FIRE/WALL

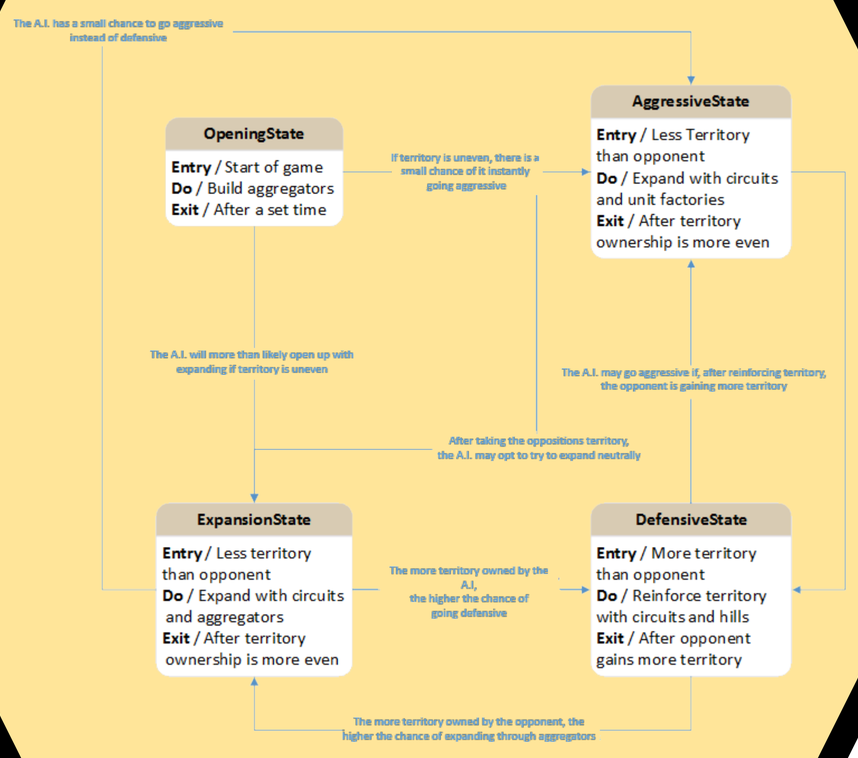
A.I. Logic

Built primarily on a finite state machine, the A.I. uses fuzzy logic to make informed decisions and govern its actions.

Fuzzy logic deals with “ranges” of truth, rather than absolute false and true. Due to this, given the same game state inputs, the A.I. will sometimes make different decisions. The closer the balance of power in the game (territory, buildings, etc), the more likely the A.I. will be to let chance play a role in the decision making, to simulate uncertainty.

There are four states in the state machine; opening, defensive, expanding, and aggressive.

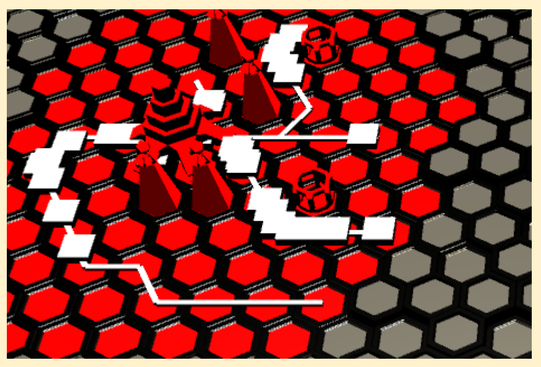
There are currently three different difficulty levels: easy, medium, and hard. The harder the A.I., the quicker the AI begins decision making.



Circuit Generation

Circuits are used in FireWall to transport units between hexes.

Circuits are created by using an A* pathfinding operation. The player specifies specific nodes for the path to travel through, then A* is run on the path to determine the optimal path, making sure to exclude enemy-occupied territory.



Hex Grid Generation

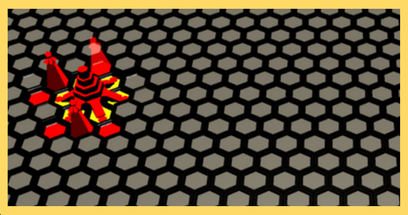
One of the defining characteristics of the game is the hex grid.

Early on, hexes were procedurally generated, but later replaced by a model to reduce complexity.

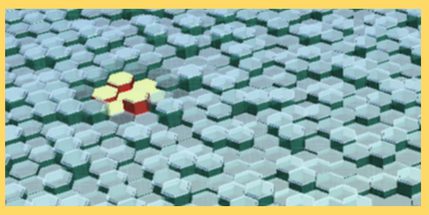
Used “pointy-topped” orientation of hexes for easier horizontal movement.

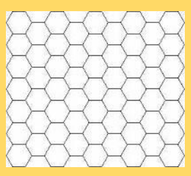
Resistances are randomly calculated and reflected by the y-scale of each individual hex.

Early build, very similar to current model

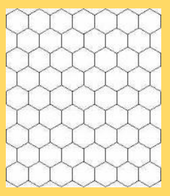


Early build including heightmap





“pointy-topped” → ← “flat-topped”



Networking

Creating a synchronized network experience

Developed a base networking class called Action. Any information traveling across the network needed to implement the base class in order to do this.

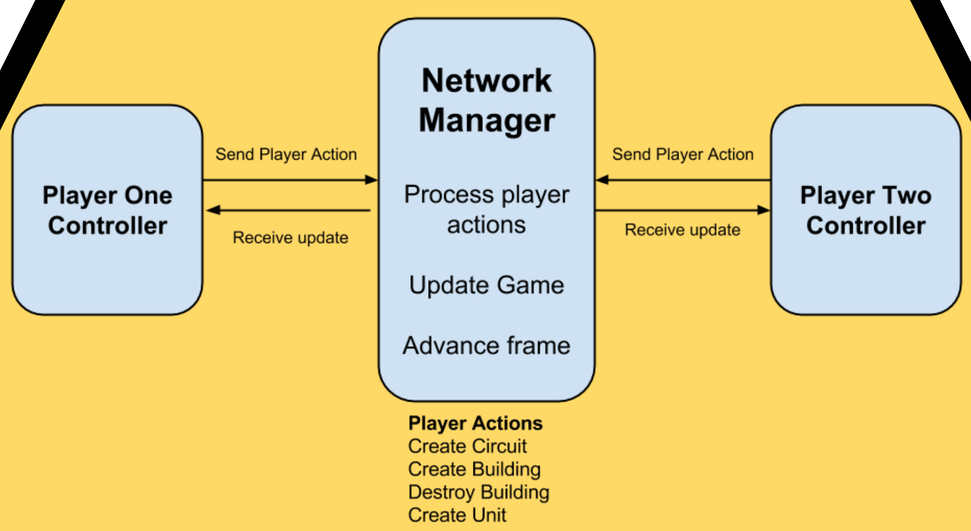
When a player performs an action, the controller creates the action and sends it to the network manager. The network manager will not advance the frame until it has an action from everyone.

Other actions were added that don’t strictly correspond to some player input:

SeedRandomAction: ensures that random numbers are the same across all instances.

ReadyUpAction: Provides game setup information to both players, including color, name, etc.

Networking Visual



Honeycomb Hexertainment