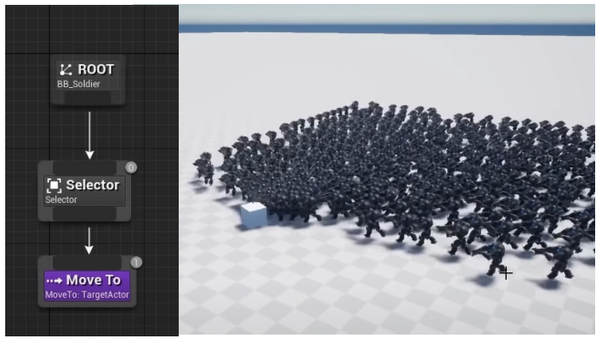
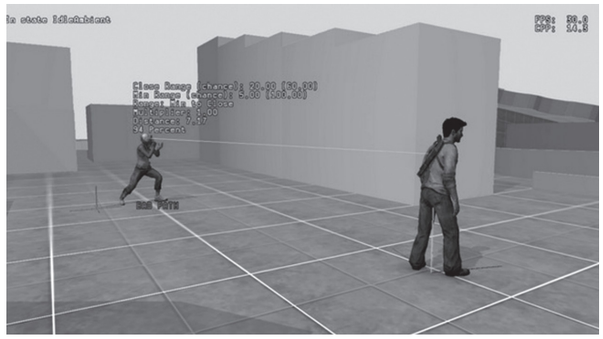
CROWD SIMULATION ON CIRCULATION, SIGHT LINE, AND MORE

Simulating large crowds is made much easier by Unreal and other game engines.

Use unreal game engine's Niagara system to create a dynamic crowd simulator to analyze and improve a certain aspect of a building environment, like circulation, program distributions, or sight line interactions. The crowd, as dynamic world elements, will be separated into diverse groups, with different behaviors, to simulate different users of the programs. For example, male and female cus-tomers target different shops, young couples and families utilize different zones. Designers or our clients can experience the spaces as players, alongside with dynamic crowd NPCs, to learn real-world issues or conflicts earlier and make improvements more efficiently.



Logic can be applied to the crowds, like these soldiers moving to this box. Imagine these are ladies chasing a fashion brand with limited edition on sale, they will accumulate and jam the circulation for some time.



Sight line is crucial for customer's way finding and navigation. It is quite the opposite from a shooting game, we want to expose our brands as much as possible. We can reverse the algorithm and let the NPCs try to navigate to their targets.

Traditional visualization, either renderings or videos, treat the building and users as static world elements. Now better game engines and stronger computer power enables complex game play experience, interacting with mostly dynamic elements. Similar tools should be tested for architects, so that we can understand our buildings and users in a dynamic relationship, just as it is in the real world.

CRTKL's projects are mostly large projects serving many people. But in our design approach we only treat these users as static numbers or backgrounds. To learn people's behavior and environment in a dynamic way will help us to learn real-world issue more thoroughly. It also helps to let our client to experience their projects in a dynamic "game play", so that they can make decisions timely.

Thoroughly study Niagara VFX Workflow; create particles to represent building users; abstract people's behavior as inputs for the particles; create multiple events to test the communication between particles and systems; analyze the interactions between particles, like sight line, navigation, way finding, temporal or regional occupancy load, etc.