Alex Chojnacki
Eliana Abraham
Ben Lapid
Morgan Erlich

Project 4 Research and Analysis

Lovers in a Dangerous Spacetime

The first game that we have decided to analyze is *Lovers in a Dangerous Spacetime*, developed by Asteroid Base, and released on September 9th, 2015. *Lovers in a Dangerous Spacetime* is a 4-player co-op where the 4 players navigate a spaceship, controlling torrents, a shield, and the engine in order to save "space bunnies" which then allow them to progress to the next level. It consists of a weapon upgrade system in which the player collects "gems" scattered across the world in present boxes. They can then attach the gems to the stations to power them up. It relates to our game in that it contains 4-player co-op, the 4 players navigate in space in order to solve a puzzle, and the players are given specific roles. The roles given to the player is similarly based on either convenience or the player's choice to decide what roles they take up.

Screenshot from **Lovers in a Dangerous Spacetime** *in which one can see the spaceship, the bunnies the player tries to collect, as well as the stations used to control the shield, engine, and torrents.*

Lovers in a Dangerous Spacetime has many differences to where our game is now. The first thing is our game is decently more time oriented, trying to capture the feeling of a frantic surgery room. *Lovers* is more based on the long run, and though it has moments where it becomes more frantic, the main focus is more on exploring a world, fighting enemies, and collecting things in order to progress to the next level. *Lovers* also contains a single player mode—enabled by a controllable second character— which helps make the game more

playable in more situations. This probably wouldn't be a feature to include in our game for a few reasons. The first being, we will not have enough time to make a full and good co-op mode and also focus on a single player mode. The second being, it would be hard to capture the hectic feeling if we had to simplify the game in order to make it playable by a single character, or in other words the game would be hectic, but only because the player would be forced to switch between characters, or use one character to jump around the surgery room. It wouldn't, though, be the flavor of hectic we set out to capture.

There are many things we can learn from *Lovers in a Dangerous Spacetime* in the creation of our game. The first being the idea that in *Lovers* the players are given a navigable space, where the components they interact with, the stations, are well defined, and always in familiar locations. This allows the player to focus on the events that happen on the environment and how they have to respond and not on learning what they have to do to respond. We can capture this by defining, and differentiating the tools and stations in our game based on colors, particular locations, and shapes. *Lovers* gives the player the ability to choose their roles which is an important aspect that we should probably take into our game. It is interesting that they do it based on the station that the player is located at. Maybe this is something to consider, as of right now we define roles based on what tool the player is holding/picks up. We will have to play around with it, but one thing to try out is to see if we like this tool based approach to dividing roles more, or the station based approach.s

Tiny Brains

Tiny Brains is a multiplayer coop that allows you to play as different rodent characters to solve puzzles and and fight chickens. The powers include but are not limited to swapping between characters and powers, teleportation, Ice manipulation, electromagnetic force manipulation, and telekinesis. The ways in which this game is similar to ours is that you have different roles in order to complete a task, when you play with 4 people you have 4 powers and you can switch between them in Tiny Brains, even when you have less than 4 there are still 4. In our game, we may have more than 4 tools so there may exist more roles than players however they each need to use at least one to complete the task and everyone in our game has to work together to do with their set of tools or without. In Tiny Brains, everyone needs to work together to complete puzzle or fend off evil chickens. We do however have a mechanic we plan on implementing that involves fending off attackers, in our case bears and raccoons, from the patient, like the fighting chickens mechanic that detracts from your task at hand. We also plan to add other environmental challenges like forest fires.

The ways in which our game is different is that we don't have as much action and movement in our game as Tiny Brains, we also don't really have to solve any puzzles. Our game is more frantic and based on completing specific tasks. Tiny Brains also gives you a lot of time to complete a puzzle and we have a game that is heavily dependent on time.
One thing that makes tony brains rather difficult is telling which character you are when you swap characters in the game. This is part of the Tiny Brains mechanic and it makes the game a little harder sometimes rather than easier, it's something to think about because we might run into the same problem when we swap tools since we don't make hands visible.

Overcooked

Overcooked is a top down 3d action game in which up to four players each control a chef in a kitchen, working together to cook ingredients and assemble dishes to deliver to the order window. Menu items are fairly straight forward, often requiring only a few steps to prepare. Burgers, fries, fish and chips, salads, soups -- each of these requires just four or fewer ingredients. For the player's part, preparation essentially involves pressing X and waiting for the chef character to finish chopping veggies or washing plates. The difficulty, then, is not in the items themselves, but the kitchen layouts.

If one were to design a kitchen, they would likely consider factors like distance from cutting board to ingredients, or free space for chefs to move past each other. The kitchens in Overcooked were made with no such regard for efficiency. Some kitchens have only one hallway between the cutting boards and the cooking ranges, forcing chefs wishing to cross into the other side of the kitchen at the same time to choose who goes first. Some kitchens are located on a boat, gentle rocking at sea, periodically shifting tables from one side of the ship to the other, taking ingredients or cooking ranges with them. Some kitchens are located on ice rafts, in which the chefs predictably slide around.

Because the dishes change very little between maps and the controls for the chefs are the same from level to level, the kitchens themselves are the point of greatest variation within Overcooked. The mechanics of the kitchens change how to players organize themselves level to level. Successful chef teams will often informally appoint players different responsibilities. One might attempt to appoint someone the official dish-washer, or a meat-cooker and food runner. The game does not enforce any of this, but when multiple orders are in flight players are forced to vocally cooperate and organize themselves on the fly to plate dishes in time and avoid burning any cooking ingredients.

Each successfully plated dish grants the players 20 coins, plus some small bonus based on time remaining on the order. For each dish the chefs fail to plate they lose 10 coins. When the timer on the level runs out, the players are given a rating of zero to three stars based on the coins they earned. I found that for most maps, a competent team could obtain two stars on their first try. However, three stars usually required a level of coordination and pre-planning. For instance, one map, which was essentially one large rectangular hallway with ingredient crates, cutting boards, ranges, and plates all ordered counterclockwise along the perimeter. This effectively confined each chef to a subsection of the map, as they couldn't interrupt the other chefs by pushing them away from their stations in order to get ingredients or plate a dish. This map comes fairly early on, and I would believe that the developers designed it specifically to enforce this notion of partitioning the kitchen. In many maps, this can be a core requirement to getting three stars.

3

The game works hard to build a frantic atmosphere. The levels themselves are quick, with the fail state being triggered regardless of player performance after 3 minutes. Orders expire after about a minute, and cooking items can ignite into a fire if they are left cooking for too long. By far, however, the greatest contributor to the sense of urgency is the constant teamwork required to prepare the meals in an efficient manner.

For our game, we seek to emulate some of the urgency created by the game's teamwork requirement. In Danger Docs, players will be required to communicate and assign temporary roles and responsibilities in order to successfully defend the surgeon from the environmental hazards and save the patient. We also want to make the objectives clear for the players in a way which is similar to the presentation of recipes on Overcooked.

Project Eden

Project Eden is a 3D 4-player co-op game released in 2001 for the PS2. What makes the game memorable was its intricate puzzle and level design set in a cyberpunk-industrial world. There are four playable characters in the game and each of them have a special ability. Single players must switch between these players as they play to progress. Friends can also jump in at anytime to help.

The character's abilities are what define Project Eden's puzzles. Carter can unlock doors. Andre can fix broken machinery such as turrets. Minoko can hack computer terminals. Amber, a large female robot, can traverse hazardous environments which include noxious fumes and fiery hallways.

Let's walk through one of the puzzles in the game so that we have a clearer understanding of how it works. A door is locked and Minoko must hack a terminal in another room to unlock it. But when she unlocks it, it only stays open for a short period of time. Amber, the robot, must grab a large object in the middle of a fire pit (in another room) and drag it in between the door when it opens. While this is happening enemies are spawning and the two other characters must protect Minoko while she's at the terminal. You see, the player (or players) must strategically place themselves in the map to complete this *puzzle*.

It's important to note that while Project Eden allows you control 4 players in any situation, the game doesn't feel too hectic. The puzzles and action are packed really well. Flow is maintained and the scenarios in Project Eden don't overwhelm the player. While we want Danger Docs to feel frantic, there's a lot we can learn from Project Eden with regard to pacing.

Even when you're playing Project Eden by yourself, all four of the characters are present and have decent AI. They're capable of fighting enemies on their own. This helps the game flow. The player never has to switch between all four players within a minute to play successfully. Danger Docs, though, will have no AI and players will only be able to control a single player. As a result, we must scale down the difficulty depending on the number of players since players won't have the luxury of an AI that will assist them in a scenario.

*Screenshot from **Project Eden** showing 4-player co-op splitscreen.*

One way we could scale difficulty is by adjusting the number of environmental events being triggered. A single player will have a hard time managing a forest fire and bear attack at

the same time, but this will be a decent challenge for 2 or more players. We will also adjust the time it takes to complete a task, such as washing your hands at a *wash station*, depending on the number of players. Shorter wash times will allow a player to jump to another task more quickly so as not to spread them to thin within the surgery scenario.

Move or Die

Move or Die is a local 4-player platformer released in January 2015 for PC, Mac, and Linux. As the title suggests, players must keep moving around or else their health depletes and they will die. The goal is to be the last one standing during each round. The game is perfectly frantic.

While Move or Die doesn't force players to assume rigid roles, players are still forced to play a certain way because players lose health while idle. On top of this mechanic, each round in the game centers around another mechanic. This all works together to create frantic scenarios in each round. The players are forced to stay on their toes.

Screenshot from **Move or Die** *showing 4 players in the* Avoid *game mode in which players must not touch the red blocks.*

This layering of mechanics is what makes Move or Die enjoyable. Players need to remember to keep moving while also dealing with whatever the round has added. For example, in the *Avoid* game mode, red blocks are placed all over the level and will immediately kill any players that touch them.

I've played many games, even competitive ones, which failed to incite the level of rivalry and entertainment seen in games like Mario Kart. Speedrunners is a game which inspires this exact kind of energy amongst its players, but with a greater emphasis on skill and quicker, round based gameplay.

Speedrunners

Speedrunners is a side-scrolling competitive party game where players control one of a cast of superhero-esque characters racing around a 2d circuit. If a player falls too far behind, that player is eliminated. When the first player is eliminated, the screen borders begin to shrink, increasing the probability that the remaining players will be eliminated. The last player left racing wins.

When playing Speedrunners, I looked specifically for elements which encouraged players to be engaged with one another and energetic. A few observations: Every player is on screen at the same time. Indeed, failing to remain on screen triggers a fail state for that player. The rounds are also finished quite quickly, with three rounds to a map and a first-to-three win condition. The game also allows extra content to be unlocked in local multiplayer, and does so rather quickly at first. This, combined with the voting system for selecting the next map encouraged us to debate map choices and preferences. Because the game encourages memorizing track layouts and finding the optimal path given the route your opponents are taking, repeated playthroughs will facilitate tighter competition. Playing with more casual gamers it was clear that the game is aided by a simple control scheme where the learning curve is mostly related to the maps and items, rather than movement in general, though this is certainly a factor. Ultimately, my experience with Speedrunners encouraged me to take a second look at our control scheme and inspired me to seek a bit more variety in our maps.