



# 如何打造轻快的即时游戏体验

## ——Unity Auto Steaming 技术介绍

成亮, 技术经理

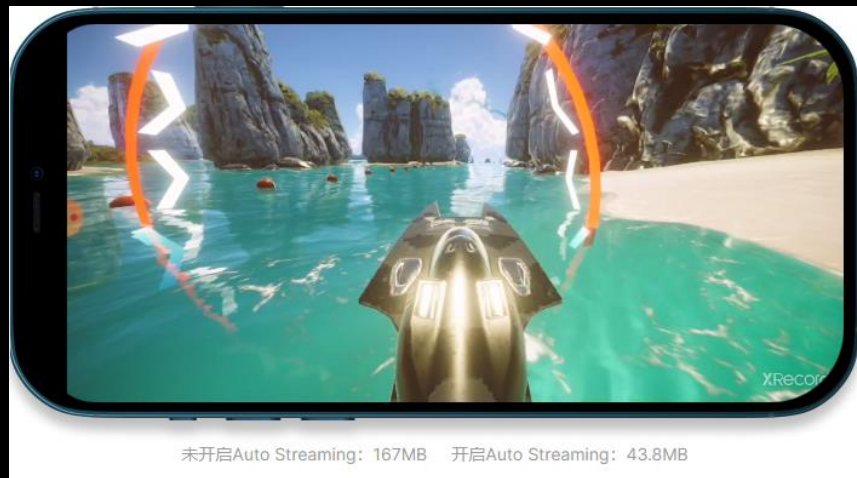
[leoncheng@unity3d.com](mailto:leoncheng@unity3d.com)

# Auto Streaming 简介

该技术对引擎资源加载模块进行了增强，使得开发者可以在不修改代码的情况下加载云端资源，从而减少游戏包体大小，提升加载速度，在不损失质量的前提下，为用户带来了即时游戏的体验。

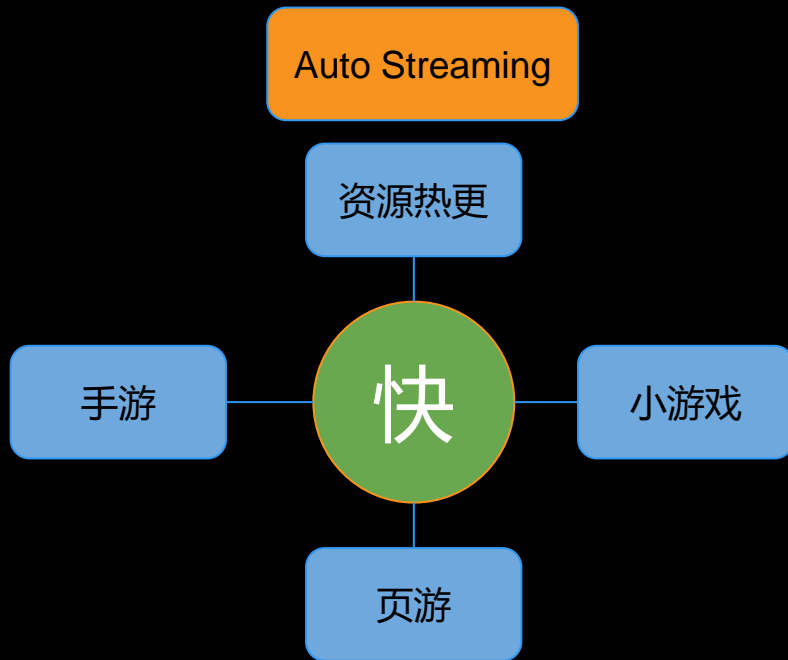
功能特点：

- 大量减小包体
- 无需修改代码
- 支持资源更新
- 运行稳定

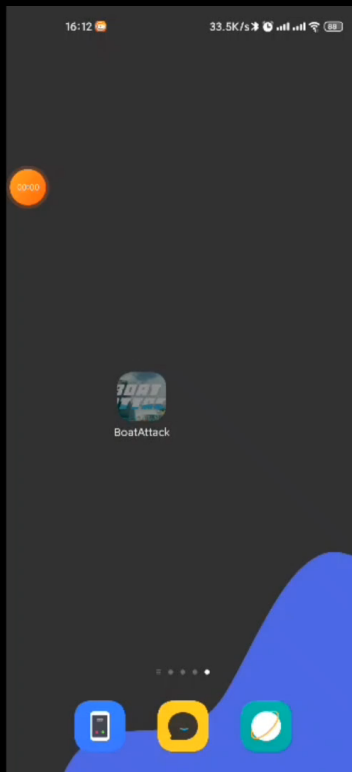


# 快速启动 有多重要?

- 快速触达玩家
- 爆发性增长



# 使用Auto Streaming的Boat Attack



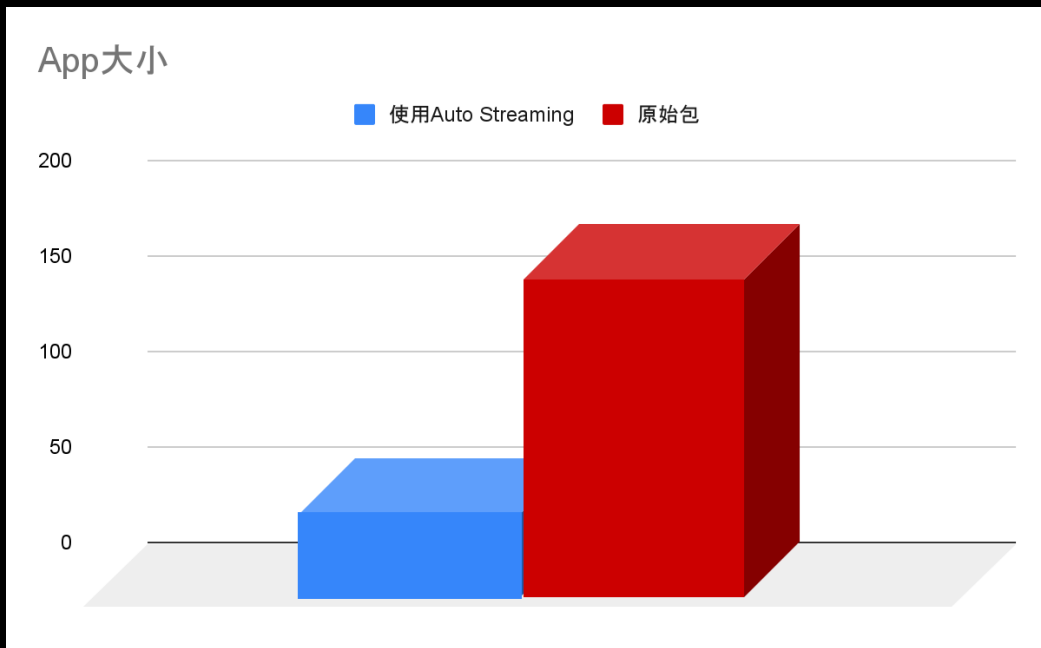
XRecorder

# 原始的Boat Attack



# App大小对比

- 基于AS的包体大小为43.8M，而原始包体大小为167M



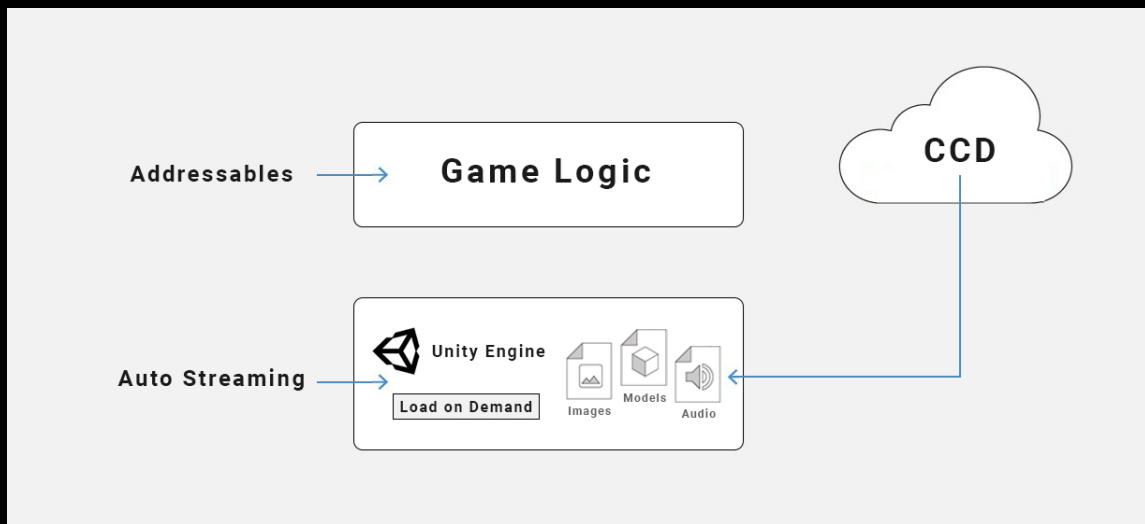
# Streaming资源类型

- Texture
- Mesh
- Audio
- Animation
- Font



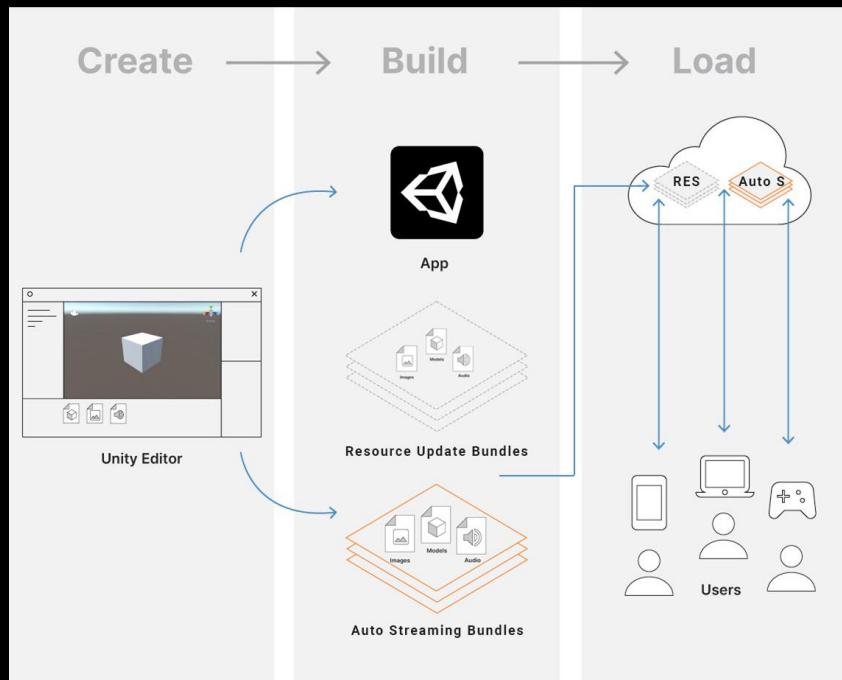
# 引擎底层实现，无需修改代码

- Auto Streaming是对引擎内部资源加载模块进行了增强，自动去远程加载相关资源，因此该方案无需修改项目代码，只需在构建时指定需要Streaming的资源，制作成Streaming Asset Bundle并上传云端即可



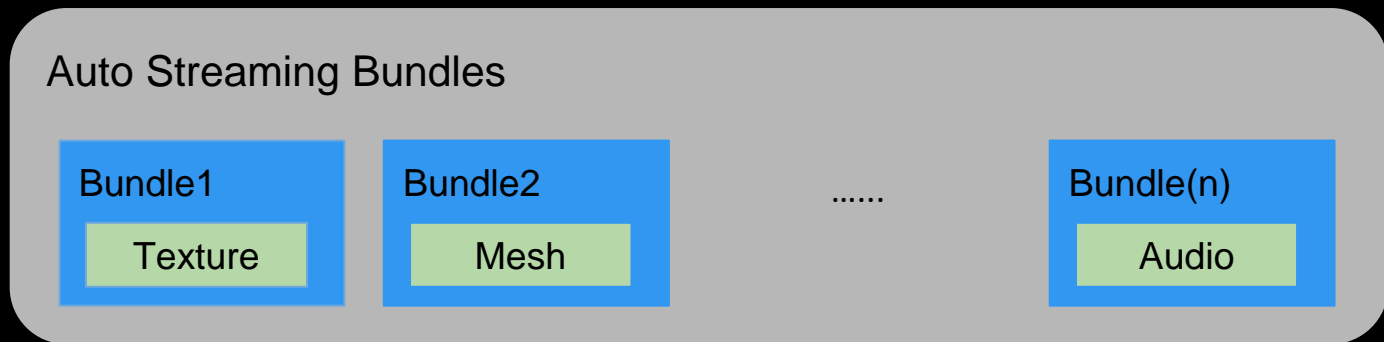
# 支持资源更新

- 该方案同时支持App与AssetBundle的资源缩减，因此除了App变小变快，整个资源更新的流程也会加快



# Auto Streaming Bundles

- Auto Streaming的每一个文件会单独放入一个AssetBundle，利于资源的快速下载和显示，以及内存回收。

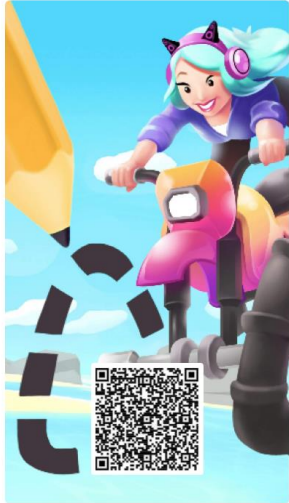




# 服务稳定可靠

- Auto Streaming技术方案已经在unity与字节，QQ等合作的即时游戏平台中使用一段时间，并且稳定运行。 <https://unity.cn/instantgame>

**参考案例**

请使用安卓版抖音APP或今日头条APP扫码体验以下高品质Unity instant game

涂鸦骑士	欢乐大厨	杰利的世界
		

# Auto Streaming Demo

- 安装插件
- 设置Texture Streaming
- 设置Mesh Streaming
- 构建App
- 上传Auto Streaming bundles 到CCD
- 上传资源更新bundles到CCD
- 运行资源包

# Texture Streaming

- SynTexture
- Generate Placeholders
- Generate AssetBundles

Texture Streaming		Mesh Streaming		Configuration	
Sync Meshes				Selected: 100/152, RT: 4.5 MB	
AssetPath	RT Mem	OnDem	References		
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Chair_LOD_0	6.5 KB	<input checked="" type="checkbox"/>	0,1,2		
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud2	5.9 KB	<input checked="" type="checkbox"/>	0,1,2		
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_ArrowSign_LOD_1	5.8 KB	<input checked="" type="checkbox"/>	1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Small_02_LOD1	5.8 KB	<input checked="" type="checkbox"/>	1,2		
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Kayak	5.7 KB	<input checked="" type="checkbox"/>	0,1,2		
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Umbrella_LOD_1	5.7 KB	<input checked="" type="checkbox"/>	0,1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Small_01_LOD1	5.5 KB	<input checked="" type="checkbox"/>	1,2		
Assets/Objects/boats/Interceptor/Interceptor.fbx:Boat_Interceptor_Engine	5.3 KB	<input checked="" type="checkbox"/>	0		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Large_01_LOD3	4.9 KB	<input type="checkbox"/>	0,1,2		
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud1	4.8 KB	<input type="checkbox"/>	0,1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Small_03_LOD2	4.7 KB	<input type="checkbox"/>	1,2		
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud4	4.7 KB	<input type="checkbox"/>	0,1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Small_04_LOD2	4.6 KB	<input type="checkbox"/>	0,1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Medium_04_LOD2	4.6 KB	<input type="checkbox"/>	1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Medium_02_LOD2	4.5 KB	<input type="checkbox"/>	1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Large_02_LOD3	4.5 KB	<input type="checkbox"/>	0,1,2		
Assets/Objects/environment/Ciiffs/Meshes/Env_Rocks.fbx:Rock_Medium_03_LOD2	4.4 KB	<input type="checkbox"/>	0,1,2		
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud3	3.9 KB	<input type="checkbox"/>	0,1,2		
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Chair_LOD_1	3.8 KB	<input type="checkbox"/>	0,1,2		

# Mesh Streaming

## — Syn Meshes

Texture Streaming	Mesh Streaming	Configuration	
Sync Meshes		Selected: 100/152, RT: 4.5 MB	
AssetPath	RT Mem	OnDem	References
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Chair_LOD_0	6.5 KB	<input checked="" type="checkbox"/>	0,1,2
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud2	5.9 KB	<input checked="" type="checkbox"/>	0,1,2
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_ArrowSign_LOD_1	5.8 KB	<input checked="" type="checkbox"/>	1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Small_02_LOD1	5.8 KB	<input checked="" type="checkbox"/>	1,2
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Kayak	5.7 KB	<input checked="" type="checkbox"/>	0,1,2
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Umbrella_LOD_1	5.7 KB	<input checked="" type="checkbox"/>	0,1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Small_01_LOD1	5.5 KB	<input checked="" type="checkbox"/>	1,2
Assets/Objects/boats/Interceptor/Interceptor.fbx:Boat_Interceptor_Engine	5.3 KB	<input checked="" type="checkbox"/>	0
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Large_01_LOD3	4.9 KB	<input type="checkbox"/>	0,1,2
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud1	4.8 KB	<input type="checkbox"/>	0,1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Small_03_LOD2	4.7 KB	<input type="checkbox"/>	1,2
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud4	4.7 KB	<input type="checkbox"/>	0,1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Small_04_LOD2	4.6 KB	<input type="checkbox"/>	0,1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Medium_04_LOD2	4.6 KB	<input type="checkbox"/>	1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Medium_02_LOD2	4.5 KB	<input type="checkbox"/>	1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Large_02_LOD3	4.5 KB	<input type="checkbox"/>	0,1,2
Assets/Objects/environment/Cliiffs/Meshes/Env_Rocks.fbx:Rock_Medium_03_LOD2	4.4 KB	<input type="checkbox"/>	0,1,2
Assets/Objects/environment/Clouds/Clouds.fbx:Cloud3	3.9 KB	<input type="checkbox"/>	0,1,2
Assets/Objects/props/props/Meshes/Props_low.fbx:Geo_Props_Chair_LOD_1	3.8 KB	<input type="checkbox"/>	0,1,2

# 官方技术交流群

Auto Streaming 官方群  
628540768



CCD 官方群  
550832645

