

Angá Resource & Kinetic Repulsion System

A Kinetic-Driven, Modular Resource Loop and Crowd Control Framework for Action Roguelites

Project Context: Open Veins (Action Roguelite Prototype)

Author: Guilherme Martins (www.guifamar.com)

Engine / Tools: Unreal Engine (Blueprints Ecosystem)

Document Version: 1.1 (Production Ready)

Angá Resource & Special Attack System

1. System Overview

The **Angá System** is a core combat loop mechanic designed for crowd control and resource management during high-density wave encounters. Defeating enemies grants a fractional chance to yield *Angá* (soul energy). Once the player accumulates maximum energy, they can unleash a powerful area-of-effect (AoE) kinetic blast to repel surrounding threats.

2. Core Mechanics & Flow

A. The Combat Drop (The 10% Rule)

To balance the scaling difficulty of larger enemy waves, the resource drop rate is constrained to a strict probability gate:

- Drop Chance:** Every defeated NPC triggers a **Random Float in Range (0.0, 1.0)** check.
- Probability:** There is a **10% chance** (≤ 0.1) that an enemy will spawn an Angá Orb upon death.
- Design Intent:** Lowering the drop rate to 10% prevents the Special Attack from being spammed infinitely, maintaining tactical tension as enemy density scales up in later waves.

B. The Magnetic Orb (BP_AngaOrb)

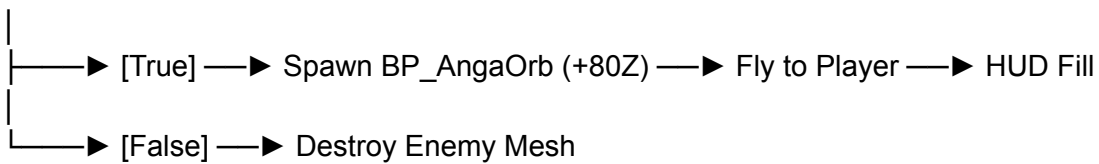
- Spawning:** Spawns via **SpawnActor From Class** at the defeated NPC's location with a vertical offset of **+80.0 Z** to prevent ground clipping.
- Homing Behavior:** Uses **VInterp To** driven by **Event Tick** to smoothly interpolate its location toward the player character, acting like a spiritual magnet.
- Collection:** On **Component Begin Overlap** with the player, it increments the current resource, clamps the value, and triggers **Destroy Actor**.

C. UI Resource Tracking (WBP_HUD_OVEINS)

- Visual Representation:** A dedicated progress bar mapped to values between **0.0** and **1.0**.
- Numerical Feedback:** A dynamic text block formatted as **{Current} / {Max}** (e.g., **100 / 100**).
- Value Clamping:** Resource acquisition is strictly capped at **100.0** using a **Clamp (Float)** node at the source to prevent text/UI overflow.

3. Technical Blueprint Architecture

[Enemy Defeated] —► Drop Roll (10% Chance)



Special Attack Execution (IA_SpecialAttack)

When the player triggers the Special Input (Right Mouse Button / RMB), the system evaluates the following blueprint chain:

1. **Condition Gate:** Checks if `RunAnga >= MaxAnga` (100/100).
2. **Visuals & Feedback:** Instantly executes the player's casting animation (`Play Montage`) and fires a central explosion (`Spawn System at Location`).
3. **Proximity Detection:** Runs a `Multi Sphere Trace For Objects` with a `500.0` radius centered on the player to identify targets.
4. **Kinetic Repulsion (Launch Character):**
 - **Direction Vector:** Calculated via `Normalized (NPC Location - Player Location)`.
 - **Horizontal Force:** Direction multiplied by a scalar value (e.g., `3500.0`).
 - **Vertical Force (Z):** Vector addition of `+600.0 Z` to lift enemies off the ground, bypassing friction for a dramatic knockback effect.
 - **Overrides:** `XYOverride` and `ZOverride` are set to `True` to negate prior NPC velocity.
5. **Resource Reset:** Clears the resource pool (`Set RunAnga = 0`) immediately after the loop resolves.