

# BeepoVac Attack

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## Game Overview

**BeepoVac Attack** is a top-down, cooperative multiplayer party game in which each player controls a BeepoVac robot vacuum cleaner and must drive around a house to pick up as much dust and filth as possible. Our low-bar goal is to have at least 3 distinct levels with dust on a variety of surfaces.

Certain parts of the house – and thus, certain patches of dust – may only be accessible to specific BeepoVac models. For example, dust underneath a short coffee table or sofa may be inaccessible to a “standard” BeepoVac model, but accessible to a “slim” model. In some instances, there may be dust on high surfaces that can only be reached by a BeepoVac with a jumping ability. Different BeepoVacs may also handle differently on different surfaces; the slim BeepoVac may move slowly on a shag carpet, while the standard BeepoVac is unhindered.

Each BeepoVac can only hold a certain amount of dust at a time. They must return to their docking station to unload the dust they’ve collected so more can be picked up. When a player is at the BeepoVac docking station, they can switch out the BeepoVac model to suit whichever scenario they are facing. For example, if a player realizes they need to get to a large patch of dust underneath a sofa, they may choose to switch out their standard BeepoVac for a slim model.

Obstacles may pose threats to the courageous BeepoVacs’ mission. Dust bunnies will roam the levels and attack the BeepoVacs, causing them to lose dust. The BeepoVacs may be able to retaliate by dashing into the Buns and gather the dust from the explosion.



Figure 1: Mockup of the Game Screen and The Basic BeepoVac

The camera position for the game will be top-down. The tablesps will be slightly transparent so the BeepoVacs can see if there is dust to gather. The players will control the BeepoVacs with WASD and bash into enemies with the Space key. The players will interact with objects—such as unload dust in the docking station and switch BeepoVacs—with E.

BeepoVac Attack is interesting because it presents an interactive environment that players need to adapt to. The players cannot complete the levels unless they work together to figure out the best way to approach the level. The players will have several ways they can interact with the environment, such as switching BeepoVacs, bashing enemies, etc. The bright and fun visuals will also give the game life.

## Development Strategy

Each of our team members has specific interests that they would like to focus on. However, we are all willing to assist in whatever other areas need help. We will be using the Tweeninator library to simplify the UI animation process. Besides that, we are starting from scratch. Here are our milestones:

1. **By November 15** – Get the networking aspect of the game running well and have an executable level. Approx. 15% of game done.  
We are all interested in learning about networking, so all of us will be a part of brainstorming its design and implementation in the game. From there, a subset of the team will implement the networking framework with assistance from the other members. The other members' focus will be on developing the levels and creating the basic playable demo. By the end of this milestone, we want to have a good networking infrastructure set up with 2 playable entities on the screen. We will also have some solid concepts for levels and mechanics. This milestone will coincide with the group status report.
2. **By November 29** – At least 2 playable levels, 2 playable BeepoVacs, and 1 intelligent enemy implemented. Approx. 50% of game done.  
Two of the members will focus on implementing the levels and BeepoVac models with different capabilities/stats. Enemy development will be done by the other two members. By the end of this, we want at least 3 levels, 2 BeepoVac models, and 1 enemy implemented.
3. **By December 6** – UI, levels, enemies, and all BeepoVacs implemented. Only need to connect everything into a cohesive game. Approx. 90-100% of game done.  
Additional levels, BeepoVacs, and enemies will be implemented. UI will also be developed. This is the final stretch, so additional high bar items will be done once the game is put together.

## High Bar Goals

Our goal is to implement a fun and polished game. Once that is done, these are the additions we would like to add.

- **Story**  
If we have time, we would like to be able to incorporate a fun, lighthearted narrative into the game that gives the players additional incentives to continue playing.
- **More Levels**  
A wider variety of levels with different settings and mechanics could complement the story better and provide players with more content to play. For our high-bar goal, we would love to have 5 polished levels.
- **Mechanics for Additional Cooperation**  
Our team came up with some ideas for game mechanics that would encourage additional cooperation and communication between players. One such idea was to introduce a distance limit between the two BeepoVacs, like an invisible rope that connects them: they must stay within a certain distance of each other. We also considered having different types of dust/filth that only a specific player can pick up. For instance, if the players are color-coded so that P1 is red and P2 is blue, then there may be patches of red dust that only P1 can pick up.
- **Minigames**  
In between the main levels, we would like to include some small competitive minigames or challenges that can provide perks to individual players. These minigames may also tie into the overall game's story, depending on how much of a story there is.
- **Tutorial**  
While our hope is that the game's controls will be simple enough for anyone to pick up easily, it would still be nice to have a curated tutorial that the player can choose to play from the start menu.
- **Time Trials or Bonuses**  
Providing players with an additional score for completing levels within a specific timeframe would give further encouragement to efficient teamwork and communication strategies.
- **Swag**  
As the players progress through the story, it may be nice for them to unlock upgrades for their BeepoVacs, whether they impact gameplay or are merely aesthetic. This would require increasing the number of art assets, however.

## Low Bar Checklist

- ☐ **Networked, 2-player co-op**  
One player should be able to start a game session, and another player should be able to join it from another computer. Each player will use their keyboard to move their BeepoVac around a level. Their screen will be centered on their BeepoVac, and will pan as they move around (see “Scrolling world”).
- ☐ **3 unique levels**
- ☐ **3 different playable BeepoVac models with different strengths and weaknesses**  
Players will be able to return to the docking station and change their BeepoVac model. Our current plan is to include the following models:
  - **Standard** – jack-of-all-trades model
  - **Tall** – slower than other models, but holds more dust; loses less dust when attacked by dust bunnies
  - **Slim** – faster on most surfaces, holds less dust, and able to traverse even the smallest space, but loses more dust when attacked by dust bunnies
- ☐ **Reasonably intelligent enemies and other entities**  
Enemies will hunt down the players when seen. This behavior will persist until the enemy loses track of the player.
- ☐ **Scrolling world**  
Each player’s screen will be centered on their BeepoVac while traversing the same world.
- ☐ **Stats and objectives for each level**  
These are the different ways players are able to complete a level.
  - **% Dust** – players must collect a certain percentage of dust that exists in a level
  - **Time** – players have a certain amount of time to reach the acceptable % dust picked up
- ☐ **Different surfaces that the Vacs can interact with (puddles, hardwood floors, etc.)**  
Just like in real buildings, our levels will have different surfaces for the BeepoVacs to clean. Different BeepoVacs may be better suited to clean up certain flooring types.
  - **Hardwood** – standard surface that spans the majority of the house
  - **Carpet** – a harder to traverse material that contains a larger amount of dust
  - **Tile** – a slippery surface that has a higher chance of containing puddles or other hazards
- ☐ **Custom sprites and visuals**  
The BeepoVac characters will be 3D modeled and rendered using Blender. Due to the complexity of their shapes, the dust bunnies will likely be hand animated.