

Growing Village High Level Design (HLD) Document

1. Introduction

The Growing Village Model will be an AgentSheets model that models the situation in the following story:

There is a village of people in the forest trying to expand. Trees, lakes, and berry bushes surround the village. For the village of people to expand they need to gather water and food to fuel the workers so they can build, and add to the village storage. Gatherers will need to go out and find food for the village. The villagers take food and water from the storage to feed on, it is also their job to keep the village clean so that it does not deteriorate. When the workers have enough food and water they build another section to the village. With more sections more people are able to live in the village. If the villages do not get enough food the people will soon die. If there are too many villagers gone from the house that they spawned from then the house will deteriorate back to forest. The food supplies in the forest should grow back after they are picked.

2. Subject Matter Experts Agreement List

Name	Title/Role	Mandatory Reviewer (Y/N)	Approved
<i>Apprentice Name</i>	Developer	Y	
<i>Supervisor Name</i>	Supervisor	Y	
<i>Mentor Name</i>	Mentor	Y	

3. Requirements

- Make agents for workers, gatherers, and villagers.
- The workers build structures after being fed.
- The villagers multiply when a new addition to the village is made, and they decrease when hungry. The villagers also need to clean the village to keep it from deteriorating.
- Gatherers collect food and water.
- The village should visually grow with the workers building more sections to the village.

- Global Hunger variable for the village

- a. An AgentSheets model showing the interactions of agents which exhibit the following behaviors:

- i. *Worker*

- 1. *Move randomly*
 - 2. *Collect food and water from Gatherers*
 - 3. *Build sections to the village*
 - 4. *Do not work when hungry*

- ii. *Gatherer*

- 1. *Collect food and put it in the village storage*
 - 2. *Collect water and put it in the village storage*
 - 3. *Give food and water to Workers*
 - 4. *Do not work when hungry*

- iii. *Villager*

- 1. *Move randomly in the village when the village is clean*
 - 2. *Repopulate(in reason)*
 - 3. *Move to storage and take food and water*
 - 4. *Die when hungry*
 - 5. *Clean the village*

4. Timeline

Your project is due by June 28, 13.

5. Desired Behavior / Components

Worker: Building a Structure

- a. **Needs a Hunger attribute**
- b. **Hunger attribute needs to be full, move to town storage and get food and water.**
- c. **Create an open area next to village (remove trees).**
- d. **Make foundation for structure.**
- e. **Empty food and water supply.**
- f. **Take a break from working (to allow storage to refill)**
- g. **Get more food and water.**

- h. Build on foundation to finish building.**
- i. Repeat until no empty space (do not build where water and food are found).**

Gatherer: Collecting food and water

- a. Needs a Hunger attribute**
- b. Locate food (bush, rabbit, etc.) or water (pond, lake, stream)**
- c. Take resource back to appropriate village storage**
- d. Consume from storage**
- e. Repeat**
- f. If Hunger attribute gets low, die**

Villager: Living in the Village

- a. Needs a Hunger attribute**
- b. The villagers should move randomly in the village when it is clean**
- c. With every new structure built you should have 3 villagers (One of each depiction)**
- d. The villagers should stay in the village**
- e. When the gatherers do not bring food and water to the village storage they die (based on hunger)**
- f. Need to clean the village when dirty**

6. Conclusion

The goal of this activity is to understand how to design an AgentSheets model based on a story.