Computer Games Lab - Riddilikus

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Contents

1 Formal Game Proposal

1.1 Game Idea

Our game is an isometric action-adventure game with a heavy focus on cooperative gameplay. As a character with different magic abilities, the players have to traverse a dangerous planet and solve environmental puzzles by combining their spells at the right time. Treacherous environment is not the only danger though, as after certain points in time the players will have to face off against strong opponents where teamwork will be required in order to struck them down.

The game is set on a fictional planet far away from earth. According to the ship's onboard map, there seems to be a human-inhabited village not far from our players' crash site, however, in order to get to the point and possibly get off the planet, our characters have to traverse a hostile environment which tries to hinder them with complex and unknown areas. Furthermore, every time a section is completed and hope is on the horizon, unknown lifeforms that can only be described as alien creatures try to stop the players from progressing any further.

While making their way through the environment, the characters come across a multitude of different climates and possible obstacles, and luckily enough, the planet's physical properties are not that different from our known earth.

As a matter of fact, our players' are not mere human explorers. Known to common folks only as "mages" they wield the powers of four or more different elements and can control them at will. Unfortunately, they are individually not strong enough to use all four elements at the same time, which is why each character is focused on only two elements, e. g. Fire/Lightning and Water/Ice. That is not at all though, as both the environmental puzzles and our boss enemies require different elemental magic at different times in order to be progressed through. In turn, this means that the players have to use the magic at their disposal in cooperation, because this is the only way to reach their destination.

Considering the dangers which lurk on the planet, they can range from

simple, small obstacles requiring one or two spells to complex, physics-based puzzles and multi-stage bossfights. As we are talking about elemental magic, we envision situations akin to setting wooden logs on fire in order to progress through them, but also first freezing a river, after crossing it setting it on fire in order to melt it back into water and then to electrocute the chasing boss enemy, while it is in the water, with lightning magic. The possibilities for different encounters and problems-to-solve are basically endless.
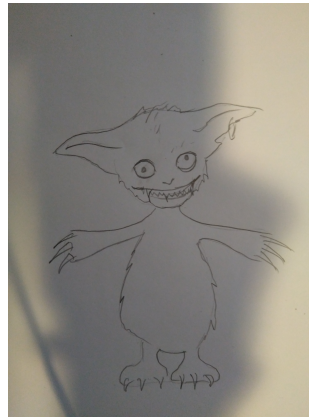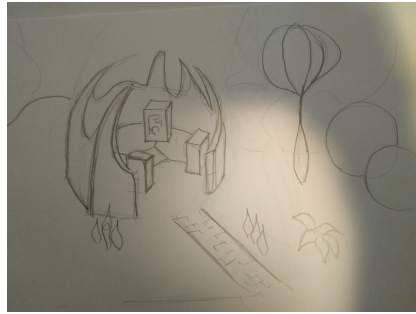
As the course's topic is "Together", this game focuses on working together by using different characters with different abilities and thereby requiring the players to work together through an cooperative online experience. Hence only one player would not have access to the entire range of magical abilities and thereby it would not be possible to progress through all puzzles and enemies. Down the line we are looking at including a cooperative split-screen mode where two players can play directly with each other, and also a more varied structure when it comes to adding questlike elements like for example escort missions.

1.2 Technical Achievement

The primary technical achievement in our game is going to be the implementation of a proper online cooperative multiplayer mode, where both players are able to play with each other and solve the game's challenges together. Moreover, the addition of properly simulated physical effects, as all of the magic in the game is based on natural elements, is going to be important as well and will therefore be our second important technical achievement. Having said that, a big focus is going to be to find the right balance between the cooperation required and also the power a single player has, as even though we are giving any single player only a subset of all possible abilities, the characters also should feel strong by themselves. After all, these are powerful mages.

1.3 Big Idea Bullseye

Whenever a challenge is encountered in the game, be it an environmental obstacle or an enemy boss, the only way to beat it is to work together with a second player and to use the combined power of both characters' magic in order to overcome the problem. Without cooperation and teamwork it is impossible to succeed in this game.

1.4 Assessment

Overall, we are creating a game which is supposed to be enjoyable, compelling and focus strongly on cooperative elements. The theme "together" is the primary focus, as we are designing gameplay around the idea of teamwork, but the players also should experience the feeling of overcoming big, strong and dangerous enemies together, while primarily focusing on solving varied environmental puzzles. When a boss enemy is faced, through combining their efforts by for example one player splashing the enemy with a water spell and then the second player using a lightning spell to increase effectiveness, we allow our players to feel powerful with the abilities they have. With this in mind we also allow them a sense of accomplishment by solving the problem together.

Finally, we are hoping to appeal to a crowd of people who love Diablo or Magicka, but always felt that these games were lacking more in depth teamwork elements besides your typical Tank/Damage/Healer archetypes. In addition, we are throwing in environmental interactions and puzzles for good measure.

1.5 Detailed Task Breakdown

Functional Minimum	Low Target	Desirable Target	High Target	Extras
UI				
Basic UI	Improved Hud Skill Bars for elements game notifications	UI Theme Alerts	Animated UI	Cutomizable skill bar
Character Modeling & Animations				
Dummy Models for Player and Environment	Enemy Dummy Models Basic Animations	Beautiful Models for Player, Enemy and Environment	Extensive Animations	Animated Dialogues Hair animations Aging of characters
Environment				
Basic interactions with world	More interactions with puzzle objects, effects on environment	More types of objects with influence on environment, more puzzles	Environment acts on itself --> Climate effects objects / elements / players, nature catastrophes	Survival elements like fatigue, hunger
Player interactions and Elements				
Basic player movement and interaction with environment Usage of elements Fire and Ice	Higher Degree of interaction with environment	More Elements (like stone and wind)	Combination of elements to create new elements	Exchanging of elements at checkpoints
Networking				
1 Player with character switch	2 Players in LAN	4 Players in LAN	Online support	Splitscreen support
Levels				
Test-Level	First Level static level boss enemy	Level adjusted to players in difficulty	Multiple different Levels	Randomly generated level

1.6 Development Schedule

Vorgang	Anf.	Ende
Game Idea Pitch	25.	03.11.17
Brainstorming	25.	28.10.17
Write Text	30.	03.11.17
Prototype	06.	14.11.17
Brainstorming	06.	09.11.17
Building Prototype	08.	12.11.17
Testing Prototype	10.	14.11.17
Interim Demo	15.	06.12.17
Basic UI	15.	22.11.17
Basic Playermove	15.	22.11.17
2 Elements	22.	05.12.17
Basic Interaction.	15.	29.11.17
Beginnings of Multi.	15.	29.11.17
Dummy Models fo..	15.	06.12.17
Test Level	29.	06.12.17
Alpha Release	06.	09.01.18
Stylized UI	06.	17.12.17
Sounds	18.	31.12.17
More uses for ele..	06.	17.12.17
More Elements	18.	31.12.17
Beautiful Models	06.	17.12.17
Animation	08.	17.12.17
Coop on one more..	11.	08.01.18
Three Levels	18.	31.12.17
Testing	25.	09.01.18
Playtesting	10.	21.01.18
Testing	10.	17.01.18
Analyze Results	13.	20.01.18
Write Text	18.	21.01.18
Final Release	25.	06.02.18
Fixing Bugs	25.	06.02.18
Adding High Target.	29.	03.02.18

2 Game Prototype

2.1 Changes according to feedback

Based on the feedback that we have received in the last week, we have included a number of different changes to our game.

First and foremost, we decided that we are going to scrap the idea of including a singleplayer mode. Instead, we would like to focus on an interesting, well-paced and compelling cooperative experience for two players. This is going to allow us to balance the game properly around this mode and design the puzzles so that they will be balanced specifically for two players. We are thinking about adding in a four player mode as a high-target or extra, but before that, the goal is to create a two player experience.

Additionally, we have received a substantial amount of feedback regarding the core gameplay of our game. After reading through the suggestions by other people, we have decided to make the puzzle aspect of our game the primary focus, while reducing the importance of our proposed boss fights. We want to have a set number of puzzles in different environments that the players have to solve first before the game ends in one boss battle. This final fight will be composed of multiple stages which will be more like additional puzzles instead of an actual combat system one might know from ARPG games.

Also, we have received feedback that the exploration aspect seems very promising. For this matter we decided that it is the player's task to figure out most of the environment interaction whether with or without the elements by himself. Meaning not doing lots of tutorials or notifications for new scenarios but let the player find out about his possibilities. Finally, it is proposed to integrate humor into the game. We take this into consideration and will think of scenarios where it is applicable to the story and gameplay.

When it comes to the narrative background and setting of our game, we have fleshed it out a bit further. The idea is that our players are not normal mages, but instead they get their magic by injecting a type of elemental drug in their bodies, however, because of its toxicity, only one element can be used at any given point. Their goal is to go to specifically this dangerous planet where the raw ingredient of the elemental drug is coming from as they have received information that another ship has crashed there and it is their mission to rescue the survivors. Now it is the goal of our main characters to find the missing crew and find out what happened exactly.

By making their way through the planet, the players find out more details about the incidents that happened before their arrival. Around the game's third level, they find the surviving crew. During this encounter they obtain the ability to add one additional element to their arsenal each, which in turn allows for more complex puzzles that are going to require even more teamwork. The game's finale will be composed of, as mentioned before, a final, multistage boss battle. Our characters are going to have to use the skills and their understanding of the environment, which they have acquired during the course of the game, to beat the final boss and thereby lead the surviving crew to safety.

2.2   Puzzle Prototype

In order to test out our game idea and boil it down to its most important core features, we have created two paper prototypes. We used them to recreate two specific levels where the players have to solve a puzzle and one additional version to simulate the final boss. In both versions we have created a basic field, which is divided like a chess board, and both versions work in a turn-based manner.
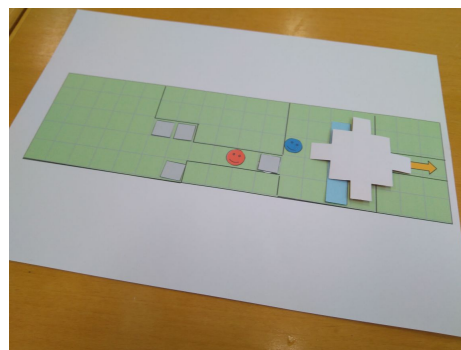

Feuer:
- 1 Schaden Zielobjekt + 1 Schaden auf Umkreis
- Holzobjekte fangen Feuer (alle 1 Runden 1 Schaden)
- Kleine Feuerkugeln erschaffen (werfbar)

Eis:
- 1 Schaden Zielobjekt + 1 Schaden auf Umkreis
- Objekte sind für 5 Runden eingefroren
- Kleine Eiskugel erschaffen (stellbar, werfbar)
- Feuer ausmachen

Player used ice to freeze the river

For the puzzle prototype, both players can move independently from each other, and each character is supposed to represent one element. They can use

their elemental magic at their own discretion, but they also have the ability to interact with objects on a more basic level, like pushing a box or activating a pressure plate. With these skills, the players have to figure out a way to traverse the environment, like how they are supposed to cross a hole or a river, without making a mistake and falling to their deaths. A big part of the gameplay experience is to figure out, by trying, how certain world objects interact with the individual elements.
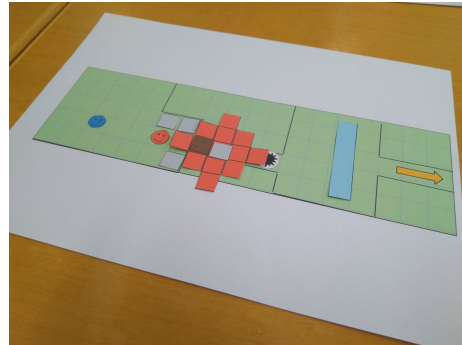
Player used fire to destroy wooden boxes

The core gameplay in our prototype seemed fun while trying it out together. It was simple and fairly intuitive, but also interesting to figure out how to interact with the environment and to make mistakes while trying things out. This is something that we were hoping for with our initial game idea, so this experience left us with a positive outlook on our core gameplay loop. While the initial puzzle ideas were rather simplistic, we believe that more complexity and additional elements will only make it better.

Creating the prototype was not that difficult, as we opted for a simple prototype with paper backgrounds and figurines. However, the actual minutiae when it comes to gameplay rules and interactions had to be iterated a couple of times to get it right. Problems like deciding whether the spell only works on a single object or on an entire area had to be fine tuned to ensure an intuitive grasp of the interactions.

After playing multiple rounds of the puzzle prototype, we have figured out that the best experience would most likely, as our aforementioned feedback stated, occur in a two player cooperative game. The reason for this is that we want the players, according to the course's topic "Together", to cooperate and solve problems with each other, but also to feel powerful. Here we gave the players only a very limited amount of abilities, which made the interactions feel too limited and one dimensional. With four players, each player would still feel relatively weak by themselves, while only a single player would not really cooperate with anyone. Finally, we figured out that adding check points would be a good idea, as this allows us to go for bolder designs of the levels where the players can actually fall into traps, making the experience of puzzle solving

slightly more tense, but not too punishing.

2.3   Boss Prototype

Having described this experience, let us talk about the boss prototype. This one has been designed initially with the idea in mind that four players might be playing the game. As the puzzle prototype has shown us that we should focus on only two players, we took this prototype as a more symbolic representation of elements and weaknesses. Specifically, each coloured pawn is supposed to be an element, while the stones represent a weakness of our boss enemy. Each of our two players controls two pawns at the same time, and one person has to control the boss.
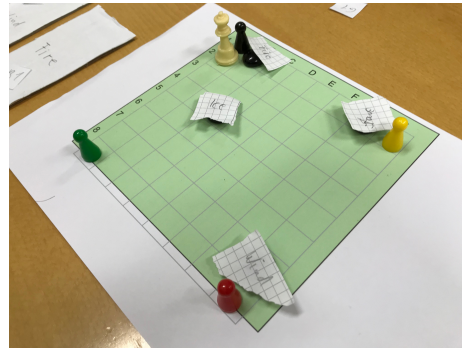
Stones are weaknesses, pawns are players' elements

The boss has to roll a dice every round which decides how many steps he is allowed to move. The pawns can move in any horizontal and vertical direction and each pawn has a specific ability: Wind can allow one player to move diagonally, fire attacks the weakness or the boss from a distance, ice can slow the boss and stone can protect one pawn in one round. The goal is to destroy all weaknesses first and then the boss himself, before the boss is able to destroy all pawns by walking over them.
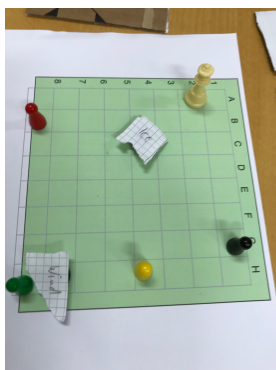
State after the players eliminated two weaknesses

Playing this prototype was a fun experience, however, it took us some time to get it right and fully comprehend all the rules. After getting this right though, we were able to play through multiple scenarios, see how they play out and adjust the rule set.At first, the boss was overpowered, as it was basically impossible for the players to bring him down, but once we allowed the players to use their abilities from a distance and also discarded the rule that every round one stone reappears if not all stones are eliminated at the same time, the balance seemed just right.

This version was very straightforward to create, as we used elements of other games like chess to represent the individual objects and characters. The primary difficulty was to figure out the rules and to adjust them over multiple playthroughs, as some abilities seemed either too strong or redundant in our first tries. After carefully adjusting multiple paramters in the gameplay, we came to the conclusion that it would in fact be better to treat the boss as a multi-staged, one-off battle, so that we could focus on it being a lasting and very challenging experience. It also showed us that the balancing of the battle is going to be a difficult task, because having so many different factors influencing the challenges proved quite demanding from a balancing standpoint.

3 Interim Report

3.1 Progress

Up until this point, we were able to finish what we considered as our functional minimum. This primarily consists of having the basics of our first level built, so that it can be completed in its simple state and so that the first puzzle can be solved.

As a reminder: The first level is the one we have shown as our puzzle prototype, where the players first need to push some rocks out of their way. Once this is accomplished, a tree has to be removed by using a fire spell, allowing the character to move forward. Then they see a hole with a rock in front of it, which means that they have to push the rock into the hole so that it becomes possible to cross. Afterwards, they encounter the obstacle of a river, and the only way to solve this part is to use an ice spell on the river, freezing the water and making it possible to walk across. This is the puzzle we have implemented until now, as it was part of our functional minimum.

Starting area

3.2 User Interface and Networking

The User Interface so far is very simple and without many functions, as this is going to become more important over time once we have more different abilities and more environment interactions. We have a skill bar on the screen that is going to be used down the line to show which skills are available and which ones are active. Then in the bottom right corner one can see a dummy healthbar, which is not used up until this point because there is no way for our player to take damage. But once the boss fight will be implemented in the future, or if

two players play together and hit each other with their spells, we will have to deal with the hitpoint system and add functionality to the healthbar.

Networking so far has been implemented in a very basic form, where the initial implementation of a LAN network exist so that hopefully, in the future, players will be able to play together via LAN.

3.3 Character

Currently we are using a simple dummy model as our character. The character can be moved around by the player by clicking the environment, for which it uses simple pathfinding as a NavMeshAgent. This makes it possible to avoid environmental obstacles. While walking around the character can push away the rocks, so that the player can progress through the level. Furthermore, by clicking the mouse buttons, it is possible to shoot a fireball and also an iceball, both of which interact with the environment in simple ways. So far, the iceball can be used in order to freeze the river. This then allows the character to move over the frozen water so that the level can be finished. In addition, the fireball can then be used to melt the frozen river. The player is also able to switch between the two different abilities by pressing the Q or W key on the keyboard.

Clearing obstacles with fire

3.4 Environment

When it comes to the environment, we have good number of different dummy models like different rocks, mountains and the river. These are supposed to roughly represent the environment we had envisioned when we created our puzzle prototype, and in the state so far it looks good, but it is going to require more detail over time. Specifically once the environmental interactions increase

in their possibilities, having different parts of the world act as aspects to solving various puzzles is going to be important.

We will also have to work out how the environment is supposed to look like exactly, as the camera that we are using now is very similar to games like Diablo, where it is showing the game world from an isometric perspective. The camera is also strictly bound to the character, which was a decision we made because we did not want the players to be able to simply move the camera around, like it is commonly the case in RTS games. We want our players to have the feeling of exploration, where they have to actually move the character into dangerous situations and deal with whatever might happen, instead of allowing them to scout out every possible danger from afar.

Using the environment to create paths

3.5   Design Revisions

Design changes since our initial game idea and prototype were rather small. For example, our player can now move in all different directions, whereas we used a grid-type movement in our prototype. So we basically took the puzzle prototype that we have created and implemented it in a way where we give the player slightly more freedom in movement and in using abilities compared to the initial design.

3.6   Implementation Challenges

The implementation went basically as expected, for example the addition of different abilities was fairly simple and was done in a short amount of time. However, some elements have proven to be slightly more complicated, like the proper combination of different puzzle elements so that they work smoothly together. One challenge we faced was in the context of NavMeshes. Even

though NavMeshes are incredibly useful for pathfinding and general navigation, we realized during the implementation process that when it comes to actually interacting with objects that are part of these NavMeshes, it was more challenging than expected. Notably, having static obstacles like a hole in the ground that then changes to being a walkable object proved to be a tricky problem to solve.
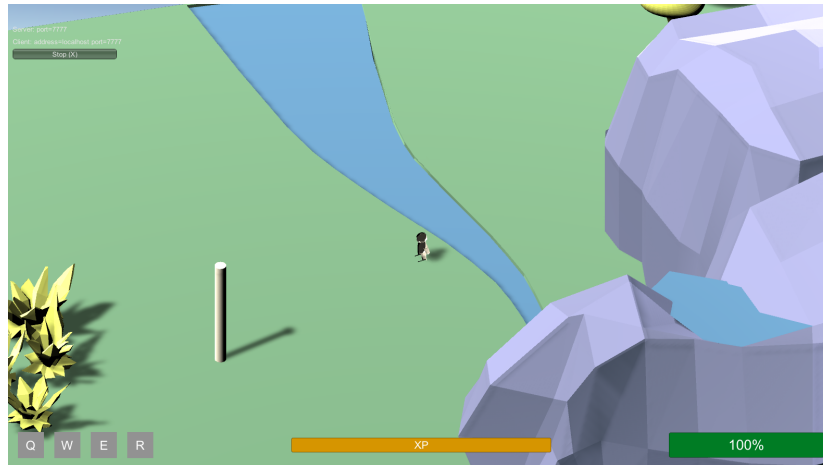
Using ice to cross the river

3.7   Next Steps

We are now at the point where every aspect of our functional minimum is done. Hence, the following steps will be entirely focused on making meaningful progress towards our desirable target while finishing the low target's final aspects. Certain elements of our low target are done already, such as the first level and some of the environmental interactions. First and foremost, networking is going to be expanded upon to start making cooperative gameplay a more significant part, which is the primary goal of this game, as the puzzles and our boss fight are expected to only be possible through smart cooperation between players. Moreover, a better looking character, a more useful HUD, more levels with increasingly interesting puzzles and the boss fight are things that absolutely need to be incorporated into the game in order to make it work.

4   Alpha Release

4.1   Progress

Since the interim report, we have made considerable progress towards reaching our desirable target. Some of the desirable target's goals we have completed, while others took longer than expected and are still on their way to completion. In general, we now have multiple abilities for our players and a total of three different levels. The first two are primarily puzzle levels, while the last one is the final boss fight with multiple stages.

4.2   Levels

The first level is very similar to the one we have shown in our interim report, especially the beginning, however we have also considerably extended the level after the players cross the river. After the river the players get to a sea where many plantmonsters are placed around the borders. The players' goal is to cross the sea and they do that by using a new ability, as the ice ability now is able to create ice platforms on water. So by using these short lived ice platforms to make room for movement, while also occasionally shooting the plantmonsters or dodging their attacks, the players have to try to cross the sea to reach their goal.
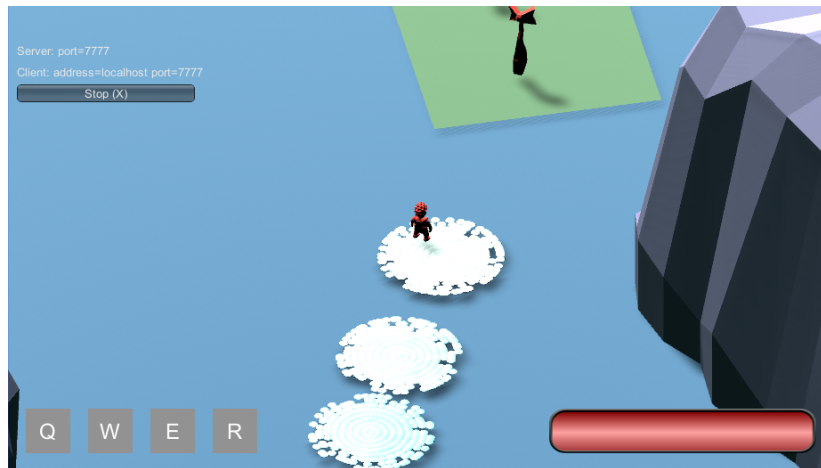
Using ice to cross the sea and avoiding plantmonsters

In the second level, the players have to cross multiple moving platforms by using their jumping mechanic without falling to their deaths. Afterwards, they have to solve a small puzzle by turning keystones, which is going to unlock the next ability for them. Then they get split on two different paths where they have to solve multiple small challenges by helping each other in order to open the doors that are blocking them from progressing through the level.
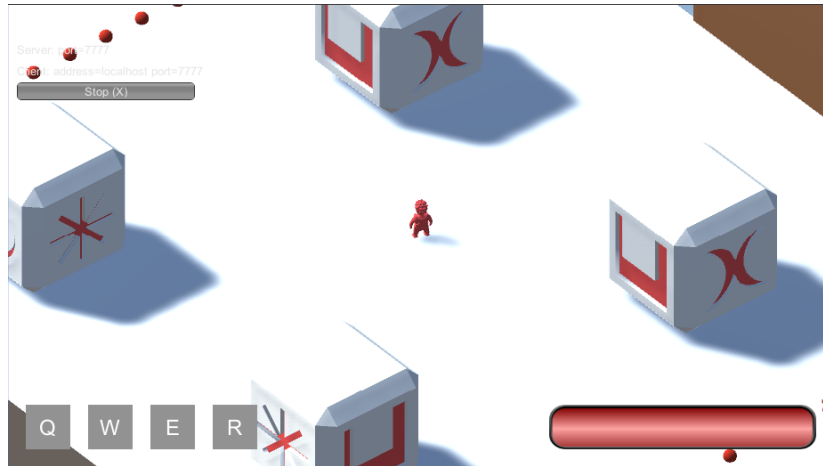
Solving the keystone puzzle

Finally, the boss level consists of multiple phases in order to challenge the players. Initially the players are being followed by golems who are able to hit the players for a lot of damage if they reach them. At the same time, plantmonsters are again placed around the borders of the level, forcing the players to dodge their attacks while simultaneously trying to lure the golems onto their correspondingly colored platforms. Once a golem is on a platform with the same color, the players can use their abilities with the same element, so fire for red for example, to hit the golems and destroy them. During this entire time the boss is just observing the fight, safe from harm on his platform. However, once the players destroy all four golems, the boss starts moving and uses his powerful abilities. These abilities are not only stronger versions of what the players are capable of, but also additional, new abilities, like spawning a meteor or creating gas clouds that hurt the players.

4.3 Controls

Since the last iteration of our game during the interim report, we have implemented a couple adjustments in regards to our controls. We thought that using navmeshes and having the characters move by just clicking in the environment was a very slow way to do things, as it did not feel all that responsive. Also, using the navmeshes proved to be quite a hassle in many situations and we also wanted to use for example a jump mechanic for our characters. Hence we decided to switch the control scheme to the well-known WASD system, where the WASD keys are used to move the player, Q and E can be used to rotate the camera to one's liking and F is used for environmental interactions like pushing stones around. Furthermore, 1 through 4 are used to switch between different abilities and the mouse is used to aim and shoot said abilities. Then, whenever it is needed, the space bar can be used to activate the jumping mechanic, so

that for example the players can maneuver the jumping puzzles in level 2.

Fighting the boss

4.4 Abilities

We have extended our ability system quite a bit, as we wanted to focus our interactions with the environment and the enemies on the different elements that the players are capable of using. The abilities now have an explosion radius attached to them, which makes it possible to use their explosion effects to hit things around the points of impact. In turn, this also makes it possible for the players to hit themselves, for example by using the fireball ability and setting themselves or the plantmonsters on fire, or by aiming the iceball to close to themselves and freezing their characters in place. Two new abilities, the stoneball and windball, were also added to allow for abilities that interact through rigidbodies with the environment. For example, the stoneball can be used to crush a brick wall, while the windball can be used to extinguish gas or push something away.

4.5 Visuals, UI and Sound

Considering the visuals in our game, we have primarily focused on adding much better looking models, animations and particle effects. After creating the models for the player, golems and the boss, we have animated them in various states they can be in and then added them as replacements for our placeholder models. The particle effects were used for the most part with our various abilities and also the boss' abilities, like for example the gas cloud that can be spawned. The enivronments have also received more details through additional modelling work. The user interface is still fairly simple, as all we have updated is a couple tooltips that show interactable objects and a new health bar that is

being emptied when the player takes damage. On the sound side of things we have added an audio manager that manages all available sounds in the game, but there are still certain abilities without sound and a distinct lack of music, something we will have to add later.

4.6 Networking

As this is supposed to be a multiplayer game, we have also changed quite a bit in terms of networking. There is now a game lobby in which the players can start and join servers. By using Unity Online Multiplayer Services we created the possibility to play cooperatively online. Additionally, we spent some time on improving the client and server environment, reducing lag in online play and also fixing smaller bugs that have occurred since implementing networking services in the game.

4.7 Implementation and Next Steps

All in all we have made multiple adjustments since our last report, especially in the context of the control scheme and how the puzzles in the levels are supposed to work. This new control scheme also gave us more possibilities when it comes to designing puzzles, as creating puzzles that are fun and engaging proved to be more challenging than we have expected. Also making the boss behave in a sensible way is more difficult than we would have anticipated and it is going to need quite a bit of tweaking moving forward. Therefore we also initially wanted to add more phases to the boss fight with more mechanics, but this is something that we had to put off for the future. The near future will mostly consist of fixing bugs and polishing the game, so that playtesting can go smoothly.

5 Playtesting

5.1 Progress

A lot of the time before our playtesting sessions began had to be spent on fixing a multitude of different bugs, specifically in regards to the networking side of things. Playing with another player over the network frequently caused problems like the lack of synchronization between host and client, physics bugs like pushing the other player across the entirety of the map or the abilities being not setup correctly for both players.

However, after some time was spent on fixing these bugs, we finally had a version that we were able to use for playtesting purposes. It consisted of three different levels, with two being focused on the puzzle side of things while the last involved the final boss fight.

5.2 Questions

In order to be able to compare and contrast results between different testing sessions, we decided to put together a questionnaire which contained questions that we asked our testers either during or after the session.

These were the questions we asked our participants before the session started:

1. What type of gamer are you (hardcore vs. casual)?

2. What genre of games do you enjoy the most?

The following questions were asked primarily during the session itself whenever we observed something unusual:

1. Why did you go there? (Does the player know where to go?

2. Why are you waiting / standing there? (Is the player confused?)

Finally, we asked a larger set of questions after the playtesting has been concluded:

1. What was your first impression?

2. Has this impression changed over the course of the game?

3. Did you encounter anything frustrating?

4. Was something especially satisfying?

5. What was the most exciting part of the game?

6. Was it fun?

7. How were the controls? Did they make sense?

8. How was the user interface? (Was there any information you would have liked to see in addition?

9. Did you easily understand how the abilities were supposed to work?

10. Was it immediately obvious what the puzzles required you to do?

11. How was the teamwork with your partner, did you focus on helping each other or rather on sabotage? Did you communicate?

12. What was strikingly good?

13. What was strikingly bad?

14. If there was one thing you could change, what would it be?

15. Where would you place the game on the following matrix?
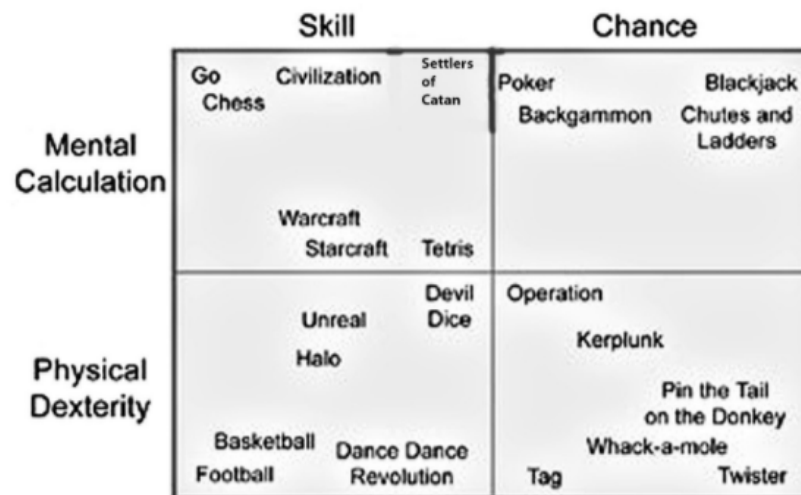
The Play-Matrix

5.3 Procedure

5.3.1 Setup

To find a sufficient number of people who would be willing to support us in playtesting our game, we used a variety of methods to obtain the results from various sessions.

First and foremost, the best way to observe people while they play a game is of course when you are in the same room with them. Whenever this was

a possibility, we tried to use that method to see directly what the players are doing, where they are watching, where they are clicking and so on. In addition, we asked the participants to engage in a think aloud protocol, which they had to do anyway to some degree if they wanted to communicate with their partner. Hence we asked them to talk out loud, in detail, about what they are doing and thinking, so that we could observe where the game's flow possibly becomes counter-intuitive or problematic.

If this type of setup was not possible for whatever reason, we either played together with one participant while focusing on giving as little additional information as possible, as all of us obviously know all the intricacies of our game, or we completed the playtesting sessions via Skype. While maybe sub-optimal, if one of our developers is playing as a partner with a tester via Skype, the only information we are really missing is the exact buttons or clicks the players are executing, especially if they take our request for the think aloud protocol to heart.

5.3.2 Issues

Almost all the issues we encountered during playtesting were caused by networking problems.

The first problem that we faced was that sometimes, on only some builds, the puzzles or the boss fight would desync, which in turn would make it impossible for our testers to finish the respective levels. For example in our door puzzle in level two different doors would open for both players, so that they would get stuck in their rooms and therefore be unable to proceed. An even bigger problem was that we faced some disconnects during testing, usually the client would be disconnected from the game and the level would have to be restarted from the beginning.

All in all though, the play sessions went rather smoothly and without any further issues besides the mentioned occasional networking problems, which allowed us to attain the following results.

5.4 Results

We tested the game with 15 testers, with four being female and eleven being male. The distribution between self-assessed hardcore and casual gamers was roughly equal, with a slight tendency towards hardcore, and most participants named first person shooters as their favorite genre. Role-playing games were the second most mentioned, while adventure games came in third. Six of these tests were performed in the same rooms with the testers, while the remaining nine were done via Skype or Teamspeak.

5.4.1 Gameplay

The gameplay came across as well paced and varied, specifically in regards to having a good balance between various puzzles and also fights.
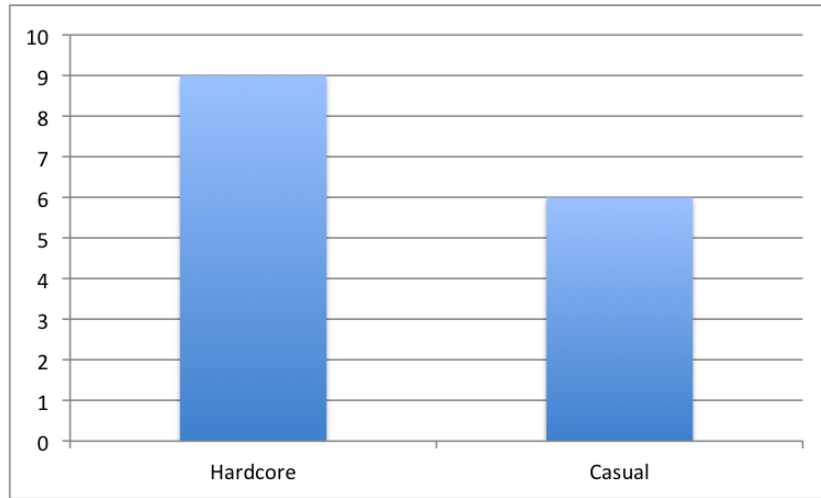
The distribution of gamer types

5.4.2 Controls

The controls were often seen as one of the weaker parts of the game. Players frequently struggled with abilities not going in the direction where they aimed and also with unresponsive button inputs when trying to interact with objects, like the keystones in level two. Further confusion was reported when some players expected to be able to use abilities directly by pressing the respective hotkeys, when in our implementation the hotkeys are there to choose the abilities, but then the actual casting happens by pressing the left mouse button. On the other side, the WASD movement we are using has generally been judged as responsive and good.

5.4.3 User Interface

Our user interface is fairly minimal, limited to the abilities, the healthbar and a tutorial screen when a level begins. This has been regarded fairly positively for the most part, however, some players have reported that they would have liked some more indicators. In level two, when our players solve the first puzzle and obtain their second ability, some did not recognize that they actually did get this ability and therefore where unable to solve the next puzzle.

5.4.4 Abilities

In general, the abilities were considered a big plus for our game. While some participants felt that it was not entirely clear what the abilities were supposed to do, that was quickly resolved once the players tried them often enough on different objects and got a feel for what they were supposed to do. Some environmental
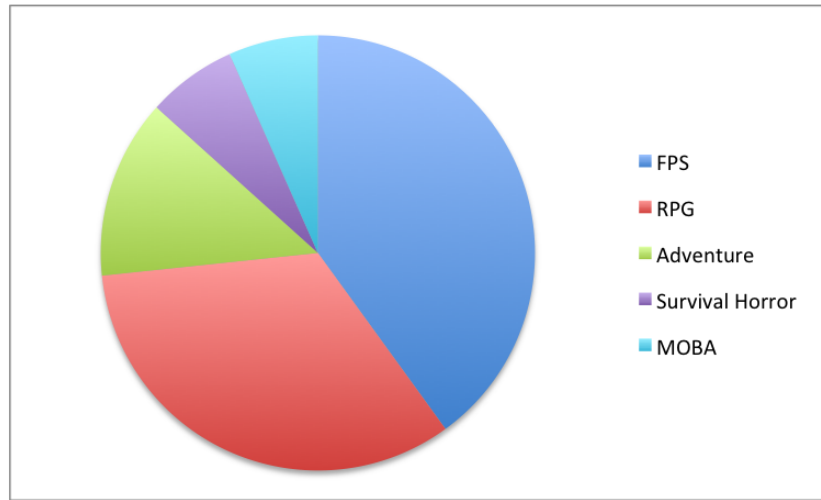
The distribution of favorite genres

interactions were also not clear in the beginning, some players expected for example that using the iceball on a plant monster would freeze it, which did not happen, or they were puzzled as to why the windball would completely dissolve a gas cloud. The interaction between abilities in the level one puzzle where the players had to cross a lake with continuous ice plate spells while simultaneously burning plant monsters was regarded as exciting by some people.

Another problem that happened too often was that the players were unable to judge beforehand how wide the area of impact for the abilities would be, which unfortunately led to some scenarios where players progressed quite far along a level, but then accidentally froze each other in the middle of the lake or burned each other, which meant that the level had to be restarted.

5.4.5 Puzzles

The next largely positive aspect for our game were the puzzles, as most players enjoyed the fact that this game that reminded them of an action RPG was in fact focused on puzzle solving instead of fighting. While certain players struggled with the first puzzle in level two, where the players are tasked with rearranging keystones in a specific order, for which the clues can be found in the environment, the other puzzles were generally characterized as intuitive and clever. Difficulty-wise the puzzles were usually considered nicely balanced, but some people felt that the navigation in level one and that the first puzzle in level two were slightly too challenging.

5.4.6   Boss Fight

In the beginning of the boss fight, the players need to lure golems onto platforms of the same colour and then hit them with a spell of the same colour at the same time. This was not immediately obvious to most testers, as they expected that just shooting the golems would be enough to finish them off. Afterwards, once the boss began its second phase and began to attack the players, they then expected a more complex solution to the fight instead of just trying to repeatedly shoot the enemy while simultaneously dodging its attacks. Overall, the idea and setting of the fight were judged positively, but the actual fight seemed to be too confusing.

Some people felt that the boss fight was exciting though, which was supposed to be the point of the finale, so that is at least an indicator that the fight was a good idea, but it needs some work to become more intuitive.

5.4.7   Graphics and Sounds

The graphics were a point of contention among testers, as some really liked the simple but colourful design, while others felt that it lacked detail. Most participants also really liked the particle effects we were using for our ability interactions.

The sounds were considered insufficient, as we had only included a very simple range of sounds with a lack in detail. Music was also missing, which is something that some expected to be in the game.

5.4.8   General

In general, our game was considered fun and enjoyable by all the testers. The majority of players actually engaged in some teamwork to solve the puzzles and fights cooperatively and in addition, they even sometimes tried to sabotage each other by for example setting the other person on fire. This was something we really wanted to see, so we are quite content that this phenomenon occurred and the participants enjoyed this aspect immensely as well.

Moreover, all testers evaluated our game along the above mentioned play matrix as being primarily focused on skill and mental calculation. The majority placed the game around games like Warcraft and Starcraft.

5.5   Changes

The primary change that had to be made was to fix the various network bugs that occurred before and during playtesting. Especially the synchronization between the players in level two and the boss fight needed work so that both players would be at the same point in the game.

The boss fight also needs to be changed in some ways, so that it becomes more intuitive and less confusing.

Checkpoints were also a requested addition, not only because we had to restart some runs because of networking problems, but also because spawning
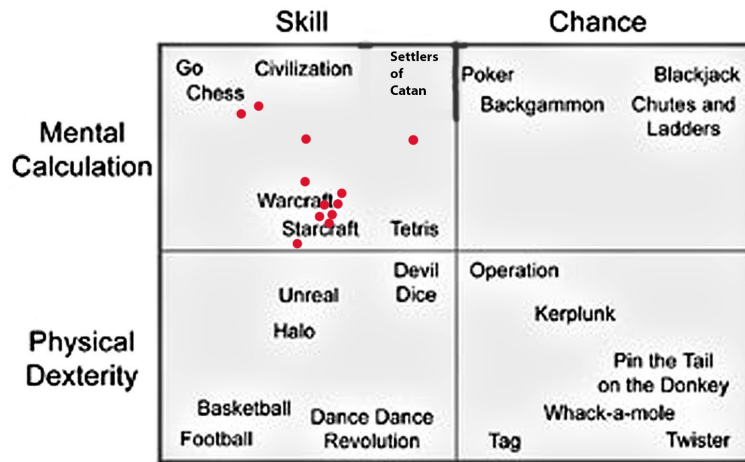
The Play-Matrix after testing

at the very back of the level only to run through already solved puzzles proved to be boring and time-consuming.

Furthermore, various indicators in the user interface have to be added, chiefly to signal to the players that something new has occurred, like unlocking a new ability after solving a puzzle, or to help with navigation. Level one posed a big challenge on that front to most testers, as it was not necessarily clear where they needed to go in the big water area, as the camera is possibly too close for proper navigation without any help in the user interface.

Last but not least, our controls also require attention because if there was one negative thing that almost all testers have pointed out to us, it was the control scheme. Unresponsive and unpredictable controls are, for obvious reasons, very frustrating for players, so making them resemble more the controls in games like Diablo for example would be a big step for improving the general gameplay experience.