



Goals

- 2D Platformer Game



http://vjarmy.com/wp-content/uploads/2012/12/awesomenauts.jpg

- Fully Destructible Terrain



http://www.androidcentral.com/sites/androidcentral.com/files/articleimage/108579/2011/01/thumb_550_WRMS-AND_EN_800x480_Screen01_R2.png

General Outline

- Unity

- Coding Multiplayer Basics- Example Synchronization Issues
 - The "Explosion" Pipeline
 - Artistic Direction
 - **Art** Particle FX
 - DEMO

Coding

(Below: Partial View of all the Scripts)

- Documents Music Pictures Videos 🌉 kyle Windows7 OS (C:) □ LENOVO (D:)
- installs (\\styx) (R:) ■ MeleeAttack.cs~ Matchmaker.cs Network Lerp.cs.meta
- PolygonClipperTest.cs~ PlayerSpawnManager.cs.meta PlayerIDManager.cs~ PlayerHealth.cs PlayerControl.cs.meta PenetrateObjectEffect.cs MoveBetween.cs.meta JumpThroughTrigger.cs~ HitObjectEffect.cs Fortify.cs~ FastForwardParticleSystem.cs~ FallThroughTrigger.cs

RangedAttack.cs.meta

PolyClipper.cs~ PlayerSpawnManager.cs PlayerIDManager.cs.meta PlayerEffect.cs~ PlayerControl.cs notes.txt~ MoveBetween.cs MeleeAttack.cs.meta ManaManager.cs~ Lerp.cs JumpThroughTrigger.cs.meta HideAreaTrigger.cs~ Fortify.cs.meta

ExplosionObjectEffect.cs

Destroyer.cs

RangedAttack.cs

- PrefabID.cs~ FastForwardParticleSystem.cs.meta ExplosionObjectVisualEffect.cs~ EffectObjectsInArea.cs.meta
 - PlayerNetwork.cs~ PlayerIDManager.cs PlayerEffect.cs.meta PlatformTrigger.cs~ notes.txt.meta MeshGenerator.cs~ MeleeAttack.cs ManaManager.cs.meta ■ KillZone.cs~ JumpThroughTrigger.cs HideAreaTrigger.cs.meta Fortify.cs FastForwardParticleSystem.cs ExplosionObjectVisualEffect.cs.meta Enums.cs~ EffectObjectsInArea.cs CameraFollow.cs~

PolyClipper.cs.meta

▼ 👣 Search Scripts Arrange by: Folder ▼ TODO.txt xt.meta dObjectCreator.cs~ SynchedObjectCreator.cs.meta rticleSystemAfterTime.cs SetRenderLayer.cs~ ictibleNature.meta SDestructibleNature.cs~ ictable.cs~ SDestructable.cs.meta er.cs RangedAttack.cs~ PrefabID.cs.meta PrefabID.cs PolyClipper.cs PlayerSpawnManager.cs~ PlayerNetwork.cs PlayerNetwork.cs.meta PlayerHealth.cs~ PlayerHealth.cs.meta PlayerEffect.cs PlayerControl.cs~ PenetrateObjectEffect.cs~ PenetrateObjectEffect.cs.meta ■ MoveBetween.cs~ notes.txt MeshGenerator.cs.meta MeshGenerator.cs ■ Matchmaker.cs~ Matchmaker.cs.meta ManaManager.cs Lerp.cs~ KillZone.cs.meta KillZone.cs HitObjectEffect.cs.meta HitObjectEffect.cs~ HideAreaTrigger.cs ■ Gun.cs~ FollowPlayer.cs.meta FollowPlayer.cs ■ FallThroughTrigger.cs~ FallThroughTrigger.cs.meta ExplosionObjectVisualEffect.cs ExplosionObjectEffect.cs~ Enums.cs.meta Enums.cs DestructibleObjectManager.cs~ Destroyer.cs~ CameraFollow.cs.meta CameraFollow.cs













ExplosionObjectEffect.cs.meta

EffectObjectsInArea.cs~

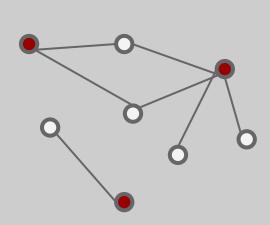
Destroyer.cs.meta

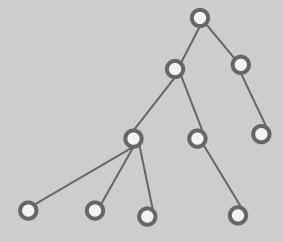
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Component Based Approach

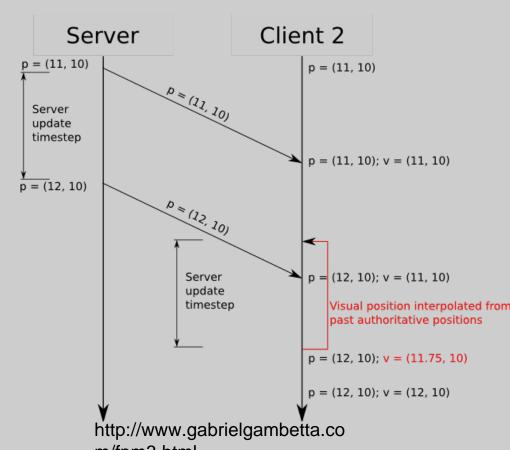






Multiplayer Basics

- Synchronization is expensive
- Game states off by 100 ms



m/fpm3.html



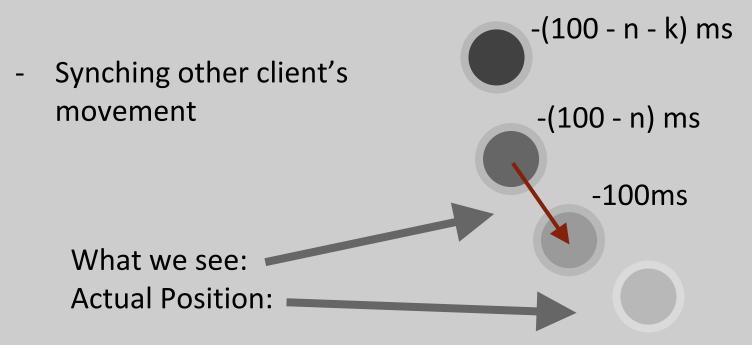
Implementing Multiplayer



- Library for connecting players
- PhotonView: fixed step state sychronization
- RPC: remote method call



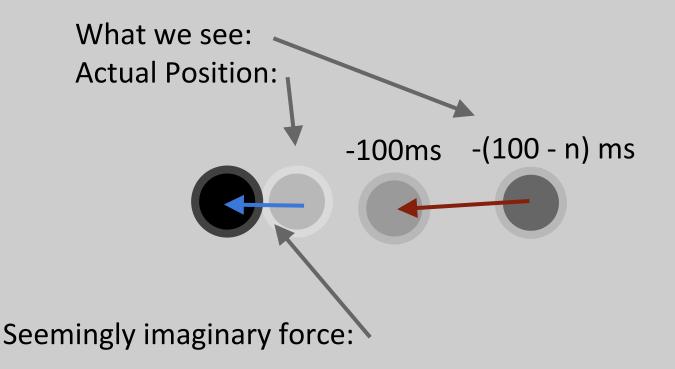
Multiplayer Physics (Positions)





Multiplayer Physics (Positions)

- Downside: glitched player to player physics





Multiplayer Physics (Projectiles)

- Projectiles: common time driven projectile created across clients
 - Avoids manual position synchronization

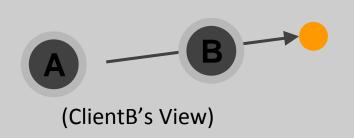
Position = F(PhotonNetwork.time - timeCreated)



Multiplayer Physics (Projectiles)

 Spawn Tunneling: lag causes projectile to spawn past player in other client



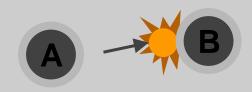


~ 100ms sync delay, Client B creates projectile at time T + 100 ms



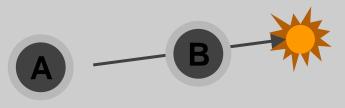
Multiplayer Physics (Projectiles)

View Discrepancy: fix by setting 100 ms creation delay



Client B registers collision, transmits event to Client A

(ClientB's View)



~ 100ms sync delay, event reaches Client A after projectile has passed

(ClientA's View)



Multiplayer Physics (Projectile Effects)

- Projectile Effect: blind, slow, knockback, damage:
- Wide variety of effects but limited network bandwidth Solution: minimize calls, rely on previous shared info



(ClientA's View)

(ClientB's View)



Multiplayer Physics (Destructible Terrain)

- STATIC: avoid additional issues with position sync
- Special "Explosion" ProjectileEffect



(ClientA's View)

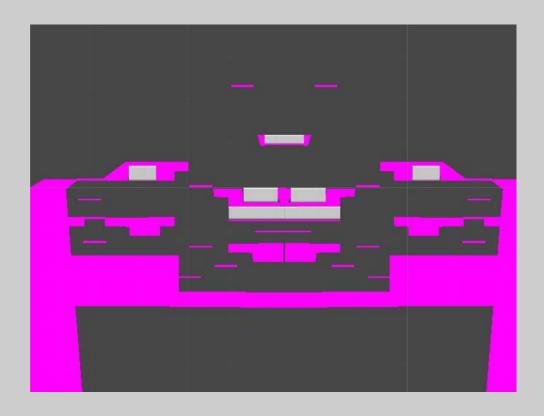
(ClientB's View)





Artistic Direction (Initial Attempts)

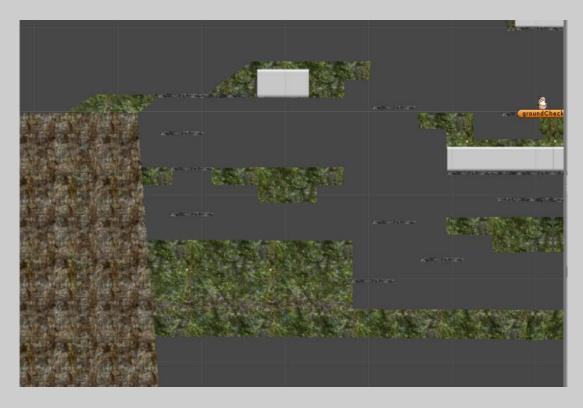
- or lack thereof





Artistic Direction (Initial Attempts)

- crappy texturing?





Artistic Direction (Refocusing)

- Goals
 - good looking
 - realistic explosion effects
- Constraints
 - no time
 - limited drawing experience



Artistic Direction (Refocusing)



- Good Looking
- Economical
 - Simple shapes, Single color palette
 - NO TEXTURES -> realistic explosions

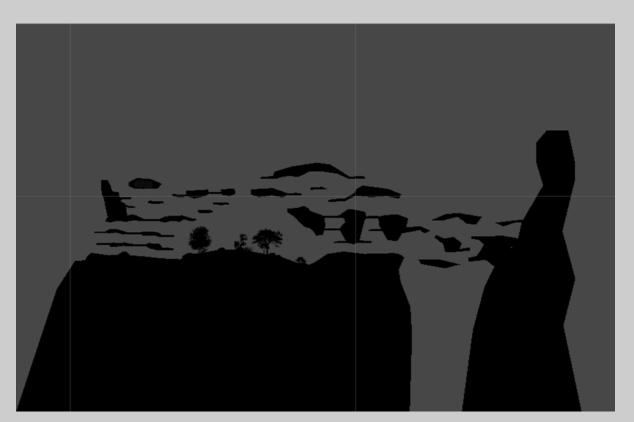






Artistic Direction (Map Design)

Lacking Cloudy
Blurred Feel





Artistic Direction (Map Design)

- Particle Systems
- Background





Artistic Direction (Map Design)

- Finalized





Artistic Direction (Map Touchups)

- Waterfall FX
- God Ray FX





Miscellaneous FX

Live Demo

- Destructible Vegetation
- Sound
- Explosion FX

