



# Unreal Engine 4

## a AAA type engine for everyone

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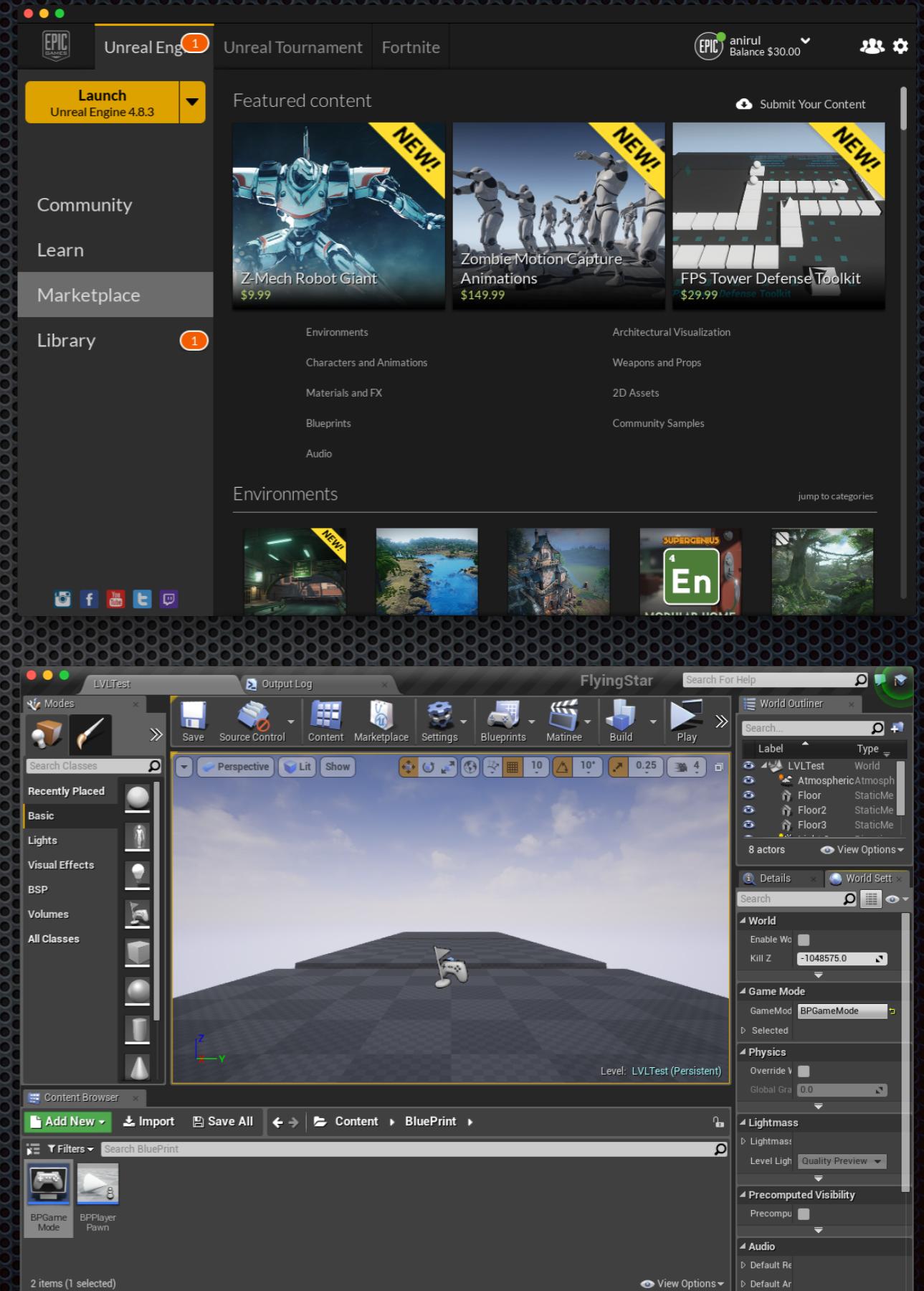
# Social Slide

- Software Engineer
  - Master From HES // SO
- Demo Scene
- Worked for
  - CERN (LHC)
  - EPFL (IK)
  - Idiap (AI)
- ...
- Now Google



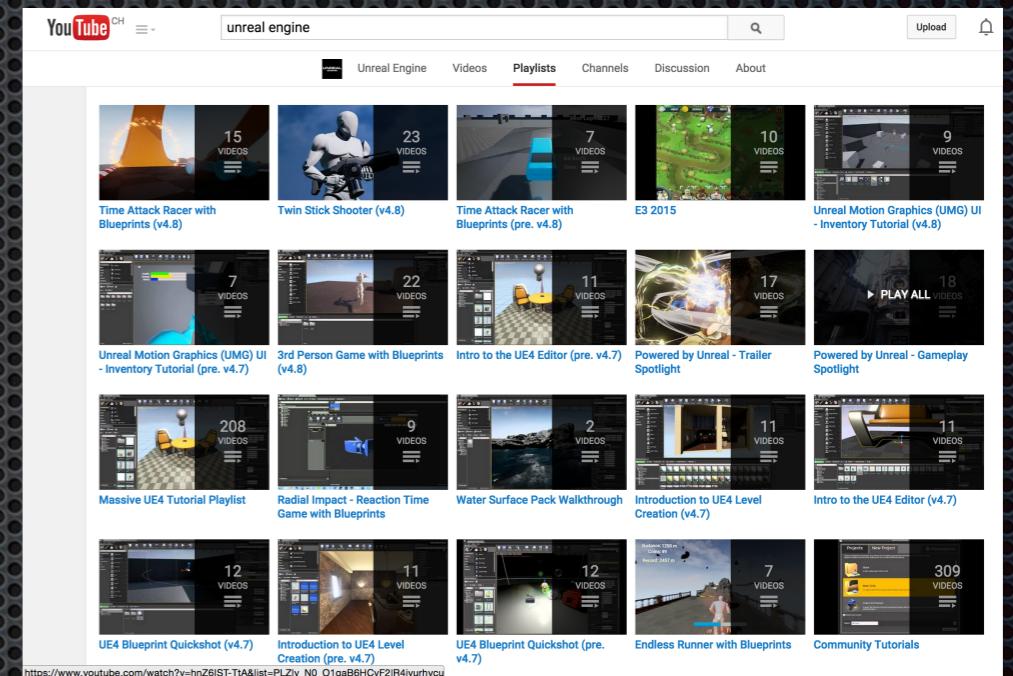
# Outline

- General presentation
- Editor & Interactive demo
- Fast track demo(s)
  - StarFox like (continue)
  - Puzzler
  - Don't Starve (Paper 2D)
- Questions



# General Overview

- AAA and Indie engine
  - High level (Blueprint)
  - Low Level (C++)
- Strong but small community
  - youtube -> unreal engine
  - Forums and AnswerHub

A screenshot of the UE4 AnswerHub forum. The top navigation bar includes 'UE4 ANSWERHUB', 'Login', 'Change Section', 'Post A Question', and a search bar. The main content area shows a list of recommended questions:

- 0 answers, Section: University of Toronto, Product Version: UE 4.8, Views: 0, Question posted 56 secs ago by nbmjy8. Tags: blueprints, unreal engine 4.
- 0 answers, Section: Rendering, Product Version: UE 4.8, Views: 0, Question posted 8 minutes ago by NirkuEx. Tags: unreal engine 4, rendering.
- 2 answers, Section: Bug Reports, Product Version: Not Selected, Views: 388, Question posted 9 minutes ago by TheAwesomeTh3ory. Tags: blueprints, collision, vehicles, collision detection, spline mesh.
- 2 answers, Section: Blueprint Scripting, Product Version: UE 4.8, Views: 0, Question posted 14 minutes ago by ambar. Tags: unreal engine 4, blueprint, location, get actor.
- 0 answers, Section: Blueprint Scripting, Product Version: UE 4.8, Views: 0, Question posted 18 minutes ago by This Week's Top Karma. Tags: how can I make two specific colliders cause an overlap event.

The right sidebar contains sections for 'Recent tags' and 'Topics' with various tags listed.

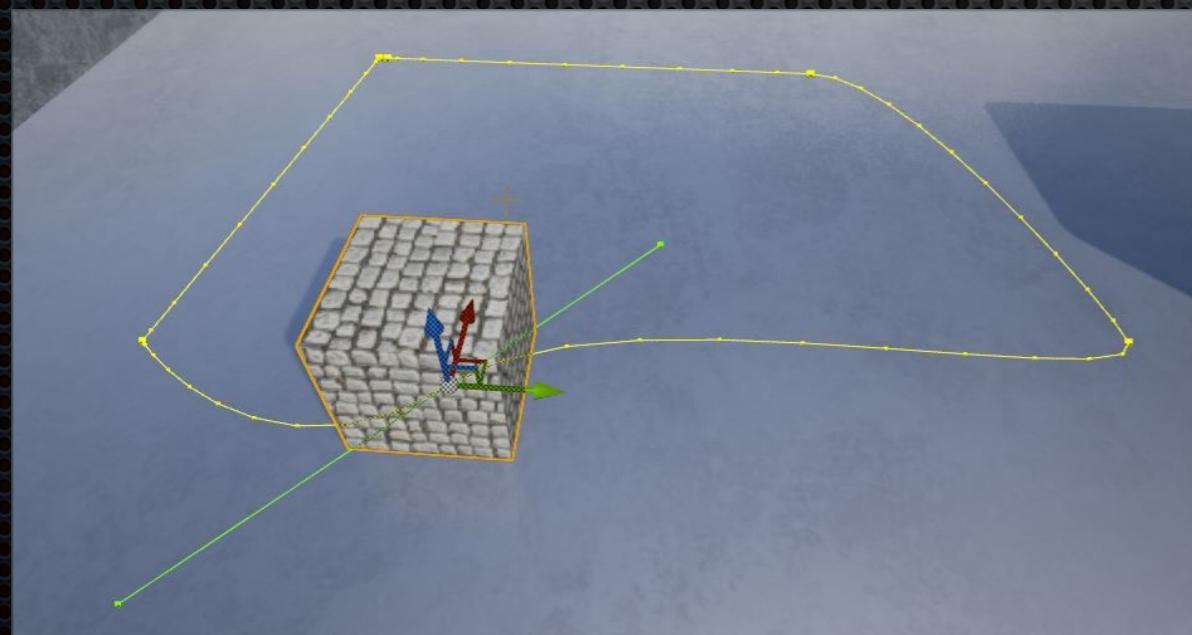
# Specs

- DirectX 11/12 rendering
- Blueprint Visual Scripting
- Content browser
- Terrain & Foliage
- Artificial Intelligence
- Path finding
- Post-Process effect
- C++ Full source access



# The Editor (Win/OSX/Linux\*)

- Instant access to your game
- Asset view / asset placement
  - drag and drop



- Animation with Matinee
  - Set curves/splines
  - Keyframes

# The Editor (paper2D)

The image shows a screenshot of the paper2D game editor interface. On the left, a 3D-style character model is displayed on a grid background, shown from a side-on perspective. To the right of the character is a search bar labeled "Search Assets". Below the search bar is a grid of 18 thumbnail images, each labeled "RunCycle\_<number>" where <number> ranges from 1 to 18. The thumbnail for "RunCycle\_4" is highlighted with a yellow border. To the right of the character and asset browser is a large grid-based tileset editor. The top-left section of the grid contains five small character models. Below this is a row of four larger character models, each with a red star icon at the bottom. This row is labeled "2DCharacter\_IdleAnimAtlas\_Sprite". The next two rows of the grid also contain four character models each, with red star icons at the bottom. These rows are labeled "2DCharacter\_IdleAnimAtlas\_Sprite2" and "2DCharacter\_IdleAnimAtlas\_Sprite3" respectively. The bottom two rows of the grid also contain four character models each, with red star icons at the bottom. These rows are labeled "2DCharacter\_IdleAnimAtlas\_Sprite4" and "2DCharacter\_IdleAnimAtlas\_Sprite5". The bottom-most row of the grid contains three character models, with red star icons at the bottom. This row is labeled "2DCharacter\_IdleAnimAtlas\_Sprite6".

- 2D game framework
- tile sets
- sprites
- flipbooks



## EpicGames / UnrealEngine PRIVATE

[Unwatch](#) 854[Star](#) 2,651[Fork](#) 7,666

# C++ code

- You have the full source on github!
- The community is patching it, REALLY!
- You can change everything in the engine
- Full integration with Visual Studio / Xcode

```
#pragma once
#include "GameFramework/Actor.h"
#include "MyActor.generated.h"

UCLASS()
class AMyActor : public AActor
{
    GENERATED_BODY()
    int Count;

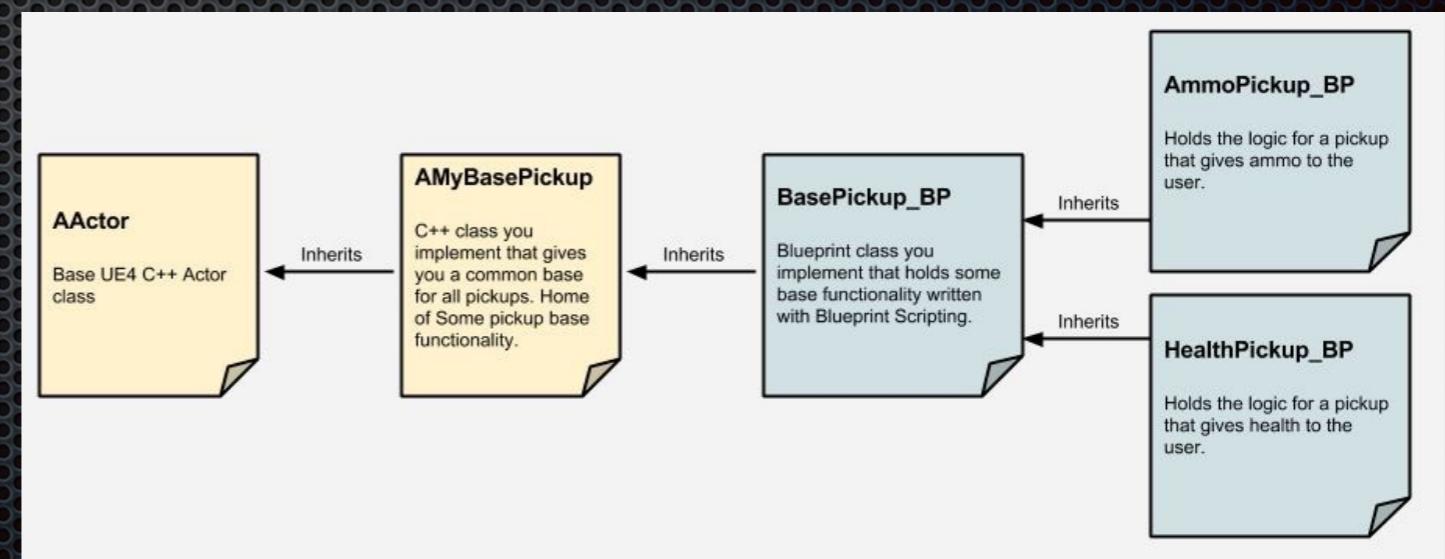
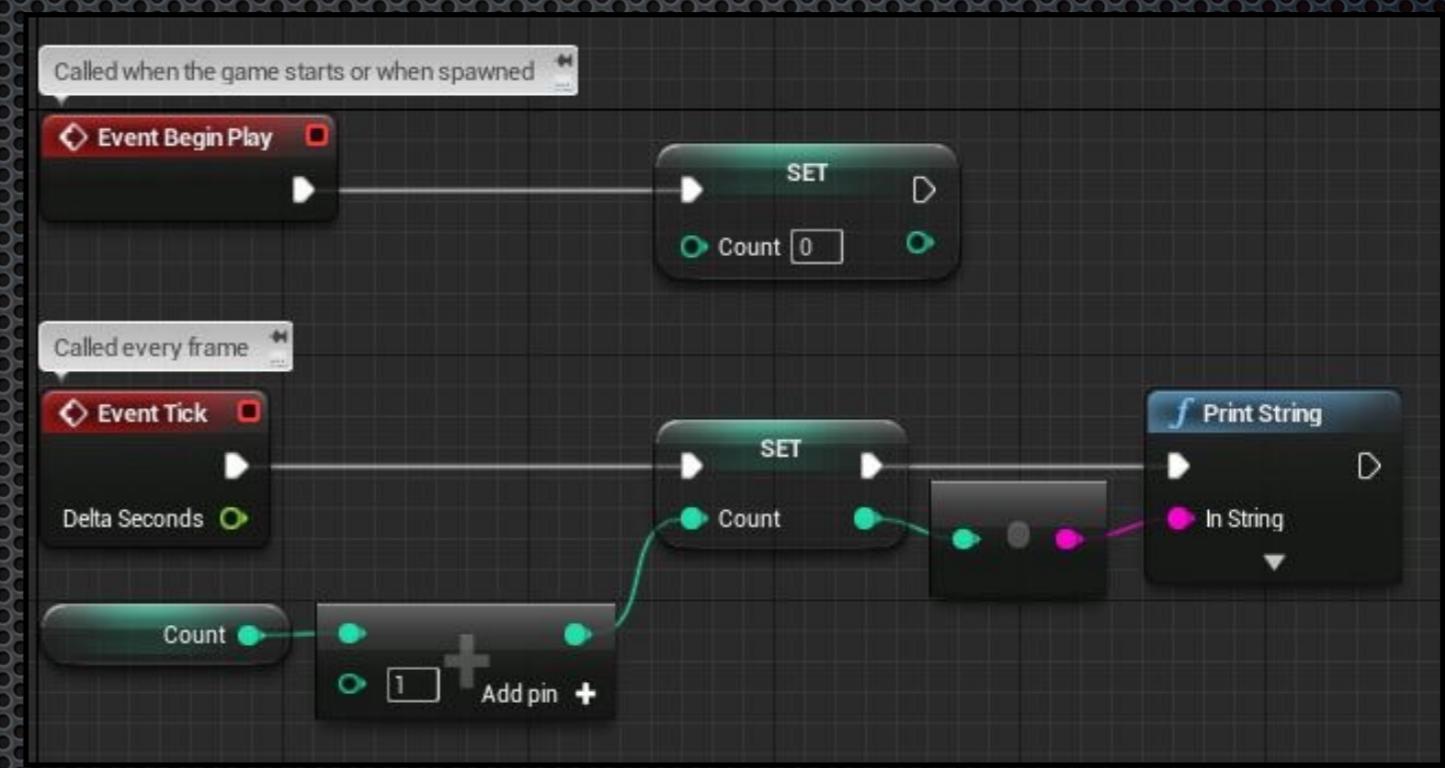
    // Sets default values for this actor
    AMyActor()
    {
        // Allows Tick() to be called
        PrimaryActorTick.bCanEverTick = true;
    }

    // Called when the game starts or when respawning
    void BeginPlay()
    {
        Super::BeginPlay();
        Count = 0;
    }

    // Called every frame.
    void Tick(float DeltaSeconds)
    {
        Super::Tick(DeltaSeconds);
        Count = Count + 1;
        GLog->Log(FString::FromInt(Count));
    }
};
```

# Blueprint (Visual Scripting)

- You don't need to be a coder to make a game!
- Coders can focus on critical parts
- C++ and Blueprint work together!



# Platforms



Windows

- OSX

- Linux



Android (Phone + tablet)

- iOS (iPhone / iPad)

- HTML5



PS4

- XBox One

- Oculus Rift (and other VR coming)



# Editor & Interactive demo

- Need Unreal 4.8.x
- Fast prototyping
- Starfox-like controls
- Infinite runner level



# Steps

- Launch > New Project > Blank (no startup content)
- Controllers keys, Save Map (need modifs), Create the game mode (from the settings), Create the player Pawn
- Change direction of starting, added movement forward set default loading map
- Added move in the plane
- Add collision & damage (check generate hit & blockAll)
- UI add a UI and init it in the event begin play (Create widget, Add to viewport)

# Fast-Track demo(s)

- StarFox-like (continue)
  - <https://github.com/anirul/FlyingStar>
- Puzzler (Isotops)
  - <https://github.com/anirul/Isotops>
- Don't Starve-like
  - <https://github.com/anirul/Mirages>

# Meow Zedong [...]

- Epic Game Jam 2
- Starfox-like
- made in 45 hours
- 6 people(s)
- Also work on iOS



**MEOW ZEDONG,  
THE GREAT PEE FORWARD**

A GAME BY TEAM-KWAKWA  
LEAD DESIGNER  
ELIAS FARHAN  
PROGRAMMER  
FREDERIC DUBOUCHET  
MUSIC & SOUND  
ANTOINE TULOUPE  
3D MODELER  
WIKTOR WAROWSKI  
CORENTIN COLINET  
ARTIST 2D  
FIORELLA ANNONI



# Isotops

- 2 person project
- Mix C++ and Blueprints
- Puzzler
- Educational
- Based on real physics

The screenshot shows a code editor window with two tabs open. The left tab contains the file `NucleusModel.h`, which includes headers for `Isotops.h` and `NucleusModel.h`, and defines structures for `Branch`, `Isotope`, and `Element`. The right tab contains the file `NucleusModel.cpp`, which defines an enum class `EDecayType` with values `Bplus`, `Bminus`, `EC`, `Eplus`, and `Nucleon`, and a struct `FDecayMode`.

```
#include "Isotops.h"
#include "NucleusModel.h"

#include <cassert>
#include <cmath>
#include <limits>

struct Branch {
    float probability;
    const FDecayMode* decays_begin;
    const FDecayMode* decays_end;
};

struct Isotope {
    double half_life;
    const Branch* branches_begin;
    const Branch* branches_end;
};

struct Element {
    FString name;
    size_t min_neutrons;
    const Isotope* isotopes_begin;
    const Isotope* isotopes_end;
};

USTRUCT(BlueprintType)
struct FNucleon {
    GENERATED_USTRUCT_BODY()

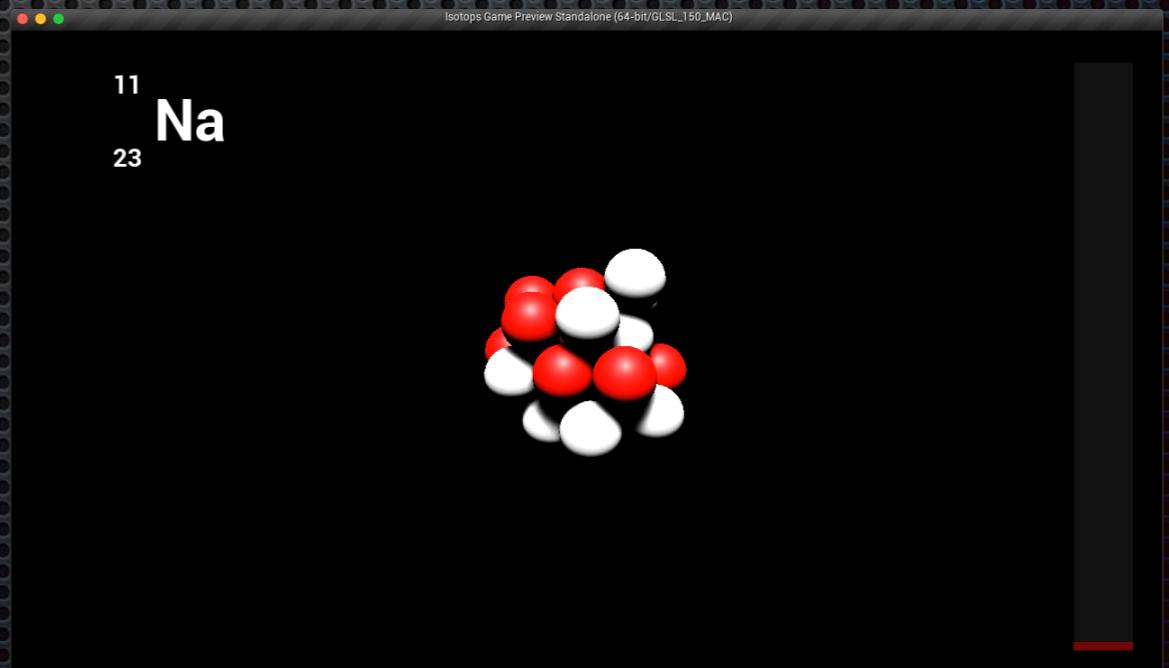
    UPROPERTY(EditAnywhere, BlueprintReadWrite)
    FString Element;

    UPROPERTY(EditAnywhere, BlueprintReadWrite)
    float HalfLife;

    UPROPERTY(EditAnywhere, BlueprintReadWrite)
    float Life;
};

UENUM(BlueprintType)
enum class EDecayType : uint8 {
    Bplus UMETA(DisplayName="Beta+"),
    Bminus UMETA(DisplayName="Beta-"),
    EC UMETA(DisplayName="Electron capture"),
    Eplus UMETA(DisplayName="e+??"),
    Nucleon UMETA(DisplayName="Nucleon ejection"),
};

USTRUCT(BlueprintType)
struct FDecayMode {
```



# Mirages

- Global Game Jam 2015
- My first UE4 game!
- 4 person project
- 48 hours
- Paper 2D
- Pickup team



Now free!

5% royalties after the first 3000\$ per quarter

# Questions?

<http://www.unrealengine.com/>

<https://www.youtube.com/unrealengine>