Panoptyk: Information Driven MMO Engine

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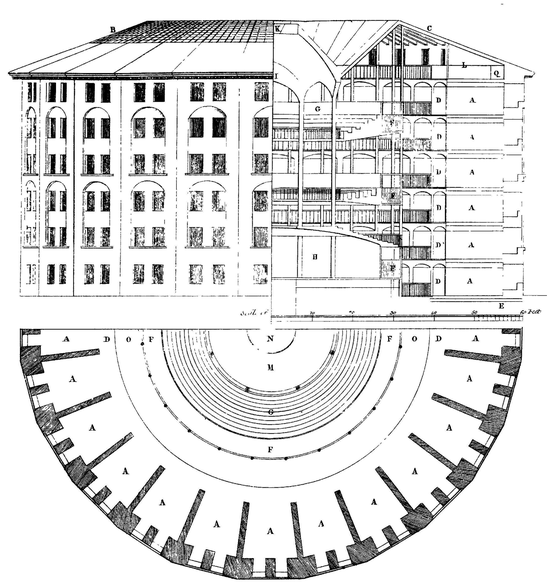
Project Panoptyk

Project Panoptyk is a game engine designed to run Massive Multiplayer Online (MMO) games with information creation, sharing, and exchange as the central gameplay focus. This engine is a work in progress, intended to serve as a platform for simulating human/robot interaction, as well as automatic generation of game assets, quests, and real-estate. The project also aims to create an open platform allowing indie and research communities to experiment with MMO concepts. In pursuit of these goals, we identify and address a number of challenges that have traditionally made it difficult for independent designers or researchers to be competitive in creation of new MMO games.

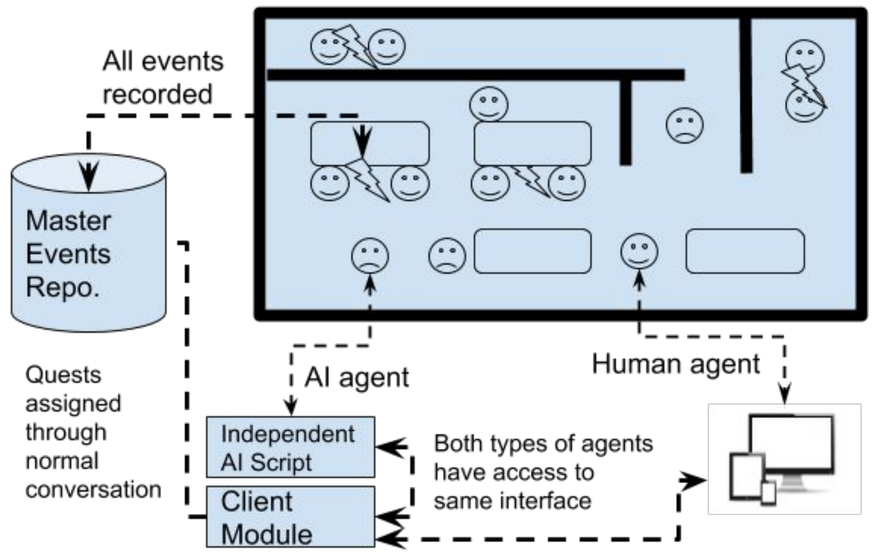


Inspiration

The Panoptyk Engine is inspired by the concept of “Panopticon”. Designed by the English Philosopher Jeremy Bentham, a Panopticon is a system of efficient control through surveillance. In prison architecture, it allows monitoring of inmates from a central location without any reciprocal ability by the inmates to observe the guards. Panopticon has been referenced as a metaphor in discussing social institutions, freedom and democracy.

MMO Challenges

Despite the success of modern MMOs, games in the genre must surmount several major issues which affect player retention and ultimately each game's success. Modern successful MMO games rely on massive financial investments to build a “bootstrap” audience through marketing and beta programs, to resource supporting hardware, and to finance ongoing generation of new and interesting in-game content. Many of these factors make it all but impossible for small independent creation of MMOs, and further, prevent research groups from creating and studying interesting phenomena within the context of a research-based MMO.



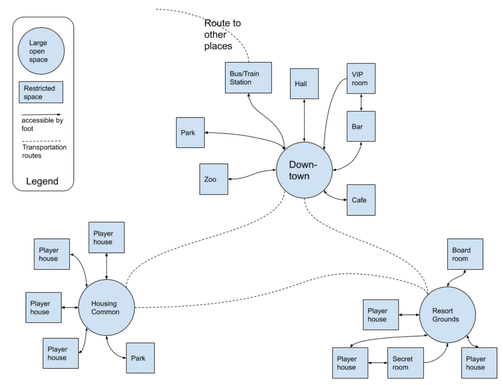
(A diagram showing information driven quests and decentralized agent interaction with Panoptyk)

Information Representation

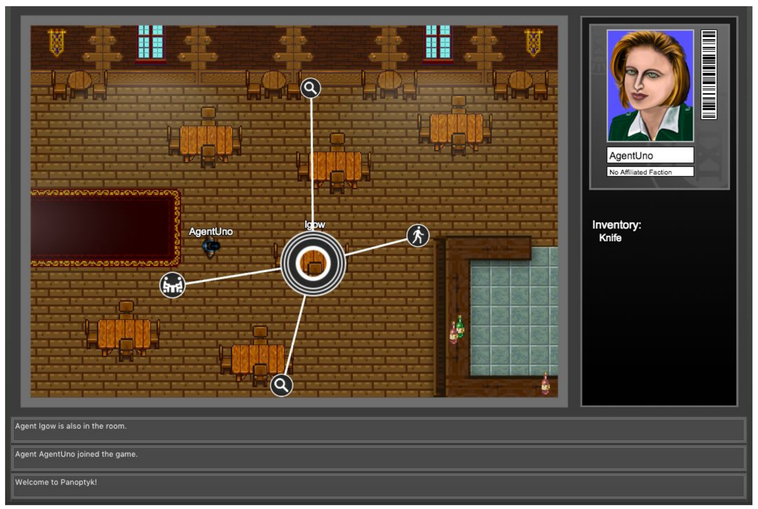
In general, information representation in Panoptyk is based off first-order logic predicates. This representation is designed to make it as easy as possible for NPC agents to reason about the data they receive. All events that occur in the world generate an information object. These objects link the action performed with the relevant variables (agent(s), location, time, item(s), etc.). Every possible action is codified and new actions specific to other games can be supported easily. Through this system information is maintained on the server and each client. The way each client interprets this information depends on whether it is intended as a human player interface or AI interface. This allows AI bot clients to make the necessary decisions without the server's intervention, thus maintaining our decentralized system of agents driving the game world.

A list of actions tracked by Panoptyk

Code	Action	Predicate Variables
1	Enter	(Time, Agent, Location)
2	Depart	(Time, Agent, Location)
3	Pick Up	(Time, Agent, Item, Location, Quantity)
4	Drop	(Time, Agent, Item, Location, Quantity)
5	Know	(Time, Agent, Knowledge)
6	Steal	(Time, Agent, Agent, Item, Location, Quantity)
7	Kill	(Time, Agent, Agent, Location)
8	Works for <faction>	(Time, Agent, Faction)
9	Boss of <Agent>	(Time, Agent, Agent)
10	Talk to	(Time, Agent, Agent, Location)



(A typical Space representation on a Panpotyk Game)



(An early client interface)

Future Work

We hope Panoptyk will serve as a test-bed for many A.I. related research questions. The platform can also be used to make games about information-centric social phenomena such as “fake news”, critical thinking, trrust, cooperation and group interactions.