GOLAGULI

PROCEDURAL TACTICAL SHOOTER

A 2D side-scrolling shooter defined by three technical pillars:

1. Procedural World Generation (Unique Matches)
2. Resource Scarcity (Economic Conflict)
3. Imperfect Information (Fog of War)

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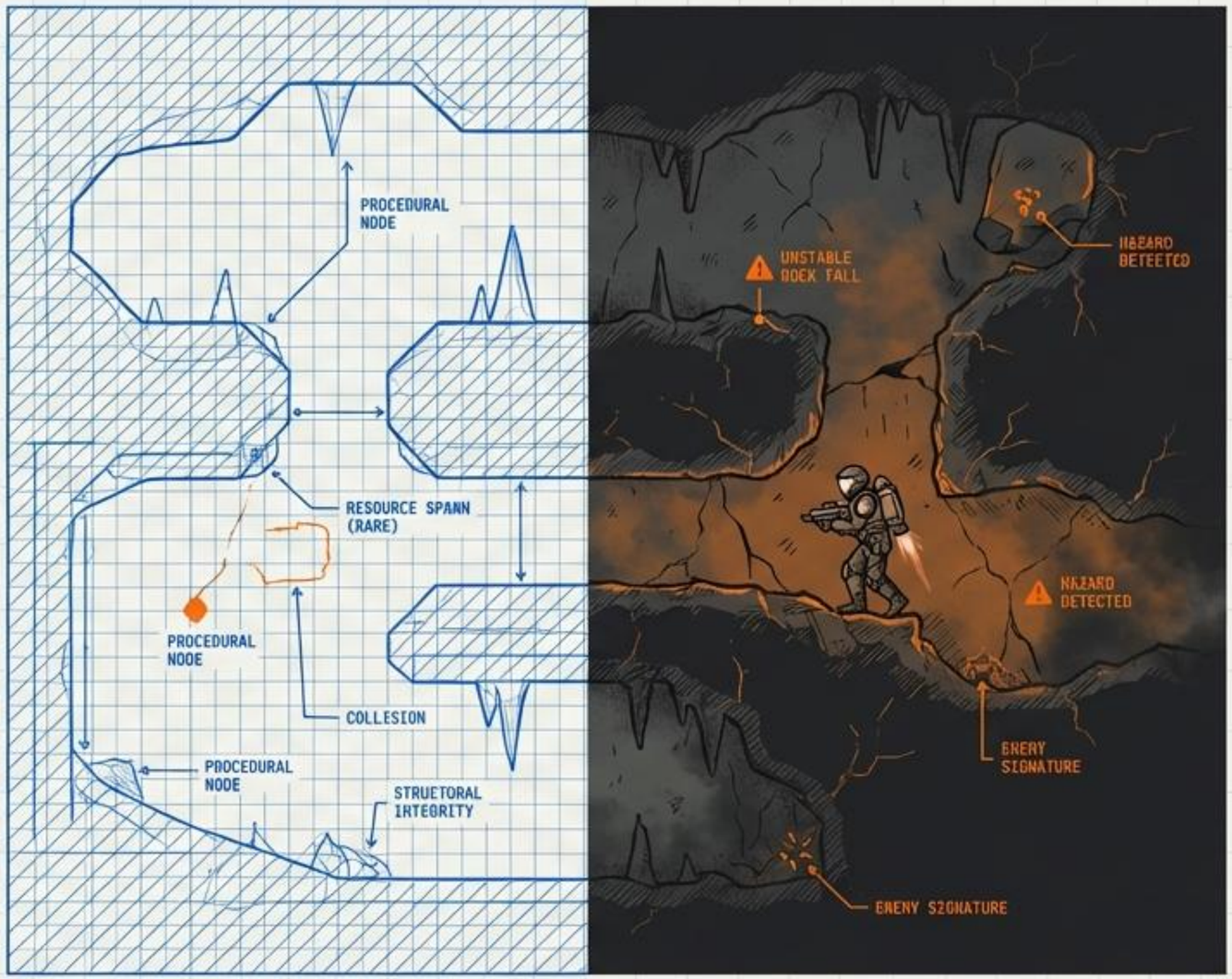
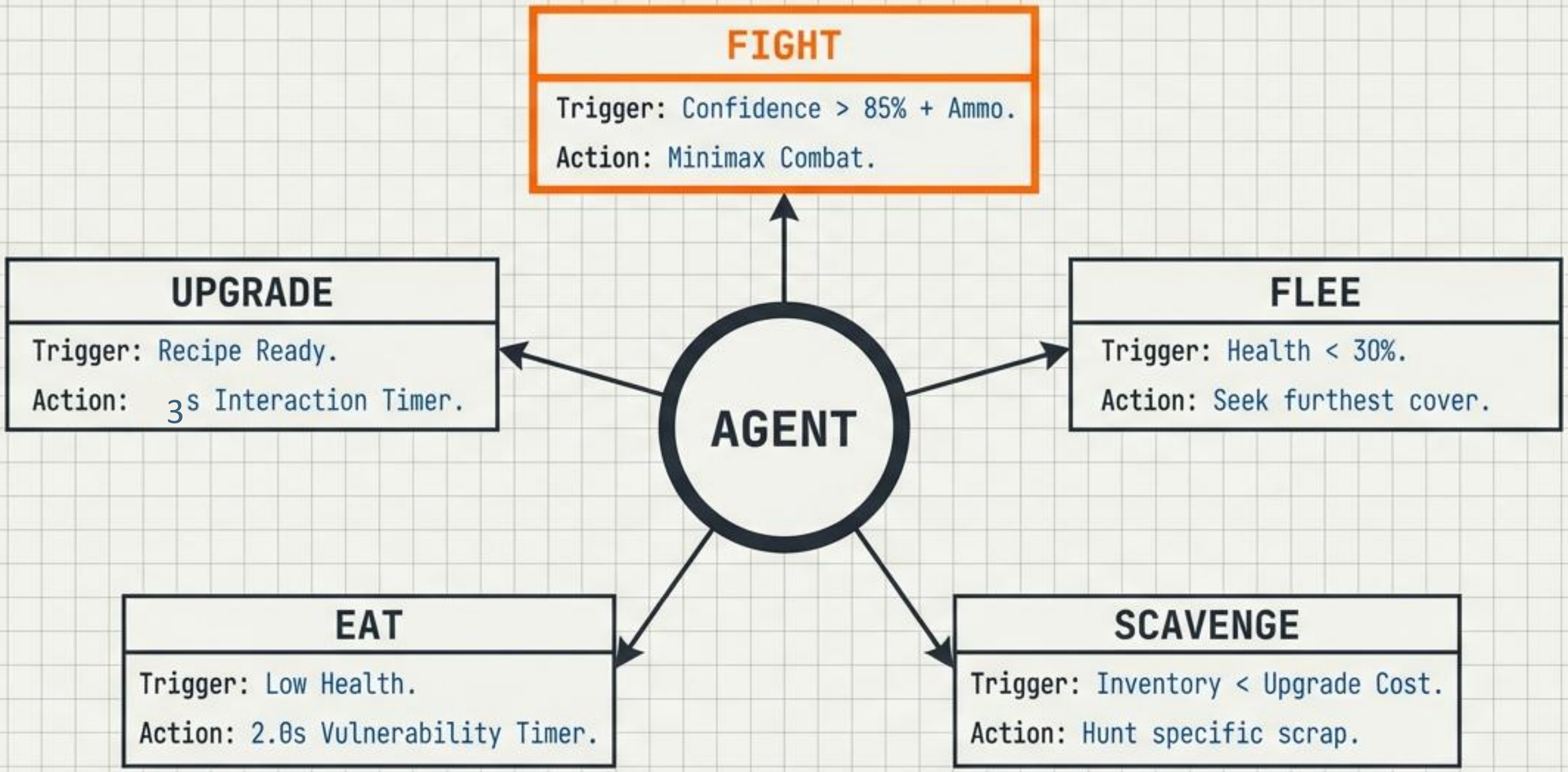


Systemic Chaos. Calculated Survival.

REDACTED

AGENT AI: FINITE STATE MACHINE

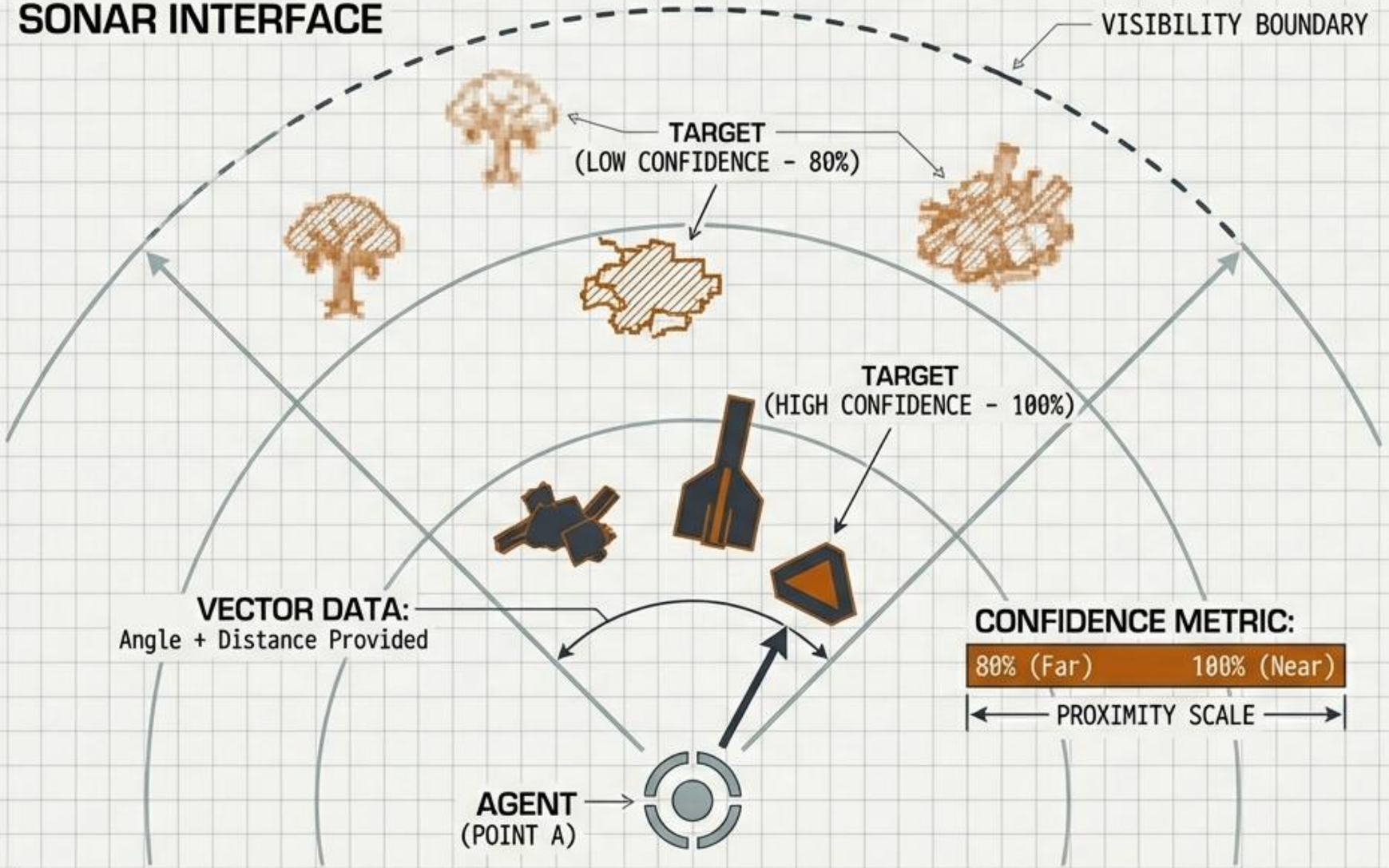
DECISION INTERVAL: 0.5 SECONDS



SENSOR DATA & VISIBILITY SPECTRUM

The Fog of War Mechanics

SONAR INTERFACE



CORE MECHANIC: PARTIAL VISIBILITY

Information is probabilistic, not absolute. Tactical decisions must be made on incomplete data sets.

Variable: Confidence scales linearly with proximity.

MODELING UNCERTAINTY

THE CONFIDENCE ALGORITHM

Target A
(Close Range)

100% Confidence.
Knows exact coordinates.
<IMAGE 0> (x, y)
Perfect Aim.

Agent

Target B
(Long Range)

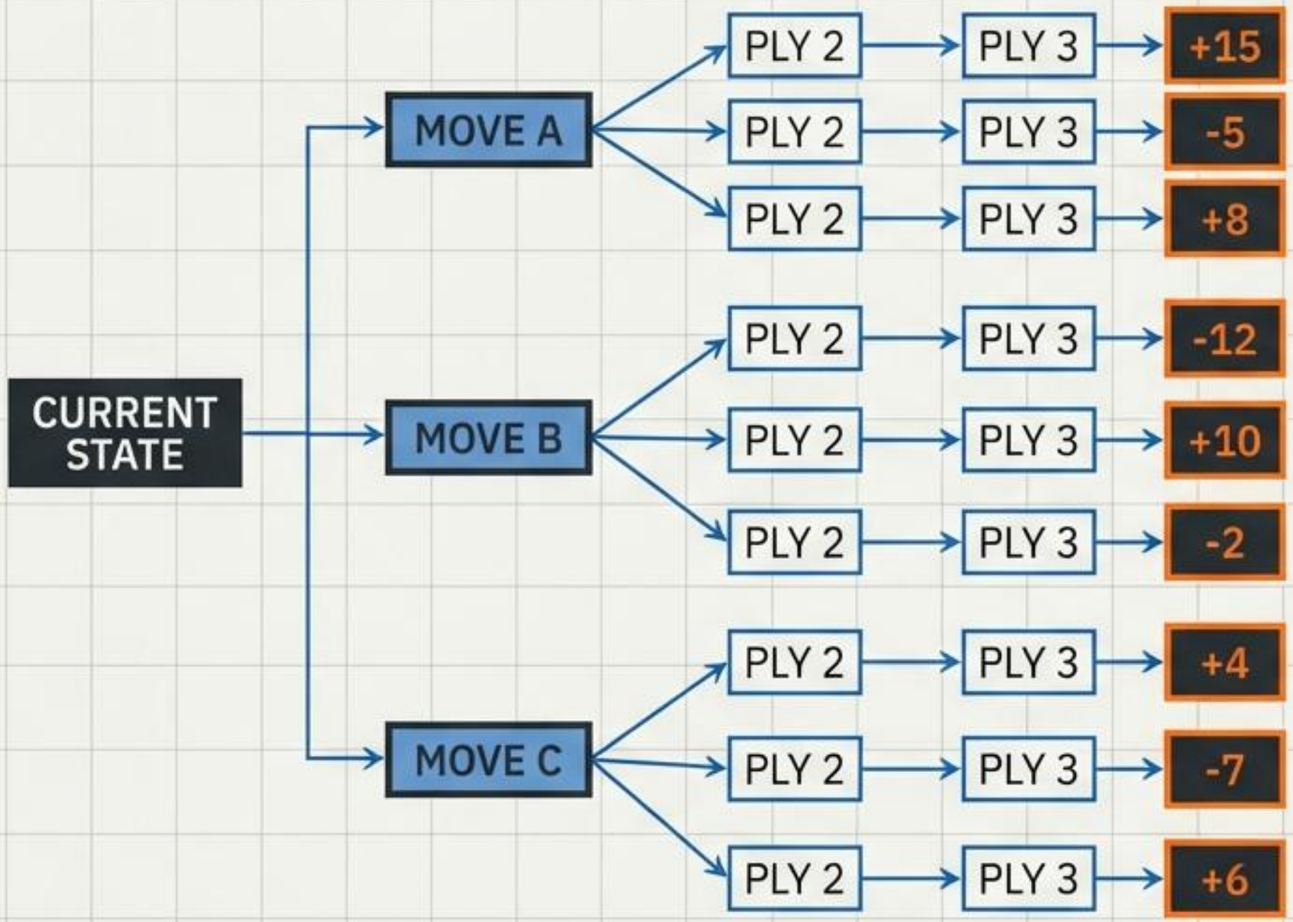
80% Confidence.
Estimates within Radius R.
<IMAGE_1> R
Suppression Fire only.

```
Confidence = 1.0 - (Distance / MaxMapDistance) * 0.5
```

COMBAT LOGIC: MINIMAX IMPLEMENTATION

DEPTH: 3 PLIES (LOOKAHEAD)

DECISION TREE VISUALIZATION



EVALUATION FUNCTION:

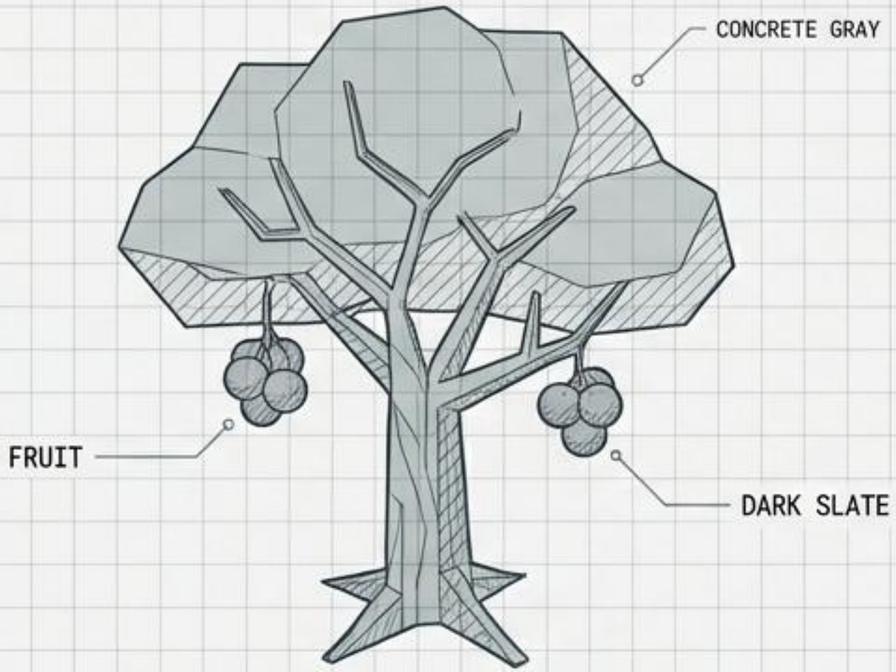
$$E = (Hp - He) \times W1 + (Ap) \times W2 + (Pos) \times W3$$

VARIABLE DEFINITIONS:

- **Hp/He** : Health Differential (Player vs Enemy)
- **Ap** : Player Ammo Count
- **Pos** : Positional Score (+10 High Ground)
- **W** : Personality Weights

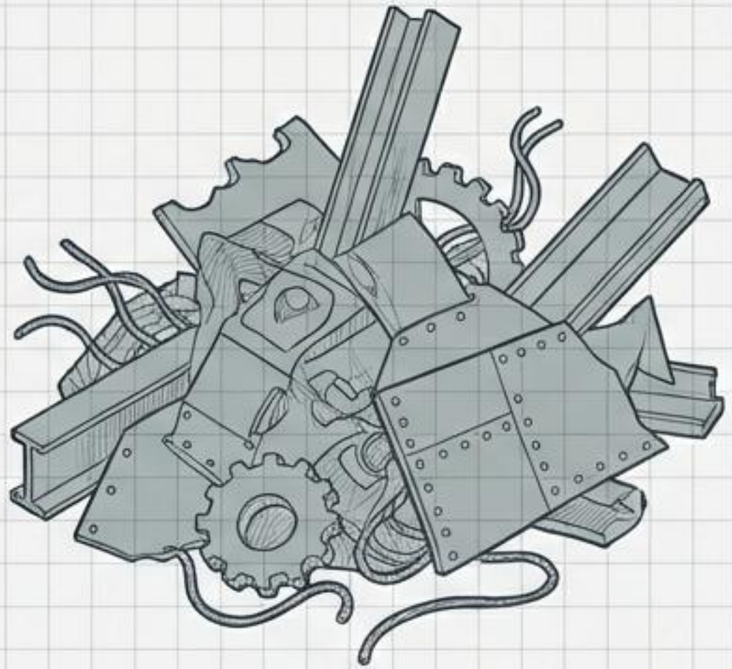
ENVIRONMENTAL ASSET DISTRIBUTION

THE BIOLOGICAL LAYER



OBJECT: Trees
SPAWN LOGIC: Surface Generation
YIELD: Organic Fruit
UTILITY: Health Regeneration & Status Effects

THE INDUSTRIAL LAYER

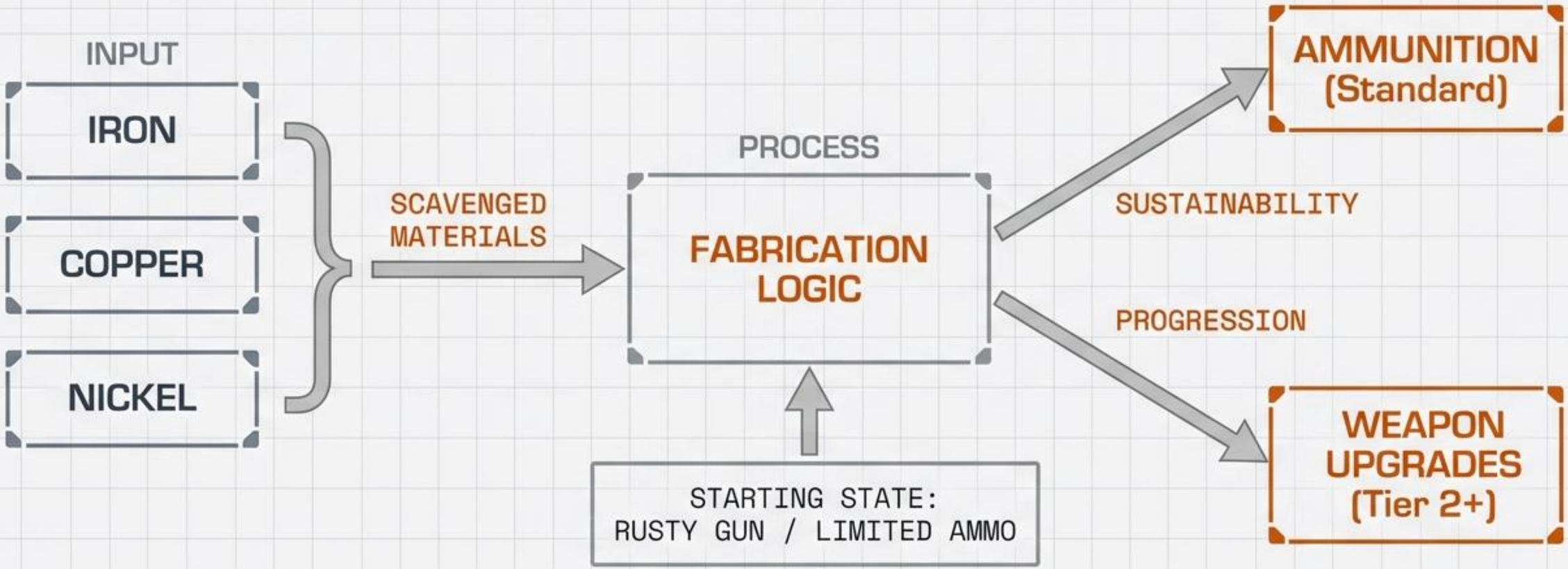


OBJECT: Scrap Piles
SPAWN LOGIC: Random Terrain Distribution
YIELD: Raw Materials (Iron, Copper, Nickel)
UTILITY: Weapon Manufacturing & Ammo Economy

Assets are not decorative. They are the primary drivers of the conflict economy.

THE INDUSTRIAL ECONOMY

Scraps & Ballistics Workflow



The journey from a rusty firearm to lethal supremacy depends entirely on scrap conversion efficiency.

THE STOMACH SYSTEM

DIETARY CHEMISTRY & COMBINATORICS

BASE: Restores 10 HP.

SHADOW BLEND

Effect: 5% Opacity (Stealth).
Untargetable by Turrets.
Note: Must consume within 5s.

ADRENALINE

Effect: +50% Movement Speed
& Reload Speed.

VULNERABILITY: Digestion cycle lasts 15 seconds.

COMBAT SIMULATION: SYSTEMS IN CONFLICT

Scenario Logic Matrix

STATUS: LOW AMMO / HIGH SCRAP / FUEL CRITICAL

CELLULAR AUTOMATA CAVE

BLUR ON RADAR (LC SIGNAL)

PLAYER 1

OPTION A: DEFENSIVE

Action: Retreat to Cellular Automata Cave
Goal: Spend time crafting Ammo safely.

OPTION B: AGGRESSIVE

Action: Consume Fruit Stack (Invisibility)
Goal: Ambush Low-Confidence Signal (80%).

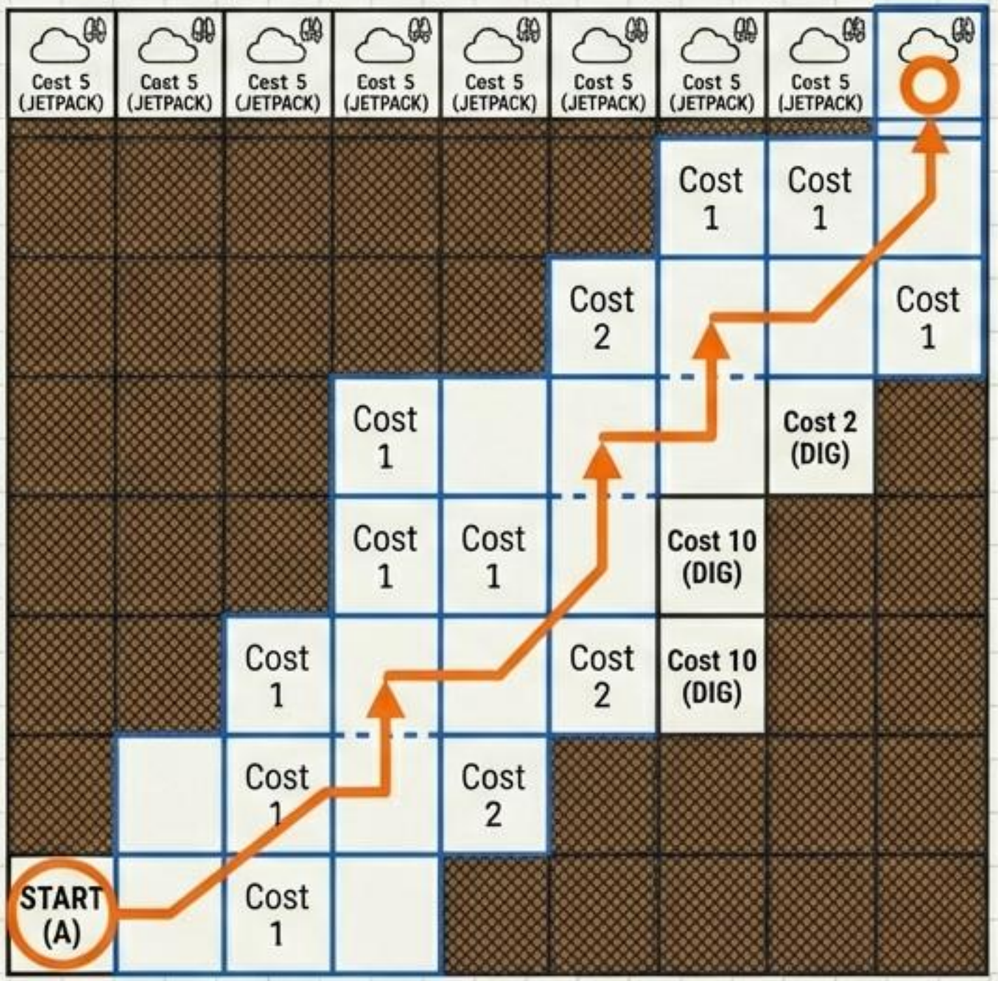
FUEL DROP NOTIFICATION

OPTION C: RISK/REWARD

Action: Pursue Fuel Drop Notification
Risk: High probability of enemy convergence.

TECHNICAL IMPLEMENTATION: NAVIGATION (A*)

EDGE COST LOGIC



Weights

Tunnel Tiles (Clear air)

Solid Dirt Tiles

Jump Tiles (Small gap)

Tunnel Tiles (Clear air)

Solid Dirt Tiles

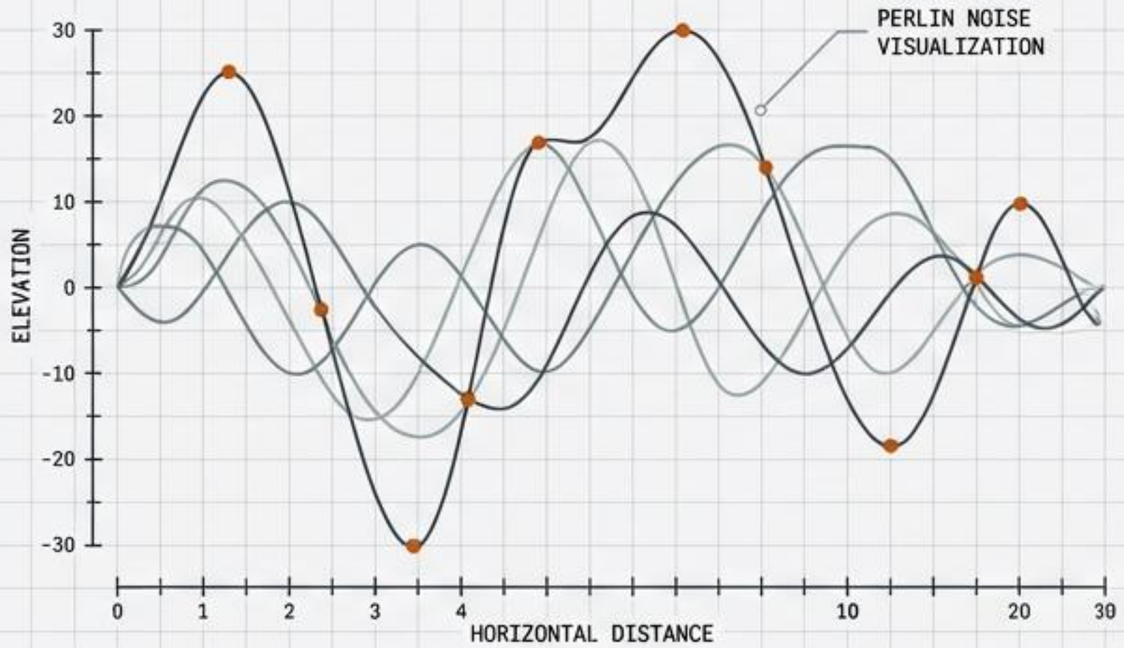
HEURISTIC & LOGIC

- **Graph:** Map Tiles = Nodes
- **Heuristic:** Manhattan Distance
- **Logic:** Agent minimizes Cost, preferring tunnels over digging or fuel usage.

ALGORITHMIC TERRAIN GENERATION

Dual-Phase World Construction

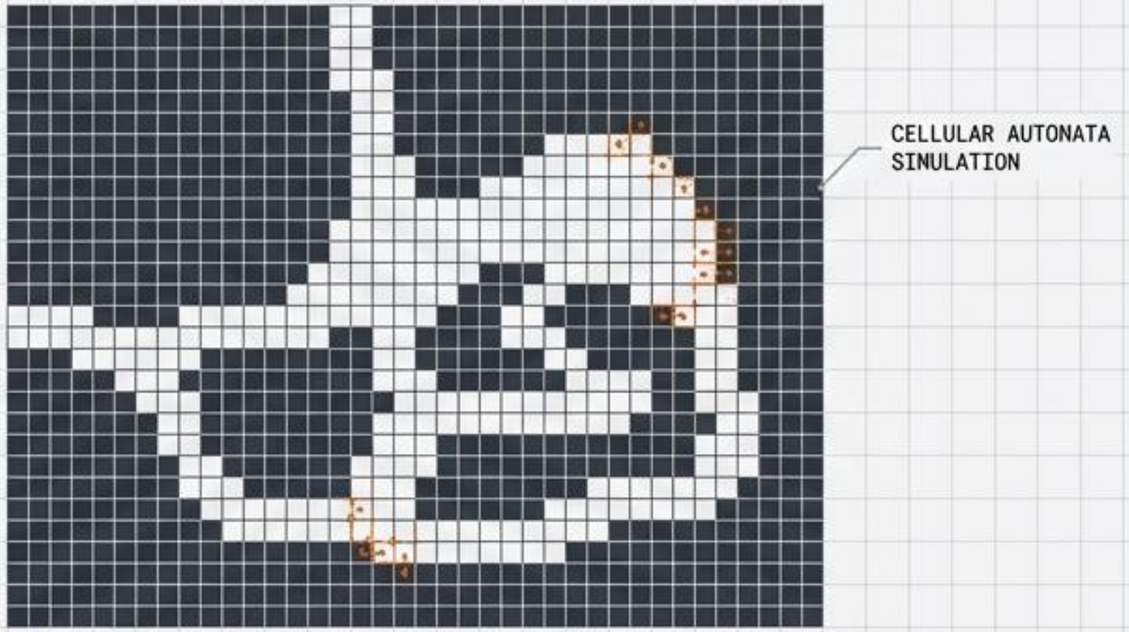
PHASE 01: MACRO ARCHITECTURE



TECHNIQUE: Perlin Noise Algorithm

FUNCTION: Defines general terrain shape and elevation boundaries within finite map limits.

PHASE 02: MICRO STRUCTURE



TECHNIQUE: Cellular Automata

FUNCTION: Carves detailed playable spaces, creating cave systems and tunnel networks.

RESULT: A generated entity balancing open movement with claustrophobic, tunnel-based combat.

TECHNICAL IMPLEMENTATION: MAP LOGIC

NOISE GENERATION

```
Math.perlinNoise(x, seed)
```

-> Generates Surface Heightmap

↓

AUTOMATA LOOP

1. Init Grid Map[x][y]
2. Seed 1 (Wall) / 0 (Air)
3. Loop k=4: If Neighbors > 4 -> Wall

↓

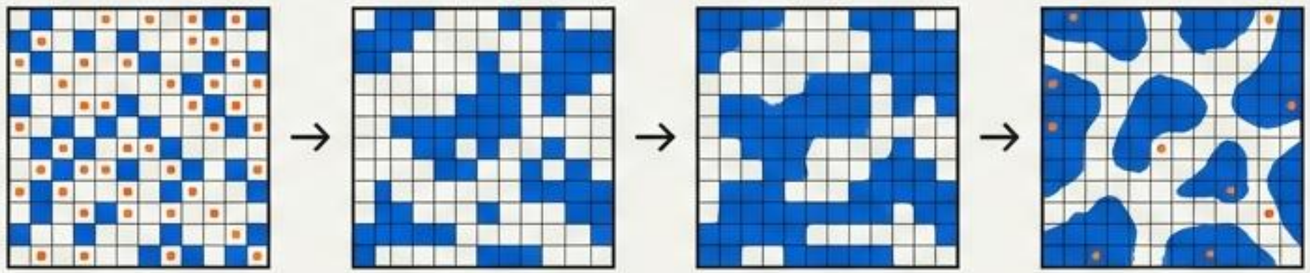
ENTITY SEEDING

Scan Grid. If Surface Grass -> SpawnTree()

Probability:

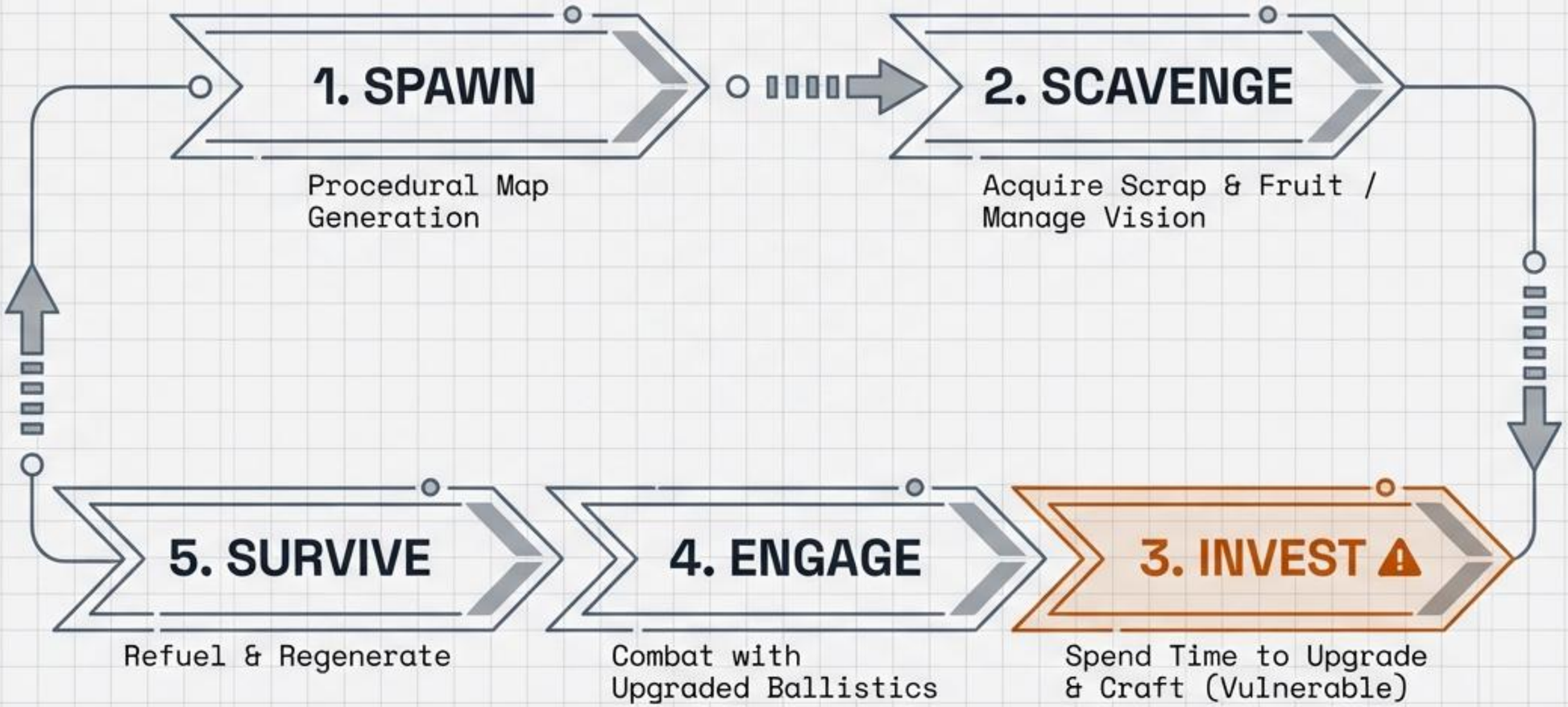
$$P = 0.1$$

CELLULAR AUTOMATA: PROGRESSION



SYSTEM OVERVIEW: THE CORE LOOP

System Logic Flowchart



CONCLUSION: Golaguli is a balance of algorithmic uncertainty and tactical precision.