

ELEVATION A1.1 // SCALE 1:100

CONCRETE MODULAR UNIT

STRUCTURAL INTEGRITY CHECK: PASSED

DEBRIEFS: COLLISION RESOLVED

FPS: 120

GPU UTIL: 85%

LIGHTING BAKED

AMBIENT OCCLUSION: ON

FROM ABSTRACT RULES TO DIGITAL REALITY

A Masterclass in Ludology and
Unreal Engine 5 Implementation

THE MISSION:
DECONSTRUCTING THE MAGIC CIRCLE

THE JOURNEY: → →
THEORY > CONSTRUCTION > ATMOSPHERE > LOGIC

DEFINING THE MAGIC CIRCLE

THE MAGIC CIRCLE



Fixed Rules

No Material Interest

Quantifiable Outcome

Orderly Manner

Real-World
Consequences

Ordinary Life

Material Interest

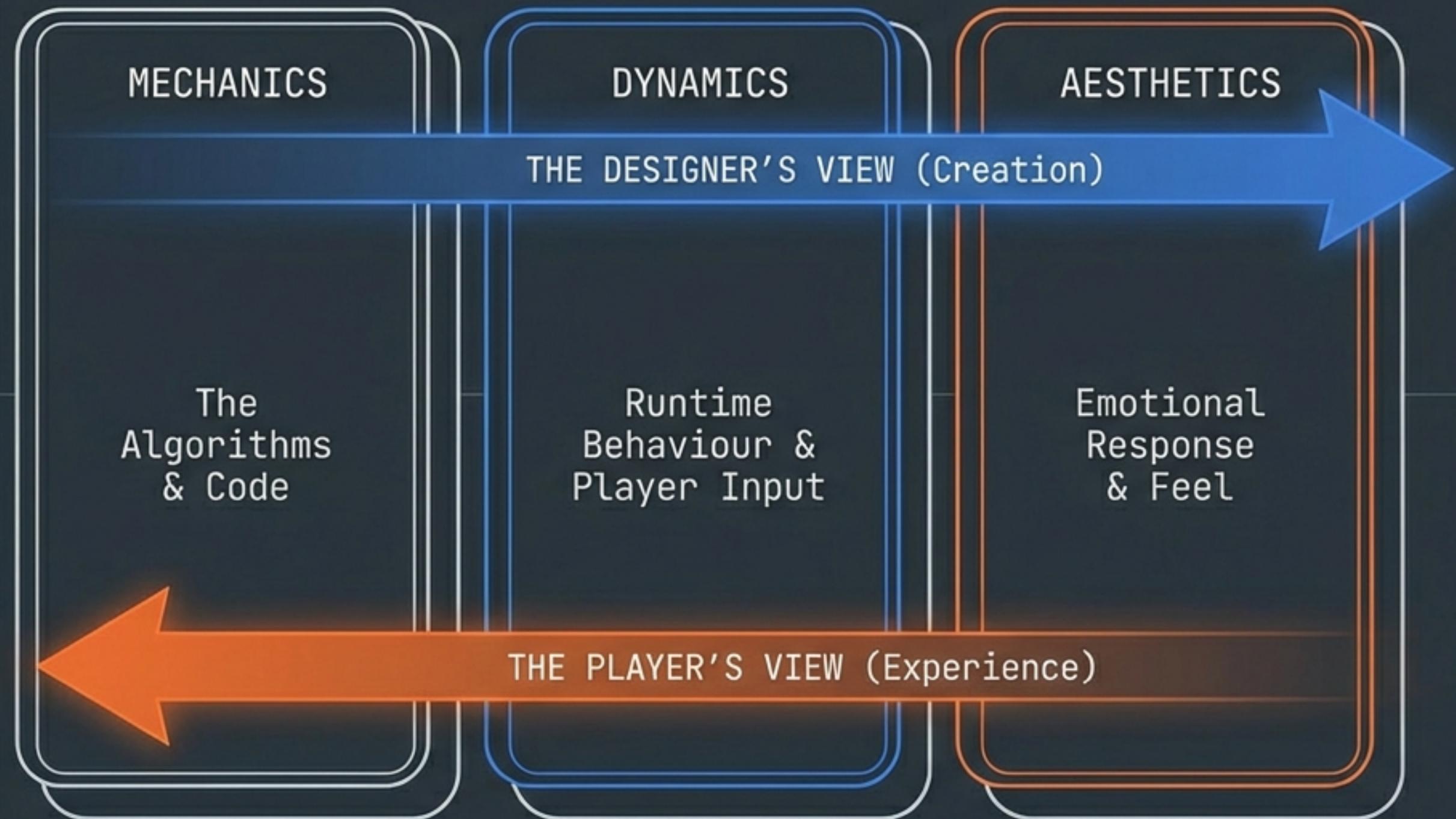
Chaos

CORE GAME:
Tag

VARIANT:
Stick in the Mud
(State Change)

EVOLUTION:
Entrapment Mechanic

THE FRAMEWORKS OF FUN



```
// FDD FRAMEWORK
var Formal = [Rules, Resources];
var Formal = [Rules, Resources];
var Dramatic = [Story, Premise];
var Dynamic = [Emergence];
```

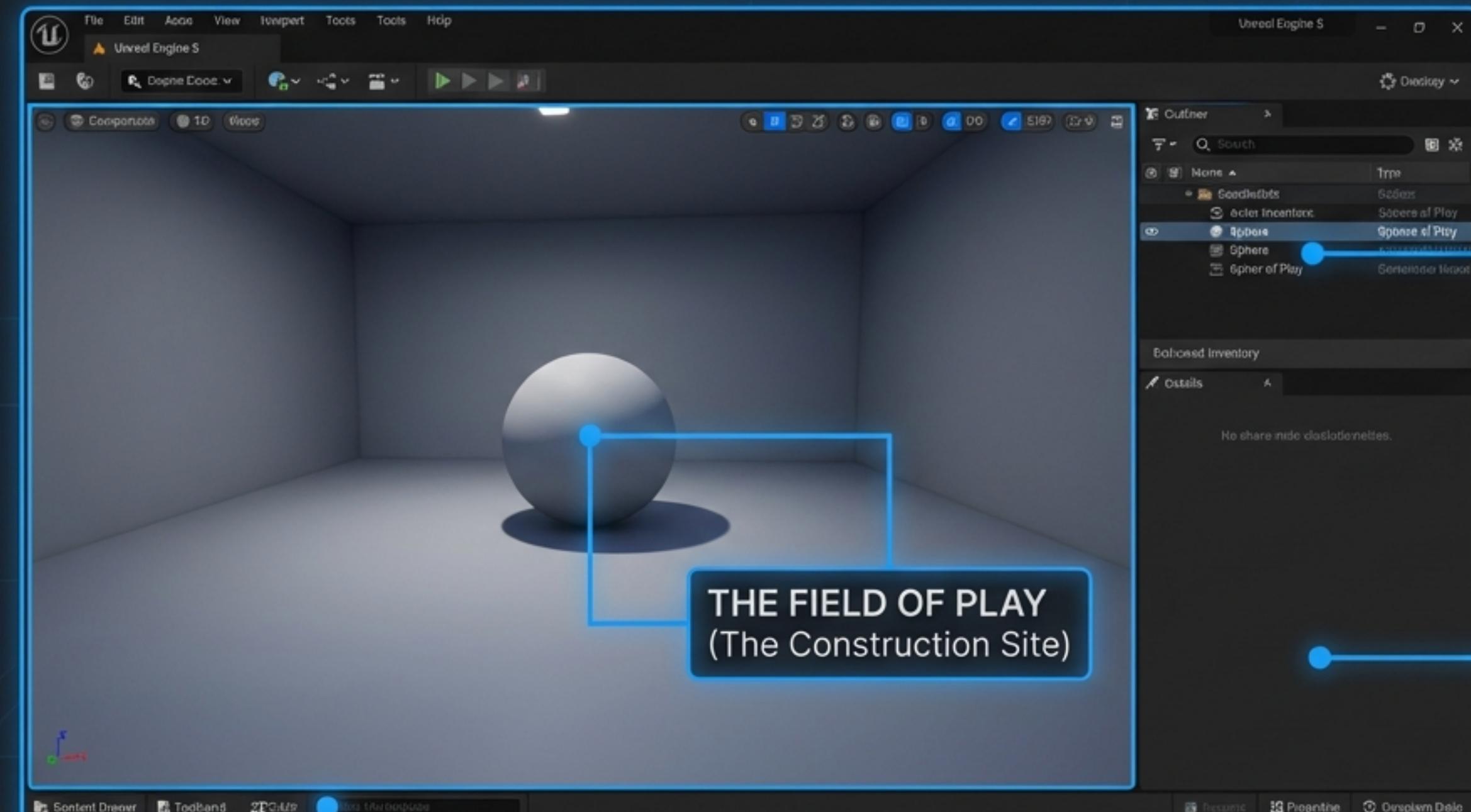
```
// FDD FRAMEWORK
var Formal = [Rules, Resources];
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```

THE RECIPE FOR A KILLER GAME



- > QUERY 1: In what way is my world more interesting than the real world?
- > QUERY 2: How will the player internalise my world?

THE FIELD OF PLAY: INTERPRETING THE EDITOR



THE FIELD OF PLAY
(The Construction Site)

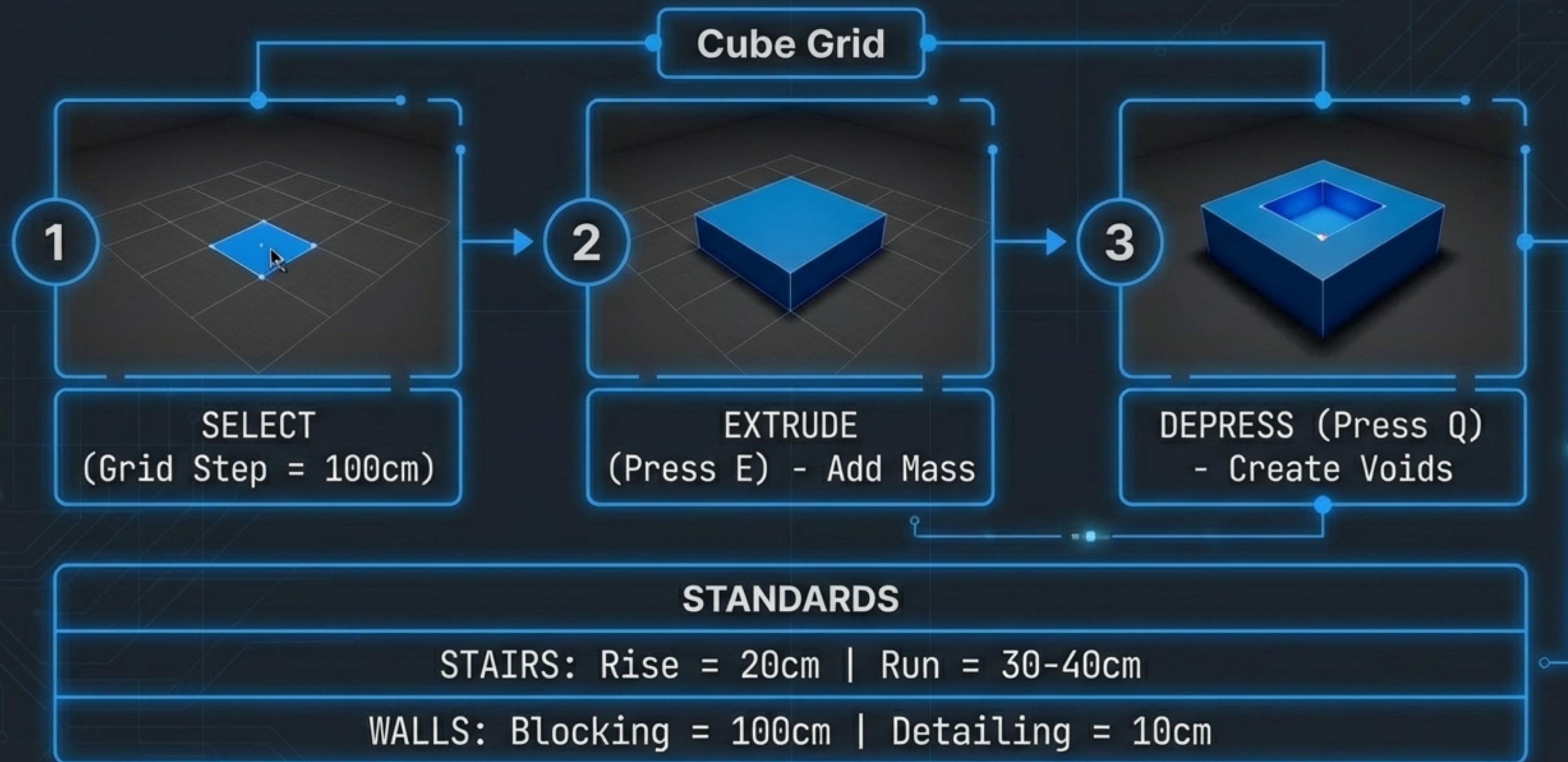
ACTOR
INVENTORY
(Sphere of Play)

PROPERTIES
(Rules & Variables)

CONTENT DRAWER (Ctrl + Space)
& FAB MARKETPLACE

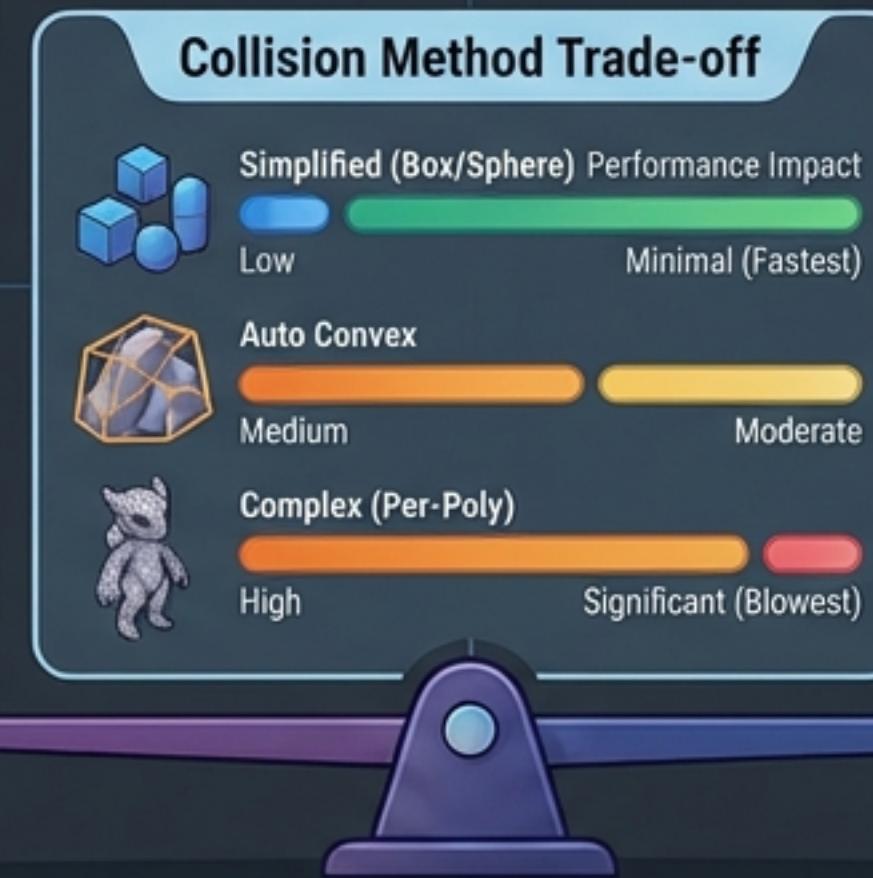
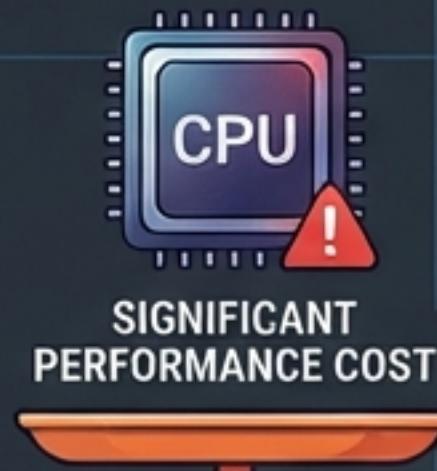
PRO TIP: Use 'Env. Light Mixture'
for instant atmosphere.

SCULPTING THE UNIVERSE: MODELING MODE



THE LAWS OF PHYSICS: MASTERING COLLISION

HIGHER ACCURACY & DETAIL



HIGHER PERFORMANCE & SPEED



TECHNIQUE SUMMARY

OPTIMISATION STRATEGY: MANUAL COMPOSITION

Problem: 'Complex as Simple' is CPU heavy.

Solution: Build hitboxes using simple Box Collision components (Left Wall, Right Wall, Header) in the Blueprint.

BREATHING LIFE: NIAGARA ARCHITECTURE

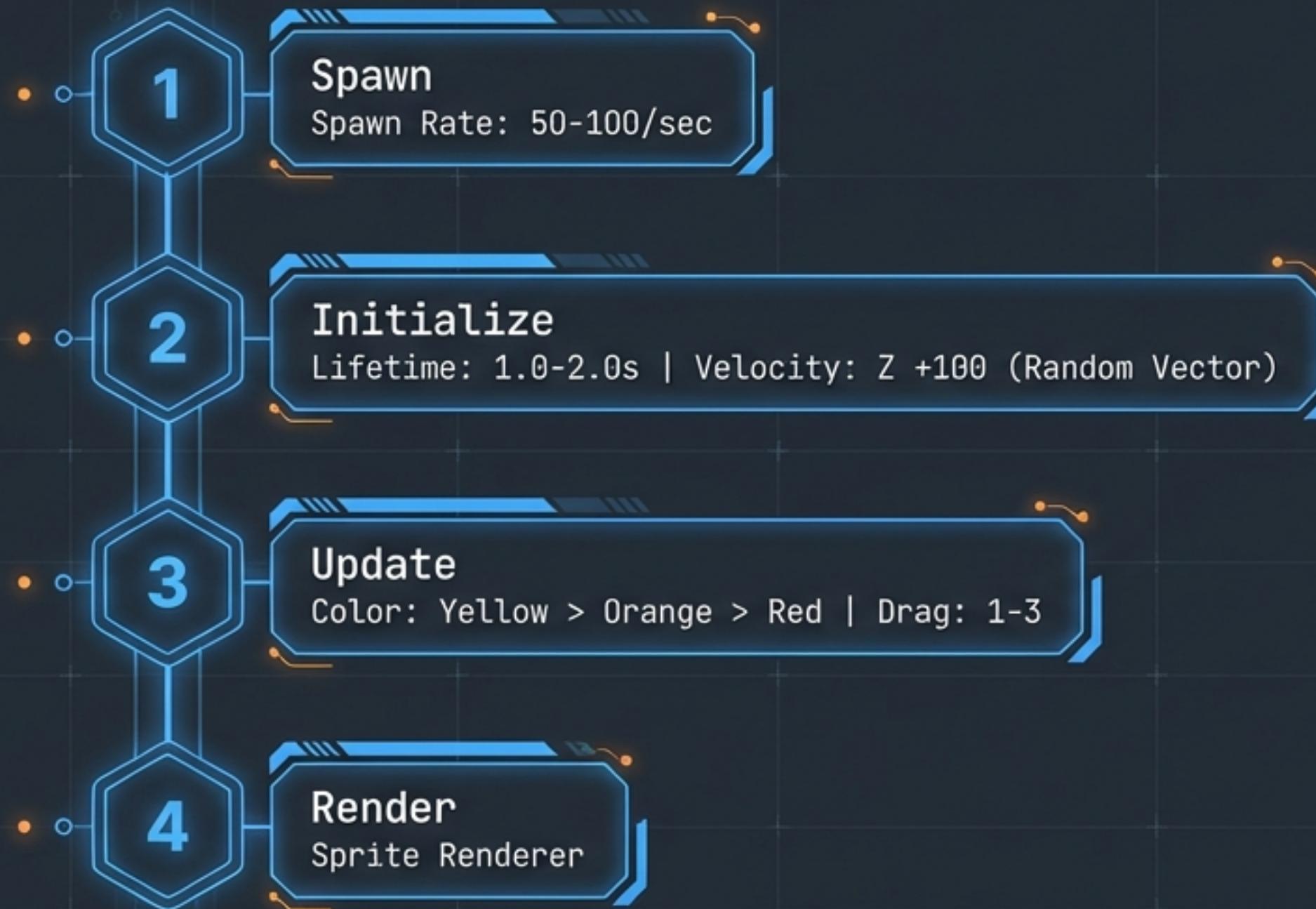
THE CORE HIERARCHY



THE EXECUTION STACK

1. **SPAWN:** Runs once on creation (Initial Setup).
2. **UPDATE:** Runs every frame (Physics/Forces).
3. **RENDER:** Defines the look (Sprite/Ribbon/Mesh).

CASE STUDY: CONSTRUCTING FIRE



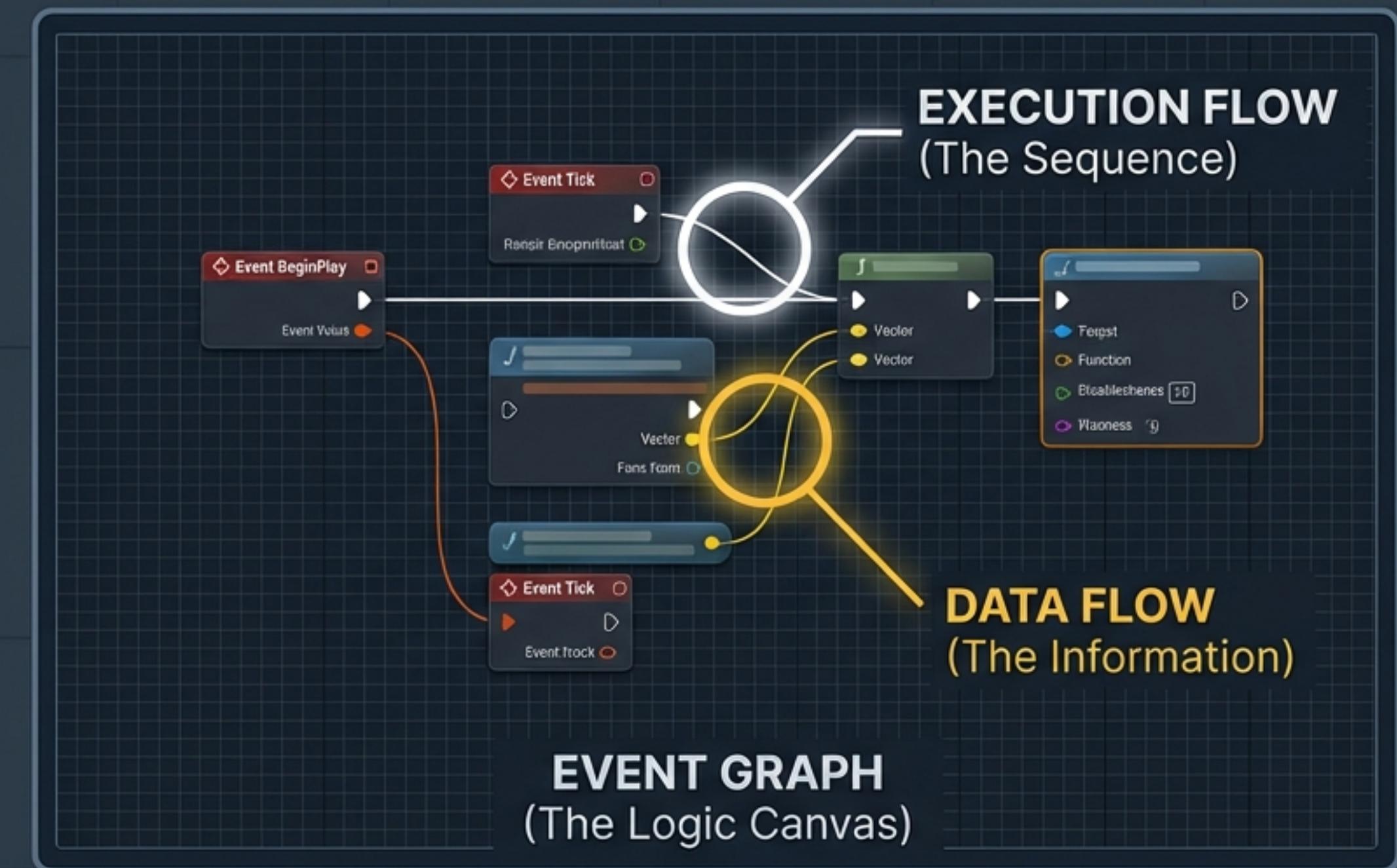
Key Insight: Fire is not an object; it is a collection of fleeting particles governed by randomness and drag.

THE BRAIN OF THE OPERATION: BLUEPRINTS

DEFINITION:

A visual scripting system using nodes to define behaviour and structure.

JetBrains Mono



ARCHITECTURE OF LOGIC: LEVEL VS. CLASS

LEVEL BLUEPRINTS: Scene-Specific Logic



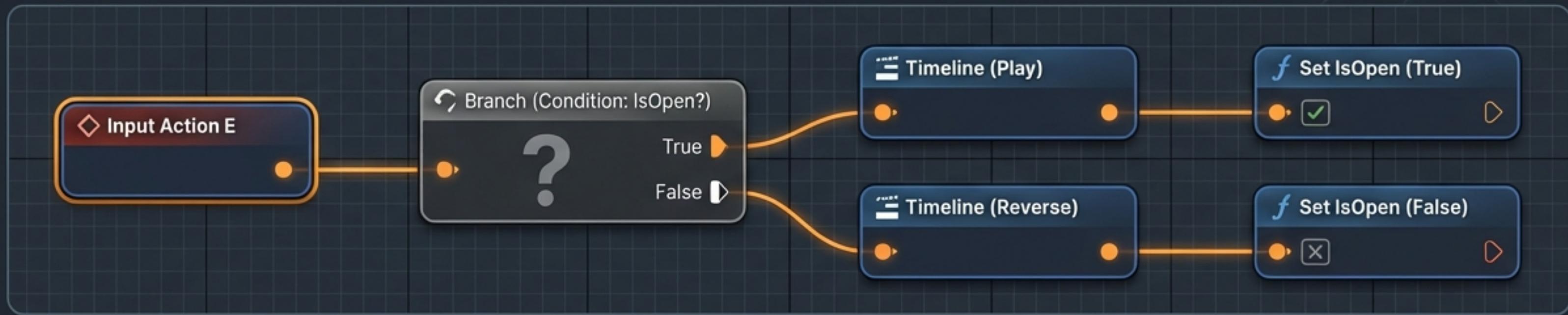
LEVEL BLUEPRINT:
Scene-specific logic
(Cinematics, Lighting)

BLUEPRINT CLASSES & INTERFACES: Scalable Systems

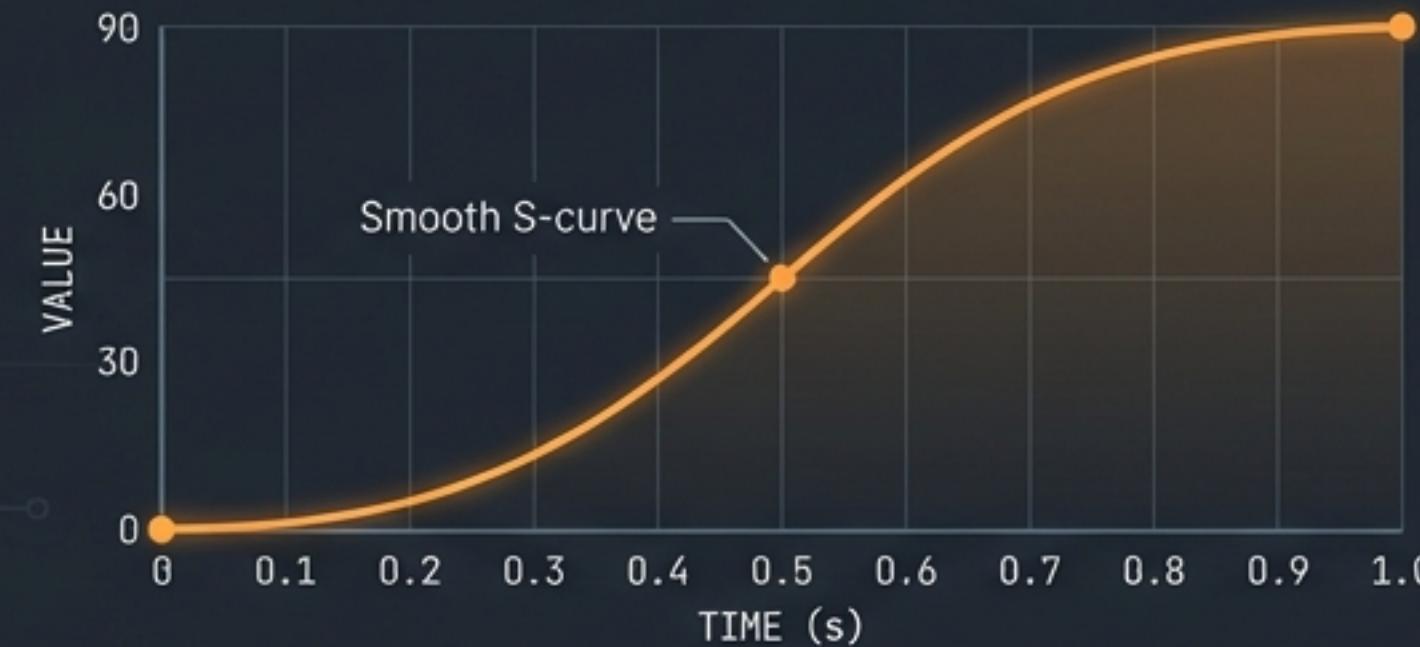


BLUEPRINT CLASS:
Scalable, modular objects
(Doors, Enemies, Pickups)

BLUEPRINT IN-ACTION: THE INTERACTIVE DOOR

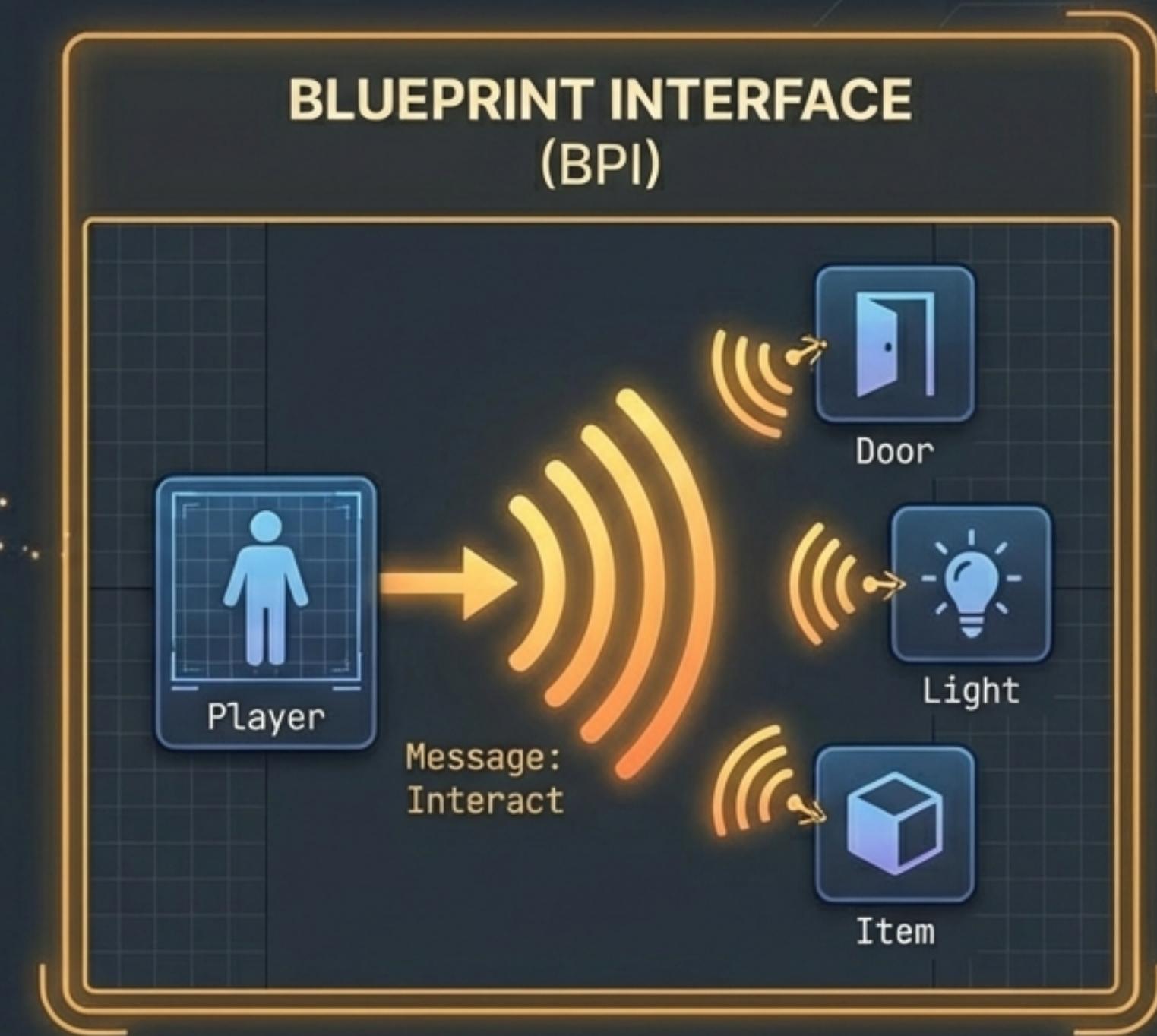
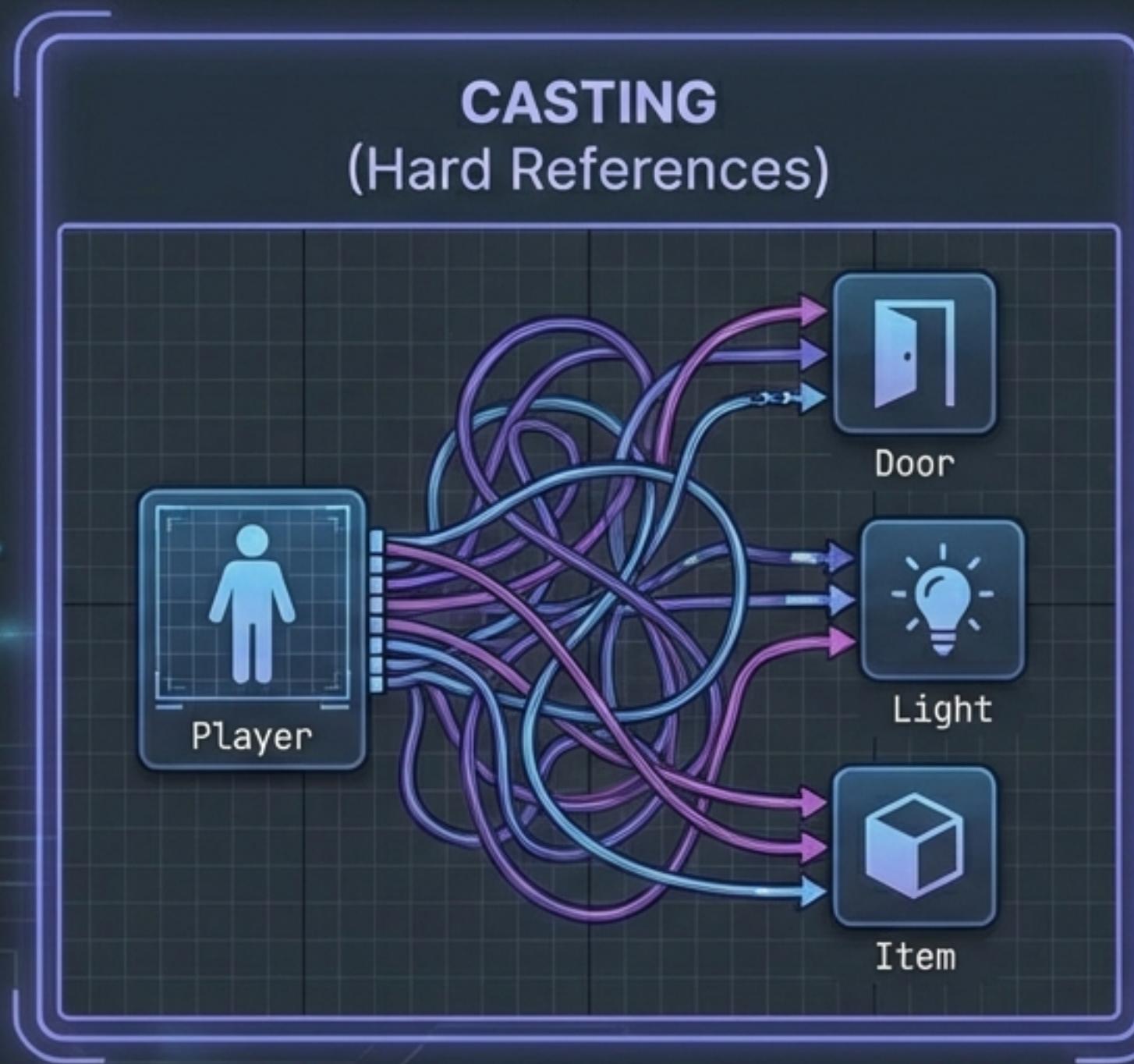


TIMELINE CURVE



MATH TIP: Use 'Split Struct Pin' on Rotation to affect only the Z-Axis (Yaw).

ADVANCED INTERACTION: INTERFACES OVER CASTING



High Memory Cost. Rigid.

Receiver Agnostic. Scalable.

THE DEVELOPER'S TOOLKIT

[Ctrl + Space]

Content Drawer
(Assets)

[Ctrl + L]

Rotate Directional Light
Light (Sun Position)

[Ctrl + L]

Rotate Directional
Light (Sun Position)

[Shift + 5]

Modeling Mode
(Geometry)

[End]

Snap Object to Floor

[Ctrl + B]

Browse to Asset

WORKFLOW WISDOM

1. PIVOTS: Set door pivots to the hinge, not the centre.
2. GRID: Keep snapping on (10cm) to prevent gaps.
3. COMPILE: Variables do not update until you compile.

THE CYCLE OF CREATION



"The mechanic is not just the code; it is the bridge between the rules of the world and the experience of the player."