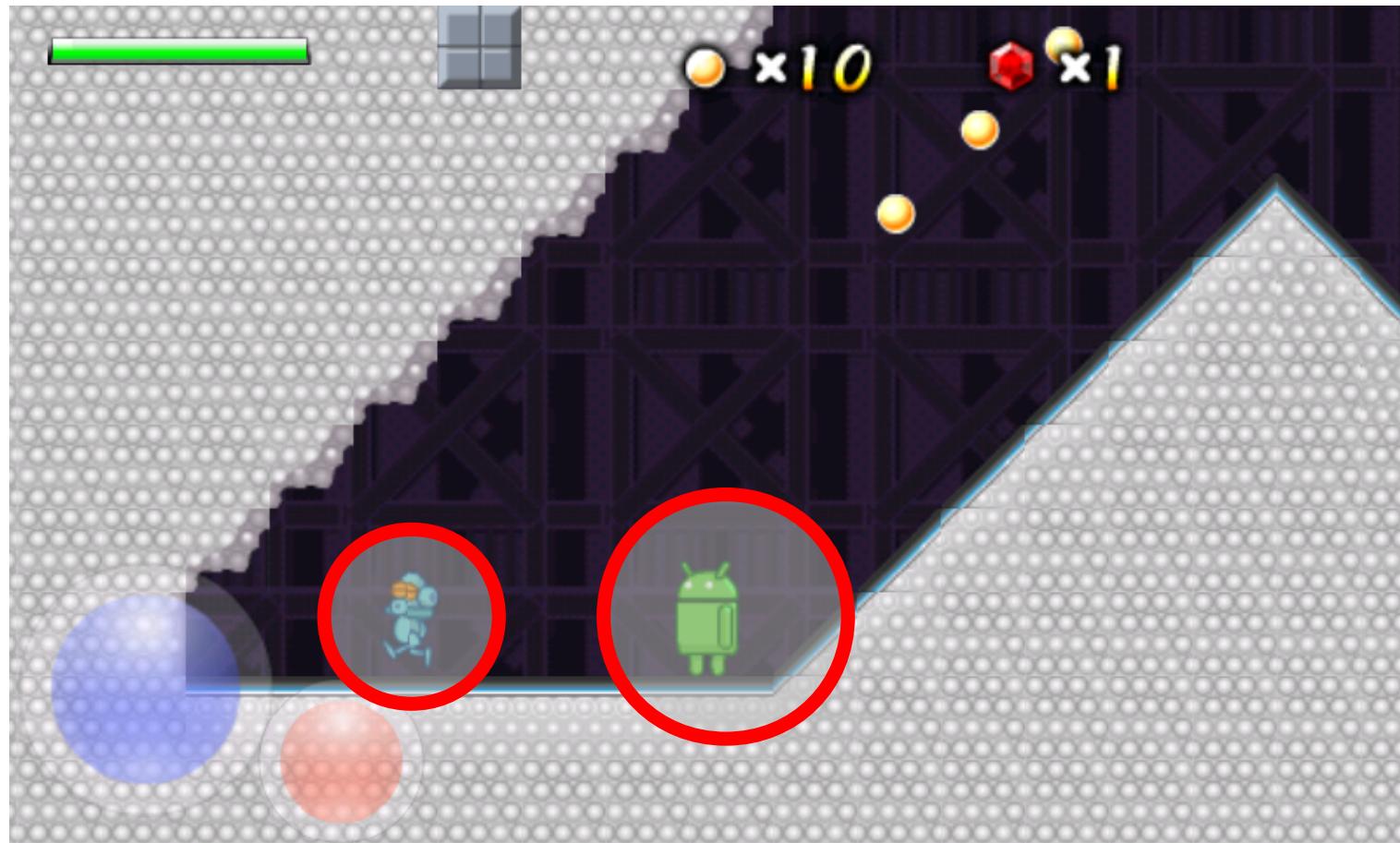
In a Game



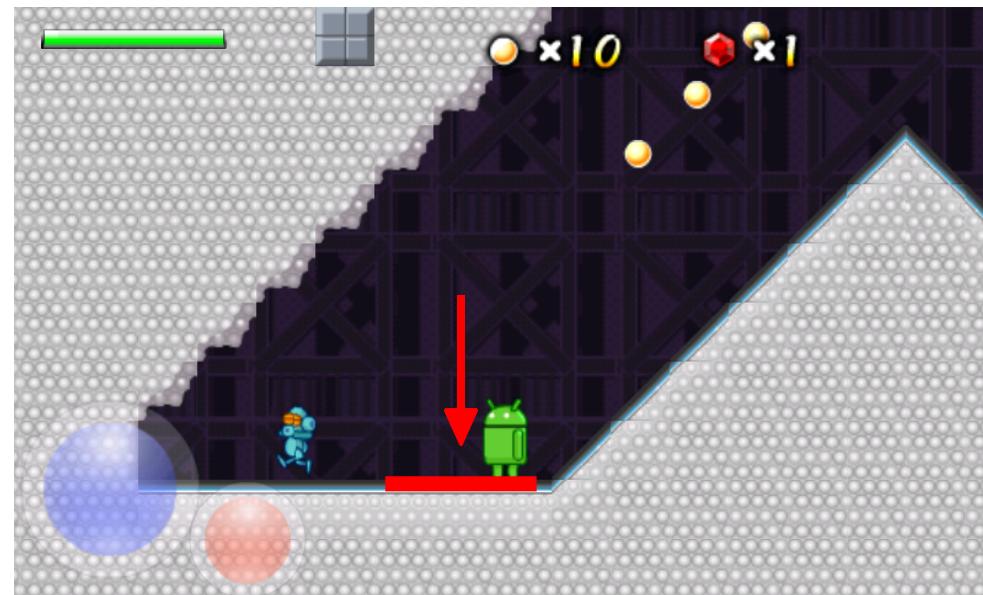
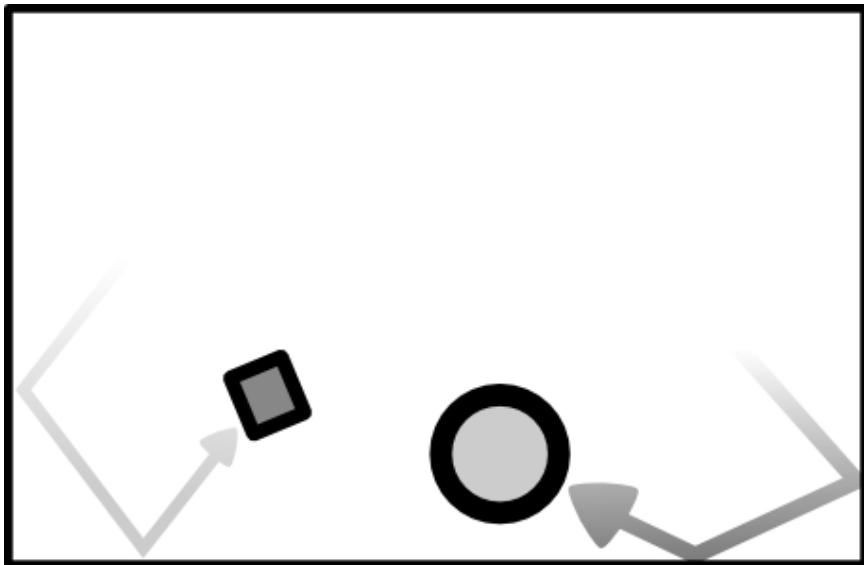
An Activity holds one GLSurfaceView.
Game Engine switch one of scenes to display



Sprite



Collision Detection



How many Game Engine on
Android



Lots of Game Engines

If you search "android game" at Google Code, you will see lots of game engines.

Some of them are Graphics Engine

- Age
- Angle
- Candroidengine
- Catcake
- Cloak
- Cocos2d
- Forget3d
- JMonkeyEngine
- Replicasland
- Rokon
- AndEngine
-more



Target

- There are too many good game engines, I can only choose some of them.

Rokon

Cocos2D

AndEngine

Important: I believe there should be some great game engine but I missed



Rokon

- **Rokon 2.0.3**

<http://rokonandroid.com/tutorials>

<http://code.google.com/p/rokon/>

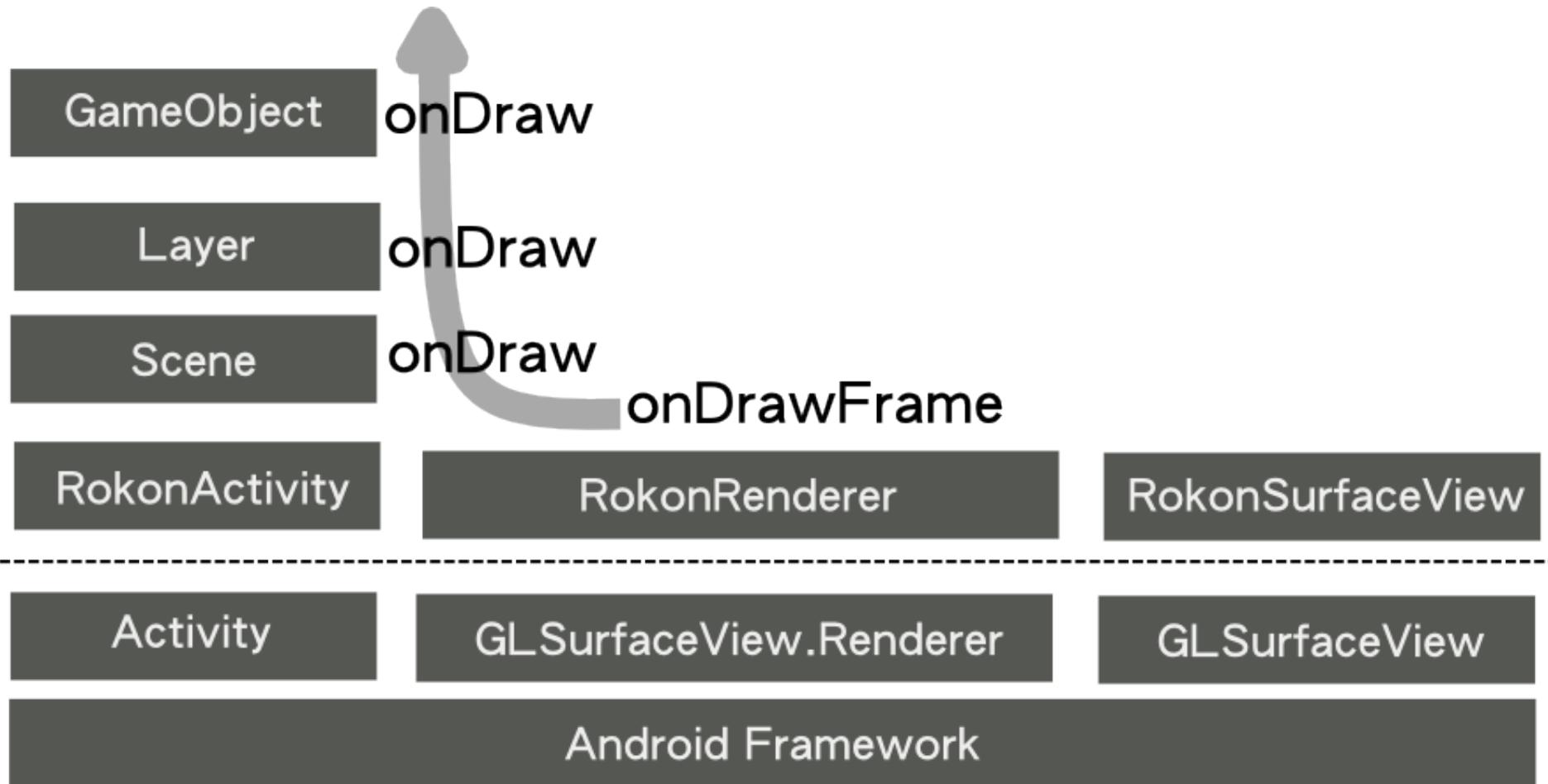
- **Useful staffs**

Sprite, Modifier, Audio, Sprite
Animation, Polygon Collision...blah

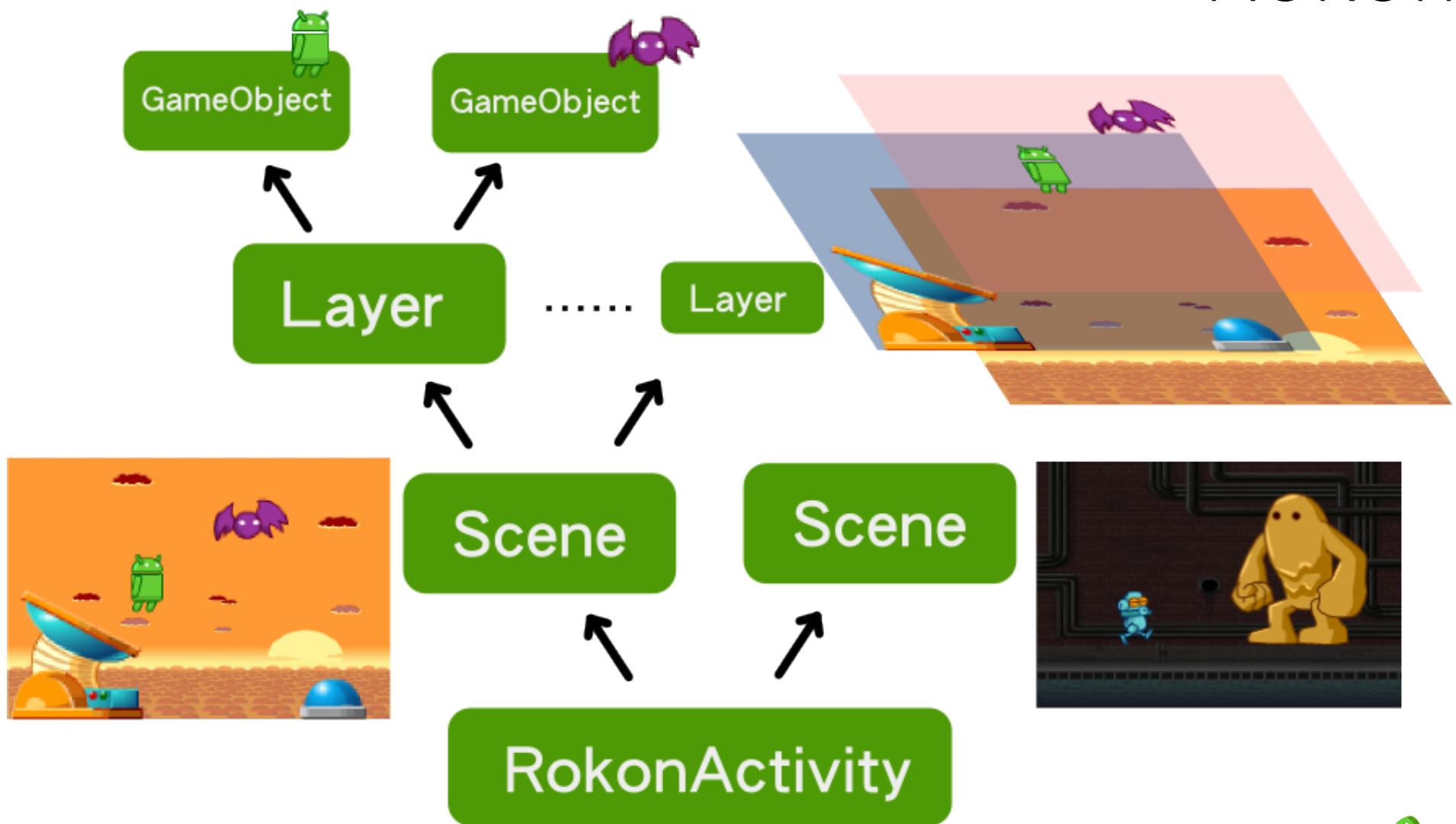
You can see Particle System at
Rokon 1, but nothing about Particle
System at Rokon2 yet.



Rokon



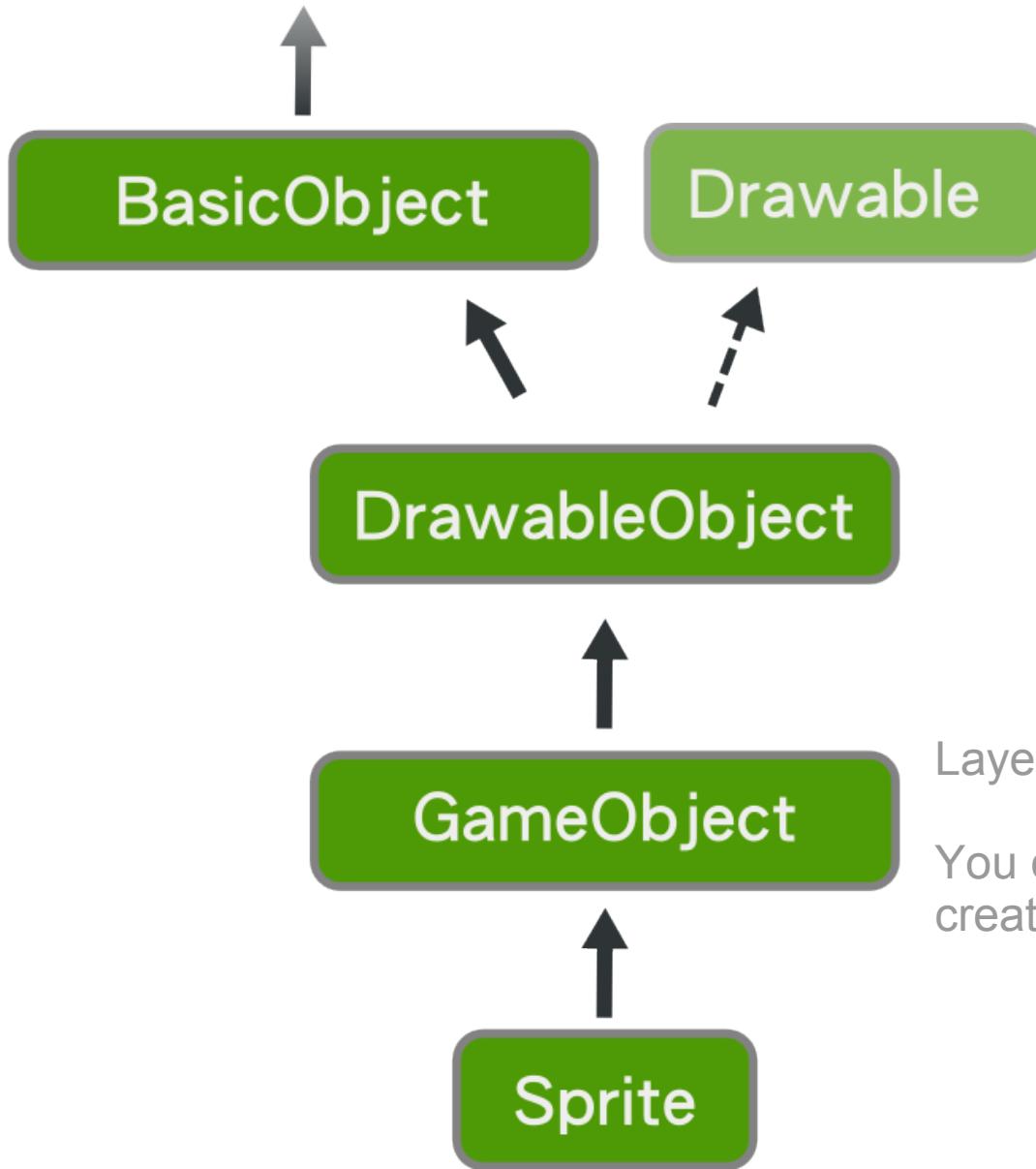
Rokon



images borrows from Replica Island



Rokon



Layer accepts GameObject.

You can extends GameObject and create your own class then add to Layer



Rokon (touchable sprite)

```
TextureAtlas atlas = new TextureAtlas();
Texture textureDoll = new Texture("doll.png");
Sprite mDoll;
mDoll = new Sprite(X, Y, Width, Height);
mDoll.setTexture(textureDoll);
mDoll.setTouchable();
add(0, mDoll);
```

```
@Override
public void onTouchDown(Drawable object, float x, float y,
    MotionEvent event, int pointerCount, int pointerId) {
    if (object == mDoll) {
        android.util.Log.i("Hi", "touch down doll");
    }
}
```



Rokon (Audio)

```
/* Longer audio file */  
RokonMusic.play("audio/music.mp3", true); //true means loop
```

```
/* Shorter sound effects */  
RokonAudio mAudio = new RokonAudio();  
SoundFile mSound = mAudio.createSoundFile(sMenuTap);  
mSound.play();
```

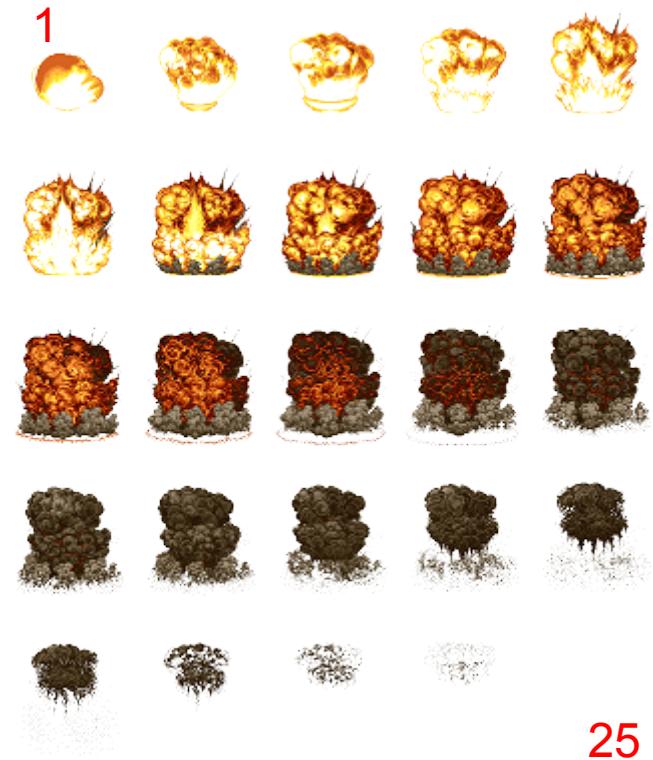


Rokon(Animation)

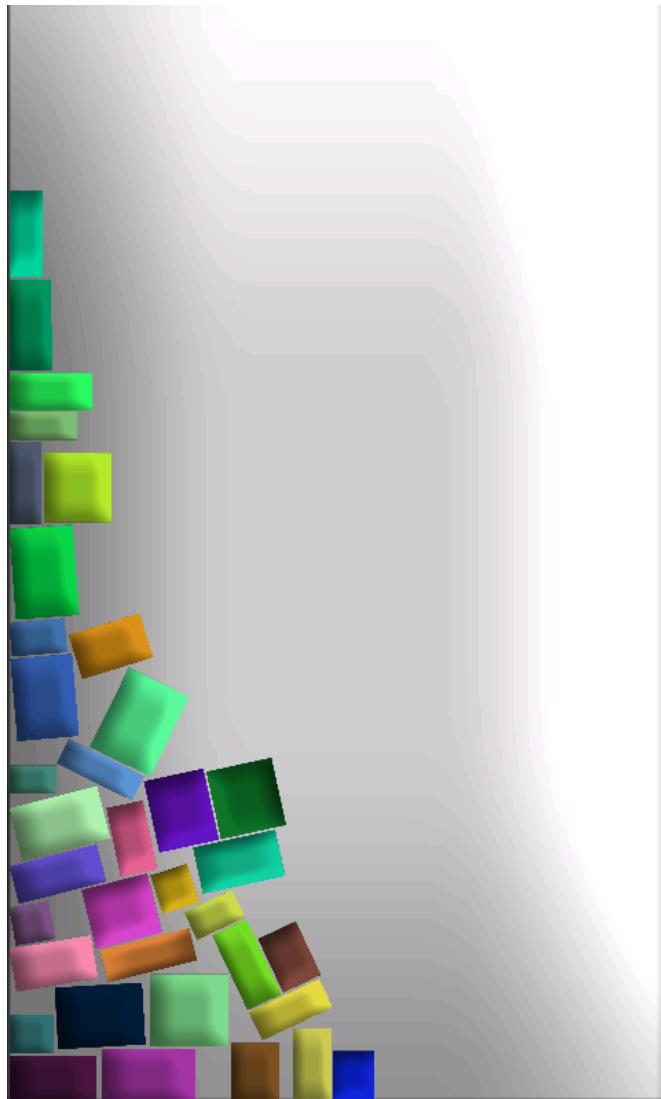
```
Sprite explosion = new Sprite(x, y, width, height);
```

```
Texture texture = new Texture("explosion.png", 5, 5)  
explosion.setTextureTile(texture, 25); // 25 is the lastest one
```

```
/* tile 1 to tile 25, one frame spends 35ms, repeat once */  
explosion.animate(1, 25, 35, 1, false);
```



Rokon(Physical)



[http://code.google.com/p/rokon/source/browse
/examples/donate_app/src/com/stickycoding
/rokondonatefree/DonateScene.java](http://code.google.com/p/rokon/source/browse/examples/donate_app/src/com/stickycoding/rokondonatefree/DonateScene.java)

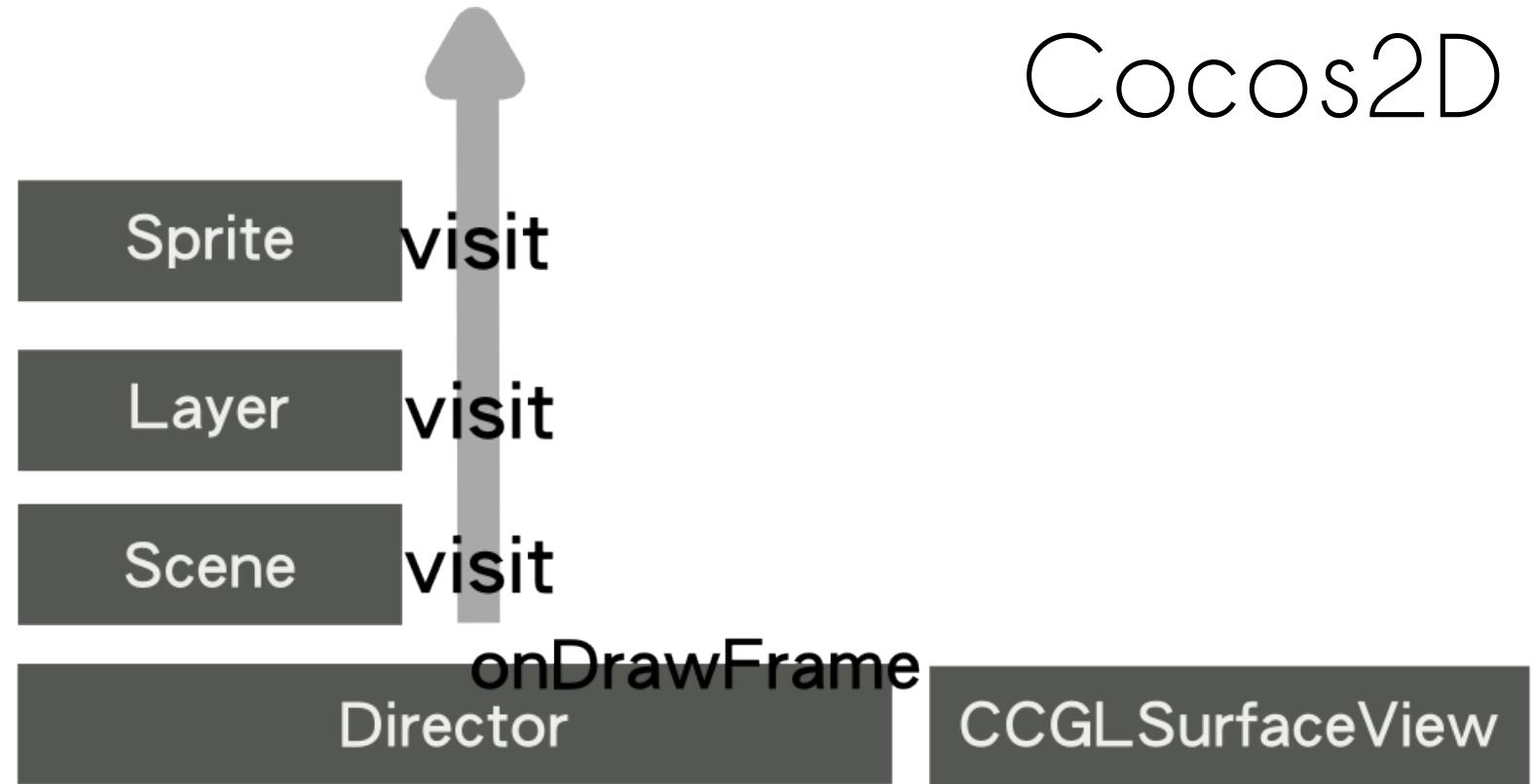


Cocos2D

- Python Cocos2d
 - iPhone Cocos2d
 - Android Cocos2d
- http://code.google.com/p/cocos2d-android/
- Android cocos2d matches version 0.8 of cocos2d for iPhone
 - 0.9 is still in development



Cocos2D



Cocos2D

- CocosNode accepts Action
- Most classes extends CocosNode

Sprite

Label

Scene

Layer

ColorLayer

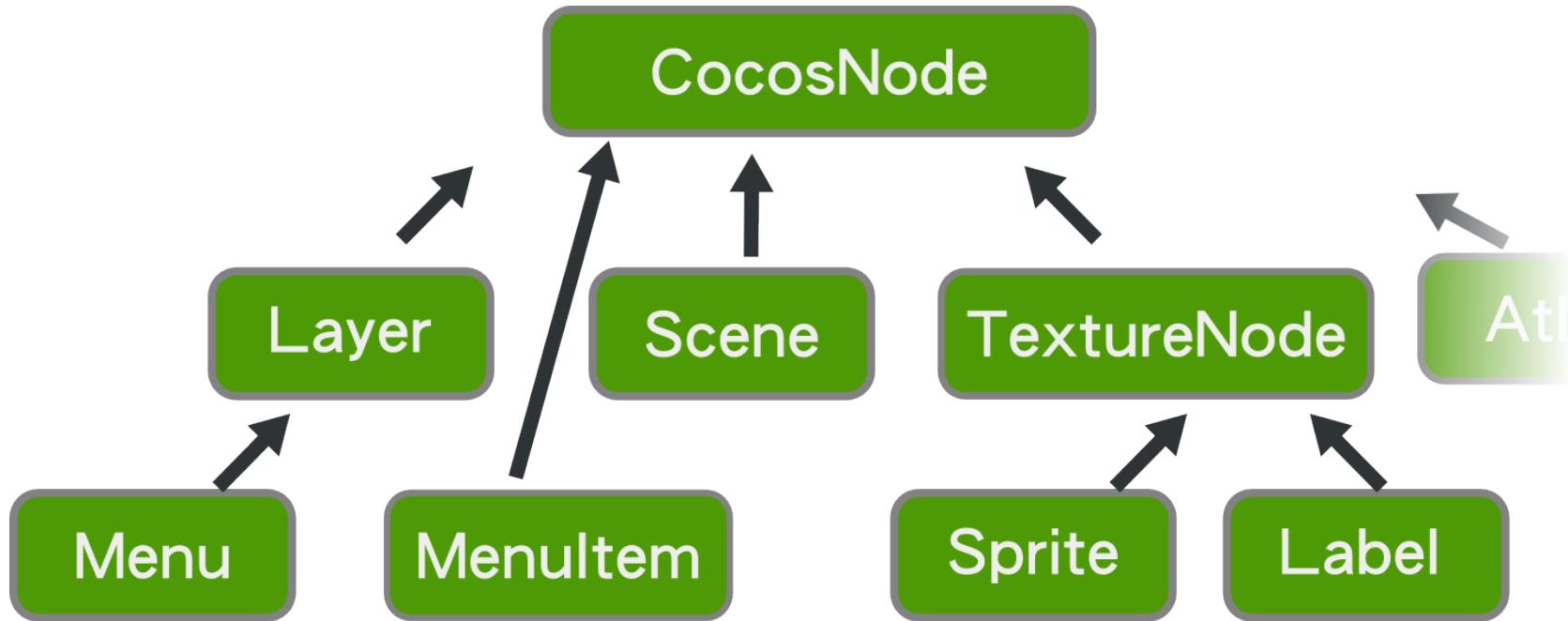
Menu

MenuItem

```
Action rotate = RotateBy.action(2, 360);  
Sprite sprite = Sprite.sprite("ball.png");  
sprite.runAction(rotate);
```



Cocos2D

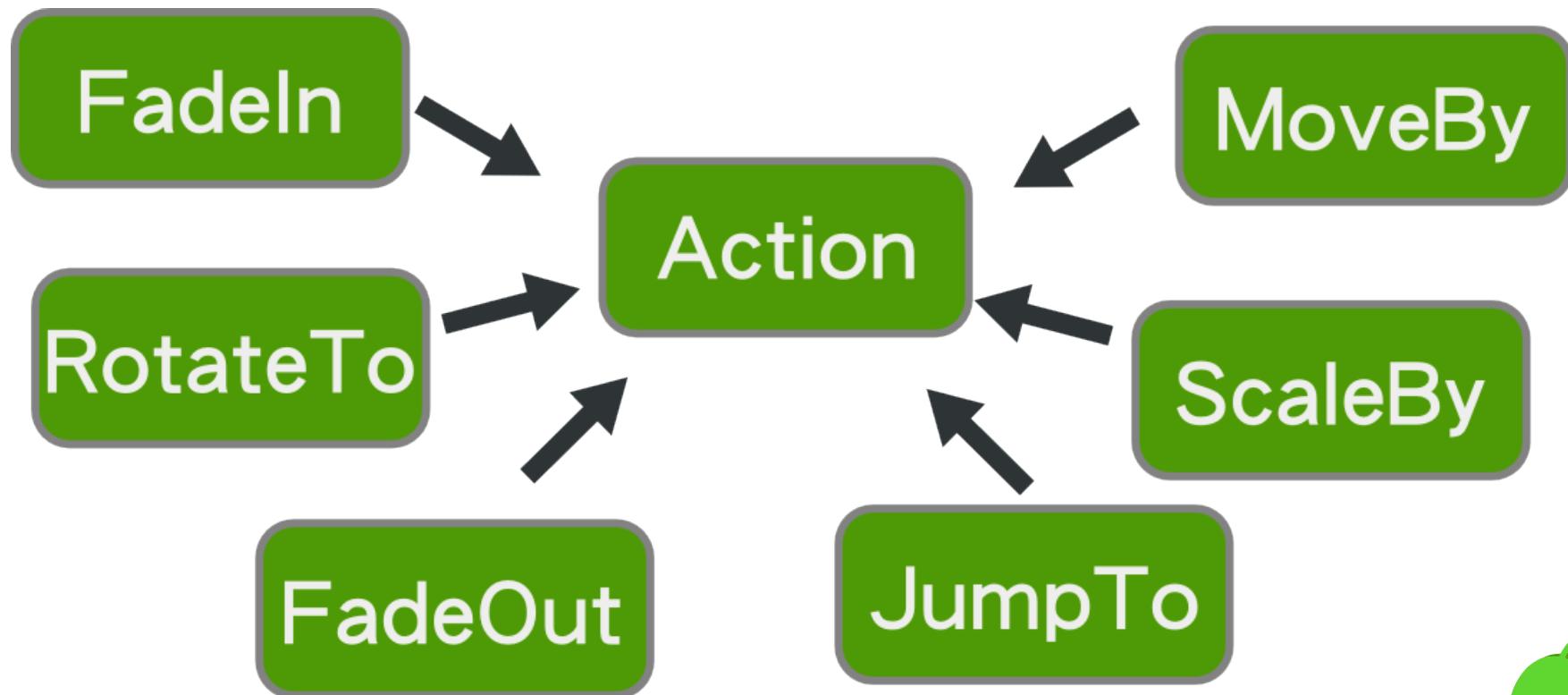


1. `addChild`: every CocosNode may has child CocosNode
2. `action`: every CocosNode may has Action

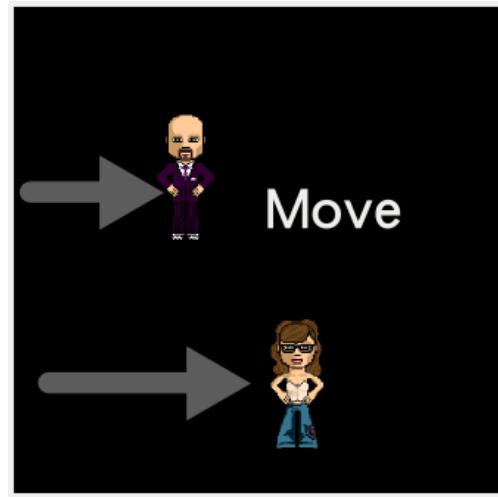


Cocos2D

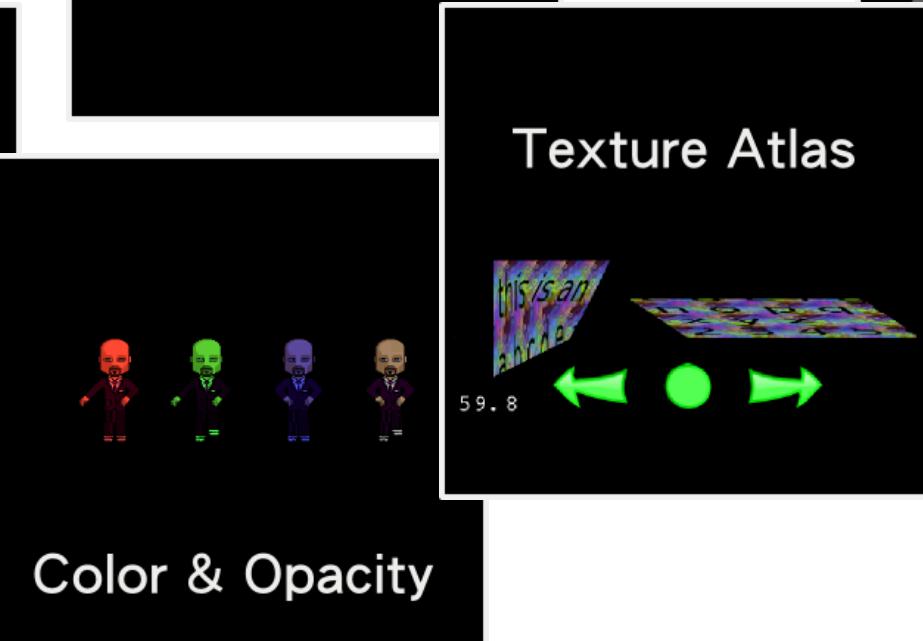
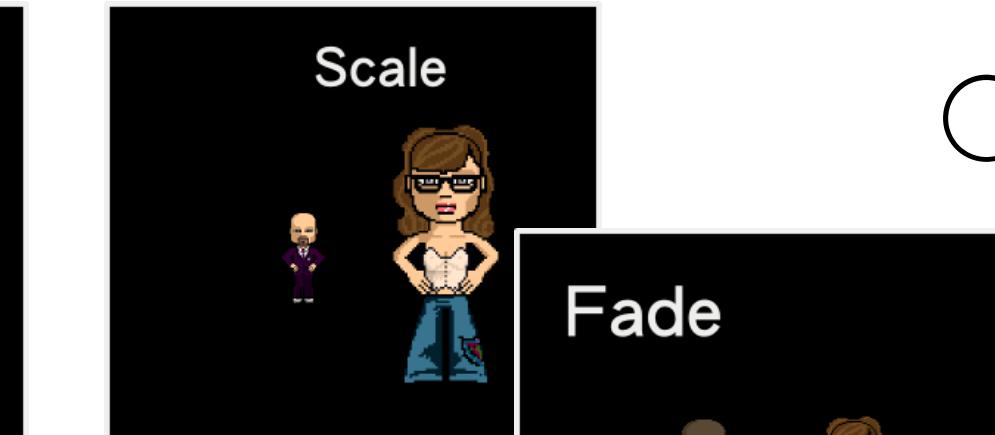
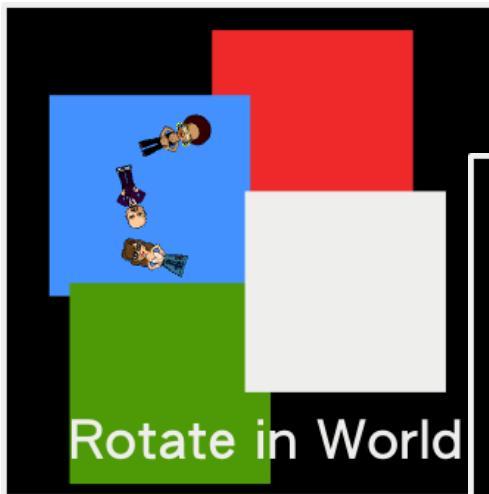
```
CocosNode.runAction(action);
```

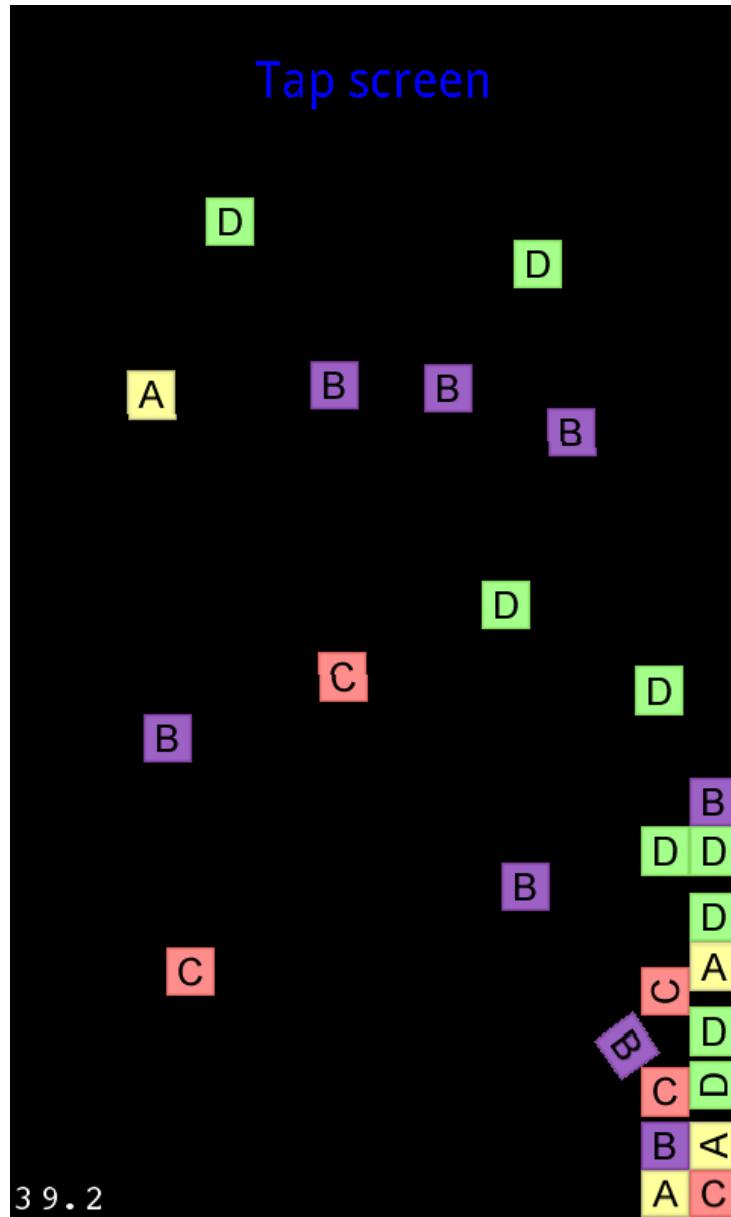


Cocos2D



CocosNode
+
Action





Cocos2D(Physical)

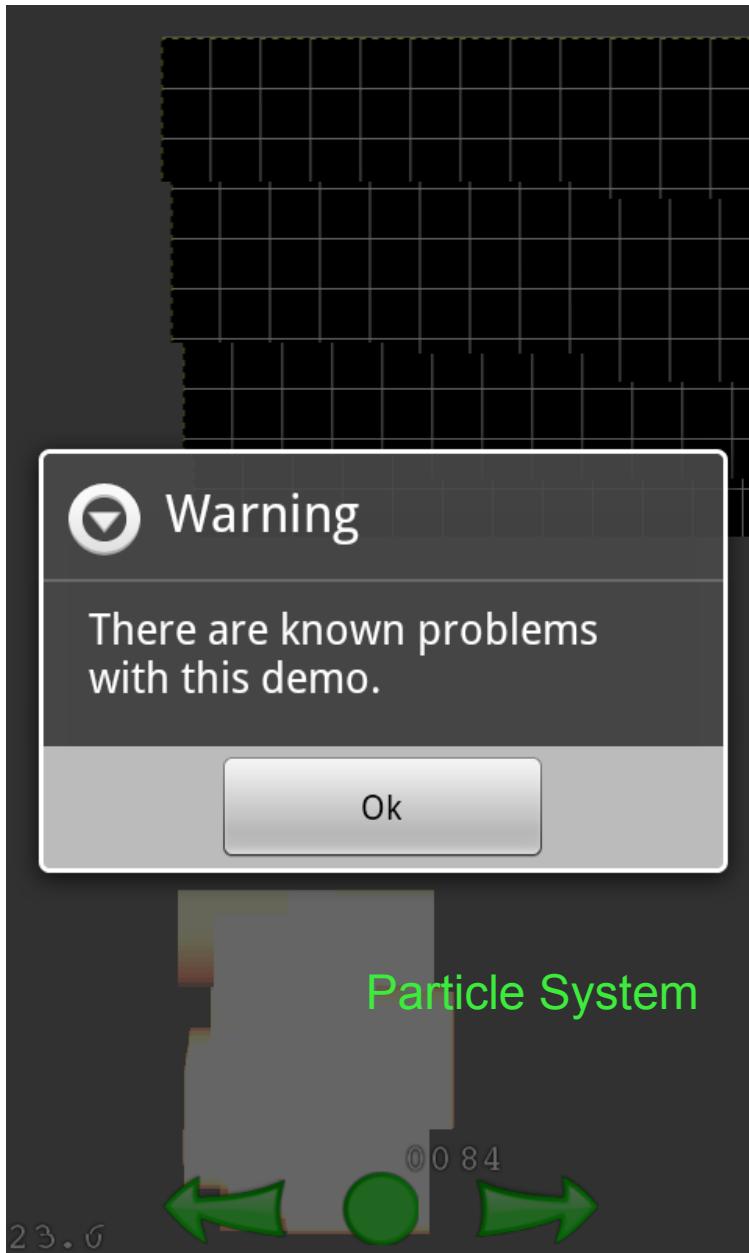


- Some problems

Particle System Example

SceneTest Example

Transition Example



AndEngine

- **Fast Development**

<http://www.andengine.org/>

- **Extension**

Box2d

Multiplayer

MultiTouch

.....etc

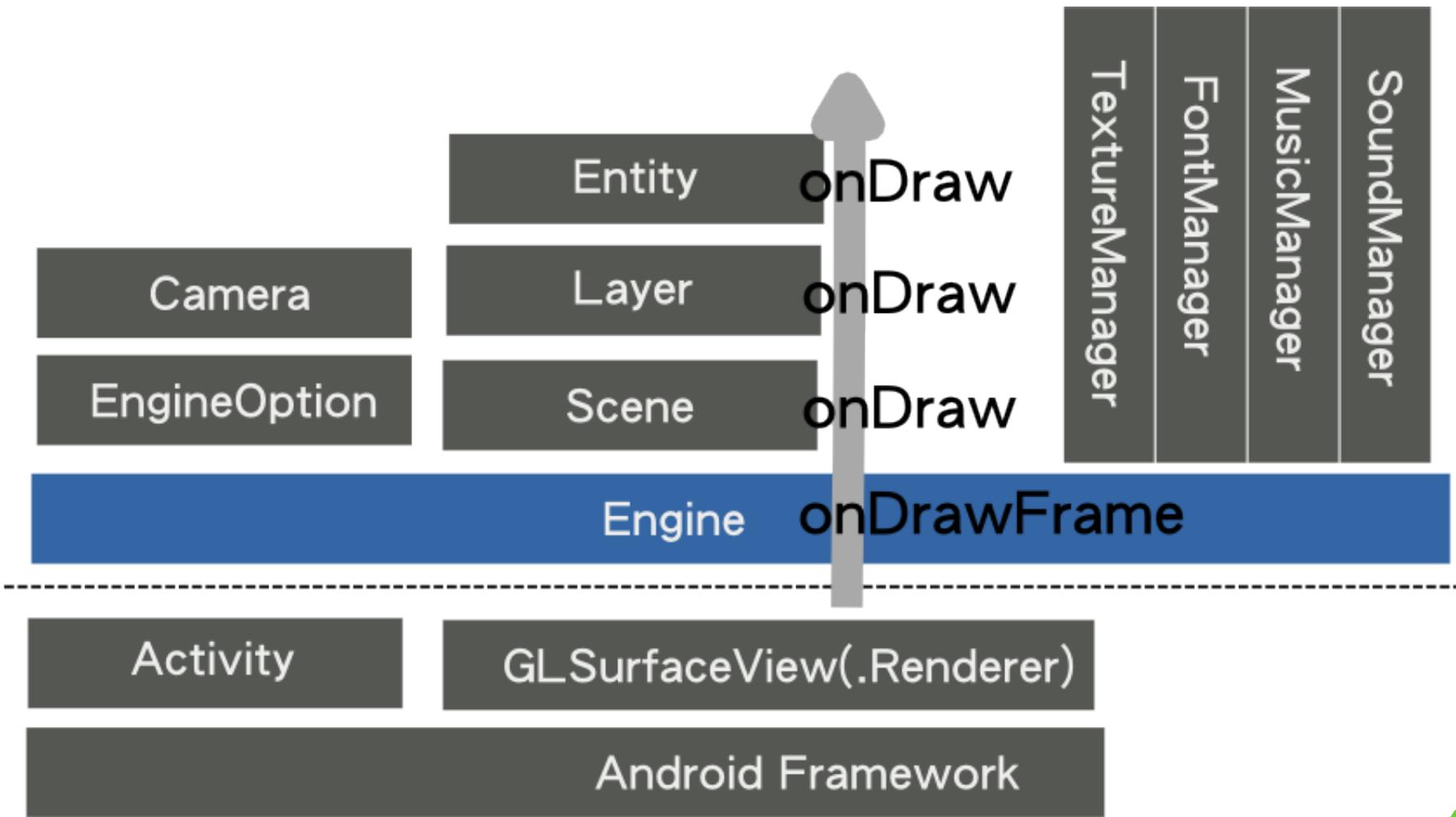
- **Amazing examples**

<http://code.google.com/p/andengineexamples/>

You can download the example at Market.



AndEngine

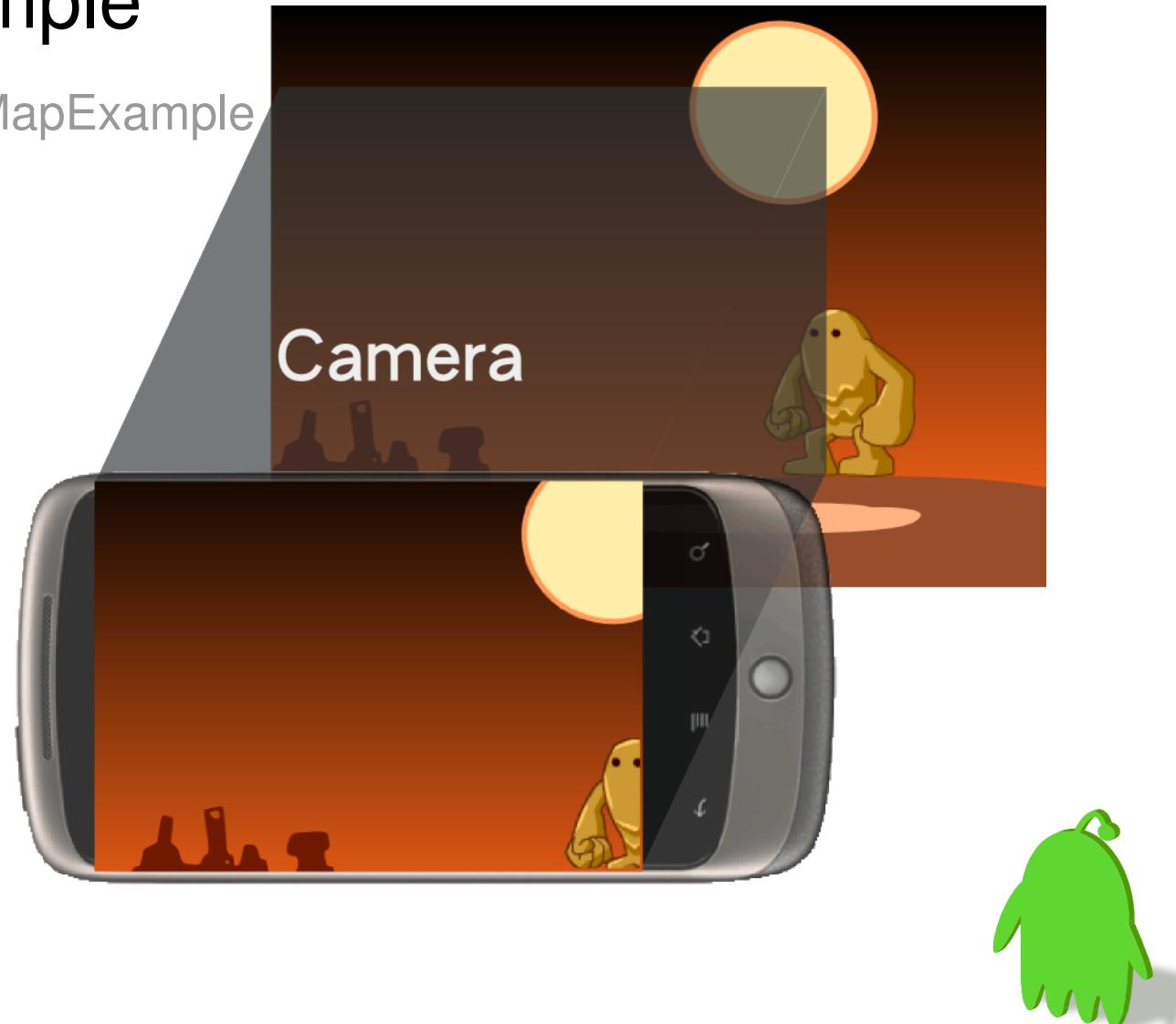


AndEngine(Camera)

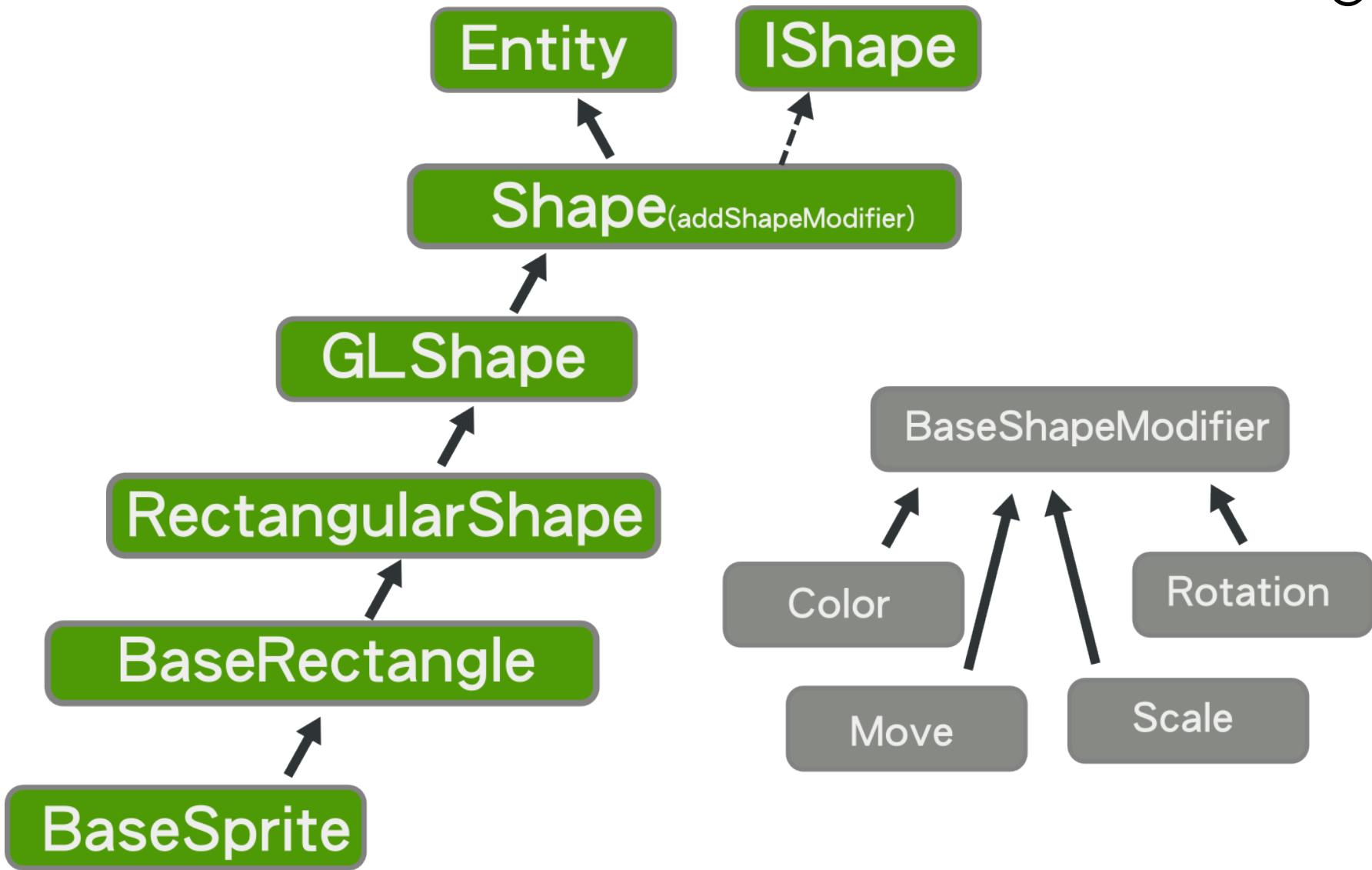
- See Example

TMXTiledMapExample

```
setChaseShape(IShape);
```



AndEngine



AndEngine



Touch and Multi Touch



Just some n

Text with fi

Text with stroke only.

KINGDOM OF HEAVEN FONT

NEVERWINTER NIGHTS FONT

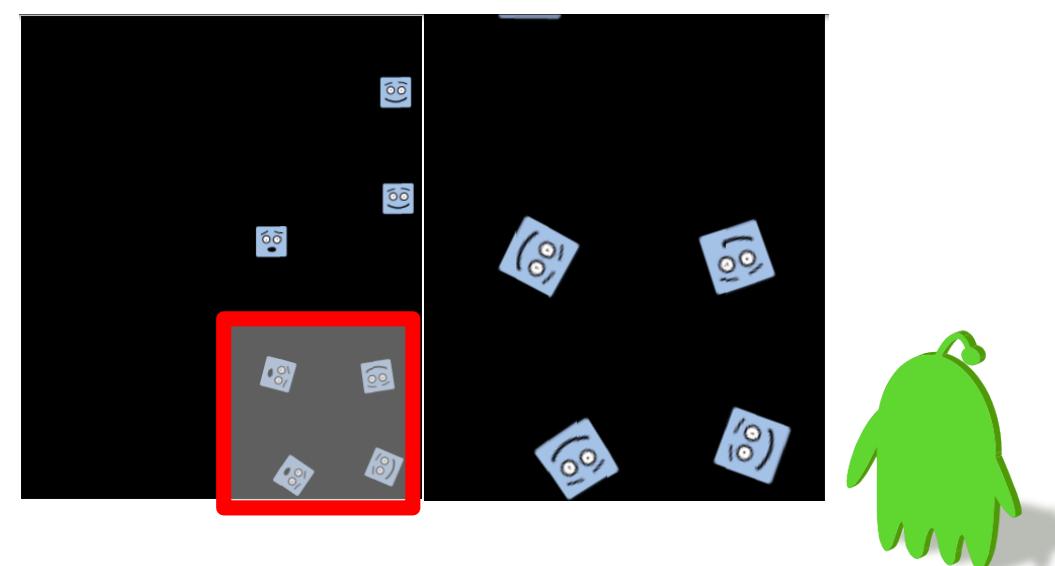
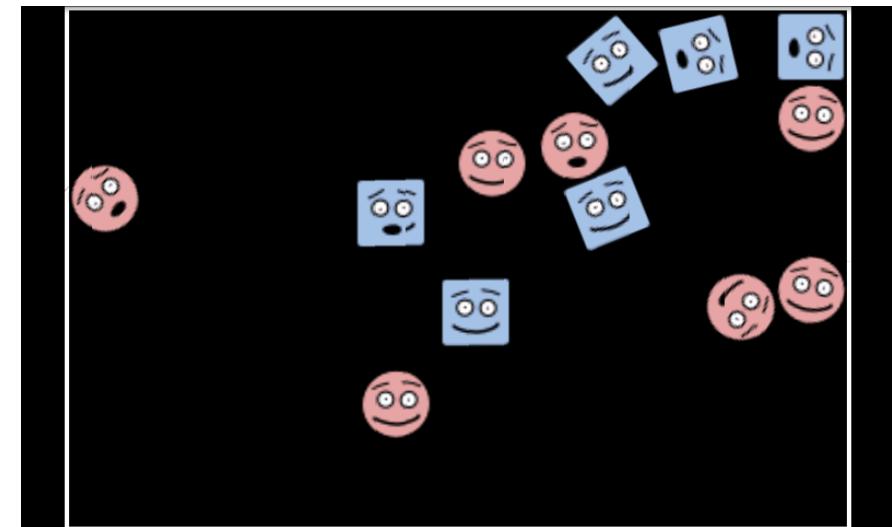
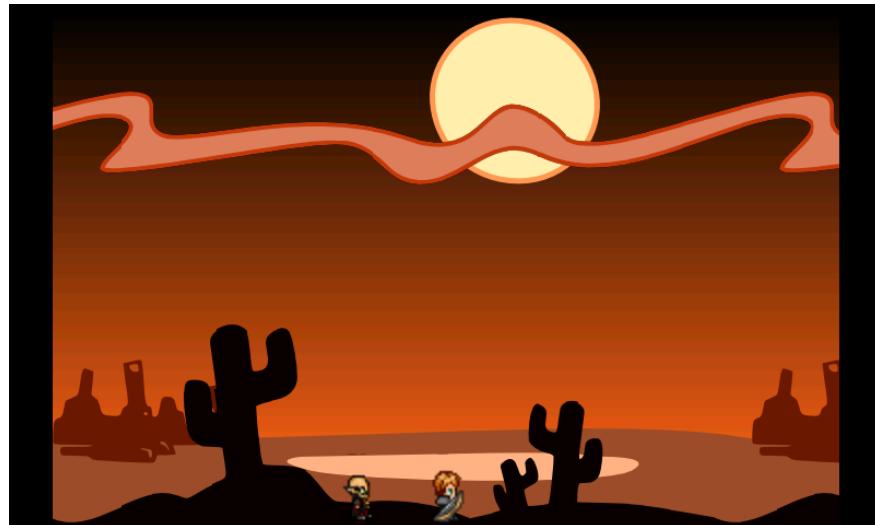
PLOK FONT

UNREAL TOURNAMENT FONT

Custom Font

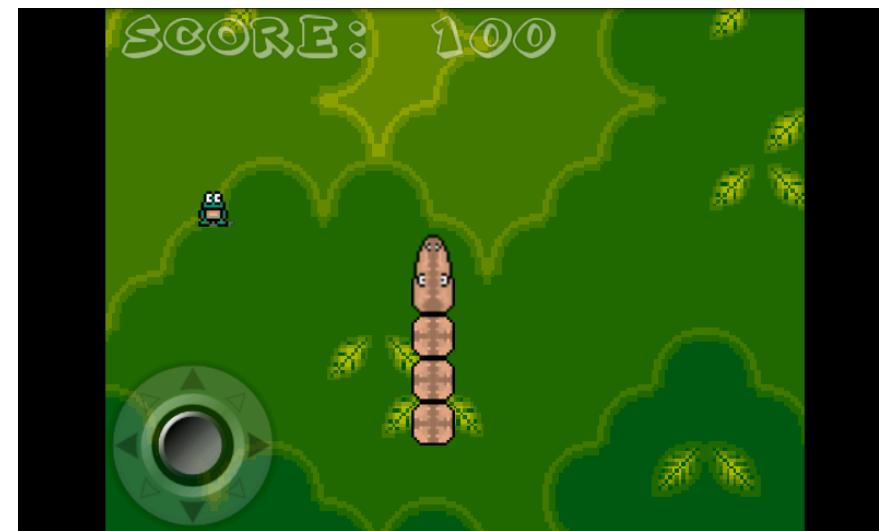
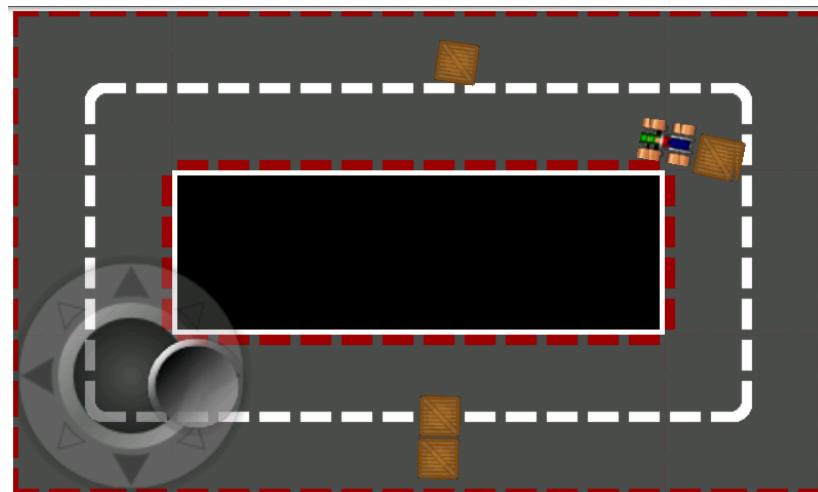
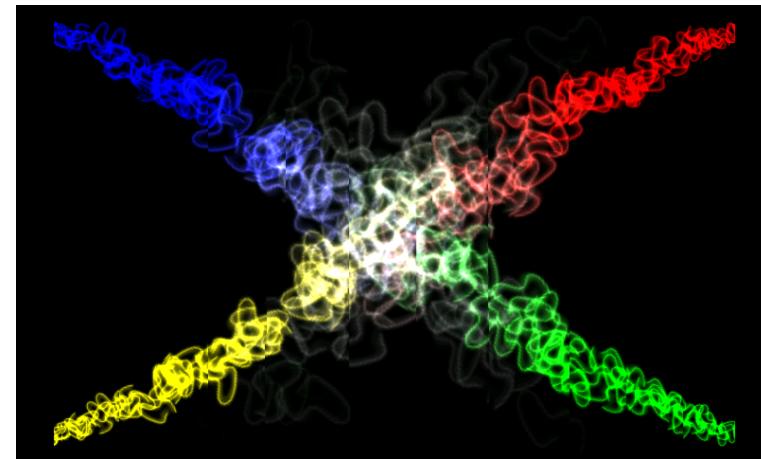
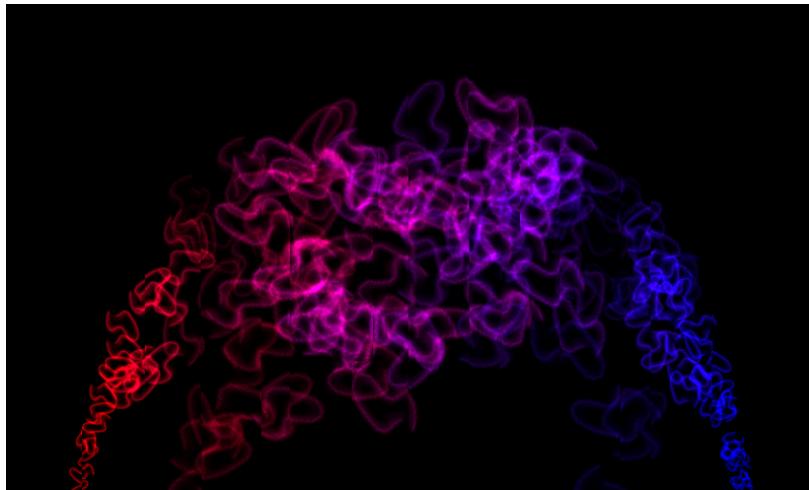


AndEngine



AndEngine

Particle System



Replica Island

- Well designed game
- Open Source

<http://replicaisland.net/>

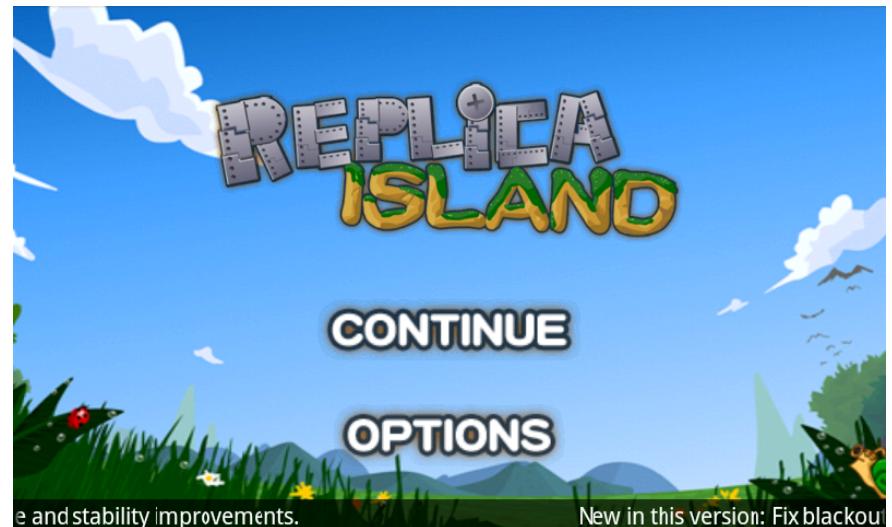
It is very possible to split engine from the game

<http://code.google.com/events/io/2009/sessions/WritingRealTimeGamesAndroid.html> (it is worth reading)

- Mailing list

<https://groups.google.com/group/replica-island-coding-community/topics>

Highly activity!!



Compare

	Rokon2	Cocos2d	AndEngine
FPS (one sprite)	52 ^(*1)	60 ^(*2)	58 ^(*3)
FPS (50 physics)	46 ^(*4)	18 ^(*5)	60 ^(*6)
FPS (100 physics)	42	8	36
Physics Engine	box2d	box2d	box2d
Particle System	No	?	Yes
License	BSD	BSD	LGPL
Examples	? ^(*7)	Yes ^(*8)	Yes ^(*9)
Lastestd Update	Aug 8	Jun 26	Aug 14(ouch!!)
Game Implement	Tetronimo ^(*10) Drop Block ^(*11)		Snake ^(*12) AlienStars ^(*13)

Tested on Nexus One, Froyo (FRF91)



Ref

1. <http://rokonandroid.com/tutorials/41-beginner/63-using-sprites>
 2. <http://code.google.com/p/cocos2d-android/source/browse/trunk/src/org/cocos2d/tests/SpritesTest.java>
 3. <http://code.google.com/p/andengineexamples/source/browse/src/org/anddev/andengine/examples/SpriteExample.java>
 4. http://code.google.com/p/rokon/source/browse/examples/donate_app/src/com/stickyCoding/rokondonatefree/DonateScene.java
 5. <http://code.google.com/p/cocos2d-android/source/browse/trunk/src/org/cocos2d/tests/JBox2DTest.java>
 6. <http://code.google.com/p/andengineexamples/source/browse/src/org/anddev/andengine/examples/PhysicsExample.java>
 7. <http://code.google.com/p/rokon/source/browse/#svn/tags/release/1.1.1/src/com/stickyCoding/RokonExamples>
- These examples were written for Rokon 1.1.1
8. <http://code.google.com/p/cocos2d-android/source/browse/trunk/src/org/cocos2d/tests/>
 9. <http://code.google.com/p/andengineexamples/source/browse/>
 10. http://www.rokonandroid.com/community/rss/index.php?option=com_agora&task=topic&id=150&Itemid=60
 11. <http://rokonandroid.com/games/67-drop-block>
 12. <http://code.google.com/p/andengineexamples/source/browse/src/org/anddev/andengine/examples/game/snake/>
 13. <http://www.andengine.org/forums/project-development-blogs/galaga-like-game-t291.html>

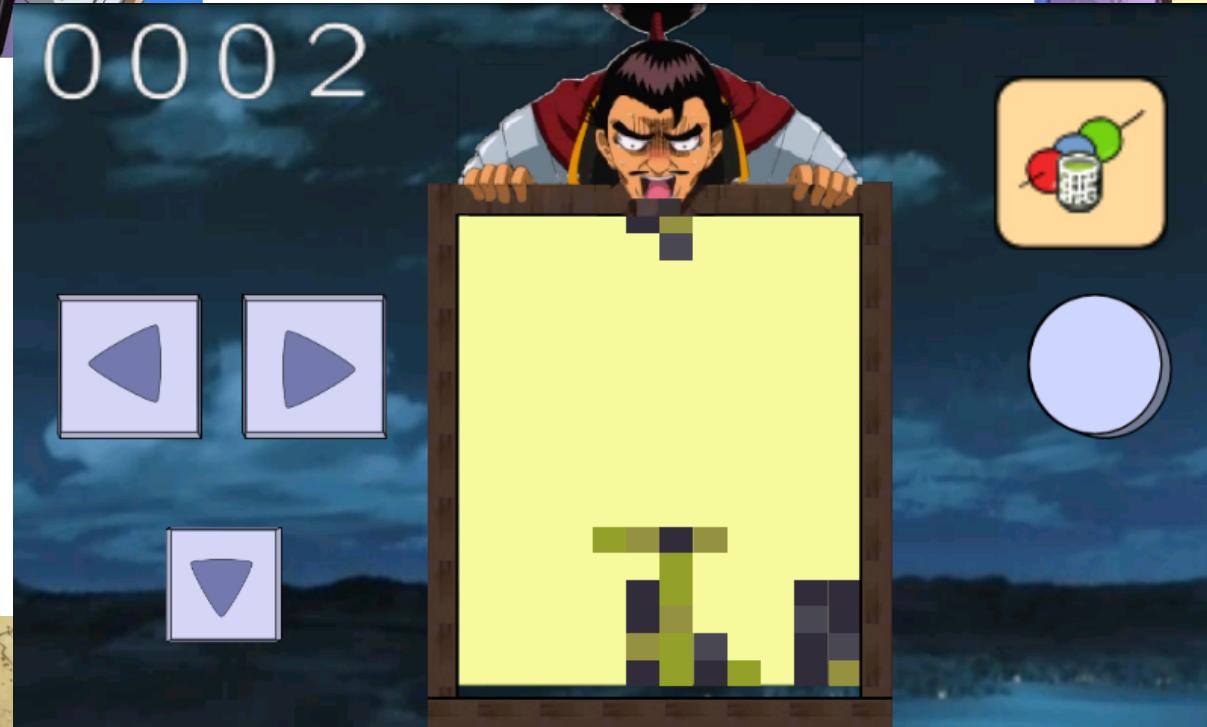




Game Implementation

信長のゲバ

Nobunaga's Puke

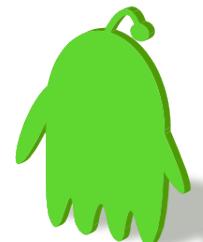


信長的嘔吐



这根本只是最低级的俄罗斯方块而已吧

Implemented in cocos2d-android and Rokon2
From scratch in 3 days
<http://code.google.com/p/nobunagapuke/>



Q&A



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