

Art Walk, Anew High Level Design (HLD) Document

1. Introduction

The Problem

The Louvre Museum has a new gallery wing that will be open 24/7 and the curator needs someone to find a way to maximize both the foot traffic in the gallery and the number of art pieces that can be displayed there. Anywhere from 0-4 guests can enter the gallery each time step. They walk randomly around trying to view at least 50% of the artwork on display. Guests will stop at an art piece for 1-5 time steps before randomly walking around again. Once guests have viewed over 50% of the artwork, they will become happy and leave. However if too many guests get in their way, they will become unhappy and leave without viewing any of the other artwork.

Your Assignment

The curator of the Louvre Museum in Paris has hired you to model foot traffic in the gallery for 30 days or until 80% of the guests are unhappy. He wants to maximize the amount of foot traffic while maximizing the amount of art the museum can display. He also wants to minimize the number of times guests get in the way of each other so that they will have a chance to view most of the artwork on display. If fewer guests are unhappy, the museum will be able to keep the gallery open for the entirety of the 30 day period. Thus, he has requested for you to build an Agentsheets model of the Louvre Museum's new gallery.

2. Subject Matter Experts Agreement List

| Name | Title/Role | Mandatory Reviewer (Y/N) | Approved? |
|----------------------------|----------------------------|--------------------------|-----------|
| <i>Apprentice name</i> | Developer | Y | |
| <i>Phil List</i> | Supervisor | Y | |
| <i>Miguel de los Reyes</i> | Intern-Apprentice Wrangler | Y | |
| <i>Mentor</i> | Mentor | Y | |

3. Requirements

The Challenge

You want to place artwork in the gallery in such a way that the maximum amount of foot traffic may be achieved while maximizing the number of art pieces the museum can display in the gallery. You also want to minimize the number of times guests are obstructed by other guests.

- Establish the characters in the story
 - You should use 1 agent and have 3 separate depictions for that agent: neutral, happy, and unhappy.
- Establish the behaviors of the characters
 - Each depiction of the agent should have certain functions
- a. Make the Agentsheets model showing the interactions of agents which exhibit the following behaviors:
 - i. Guest Agent (neutral depiction)
 1. Moves randomly throughout the gallery
 2. If next to a piece of art, stop and view it for 1-5 time steps
 3. If viewed more than 50% of artwork, become happy
 4. Keep count of number of other guests who get in the way
 5. If number of other guests who get in the way equals “crowd tolerance” number, become unhappy
 - ii. Guest Agent (happy depiction)
 1. Head directly towards exit
 - iii. Guest Agent (unhappy depiction)
 1. Head directly towards exit

4. Timeline

Your project is due by August 14th, 2015.

5. Desired Behavior / Components

The Gallery

The gallery is a 20 x 40 grid in which guests can walk randomly. One time step is equal to 30 seconds.

The Art

Each piece of art occupies a 1 x 1 square and must be arranged so that the maximum amount of foot traffic may be achieved. The curator will add one new piece of art to the gallery every 24 hours until the number of unhappy guests is 80%, or the model runs for 30 days (86400 time steps), whichever happens first.

The Guests

There are three kinds of guests – Neutral guests, Happy guests, and Unhappy guests. Here is how each guest behaves:

- **Neutral:** 0-4 Neutral guests may enter the gallery from the right every time step. They will then randomly walk throughout the gallery trying to see over 50% of the artwork. Each guest will stop moving for a random number of time steps (1-5) when next to a piece of art. Guests will keep track of the amount of art pieces they have viewed. When guests have seen over 50% of the artwork, they become Happy guests.
Neutral guests also have a set “crowd tolerance” number (5-25). Guests will count the number of times other guests get in their way. Once that number equals their “crowd tolerance” number, they become Unhappy guests.
- **Happy:** After guests have seen over 50% of the artwork and became happy, they will head directly towards the exit.
- **Unhappy:** After guests have been obstructed too much and became unhappy, they will also head directly towards the exit.

Depictions

Each guest can have 3 possible depictions – one showing they are neutral, orange; one showing they are happy, green; and one showing they are unhappy, red.

Entrances/Exits

Only neutral guests may come from the entrances. Only 0-4 guests total can emerge from all the entrances every time step. Only happy and unhappy guests may leave via the exits.

6. Conclusion

The goal of this activity is to model a real life scenario where a museum opens a new exhibit for guests to visit 24/7. Your results from making this model may help people solve similar problems in real life. Thus, the world depends on you to make this model as realistic as possible.