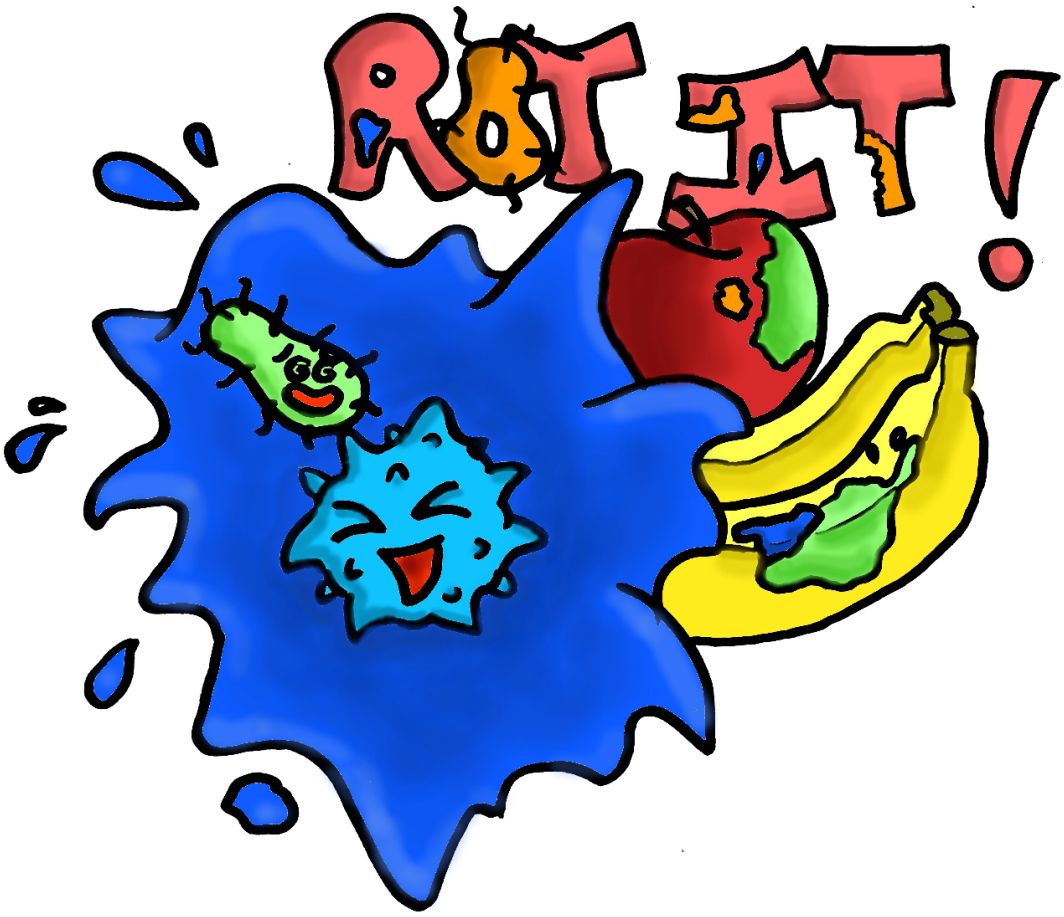



Have you ever seen perfectly shaped food not ever going bad ?
Have you ever wished that you could do something about it ?
Now is your chance! Pick your bacteria type and decay that food!
But be careful, other bacteria will try to sabotage you.
**Battle for the right to decay the food in your own way!**

**Team 4**
Ioana Pandele
Irene Baeza
Carlota Soler
Daniel Borges

**Team 4**: Ioana Pandele, Carlota Soler, Daniel Borges, Irene Baeza

# Alpha release report

Done
In progress
To do

## Task allocation

| | | | | | | | Easter | 1st play demo | | | | | Alpha release | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Task name | Time (hrs) | w1 | w2 | w3 | w4 | w5 | w6 | w7 | w8 | w9 | w10 | w11 | w12 | w13 | w14 |
| Assignments | | | | | | | | | | | | | | | |
| Game Proposal Draft | 4 | | All | | | | | | | | | | | | |
| Game Proposal Chapter | 6 | | | All | | | | | | | | | | | |
| Prototype Chapter | 6 | | | | All | | | | | | | | | | |
| Interim Report | 10 | | | | | | | | | All | | | | | |
| Alpha Release Chapter | 10 | | | | | | | | | | | All | | | |
| Playtest Chapter | 6 | | | | | | | | | | | | All | | |
| Conclusion Chapter | 6 | | | | | | | | | | | | | | All |
| Deliverables | | | | | | | | | | | | | | | |
| Physical Prototype | 16 | | | | All | | | | | | | | | | |
| Alpha Release | - | | | | | | | | | | | All | | | |
| Trailer | - | | | | | | | | | | | | | All | |
| Miscellaneous | | | | | | | | | | | | | | | |
| Game Idea Presentation | 2 | | All | | | | | | | | | | | | |
| Final Game Idea/Prototype Presentation | 2 | | | | | All | | | | | | | | | |
| Monogame Setup | 6 | | | | All | | | | | | | | | | |
| Bug Fixing | - | | | | | | | | | | All | | | | |
| Playtesting | - | | | | | | | | | | | All | | | |
| Playtesting Presentation | - | | | | | | | | | | | | All | | |
| Public Presentation | 6 | | | | | | | | | | | | | All | |
| Functional Minimum | | | | | | | | | | | | | | | |
| Basic Modelling + Integration | 8 | | | | | Daniel | | | | | | | | | |
| User Controls Integration w/ movement | 12 | | | | | Irene | | | | | | | | | |
| Basic Explosion (stains) | 8 | | | | | Carlota | | | | | | | | | |
| Player score management | 8 | | | | | | Carlota | | | | | | | | |
| Collision Detection | 16 | | | | | Ioana | | | | | | | | | |
| Basic resource placement | 8 | | | | | | Irene | | | | | | | | |
| Low Target | | | | | | | | | | | | | | | |
| Player interactions | 8 | | | | | | | Carlota | | | | | | | |
| Explosion stains (shape and scoring) | 20 | | | | | | | Carlota | | | | | | | |
| Screen (Scores and Lives display) | 8 | | | | | | | | Irene | | | | | | |
| Handling Collisions with env. | 20 | | | | | | | Ioana | | | | | | | |
| Movement physics | 6 | | | | | | | | Ioana | | | | | | |
| Explosions (Particles System) | 16 | | | | | | | Irene | | | | | | | |
| Modelling upgrade and integration | 20 | | | | | | | Daniel | | | | | | | |
| Desirable Target | | | | | | | | | | | | | | | |
| Explosion integration | 8 | | | | | | | | | Irene | | | | | |
| Stain interaction with walls and particles | 20 | | | | | | | | | Carlota | | | | | |
| Explosion preview | 8 | | | | | | | | | Carlota | | | | | |
| Advanced skills (dashing) | 20 | | | | | | | | | | Ioana | | | | |
| Advanced resources | 8 | | | | | | | | | | | Carlota | | | |
| Animations integration | 15 | | | | | | | | | | Irene | | | | |
| Sounds | 16 | | | | | | | | | Daniel | | Irene | | | |
| High Target | | | | | | | | | | | | | | | |
| Start Menu | 16 | | | | | | | | | | | Irene | | | |
| Special obstacles and resources | 16 | | | | | | | | | | | Carlota | | | |
| AI | 12 | | | | | | | | | | | Ioana | | | |
| Graphics improvement (animations) | 15 | | | | | | | | | | | Daniel | | | |

# Dashing

## Mechanics

Dashing at another player is the main form of attack in the game. When a player decides to dash, they hold a button pressed to charge this ability and cannot move during that time. The charging has a maximum duration, and the time for which the player will dash is proportional to the time for which the button is pressed. At every frame, the current velocity is altered to the dashing velocity based on the elapsed game time.

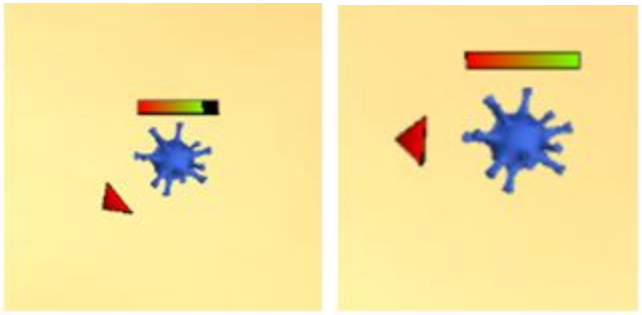
Instead of using the thumbstick of the controller for movement, the player will use it now to aim at the place they want to dash at. The direction is polled for the entire charging time and only the last one is used.

If the player collides with a wall or another player, the dashing stops and the velocity is changed to the maximum movement velocity. This gives the appearance of inertia. A collision with another player means that the attack has been successful. The other player dies and the attacking player gets 25% of their resources.

## UI

When players want to dash, they need to press X button and hold it in order to charge their bacteria the necessary strength to run fast and kill other bacteria. The charging process is shown in a charge bar that appears at the top of the bacteria. This bar begins with red (less dashing time, less strength) and ends with bright green (maximum dashing time, maximum strength!).

While charging, player can point to other opponents with the direction red arrow. When they stop pressing the dashing button, bacteria will direct the attack to the direction of the arrow they were pointing at.



Bacteria charging dashing energy (left) and complete dashing energy bar (right)

# Explosions

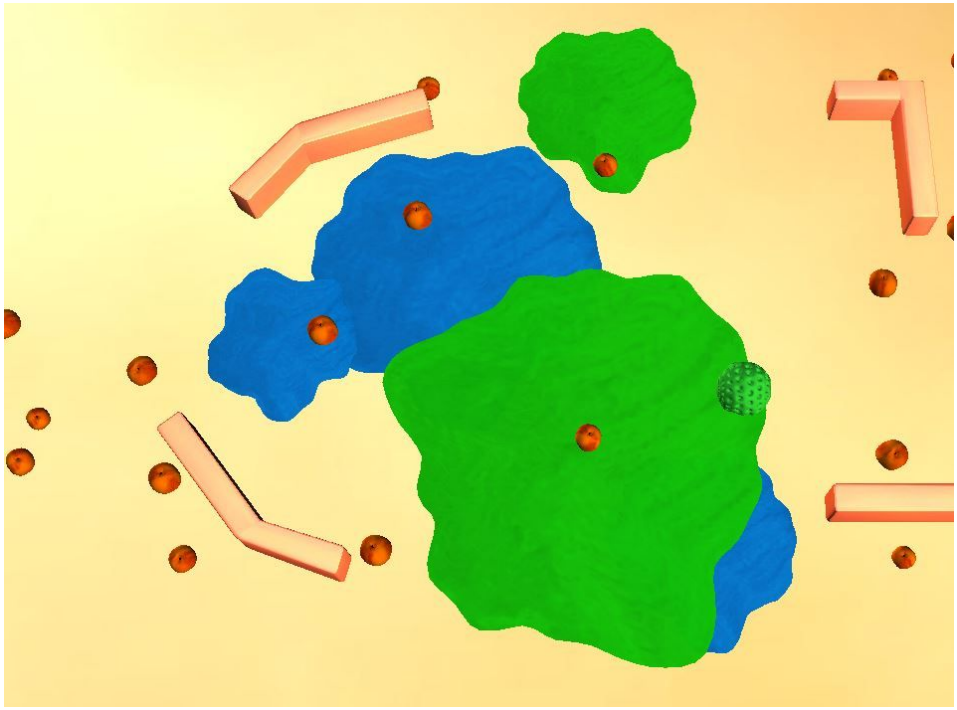
## Preview

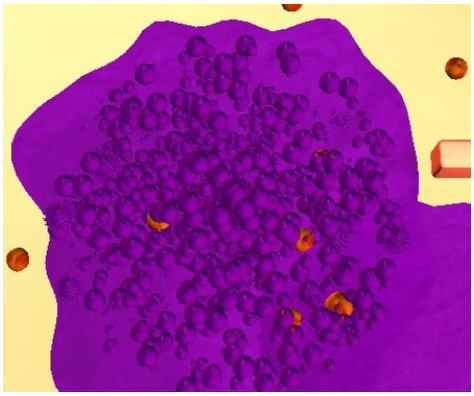
Now the bacteria can preview the approximate area that they are going to conquer!

The preview simulates the behaviour of liquid, reminding to the player that the bacteria is filled with liquid and that he's thinking to explode soon...

## Textured stains

Explosions are now more realistic than before. A texture similar to peinture has been given to them.

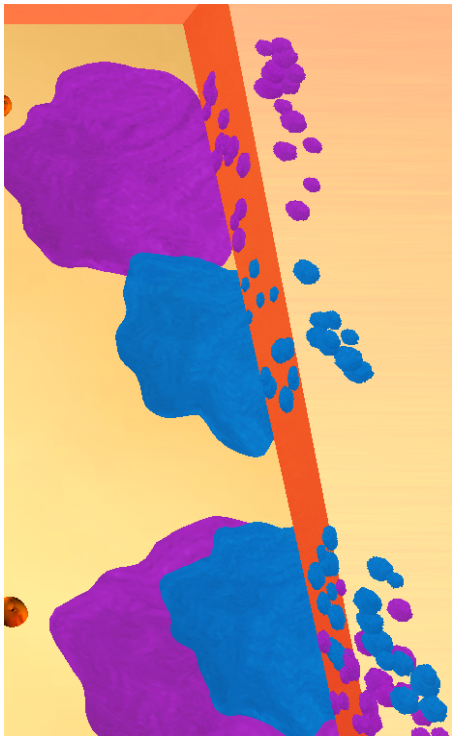


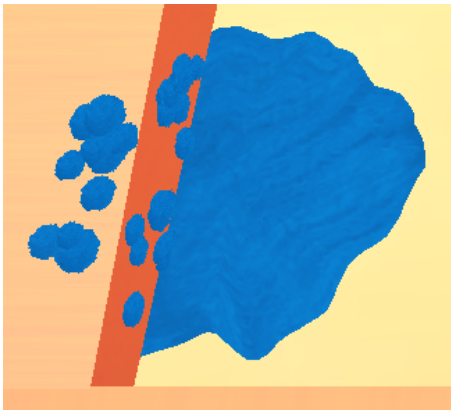


The particles from the explosion match to the stains of the floor. Indeed, they come from inside of the bacterium!

## Stains on walls

This section is still in process. For now, the lateral walls get stained as seen on the images below. Still, the algorithm has to be improved and the rest of walls need to be included, also the obstacles that are found on the board.





## Delayed explosion

When a player presses the button to explode, they have to wait for the bacteria to charge the explosion. The bacteria colour will change intermittently during three seconds and the bacteria's position is frozen for that time. We decided to introduce this "explosion handicap" because the players were not motivated to attack or interact with each other, but only to explode.

# Graphics

## New characters

Two new characters have been added to the game. Now the players can choose between four playable bacteria:

- Thiobacillus
- Fastidiosus
- Rhizobium
- Acetobacter


Screen where players can choose between four different bacteria

## New  Map

The map has been altered, so that it represents more a fruit (in this case a peach). The colors show the exterior and interior of a peach.

# Score panel

Scoring panels have been added to the game. At the top left of the screen, players can check in score bars how much food they need to conquer to win the match. Filling your bar means certain winning, and once you fill it completely, you win. The bars adjust based on the progress of other players, as the sufficient condition for winning changes depending on how much of the surface the other players have conquered.

Also, the death penalty (time you need to wait to spawn again when you are killed many times) appears at the bottom of the bar when the player is punished with skulls. The time counter also appears at the right of the bar when the player is dead, and a skull instead of the corresponding bacteria is shown in the character.


Example of scoring bars with three players

## Sound

Sounds have been added for explosions, player respawns, dashing and menu interactions. The game also features music for the menu screen and main game.

## Resource improvement

The resources no longer have a constant value. Instead, their value grows over time until a certain point is reached. This is signaled to the player via a slight increase in size.

## AI

An AI player is instantiated when there is only one controller connected, so that the player has an opponent. In order to make sure that the AI player follows the same mechanics and restrictions as a normal player, all the AI logic is implemented such that it replaces the player input.

### Movement

The movement algorithm that the AI uses is based on a simple line of sight approach. The AI bacteria moves straight towards the closest resource. Because a human player controls the target velocity with the thumb stick, we emulate that behaviour by using the normalized direction and multiplying it with a factor between 0 and 1 (currently set at 0.6, possibly a bit random in the future).

Moving directly towards a goal might get the AI player stuck in obstacles. In order to mitigate that, we check to see if the character is stuck by checking to see if it hasn't changed its position significantly for a while. If so, a random point of interest is picked and the movement towards this is maintained for 3 seconds. After that the "closest resource" approach is resumed.

If there are no more resources on the table then the AI should target random positions and change its velocity after different time intervals. (Might not be available in the Alpha Release.)

## Explosion

The AI decides whether it wants to explode at random, with a probability of 20%. This check is only performed once per second.

In the future we could add an explosion preview step to make the AI look more natural and give the appearance of thinking.

## Attack

Just like in the explosion case, the attacking could decided at random. However, an extra condition must be added: another player has to be in a certain radius of action. This step is currently being polished and might not be available in the Alpha Release.