

# **Game Startup Manual: Game Design**

The fundamental theory and practice in game design

Ardiawan Bagus Harisa

# GAME STARTUP MANUAL: GAME DESIGN

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## DEDICATION

This book is dedicated  
to all of you who believe that the game can change the world better,  
to all of our families and friends who always support us,  
to the earth's children who are grinding their purpose in life.

I share the same approach as Andry Burkov's books, following the "read first, buy later" principle.  
This means that readers have the option to download and read book chapters for free before making a purchase.  
This practice is harmless and beneficial to readers.



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## ACKNOWLEDGMENTS

The first, second, and third of my acknowledgment should always be for my mother. Because in my Muslim culture, mom is praised three times before our father. Both have sacrificed an unmeasurably amount of things to support me. I know words in here will never be enough to acknowledge them.

I would like to thank my academic advisors, Wen-Kai Tai and Hanny Haryanto, for teaching me scholarly manners and life lessons outside my house. Your superb work ethic, extraordinary thinking, and sympathy will always be the perfect example for new generations.

Thanks for the companion for a lifetime, my wife, Salasa. Because of your presence, we carved the life story on the cave of experience.

Shout out to Deep-Fold's Pixel Space Background Generator (<https://deep-fold.itch.io/>) and Lospec (<https://lospec.com/>) for allowing me to create a beautiful pixel art-style book cover.

Thanks to all of you who support me.

“Life is either a daring adventure or nothing.”

Hellen Keller  
Author & Lecturer

## PROLOGUE: GAME START!

Starting a game development studio or launching a successful game can be a challenging and risky endeavor, especially in today's competitive and dynamic game industry. However, with the right mindset, skills, and strategies, you can overcome obstacles and turn your game ideas into reality.

This book is the first and part of the "Game Startup Manual" series, a book collection for game startup enthusiasts. We will provide another title, including game programming, game development, operational management, business and marketing plan, hopefully.

Particularly, this book is intended to be a guide for game startup founders, game designers, and game developers who want to make engaging and profitable games that stand out in the crowded game market. You will learn about the role of games in entertainment, education, and social interaction, as well as the benefits that games can bring to players and society. You will also discover the importance of fun and engagement in game design, as well as different types of games and platforms. The book covers the game design process, essential skills and knowledge of game design, and the different roles and responsibilities involved in creating a game. You will also learn about game mechanics, dynamics, and aesthetics, as well as the principles of game balance, pacing, and difficulty that contribute to a compelling player experience. The book also covers the importance of game documents and the prototyping and playtesting phase of game development. By the end of this book, you will have the tools, skills, and knowledge to create meaningful games that players love.

It's important to keep in mind that this book is primarily based on the author's personal experience and references from the game industry. As a result, not all of the approaches outlined in the book may align with your preferences. Nonetheless, reading this book will provide you valuable knowledge.

Let's start the game!

“If you’re not having fun, it’s not worth doing.”  
Tommy Bolin  
Deep Purple’s & Zephyr’s Guitarist

## I. GAME

Everybody enjoys playing. Don't you? If not, what are you? Even my grumpy father love to play board game, although he was not always wanting to join. Of course, just because he is busy or sleepy. Well, at least you are interested to seek a play since you are reading this book. All kids in my neighborhood play every day, either physical-traditional activity game, or digital game. Many times, they called me in front of my door and invite me to join. Sometimes I invite them too to play board game as long as they wear foot wear or sandals before going inside of my house. I sent back them home if they didn't wear it. Ha! I contribute to community by preventing the worm going in to the feet, wonderful!

But then, what do you think a play is, anyway? There is a professor from the Department of Career and Information Studies at the University of Georgia College of Education, Lloyd P. Rieber. He defines play as a voluntary activity that includes physical activity that is fun, at least for ourselves. First, he is a professor, and second, he must play millions of games to master his expertise. I used to enjoy playing (both video games and traditional outdoor games) with my friends when I was a kid. Traditional games like skipping, hide-and-seek, and marble shooting are me and my friend's favorites. Sometimes we chill and enjoy the competition. Few times we ended in fight and cried on our way back to home too. However, I argue that this is part of the game as well and a way to teach us that losing is also part of the game.

There are lots of definitions of what a game is. Sid Meier, one of the greatest game designers and creator of the Civilization franchise, defined a game as a series of interesting choices. It means players will be provided with tons of choices that will impact the gameplay according to the player's decisions. Raph Koster stated that games are puzzles to solve, just like everything else we encounter in life (Koster, 2013). Meaning that the challenges we encounter in games might be useful as an exercise to sharpen our real-life skills. For example, I learned the English vocabulary from playing games. Perhaps because no games were available in Indonesian, my native language, at the time. It has had a positive impact on me, though. According to Clark C. Abt, a game is an activity between two or more players that includes decision-making to achieve a goal in a limited context. Yes, depending on the game, you will try to reach specific objectives while playing. I just want to be as honest as possible. I have played video games since I was six years old, and now I am a lecturer at a college and focusing on game development. Therefore, safe to say that I have summarize the definition of a game.

*"A game is a medium, result, and source for educating creatures in any way that emphasizes fun."*

For me, it sounds cool. Okay, let me explain the quoted sentence. First, a game can be used as a medium to reach some of our purposes. For example, in serious games, you can capture the kids' learning style using only a mobile phone game, and the resulting observation may help those kids choose the best learning method for them. Second, the game is a result. Culture is the result of human life coming together for specific reasons in order to create harmony in life dynamics. It has limits; time and space. So, the game as a result means that the game is also our product of life. For a long time, humans have played games. Senet, for example, is a historic board game from Egypt known dated back to 3500 BC. Finally, the game is a source for us to educate our young generation by emphasizing the fun aspect. You teach your kids to play baseball; it is fun for you and your kids. I love going to the zoo and watching animal documentaries on National Geographic, BBC, or YouTube. I am sure you know that even animals play at an early age. Animals in the circus play too, but it is a different example since they are forced to do the activities. So, I don't like to bring it here as an example. Figure 1 shows cheetah cubs play fighting to shape their hunting skills in the later stage of their lives. I believe it is fun also for them.



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Figure 1. Cheetah cubs play fighting. It will shape their hunting skills in the later stage of their lives.  
(This photo is taken from <https://www.dailymail.co.uk/news/article-2146332/Heartwarming-pictures-cheetah-cubs-playing-Tanzania.html>)

“Laughter is timeless, imagination has no age, dreams are forever.”

Walt Disney

Founder of Disney, Animation Producer

## II. FUN

What is fun? When you play a game with your friends, or even alone, you are having fun. Can you explain it? Fun is a pleasant feeling we experience while doing some activities we prefer or like, consciously or unconsciously. When you are playing a game with friends, whether online or offline, all of you tend to be happy when you win a match. Sometimes, you also realize that some of your friends are even happier when they accomplish something you may never want to do. For example, your friend Jake likes to follow the narration and is curious about the story, while Kenny is thrilled when he unlocks a new badge as an achievement. We all have different preferences for the things we like in a game. You can never make a game that will satisfy all of the players. You need to identify target players through proper market research.

In game design, it's crucial to prioritize replayability to enhance the learning content's comprehension. This is achieved through the gameplay experience, which is the foundation of replayability. However, the player's replayability depends on their characteristics or preferences. Games offer an enjoyable experience, and immersion plays a significant role in designing games that provide this experience. Thus, providing the fit experience to the players resulting in better immersion, meaning better engagement (Gamayanto et al., 2021; Haryanto et al., 2021).

Howard Gardner, a professor of psychology, provided a theory that divided intelligence into seven regions, while Armstrong added one. I want to show the concept of multiple intelligences because it is interesting, and you may find a correlation with the players' preferences.

### 2.1 Theory of Multiple Intelligences

Gardner originally proposed his theory in a book titled *Frame of Mind: The Theory of Multiple Intelligences* in 1983, where he suggested people have different kinds of intelligence. Moreover, he was unsatisfied because the traditional psychometric views of intelligence are very limited (Bakić-Mirić, 2010). Therefore, a person may possess more than one type of intelligence. Referring to this concept, here are my strengths in the theory of multiple intelligences: visual-spatial, bodily-kinesthetics, intrapersonal, and naturalist. In addition, Howard Gardner divided intelligence into seven regions, while Armstrong added one. I want to show the concept of multiple intelligences because it is interesting, and you may find a correlation with player preferences. Figure 2 shows a beautiful comic cover by Andrew Wales posted on his website.

#### 1. Linguistic-verbal

When writing and speaking to others, a person with strength in linguistic verbal intelligence can use words excellently. The person is also good at memorizing information they have seen or heard and also very good at writing stories. The person seeks enjoyment from reading, writing, and persuasive speaking.

#### 2. Logical-mathematical

People with logical-mathematical have a tendency to think in measurable numbers, relationships, and patterns. They have the strengths to reason, recognize patterns, and logically analyze situations or problems (Singh et al., 2017). Therefore, people with these strengths are great at problem-solving, love conducting experiments, calculate numbers in mind, and enjoy thinking about concepts or abstract ideas.

#### 3. Bodily-kinesthetic

The individuals who belong to this type are great with physical activities, such as body movement and balance control. The people strong in this area have excellent body parts coordination and high dexterity (Singh et al., 2017). They are good at activities like dancing and sport. They also enjoy crafting and prefer understanding things by doing

rather than only hearing or seeing.

#### **4. Visual-spatial**

Individuals with strength in visual-spatial intelligence are very good at visualizing things surrounding them. They are very good at following instructions or directional signs, compasses, maps, pictures, videos, or any visual (Levine et al., 2012). Usually, a player with this characteristic of intelligence likes to read the situation and write something personal in the game, such as a meaningful name, a pet's name, the name of a city, and many more. They like to see part of "themselves" in the game. The player is also good at putting shards of puzzles together. Generally, they can recognize visual patterns better than any other type.

#### **5. Musical**

People with dominance in musical intelligence are good at thinking and analyzing rhythmical patterns or sounds. No wonder there is a high possibility they also have logical-mathematical intelligence as a strength. Due to their deep appreciation of musical aspects, they are great composers or performers (Sternberg, 2012). Some say that music melody is like a language, and people with strength in musical intelligence can easily remember it.

#### **6. Interpersonal**

Interpersonally intelligent people are good at understanding and interacting with others. These people are adept at understanding the motives, feelings, and intentions of those around them. They have excellent verbal and nonverbal communication skills. They may see a situation from a broader perspective, giving them the benefit of performing necessary action. Because of those reasons, they have positive relationships with others.

#### **7. Intrapersonal**

Intrapersonal intelligence refers to the ability to identify and comprehend one's own emotional states, feelings, and motivations. Individuals with this type of intelligence enjoy self-reflection and analysis, fantasizing, examining interpersonal interactions, and assessing personal capabilities. People with intrapersonal intelligence can analyze the opportunities and challenges they will face, construct theories, have high awareness, and, most importantly, understand their feelings.

#### **8. Naturalist**

According to Gardner, people with this type of intelligence are particularly attuned to nature and enjoy nurturing, exploring the environment, and learning about different species. They are known for noticing even small changes in their surroundings. They are excellent at gathering puzzles and easy to find the correlation of one thing to another in nature.

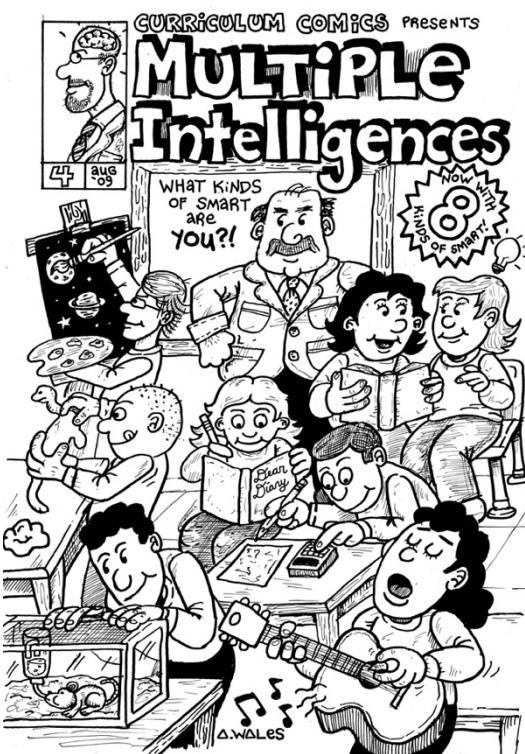


Figure 2. Beautiful comic cover by Andrew Wales.

(This illustration is taken from <http://andrewwales.blogspot.com/2009/08/curriculum-comics-multiple.html>)

The theory of multiple intelligences by Gardner has been criticized by psychologists and educators. Critics claim that his definition of intelligence is too broad and that his eight “intelligences” are simply a group of talents, personality traits, and abilities. Moreover, empirical validation of the concept is inadequate. I have observed the propositions and the rebuttals of the theory and agree with the criticisms. However, in my perception, some of the things from the concept are not wrong, and many educators (including me) have been utilizing it in their classes and taking benefits out of it.

Although not all researcher in the related domain agrees with Gardner, at least you now understand that as a player, we are so distinct from everybody else in terms of what we like in the game. Therefore, the way that the players get fun is also different from each other. Psst! By the way, you can still use the theory to generate game ideas. For example, you randomly chose the naturalist, visual-spatial, and body-kinesthetics from the list, and you came out with a game idea like this: an adventurer who is also an acoustic guitarist at the elf world that has vibrant-colored plants needs to move and strike the infiltrators. What do you think? Remember, game ideas may come from anything. Even something around you that you see every day.

## 2.2 Four Types of Fun

Nicole Lazzaro, a well-known game experience designer, uses her own framework of four different kinds of fun. The idea demonstrates the various positive emotions that gamers may experience while playing. The framework was obtained by observing around 60 players (gamers and non-gamers). In the end, she identified four key categories of enjoyment that explain why we play games: people fun, hard fun, easy fun, and serious fun (Lazzaro, 2021; XEODesign®, 2023). Generally, the experiences given to a player will create a bubble of emotions. That bubble is actually the fun that you, as the game designer want to design. Figure 3 depicts the map of four types of fun.

### 1. People Fun (Friendship)

People fun discusses the amusement from competition and cooperation from players. In this type of fun, socializing or hanging out with friends is the most reason people play games. Human nature is unique and complex, and providing suitable game mechanics to the players will be addictive and build social bonds and teamwork over time. Everybody wants to stay and play games with the one they love. In people fun, the players’ actions such as communication, cooperation, and competition, will emerge emotions such as amusement and admiration. If you want to make your balloon of people fun to be bigger, add more caretaking and compassion to your game. However, the game actions requiring more skills will usually make the bubble smaller. You can see from Figure 3 people fun is more group-oriented while hard funs is more challenge-oriented.

### 2. Easy Fun (Novelty)

This kind of entertainment primarily emphasizes the novel aspects of explorations, role plays, and creativity. According to Lazzaro, the bubble wrap of game design is the easy fun. Because it is on the surface level of player engagement and may lead to a deeper immersive experience if it pops up right. Fantasies help the player to temporarily escape the crowded (real) world. Players’ ability to embark on adventures is fueled by their imagination. The fun failure states also reduce the player’s frustration. Consider including funny animation when the player’s character dies. In this type of fun, player activities include exploration, fantasy, and creativity. You can increase curiosity and surprise by adding off-track play. While introducing badges and incentives may make players wonder and feel amazement, it will also lessen the bubble of easy fun.

### 3. Hard Fun (Challenge)

You should provide your gamers the chance to overcome obstacles, master or level up, and feel a sense of accomplishment in this type of fun. Hard fun is tightly related to the gameplay and game mechanics. Players will concentrate on achieving particular objectives while applying strategies and dealing with constraints in hard enjoyment. Player actions such as strategy to go to the goals and handle obstacles will create emotions like frustration and relief. The hard fun bubble will grow as you add more scoring systems and techniques, but you should take precautions because it also increases frustration. This type of fun may create a fiero, the optimal state when challenge and fun failure states are balanced. You can reduce the frustration by adding fun failure states, such as silly animation on the character’s death.

### 4. Serious Fun (Meaning)

Serious fun is actually playing as therapy. It might be treatment for a condition or illness of any kind. In serious fun, participants participate in a game or game-like activity while being given certain explicit goals in the hopes that they may alter their ways of thinking, feeling, or doing afterward. For instance, using virtual reality technology, my friend Abas Setiawan created a birthing tutorial for nurses and midwives. It significantly reduces the risk of observing and performing out the birthing process. Make the medical students relieved and still fully comprehend the operational

procedure. To study the ADHD (attention deficit hyperactivity disorder) syndrome in elementary students, my team and I also developed a virtual reality game. We keep track of gameplay information including how long it takes students to finish tasks, whether they follow the instructions, whether some tasks are challenging for some students to complete, and so on. Repetitive actions result in the player's relaxation by giving tangible and meaningful rewards. While collecting the in-game inventory will create more players' excitement by adding more experimentation. However, it will make the bubble of serious fun to be smaller. Finally, the solid-designed fun will allow the players to be in zen-focus, or others may call it "in the zone".

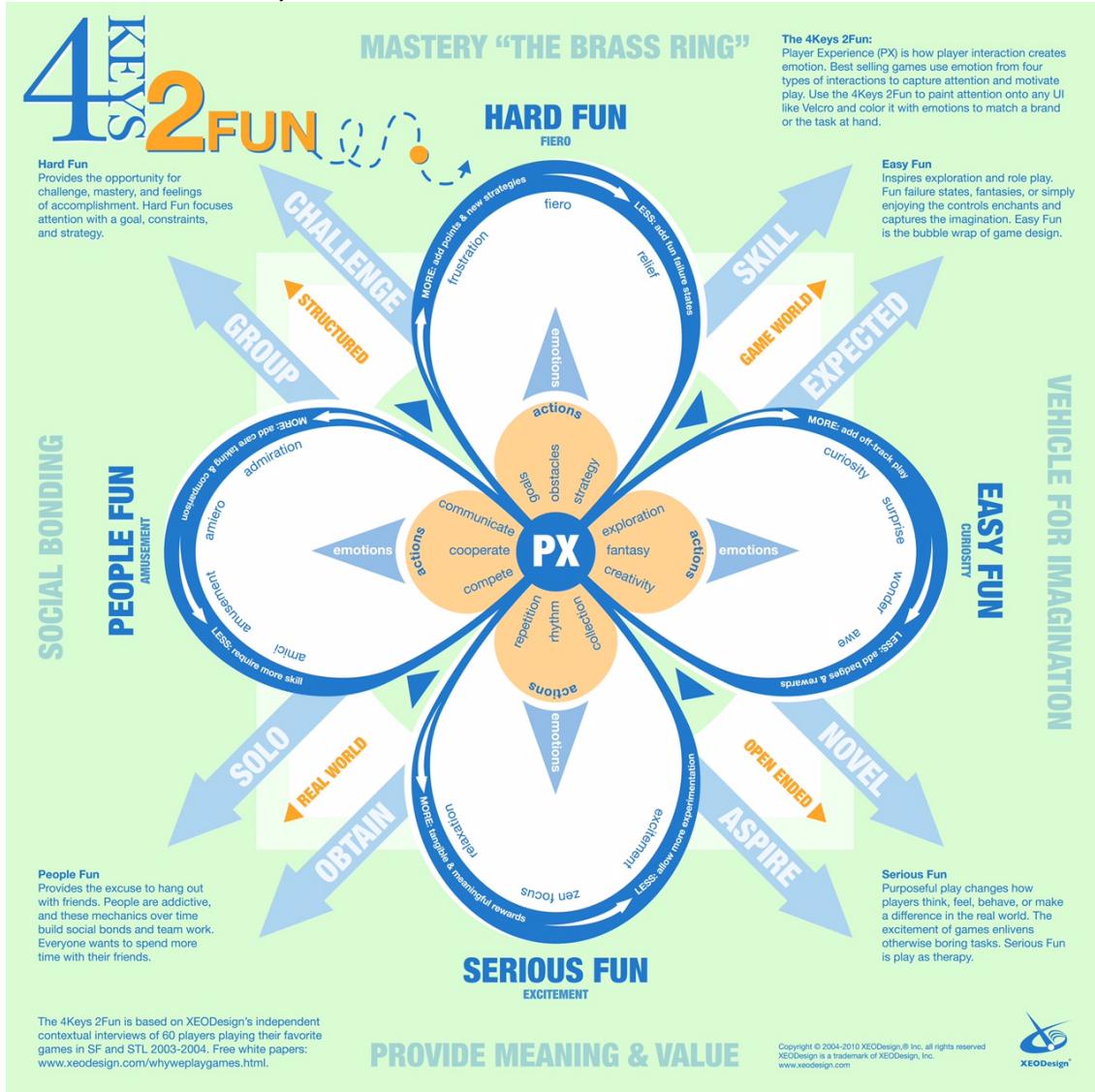


Figure 3. The map of the 4 keys 2 fun.  
(This illustration is taken from <https://xeodesign.com/research/>)

Whew, that's a lot, isn't it? Do you want more? Don't worry. I still have some recommendations to read about "fun". Here are some more theories you may want to know.

### 2.3 Eight Types of Fun

There are eight kinds of fun by Hunicke, LeBlanc, and Zubek: sensation, fantasy, narrative, challenge, fellowship, discovery, expression, and submission (Hunicke et al., 2004). Here are some descriptions by Sniezak (Sniezak, 2016):

#### 1. Sensation (game as sense-pleasure)

These games engage our senses directly. This type of fun includes RPGs with minis, terrain, handouts, and things we can physically touch, pick up, and interact with. People who enjoy incorporating music into their games find the sensation enjoyable. If you enjoy seeing, touching, and feeling things as part of your gaming experience, then the sensation is the place to be.

#### 2. Fantasy (game as make-believe)

We have the ability to switch identities and visit imaginary locations that we can only dream of. One example of this is playing a fantasy game like Dungeons & Dragons (D&D), where players fight supernatural monsters and enemies in a world of magic and swords. Anything that lets us experience the fantasy world is enjoyable. If you want to escape the monotony of reality for a while, fantasy is the place to be. Like I said before, it is the alternative you and your environment.

### **3. Narrative (game as drama)**

This element of enjoyment is all-encompassing in RPGs. We frequently play role-playing games (RPGs) to create or experience stories, from those elements built into the games we play to those that allow us to craft or control every aspect of the story and everything in between. The narrative is ideal for those who enjoy telling stories or listening to them.

### **4. Challenge (game as obstacle course)**

Players play RPGs to overcome obstacles with the tools their characters have, but the challenge is an illusion in RPGs. Why? Because a challenge in an RPG could be more about expression, discovery, or narrative - telling the tale of how we overcome the challenge. However, if you're seeking a challenge, RPGs aren't the ideal genre to play. Try action games instead.

### **5. Fellowship (game as social framework)**

Social contact is emphasized in many games. Cards Against Humanity is mostly about fostering social interaction among players, then the activity is the second priority. The experience, comedy, and laughter that take place during the game are more valuable than the game itself, even though those games contain a win condition to reach. RPGs are remarkably good at this. We communicate and interact with one another constantly, building relationships inside play that frequently go beyond it. Fellowship is the place to go if playing video games is more about the people and hanging out with your pals.

### **6. Discovery (game as undiscovered territory)**

How interested are you in what lies beyond the next door or in the next space? Yes, that is the point of a game of discovery. The answer to a problem is sometimes the catalyst for a breakthrough. Since the story and game will come to a halt if you are unable to solve the problem, it is more accurately described as a discovery than an obstacle. Because of this, we view difficulty not as an end in itself but as a means to an end (finding a solution or, at the very least, learning how to die).

### **7. Self-Expression (Game as a Means of Introspection)**

Every time we play, we bring a little bit of ourselves to the table. Through the characters we develop, our solutions to problems, and every other aspect of a session's creation, we leave traces of ourselves in the stories we help create. To put it another way, if you get a thrill from making your mark and contributing creative thoughts, then games are primarily about the expression.

### **8. Submission (game as pastime)**

Allow yourself in a consistent enjoyment; the satisfaction that comes from knowing you'll be able to see your friends at the weekend gaming night every week or every other week. It's because of these things that submission can be so rewarding. Then you can have a good time by taking part in an ongoing event that you or your friends have planned.

There are more theories of "fun" out there if you search, for instance, 14 elements of fun by Werbach and 14 forms of fun by Garneau. However, in creating the player's experience, we should not only focus on the fun theory as the only method. Dustin DiTommaso said that "fun is too diluted of a concept" (Lush, 2015). The unique psychological experience of the gameplay leads to sustained player engagement. Although sometimes, the social aspect (social rewards) of gaming is the one that keeps participants playing (Arbeau et al., 2020). I know, folks, this is a lot. But don't get confused. When you want to create a game, you can just start from anywhere as a trigger or even starting point. You can start with the character sheet that you think is great, the novel game mechanics that players will drop their jaw when playing your game, or you can also start with the art marvelous art style. Essential things you need to ask before you go, will there be a market for it? Or will the value of your game be loved by the player, hence fulfilling the sales goals? Let me give you a tip. Choose one or two of the type of fun by Lazzaro or the others, and try to analyze whether it fit your game design or vice versa.

“Play is the highest form of research.”

Albert Einstein

Theoretical Physicist, Professor

### III. GAME BENEFITS

Before we go deeper into game design, I want to remind you what games have taught us. The game is played by everyone; the game can be used as a means of exercise, reward us after we successfully complete the task, and make us think critically. Here are some things we learned from a game based on Raph Koster and my experience in the industry. Look at Figure 4 below; it pictures the university of players worldwide, regardless of the background of the players.

#### **1. Game is universal**

Games can be played by limitless kinds of players. In an Animalia kingdom, for example, the young species also play to sharpen their skills for hunting, attacking, aiming, and more. You may realize if you have kittens or puppies, they are so actively playful at young ages. It is constructing the survivability skill for a further phase of their lives. In the board game café I am running, you can find families, including grandparents and grandkids, playing at the same table without disrupting smartphones. The games can also be played by the young or elder. Of course, some categorizations fit specific player categories. As a game designer, you must define your players and the mechanics you create.

#### **2. Game is a practice**

As we mentioned before, games can be used as an exercise for the youth generation of not only humans but animals as well to reserve the skill that might be useful in their lives. For example, animals like cheetahs, lions, and any cats play a sneaky move in their youth with their family or easy-to-catch target. Later in their adult ages, the hunting procedure experienced from playing is well-constructed, and they use it to survive in the wild.

#### **3. Game is forgiving and rewarding**

There is a story from my friend, a game designer in Indonesia. He once told me in a game jam that a game is very rewarding and often forgiving to the player, even if the rewards are not real. For instance, if you play a game while not having the knowledge to complete the challenge, your possibility of dying in the game is high. But you need no worries because later, after you die in-game, there will probably be a pop-up window saying, “You lose. Do you want to try again?”. That phrase is so different if I compare it to what most of my friend’s parents said to their kids when we got low scores on school exams. “What have I told you. You need to study more. No TV for today”, yes that is the most common saying we get instead. Do you see the psychological differences here? Yes, you are right. Most of my friends chose the first feedback from the game compared to the feedback from our parents. Furthermore, there is no significant negative effect since the feedback on the game would not affect our real life.

#### **4. Game push you to think**

Games provide massive challenges for players. The player will try to solve the puzzle and then be provided another more challenging one. It will force the players to think and act carefully. As a result, players are prompted to establish strategies for action. In this process, the player is pushed to work their brain, which is good exercise.

#### **5. Game is teaching language**

In my personal experience, I got good grades in class in elementary school because my parents promised me that if I got top 10 in the class, they would buy me a video game. I strongly remember that playing a game in English text was also a major factor in why I had a good score in English classes in junior and senior high school. I played the game, practiced the speech, looking for the meaning in the dictionary if I needed help understanding the words.

You have your own reasons why you would say that game teaches you something. So, what is it for you?



Figure 4. The biggest event of board game community in the world, Spiel, in Essen, Germany. Players from over the world come together to play board games, either kids, adults, or even grandparents.  
(This photo is taken from <https://www.allrolledup.co.uk/2018/10/16/spiel-2018/>)

All of those things are just some examples of what games have taught us, especially at our younger ages. But, do you know what element in the game we have played that is inevitably the biggest factor in playing games? Fun it is.

“Someone who designs projects to make people happy.  
That’s a game designer’s purpose.”

Toru Iwatani  
Pac-Man Creator

## IV. GAME DESIGN & SKILLS

Gameplay, win/loss criteria, control, and game functions are the game's basic foundations. The game design is what determines the form of the gameplay. The game design determines what choices players can make in the game world and what ramifications those choices will have on the rest of the game. Additionally, game design determines what win or loss criteria are, how the player will be able to control the game, what information the game will communicate to the player, and determine every detail of how the gameplay will function. For example, defeating the level's boss or making it to the level's endpoint are examples of level completion; the players reach the win condition.

So, what it takes to be a game designer? Do you need a specific type of education to succeed as a game designer? Any degree will do, in fact. However, most game designers I know have backgrounds in fields such as art and design, computing, psychology, education, and language. For example, say you are interested in developing a strategy game with a Mars colonization theme. In this case, it would be helpful to have knowledge of computer science, astronomy, and engineering. I have listed a few skills that the game designer needed the most. I have tried to write the list according to the priority as orderly as possible, but don't limit yourself to strictly following my list. Your top priorities will likely depend on your personal circumstances. I'd like to classify some potential abilities a game designer might need. Although not all of the skills in each category you may or want to follow, this list should give you a glimpse of knowledge on what it takes to be or what is beneficial for you as a game designer.

### 1. Art & Design

Design is always the first skill you need to be a game designer. Generally, design is the skill that allows you to concept and construct your ideas into reality to help human tasks to be performed better or more efficiently. There are lots of skills inherited from the design that can help a game designer, including game design itself, visual arts, sound design, animation, and cinematography. Remember, even if your game is a text-based visual game, your game will still be full of graphic elements. Therefore, you, as a game designer, must be fluent in the language of graphic design or visual art and know how to use it to make the feeling you want to serve your player.

Players will strongly "believe" your game if they can sense it. One of the senses they have is hearing. The sound design of your game is what truly convinces the players' minds that they hear the game environment. Understanding the power and constraints of character animation will let your mind open for ideas that the world wants to see. Animation design is supposed to mean giving life to your concept with the help of sound design. The movement or gesture of the character will be realized by players because we as human experience almost the same thing, which make the player feel related.

Video games have the virtual camera(s). To provide an emotionally captivating experience, it is essential to comprehend the craft of cinematography. Take a look at the cutscene of the Life is Strange franchise as shown in Figure 5. When you play the game, you will hear great indie music and videography that is very nostalgic and typical American. Even if you are not American, you can still recognize and relate to the game. The music is super immersive. It just feels like you understand the game designer's intention. The transition between the cutscene and the actual gameplay scene is seamless in this game. I was in awe when the first time I finished watching the prolog, and then the game took me to the gameplay smoothly. At that time, I waited for the cutscene to continue, and I thought it might be a system bug. Then I realized I was wrong. The cutscene-to-gameplay transition is too smooth. I summarize the game in one sentence; Life is Strange is an indie music and video that players can play. Come on! How cool is that?



Figure 5. Life is Strange screenshot. We can control the character when the game title pops up, the opening music still plays, and the character still has a monologue.

(The screenshots is taken from <https://lifeisstrange.square-enix-games.com/en-gb/>)

## 2. Technical

Another category you want to look at is technical skills, including mathematics, engineering, and technical writing. Many people are horrified when they hear “math” or “mathematics”, even me. But that was just decades ago when I still didn’t understand the importance of mathematics. I will argue that this is because my teachers from elementary to high school are not able to give me a practical example of the application, which will then make me uninterested in the subject. However, I always question in my mind what is the benefit of learning mathematics. I know we can calculate the distance of two vehicles moving with certain acceleration and speed. That’s it. But after I got introduced to game development, I finally can grasp one of the purposes (at least my purpose) to learn mathematics. That is to understand and simulate something via the game.

Battle Star Galactica, as shown in Figure 6, is one cool game with a theme of space war. In this game, you must control and navigate your spaceship to maneuver. It is extremely hard to do, especially in its digital version. If you want to move towards one of your enemy’s units, you need to set the turning angle of your ships, and once you miss, you need to re-maneuver your ships again. A mistake you make may cause the destruction of your unit because your ships can’t perform an attack since the attacking angle is limited. Finally, boom! Your enemy can freely shoot their missiles from your back.

Another example of the importance of mathematics is balancing. With great knowledge of statistics and probability, you can make your game balance across game variables. For instance, in level 4, the player needs 50 exp points to go to the next level, while the player needs 100 exp points to level 6. The higher present level of a player will need more exp points to fulfill. Balance doesn’t mean the same or equal.



Figure 6. The gameplay screenshot of Battlestar Galactica Deadlock. Battlestar Galactica Deadlock is a strategy game set during the First Cylon War in the renowned Battlestar Galactica universe. The player controls the Colonial fleet in turn-based strategic, 3D tactical space battles.

(This screenshot is taken from  
[https://www.gamereactor.asia/media/23/battlestargalacticadeadlock\\_2212333b.jpg](https://www.gamereactor.asia/media/23/battlestargalacticadeadlock_2212333b.jpg))

The same thing happens for engineering backgrounds in general. If you have the knowledge of how a 3D building model can be constructed, you may develop an efficient way to create a fully occupied city map. The ability to write a technical document such as a game design document, system documentation, or player walkthrough is also necessary. In fact, your team's understanding of your game ideas is highly dependent on the technical document you write. Because it is an interface, a way for you to communicate to your team to deliver your message through a game. I often hear my students say they are lazy and too tired to write their ideas into game design documents or events in any sketch or note. Remember this, a great game designer can explain all of his great vision via a medium that the audience can easily understand; a written document in the context of game design or development.

### 3. Humanitarian

There are some notable skills that will enhance your game design, such as creative writing and public speaking. Moreover, more formal studies like anthropology, history, and psychology also contribute to game design knowledge. The first is creative writing, which involves creating entire fictional worlds and the people who live in them, as well as defining the many events that will take place. You make the little universe. In short, you are the director of the fictional universe. In order to make the narration believed by the players, you need to create and adjust lots of things to make sense for the player, even if it is fiction. The second skill is public speaking, which is crucial for presenting your ideas to your team and gathering feedback. You must be confident, natural, clear, and engaging in order to convey your knowledge and ideas effectively.

Anthropology is the study to learn the people's natural habitat. With the knowledge you get from here, you can figure out people's desires, especially their expectations of your game. One way to make your narrative believable is to write your story inspired by history. Somehow, the nature of history makes the player easy to understand and believe more. It's worth noting that even games set in fantasy worlds can be heavily influenced by historical events and settings. Gaming activity is tightly related to psychology. Your goal through your game is to entertain the players and make them as human beings happy. Therefore, you need to understand the working of human psychology. Otherwise, you are designing with no values. There is a concept called flow theory by Mihaly Csikszentmihalyi as shown at Figure 7. It mainly discusses how enough balanced game challenges and skills the player possesses can lead to the best player engagement. Therefore, you may give the best game experience to the player.

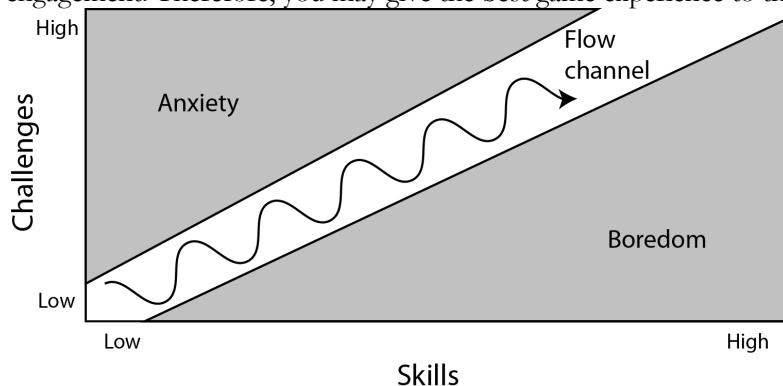


Figure 7. Theory of Flow. According to flow theory, when game designers work on level design, they should consider the balance of skills and challenges to form a flow channel that will keep players engaged.

(This illustration is taken from <https://medium.com/@chow0531/flow-theory-336c9278dbd0>)

### 4. Business and Management

Understanding business management, economics, and marketing, in general, is extremely important. Many designers also start with this category before they make the game concept. Because they can see the market's demand. It also helps them to sharpen their focus and leave the unnecessary stuff that may lead to a broader design. To be frank, most games are designed with the intention of generating profit, even the ones that are considered serious games. If you have a clear understanding of the financial aspect of game development, you increase your likelihood of creating your dream game. This means that if you can identify the potential of your game, it can certainly be brought to life; it can be developed for sure.

Modern games often have intricate economies that rely on various resources. Having a knowledge of economic principles can provide valuable insights for players. For example, in The Sims, your character needs to work so that you can use the in-game money to build your character's house and buy furniture. To be able to work, you need to train or exercise them. While learning some knowledge or skill, they need to fulfill their needs (such as drinking or eating a snack). So, you also need to monitor their conditions. These relationships of the variable inside your game that affects the game dynamics are the game economy. The game economy is not always presented as in-game currency, but it can be any entity used to be converted to another entity. Figure 8 and 9 shows two games that can

teach you to learn management skills, The Sims and SimCity series.



Figure 8. Your Sim's skill level can be monitored by looking at the bar or gauge above the character in the game. You may need to check the Sim's needs meters from time to time to make sure your Sim is in a good mood. If you assign them a task, they will not stop until their need levels are extremely low. However, your Sim may faint if the energy level is too low (the bar turns red).

(This screenshot is taken from <https://steemit.com/writing/@simgirl/playing-the-sims-skills-needs-and-other-things>)

Finally, having management skills is crucial when working in a team towards a common goal. Even if the management is poor, talented designers can still succeed and complete the job successfully. But there will be a challenge that will struggle you this way, and believe me, you want to avoid it. Like playing a game, you want to end your last move with style, right? So do it beautifully. In the context of management, list your task, make a priority, schedule them on the calendar, write notes every time you get a new idea, and ignore abstract, absurd, too-broad ideas that may lead to eternal work in progress.



Figure 9. The screenshot of SimCity BuildIt. SimCity BuildIt is one title from the franchise of SimCity from Electronic Arts (EA). It is a city-building simulation where players may craft, build, and control the city's development. Although it is easy to understand, the game requires you to consider many variables before you develop your city, such as factory raw materials, regional raw materials, commercial products, hardware, market, and many more. Furthermore, one resource can only be produced when the required resources from your building already exist. Therefore, you need to prioritize which building you want to build first.

(This screenshot is taken from  
[https://play.google.com/store/apps/details?id=com.ea.game.simcitymobile\\_row&hl=en&gl=US](https://play.google.com/store/apps/details?id=com.ea.game.simcitymobile_row&hl=en&gl=US))

## 5. Teamwork

Teamwork should occur in the technical skill and management category, but I want to discuss it separately since it is one of the most required skills in any field. Teammates want their opinions to be considered since they also desire the game to succeed. You will have more options if you involve everyone in the design process and critically consider every concept and recommendation. Remove bad ideas as soon as possible, be compelled to observe the game from various angles, and make each team member feel like they are the designers. Communicate these decisions to the rest of the team promptly. Here's an example of how this process might look:

- **Initial Brainstorming:** Involve as many people as possible in the initial brainstorming session. Putting together the game's wrapping and principles is a great creative exercise. Bring out your pen and paper. It's important to get down as many initial thoughts as you can. You will have a perspective to eliminate unnecessary ideas.
- **Independent Design:** The core design team members brainstorm ideas independently. This will initiate them to think creatively without having to contend with any rough, unwelcome concepts.
- **Design Discussion:** The core design team members share their individual perspectives for discussion and ultimately come to a group decision.
- **Design Presentation:** The core design team informs the rest of the team about their progress and welcomes questions and feedback. The next stage of the iterative cycle typically begins with the resulting brainstorming session.

Involving everyone on the team in the development process can be time-consuming, but the end result will be a bigger success if the developers are able to effectively communicate among themselves. The following are the nine essentials for effective team communication:

- **Objectivity:** As a designer, if you can develop good habits of objectivity, people will feel comfortable coming to you with design questions without fear of being judged negatively. Members who are usually hesitant to share their thoughts will feel safe doing so, and many previously unspoken ideas will emerge from the shadows.
- **Clarity:** To ensure that your meaning is conveyed clearly, you should always ask for clarification after giving an explanation. You should provide examples to back up your argument whenever you can. Also, if you don't understand something someone else says, don't act like you do. Additionally, maturing into precision and detail is also helpful.
- **Persistence:** WRITE THINGS DOWN! The spoken word is easily misunderstood and quickly forgotten. All members of the team have access to past recordings at any time. Be sure to copy everyone on the team when emailing about new design projects. As a result, there is only little possibility of someone feeling or actually being excluded.
- **Relax:** A comforting situation is a good condition for clearer thinking and more open communication. Ensure that your team has a suitable place to meet that is conducive to a conversation in terms of noise level, temperature, the availability of seating, and the size of the available desk or table. You should also see if anyone on the team is thirsty, hungry, or exhausted.
- **Listen:** The first step in becoming a good listener is learning to show respect towards the person you are communicating with. When people don't believe they are valued, they are more likely to keep quiet. When they open up, it's usually not about how they're really feeling; they're too afraid of being judged negatively to be susceptible. People tend to be more open and honest when they feel respected. Confide in your team and encourage open communication, even if it seems unrelated to the project at hand. All sorts of conversations can now take place with more information.
- **Honesty:** Since game development can get political at times, being honest is essential; your team needs to trust that you are telling them the truth, even if you have to embellish the truth on occasion. Sometimes you also need to spare time for private conversations with each design team member whenever possible. They have suggestions or problems to share but want to avoid bringing them up in front of the group. A team member's stubbornness on a particular issue requires your attention.
- **Cooperation:** If one team member is adamant about something, the rest of the group must respect their opinion and work with them to find a workable solution. Asking for an explanation of the idea's significance from the person who finds it most important is a surefire way to help the rest of the team see its value.

“We don’t stop playing because we grow old; we grow old because we stop playing.”

George Bernard Shaw  
Writer, Political Activist

## V. GAME DESIGN ELEMENTS

Now I would like to introduce you to two cool concepts as game design elements: elemental tetrad and weirdness trio. It's challenging to pull together so many different aspects of art and design into creating an experience, a game experience. The elemental tetrad is introduced by Jesse Schell in his book: "The Art of Game Design" and it serves as a framework for arranging these constituent parts (Schell, 2008). The more you know about your art, the better it will be, so use it as a tool to enhance the essential experience you want to create. While the weirdness trio binds the strange, fictional of your game story. Figure 10 indicates the elemental tetrad, while the weirdness trio is indicated in Figure 21.

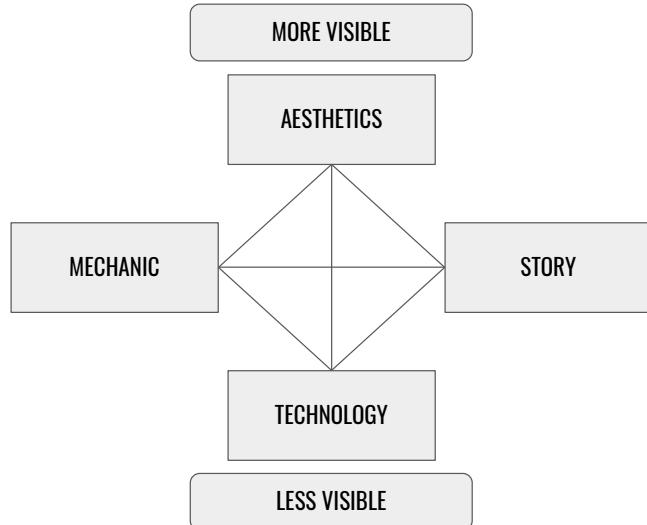


Figure 10. Elemental Tetrad; the four elements of game design: Mechanics, Aesthetics, Technology, and Story.

### 5.1 Elemental Tetrad

Like other types of art, a video game is merely a means for delivering an Experience. That experience is the foundation of all fun and engaging games. Someone has a unique experience when they play a game. The elemental tetrad can be used to fine-tune a game's various elements into a harmonious whole. The player's experience in the game depends on each of these elements. Let's create a challenging, scary game, for example. Even if the mechanic itself was effective, the game wouldn't be scary if it was filled with bright, cheerful colors (aesthetic aspect). There is a strong connection between all four elements of the tetrad. The game's mechanics should be coherent with the plot. The mechanics ought to be strengthened by technology, and so on.

#### 1. Mechanics

These are the procedures and rules of your game. A game's mechanics outline the rules for how the game is played, what happens when players try to accomplish the game's stated objective, and what consequences they face if they fail. The mechanics of a game are the set of rules and procedures that players must follow to progress through the game and achieve its goals. The game differs from mediums like comics, movies, or toys because of the element of mechanics and their vital role in complementing other elements of aesthetics, story, and technology (Ahmad, 2019). For example, the design of your game allows your player to move to a certain space. How would you define the procedure to allow your players to do that? Do you roll the dice to determine the value, use an available action point

from your character's pool, or press the arrow button at will?

There are tools to help you design and simulate the game mechanics. Machinations.io, a web-based mechanics simulator, can simulate the input and consequences of the mechanic variables. Therefore, you can quickly observe and adjust the stats. Many designers are still using Ms. Excel sheets, which is enough to learn the game dynamics in their games. The screenshot of Machinations.io is shown in Figure 11.



Figure 11. Machinations.io is a web-based tool to simulate game economics and game system. The aim of using this tool is to predict the behavior of your designed mechanisms.

## 2. Story

There is a concept of project management in reaching specific priorities or goals called the project triangle. Three corners in the project triangle: quality, time, and cost. Prioritizing high-quality product have a consequence for a long time and higher development cost. On the other hand, if you prefer the shortest development time, expect to loosen the quality and more expenses. While prioritizing a low-cost means lowering the quality and adding a development timeline. Typically, we can choose up to two corners in a service project. Except, you are in a big AAA company. For example, if you produce a high-quality product within the budget, you may have to extend the timeline. Consider choosing up to two over three priorities in the business parameter of game development. See Figure 12 if you want to make a game that has an exclusive quality, you should be fine with the development cost and time.

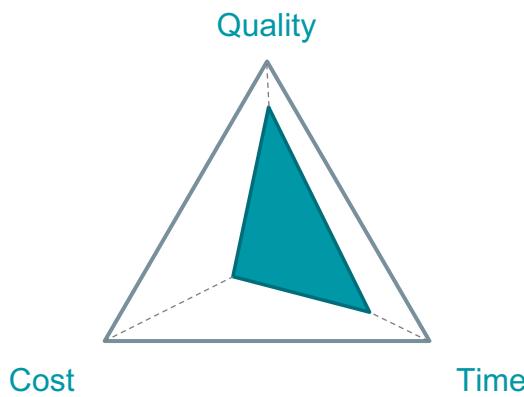


Figure 12. The project triangle: high-quality, efficient cost, and effective timeline.

The game story could be linear and pre-scripted, or it could be branching and emergent. You should pick only one corner of the weirdness triangle (Figure 12), in contrast to the production triangle, where you can have up to two priorities. Prioritize more than one weirdness in weirdness triangle, and you risk alienating your players. In video games, the “game story” is the sequence of events that play out from beginning to end. The process at hand could be predetermined and linear, or it could be emergent and bifurcate. In games, the mechanics play a significant role in setting the stage for the story’s development and progression. For instance, the game This War of Mine as shown by Figure 13, tell us about the dilemmatic decision. The game’s story is about a war victim who tries to survive. The game’s goal is to stay alive until the end of the war. The player is responsible for keeping everyone in their home healthy, rested, and, frankly, alive. Items and workstations can be crafted to advance, providing new items to craft. Often the player will be provided with difficult options. For instance, a) you can steal a piece of bread from your neighbor and give it to your family member so that they can survive, but it will make your neighbor die, or b) you

can be an idealist and be honest, but you will struggle to survive in the next few days.



Figure 13. This War of Mine. The game's story is about a war victim who tries to survive. Meaningful decision-making engages the player experience better.

(This screenshot is taken from <https://toucharcade.com/2019/03/27/this-war-of-mine-stories-fathers-promise-review/>)

### 3. Aesthetics

The appearance, sound, scent, flavor, and sensation of your game are all important factors in its design. Aesthetics play a crucial role in shaping the player's experience, as they impact how the game's world looks. Given their direct impact on the player's satisfaction, aesthetics are considered a highly significant aspect of game design. Using advanced visual technology can enhance the game's aesthetic features, allowing players to fully immerse themselves in the plot and feel connected to the game. In Legend of Zelda: Breath of The Wild as shown in Figure 14, I was shocked when I knew we could climb the apple tree and use it as a consumable item. For me, that is a beautiful mechanism made by the designer.



Figure 14. Link from Legend of Zelda climbs a tree. Not only the graphics is awesome, but the micro actions the main character can do is also surprising.

(This screenshot is taken from <https://gameup24.wordpress.com/2017/02/15/link-looks-at-frogs-plays-baseball-and-dies-in-the-legend-of-zelda-breath-of-the-wild/>)

### 4. Technology

The medium in which the aesthetics take place, the mechanics will occur, and through which the story will be told is technology. The element of technology means the set of tools, resources, and know-how required to make the game a reality. Any form of these elements, including crayons and duct tape utilized in your first prototype, is related

to technology. It is in the medium of your game that you implement technological aesthetic aspects. The game's final outcomes are extremely dependent on the technology being used. The most notable video game engines are Unity, Unreal, CryEngine, O3DE (Lumberyard then), Godot, Construct, and RPGMaker (see Figure 15 to 20). In a physical board game, paper and pencil, plastic chits, or wooden tokens are the technology. The technology you select for your game determines its capabilities and limitations.



Figure 15. Unity3D engine by Unity Technologies. The engine supports 2D and 3D game development with C# programming language.  
<https://www.linuxadicatos.com/en/the-unity-game-engine-already-has-a-build-for-linux.html>



Figure 16. Unreal engine, a C++ game engine developed by Epic Games.  
<https://cuevadelobo.com/como-usar-unreal-engine-tutorial-en-espanol/>

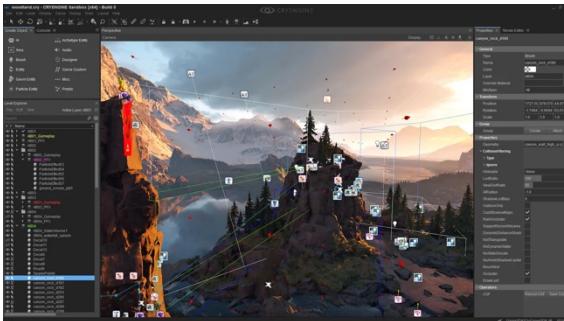


Figure 17. CryEngine by Crytek, written in C++, Lua, and C#.  
<https://www.crytek.com/cryengine>

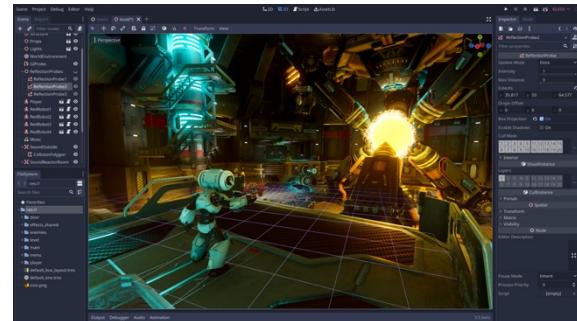


Figure 18. Godot engine, a 2D and 3D open-source game engine. Uses GDScript, C#, and C++.  
<https://github.com/godotengine/godot>



Figure 19. RPGMaker, an engine to create 2D RPG.  
<https://rpgmakermvtutorial.com>



Figure 20. Construct3 game engine, a visual scripting game engine. Programming language: Javascript.  
<https://bitlabs.id/blog/apa-itu-construct-3/>

Note that the element of technology is less visible, while the aesthetic is more visible to players. Players likely won't care about the game engine you use to make the game. In the elemental tetrad, you may design your game dominants on one or more elements, but it is never hard to accomplish all of them. However, look at The Legend of Zelda: Breath of The Wild. This game's elements are so strong in any element, either mechanic, story, aesthetic, and even the technology used. This game is a masterpiece.

## 5.2 Weirdness Trio

The second concept I want to introduce is the triangle of weirdness, or I like to call it the weirdness trio (see Figure

21). The weirdness trio binds the weirdness of activities, characters, and game world. The weirdness trio is used to help you build an interesting narration for the player. Something weird or extremely insane happens to one or more elements of the game.

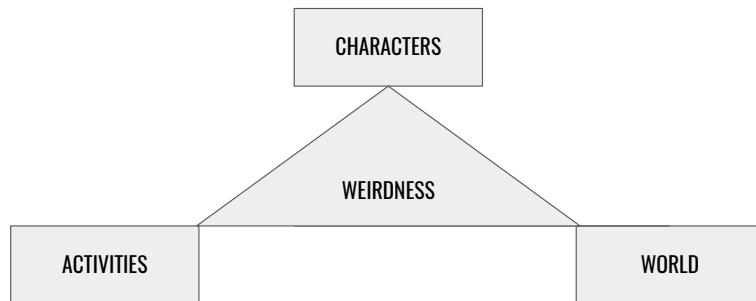


Figure 21. Weirdness Trio; the three elements of weirdness in game design: characters, activities, and game world.

The player is curious and interested to know the conflicts that happened in the game story. It is easier to create weirdness in these areas:

### 1. Activities

Activities weirdness means there is something abnormal happening related to the activity we do on a daily basis. For example, in the action-adventure platform game Mirror Edge, you play as a protagonist with a first-person perspective and adventure from one city building to another (see Figure 22). You attempt to overthrow crazy rich corporations who govern the city. You need to complete a series of levels that involve performing acrobatic maneuvers, like parkour or freerun. There are two kinds of activity weirdness actually in this game. First, there is something fishy about the conglomerate and the networks, so you, as the main character, try to save people's lives through your action. Secondly, parkour is also considered a new sport founded by David Belle around 2000. Therefore, the sport of parkour is considerably new and strange, yet it is so interesting. In summary, the weirdness can be an in-game activity or real activity while the player playing the game.



Figure 22. Mirror Edge from Electronic Arts.  
(This screenshot is taken from ea.com)

### 2. Characters

In the game of Resident Evil franchises, people turn into scary zombies. Some zombies can be defeated easily, but some will give the player nightmare. The non-playable character turns into a zombie because it is infected by some virus and easily transmitted by blood or wound. The disease transmitted by blood is actually not new in our daily medical field. However, turning into a zombie is surprising. The weirdness may also happen to the player's character. For example, in the Spiderman game, your character was bitten by a rare spider, which gives the character ability to produce a spider web from the body. Although there are some versions of how Spiderman can shoot the web, either naturally or artificially, using a tool in his hand. Look at Figure 23 and 24.



Figure 23. Resident Evil IV by Capcom Asia.  
(This screenshot is taken from playstation.com)

Figure 24. Marvel's Spider-Man: Miles Morales by  
Sony Interactive Entertainment  
(This screenshot is taken from playstation.com)

### 3. Game Worlds

Weirdness can also happen in the game world. In Horizon Zero Dawn, for example, people are represented as disparate, primitive tribes with wildly varying levels of technology. It takes place in the 31st century, after the end of the world, in a post-apocalyptic America. Robots were created by our forefathers' technological civilization. Massive robotic creatures rule the planet, and humans coexist with them in peace. However, a peculiar phenomenon known as "Derangement" has turned animal robots into violent monsters. It appears that larger, deadlier animals have emerged. You take on the role of the protagonist, fighting monsters and stealing their machine parts. See Figure 25 for the screenshot of Horizon Zero Dawn.

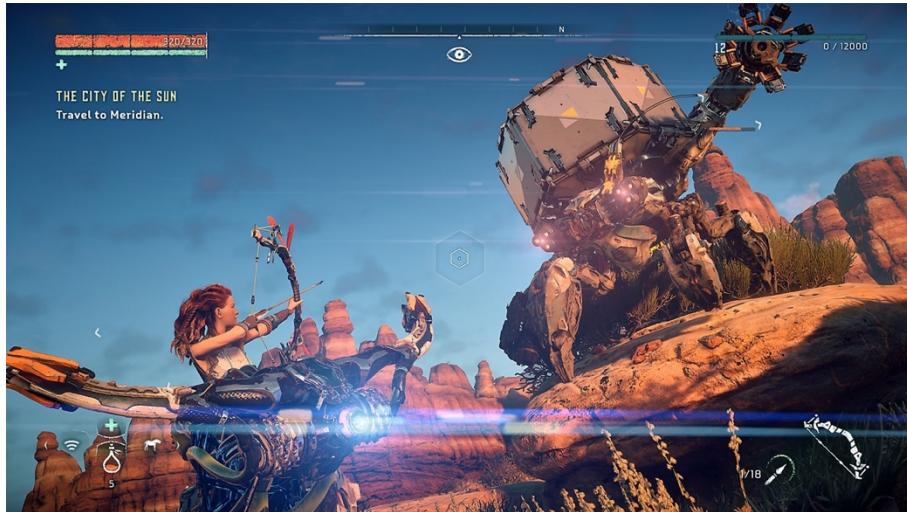


Figure 25. Horizon Zero Dawn.  
(This screenshot is taken from playstation.com)

Kingdom Hearts is one example of a game with almost all dominant elements of weirdness, either activity, character, or game world. The characters crossover from different games or cartoon TV shows in this game (Disney). The game characters gather from different universes, implying the game world's strangeness. You can play actions by using the card on your hand, which is unique because there are not many games using the mechanics for such an action genre. Figure 26 shows the characters of the game.



Figure 26. Kingdom Hearts III + Re Mind DLC edition. You can clearly see the characters in this game are crossed from different intellectual property, such as Monster Inc, Mickey Mouse, and Donald Duck's Disney.  
(Taken from <https://store.epicgames.com/en-US/p/kingdom-hearts-iii>)

“Education should learn from the positive side of gaming  
- reward, accomplishment, and fun.”

Sebastian Thrun  
CEO of Kitty Hawk, Udacity co-founder, and Professor at Stanford

## VI. PLAYER TAXONOMY

Your players have different characteristics while playing your game. You may realize that when you play with your siblings or friends, some of them are just chaotic, killing everyone. Some players only want to have fun without worrying whether they win or lose, while others only want the greatest reward and accomplishment. The variations of player characteristics are discussed in the player taxonomy. The most well-known of them is Bartle's player types. Bartle's initial research focused on the characteristics of MMORPG gamers. Yet the observed player traits can also be found in different genres. As a result, Bartle's proposed taxonomy can be applied to a variety of genres.

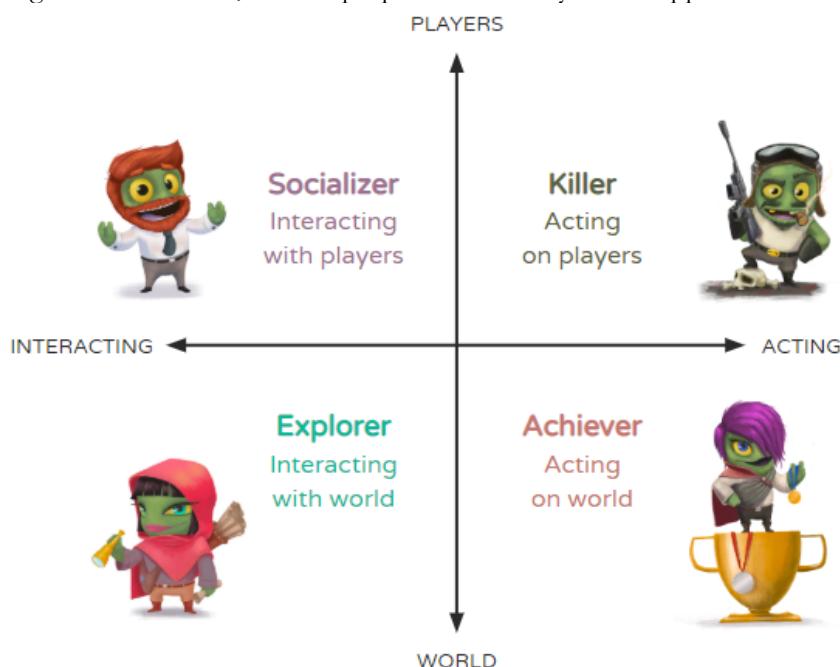


Figure 27. Bartle's 4 player types taxonomy: Socializer, Killer, Explorer, and Achiever.  
(This illustration is taken from <https://uxdesign.cc/designing-your-game-mechanics-based-on-player-types-b16a95fb7f60>)

### 6.1 Bartle's Player Types

Nowadays, there are several theories of player taxonomies. One newer enhances the other. In this chapter, we are focusing only on two concepts, the first is Bartle's player types, and the second is the ACE2 model. Based on a study published in 1996 by Richard Bartle (Bartle, 1996), the Bartle taxonomy of player types categorizes gamers according to their playstyle preferences. The label was initially applied to MMORPG players but has since expanded to cover fans of single-player games, even today, for more genres. A character theory forms the basis of this classification. The four archetypes in this theory are Achiever, Explorer, Socializer, and Killer. They are envisioned using a quadrant model. The X-axis represents a preference for interacting with other players over exploring the environment, and the Y-axis represents a preference for interaction over unilateral action (Taylor, 2006). See Figure 27 for the Bartle's player types taxonomy.



- **Leaderboards:** The two most common types of leaderboards are relative and absolute. While their primary function is to provide players with a means of showing off their accomplishments, high scores are also used as mental benchmarks, making them an ideal design element for goal-setters. In addition, players are more likely to experiment with new strategies after seeing those of their peers. Leaderboards are a good suggested mechanic for socializers and killers as well because it involves other players. However, this is highly dependent on the details of the game design. For example, still in Dota2, the game provides global leaderboards according to the regions; see Figure 30.

The screenshot shows the 'World Leaderboards' section of the Dota 2 website. At the top, there are navigation links for 'DOTA 2', 'NEWS', 'HEROPEDIA', 'LOGIN', 'LANGUAGE', and a 'PLAY FOR FREE' button. Below this, the title 'World Leaderboards' is centered. Underneath, there are four regional tabs: 'Americas', 'Europe', 'SE Asia', and 'China'. A note indicates the last update was on 20/09/2022, 06:13:02 and the next update will be on 20/09/2022, 07:13:00. The main content is a table of player rankings:

Division Rank	Player	Country
1	TUN.Mikoto.M88	IND
2	EG.Abed	ESP
3	PSGL.GD.NothingToSay	IND
4	M.Y.BeeBieCryBaBy	IND
5	Fnatic.Raven	IND
6	GARBAGE	IND
7	RNG.Ghost 鬼	IND
8	TUN.23savage.M88	IND
9	BOOM.JACKBOYS.Bivalve	IND

Figure 30. The Dota2 leaderboards. The leaderboards are categorized into four regions. In 2022, Indonesian player Mikoto is leading the South East Asia region. But everything can change since it will be updated daily.  
(This screenshot is taken from [https://www.dota2.com/leaderboards/#se\\_asia](https://www.dota2.com/leaderboards/#se_asia))

- **Bonus Points:** Bonus point is awarded for accomplishing what was expected from the task. Bonus points can be “useless” (serving only as a secondary goal, such as hitting the top of the flagpole in Super Mario; see Figure 31). However, you can also use them to satisfy your gaming requirements: If your game is meant to be played with others, you might consider implementing a system like Overwatch’s friend bonus to encourage players to invite their friends to join in the fun. In Overwatch, to score points, accomplish the following tasks: First, each enemy you eliminate increases your score by a fixed amount. Second, you advance in the mission and receive a bonus based on how far along you are (Objective bonus/ progression bonus). Depending on how many incapacities were incurred during a given segment of the mission, the survivor will receive a bonus at the end of that segment (Survival bonus). Fourth, you’ll receive a bonus based on how quickly you finished each mission segment or “section (Time bonus). Scores were split evenly among the Uprising team. If just one player were to suffer, everyone would have a reduced survival bonus. See Figure 32 for the screenshot.



Figure 31. Super Mario flag bonus points.

(This screenshot is taken from <https://uxdesign.cc/designing-your-game-mechanics-based-on-player-types-b16a95fb7f60>)



Figure 32. Overwatch gives player 20% exp as group bonus. Motivation for socializers and achievers alike. (This screenshot is taken from <https://gaming.stackexchange.com/questions/331095/how-are-points-awarded-in-the-uprising-and-retribution-events>)

- **Boss Battle:** A boss fight is an ultimate test at the end of a level, analogous to an “exam” in which players show off their skills. The boss fight, rather than being a “regular challenge,” will be an “epic challenge” (in terms of art, music, pace, needed skills, strategy, etc.). It has the qualities of a target, an advancement, and a payoff, so it satisfies the drive of those who like to set and reach goals. In addition to breaking up the monotony, having to overcome a boss adds a new layer of challenge to the game. Figure 33 shows the illustrations of bosses from Plants vs. Zombies 2.



Figure 33. Some of bosses from Plants vs. Zombies 2. (This screenshot is taken from <https://uxdesign.cc/designing-your-game-mechanics-based-on-player-types-b16a95fb7f60>)

## 2. Explorers

The explorers, in my opinion, are looking to learn as much as possible about the game. For them, exploring new places is a source of great joy. People of this type often enjoy playing games to experiment with various play styles and then analyze the outcomes. I recognize that I am also of this type. My preferred method of playing adventure games like Legend of Zelda is to explore the environment before tackling any missions. As a result, players like me take longer to complete a quest because we like to take in the game’s stunning visuals.

Their primary goals are to expose the game’s internal plot, locate interesting features (including bugs), and deduce its mechanics. Then, provide what explorers want through random mechanisms such as random rewards, hidden areas, open maps, easter eggs, an evolved user interface, and so on. Examples of game mechanics include the following (Dori, 2022):

- **Choices:** Players feel more invested in the game and more strategic when given branching options to decide their own path (making players think about what they are doing, why they are doing it, and how it might affect the outcomes of the game). Explorers frequently make alternative plans to see how they affect the journey. A meaningful choice leads to different outcomes, as having the same outcome for different choices can reduce the excitement associated with taking charge of one’s experience and discovering new things.

Time pressure in the decision-making phase has been shown to increase the likelihood of alternative choices and to increase player focus on the problem. In Walking Dead, as shown in Figure 34, your choices will affect the gameplay.



Figure 34. The outcome of the choice in the Walking Dead affects your inventory and the morality of you being a good\bad person.

(This screenshot is taken from <https://uxdesign.cc/designing-your-game-mechanics-based-on-player-types-b16a95fb7f60>)

- **Internal Mechanism:** Explorers are players who dig deep into your game to figure out its internal logic and the game design (including the meta-game). If you provide them a deep internal logic to uncover, they will be more immersed and satisfied. Internal mechanisms come in many forms, and as the complexity of your game grows, so will the number of layers you can explore. Let's think about the mechanics of "leaving footprints" mechanic. Does the sound effect of footsteps alter if the user steps on various surfaces like snow, sand, wood, metal, etc.? How about the graphics? The explorers will appreciate your thoughtful design. In The Witcher game, you may get damaged from the property surround your character, see Figure 35.



Figure 35. In the Witcher, you will get damage from the fire of street-light, although its main purpose is for environment decoration. (This screenshot is taken from <https://uxdesign.cc/designing-your-game-mechanics-based-on-player-types-b16a95fb7f60>)

- **Customization:** From a game design perspective, giving explorers the mechanism to alter their experience in several ways is a chance to encourage creativity, boost player engagement, promote exploration, and give them a sense of ownership. In contrast to the "branching choices", customization may be more extrinsic than intrinsic factors (i.e., allow players to express themselves through their visual appearance for fun without affecting gameplay). However, customization is not only a powerful visual motivator, but it also encourages the development of strategy. For instance, build your own rifle as a weapon, add a silencer

or a scope, and see how your game changes depending on your decision. So, if you use the silencer, you may play with a stealth style. In Robocraft (Figure 36), players can customize all of the components on the robots, including engines, wings, wheel, and so on. Players can even design their own style based on the components being used. For instance, the figure shows a player with a style of plane which can shoot in the air.



Figure 36. In Robocraft, players can customize all of the components on the robots, including engines, wings, wheel, and so on.

(This screenshot is taken from <https://store.steampowered.com/app/301520/Robocraft/>)

- **Open Maps:** Open maps are beneficial for exploration-based gameplay. This design component allows for a vast open world to be explored by the explorers, complete with a wide variety of unpredicted events, points of interest, and collectibles. In addition, curiosity is the main driving force that will take players in unexpected and exciting directions. Figure 37 shows the wide area in Legend of Zelda: Breath of The Wild.



Figure 37. The example of open map in Legend of Zelda: Breath of The Wild.

(This screenshot is taken from <https://www.zelda.com/breath-of-the-wild/features>)

- **Side Quest:** The purpose of side quests is to support the main storyline rather than replace it. They should be easy to complete, entertaining to play through, and rewarding to your character by adding new layers of exploration and potential contacts, locations, and tools. An interesting and rewarding side quest gives players a compelling reason to investigate the game's environments. As a designer, you should be conscious of your players' time and try to avoid boring and pointless side quests that require the player to travel to multiple locations for no apparent reason. Otherwise, your players will just get tired and frustrated all the time. Figure 38 shows the markers of side quests in The Witcher 3.



Figure 38. The map showing the side quest in Velen, The Witcher 3.  
 (This screenshot is taken from [https://www.ign.com/wikis/the-witcher-3-wild-hunt/Velen\\_Side\\_Quest\\_Map\\_-\\_including\\_Novigrad](https://www.ign.com/wikis/the-witcher-3-wild-hunt/Velen_Side_Quest_Map_-_including_Novigrad))

- **Secret Areas:** No matter how big or small the reward, the bonus, the hidden message, or the joke is, explorers will spend a considerable amount of time looking for it in the game. Believe me, they will. They demand the aspect of secret areas or hidden rewards very much. Fortunately, with this component, your players can spread the word about your game, enhancing your game's publicity. Hidden areas are secret areas that the designer intends the players to explore in addition to the game's progression. It need not be directly related to the main quest or plot. However, they typically show up as an exclusive or final location that is only accessible after completing a series of difficult challenges. And for me, forbidden areas are found outside of the main flow of the game, which means explorers will have to dig deeper to find them (and will be more delighted when they do): exploiting a bug, sliding through walls, entering cheats, and generally attempting to do things the game doesn't want you to do normally. Look at the example of easter egg in Grand Theft Auto (GTA) San-Andreas; see Figure 39, and the circuit shortcut in Crash Team Racing (CTR) in Figure 40.



Figure 39. GTA San-Andreas has a smart easter egg buster. It is actually a rewarding experience for the explorers.

(This screenshot is taken from <https://uxdesign.cc/designing-your-game-mechanics-based-on-player-types-b16a95fb7f60>)



Figure 40. In PlayStation 1's version of CTR (Crash Team Racing), you can get the shortcut by using the glitch shown by the white arrow. Me as a player usually go pass that area, making a U-turn, and then accelerate to the max speed and jump over the fence.

### 3. Killers

The killer type is fascinated by competing with and defeating others. It seems killers enjoy a mix of pleasure from competition and destruction. This type of player dominates games like Dota 2 and Counter-Strike, which require a high level of precision and reflexes. However, a killer type can sometimes be too brutal to enjoy playing with as a casual player.

Killers seek to impose their will on those around them at any cost. Killers take pleasure in seeing their victims suffer, and the more they suffer, the happier they are. Killers attack other players in an effort to wipe out their personas and enjoy seeing others fall. You can incorporate strategies like disrupting other players, establishing dominance, embracing chaos, and more to satisfy killers' desires. Some examples of gameplay mechanisms are:

- **Domination:** It's no secret that killers take pleasure in defeating their opponents. Still, the victory would taste all the sweeter if it was accomplished by establishing dominance and using it to impose one's will on others. Success would be sweet, but even if it's not in sight, they'll keep playing to annoy their competitors, which is their primary objective. If players can dominate a certain area, resources, privileges, etc., you can expect more killers to play and enjoy your game. As shown in Figure 41, Dota2 has various spectacular ways to show the players domination in the game.



Figure 41. In Dota2, player domination is shown after the player successfully executes the opposing heroes. In addition, a specific label is shown after getting a certain number of killings.  
 (Taken from <https://www.rockpapershotgun.com/>, an article by Alice O'Connor)

- **Strategy:** Killers take pleasure in causing others pain in a video game. Disrupting their plan is one option. This is why some killers prefer a more stealthy, patient approach, waiting for their opponents to make a mistake while they watch and wait rather than making a move themselves. Then, will the killers appear out of nowhere and spray their opponents with a hail of bullets, or, even better, a disgraceful pan to the head like in the game of PUBG (Player Unknown's Battle Ground). See Figure 42 that shows the stealth gameplay of a player in Counter Strike.



Figure 42. A sneak attack in the Counter Strike: Global Operation. It will give the enemy a shock moment and you will gain more pleasure as killers.

- **Chaos & Destruction:** In video games, “anarchy” and “chaos” typically mean either the absence of rules or the alteration of the standard rules for the purpose of some “mayhem” event (like a +300% additional damage event). Killers seek new methods to impose their will on others, ideally by being more powerful and acting swiftly, with fewer boundaries and constraints. Additionally, anarchy can be used to create “visual chaos” when there are many elements (particles, participants, enemies, noise, etc.) on the screen simultaneously. Killers take pleasure in causing chaos, so why not give them the freedom to blow up everything in sight? Of course, vehicles and gas stations aren’t the only targets for destruction mechanics. It gives you the power to completely devastate your surroundings, reshaping them and making anything fragile fall apart like Lego bricks. The game’s internal logic and chain reactions also make it fun for explorers. Just look at Figure 43, where a player character called Techies has already prepared a bunch of bombs ready to detonate to sweep the opponent team.



Figure 43. All five hero characters from the Dire team (with the red HP bars) try to hunt Techies from the Radiant team (with the green bar). But, little did they know, Techies had already planted some remote mine

bombs ready to explode and had a high probability of killing all five of them.  
 (This screenshot is taken from DotaCinema)

#### 4. Socializer

Those who fall into the socializer category actively seek out and maintain connections with the other players (socializing). They typically didn't worry much about the outcome of games. That's both good and bad, actually. They can be calm and help their friends stay calm when things are tough. They enjoy games primarily for the social and interactive aspects of the game with other players. Interacting with others and learning from what they say was central to their goals. In fact, they can find entertainment simply by observing others engage in play. Take a look at these different types of game mechanics:

- **Chats:** Having a chat system in your game not only gives your players a way to interact with one another but also gives the impression that other people are actively participating in the game. An in-game chat serves as a social hub, but it also facilitates group strategy through the exchange of information, questions, and connections among players. You can have a text, audio, or video chat system in modern games by utilizing either the game's native features or external programs like Discord. Still in Dota2 (Figure 44), players can have text chats with others, including the opponents.



Figure 44. In Dota2, players can send text and voice messages. It is useful for team communication to build strategy.

- **Trade:** The ability to trade between players increases the social depth of your game. When both sides benefit from a transaction, it is considered a successful trade. For players who prefer to converse rather than fight, trading provides a means to do so without resorting to physical conflict. When two people with different motivations engage in a transaction, say, an achiever and a socializer. The achiever's reward will be the acquisition of the wanted item. In contrast, the socializer's reward will be the interaction itself. In Catan (Figure 45), there is a mechanic that allows any player to trade with others. It encourages the interactivity among the players.



Figure 45. A player may trade to another player for intended resources in Catan Universe. You can see that this game also provides a chat system.

- **Grouping:** Having the option of teaming together with other players who share similar interests gives them a feeling of purpose and meaning in the game. It promotes teamwork, rivalry, and elitism so that everyone works together to accomplish the team's goals and maintain its sense of self-worth. As a game creator, allowing players to see how they contributed to the team's overall success is a great way to boost morale and encourage effort, even if the team ends up losing. Especially when you are the top player on the team. The grouping mechanisms are usually implemented from as small as a party to as big as a guild. Figure 46 shows a guild in King of Thieves.



Figure 46. King of Thieves: Forming guilds. Being a part of a group is also a motivator for killers, as is attempting to frustrate and defeat the competitors from another group.

- **Friending:** Send a request to be friends or ask others to play the game by sending them an invitation is another mechanics the socializer wants. Of course, social players will enjoy your game more if they can play with others. However, even if your game doesn't let players talk to each other directly, it can still support friending through invitations to create a friend ladder: a leaderboard within a friend-list scope. To socialize, I enjoy games with my friends and acquaintances. Sometimes, we can strongly relate to NPC as our in-game companion. That's why you can still befriend with an NPC, just like what Figure 47 shows.



Figure 47. Heroes of the Storm: the character Rehgar is healing the NPCs.

- **Sharing and caretaking:** A great way to encourage players to work together is to reward them for sharing what they know and contributing to the group's overall success. Being helpful during the round is a reward in itself, even if the team fails in the end. Some forms of knowledge sharing are meta-social in nature, such as this guide I am writing, while others are integral to the game itself, such as when one player pings another to warn them of a potentially dangerous area.



Figure 48. In League of Legends, the ping wheel can inform teammates.

While genres like farming and pet care naturally lend themselves to games emphasizing caretaking, the real aim is to create a social experience where players can actively help one another. For example, a “healer” class is often included in “killer-oriented” battle games to attract socializers. Since healers have fewer stats than offensive classes, having one on a team makes the player feel valuable to the rest of the party by accompanying them on their journey rather than venturing alone. However, this is a two-way street, as the rest of the party must also look out for the healer. Players who enjoy interacting with others and gaining a sense of purpose from helping others will enjoy participating in such games.



Figure 49. Coral Island: taking care of overrun land into a lush and lively farm.  
(This screenshot is taken from <https://www.stairwaygames.com/coral-island>).

Give players the option to help one another out in your game by sending them presents or donating resources. Unlike selling, gifting doesn't always involve two parties. Depending on the player, they may either actively give or passively receive gifts. On the other hand, the recipient's sense of obligation to either repay the present or make some sort of community contribution boosts the likelihood of future interactions between the giver and the recipient. Let's say the recipient declines to return the gift because they are a guild member. In that situation, it's possible the player will be substituted in favor of more dedicated team members. Figure 48 to 50 shows examples of sharing and caretaking.

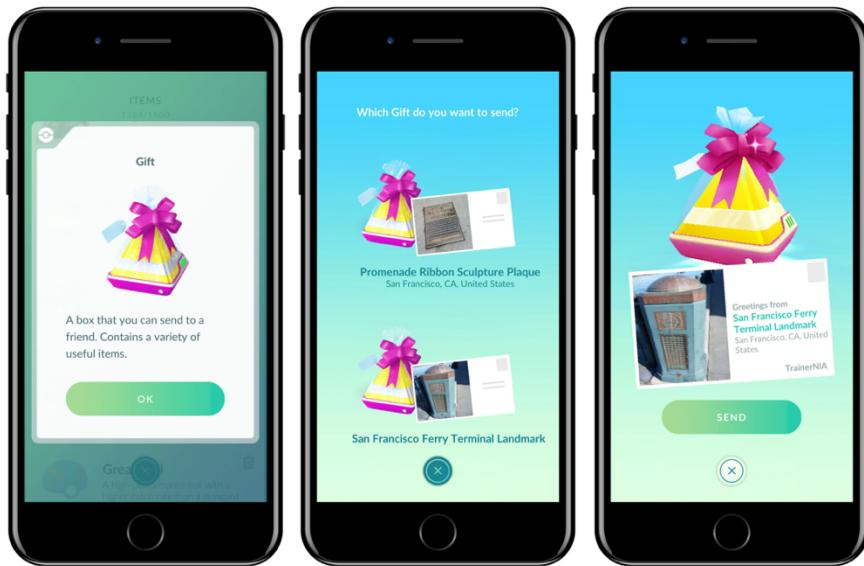


Figure 50. Sending a gift to a friend in Pokemon Go.

- **Competing:** If you take advantage of the player's participation and contribution to the team's shared effort, let them trade information, and give the team a chance to socialize under specific social mechanics, you'll win over the socializers. However, more killers will be interested if you take advantage of the tension created by the opposing side, create it independently of other players, and enhance methods to disrupt their experience. It all depends on how you design the competition in your game to shift the balance away from appealing to socializers or more to killers. In Angry Birds, you can compete and compare the scores with your friends, as shown in Figure 51.



Figure 51. Rovio's Angry Birds: player can compete with other players.

- **Spectating:** As was briefly stated earlier, spectating is enjoyable for people who enjoy being around others. Observing a game or video of a player participating online is often considered an "educational" opportunity. Socializers gain insight from their peers' successes and failures, which they then pass on to the community. To increase the socializer's motivation as a spectator, you can implement additional interaction mechanics such as voting for others (which gives the feeling of influencing the game and being part of the team), betting on the game, cheering the players (which gives the sense of supporting), chatting with players, and so on. See Figure 52 for the spectating example in Hearthstone.



Figure 52. Hearthstone: Allows spectators to join a match and watch others play online.

I am sure that you have your own style, whether it is one dominant type or even more than one. For instance, I have an explorer and socializer style. It is more like a fuzzy metric. You have traits of all types, but some styles might be more dominant. There is another theory on the player taxonomy other than Bartle's. The ACE2 model is another player taxonomy developed by Thomas van Dam and Sander Bakkes. The ACE2 model builds on previous work in player taxonomies to expand the established Bartle's taxonomy of player types by integrating the aspect of creation play (as seen in modern games like Minecraft), making the revised model more broadly relevant to modern video games. The model is part of an ongoing inquiry into the relationship between aesthetics and mechanics in games. The author aims to emphasize a creative play dimension that is often neglected in traditional player taxonomies.

## 6.2 Bakkes' Player Types

As a result of improvements made to the ACE2 model, single-player video games can now be more precisely categorized. The ACE2 model's descriptive expressiveness significantly and practically refines Bartle's taxonomy of player categories. Furthermore, investigation of the interplay of aesthetics and mechanics as experienced by game players may yield important insight into (the taxonomic understanding of) creation play in games (van Dam & Bakkes, 2019). Figure 53 shows the comparison between Bartle and ACE2 models.

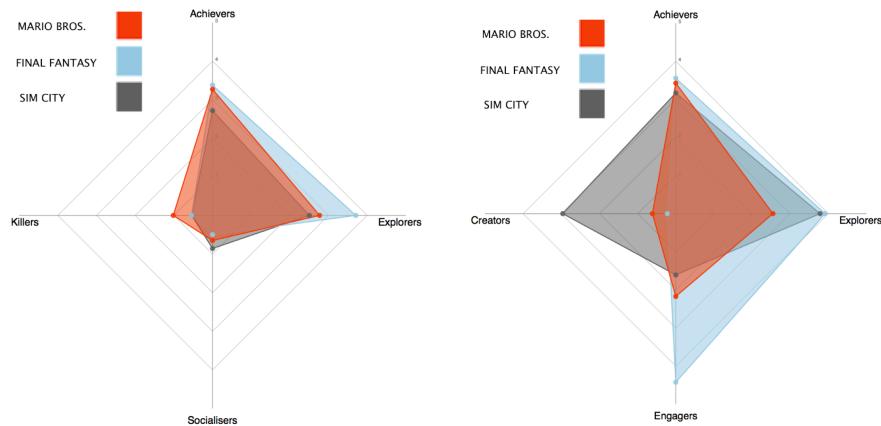


Figure 53. The comparison player types on the three games (Mario Bros, Final Fantasy, SimCity) between Bartle and ACE2 models.  
(These graphs are taken from (van Dam & Bakkes, 2019))

The authors claimed that Bartle's model is limited to being created for only one form of the game: MUDs (multi-user dungeons). Therefore, they adopted a more abstract approach to games to develop a model that could be used for a wider variety of games. However, they soon learned that the multiplayer component of games adds numerous complexities to the types of behavior that players exhibit, so they chose to restrict the model to single-player games. Choosing not to include all potential game types was a deliberate design that allowed for a more satisfactory compromise between model simplicity and articulation. Due to its focus on the distinctions between the simulated world and its player inhabitants, Bartle's x-axis was not suitable for incorporation by the authors. The axis, in their

view, is more appropriately concerned with the different ways gamers take pleasure in the games they play. Of course, many factors make video games fun to play (Avedon & Sutton-Smith, 1971; Lazzaro, 2021), but they can be roughly grouped into two broad categories: aesthetics and mechanics.

The MDA model (Hunicke et al., 2004) uses the word “aesthetics,” but they mean non-gameplay aesthetics aspects of a game. Which includes things like the game’s story, visual style (or absence thereof) (Solarski, 2013), soundtrack, and so on. The Mechanics, on the other hand, make up a game’s gameplay and include the player’s ability to interact with the game environment and other game mechanics. The vertical axis is identical to that of Bartle’s model because the distinction between acting on the game world and interacting with the game world is explicitly evident (especially in single-player games) (van Dam & Bakkes, 2019).

### **1. Achiever**

This model’s achievers are most analogous to Bartle’s because they emphasize interacting with game mechanics, which is conceptually close to the actions in the game world. Achievers in ACE2 share a passion for scoring high and mastering the game’s mechanics, just like Bartle’s achievers. Mastering the game’s mechanics can be demonstrated by one’s skill in performing complicated combos in a fighting game or timing jumps in an action game to perfection. Bartle doesn’t discuss this approach in his model.

### **2. Explorer**

The explorers resemble Bartle’s explorers in many ways. They care more about the action than the game’s intricacies and details. Unlike Bartle’s explorers, they weren’t particularly interested in seeking new territory. Instead, they’re always looking for new and exciting ways to use the game’s features, such as unusual combos in card games like Hearthstone. It includes strategies like “snaking” in Mario Kart DS, which involves utilizing the game’s sliding mechanic; intended for speed-taking corners to gain speed on the track’s straightaways.

### **3. Engager**

The first completely original class of the ACE2 model, “Engagers,” are those who emphasize the game’s visual elements. They care more about the game’s narrative or perspective than gameplay. These players are generally looking for games that will make them feel something or enable them to form some emotional connection to the game’s characters. Some examples of popular games for this demographic are interactive novels, which feature relatively little actual action but offer an aesthetically rich experience.

### **4. Creator**

This model includes a special kind of participant called creators who set ACE2 apart from other models. Despite often being disregarded as unimportant, this behavior type has its own player variety. Creators, like engagers, are attracted to a game’s aesthetics but prefer to act on them rather than only connect with them, which may seem counterintuitive. This takes the form of making structures or images for use in-game, turning the game into a medium for expression. Artists can use the game to craft their own unique visual experience, designed to make viewers feel something.

“A game is a series of interesting choices.”  
Sid Meier  
Civilization Creator

## VII. GAME MECHANICS (PART 1)

Game mechanics are what define what the game is. If you take away the aesthetics, the technology, and the narratives, what's left are the interactions and relationships. The objects and how they interact with each other are game mechanics. You can use the element of game mechanics, which falls into five distinct classes, to construct your game's design (Schell, 2008). I prioritize making the rules first. Since rules define everything else, they are my top priority, followed by objects, space (since space is also an object, programmatically), action (once all rules and objects are set), and finally, skill (players will have a strategy after they gain knowledge in the game's design). However, you can start from any. Figure 54 shows summary of five game mechanics elements.

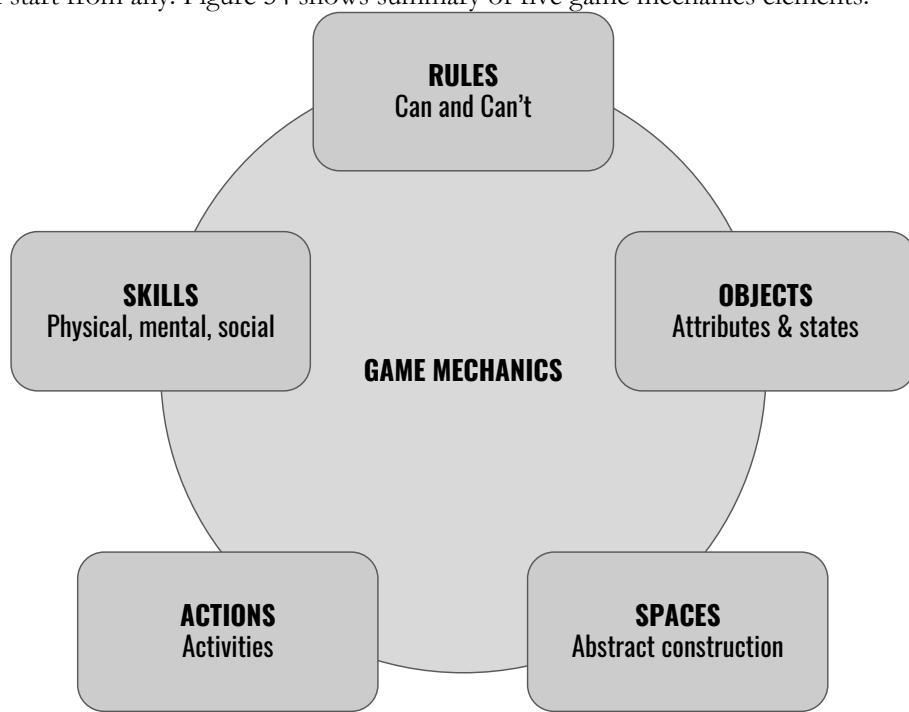


Figure 54. Game mechanic's five elements.

### 7.1 Spaces

Every game takes place in a certain environment. This area serves as the gameplay's "magic circle". It defines the various locations in a game and the connections between them. Space is a mathematical construct in terms of game mechanics. Remove all visuals and aesthetics of the game, then it remains solely on the abstract construction of a game's space. Figure 55 and 56 shows two different applications of space.



Figure 55. A classic Asteroid game by Atari in 1979. If the player's spaceship exceeds the right boundary of the screen, it will eventually appear on the left boundary. It gives us the perception of parallel space.



Figure 56. Sid Meier's Civilization VI. The space in this type of game is commonly defined by hexagonal tiles. You can see the different type of space will give you different mechanisms of gameplay and experience.

## 7.2 Objects, Attributes, and States

This category covers characters, props, tokens, scoreboards, and anything else you can see or manipulate in your game. Objects are the “nouns” of game mechanics. The space itself may be considered an object. Still, the space in your game is usually distinct enough from other things to stand out to be a different element type. Objects have one or more properties, the most common of which is their current position in the game world. Attributes are many forms of information about an entity. For example, a car in a racing game could include attributes like maximum speed and current speed, the health of the engine, etc. Each attribute has a current state and several inactive states. See Figure 57 for instance.

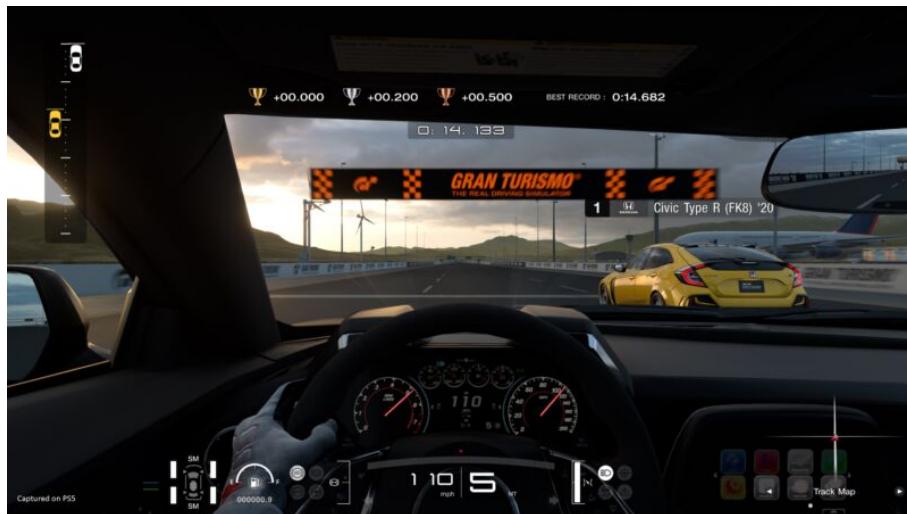


Figure 57. Gran Turismo 7: informative UIs are shown such as speed, wheel damage, fuel, leaderboard, and many other. Even in the PlayStation 1's version, once you finished a race, your car will be covered in a dirt – especially when it was raining. Worry not, you can even carwash it in the workshop to refresh the car's look.

### 7.3 Actions

Actions are what we call the “verbs” of game mechanics. There are two ways to look at actions. The first is what we see as ”What can the players do?”. The first form of action is the operative action. These are the most fundamental actions that a player can execute. In a chess game (Figure 58), a player can only do some basic operations, such as:

- Move any owned pieces regarded with how it moves.
- Swap the owned pawn with any pieces that are eaten by the rival earlier after our pawn reaches the opponent’s edge.
- A king piece and rook piece may do special movement, castling.

The second form of action is a resultant action. These actions are only relevant in the context of the game’s wider view. They have to do with how the player employs operational actions to achieve a goal. Consider the following chess actions:

- Move a pawn two tiles instead of one to avoid getting eaten by opponent.
- Force the opponent into making an unfavorable move.
- Do checkmate with some pieces.
- Sacrifice pieces to create a checkmate opening.

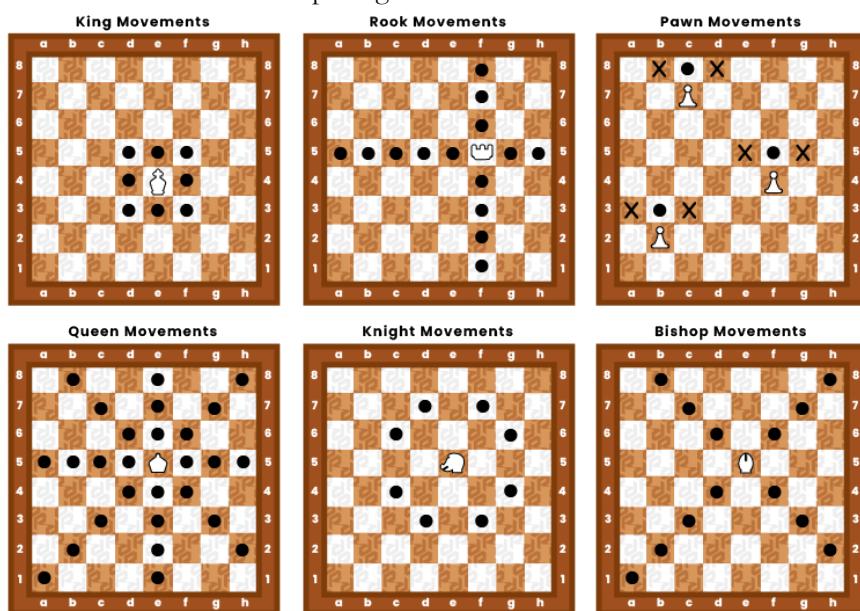


Figure 58. The chess basic movement patterns. Generally, the pieces can only move or capture an opponent’s piece on one of the black dots. Except for a pawn, it needs to capture diagonally at x-mark.

## 7.4 Rules

Actually, the most basic mechanic is the set of rules. They define the spaces, objects, actions, actions' implications, constraints on the actions, and objectives. In a sense, the rules enable all the elements we've mentioned while adding the important element that distinguishes a game as "a game". We borrow the diagram that shows the different kinds of rules involved with gameplay initially summarized by a game historian, David Parlett (Figure 59).

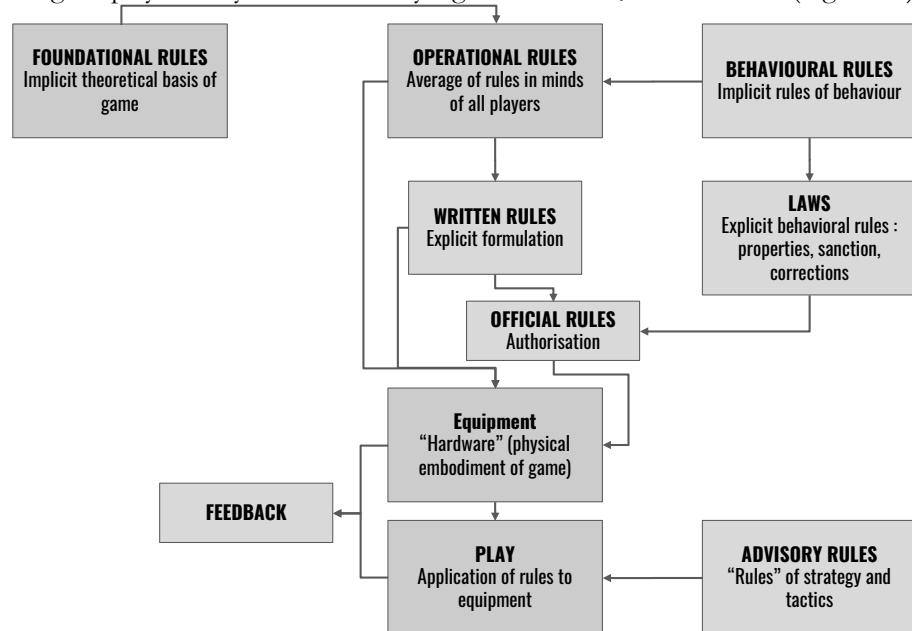


Figure 59. Different types of game rules.

### 1. Operational Rules

These are the rules that need the slightest effort to understand. These are essentially "what the players do while playing the game". Players can play a game after they understand the operational rules. For example, in Super Mario, the player can only move to the left or right side towards the screen's edges by pressing the arrow key button on the joystick.

### 2. Foundational Rules

The basic rules are the game's underlying formal structure. Say we have an operational rule "Player may add manna by using certain items", in Dota2. "The player's manna value is then increased by a certain number that could be calculated by other stats"; this is the foundational rule, which is more abstract. The foundational rules are a mathematical representation of the game state and how and when it changes.

### 3. Behavioral Rules

These are implicit rules for gameplay that most people accept as part of "good sportsmanship". For example, during a game, one should not tease the other player while attempting to think or wait too long to make a move. These are rarely mentioned openly, yet everyone is aware of them. But today, competitive games also force players to apply the norm, especially in professional competitions. Some of them are even written formally.

### 4. Written Rules

The "rules that come with the game" are the documents that players must study in order to comprehend the operational rules. Video games today tend to skip printed rules and instead use interactive tutorials to teach users how to play. This method is more effective, but it can be challenging and time-consuming to develop and implement, as it requires multiple iterations that can only be done after the game is finished.

### 5. Laws

This form is only used when games are performed in serious, competitive contexts, when the stakes are high enough that it is deemed necessary to expressly record the standards of good sportsmanship, or where the official written rules need to be clarified or modified. Take a look at Root (see Figure 60), the board game, for example. Root has two main rulebooks: The Law of Root and the Learning-to-play guide. The Law of Root contains strictly defined, formal rules in a concise reference style. Besides that, the game has a more friendly teaching-to-play guide, teaching conversationally and showing many graphical examples.

**The Map**

Most action in Root unfolds on the map of the Woodland, consisting of 12 CLEARINGS connected by PATHS.

A river runs through some clearings. Only use the river if the Riverfolk Company, an expansion faction, is in play.

**Moving Around the Map**

You can MOVE from clearing to clearing. When you move, take any number of your warriors from one clearing and move them to a clearing connected by a path.

The spaces on the Map enclosed by paths are FORESTS, which only the Vagabond can move into.

To move, you must RULE the clearing you are moving from or moving to.

You rule a clearing if you have the most combined warriors and buildings there. On a tie, no one is ruler.

Various other actions in Root will require you to rule clearings.

**Move Example**

The Eryie want to move out of this clearing, which they don't rule. They don't rule this clearing either, so they cannot move here. They rule this clearing, so they can move here.

**1. Golden Rules**

**1.1 RULES CONFLICTS**

- Precedence.** If a card conflicts with the Law, follow the card. If the Learning to Play guide conflicts with the Law, follow the Law. If you can follow both a general rule and a faction rule, follow both. If you cannot, follow the faction rule.
- Use of Cards.** The Law of Root is absolute. It cannot be overridden unless explicitly instructed.
- Simultaneous Effects.** If two game effects occur simultaneously, the player taking the current turn chooses their order, unless explicitly instructed.
- Use of Treat.** If you are prompted to TREAT one thing as another, the former takes all the properties of the latter. *(For example, if you caused Outrage while attacking yourself as another player, the other player would give the card.)*

**1.2 PUBLIC AND PRIVATE INFORMATION**

**1.2.1 Hands.** Players may only show or reveal cards in their hand if explicitly instructed, but the number of cards in their hand is public information.

**1.2.2 Discard.** The discard pile can be searched and inspected at any time.

**1.3 NEGOTIATION AND DEALS**

**1.3.1 Agreements.** Players may discuss the game and make agreements, but they are non-binding.

**1.3.2 Cards.** Players may only give cards to each other if explicitly instructed.

**1.4 PLAYERS AND FACTIONS**

For simplicity, the Law refers to players, not factions. However, game effects such as *“as another”* and *“different faction”* are properties of factions, not players. When controlling pieces of a faction they do not own, players follow the rules of that faction unless explicitly instructed.

**1.5 GAME STRUCTURE**

Each player's turn has three phases: Birdsong, Daylight, and Evening. After a player completes all three phases, the next clockwise player begins their turn. Play continues until one player has won the game (3.1).

**2. Key Terms and Concepts**

**2.1 CARDS**

Each card has a suit: bird, fox, rabbit, or mouse. Most cards also have an effect you can craft (4.1).

**2.1.1 Birds Are Wild.** You can treat any bird card as a card of another suit, even if you must spend, take, or give multiple cards of the same suit.

**2.2 CLEARINGS AND PATHS**

The map of the Woodland is composed of many CLEARINGS linked by PATHS.

- Adjacency.** A clearing is adjacent to all other clearings linked to it by a path.
- Suit.** Each clearing has a suit: mouse, rabbit, or fox.
- Slots.** Each clearing has a number of slots (*white boxes*). When you place a building, it fills an open slot. You cannot place a building in a clearing with no open slot.
- Ruins.** Slots marked with a small “R” begin the game filled with RUINS. Ruins can only be removed by the Vagabond's Explore action (9.5.3).

**2.3 RIVERS**

Many clearings are linked by RIVERS. By default rivers are not paths, but can be treated as paths if explicitly instructed. Rivers do not divide clearings or forests.

**2.4 FORESTS**

Areas on the map enclosed by paths and clearings are called FORESTS.

- Adjacency.** A forest is adjacent to all clearings that touch it without crossing a path, and it is adjacent to all forests that are separated by only one path.

**2.5 PIECES**

Each faction has a set of pieces listed on the back of its faction banner. Pieces are limited by the contents of the game. If you are prompted to place, take, or remove any number of pieces but you cannot, you must place, take, or remove the maximum number possible.

Figure 60. Left: a page from Learning-to-play guide; rich of visuals, easy to comprehend. Right: The Law of Root; contains complete, detailed rules of Root board game.

## 6. Official Rules

This type of rule is made when participants take the game seriously enough to want to include elements of the law into the established norms, OR, however, big game companies such as Konami take care of the community by changing the official rule of the Yu-Gi-Oh card game periodically. Eventually, it makes the community's dynamic positively impact both sides: the company and the community. Sometimes, these formal guidelines eventually become written rules. In Yu-Gi-Oh, there are banned card lists that all the players are not allowed to use in competitive, official tournaments. Figure 61 shows the Yu-Gi-oh's limited card list in 2023.

**FORBIDDEN & LIMITED LISTS** February 13, 2023

Effective from Feb 13, 2023

- Cards that are "Forbidden" cannot be used in your Main Deck, Extra Deck, or Side Deck.
- You can only have 1 copy maximum of a "Limited" card in your Main Deck, Extra Deck, and Side Deck combined.
- You can only have 2 copies maximum of a "Semi-limited" card in your Main Deck, Extra Deck, and Side Deck combined.

The next update after this will be in a few months.

The previous (Dec 1, 2022) list will remain in effect until Feb 13, 2023.

Updated: 2/6/2023

Card Type	Card Name	Advanced Format	Traditional Format	Remarks
Monster/Effect	ARCHNEMESES PROTOS	Forbidden	Limited	
Monster/Effect	ARTIFACT SCYTHE	Forbidden	Limited	New
Monster/Effect	BARRIER STATUE OF THE STORMWINDS	Forbidden	Limited	New
Monster/Effect	BLACKWING - GOFU THE VAGUE SHADOW	Forbidden	Limited	
Monster/Effect	BLASTER, DRAGON RULER OF INFERNOS	Forbidden	Limited	
Monster/Effect	BLOCK DRAGON	Forbidden	Limited	

Figure 61. Official banned card list of Yu-Gi-Oh! trading card game by Konami.

## 7. Advisory Rules

Often referred to as “rules of strategy,” these are simply ideas to help you play better and are not technically “rules” at all. Many board game rulebooks clearly state a chapter of this rule with simply “Tips”.

## 8. House Rules

Parlett doesn't provide a clear description of these rules, but he notes that players may adjust the operational rules

during gameplay to enhance the enjoyment of the game. This corresponds to the “feedback” rule on his diagram, as players typically establish house rules in response to perceived shortcomings after a few rounds of play.

## 7.5 Skills

The skill mechanic shifts the emphasis away from the game and onto the player. Every game demands players to use specific skills. Suppose the player’s skill level corresponds to the game’s difficulty. In that case, the player will feel challenged and remain in the flow channel proposed by Mihaly Csikszentmihalyi, as illustrated in Figure 7 in Chapter IV. Skills are often classified into three types:

### 1. Physical Skills

Physical abilities such as strength, dexterity, coordination, and endurance are crucial for most sports. In addition, video games like Dance Dance Revolution (shown in Figure 62) and many Nintendo Wii and Nintendo Switch games require players to possess a wider range of physical skills beyond just manipulating a game controller effectively.



Figure 62. Two players play Dance Dance Revolution in arcade.

(This photo is taken from <https://www.polygon.com/features/2017/12/11/16290772/the-rise-fall-and-return-of-dance-dance-revolution-in-america>)

### 2. Mental Skills

Memory, observation, and puzzle-solving are examples of these abilities. Although some players avoid games that demand too many mental skills, it is uncommon to find a game that doesn’t require some mental skills. Games are exciting when there are intriguing decisions to make, and decision-making is a mental skill. Figure 63 shows the screenshot of A Space for The Unbound. This game serves us a story about how to overcome anxiety and depression in the rural community in Indonesia. The game mechanics in this game is simple, side-scroll with some puzzles player need to solve. All I can say is this game really depicts the situation in our community (Indonesian’s rural areas). Both, story and the environment. This game has been awarded several awards.



Figure 63. In the game of A Space for The Unbound, player will face mental challenging stories (explicitly and implicitly).

### 3. Social Skills

Some examples are reading an opponent (guessing what he is thinking), deceiving an opponent, and collaborating with teammates. Typically, we think of social skills as the capacity to make friends and influence others. Still, the breadth of social and communication abilities in games is considerably broader. You and your team must carefully pick and ban the heroes from building up strategy and ruining your enemy's tactic in Dota2 (see Figure 64). Because you may construct many alternatives of combo attack with heroes. Of course, a competitive game like Dota2 demand multiple type of skills of yours to compete. Thus, team communication is essential in competitive game like this.



Figure 64. In Dota2, there is a picking and banning phase. That's why you and your team need to communicate.

“Do anything, but let it produce joy.”

Walt Whitman

Journalist, Poet

## VIII. GAME MECHANICS (PART 2)

There is still much more to talk about in terms of game mechanics, such as the chance or probability of an event, level design, combat design, opponent and character design, consumable item design, and more aesthetic aspects such as sound and cutscene. Understanding these characteristics will broaden your understanding of game design in general (Schell, 2008).

### **8.1 Character and Avatar**

When playing a game, the character a player controls is very personal and magical. This character is commonly referred to as an avatar, which comes from a Sanskrit word that means a divinity taking physical form through sorcery (Lochtefeld, 2002). To help you with character design, define these:

#### **1. Character functions**

During the writing process, characters are often created as needed for the storyline. However, in the case of game development, it's important to plan out the cast of characters and determine the specific functions they must perform. A useful strategy is to create a list of these functions beforehand.

#### **2. Character traits**

Compiling a list of attributes, whether physical or behavioral, is a straightforward process that simply shows familiarity with the characters. However, for the player, it could also reflect their personality and general preferences. Consider using the interpersonal circumplex to help you reshape the characteristics of your characters. The interpersonal circumplex is a visualization tool that social psychologists sometimes use to understand how characters interact. While it is not the only tool available for analyzing character interactions, it can offer valuable insights to help you consider them in game design. Adding this tool could be helpful.

The Interpersonal Circumplex, as shown in Figure 65, is a system that categorizes different personality traits and behaviors related to social interactions. It was created by Timothy Leary and is represented in a circular diagram. The system not only enables comparison of different traits but also provides a scale of healthy and unhealthy expressions of each trait (Horowitz, 2004).

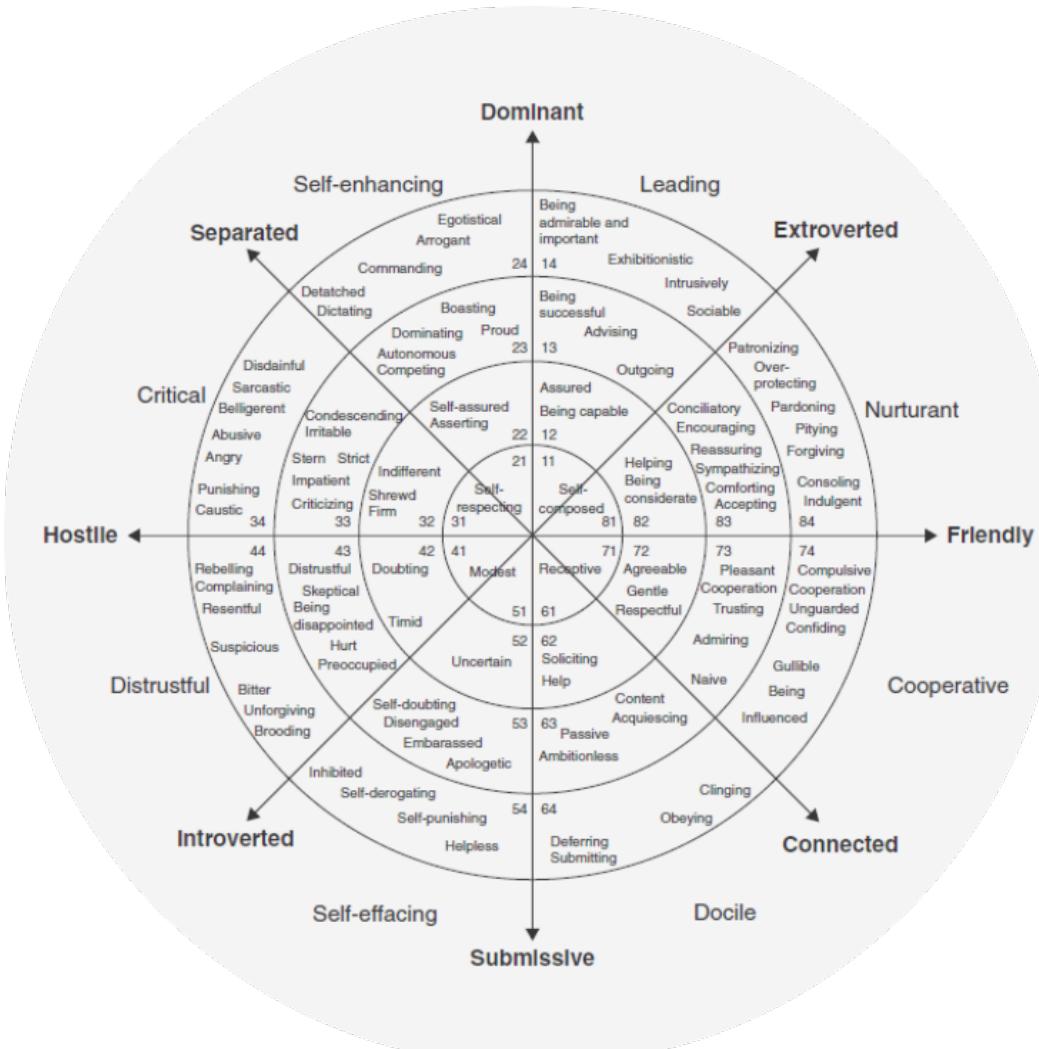
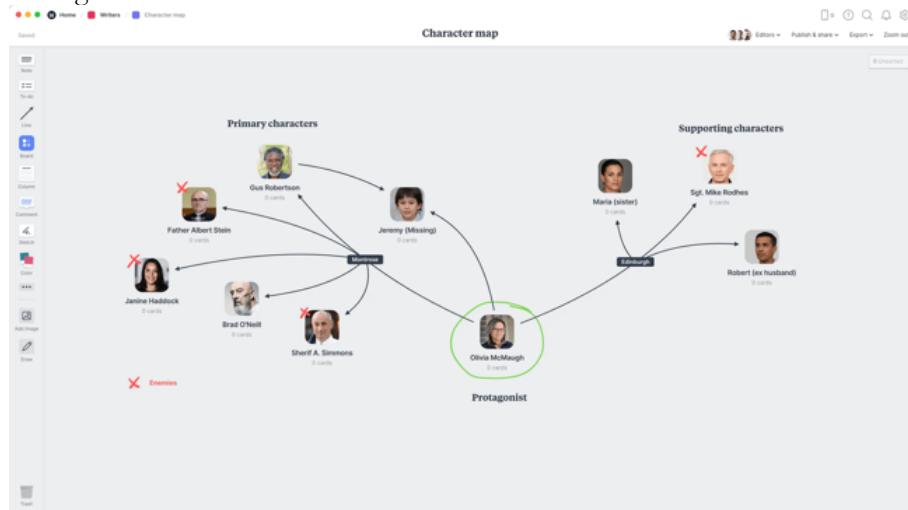


Figure 65. The interpersonal circumplex, a taxonomy of interpersonal personality traits and behaviors originally by Timothy Leary.

### 3. Character web

Visualizing character relationships can be done effectively with the use of the circumplex. However, it is important to consider that other variables may also impact the connections between characters. To address this, creating a network that links these variables to your main or secondary characters can be helpful. Figure 66 shows an example of characters web using Milanote.



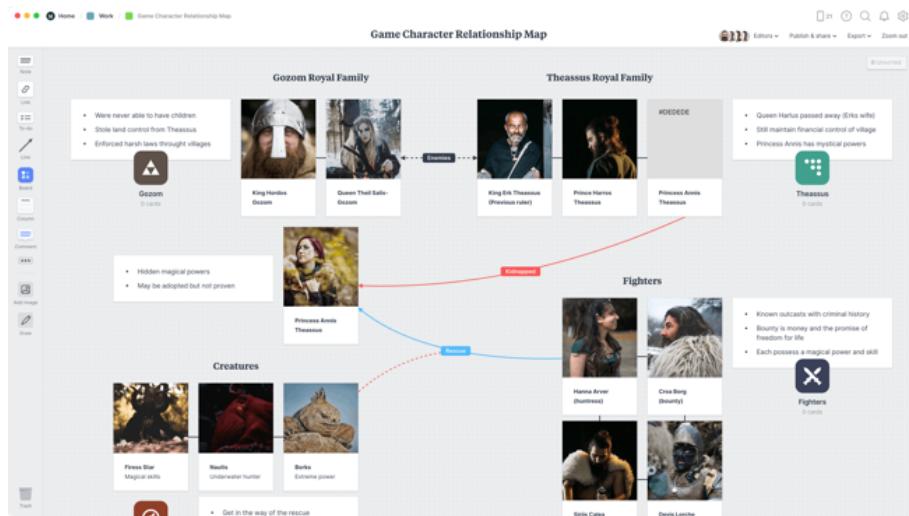


Figure 66. An example of a character's web using Milanote.  
(This screenshot is taken from [www.milanote.com](http://www.milanote.com))

## 8.2 Combat

If you want your character's attacks to be more authentic and distinct, do some research on actual combat techniques. Create a signature weapon for your character to help them establish their persona quickly. Be sure to explore all four ranges of combat:

- **Close-range combat:** Involves various physical moves such as grappling, punching, striking, sweeping, and quick burst moves like head butts and uppercuts, as well as playful moves like tickle fights.
- **Medium-range combat:** Consists of weapon swings, flying kicks, and dash attacks.
- **Long-range combat:** Involves attacking enemies from a distance by shooting or casting spells.
- **Area effect:** Smart bombs and special attacks have area effects that can target enemies from a distance or on the entire screen.

To add more variety to combat, attacks can be executed from four different elevations or positions:

- **Standing position:** Is when the player is at shoulder height and can strike opponents of man-size or larger.
- **Low position:** Involves crouching or kneeling to deliver strikes at the enemy's waist height or lower.
- **High position:** Requires jumping to attack over the head of an average-height enemy.
- **Aerial position:** Is when a player has jumped or flown into the air to attack.
- **Underground position:** Some games even let the players hit enemies from exactly below.

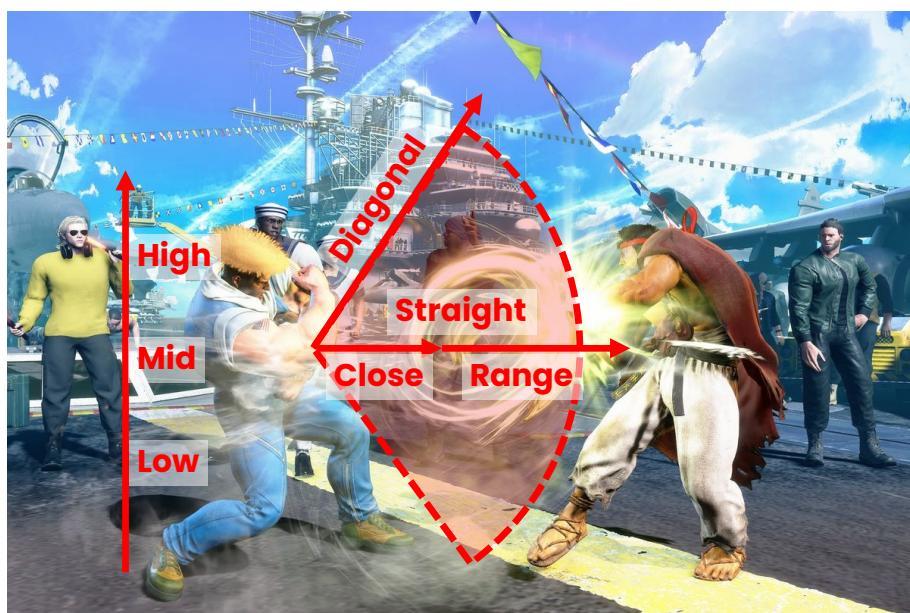


Figure 67. Various attack types in combat in Street Fighter 6.  
(This screenshot is taken from <https://www.polygon.com/23172651/street-fighter-6-simple-modern-controls>).

Combat maneuvers can be performed with vertical and horizontal attacks from any distance or height. To keep track of the important details of these attacks, an attack matrix, like the one displayed above, is used. The matrix includes the attack name, control scheme, attack range, attack speed, attack direction, damage, and special abilities. Figure 67 shows the combat mechanic approximation in fighting game Street Fighter.

### 8.3 Enemy

It is important to identify your opponent's objective. Your decisions during the design process will have a significant impact on how the programmer codes it, how the animator builds the rigging model, and how the artist textures it. Take note of the following essential opponent attributes:

#### 1. Size

In video games, enemy size often indicates their level of health. There are various enemy sizes in Metal Slug as shown in Figure 68.

- **Smaller enemies:** Typically, no taller than the player's character waist.
- **Average enemies:** Around the same height as the player character.
- **Larger enemies:** Several heads taller than the player, while huge enemies are at least twice the size of the player.
- **Gigantic enemies:** massive enemy that they can be viewed clearly from a distance.



Figure 68. Metal Slug X: on the most left is the character and the regular size of other characters including enemy is similar, while the second-last boss is bigger (the grounded UFO), and the last boss is the big, levitating UFO.

#### 2. Behavior

In a game, there are different types of enemies with unique behaviors. Here are some behavior patterns according to attack or defense styles:

- **Shooters:** Include patrollers and chasers, will attack the player once they have been spotted.
- **Flyers:** Moves in the air, have their own classification due to their added dimensionality. They can attack the player by swooping down or firing projectiles from a distance. Some flyers are also **Bombers**, attack from above and affect areas.
- **Burrowers:** An invulnerable state that allows them to position themselves advantageously.
- **Blocker:** An adversary that can defend itself from the player's attacks by using a shield or other defensive tool.

These are the patterns according to the movement styles:

- **Patroller:** Moves in a repetitive mechanical pattern, while a chaser pursues the player when certain conditions are met.
- **Guards:** Prioritize guarding a specific item or location rather than chasing the player.

- **Teleporters:** Change their position around the playfield, keeping the player on their toes.

Generally, you can combine between multiple types of behavior to create your unique enemies.

### 3. Speed

When it comes to enemies in video games, their speed and movement can greatly affect their danger level and how intimidating they appear. It's important to consider different speeds for enemies, such as non-mobile, slow, medium, fast, and quick.

- **Non-mobile enemy:** Even a non-mobile enemy can still move in some way, and it's important to remember that movement adds character and life to the enemy. For example, a giant creature like Cthulhu may be immobile due to its size or technological limitations, but it can still be considered a formidable enemy.
- **Slow enemies:** Work best in large groups, as one alone may not pose much of a threat, but a dozen or more can make even a brave hero nervous.
- **Medium speed enemies:** Move and attack at a pace similar to the player, making them predictable but suitable for most situations.
- **Fast enemies:** Fast enemies are great for horror and action games, as they can quickly strike and retreat or move around quickly and launch multiple attacks. Players will have less time to react to fast enemies, making defeating them more challenging. Figure 69 shows the screenshot of Days Gone where the enemies (zombies) have relatively medium-fast movement speed.



Figure 69. In Days Gone, player will face medium to fast zombies approaching in huge numbers.

### 4. Movement

To determine the movement of your designed enemies, consider asking yourself a few key questions:

- What is their movement style?
- Do they charge at the player aggressively or zigzag in an erratic pattern to avoid taking fire?
- Do they make a beeline towards the player and then retreat, or jump from cover to cover?
- Do they crawl on walls to ambush the player from above, or do they run away and never engage in combat?

Understanding the movement patterns of your opponent is crucial, as it not only determines their attacks but also their character. It is important to identify if your enemy moves randomly or predictably. Avoid being too one-dimensional and incorporate diversity. If the movement is too random, the player may feel that the enemy is moving in an arbitrary manner. Conversely, if the movement is too predictable, the enemy may seem too artificial.

### 5. Modifier

- **Block/ parry:** The enemy can block or parry the player's attacks, which can cause the player to become staggered during a combat. This can disrupt the player's combat flow, reset their combo meter, and even cause their weapon to rebound or ricochet.
- **Knockback:** When the player is hit, they are not damaged but instead knocked backward. This can interrupt any combat chain or activity the player was involved in, such as spell casting or operating a mechanic. Creating distance between the player and the enemy is advisable to avoid such interruptions.
- **Stun:** When the player is stunned, they become defenseless and may be standing or on the ground. While

they briefly lose control, the duration of the stun must be brief, as it can be frustrating for players.

- **Freeze/ paralyze:** In the game, a “freeze” attack can briefly immobilize characters. However, it can be countered by quickly pressing buttons or moving the control stick. This attack may or may not cause damage to the player. It’s crucial to have a pleasing animation and visual effect when the player successfully breaks free from the attack. Some games differentiate the “paralyze” implementation, in which the affected object will gradually lose resources, including hp, energy, and coins per period of time.
- **Heal/ repair:** The option of the enemy regaining health sparingly is recommended, as it may seem unjust to the player. For best results, it is advisable to use only when the enemy has a healing animation and a health bar to indicate that they have returned to their partially or fully healed state.
- **Buff:** This action functions similarly to healing, but the opponent accumulates power to launch an attack. It’s commonly observed when preparing for magical spells, but not limited to.
- **Steal:** If the enemy steals money or equipment from the player, the gameplay dynamic changes from “fight the enemy” to “retrieve what was stolen.” It’s important to ensure the player has a fair chance to recover their lost items. There is also “Leech”, the player’s “charged up” resources are depleted by the attacked enemy, such as power, mana, shield power, or fuel.
- **Vulnerability/ resistance:** Ensure that the weaknesses of the characters are easily understandable and logical. For instance, it’s obvious that a snow angel that is harmful can be defeated by fire, while a flaming bat would be unaffected by a burning torch waved in front of it.

Creating an enemy the player strongly dislikes can enhance their immersion in the game and make it a memorable experience. Figure shows the Dota2 screenshot again, where a character might be affected by several buff effects, either positively or negatively.



Figure 70. In Dota 2, player status buffs are displayed above the main HUD. Status like being stunned is showed with a circular time indicator. Typically, red circle indicates negative buff, while the positive buff is shown by green circle.

#### 8.4 Power Ups & Consumable Items

Power-ups can be found in various gaming genres, including driving, puzzle, action-adventure, and shooters. They are obtained by defeating enemies, uncovering treasure chests and crates, or simply located along the player’s path. Power-ups can be categorized into four types. Figure 71 shows a two-type power up where it can be considered as an offensive or defensive one.

##### 1. Offensive

Enhance combat or attack for players to defeat foes quicker, with greater effectiveness, and in a more impressive manner.

- **Buffs:** temporarily enhance the player’s skills and abilities. One example is the damage modifier, which can increase the player’s elemental or base damage. These power-ups may also come with dynamic visuals.
- **Upgrader:** players can permanently enhance their equipment or improve their stats such as strength, speed, and attack damage. For instance, the Ammunition boost feature will partially or fully replenish the player’s ammo supply.
- **Companion:** small object appears beside them that can offer extra attack or shielding abilities.

##### 2. Defensive

Assist in enhancing the player’s resilience to withstand damage and advance further in the game.

- **Recharger:** In the game, the player's health bar or life needs to be refilled when it runs out. However, even if the player runs out of health, they can still continue playing thanks to this feature.
- **Invulnerability & Invincibility:** Invulnerability means that the player is not affected by enemy attacks. Invincibility is similar, but the player can also defeat most enemies automatically by clashing with them.
- **Protective:** As a form of protection, there are momentary force fields, physical shields, or auras that can defend the player from projectiles, fire, or any potential damage caused by opponents.
- **Bomb:** Refers to a type of bomb that eliminates all enemies visible on the game screen, providing relief to the player from challenging gameplay.



Figure 71. The Super Vehicle (SV), called Slug in Metal Slug, can be an offensive and defensive power-up.

### 3. Movement

You can give the player the option to upgrade their current movement abilities or even add new ones. The movement buff can be used as an offensive or defensive trait.

- **Speed change:** The player can achieve remarkable speeds in their gameplay, thanks to the implementation of nitro boosts and other powerful enhancements. These game features allow for a thrilling and fast-paced experience that adds an exciting element of challenge and excitement to the game.
- **Access change:** If the player acquires a power-up ability, they can gain access to areas that would otherwise be inaccessible. This can be a useful strategy for exploring and discovering hidden secrets within the game. See an example in Figure 72, a player can get special access to certain area with certain trigger.
- **Size change:** It has been observed that in certain games, modifying your size can grant you access to a range of unique abilities. These abilities can range from basic ones, such as being able to squeeze through narrow spaces, to more complex ones that can significantly enhance your gameplay experience.



Figure 72. In Crash Team Racing (CTR), players are provided with shortcuts that can be reached in specific ways. For instance, in the Temple circuit, players may find a narrow hallway after firing some explosives.

#### 4. Game Changers

Even a simple mechanism can greatly change the way the game is played and how the player interacts with it.

- **Magnetic:** This power-up helps players attract treasure items during battles and eliminates the need for them to collect them afterwards, which can be risky in dangerous areas.
- **Comedy or unknown:** Some power-ups are designed to be funny or unexpected, solely for the purpose of entertaining the player. However, not all power-ups are useful or practical. Game designers have also created anti-power-ups to make the game more challenging. Figure 73 shows a Crash Bash, a multiplayer party game that accommodates up to 4 players. In one of the game modes, called Polar Push, players must push each other to remain standing until the end of the game. Random power-ups are available, some of which have negative effects. For example, a power-up may shrink your character, making it easier for others to push you and potentially leading to being crushed by a 500 lb metal object.



Figure 73. Crash Bash is a multiplayer, comedy-party game that accommodates up to 4 players. In this game there are some funny and crazy items that may alter the game ends.

#### 8.5 Level Design

The definition of a level in video games can be ambiguous. Some people believe that a level refers to the location or environment where the gameplay takes place, while others think it refers to a player's rank based on their score, experience, or skills. Both definitions are commonly used in the gaming industry, but it is important to be clear with your development team about which definition you are using. Personally, I prefer to use the term “level” to refer to a game space and use specific terms to describe level progression, such as the name of a world or city in the game. If you want to learn more about terms related to levels, there are additional keywords to understand, but don't worry - this is not an exam and you can always revisit the chapter later. Let's review these keywords together:

- **Round:** In games where the same action is repeated, we use the term “rounds”. It is commonly seen in sports games like MMA, boxing, or golf. See Figure 74, an example of sport game, UFC.
- **Wave:** When referring to combat, the term “wave” is used. The player is served with multiple waves of zombie raids in Plants vs. Zombies, see Figure 75.
- **Stage:** To describe the behavior of a boss adversary, we use the term “stage”. Usually, the player will venture through several stages before finally arriving at the boss stage.
- **Act:** When game creators want players to focus on the game’s story, they use “acts” and “chapters”. It just sounds narratively correct, right?
- **World:** Lastly, the term “world” refers to the video game setting, mainly defined by its visual or genre concept, and can consist of multiple areas with a common theme.



Figure 74. EA Sports' UFC 3. The gameplay segmented into 3 to 5 rounds each match. (This screenshot is taken from <https://www.youtube.com/watch?v=jJcMWwhYGvQ>).



Figure 75. The final wave in the game of Plant vs. Zombies is incoming.

## 1. Level Design Elements

Level design involves combining various playable game components to create a puzzle-like experience for the player. The designer must utilize the game engine, artwork, and gameplay mechanics to construct levels. Poor level design is often the most noticeable issue in a game. The following elements make up a level:

- **Action:** The level of action in a game is determined by the type of game being designed. However, it is important to determine the level of conflict that players will encounter.
- **Exploration:** Planning the flow of a level is crucial to ensure that the exploration aspect of a game is enjoyable. This involves deciding whether players need to deviate from the main path to advance or if there is only one way to progress.
- **Problem-solving:** Players must experiment in the environment and with the game mechanics to solve the problem. This requires them to move beyond just finding the puzzle and instead focus on figuring out how to handle it correctly.
- **Storytelling:** It is crucial to know the story goals for each level before building it to effectively present the story. However, it's also important to keep the story flexible enough for the level designer to have the freedom to create the best possible level.
- **Aesthetics:** Most level designers prioritize the visual and auditory aspects of their work, as these are often the first elements that receive feedback from team, the press, and of course the players.

## 2. Beat Chart

Designers often use popular themes such as outer space, dungeon, cavern, factory, jungle, spooky, pirate (town, ship, or island), urban, and more to enhance their game design. A beat chart, which is a tool used by Hollywood writers and filmmakers to plan and organize the production of their films, is also helpful for game design. Your beat chart should include the file name, level name, player's objective, story beat, enemies, mechanics, and NPCs. Bonus materials, time of day, color mapping, and play style are also important. Creating a beat chart can help identify gaps and clustering in your game, allowing you to reorganize game elements to make it feel more natural.

Nick Filatov, the game designer behind the 2D action-adventure game Die with Glory, has shared his approach to designing level and player progression. A beat chart is a one-page document that outlines the game's structure, including its mechanics, narrative, and other contents (Arbeau et al., 2020). This chart helps monitor gameplay progress and ensures that players are always entertained without feeling overwhelmed at any point in the game. The most convenient form for this chart is a table format. To create a beat chart for your game, you'll need to:

- Describe all the parameters required for each location.
- List the game mechanics and content you want to include.
- Distribute them in a way that avoids excessive overload, obvious gaps, and boring repetition of game elements.

Let's examine their beat chart example, which includes the following details:

- Name or code name
- Brief description (including time of day, season, and color scheme)
- Additional mechanics (each location has a new global mechanic)
- Storyline events
- Player progress (focus of gameplay, game resources obtained, and where they can be spent)
- Approximate time to complete
- Content list (characters, objects, items, threats, and specific game mechanics)
- Audio content list (sound and music)

It is very convenient to have access to all this data for gameplay tuning. The primary recommendations for content distribution are straightforward: avoid overwhelming players with excessive new information or frequently repeating game element combinations. Nick recommends finding further information about beat charts (along with many other valuable tips) in the book "Level Up" by Scott Rogers. Once you have established the structure of the game, it is time to focus on designing each individual location. To do this, we will create another table that expands on the information from the beat chart and provides more detailed information on each location. Each location is broken down into individual "screens" where game objects, items, characters, and other content are placed. Figure 76 illustrates the example of a beat chart.

Location "Nine"	Kiwik Village	Room with Failing Diamonds	Troll Cave	Dark caves with hungry shadows	Falling bridge to exit	Waterfall Cave
Goal	Bring all Kiwiks back to the village alive	Catch 6 diamond keys to open the door to Firi	Run from troll with Kiwik	Pass them	Put mirrors to the right places to open door to rescue Kiwik	Put mirrors to the right places to open door to rescue Kiwik
Characters	Kiwik Shaman, Torch Merchant	Firi	Kiri, Troll	Shadows	Spider Queen, Tori, Green Knight	Raven
Items	Casket, Torches, Jinn Lamp, Guitar	Keys, Smoking Pipe, Coin	Coin (2)	Coin (2), Special Kiwik, Smoking Herb, Long Stick, Portal, Crossbow	-	Tobacco
Objects	Ladder Upstairs	Lever (triggers event), Misc flying dangerous stuff	Ropes, crops, stones, lanterns	Levers, gates	-	Mirrors, Ropes
Assets	Village houses, Cave background, Black background	Moving ceiling, Room interior, Door, Glowing Stone	Cave background, Black background, Glowing stone	Cave background, Black background, Glowing stone	Falling bridge, Cave background, Lava stream, Red background	Cave background, Waterfall, Light beams

Events	If collected, Shaman dies of smoking, but Sigurd got Bottled salt	-	Burn crops to fear troll	-	Bridge falling	System or boxes, ropes and swings to move mirrors
	Buy torches for coins	Poltergeist (sudden flames, closing and opening doors, moving objects, flying objects)	Pull crops under lanterns, drop lanterns on crops	-	-	Scare Raven to move mirror
Notes	Save Kiwiks	Horror atmosphere	All scene are dark	Torches consumption rate	-	-
Level Scheme	Waterfall	Bridge				
	Dark	Village	Dark	Troll	Troll	
				Diamond		

Figure 76. Extended beat chart of Die with Glory.

In Figure 68, you can see an older version of the “Nine” table location in Die with Glory. The bottom of the table includes a scheme that explains the relative position of the recreated screens in Illustrator. Once Nick has the blank “map” and a list of all game elements that need to be placed, it’s time to start putting them in their proper places. However, keep in mind that the initial location configuration may change frequently, with elements and their relationships appearing, disappearing, and changing locations. It’s important to avoid these changes once the team has already started working on the location, as later changes can be costly. Therefore, it’s crucial to plan as many details in advance as possible. Moreover, visuals are a more effective way to communicate information. This is an important point that should be addressed. The level layout of Nick’s game is shown in Figure 77 and the refinement of the level is shown in Figure 78.



Figure 77. Template of level layout used in level “Nine”.

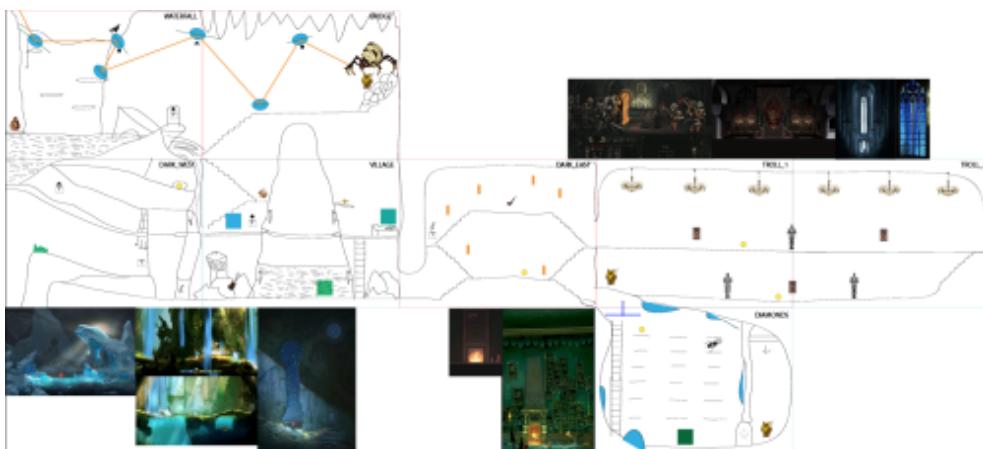


Figure 78. The refinement of level design in level “Nine”. Nick also attaches the references.

Nick usually focuses on hand-drawing landscapes and tends to use colored markers or placeholders for

characters and objects. To effectively communicate your game design ideas with artists, it's crucial to provide detailed visual references. Don't forget to include background references in the location map. It's a good idea to have one or two meetings to discuss the location and listen to input from teammates. Based on those discussions, make adjustments to the location as needed. Remember to stay open to feedback and work together to create the best location possible. Once everything is prepared, discussed, and approved, Nick sends a location map to the artists. Figure 79 shows the refined level design by visual artist.

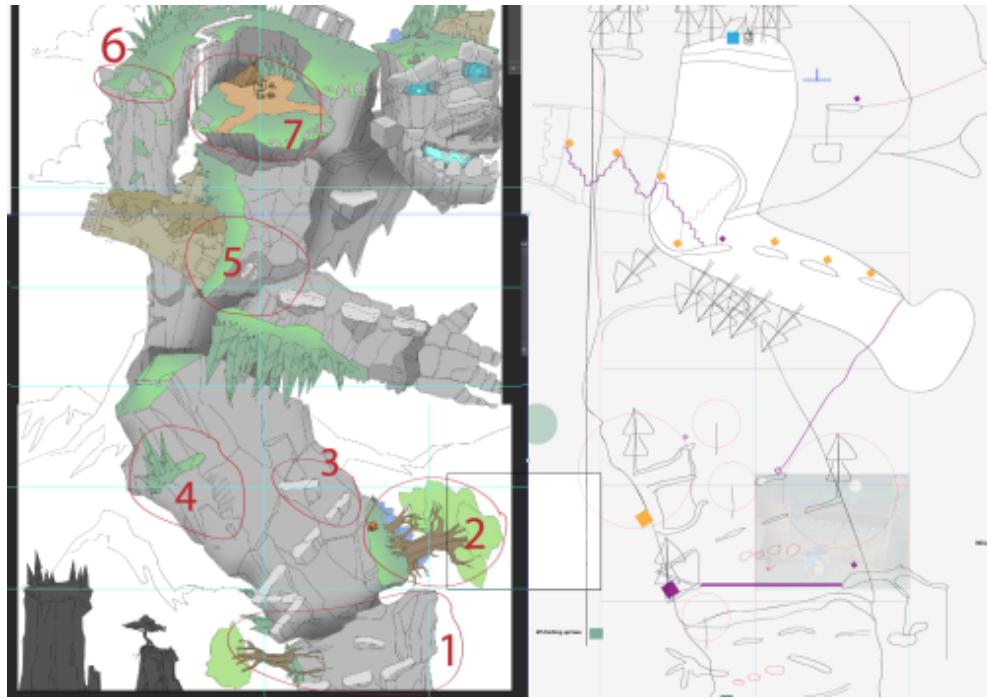


Figure 79. Left: refined level arts by artist. Right: level design by designer, Nick.

Please note that there is no strict template for making a beat chart. A Reddit user, u/aporokizzu, shared his template and example of a beat chart. Figure 80 shows the beat chart template, and Figure 81 shows the example use of it.

BEAT CHART					
LEVEL					
NAME					
TIME OF DAY					
STORY					
PROGRESSION					
EST. PLAY TIME					
COLOR MAP					
ENEMIES					
MECHANICS					
HAZARDS					
POWER-UPS					
ABILITIES					
ECONOMY					
BONUS MATERIALS					
MUSIC TRACK					

u/aporokizzu

## BEAT CHART

GAME ELEMENT	LEVEL NAME / FILE NAME				
LOCATION					
GAMEPLAY					
OBJECTIVE					
STORY BEAT					
NEW WEAPON					
ENEMIES					
MECHANICS					
NPC					
BONUS MATERIALS					
TIME OF DAY					
COLOR MAPPING					

u/aporokizzu

Figure 80. A beat chart template. The first part of image shows the general, wider picture of beat chart. The second part of image shows the detailed description per area or level.

*Relic Raider* beat chart

Game	Level Name/File Name				
Element	Shanghai/ Rooftop01	Jungle 01/ Jung01	Jungle 02/ Jung02	Temple of the Hidden Skulls/ Jung03	Mountain Escape!/ Road01
Location	Shanghai rooftop	Jungle	Jungle	Ancient temple (int)	Mountain pass
Gameplay	Stealth, shooting, jumping	Shooting	Fighting	Platform, jumping	Driving
Objective	Find crime boss Wu-Fan	Jungle part 1	Jungle part 2	Reach chamber of skulls	Car chase
Story beat	Jake steals medallion, is caught by Wu-Fan	Jake explores jungle	Jake finds temple of skulls	Jake places medallion in statue; Nazi general Hauser shows up	Jake steals truck, flees Nazis
New weapon	.45, machine gun	Machete	No	No	No
Enemies	Tong thug, axe man, machine gunner	Jaguar, native (spear)	Jaguar	Jaguar, Nazi soldier	Nazi truck, Jeep w/ machine gun
Mechanics	Swinging rope, zip line	Swinging rope, zip line	Zip line	Spiked pits, blow darts, crushing walls, fall-away floor	Falling rocks
NPC	Wu-Fan	Guide	None	Hauser	None
Bonus materials	Art gallery 1	Art gallery 2	Art gallery 3	Alt. costume	Art gallery 4
Time of day	Night	Night	Night	Day	Day
Color mapping	Blue/red	Green/brown	Green/brown	Green/gray	Tan/sky blue

*Maximo: Ghosts to Glory* beat chart

Level: World 1-1	Level: World 1-2
Name: Grave Danger (Boneyard)	Name: Dead Heat (Boneyard)
<b>TOD:</b> Night	<b>TOD:</b> Night
<b>Story:</b> Maximo enters the graveyard, fighting his way through undead creatures that bar his way.	<b>Story:</b> Achille's drill has cracked open the earth, causing lava pits to open up throughout the graveyard.
<b>Progression:</b> Player taught basic movement, combat and defensive moves. Player learns how to collect and map abilities.	<b>Progression:</b> Player masters hazardous jumps and more intense combat.
<b>Est. play time:</b> 15 min	<b>Est. play time:</b> 15 min
<b>Color map:</b> Red (lava), brown (trees/rock), purples (tombstones)	<b>Color map:</b> Red (lava), brown (trees/rock), purples (tombstones)
<b>Enemies:</b> Skeleton (basic), sword skeleton (red), skeleton (axe), ghost, zombie (basic), wooden coffin, chest mimic	<b>Enemies:</b> Skeleton (basic), skeleton (axe), sword skeleton (red), sword skeleton (blue), skeleton (guardian), zombie (basic), raven, ghost
<b>Mechanics:</b> Holy ground, breakable tombstone, breakable torch, breakable crypt lid, breakable rocks, Achille key statue, key lock, opening gate (door), opening gate (cave), prize wheel, treasure chest, locked chest, hidden chest, end plinth	<b>Mechanics:</b> Holy ground, breakable tombstone, breakable torch, breakable crypt lid, key statue, key lock, opening gate (door), enemy coffin, floating platform, prize wheel, treasure chest, locked chest, hidden chest, end plinth
<b>Hazards:</b> Unholy ground, Achille statue, fall-away ground, skull tower, breakaway bridge, deep water, lava pit	<b>Hazards:</b> Unholy ground, swinging gate, skull tower, flame jet, lava pit
<b>Power-ups:</b> Koin, koin bag, diamond, death koin, spirit, life up, flametongue, shield recharge, sword recharge, half health, full health, iron key, gold key, armor up	<b>Power-ups:</b> Koin, koin bag, diamond, death koin, spirit, life up, flametongue, shield recharge, sword recharge, half health, full health, gold key, armor up
<b>Abilities:</b> Second strike, mighty blow, magic bolt, doomstrike, foot cheese	<b>Abilities:</b> Second strike, mighty blow, magic bolt, doomstrike, throw shield
<b>Economy:</b> 200 coins, 2 death coins	<b>Economy:</b> 200 coins, 1 death koin
<b>Bonus materials:</b> N/A	<b>Bonus materials:</b> N/A
<b>Music track:</b> Graveyard 1	<b>Music track:</b> Graveyard 2

Figure 81. The example use of a beat chart by u/apporokizzu.

(This is taken from

[https://www.reddit.com/r/gamedev/comments/e9wp41/game\\_design\\_document\\_beat\\_chart\\_description\\_blink/](https://www.reddit.com/r/gamedev/comments/e9wp41/game_design_document_beat_chart_description_blink/)

**8.6 The 3 Cs (Control, Character, and Camera)**

When designing a game, it is important to establish three fundamental elements early on in the pre-production phase. These elements, known as the “Three Cs,” are essential and serve as a basis for the rest of the design process.

**1. Control**

The field of ergonomics focuses on adjusting equipment to fit the user. When designing hardware, developers pay

close attention to how players hold and operate the controller (human ergonomics). For younger players, it is important to keep button presses simple and avoid complex combinations that their fingers may not be able to handle. It is also helpful to offer a variety of control options and even allow players to customize their controls in the options menu. An example of control mapping in Pro Evolution Soccer 2021 (PES2021) is shown in Figure 82.

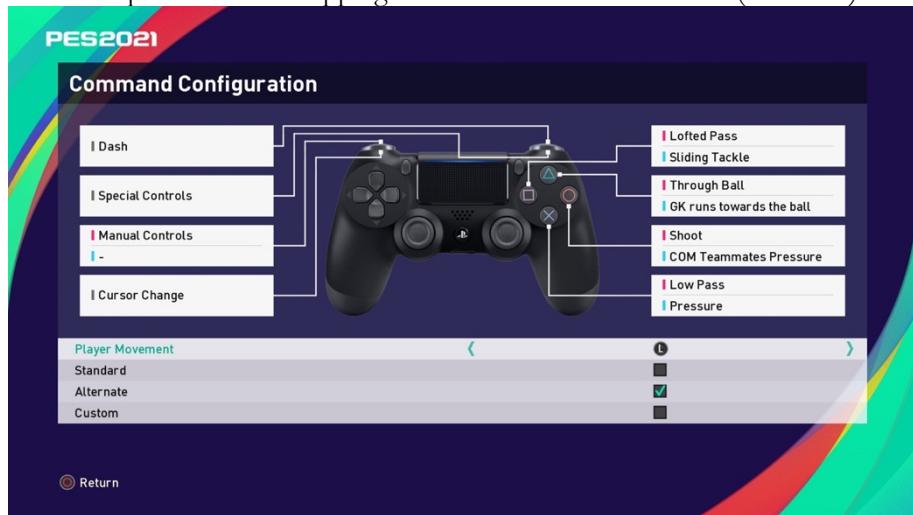


Figure 82. Control configuration in PES2021 game. Players may change the control to fit their preferences.

## 2. Character

If you want your game characters to be more believable and lifelike, use these guidelines to define them:

- **Personality Traits:** As an example, players can choose to create characters with comedic, heroic, or badass traits. They have the freedom to customize various aspects such as their character's name, appearance, clothing, armor, gear, vehicle, base of operations, weapons, and pet.
- **Physical Characteristics:** the shape of the body, age, and any historical scars. Figure 83 illustrates the different main shape of characters. The shape's differences will be beneficial for player to differentiate between one character to another. While Figure 84 more describing the differences in the behavior characteristics.
- **Metrics:** The metrics of the character are based on these proportions, which are crucial for designing and playing the game. These metrics determine various factors such as the character's height, passage width, walking and running speed, jump height and distance, attack distance, and projectile distance.

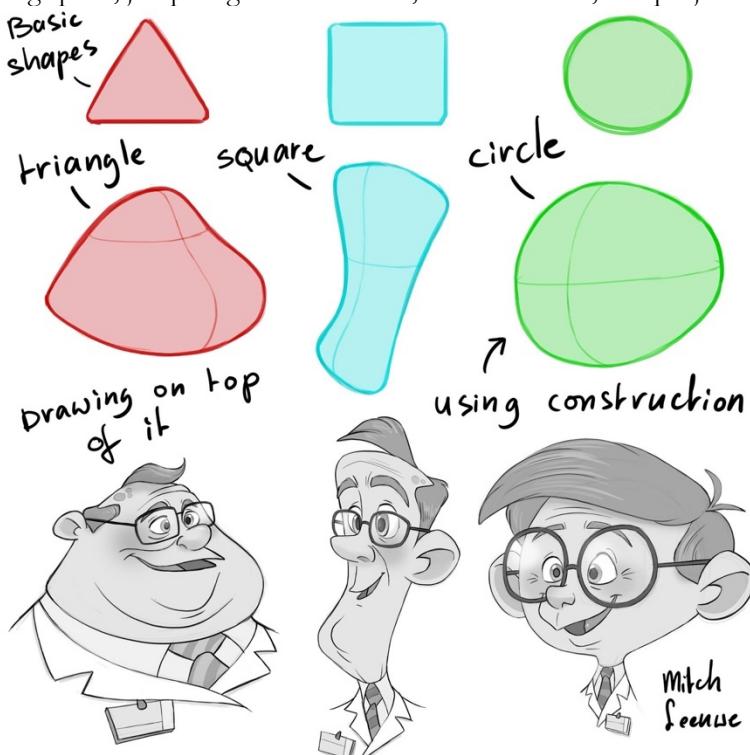


Figure 83. Characters main shapes by Mitch Leeuew. (Taken from [http://mitchoo.blogspot.com/2019/08/shapes\\_18.html](http://mitchoo.blogspot.com/2019/08/shapes_18.html))



Figure 84. A player board from Root board game. This player board informs the characteristics of play from a specific certain character. Mainly, there are three phases: birdsong, daylight, and evening. But between players, the activities on those phases are very different. In Marquise de Cat board for instance, the play-style is that the player must recruit and build as many as the player can.

### 3. Camera

Selecting the appropriate camera for your game is crucial not only in terms of programming it, but also in terms of influencing the design of your game, control mapping, and artwork creation.

- **Static Camera:** A static camera is a camera that doesn't move and is fixed to a single screen, location, and image (Figure 85).
- **First Person Camera:** First-person cameras are used in a wide range of game genres, from platformers to racing games. It shows how you see (your point-of-view) (Figure 87).
- **Third Person Camera:** Shows how other people see another. Getting a third-party camera to work properly may be the most difficult problem a team encounters (Figure 88).
- **Isometric Camera:** There are certain advantages to using an isometric (or iso) camera. It provides players with a fast understanding of an environment's layout and item relationships, making it perfect for environmental puzzle solving (Figure 89).
- **Scrolled Camera:** A camera where it can follow the game objects. It can scroll sideways, or upwards-downwards (Figure 86).
- **Top-Down Camera:** While some game level features (usually world objects and power-ups) are presented from the top down, others (such as characters) are presented from the side (Figure 90). Yes, top-down camera is actually a scrolled camera. Because of the peculiar game designs using this technique frequently, we consider as separated type.
- **Multiplayer Camera:** A camera that shows multiple players on a single monitor. The most popular multiplayer camera is as follows: Split Screen (Figure 92) and Zooming Screen (Figure 91).



Figure 85. Static camera view in Mario Bros (Atari C64), 1984.



Figure 86. Rayman Legends by Ubisoft uses parallax environment. Where the object closer to the camera

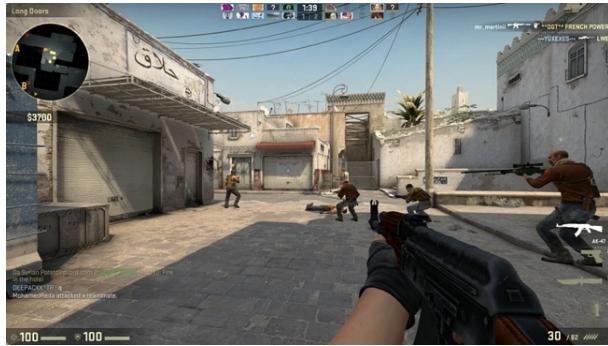


Figure 87. A first-person-shooter (FPS) camera in the Counter Strike: Global Offensive.



Figure 89. Isometric view in Metal Slug Tactics.

will move faster than in the background.



Figure 88. Third-person view in the game of Tom Clancy's The Division.



Figure 90. Top-down camera in the game of Sonic Wings 3. Typically, a shooter-airplane games are using this view.



Figure 91. One-screen multiplayer view in Diablo 3. Where all players are looking in the same frame.



Figure 92. Split-screen multiplayer in the Bishi Bashi (PlayStation1), a comedy game.

## 8.7 Heads-Up Display (HUD)

The HUD, named after the heads-up display featured in modern airplanes, is the most efficient method of communicating with the player. The HUD is any visual feature that delivers information to the gamer. A HUD's small screens and icons are among the most useful tools in a video game designer's arsenal. They can transmit information, emotions, and even point the player in the right direction. Figure 93 and 94 shows PUBG and Ni no Kuni; two games which have rich of HUD components.

HUD elements on a typical gaming screen include:

### 1. Health Bar/ Lives

The health bar, which is common in action, adventure, platformer, and shooter games, shows how near the player is to death or needing to restart for some other reason.

### 2. Targeting Reticule (Aim)

A targeting reticule helps players find and/or lock onto long-range targets. They can be as simple as a “dot” on a laser sight to as complex as a lock-on system that also communicates target information like as health and range.

### 3. Resource Gauge

The gauge shows the information of resources you have. For example, your ammunition gauge will be one of the most watched gauges on-screen, whether it displays bullets or a basic number.

### 4. Inventory

Inventory is a frequent element in adventure and role-playing games, allows players to keep track of and handle objects obtained throughout the game. Keys, potions, puzzle pieces, and weapons are all common inventory items.

### 5. Map/ Radar

A radar or map is a user interface element that displays geo-location information surrounding the player. Sometimes players want to see the big picture of where they are in order to gather information and plan their strategy.

### 6. Score and Experience

Make your scoring huge and flashy when it happens, whatever form it takes. Here are some suggestions for making your awards more rewarding:

- When a player obtains a prize, call emphasis to it with voice and sound effects.
- Stop the game so the player can appreciate the moment of reward.
- In order to grasp how they arrived at their score, the player must see a clear “cause and effect” for scoring.

### 7. Context Sensitive Prompt

When the player is near an object or character with which it interacts, a context-sensitive prompt emerges in the form of an icon or text. The most typical context-sensitive prompt shows the icon of the button or control that the player must press in order for the event to occur. This UI is typically displayed with more highlighted objects.



Figure 93. The screenshot of one of the most popular games in 2020, PUBG (Player Unknown Battle Ground).

You can see that this mobile version of game is using some HUD elements, like health bar, target reticule, ammunition gauge, inventory, and a radar.



Figure 94. Ni no Kuni: Wrath of the White Witch is also implementing some HUD elements such as: experience (level), contextual UI (action that the player can choose) like when in battle, and more.

“When playing a game, the goal is to win,  
but it is the goal that is important, not the winning.”

Reiner Knizia  
Board Game Designer

## IX. GAME MECHANICS (PART 3)

Can you keep up with the material so far? Great! Lots of things we want to share with you. In this section, we want to share how to balance your design since balanced gameplay is a must for the majority of players. Of course, you can't please everyone. But still, pushing the limit to produce an enjoyable experience for as many players as possible is what you expect as a game designer.

### 9.1 Balancing

Game balancing is a challenging task because every game has its unique features that require balancing. As a game designer, you need to identify the areas that require balancing and experiment with them until you achieve the desired gaming experience for your players.

#### 1. Fairness (symmetric vs asymmetric)

- **Symmetrical Games:** Fairness is a quality that all players seek in games. They want to have an equal chance of winning and not feel like the challenges they face are impossible to overcome. One way to ensure this is to create a symmetrical game, where all players have the same resources and abilities. Examples of symmetrical games include chess and monopoly.
- **Asymmetrical Games:** However, it is also possible and often desirable to create asymmetrical games, where opponents have different resources and abilities. This can simulate real-world situations, provide players with different ways to explore the game space, offer personalization options, level the playing field, and create interesting situations. In Figure 95, the Vagabond character from Root, represented by a skunk, takes on the role of an adventurer who travels through forests and clearings to acquire items. On the other hand, the Marquise de Cat character, represented by a cat, requires the player to build structures and gather wood from sawmills to construct different types of buildings and add combat units to the game board. This version of the game was released by Leder Games in 2018 (Leder Games, 2022).



Figure 95. The Root (digital) board game involves players competing as unique characters. Each character has their own abilities that determine how the player will approach the game.

## 2. Challenges (skill vs challenge)

Remember Csikszentmihaly's Flow theory? Different players have different experiences - one may find it boring, another challenging, and yet another frustrating. To strike a proper balance, there are some common techniques to try:

- **Increasing Difficulty:** With every success, the difficulty increases, and each level becomes more challenging than the previous one. As players improve their skills and manage to finish a level, they are presented with a new one that poses an even greater challenge.
- **Layers of Challenges:** The game offers different levels of challenge for players. Novices may find it exciting to unlock the next level despite receiving an imperfect score. As they progress and complete all levels, they may challenge themselves to improve their scores on previous levels, creating multiple layers of challenge.
- **Challenge Shortcut:** One way to make a game more enjoyable for both skilled and less skilled players is by providing a shortcut through easy levels. Skilled players can quickly advance to more challenging parts of the game, while less skilled players can be challenged by the earlier levels. This allows every player to reach the part of the game that is personally more interesting to them.
- **Playtest with Variety of Players:** It is wise for game designers to test their game with a diverse group of players, including both skilled and novice players. By doing so, they can ensure that the game is enjoyable from the beginning, remains enjoyable over time, and continues to be fun even after extended play.

When designing a game, there are two opposing forces to consider: player skill and randomness. If there is too much randomness, it can negate the effects of player skill, and vice versa. The balance between these two elements determines the flavor of your game. To achieve this balance, ask yourself the following questions:

- As a designer, what should you prioritize? The player's talent (skill) or chance (randomness)?
- Is your game considered serious or casual? Skill is typically taken more seriously than chance.
- Are there any parts of your game that are boring or repetitive? Adding elements of chance make them more engaging. But, how much randomness?
- Are there certain parts of your game that seem too reliant on chance? Would incorporating elements of skill or strategy instead of randomness help the players feel like they have more control?

## 3. Meaningful Choices & Feedbacks (meaningful vs meaningless)

A quality game offers players the opportunity to make impactful decisions that affect the outcome. These decisions should involve a choice between playing it safe for a smaller reward or taking a big risk for a larger reward, making the game more intriguing and engaging. Let's take a look at the Figure 96 of Risk-Reward relationship below.

- **Starter:** In the reward-risk category, players receive a low reward for engaging in low-risk activities. An

example of this is when a player completes a tutorial level and the system provides them with initial items as a reward.

- **Bonus:** Players can typically expect to receive a bonus after completing a certain number of game rounds. This provides them with a chance to take a break and enjoy some valuable rewards after long and exhausting gaming sessions.
- **Meaningful:** The most valuable reward is one that is meaningful and justifies the risks taken to obtain it.
- **Worthless/ meaningless:** Finally, the least we want to create is a worthless reward; it simply gives the player an insignificant reward. However, you may still give the player some more common reward than nothing at all. For instance, in Dota2, a player will get a user XP (experience point) after a match, and if the player leveled up, they might get some in-game items. Most of the time, players will get common, sometimes even duplicated, items. Implicitly, it will make the item with a high rarity level more meaningful. Thus, compliment the “meaningful reward”.

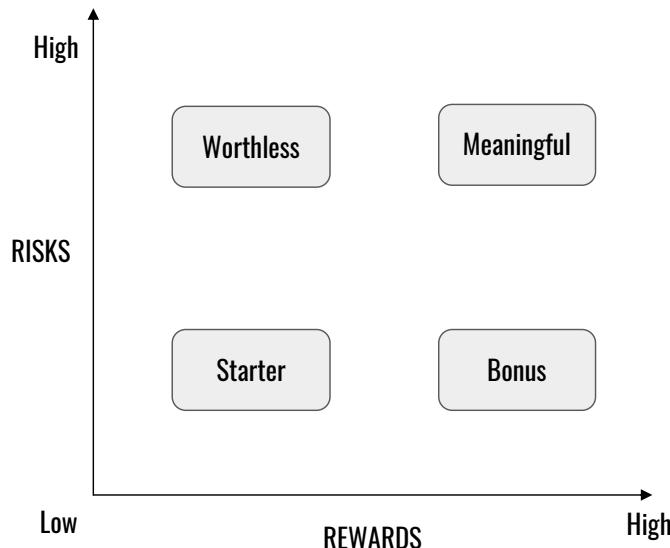


Figure 96. The Risks-Rewards diagram: The meaningful choice emerges from high risk and high rewards.

Games usually offer different types of rewards that are all designed to satisfy the player's desires, even though each type is unique in its own way. Based on the Risks-Reward diagram, we use it to categorize and show some examples of reward or feedback forms. We refer to them as feedback as the resulting reward or feedback is caused by the player's action waiting to get the response from the system. There are 3 channels of feedback:

- **Gameplay Feedback:** feedback to players related to gameplay dynamics. These include:
  - **Gateway:** As humans, we crave both validation and adventure. Game mechanics that unlock new areas when we succeed satisfy this desire. Winning a key or gaining entrance to a new level is often rewarded with a gateway prize. Usually, you will find after a tutorial level, you will get a starter bonus as an initial resource or supplies.
  - **Points:** In most games, points are used to measure the success of the player, which can be achieved through either skill or luck. Occasionally, points may lead to a larger reward, but more often than not, the knowledge of one's success is sufficient.
  - **Power:** In real life, people often desire to become more powerful. Similarly, in a game, having more power is likely to enhance the player's performance evaluation.
  - **Resource:** Rather than offering resources, certain games offer virtual money that players can use to purchase various items such as additional powers, extended play, and expression. These items are available for purchase with the virtual currency.
  - **Prolonged play:** Some games that have time limits offer rewards for players who extend their playtime. This is essentially the same as increasing the length of the game session. Having a longer game session is attractive not only because it allows for a higher score and a feeling of achievement, but it also taps into our natural instinct to survive.
- **Aesthetic Feedback:** feedback to players related to aesthetic, including these examples:
  - **Gateway:** Just like in the gameplay feedback channel, a gateway also needs to have an aesthetic aspect that blends the mechanism into the overall gaming experience for players.
  - **Completion:** Achieving all the objectives in a game gives players a feeling of conclusion that is hard to come by when dealing with real-life challenges.

- **Praise:** After completing a task in the game, you will receive positive feedback in the form of explicit messages, sound effects, or even in-game characters praising your performance. Take a look at Figure 97 below where a player may get praises for performing better.



Figure 97. In Taiko no Tatsujin, different types of rewards are displayed depending on how well the player hits the button. It's possible for a game to have multiple reward types. In addition to praise, this game also displays point rewards to inform the player.

(This screenshot is taken from <https://gaming-age.com/2021/06/taiko-no-tatsujin-rhythmic-adventure-pack-review-for-nintendo-switch/>)

- **Narrative Feedback:** feedback to players related to narrative aspect. Some examples of narrative feedback:
  - **Prolonged play:** Longer play duration will affect the player experience and the narrative aspect. Therefore, the prolonged play also occurs in the narrative channel.
  - **Expression:** A lot of gamers like to use unique clothing or accessories to showcase their personality when playing. Even though these items don't have a direct connection to the game, they can be enjoyable for the player and fulfill the desire to make an impact on the virtual world.
  - **Spectacle:** As humans, we tend to enjoy things that are visually appealing and engaging. To enhance the gaming experience, music and animations are often incorporated as simple incentives. For instance, Pac-Man's "intermission" after level 2 was one of the earliest examples of this in video games. However, such rewards are not usually enough to keep players satisfied on their own, so they are often combined with other types of incentives.

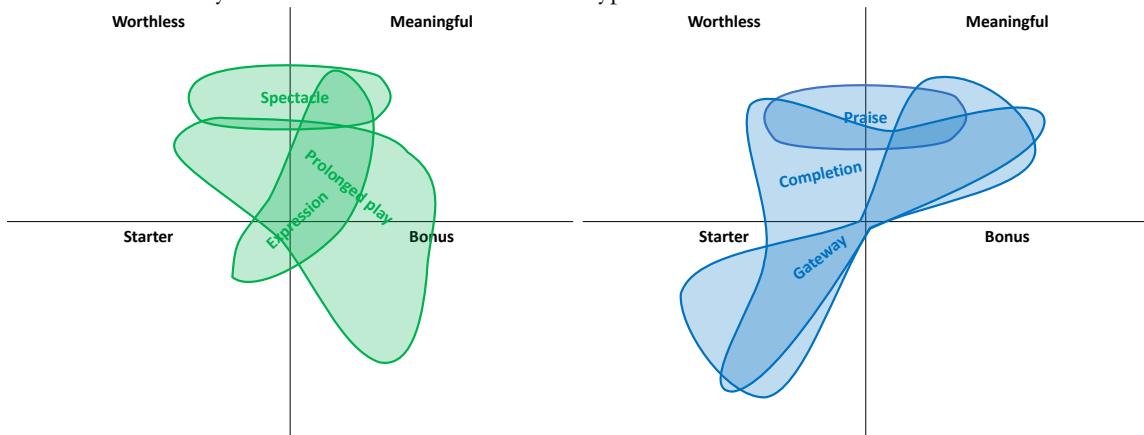


Figure 98. Left (greens): Narrative feedback examples; the feedback examples related to the narrative channel. Right (blues): Aesthetic feedback examples; the feedback examples related to the aesthetic channel.

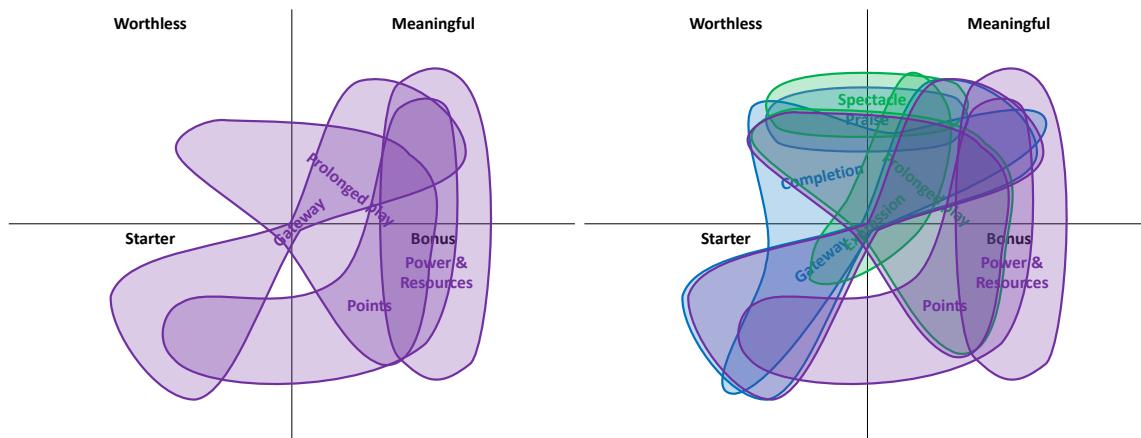


Figure 99. Left (purples): Gameplay feedback examples; the feedback examples related to the gameplay channel. Right (mixed colors): Feedback examples in a single game that may occur.

You may notice that feedback can come from various sources, such as gameplay and aesthetics or narrative and gameplay. When feedback is received from multiple channels, it creates a more cohesive and seamless gaming experience for the players. This is definitely a positive, desirable outcome. See Figure 98 and 99 as the illustrations of feedback channels.

#### 4. Punishment (negative feedback)

Actually, punishment can be considered negative feedback. Therefore, I should have written this part in a single section with the feedback. However, punishment can also enhance the overall enjoyment of playing games when used appropriately. Here are a few reasons why a game may choose to punish players:

- It creates an inherent value within the game.
- Taking risks can add to the excitement of the game.
- The potential for punishment can increase the level of difficulty.

Figure 100 shows one famous punishment from Dark Souls. Here are some examples of game punishments, but many of them could also be seen as rewards that can be undone if necessary. Check out these instances of negative feedback across different channels:

- **Gameplay Feedback:**
  - **Setback (power removal, resource depletion, place backtrack):** In video games, a setback punishment is when you are sent back to the beginning of a level or the last checkpoint after you die. One way to eliminate powers fairly is to temporarily take them away, known as **Power Removal**. **Resource Depletion** is another form of punishment, which includes losing money, items, ammunition, shields, or hit points. This is a common form of game punishment.
  - **Point Loss:** Perhaps the issue isn't with the pain caused, but rather the fact that the value of points earned decreases when they can be lost by players.
  - **Reduced playtime:** Perhaps the issue is not necessarily the pain caused, but rather the fact that the worth of earned points decreases when players are able to lose them. However, in an open simulation game like Fall Guy, the duration of play does matter for player experience.
- **Aesthetic Feedback:** feedback to players related to narrative aspect. Some examples of narrative feedback:
  - **Shaming:** Notifications that are too explicit (such as “Missed” or “Defeated!”) and negative animations, sound effects, and music can all be factors that contribute to a discouraging experience.
  - **Game Over:** The scene of telling the player that the game is terminated.
- **Narrative Feedback:** feedback to players related to narrative aspect. Some examples of narrative feedback:
  - **Shaming:** Again, you need a means to deliver the gameplay effect to player through aesthetic and even narrative.
  - **Reduced playtime:** As we mention in gameplay channel.

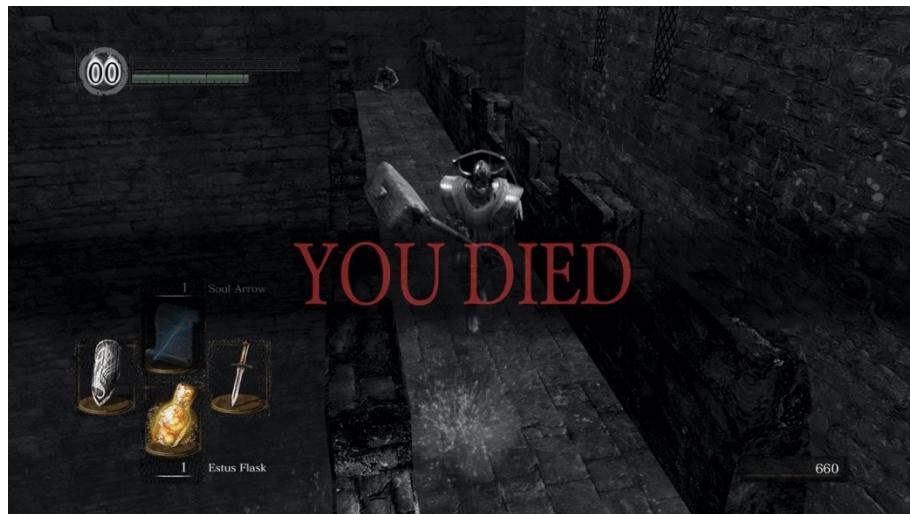


Figure 100. This is probably the most scene you will get in Dark Souls. This game provides lots of obstacles and enemies in the strategic places so that can kill you easily. In this game, player is usually learning the tactic to encounter the obstacles after the player is dead. It feels like the designer intentionally want us to learn that “hard way”.

### 5. Activities (physical vs logical)

It's important to remember that even games that require a lot of button-pushing also require strategy and thought. Balancing these elements is a matter of deciding how much of the game should be focused on executing difficult physical actions, like steering or button-pushing, and how much should be focused on thinking.

### 6. Grouping (competition vs cooperation)

Competing and cooperating are part of an animal's instinct, which is us. All higher animals feel the need to compete with each other to survive and establish their social status. Simultaneously, there's a natural inclination to work with others since a group with various skills and perspectives is always more potent than an individual.

### 7. Time (short vs long)

When choosing a game, it's essential to consider its length. Longer games allow players more time to develop and implement strategies, but excessively long games can lead to boredom and may discourage participation due to the time commitment required.

### 8. Chance (freedom vs controlled)

Interactive games aim to give players control and freedom over their experience. However, giving complete control can be burdensome for game developers and may even bore players. Additionally, it can be disappointing for players when the game abruptly ends without warning.

Chance is an important aspect of any enjoyable game since it implies uncertainty, and uncertainty implies surprises. Surprises are a significant source of human enjoyment and the key factor in having fun. To create an experience that is always full of tough decisions and exciting surprises, a good game designer must master chance and probability, shaping it to his will. The mathematics of probability is a good start to go to produce balanced statistics in your game design. Figure 101 gives an example of variable probabilities of obtaining a resource and its impact on other entities or attributes. You can also adjust the possibility to be more dynamic. Level 1 players, for example, have a 50% chance of performing a critical attack. However, by level 5, the chance of a critical attack drops to 20%. Figure 102 shows another tool called Machinations.io, a platform where game designer simulates the economic design of a game.

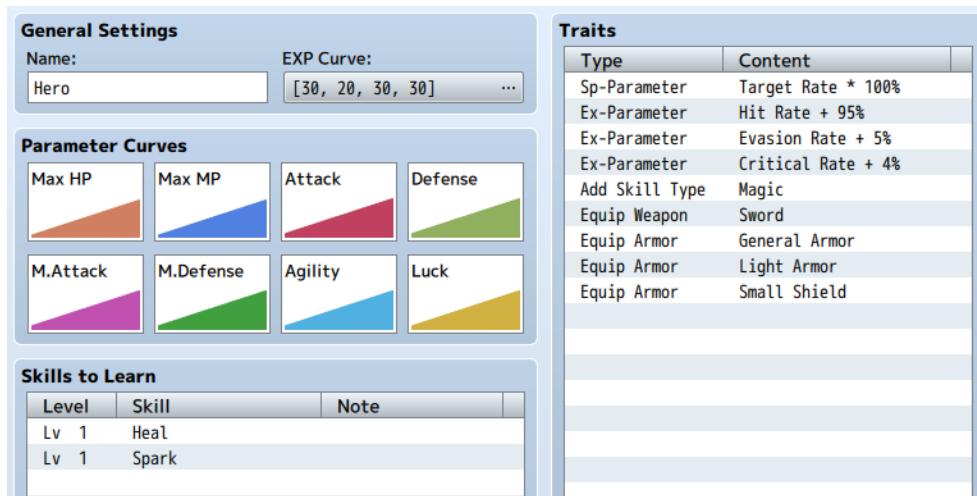


Figure 101. Status curves in RPG Maker VX Ace. Designers may choose a set of predefined curve designs or even create their own to fit the character's level of development.

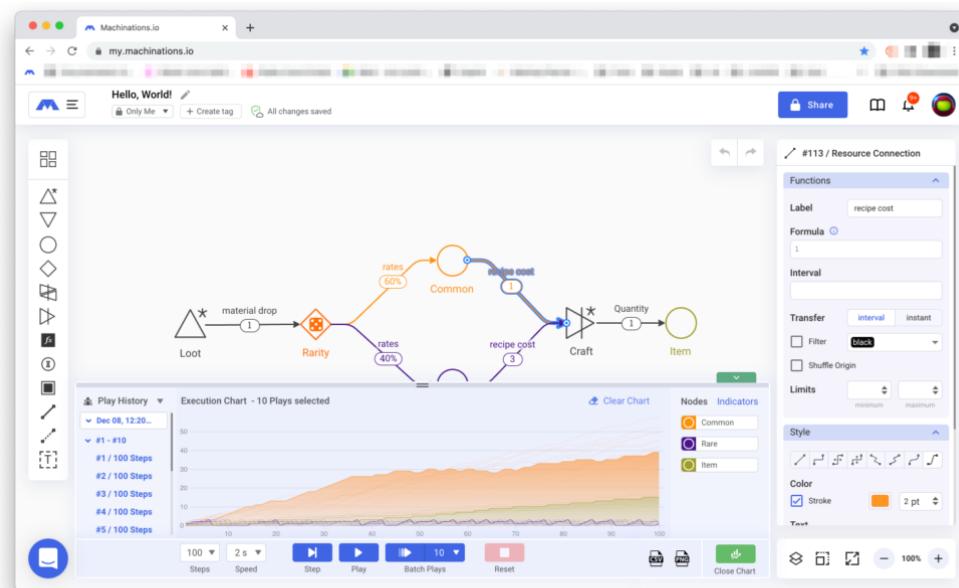


Figure 102. The screenshot of machinations.io shows the mechanism of the looted and crafted item's rarity design. In this newer-commercial version, you can even see the analysis of the resulting simulation.  
(This screenshot is taken from machinations.io)

## 9. Cognitive Load (simple vs complex)

The level of complexity in games can have both positive and negative effects. Some games are criticized for being too complex, while others are praised for their intricate features. To create a successful game, it's important to find the right balance between simplicity and complexity, avoiding poor complexity. Game designers have noted that difficulty and complexity are not the same. By using simple mechanics, a game can still be challenging, and vice versa. There are two types of complexity in games. Innate or built-in complexity occurs when the rules become overly complicated. On the other hand, emergent complexity is the type of complexity that players appreciate.

### 9.2 Sound & Music

Choosing the right music for your game can be challenging as it can impact the workload of your team. In video games, there are generally two types of music: original and licensed. Original music is specifically created for your game, while licensed music involves paying a one-time fee for the rights to use existing music. These licenses are valid for a few years or the entire product's lifespan, and the cost per song can range from \$2,500 to \$30,000 or more. However, with digital game platforms like Steam, developers can now sell the original soundtrack as a companion to the game, increasing revenue.

#### 1. Typical Themes

To start, create a list of your musical needs. Determine the number of levels, environments, chapters, racetracks,

and unique encounters in your game to help with this. Dynamic scoring, inspired by the musical practice of leitmotif, associates a specific musical theme with a certain character or situation. This information can also be found in the game design document. Here are some common themes for dynamic scoring:

- **Mystery:** When the player finds themselves in an unexplored and mysterious location.
- **Warning:** Sinister or threatening music will play when the player is approaching a dangerous area or about to face enemies.
- **Combat:** Exciting music sets the mood during battles. This also includes a chase like in racing games, while chase scenes or fast movements have faster-paced music.
- **Game end:** When the player wins, celebrate your player's achievement with a sound effect that signifies success. But when the player loses, start to play melancholy background music.
- **Footsteps:** Hearing the sound of footsteps will enhance the player's immersion in the game world.

## 2. List of Sound Effect (SFX)

As you develop your characters' and enemies' move sets, make sure to also create a list of accompanying sound effects. Start with organizing the essential sound effects for your primary character.

- **Movement:** To make your character feel more connected to the game world, start by incorporating sounds of walking, running, and splashing through different surfaces such as stone, gravel, metal, and water. It is important to provide audio feedback for actions such as jumping, landing, rolling, and sliding to inform the player that they have successfully executed the motion.
- **Attack:** To make swings and kicks sound more outstanding, adding a “swoosh” sound can enhance their effect.
- **Impact:** In order to enhance the impact of a punch or kick, it's important to deliver a solid “whack!” sound. Furthermore, to indicate that a player has successfully landed a hit on something or someone, weapons, spells and explosions should generate loud and dynamic sounds. Including the vocal hit responses. Record “Oof!”, “Ouch!”, and “Aargh!”, as they could sound comical. It will be better if you also include audio cues like grunting, to show that you're working hard when you push movable blocks or pull obstinate levers.
- **Game End (win & lose):** To indicate success to the player, utilize sound effects for both music and vocals.

## 3. Priorities

Be mindful of playing too many sounds at once. It's important to prioritize sound effects in order to prevent the room from becoming too noisy. Your sound programmer can help you classify sounds into three groups:

- **Local sound effect:** The sound effects should only play when the player is near its source. Examples of these sources could be an enemy growling, the sound of a babbling brook, a ticking clock, a ringing phone, or the hum of machinery.
- **Distant sound effect:** Players can hear certain sounds even when they are far away from the source. These sounds may include the approach of a truck engine, explosions, or the howling of wolves. Those will enhance the player's immersive through the ambience.
- **Priority sound effect:** Priority sound effects are always played no matter where the player is located. These sounds provide important information to the player, such as footsteps, swimming strokes, wing flaps, health loss, treasure or item gathering, core or combo increase, power-up or countdown timer, successful enemy hits, and death. In short, this type of sound will overload the other if needed.

### 9.3 Cutscenes

A cutscene is an animated or live-action segment used to further the narrative, generate spectacle, and offer dialogue, character development, mood, and clues in the game. Although some players would also skip it. However, following the story by watching the cutscene for some narrative nerds is always a pleasure. That is why sometimes the developer makes the cutscene, mostly the important one, which can't be skipped. Making a cutscene can be done in a variety of ways:

#### 1. Animated/ Full Motion Animation

The game's engine transforms an animated cutscene into a video format or video-like (or movie-like) that can be viewed during the title and story scenes. This type of animation creates a seamless transition between actual gameplay and the cutscene. For example, take a look at the game Life is Strange as shown in Figure 103, where the end of the cutscene is the actual gameplay, and the designer tells us that the cutscene is finished by camera rotation to the main character.



Figure 103. The transition from the cutscene (left) to the gameplay (right) on Life is Strange is extraordinarily seamless.

## 2. Prerendered Cutscene

Cutsscenes that are pre-rendered use cinematic cameras and high-resolution copies of the game's character and environment models to create visually striking and dramatic images. These cutscenes often feature enhanced graphics compared to the in-game visuals. This type of cutscene was commonly used in PlayStation 1 games, such as Final Fantasy. However, some players, including myself, may not enjoy pre-rendered cutscenes because they don't always meet our expectations in terms of matching the quality of the gameplay graphics (see Figure 104 and 105).



Figure 104. The comparison of in-game graphics (top) vs pre-rendered (bottom) cutscene in Kingdom Hearts franchise.



Figure 105. The comparison of Final Fantasy VII's Aerith in a cutscene (left) versus the actual game model (right).

(Taken from <https://tvtropes.org/pmwiki/pmwiki.php/Main/PreRenderedGraphic>)

### 3. Full Motion Video

Full-motion video (FMV) is a storytelling method used in video games that involves using pre-recorded video files to depict game action instead of sprites, vectors, or 3D models. While some games use FMVs to display information during cutscenes, full-motion video games (also known as interactive movies) primarily rely on FMVs to present their content. Because of the significant resource demands, producing FMVs typically requires outsourcing to a production company. The FMV implementation in Her Story, shown in Figure 106.

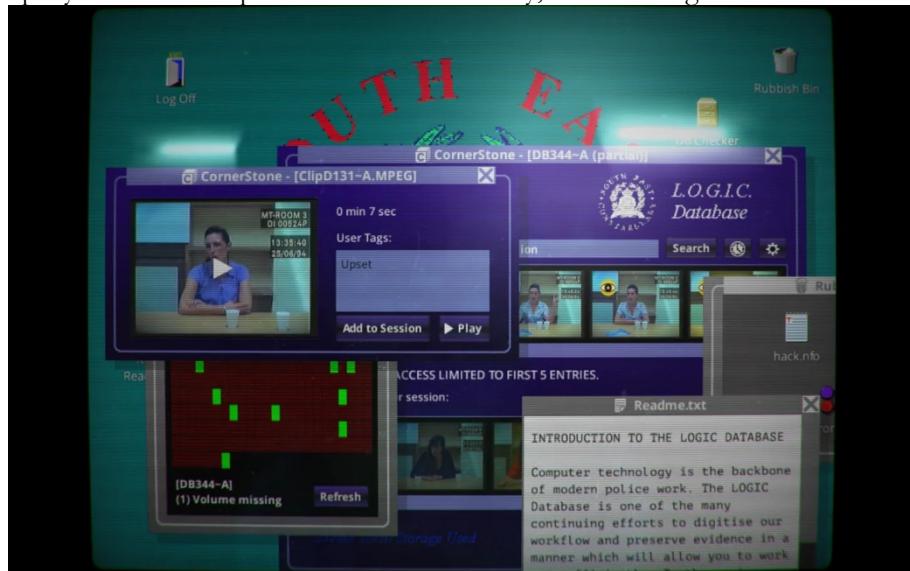


Figure 106. In Her Story, the player utilizes the FMV mechanism to investigate a missing person case. The gameplay involves sifting through a database of fabricated police interviews in order to solve the mystery.

### 4. Puppet Shows & Scripted Events

Cutscenes in video games are created using in-game resources such as characters and environments. These are referred to as puppet shows due to the unnatural movements of the characters in earlier versions, resembling marionettes.

In some games, scripted events are like puppet shows. They use game materials to create animated sequences, but players can only interact with the game during certain parts. This type of event is common in RPG Maker games, where cutscenes are actually scripted events. Take a look at Figure 107 for the scripting event in RPG Maker where we set the player to move and to be followed by companions.



Figure 107. The scripted event in RPG Maker engine.

“When something is important enough,  
you do it even if the odds are not in your favor.”

Elon Musk  
Founder & CEO of Tesla, SpaceX, Neuralink, and OpenAI

## X. GAME DOCUMENTS

In games, documents have two functions: memory and communication. By keeping track of design choices, you can avoid continually fixing the same problems. Documents also enable more efficient teamwork, allowing more people to contribute to the design process and identify any flaws in game design.

### 10.1 Type of Game Documents

There are eight distinct types of documents, each serving a unique purpose and containing specific information. It is important to keep track of and effectively communicate the contents of each document. First, the core document is, of course, a design document; it tells the core idea of your game. The Second is Engineering, which shows the technical aspect of the game design, so it helps the role of the programmer and technical artist. The artist creates an art document then. Fourth, the management team can analyze the timeline, budget, and quality of the game with a management document. As for the fifth and sixth, there is a writing and document for the player. Then, there is pitching and legal-related document to guide your team as a company. The summary of game document is depicted in Figure 108.

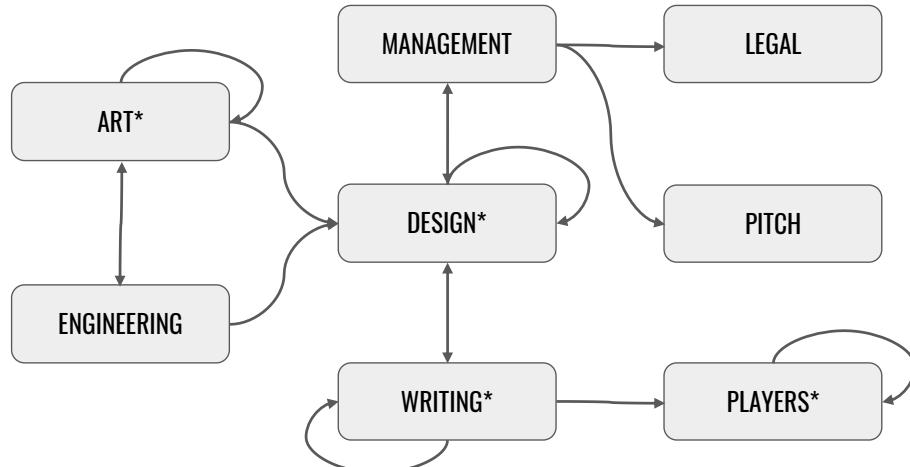


Figure 108. The game document categories.

#### 1. Design

A design document is crucial for a successful game. It acts as a blueprint, outlining the gameplay mechanics, storyline, artwork, and sound design. Without it, your game may not make sense and players may not enjoy it. Spend time creating a comprehensive design document as the foundation for your game.

- **Game Design Overview:** The overview document is usually intended for management to get a clear understanding of the game's core and target audience without delving into specifics. However, the whole team can benefit from it to grasp the game's overall scope.
- **Detailed Design Document (GDD):** This document provides an extensive and detailed overview of the various operational strategies and graphical interfaces employed in the game. The information contained herein aims to provide a comprehensive understanding of the game's mechanics and design, allowing for a more immersive and engaging gaming experience.
- **Story Overview:** Game designers often need a concise summary of the essential narrative aspects, including

locations, characters, and events, for the game's dialogue and narration. This helps create a more immersive and engaging experience for the player.

- **Screen Flow:** Before building the screen flow, create a flow chart first! No need to draw it beautifully. Just draw the state flow. What are the differences between a screen flow and a flow chart? The flow chart is a diagram constructed from rectangle shapes representing events (major events) in a game connected by a line representing the flow. Additionally, a screen flow is an extended or detailed flow chart with information such as the level layout, user interface, and which button will direct players to which scene or screen.

## 2. Engineering

The creation of games heavily relies on Engineering, particularly for programmers and technical artists. This involves the technical aspects of game design, such as developing efficient code, designing intricate game mechanics, and building robust software. Without Engineering, game designers and developers would face difficulties in bringing their ideas to life and creating immersive gaming experiences for players. As such, it is crucial to understand Engineering principles and techniques to ensure that games are well-designed, technically sound, and enjoyable to play.

- **Technical Design Document:** It is essential to create this document to plan the architecture of the necessary systems and begin the coding process. Without a clear explanation, the programming team may have numerous questions for the designer team.
- **Pipeline Overview:** When game art is being created, there are guidelines that the artists must follow to ensure the graphics look appropriate. The engineers usually provide a concise document for the art team, which is preferred to be straightforward.
- **System Limitations:** Designers and artists sometimes lack knowledge about the limitations of the system they are working on, or they may pretend to do so. To address this, engineers create documentation that outlines the specific boundaries that must not be exceeded for certain games.

## 3. Art

The Art Design Document details the visual style that the designer plans for the game. Just as the Game Design Document outlines the game mechanics, the Art Design Document lists all the assets that will be used in the game and communicates the requirements to the artists.

- **Concept Art Overview:** Prior to constructing the game, it is necessary for a significant portion of the team to have an understanding of its visual design through the use of concept art.
- **Art Bible:** When multiple artists work together on a project, it's important to establish guidelines to ensure a consistent look and feel. These guidelines may include character designs, environmental samples, color usage examples, interface layouts, or any other details that help define the visual style of the game.
- **Storyboard:** A storyboard is a tool that outlines the steps needed to implement a story or feature within a game design. It can also be used to propose solutions for gameplay issues. The storyboard includes visual cuts of the game and highlights the actions the player takes to trigger the next frame (Abraham, 2021).

## 4. Management

Creating a game requires a budget document and project schedule to secure funding and outline necessary tasks and due dates. A well-planned schedule considers each team member's workload. A marketing editorial plan helps visualize the overall plan for press or marketing purposes.

- **Game Budgeting:** Usually, the team needs to determine the cost of developing the game before they have a complete understanding of what they are developing. This document is often created early on to assist in securing funding for the project.
- **Project Schedule:** On a well-managed project, this document will undergo frequent changes. However, it is still important to have a plan in place that can be adjusted regularly. A high-quality project schedule should include all necessary tasks, their durations, due dates, and assignees. It should also consider the fact that one person can't handle everything. Usually, a project schedule can be illustrated with Gantt chart, see Figure 109.
- **Marketing Editorial Plan:** An editorial plan is a crucial component in the arsenal of marketing teams and press organizations alike. It allows them to map out their overall strategy in a clear and concise manner, making it easier to execute effectively. This plan can be implemented through a variety of media channels, including both print and digital options, both of which have proven to be highly effective in achieving desired results. By utilizing an editorial plan, these entities can ensure that their efforts are streamlined and focused, leading to increased success in reaching their goals. Figure 110 shows the editorial plan for marketing team.

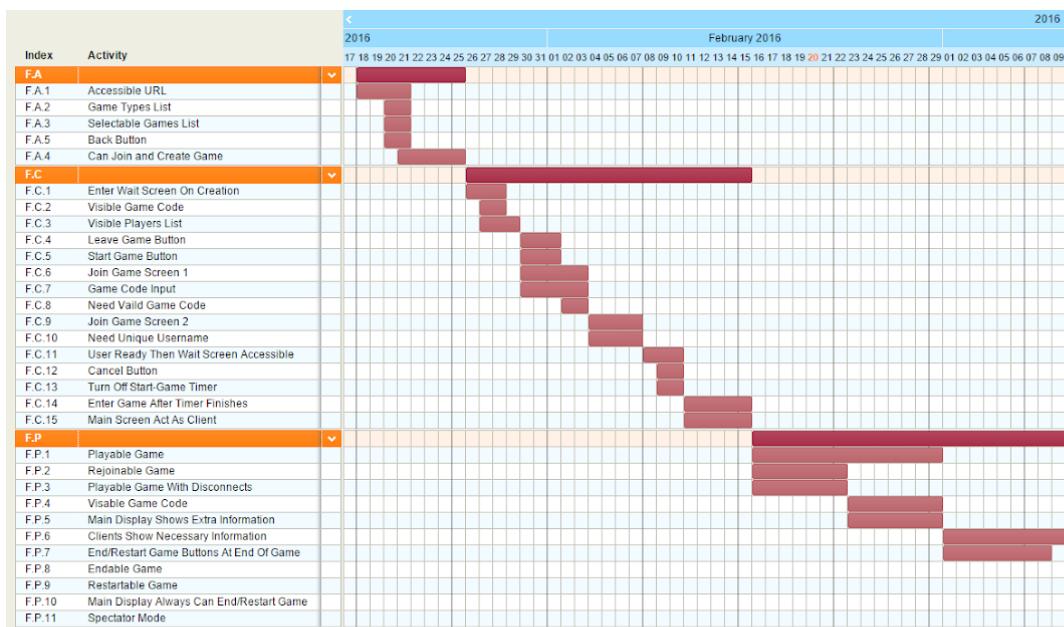


Figure 109. An example of game development's Gantt chart, used by managerial team as a scheduler.

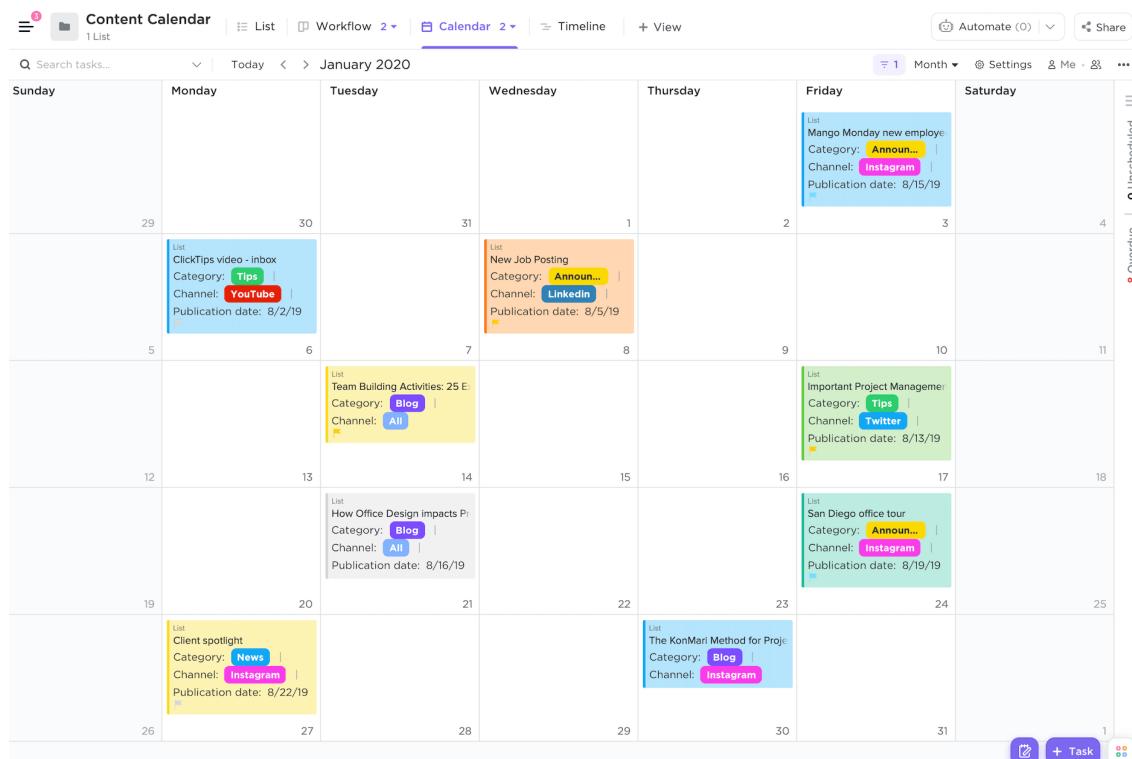


Figure 110. An example of an editorial plan that is typically utilized by the marketing team.

## 5. Writing

Having a story bible is important for creating a cohesive experience in a game. Non-player character dialogue is often written in a screenplay document and tutorials and manuals are provided to help players navigate the game.

- Story Bible:** Having a story bible that outlines the guidelines for what is acceptable and what is not in the story world makes it easier for every team member to contribute their narrative ideas. This strengthens the story world and makes it more cohesive with the gameplay, art, and technology.
- Dialog Scripts:** The conversations that non-player characters have in a game have to come from somewhere. Usually, they are written in a separate document, either as part of the overall design document or on their own.
- Game Tutorial and Manual:** Learning how to play video games can be complex, requiring gamers to use

printed manuals, web pages, and in-game lessons. It is your responsibility to assist your players, to create helpful documents to guide them through the game progression.

## 6. Player

Sharing game-related documents online has become a popular way for players to express their opinions and provide valuable feedback. Previously, printed walkthroughs were common, but now most digital games have a fandom or wiki available online.

- **Game Walkthrough:** When users enjoy a game, they often create their own documents and share them online. By reviewing these materials, you can gain valuable insight into what players appreciate and dislike about the game. You can also identify which game elements are too challenging or too easy. In the past, printed books were used as game walkthroughs, but now most digital games have a fandom, either official or fan-based, on the internet.

## 7. Pitch Document

In addition to the previously mentioned documents, it is important not to overlook the pitch document when presenting to the board committee, investors, decision makers, or any other stakeholders with the power to help your game succeed. The purpose of this document is to persuade them to invest in your game and fund your dream. Typically, a pitch document includes all the necessary information for investors or publishers.

- **Concept:** Present a visually appealing and easily understandable summary of your game for the audience. Highlight its key features and selling points.
- **Issue & solution:** Identify any potential issues that may arise and require attention.
- **Target Markets:** Provide information on the target market, including their age, gender, genre preferences, and any relevant economic factors..
- **Value Proposition:** Investors and publishers typically prioritize one thing above all else: a return on investment. Therefore, it is important to demonstrate that your game is profitable based on sound reasoning.
- **Competitor Analysis:** By analyzing your competitors, you will gain a fresh perspective on your game. Your audience will be able to discern the strengths, weaknesses, opportunities, and threats of your game. This analysis will boost your audience's confidence in your game.
- **Business Model Canvas (BMC):** The Business Model Canvas (BMC) is a concise summary of your business idea that can fit on a single sheet of paper; see Figure 111. It's a useful tool that helps you and your team understand your idea quickly and clearly. The BMC covers important aspects such as the value of your product, your target customers, your relationship with customers, the channels you'll use to deliver your product, your partners, the activities you'll undertake, the resources you'll need, and your cost and revenue structures. While the BMC is designed for general business, it can also be applied to game development, whether you're working on a single game or running a game studio.
- **Timeline:** To gain the trust of your audience, it's important to showcase your roadmap. This should include both quarterly and yearly milestones, as well as your current progress. Additionally, sharing your editorial plan document can further enhance transparency and credibility.
- **Demo:** Remember to showcase your game progress by presenting your demo or prototype. While you can describe your project, demonstrating it to your audience through a game prototype is the most effective way to pique their interest. We suggest prioritizing this step.
- **Development Team:** As a development team member, investors can assess your capabilities based on your previous portfolios and whether you held a structural or functional position. It is necessary to showcase your trustworthy team and their abilities.

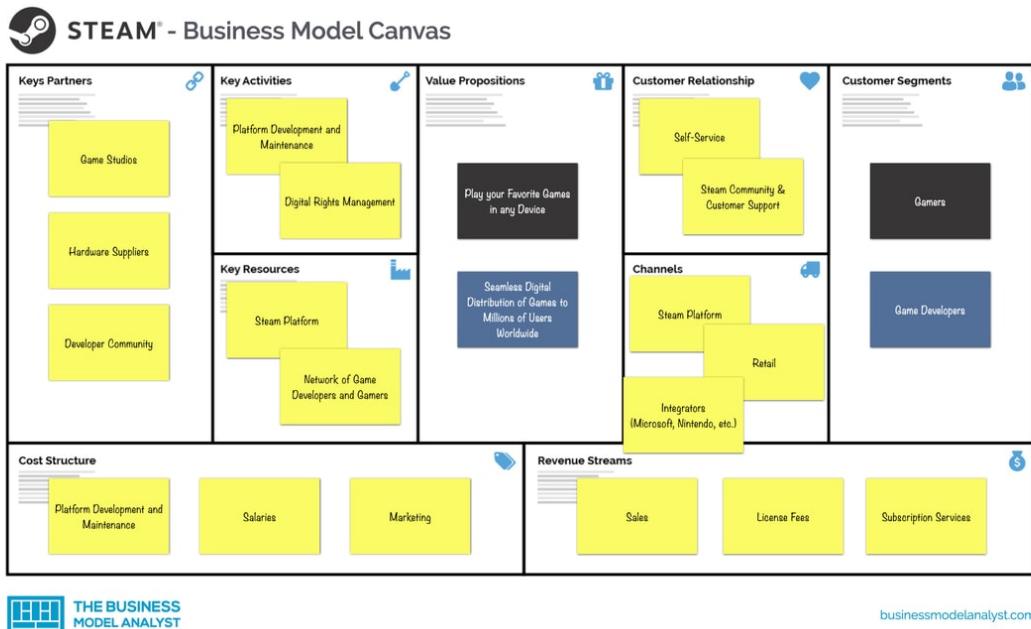
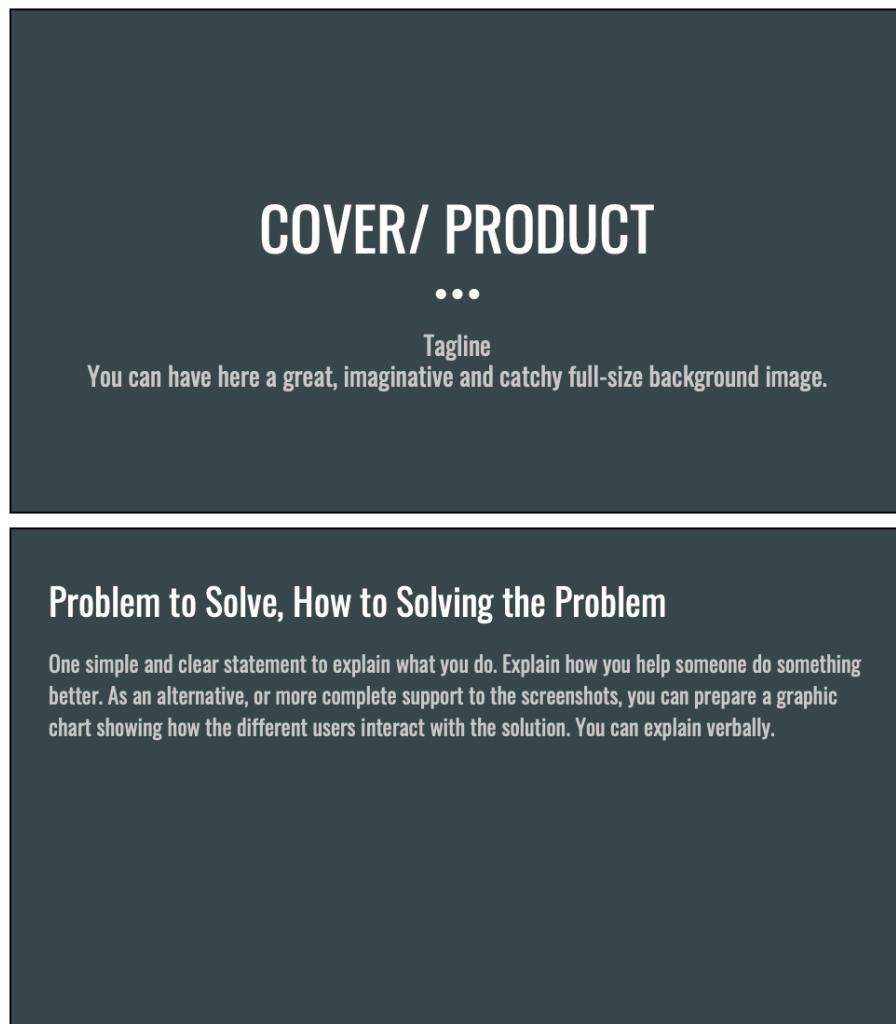


Figure 111. An example of BMC using Steam as a study case.  
(This screenshot is taken from <https://businessmodelanalyst.com/steam-business-model/>)

The general pitch document (or pitch deck) is intended to be used on the business matter, while the game concept pitch is, of course, intended to be pitched to the potential investor or game publisher with a known background in game development or business. See the pitch deck templates (Figure 112) and an example of a high-concept game pitch document (Figure 113) below.



## Demo / Screenshot

Demonstrate the solution in 1 or a few slides: show the actual product or mockup if you have one, and explain how this solves the problem.

## Team

Give only names + previous relevant roles and companies, main relevant qualifications or achievements. Pictures are OK but not mandatory. Important: if your team kicks butts and your names are enough to raise, you can put the team slide first in the deck.

## Market

Use one or two charts, clearly readable. More than 2 charts could make the estimates complex and less credible.

## Business Model

Explain how you intend to generate revenues: product sales, subscriptions, sign up fees, consulting fees, ad fees ... A table format is usually appropriate.

## Competition

Map your team and your competitors on the chart to show how you are different. You can use different colors to show a qualitative attribute, and/or bullet size for a quantitative one.

## Distribution

What are the channels you are planning to use to get to clients? a graphic chart or a table showing different channels and how distribution models differ.

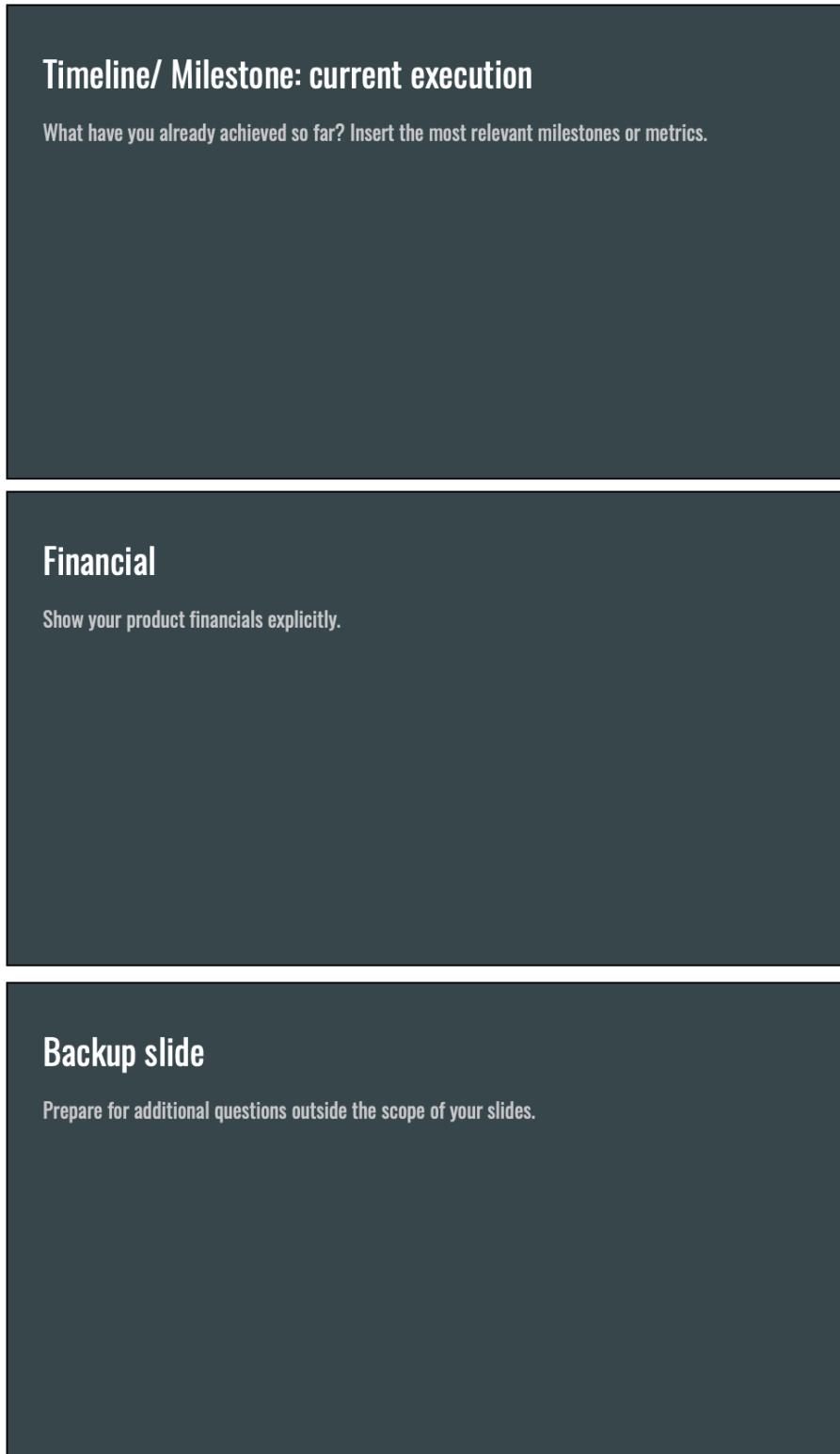


Figure 112. An example of general pitch document template.

# High Concept Pitch Presentation

...

## Slide 1: Cover Page

Start with a compelling image and logo that sums up your game. Put date of presentation on the PowerPoint so the people you present to will remember when the meeting took place. For author credits use the studio's name; remember no one makes a game by themselves. Include contact information: email address and/or phone number.

## Slide 2: Company Profile

Briefly outline who you are, what you've done, and how long you've been doing it for. This is a great place to showcase the covers of any games your studio's created. Obviously you can skip creating this slide if you are presenting to your own peers.

### **Slide 3: Target Specs**

This slide covers the very basics of the game. What kind of game is it? What is it rated? Who is the audience? How long will it take to play?

### **Slide 4: Game Story**

Who is the player? What is the game's story? What's the conflict? Don't forget a beginning, middle, and end, or at least a cliffhanger that gets the reader/audience interested in knowing the ending.

### **Slide 5: Game Goals**

What are the most kick-ass features of your game? Why should the audience/reader care about your game? Aim for five "back of the box" goals.

## Slide 6: Gameplay Summary

This slide should briefly cover the major points of gameplay. What are the basics of play for the game? What is the camera view? How will the play expand/increase in challenge during the course of the game? What environments will the game happen in? What are the “hooks” that make this game unique?

## Slide 7: Gameplay details

Go into some of the more interesting details of the gameplay. The goal is to give the audience/reader an idea of what it is going to be like as they play the game. If any gameplay elements are important enough to the game, go ahead and dedicate a specific slide to them so the audience/reader is clear on how they impact gameplay and what they add to the game experience.

## Slide 8: Download strategy

Most games these days require download support to extend the life of the game beyond release. Outline these plans on this slide.

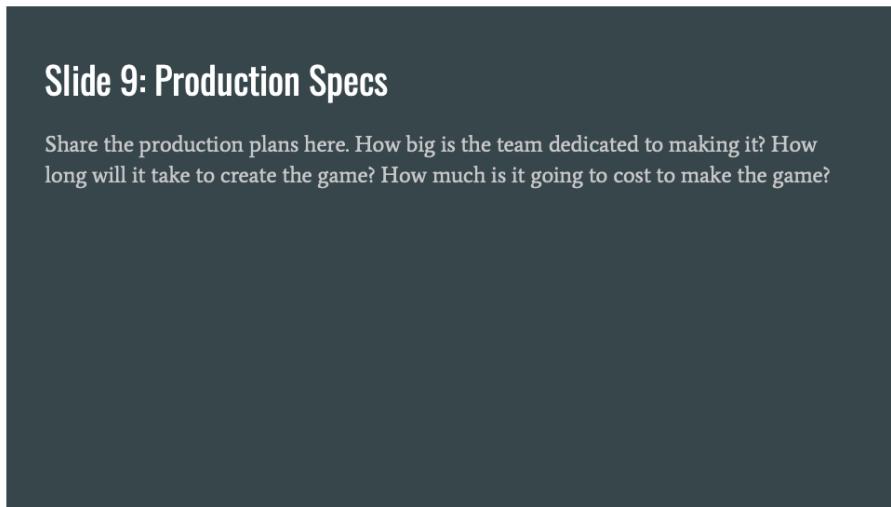


Figure 113. An example of a high concept pitch template.

## 8. Legal

To avoid future infringement, register intellectual property before launching a game. Maintain a good partnership with the publisher and negotiate a mutually beneficial agreement to avoid disagreements. Ask about the publisher's reasoning if a game's rights are being sold. Seek legal advice when licensing a game. Those all are the purposes of legal documents.

- **Intellectual Property (IP) Ownership:** As you prepare for your game launch, it's important to register your game's brand, trademark, and any other intellectual property-related materials. It's impossible to predict when someone may infringe upon your IP, so it's best to take preventative measures rather than having to deal with potential issues later on.
- **Publishing Agreement:** The game publishing agreement has six important points that can help you maintain healthy relationships with your partners (Gordey, 2022).
  - **Negotiation:** To avoid potential disputes in the future, it's important to negotiate and agree on contract terms during the negotiation stage. This can benefit both parties involved.
  - **Rights Assignment:** If a video game's rights are assigned, the game developer no longer owns the game. If you come across an agreement stating that a video game's rights have been assigned or sold, it's best to speak with the publisher about the reasoning behind the sale. While there may be some exceptional cases where it's appropriate, an exclusive license is generally the more common choice.
  - **License:** Before finalizing the agreement, it's important to consider a few key questions and make any necessary changes. These may include: What rights does the publisher have with the game and what are your rights? How can you terminate the agreement if needed? Where will the game be published and sold? Which platforms will it be available on, such as PC, Xbox, Android, iOS, PlayStation, or others? What percentage of royalties can you expect to receive? Lastly, how long will the agreement be in effect?

## 10.2 Writing the Game Design Document (GDD)

Congratulations on learning the basics of game design! It's time to put your knowledge into practice by writing your first GDD. To do this, we recommend following three simple steps. First, create a One-Sheet GDD to outline your game's main features. Next, add more details to your Ten-Page GDD. Finally, complete your design with a comprehensive version of your GDD. Good luck!

### 1. One-Sheet

Your game's one-sheet is a concise summary that should be both engaging and informative. Remember that it will be read by various individuals, such as your team members and the publisher. Figure 114 illustrates the one-sheet document. Be sure to include the following details in your document:

- **Game Title:** Provide the title of your game and feel free to include a slogan if you have one. It does help your players remember a glimpse of what your game is about.
- **Game System:** Provide information on the gameplay system intended for your game.
- **Target Players:** Indicate the age range of your players. Additionally, feel free to provide more specific details about your target players in the accompanying document.

- **Rating:** To ensure that players are aware of the appropriate age range for your game, it's important to assign a legal rating. One example of a rating system is the Entertainment Software Rating Board (ESRB) (ESRB, 2023), which enforces age-based ratings and regulates advertising and online privacy principles for software in the United States and Canada. However, it's worth noting that there are other rating systems in place around the world, such as the Indonesia Game Rating System (IGRS) developed by the government. Here are the different age tiers used by ESRB:
  - **Early Childhood (EC):** The content doesn't contain anything that parents may deem inappropriate. But now, EC is replaced with **Rating Pending (RP)** because not many games use EC rating before.
  - **Everyone (E):** This content may include depictions of fantasy, cartoons, or mild violence, as well as occasional use of mild language.
  - **Everyone 10+ (E10):** This content may include elements of fantasy, cartoons, mild violence, mild language, and suggestive themes.
  - **Teen (T):** This content may include crude humor, bloody scenes, suggestive themes, violence, and infrequent use of strong language.
  - **Mature 17+ (M):** This content may include graphic violence, gore, sexual material, and strong language.
  - **Adults Only 18+ (AO):** Not suitable for people under 18, may contain prolonged scenes of intense violence, graphic sexual content, and nakedness.
- **Game Story & Gameplay Summary:** Provide a brief summary of your game's storyline and primary gameplay features.
- **Game Modes:** In your game, showcase different modes of gameplay. This can increase the variety of player experiences and ultimately result in higher sales.
- **Unique Selling Points (USP):** Highlight the distinctive feature of your game that players will find appealing and sets it apart from others.
- **Competitive Products:** Show the potential of competitors' products. It will help you to find the differentiation from the other game.

## <Game Title> Concept Overview

Change “< >” with your own game.

**Game Platform:** <Game Platform>

**Target Age:** <age to age>

**Rating:** <Rating>

**Game Summary:** <Game Summary; Focus on story>

**Game Outline:** <Game Summary; Focus on gameplay>

### **Unique Selling Points (USP)**

- **gameplay style**
- **game modes**
- **game type**
- **technology innovations**
- **cool features**
- **5-7 points of this bullet**

### **Similar Competitive Products :**

<Choose competitive product that are successful, recent or very well known - preferably all three>

Figure 114. One-sheet document template.

## 2. Ten-page

This ten-page document is a high-level design outline for your game, see Figure 115. It focuses on the fundamental concepts without getting bogged down in specific details. The key is to keep the reader engaged throughout the entire document. To achieve this, the document should be easy to read and formatted using PowerPoint or a similar application.

A ten-page document can be helpful when you're making an early pitch to the production and marketing team. For the production team, include gameplay diagrams and use short, specific sentences with relevant terminology. You can also compare your gameplay to other games, even older ones. For the marketing team, display fascinating conceptual artwork in bullet points and use colorful, illustrative examples. Comparing your game to popular, modern titles can be helpful. The outline of the ten-page document is as follow:

- **Game Title Page:** Selecting the appropriate font for your game's title can effectively communicate its genre without relying on images. This includes:
  - Intended game systems
  - Target age of players
  - Intended ESRB rating
  - Projected ship date
- **Game outline**
  - **Game Story Summary:** To develop your game's story, start with your one-sheet story outline and expand it. Keep in mind that your outline should only be a few paragraphs, but that doesn't mean you can't develop a complete story with a beginning, middle, and end.
  - **Game Flow Summary:** Provide a summary of the different locations the player will encounter during the game and any unique gameplay features that may be present in each location. Please also address how challenges and methods, progression and reward systems, gameplay, puzzles, fights, and victory conditions relate to the story.
- **Characters:** Describe your character's appearance, backstory, personality type, and how they got into their current situation. How do they respond to the challenges of the game? Are there any unique moves, abilities, weapons, or attacks associated with your character, such as Mario's jump and stomp attack or Simon Belmont's whip in Castlevania? Additionally, provide detailed information about any platform-specific features following your gameplay description.
- **Game World:** To give players a better understanding of the game world, display snapshots and descriptions of various locations that are mentioned in the story. Additionally, provide brief descriptions of what players can expect to discover in each location. Be sure to include screenshots to enhance the visual experience. Create a list of all the locations mentioned within the story.
- **Game Experience:** To create a fully immersive game experience, it's important to carefully consider the starting screens, cinematics, music, sound design, and camera angles. These elements should work together to create a cohesive and engaging overall experience for the player.
- **Gameplay Mechanics:** A mechanic refers to the elements of gameplay that players interact with to create or enhance their gaming experience. Some examples of mechanics include moving platforms, opening doors, rope swings, and slippery ice. In a game, hazards are mechanics that pose a threat to the player's safety without any intelligence. Some examples of hazards include electrified platforms, spike pits, swinging guillotine blades, and flame jets. On the other hand, power-ups are items that players can collect to enhance their gameplay, such as ammo, extra lives, invincibility, and other bonuses. Collectibles, on the other hand, are items that players can collect but don't have an immediate impact on gameplay. These can range from coins to puzzle pieces to trophy items. However, if a hazard is equipped with artificial intelligence (AI), it is considered an enemy character.
- **Cutscenes:** Please provide a detailed description of the different methods that will be used to create the graphics for the game. This may include CG, sprite animation, and puppet shows, among others. Additionally, please specify when in the game the player will encounter these graphics, such as during gameplay, in level headers and footers, and any other relevant sections. Lastly, please let us know if there will be any attract mode movies.
- **Bonus Materials:** Let's discuss additional materials or unlockables that would motivate players to replay the game. Can you give examples of what players can unlock? What would be the incentive for players to return to your game? This is the place to talk about multiplayer, downloadable content, episodic content, and more.

**Page 1: Title Page**

<Include a graphic if possible, a title (preferably a logo) and your contact information, target platform, target audience, target rating, and expected shipping date.>

**Page 2: Story and Gameplay**

<Page 2 should include a few short paragraphs about the story (beginning, middle, and ending ... or at least a cliffhanger) mentioning the setting, the characters, and the conflict. Gameplay description should give a brief idea of the flow of the game — break it into stages or bullet points if it's easier to convey info that way.>

**Page 3: Game Flow**

<How does the player grow as the challenges increase? How does this tie into the story? Briefly describe how these systems will work (experience points, money, score, collectibles) and what the player gains as they grow (new abilities, weapons, additional moves, unlockables).>

**Page 4: Character(s) and Controls**

<Who does the player control? What is his/her/its story? What can they do that is unique/special to this game? Can the player do several types of activities? (Driving, shooting, and so on.) Does the player ever change characters? What is the difference in play? Show control mapping highlighting some of the special/unique moves to this product. Include image of SKU's controller for reference.>

**Page 5: Main Gameplay Concepts and**

<Platform Specific Features What kind of play does the player engage in? What genres are they? (Driving, shooting, platform, and so on.) How is the sequence of play broken up? (Levels? Rounds? Story chapters?) If there are multiple minigames, list them out by name and give short descriptions. If there are specific cool gameplay scenarios, list them. USPs from the concept overview should be included and briefly detailed here. Diagrams are good to illustrate game concepts. What game features are unique and capitalize on the platform's hardware? (Hard drive, touch screen, multiple screen, memory card, and so on.) Provide examples.>

**Page 6: Game World**

<Where does the gameplay take place? List the environments the player will visit with short descriptions. How do they tie into the story? What mood is being evoked in each world? How are they connected? (Linear or hub - style navigation?) Include a simple flow diagram of how the player would navigate the world.>

**Page 7: Interface**

<How does the player navigate the shell of the game? What mood is evoked with the interface screens? What music is used? Include a simple flow diagram of how the player will navigate the interface.>

**Page 8: Mechanics and Power-ups**

Gameplay mechanics. What unique mechanics are in the game? How do they relate to the player's actions? How will they be used in the environment? Power-ups. If applicable, what kind of power-ups/collectibles can the player collect? What are the benefits of collecting them? Can they be used to buy items, abilities, and so on?>

**Page 9: Enemies and Bosses**

<Enemies. If applicable, what kind of enemies does the player face? What kind of cool attacks do they have? Describe the enemy AI. What makes them unique? Bosses. If applicable, what kind of boss characters does the player face? What environments do they appear in? How does the player defeat them? What does the player get for defeating them?>

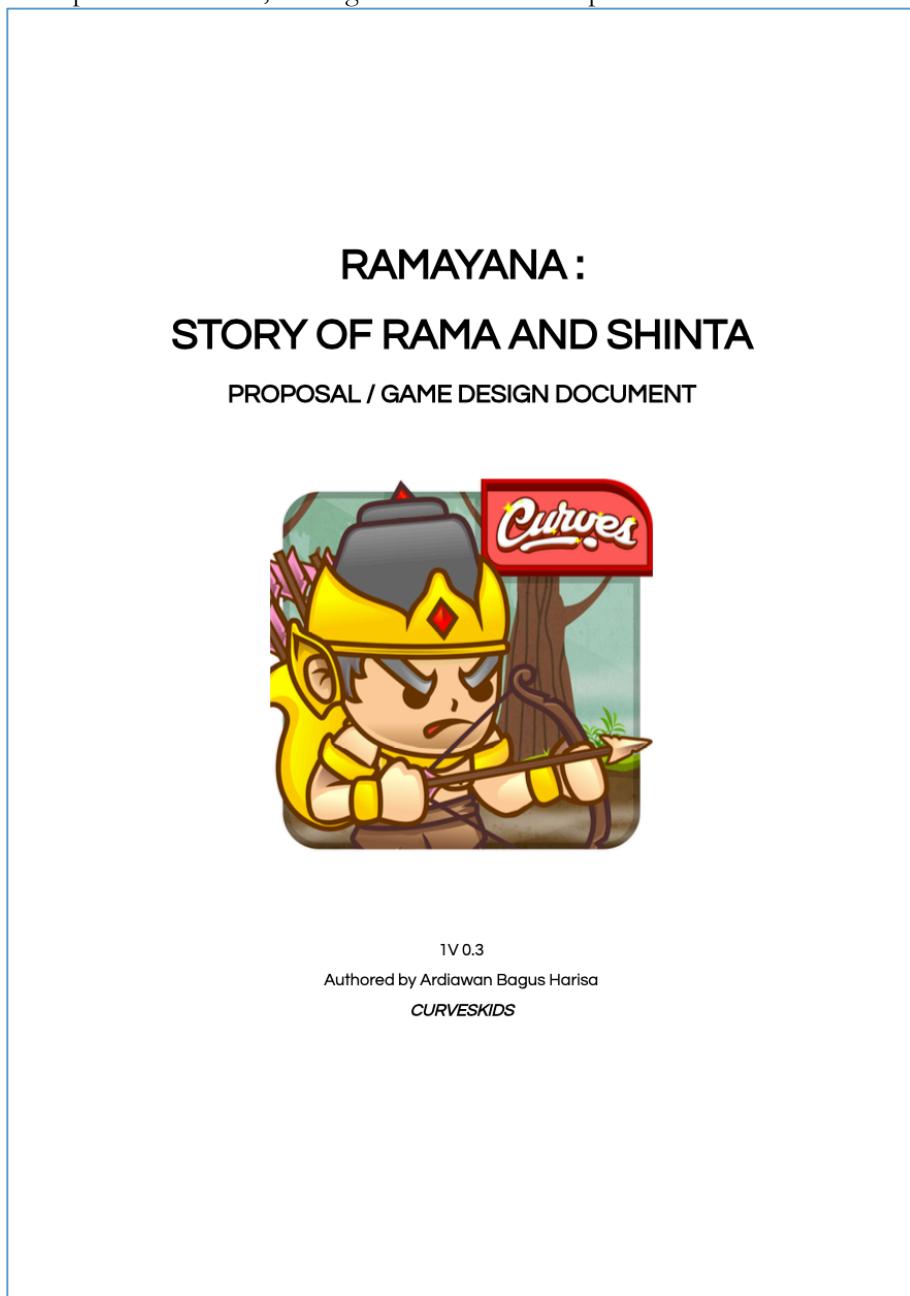
**Page 10: Cutscenes, Bonus Material, and Comps**

How are the cutscenes going to be presented? When do they appear; in between levels? At the beginning and end of the game? What format have they been created in? (CG? Flash? Puppet show?) What material will the player be able to unlock? What incentive is there for the player to play again? What other games will be your competition upon market release?

Figure 115. The summary of a ten-page document.

### 3. GDD (complete)

After you finish your ten-page document, have your team review it, and then you can add more details as time goes on. There are two types of GDDs you can create, and there isn't a set format for making them. However, keep in mind that your GDD should be easy to read and update, and serve as a guide for your development team. Ultimately, there is no strict template for a GDD, but Figure 116 shows a simple GDD as a reference.



## *Index*

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- 0. Index
- 1. Game Design
  - a. Title
  - b. Summary
  - c. Gameplay
- 2. Technical Design
  - a. Game Flow
  - b. Screen
  - c. Mechanics
- 3. Visual Arts
  - a. Style Attributes
  - b. Art Needed
- 4. Sound/Music
  - a. Sound Needed
  - b. Music Needed

RAMASANA

## I. Game Design



### a. Title

- i. Game Title : Ramayana : Story of Rama and Shinta
- ii. Target : 10+, Android
- iii. Team : Curveskids
- iv. Member : Ardiawan Bagus Harisa ([kertaskids@gmail.com](mailto:kertaskids@gmail.com)) as Designer  
Husain Ali ([join.curves@gmail.com](mailto:join.curves@gmail.com)) as Artist

### b. Summary

Get Inspired by the story of Ramayana, where Rama was an incarnation of God Krishna who looking for her wife, Shinta, that kidnapped by evil Rahwana, evil giant from Ngalengka. On his adventure to save Shinta, a white miracle monkey called Anoman come and help him. It's not that easy to save Shinta, Rahwana troops would always hunting for Rama and Anoman. There would be stats and equipment that Rama can upgrades by collecting wisdom point and trade it on the wisdom shop. In order to save Shinta, Rama have to destroy all of the Rahwana troops and defeat the boss, Rahwana.

### c. Objectives

Through this game, we want to pursue the player to do kindness / goodness in the real world. This game will showing us, the player, words of wisdom by collecting certain items. We believe with this way we can achieve what we want to achieve, pursue the players to do goodness. Beside, this game contains traditional and famous-cultural indonesian story, Ramayana. We want to give education outside the textbooks. We believe that the interest of traditional puppets would be increased.

### d. Gameplay

Player control a character (Rama) inside the game world. Ramayana : Story of Rama and Shinta is 2D Action-Platformer game. Player should survive and reach finish point in every stage of game. There would be 8 stages in prototype. At the last stage of game Rama should battling boss. During the adventure, player can collects wisdom point that would be used as trading point to buy equipment such as Armour and Weapon and upgrade character stats i.e Health Point. Every time player collect wisdom point, there would be wisdom words shown on the screen.



In order to make that happened, player can do :

i. Action

1. Moving

Player can do both moving right and left. There are buttons that would be triggers how player can achieve this action.

2. Jumping

In order to pass a gap, player should jump by pressing jump button. Some collectible items are up above the character so player should jump up.

3. Shooting

Player can shoot enemies to get wisdom point and win the stages.

ii. Upgrade

1. Stats

Player can trade out his/her wisdom points to upgrade his/her stats ie. Health Point, Strength, Intelligence, Agility.

2. Equipment

Player can buy armor and weapon. It would increase stats of the character.



## II. Technical Design



### a. Screen Flow



\*design is not finish yet

### b. Screen

\*design is not finish yet

#### i. Splash screen



Showing the logo of the creator of this game.

#### ii. Loading screen



Showing the status / progress of game.

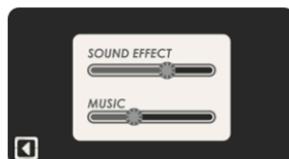


iii. Main Menu screen



This is the main menu of the game. Player press play button to play, or press option button to set the game preference, or press info button to get information about this game. The main title would be animated moving up and down.

iv. Option &amp; Info screen

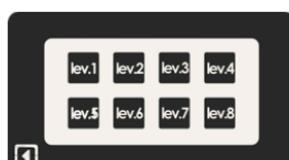


Player can set audio volume option screen.



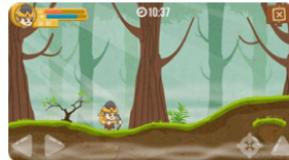
Player get info about how to action on the game here, in this info screen.

v. Level Menu screen



Player have to play and win a previous stage before a next stage unlocked. Some stages have story to entertain and give hints to player to play the game.

vi. Game screen



This is the main screen of the game. There are 4 layered parallax background to increase the aesthetic element. Fogs would bring the player amazing jungle environment.

c. Mechanic

i. Player

1. Move left & right

Player can move the character left or right as which movement button he/she pressed.

2. Jump

Player can jump to pass a terrain gap or to get wisdom point above the character.

3. Stoop

Character can stoop to avoid enemies fire.

4. Shoot

Player can shoot the enemies to get wisdom points and to complete stage.

ii. UI

1. Bounce in / Fade in

Every time screen changed, UI of this game would bouncing into the screen. This is to increase the interest of the players.

2. Bounce out / Fade out

UI will bouncing out as player do an action i.e pressed a button.

3. Shake

UI will shakes as player do an action i.e pressed a button.



Player have to play and win a previous stage before a next stage unlocked. Some stages have story to entertain and give hints to player to play the game.

vi. Game screen



This is the main screen of the game. There are 4 layered parallax background to increase the aesthetic element. Fogs would bring the player amazing jungle environment.

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UI will shakes as player do an action i.e pressed a button.

**RAMASANA**

### III. Visual Arts



#### a. Style attributes

The characters in this game are chibi to fit any ages using vector images.



\*Image above is only a reference.

#### b. Art needed

##### i. Characters

###### 1. Rama



Rama is the main character of this game. Holding a weapon, holy bow.

###### 2. Shinta

\*design is not finish yet

###### 3. Rahwana



Rahwana is the main antagonist character of this game. He was kidnapping Shinta, the wife of Rama.

###### 4. Rahwana Troops

\*design is not finish yet



ii. Environment

1. Theme



Theme of this game is jungle in the Ngalengka Kingdom.

2. Platform



The platform that character can stand up is uneven terrain.

3. Effect

\*design is not finish yet

4. Items



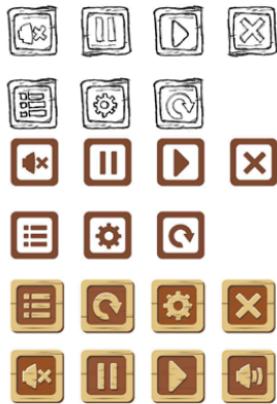
\*Image above is only a reference.

There would be 3 types of items. One is wisdom points, secondly is weapon, last is armor. Player can buy this item with wisdom points.

iii. UI

1. Button





2. HUD & Bar



3. Board



RAMASANGK

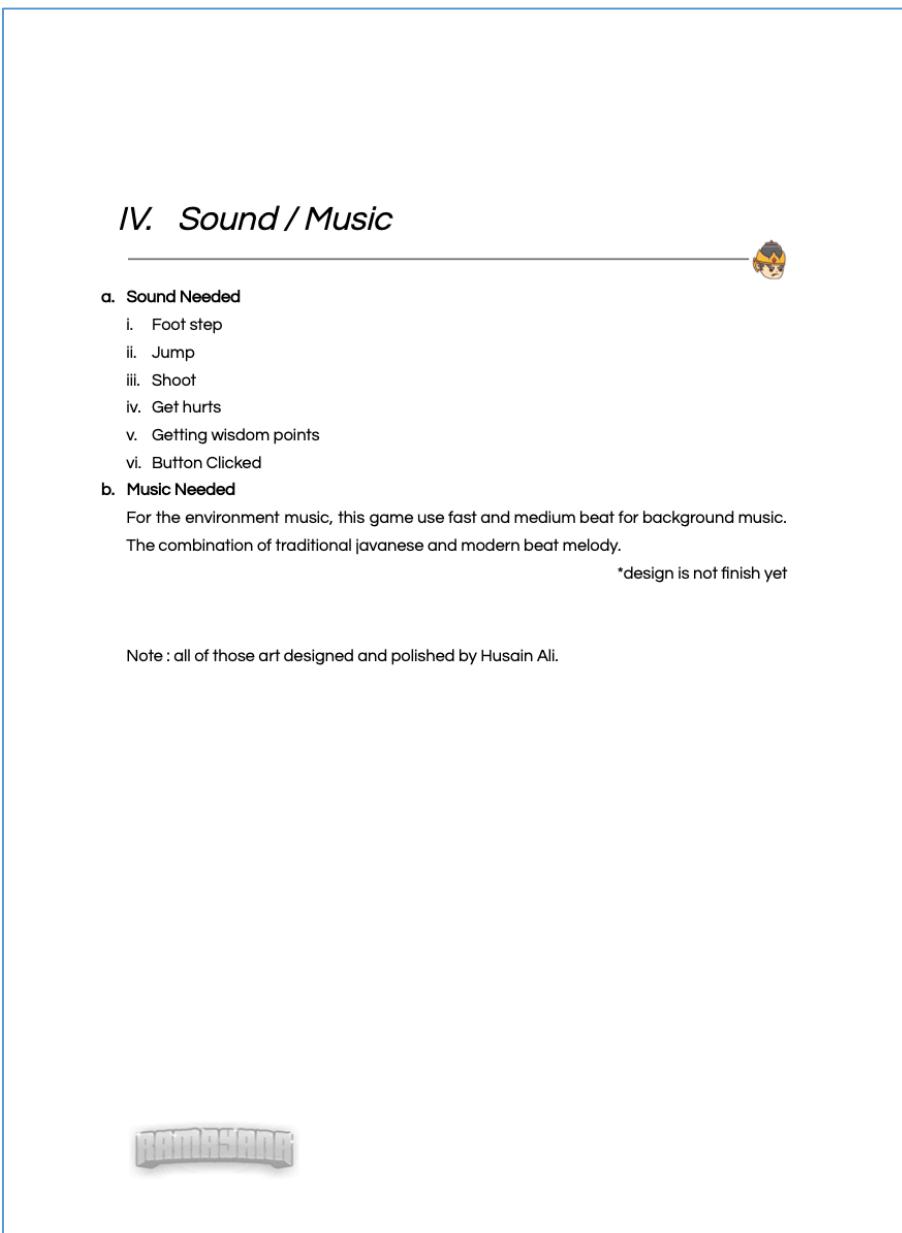


Figure 116. An example of simple GDD from platformer game The Story of Ramayana (Harisa et al., 2016).

“A lot of indie developers who became ‘overnight successes’ were working at it  
for ten years.”

Dan Adelman  
Professor of Operations Management

## XI. PROTOTYPING & PLAYTESTING

Prototyping is undoubtedly one of the most important procedures in game development. Productive prototyping reduces the time and resources necessary. We offer some suggestions for productive prototyping:

### 11.1 Prototyping

When creating a new game, a prototype is important to ensure there is enough evidence that it will be successful before production begins (Polsinelli, 2018). Experienced game designers understand that prototyping involves more than just mechanics, and should also explore story, characters, and world-building. The purpose of a prototype is to allow developers to test mechanics and pitch the game to others for production. However, some people mistakenly believe that a prototype should only focus on one aspect of the game, such as mechanics, which can lead to a lack of depth and ultimately, an unsuccessful game. It's important to remember that a prototype is not the final product, and should not be treated as such. This is equivalent to asking for a prototype of the Space Shuttle. A prototype to make people fly and return to Earth safely, which needs a complicated system.

#### 1. Answer the Key Questions

Always remember to answer the following critical questions before building your prototype to guide its development:

- How many characters are there in a scene?
- Is the core gameplay enjoyable? even for an extended period of time?
- Do our characters and settings fit well aesthetically?
- How long should a level be?
- How many players are there?

#### 2. Forget Quality and Don't Get Attached

When creating a prototype, it's best to avoid making it too beautiful. This can actually increase both the cost and time of development in the long run. If your team discovers any bugs or flaws, you'll have to redo the entire process, which can be a huge headache. Remember that this is just an early prototype, so don't get too attached to its appearance. You can even use simple, hand-drawn assets or primitive shapes to create it. Keep in mind that the final product will have better visuals, as shown in figures 117 through 120.

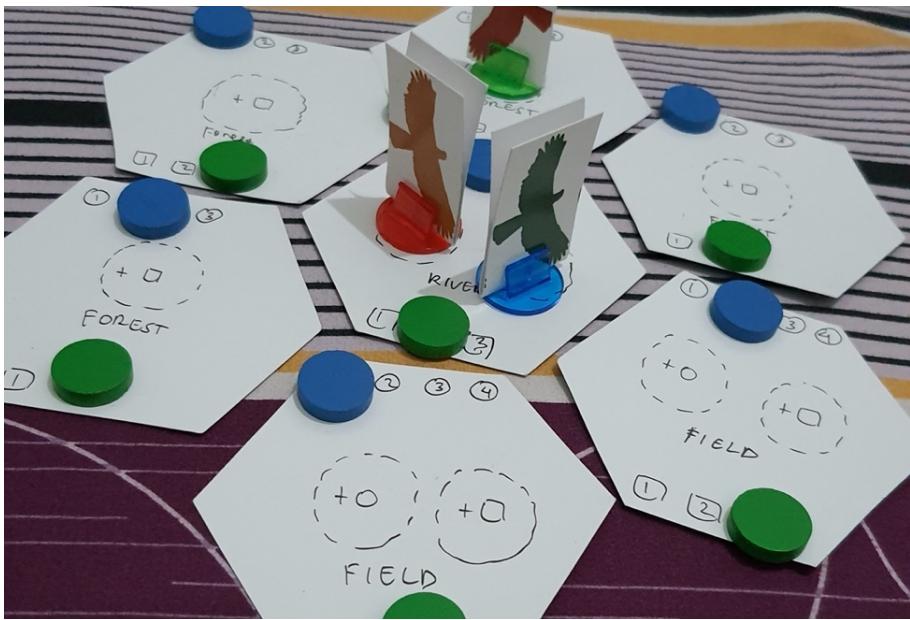


Figure 117. The first prototype of our board game design, Eagle Dance. The players play as Java Hawk-eagle in the wild, trying to survive by doing flight maneuvers. You can see we start with raw visuals.



Figure 118. The middle phase prototype of Eagle Dance. Step by step, the visual art is improved.



Figure 119. The latest prototype version of Eagle Dance. At this stage, all the visuals to be print-ready.



Figure 120. The level design in Uncharted 4 is developed with some basic or primitive shapes (left). The final visual of Uncharted 4 (right).

### 3. Prioritize and Parallelize Prototype Production

To ensure efficient prototyping, it's important to create a prioritized list of tasks. Determine the most frequently used or significant objects in the game and prioritize accordingly. Communication with all team members, such as artists, programmers, and composers, is crucial to avoid delays. Each member should work in parallel to ensure timely completion of the project. It is also important to note that prototypes for digital games don't necessarily have to be digital themselves. Even when creating a board game, it can be helpful to create a digital prototype before making the physical version.

### 4. Pick A Fast Loop (Engine)

We recommend using simple tools for your game as there may be frequent changes during the prototyping phase. It's also okay to experiment with different game engines in the initial stages. The main goal is to select the fastest tool or engine that will help you create your prototype efficiently. For instance, we use Tabletopia to simulate board games (Figure 121). This has saved us a significant amount of money compared to creating an early board game prototype, and doesn't need to be installed on our computer.



Figure 121. Digital version of our game in Tabletopia, Eagle Dance.

## 11.2 Playtesting

In order to ensure a successful and effective product, it is crucial to conduct playtesting after each prototype version. This process enables the identification and resolution of any potential issues that may have been overlooked or avoided during the development phase. By carrying out playtesting, developers are reminded to tackle any problems that may have been previously neglected, allowing for a more thorough and comprehensive product.

### 1. Group Testing

Group testing involves interviewing potential players about their preferences and interests to assess their level of interest in a game idea being considered by a company.

### 2. Quality Assurance (QA) Testing

Please note that this testing is solely focused on identifying bugs and not on evaluating the game's entertainment value. Please answer the following questions on a ten-page document:

- What is the initial visual presented to the player upon starting the game?
- What emotions or moods does your game aim to evoke?
- How is sound and music employed to convey the game's atmosphere?
- Please provide a basic flow chart diagram demonstrating how the player can navigate through the game's interface.

### **3. Usability Testing**

One of the most important aspects of a successful gaming experience is the ease of use and user-friendly systems. However, these factors alone can't guarantee a great gaming experience. It is essential to conduct thorough usability testing to ensure that the interface and systems are intuitive and efficient. By doing so, developers can identify potential issues and make necessary adjustments to optimize the overall gaming experience for users. This approach maximizes the potential for a positive and enjoyable gaming experience for all users. Personally, testing in digital games is quicker than in board games. Because many things can be automated using scripts. For instance, I use a genetic algorithm to produce level, including its game objects and their positions, by simply setting up the intended pacing curve the game designer wants (Harisa & Tai, 2022). Unfortunately, you almost can't automate the testing in board games. However, there are some simulators or tools to help you "try" to play the game even before printing it (see Figure 121).

### **4. Rulebook/ Manual Book Testing**

When developing board games, we conduct extra testing to ensure that the rulebook is easy to understand. This enables us to assess the quality of the information and layout provided to players. Testing the rulebook is a simple process. We provide multiple versions of the rulebook and ask players to follow the instructions. This allows us to compare their actions with the designer's intentions and evaluate the accuracy of the rulebook. Although the rulebook testing journal is created for board game, the concept can also be implemented to validate the digital game tutorial. Figure 122 shows the rulebook testing journal template.

Rulebook testing journal															
<b>General information</b>		Date : ...	<b>Configuration</b>												
Game Designer : ...		Time : ...	Label : ...												
Game title : ...		Duration : ...	Cp score : ...												
Game version : ...			Notes : ...												
<b>Playtesters</b> <table border="1"> <thead> <tr> <th>No</th> <th>Name</th> <th>Age &amp; Gender</th> <th>Occupation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Arby</td> <td>24, Male</td> <td>...</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				No	Name	Age & Gender	Occupation	1	Arby	24, Male	...				
No	Name	Age & Gender	Occupation												
1	Arby	24, Male	...												
<b>List of actions to perform</b> <table border="1"> <thead> <tr> <th>No</th> <th>Action</th> <th>Status (performed?)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>...</td> <td>✓</td> </tr> <tr> <td>2</td> <td>...</td> <td>X</td> </tr> <tr> <td align="right" colspan="2">Total</td> <td></td> </tr> </tbody> </table>				No	Action	Status (performed?)	1	...	✓	2	...	X	Total		
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No	Name	Feedback													
1	...	...													

Figure 122. An example of a rulebook testing journal to help designers. We use this framework to create our serious game, Eagle Dance (Harisa et al., 2022), as shown in Figure 117 to 119, and 121.

As board game designers, we often conduct self-playtesting where we test our own games, usually alone. However, in Taiwan, the Taiwan Boardgame Design (TBD) hosts monthly playtesting sessions where designers try out each other's games and give feedback. It's important to ask playtesters for their criticisms so that you can make improvements quickly. Don't be afraid of playtesting - it's a great chance to enhance your game. To help you gather useful feedback, here are some questions you can ask.

- **Why?** When planning a playtest, it's important to prepare specific questions for playtesters to answer. Simply asking if the game is enjoyable is not enough. To determine the who, where, what, and how, you must first establish the "why" behind the playtest. Creating a list of questions to be answered is a great starting point.
- **Who?** Before conducting a playtest, determine its purpose and identify the stakeholders to test. These stakeholders may include developers, friends, expert gamers, and novice gamers.
- **Where?** Choosing the right location for playtesting is crucial to gather valuable feedback from players. You have various options to consider, such as conducting the test in-studio, a playtesting lab, a public venue, the playtester's home, or through the internet (using the demo version).
- **What?** As you plan your test, ensure that you have a means to obtain answers to all the questions on your list. If there are aspects of your game that don't pertain to these inquiries, you might want to develop a special version of the game that omits these segments to save time.
- **How?** To gather feedback, utilize techniques such as surveys, ratings, interviews, web analytics, and so on.

“Seeking knowledge is obligatory upon everyone who submits.”

Muhammad via Sunan Ibn Majah

The Last Prophet in Islam

## EPILOGUE: GAME OVER

Well done! You have finished reading the Game Startup Survival Manual: Game Design. You now possess the necessary knowledge, skills, and attitude to produce exceptional games that captivate and amuse gamers. You have also gained insight into the basics of game design, covering topics such as game mechanics, player experience, and prototyping. Your game development journey is just starting. The game industry constantly changes, and new technologies, platforms, and players emerge daily. To stay ahead of the game, it's essential to continue learning, experimenting, and iterating. As we come to the end of this epilogue, we would like to offer some final thoughts and advice for your game startup journey:

- **Stay curious:** The game development is full of creativity and excitement, but it also requires a continuous desire to learn, explore, and experiment. To stay current, keep up with the latest trends, technologies, and games, and always be curious and inspired to ask questions.
- **Embrace feedback:** When designing a game, it's important to understand that the process is collaborative and requires input from players, peers, and mentors. Embrace criticism and suggestions to improve both your game and your skills. Continuously iterate and refine your game until it reaches its full potential.
- **Build community:** Just creating games is not enough for game development. It's equally important to establish a devoted and interactive community of gamers, supporters, and enthusiasts. Allocate resources towards social media, marketing, and community-building endeavors, while developing a compelling and unique brand that captivates your intended audience.
- **Have fun:** Developing a game can be difficult and tense, but it can also be satisfying and meaningful. It's important to enjoy the process, acknowledge your achievements, and gain insight from your setbacks. Stay strong, face challenges head-on, and have confidence in your abilities and goals.

We believe that this book has motivated and given you the confidence to begin your journey in starting a game company that will be both thrilling and prosperous (well, maybe). But always remember that game development is not just work or a source of income but also a passion and a vocation. Therefore, keep playing, keep inventing, and keep pushing the boundaries. We look forward to seeing you in the gaming industry!

“We are a way for the universe to know itself.”

Carl Sagan  
Astronomer

**Congratulations! You win.**



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