

Destruction FX Houdini Project

YouXitao

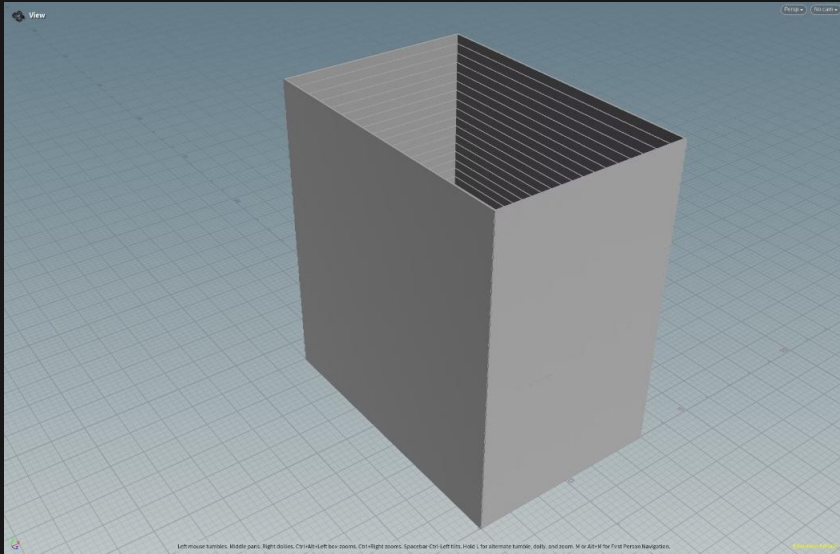




Reference

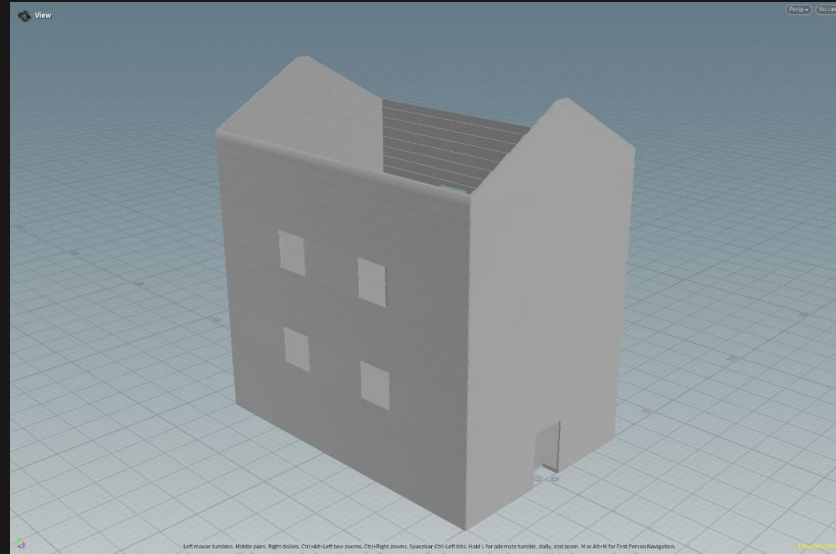


Modeling



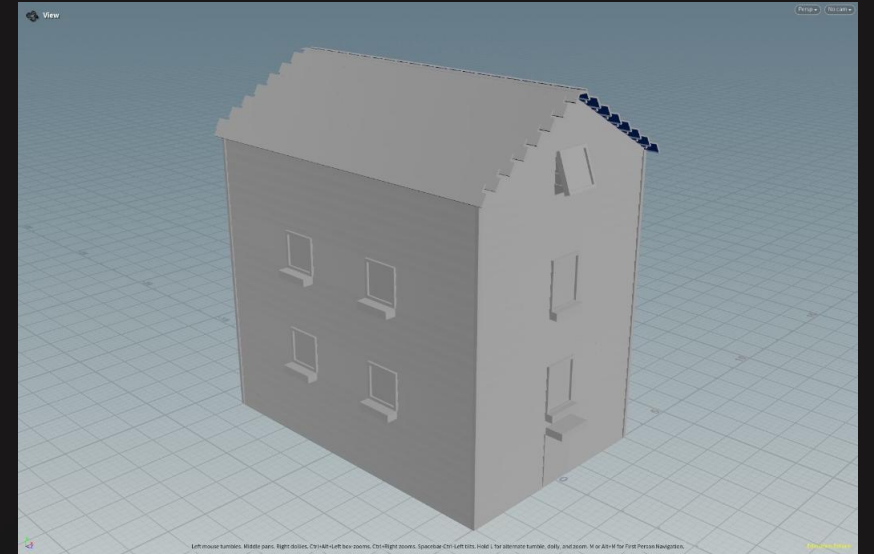
Main framework

Use Box, Transform, Copy, and Merge nodes to simulate a wooden plank structure.



Shapes of the roof , windows

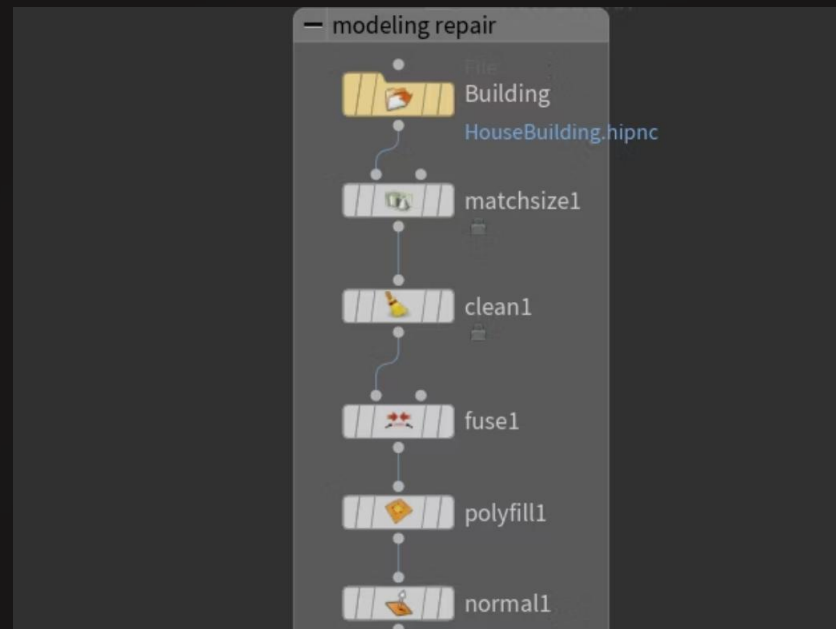
Use the Line and Group by Range nodes to position the windows, then use the Boolean to subtract the roof, windows, and doors from the main structure.



Windows and Roof

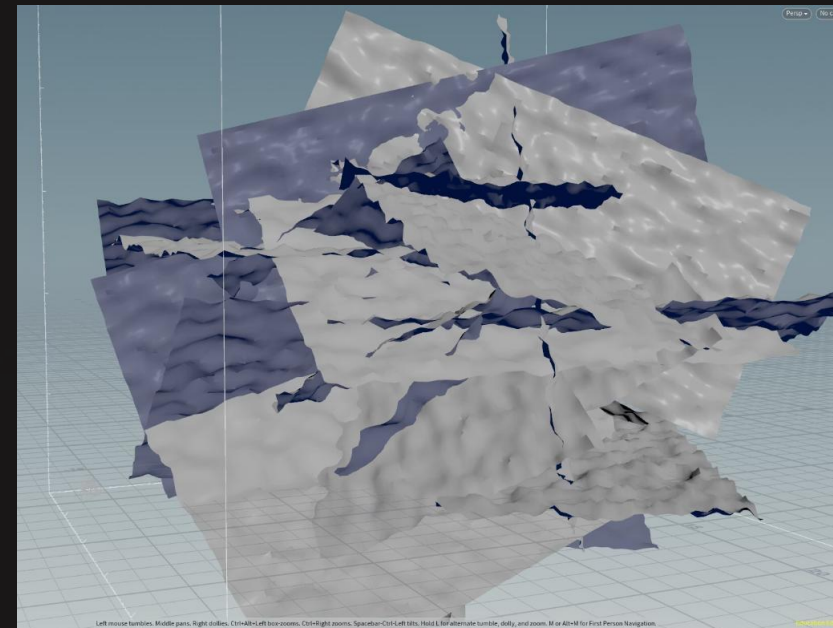
*Then I made the windows, doors, and roof. Using the Line and Group By Range nodes to arrange them neatly, and finally used the **Merge** node to combine them with the previous model.*

Fracture



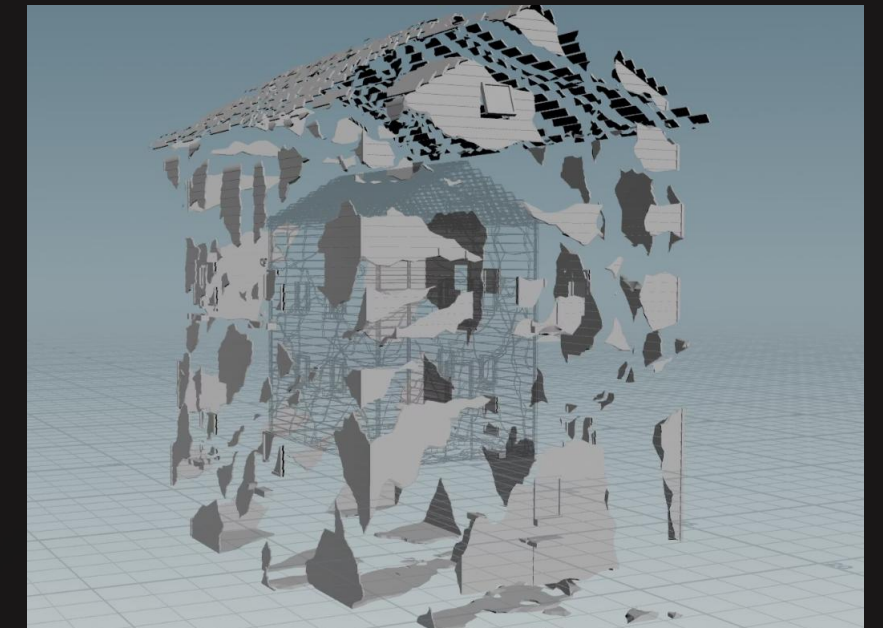
Repair

Before fracture, use Clean, Fuse, Polyfill, Normal nodes to repair the Model.



Subtract

Use the Mountain and AttributeRandomize nodes to create shapes for cutting the model.



Boolean Fracture

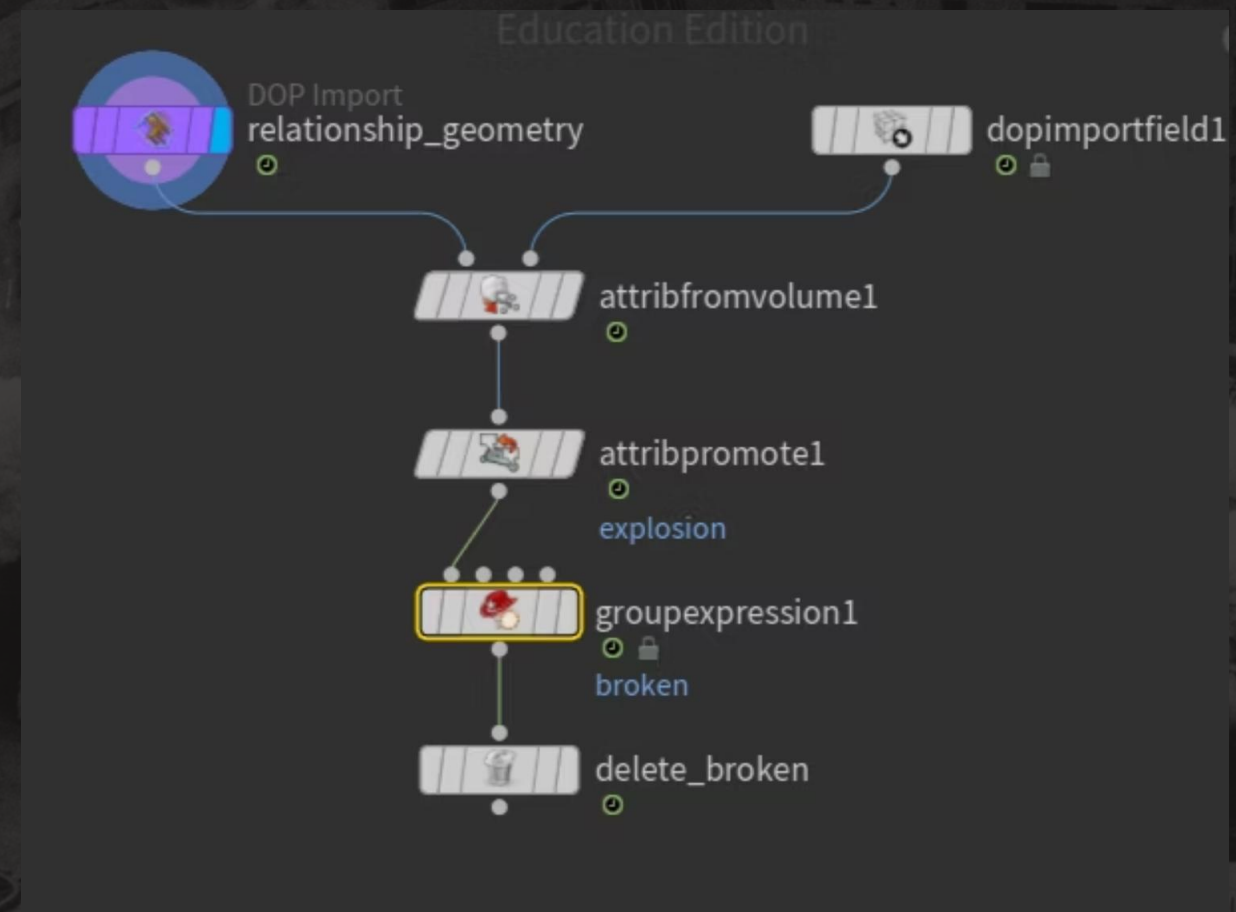
Finally, connect the repaired model and the subtraction model to the Boolean Fracture node to create a desired fracture effect.

Destruction

I used the Fireball and RBD Glue Object tools from the shelf tools to simulate the building's destruction effect.

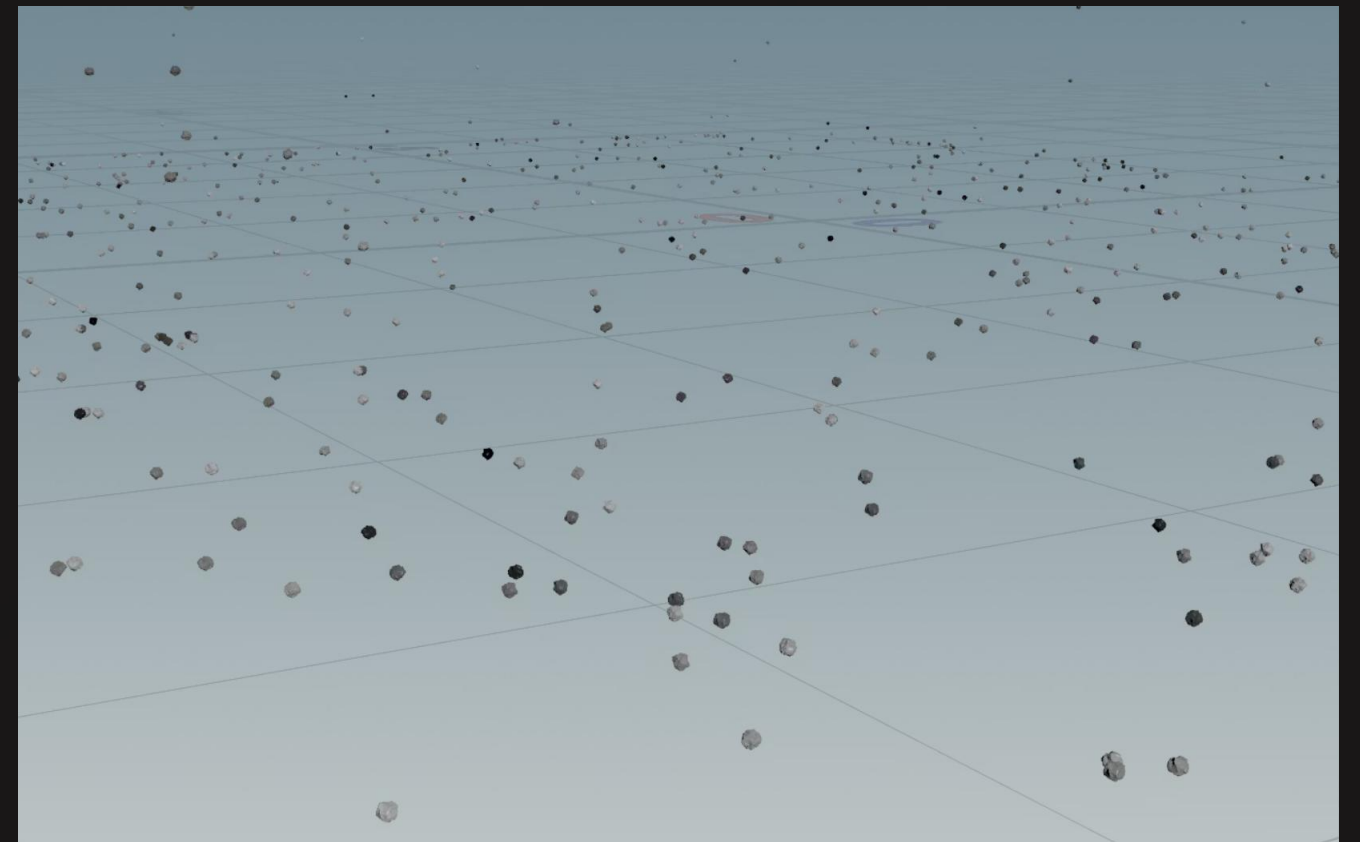


To make the building's destruction occur with the explosion, I procedurally break the constraints by sampling the pyro's density.



Particles

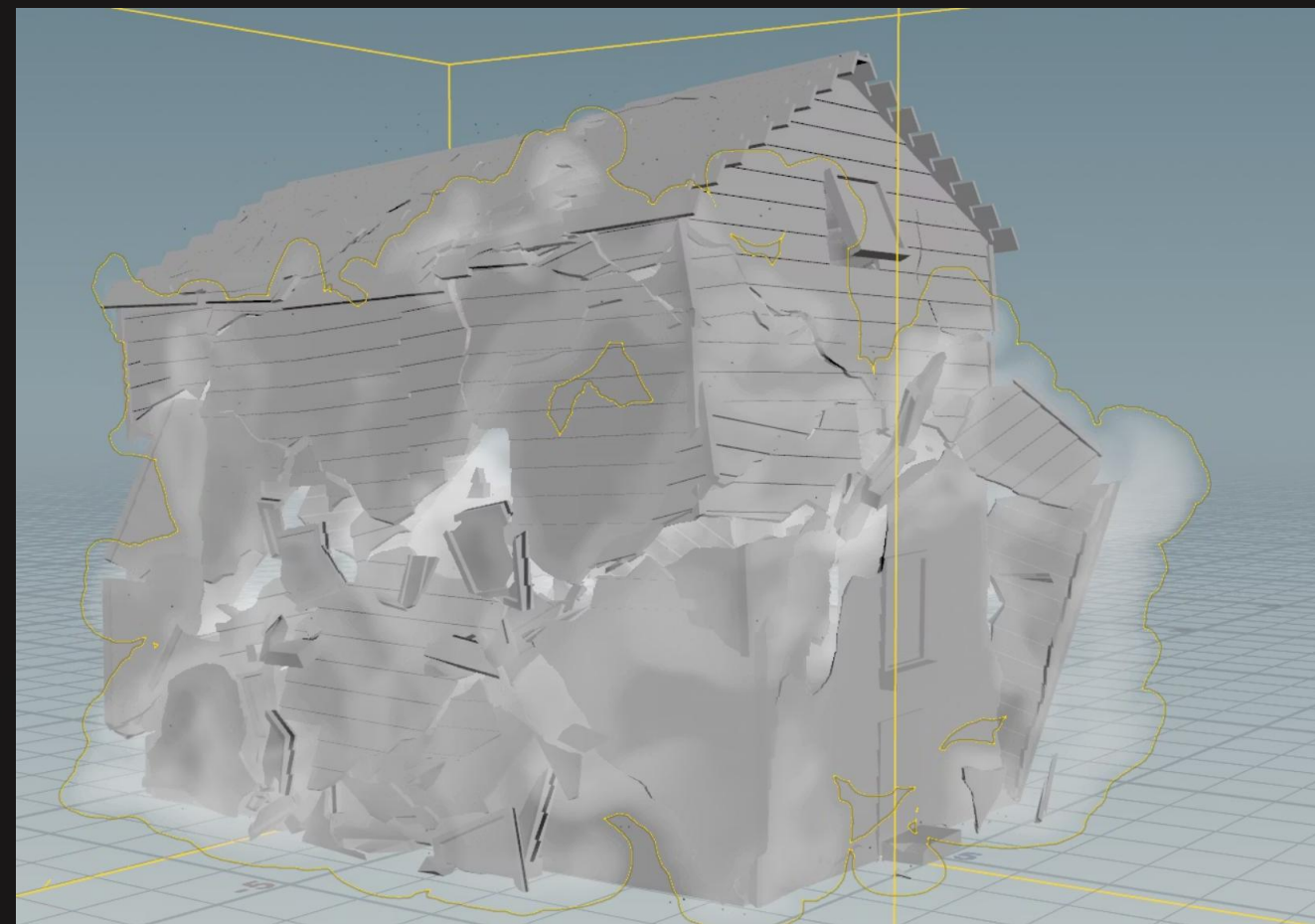
I used the Debris in the shelf tool to simulate fragments and debris. By utilizing the Pop Collision Detect node and Pop Limit node, I ensured that the particles could settle on the ground. Finally, I created a Sphere and applied Attribute Noise to make the particles appear more realistic.



Billowy Smoke

To simulate the dust formed during the building collapse, I used the Billowy Smoke tool from the Shelf.

By adjusting parameters like Density, Buoyancy Lift, Viscosity, Dissipation, etc., make the smoke look like dust. Then, create collision volumes to allow the smoke only pass through the broken parts of the building.

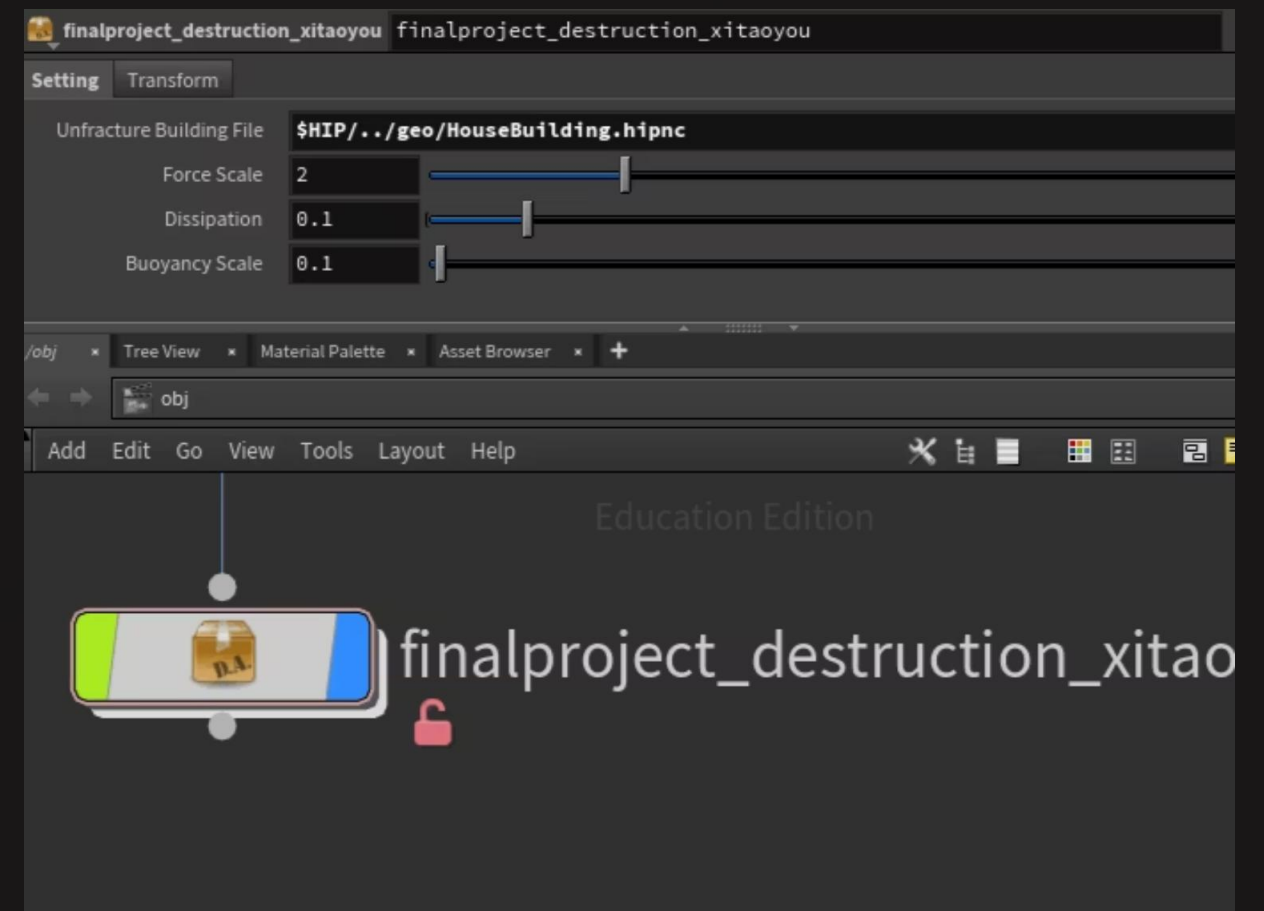




Digital Asset (HDA) and Parametric Control

To ensure a clean, portable workflow, the entire destruction system—including RBD, Pyro, and Particle simulations—was encapsulated into a single Houdini Digital Asset (HDA).

Key parameters were promoted to the HDA's top-level interface for easy access.



Thanks

