



Creating game addiction with Game Feel

Implementation of Game Feel on a virtual slot machine inside of Governor of Poker 3.

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Preface

Author

Mert Atakan Kaya, a 4th and final year student Game Development at the Amsterdam University of Applied Sciences with a major in Advanced Game Design and a minor in Design Across Cultures: Emotions in Design at the Kyushu University in Fukuoka, Japan. Main skills consist of the following; Android Development, Virtual Reality, Augmented Reality, Unity, Web Development and Music Composing.

Task description

The client OrangeGames would like to implement a virtual slot machine mini-game in their already successful multi-platform multiplayer game Governor of Poker 3. This mini-game shall be accessible during the poker rounds, moving in from the side to give players something to do while waiting on their turn.

Objective Client

The objective OrangeGames wants to accomplish is to provide players a new way to gamble with their account balance in such a way that it becomes addicting to them.

Problem analysis.

In the past OrangeGames has made a slot machine game called "Poker Slots", which due to certain design choices was really unsuccessful, as almost no players returned to play it. That is why they don't want to make the same mistakes while implementing the slot machine mini-game in their most successful game with more than ten thousands of active players. Not only because it might end up in a failed feature, but also because of the risk of losing their current player base.

Goal of this research

This research provides an insight to an extend in which is visible what has gone wrong when designing their previous game "Poker Slots" with the help of researching the relationship between Game Feel and Addiction. This to further support the development process of the slot machine mini-game in Governor of Poker 3.

Main and sub-questions

"How can OrangeGames, using Game Feel, make a virtual slot machine addicting?"

Sub-question 1 – What is Game Feel for slot machines?

Sub-question 2 – How does addiction in games get stimulated?

Sub-question 3 – What is the relation between adapting Game Feel and stimulating addiction?

Approach

Background Information

First of I will explain the necessary information needed to follow the rest of my research,

- To get a full understanding of Game Feel by reading the one and only book about it written by Steve Swink and then writing down the essential things.
- To research about slot machine's by reading and watching information about them and by playing slot machine games myself, to get a full understanding of what components a slot machines consist of and get an understanding of what questions I need to ask OrangeGames for the requirements of their desired slot machine.

What is Game Feel for slot machines?

The approach I am planning to take to answer this sub-question is,

- To analyse multiple slot machine games including "Poker Slots", to help me explaining the Game Feel elements that slot machines consists of.
- Doing a field research on two groups of people that qualify for the type of players who would play a slot machine in Governor of Poker 3, to get their opinion on the impact of Game Feel.

How does addiction in games get stimulated?

The approach I am planning to take to answer this sub-question is,

- First finding a workable definition for addiction, that I can use to define game addiction.
- Try to find out the psychological cause of game addiction and connect this to gambling addiction.
- To do an ethical research on stimulating addiction.

What is the relation between adapting Game Feel and stimulating addiction?

The approach I am planning to take to answer this sub-question is,

- To go through the Game Feel elements and making connections with the knowledge gained by the previous sub-question about stimulating addiction.
- To try and create an addicting slot machine that OrangeGames expects from me.

Personal appeal to this research

For me personally to want to research slot machine addiction, and create an addictive slot machine myself was quite a hard choice as my life has been greatly affected by slot machine addiction. As my own father was and still is a slot machine addict, he not only ruined his own life, but also that of our whole family. Being forced to leave us when I was in my early teenage years, with even now the side effects of his addiction still present. I personally do believe that this research could lead me into the answers that I have been wanting to know all these years. Finally understanding what makes a slot machine addicting, using this knowledge in a game elements form to help OrangeGames achieve success, and relieve me of my fear of becoming a gambling addict myself.

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Summary

OrangeGames wants to create a slot machine mini game in their most popular game Governor of Poker 3 (GOP3). In the past however OrangeGames has made a slot machine game called "Poker Slots", which due to certain design choices was really unsuccessful, as almost no players returned to play it. That is why they don't want to make the same mistakes while implementing the slot machine feature in GOP3.

That is why my goal with this research is to answer the question of how OrangeGames should create a slot machine feature in their game GOP3, so that it is addicting to the players to keep coming back and play it. This leads me into the main question of this research: "How can OrangeGames, using Game Feel, make a virtual slot machine addicting?"

To answer this question I first build a fundament by using fundamental research to gain a basic understanding of Game Feel and slot machines as background information, after which I divide my main question into sub-questions beginning with the following: "What is Game Feel for slot machines?" Where I find out that slot machines are full with nothing but Game Feel and with the use of comparative research I make connections between Game Feel elements and slot machine components. To further use these connections in a survey, in which I rank the Game Feel elements based on their impact on the desired target group. In my second sub-question: "How does addiction in games get stimulated?" I find out that another way to put the term "addiction" is "irresistibly engaging". Doing this I find out that creating engagement to an irresistible level in games, results into players getting in something called "Flow". This term is in gambling called "the zone", and it basically is where optimal engagement lies, this zone is what the gamers truly are after and they want it for as long as possible. Then for my final sub-question: "What is the relation between adapting Game Feel and stimulating addiction?" I start to get my hands dirty with applied research by combining both my research on Game Feel with slot machines and my research on stimulating addiction while creating the product that OrangeGames expects of me.

Then finally coming to the conclusion that by adapting Game Feel a game will become more engaging, and by having this engagement at the right level for it to stay in Flow, and thereby having the players stay in the zone, the game can stimulate addiction.

1. Introduction

On my intake meeting at OrangeGames I was made clear that during this internship I was about to work together in a team of people that are working on a game called Governor of Poker 3. My first task within this team would be to create a 'slot machine' component for the game Governor of Poker 3 which players can use during their rounds of Poker to get a chance to maybe multiply their win amounts; while keeping into account that a slot machine like this should be attractive enough for the players that they can get addicted to it.

Even if I am going to work in Unity with NGUI while creating this slot machine, it does not have any direct connection to this research, except that it will be my toolset to implement my gained knowledge and like that achieve the task that was given to me.

This research is answering the question of how OrangeGames should create a slot machine feature in their game Governor of Poker 3, so that it is addicting. As in the past however OrangeGames has made a slot machine game that was really unsuccessful, where almost no players returned to play it. That is why they want me to research for them how to not make the same mistakes while implementing the slot machine feature in their most successful game.

This research consist of 3 parts, the first is providing background information about Game Feel and slot machines in general. The second part is getting deeper into my background information and connecting them, while finding new information about addiction in games and how to stimulate it. Then the final part is connecting everything that I had previously connected together with my new findings about addiction, to come to a conclusion for my research question.

2. Context

This section will provide information around and about my graduation research. Starting from my graduation internship company who I am doing this research for, a description of my graduation task as specified in my internship agreement and an analyses of the problem I would like to solve with my research, leading into my main research question. Followed by an explanation of why I chose to divide my main question into the sub-questions that I have decided on. Finishing it off with my agreement with the company.

2.1 Company



2.1a - OrangeGames logo. Retrieved from: dutchgameawards.nl

OrangeGames is a game development, publishing, distributing and advertising company with offices in Amsterdam, Berlin, Tel Aviv and Istanbul. The office that I did my internship at was the one in Amsterdam, which is the main office. Here there are a 200 employees consisting of game developers, artist, marketing people, back-end developers, QA testers, etc. Of which all working on different game projects varying from mobile games to games on pc, or even just web games.

Examples of successful products of OrangeGames are;

- YoudaGAMES, a portal where players can experience all kinds of games within their browsers on their PC or mobile phones. The same goes for FunnyGames.nl and Spele.nl
- Game Distribution, which offers a free service for developers and publishers to help them monetize and distribute their games.
- Governor of Poker 3, which is Governor of Poker 2 but then multiplayer! Governor of Poker 3 is a multi-platform multiplayer Texas Hold'em poker game with a lot of extra's like cash games, tournaments, Heads Up, Push or Fold, and Royal Poker. A lot of new features keep getting added to this game like a Piggy Bank which saves up a part of your lost credits so you can break it open to regain it, funny hats with animals on them animating while you are playing poker, teams you can join to chat with others or just play some poker together.

2.2 Task description

The way my graduation task was accepted by the graduation commission of my school, is by the following description:

“The task is to work together in a team and create a ‘slot machine’ component for the game Governor of Poker 3 which players can use during their rounds of Poker to get a chance to maybe double their win amounts; while keeping into account that a slot machine like this should be attractive enough for the players that they can get addicted to it. Which is why I would like to focus my research on ‘Creating game addiction with the help of Game Feel’.”

As I was writing this description, I still had no experience with slot machines nor poker, but as the component had to be able to create addiction and how the company gave me all the freedom to choose a research subject that I like, I came to the conclusion that I wanted to focus my research on creating addiction. As that was still a critical skill that we would need while creating or polishing this slot machine component.

2.3 Problem analyses

As already mentioned in the section above, OrangeGames wants to create a slot machine mini game. In the past however OrangeGames has made a slot machine game called "Poker Slots", which due to certain design choices was really unsuccessful, as almost no players returned to play it. That is why they don't want to make the same mistakes while implementing the slot machine mini-game in their most successful game with more than ten thousands of active players. Not only because it might end up in a failed feature, but also because of the risk of losing their current player base.

Thus leading into the main question: “How can OrangeGames, using Game Feel, make a virtual slot machine addicting?”

From my own experience and talks I've heard of other game developers, there is 1 thing that sums up the whole explanation of why a game is feeling fun to play, Game Feel. That is exactly the reason why I have chosen to explore the power that Game Feel could have, while experimenting it on a product with the intent to solve the problem of OrangeGames.

2.4 Sub-questions

The previously mentioned main question then divided into the following sub-questions;

What is Game Feel for slot machines?

As in the background information I plan on explaining about Game Feel and slot machines in general, focussing this sub-question on the Game Feel of slot machines. Making the required connections between the Game Feel elements and the components of a slot machine, creating surveys to ask

fellow game developers their opinion on when a certain component is more fun. Using their feedback as field research data to find out what game feel elements have the most impact on a game's fun.

How does addiction in games get stimulated?

Making a connection between stimulating addiction with a focus on gambling and games. I want to find out what the causes or requirements are for someone to be addicted.

What is the relation between adapting Game Feel and stimulating addiction?

Knowing the requirements for stimulating addiction I can aim to try and meet them with the help of Game Feel. Combining both my research on Game Feel with slot machines with my research on stimulating addiction. Making connections and coming to new conclusions while creating the product that OrangeGames expects of me.

2.5 Agreement

As I signed a contract to be an intern at OrangeGames the only special points that I should hold into account were,

1. I am not allowed to share any direct code that is implemented inside the Governor of Poker 3 project with people outside of the project.
2. I am not allowed to talk about the company's secrets or private information with people outside of the company.
3. I am not allowed to share the news about the slot machine feature that is being implemented with the public, until it gets officially launched.

As I am focusing my research more on a theoretical side, with when implementations are being made I only need the feedback of it and not the technical side, I should be fine with not going against my agreement.

3. Methods and responsibilities

In this chapter I want to explain my methods and responsibilities on how I am going to realise the graduation task that I have been given.

3.1 Research methods

3.1.1 Fundamental research

“Fundamental research, also known as basic research or pure research does not usually generate findings that have immediate applications in a practical level. Fundamental research is driven by curiosity and the desire to expand knowledge in specific research area. This type of research makes a specific contribution to the academic body of knowledge in the research area.” (John Dudovskiy, 2018)

First of not knowing for sure if there are any connections with addiction and Game Feel at all, I will be doing fundamental research on gambling addiction in general and how it works. This to broaden my knowledge of psychology outside of game design, without being certain if I can make any practical use of that knowledge. Except for this I will also need to build a fundament on basics of Game Feel and slot machines, which I will implement in my background information.

3.1.2 Comparative research

“Comparative research, simply put, is the act of comparing two or more things with a view to discovering something about one or all of the things being compared. This technique often utilizes multiple disciplines in one study. When it comes to method, the majority agreement is that there is no methodology peculiar to comparative research. The multidisciplinary approach is good for the flexibility it offers, yet comparative programs do have a case to answer against the call that their research lacks a ‘seamless whole’.” (Wikipedia, 2018)

As my graduation task is to make a slot machine that is not a failure as the previous Poker Slots game, I do need to compare this example with successful slot machines. Because this research method is flexible when applying, I do believe it will support me the best in finding differences and then decide which of these are points to improve on or rather should be ignored. Another subject I will be researching with the comparative research method is the impact of Game Feel on slot machines from two different points of views. By holding surveys I hope to gather information about what the Game Feel elements in a slot machine context mean to two selected groups of people, and compare my findings

3.1.3 Applied research

“Applied research “aims at finding a solution for an immediate problem facing a society, or an industrial/business organisation, whereas fundamental research is mainly concerned with generalisations and with the formulation of a theory”. Applied research is considered to be non-systematic inquiry and it is usually launched by a company, agency or an individual in order to address

a specific problem.” (John Dudovskiy, 2018)

In my graduation task I have a practical goal that needs to be achieved. This means that I have to also do research in a way that I can make my hands dirty with it. After doing research on Game Feel and addiction, I will aim to solve the problem that OrangeGames is having with trying to make their new slot machine more addicting with the use of Game Feel elements. The only way to find out if an acquired theory is practical or not is by just trying it out.

3.2 Version control

To work together on the same project OrangeGames uses git, with their Governor of Poker 3 repository hosted on BitBucket. For a gitClient you are advised to use SmartGit in case of any issues happening, that everyone else in the company could help you out. As this was not a requirement however, I chose to stick with GitExtensions, a program I have been using for almost 4 years now.

For every release there is a dedicated branch within the origin/release/ (release number), and if the branch is used to experiment a new feature it needs its own branch within origin/feature/ (feature name). Every feature will first get merged into the main branch origin/develop, after which this branch will be branched into a new release branch which after a lot of testing and fixes gets merged into the Master branch origin/master. For me personally I was working inside the “origin/feature/slot machine” and “develop” branches. In case I wanted to experiment with fixing certain things like layering issues within the game, that would go through branches like “origin/layering” issues or something like that.

3.3 Scrum

For realizing the graduation task, we worked with the Scrum method. Every time starting off with a Sprint planning to decide what can be delivered in the upcoming Sprint and till what degree we want to achieve that. Setting a Sprint goal we have an objective to strive for, with the Product backlog providing us guidance.

At OrangeGames the Governor of Poker 3 team usually has Sprints of 3 weeks. But as we are a new team of 2 interns and a new back-end developer, the Sprints end up with an extra 1 week of waterfall. Where the developers who aren't done with their tasks can finish things up, and the others who are done can work ahead on the next Sprint. Every day we hold a daily stand-up, telling what we worked on the previous workday, any issues we have, and what we plan on working on that day. During the sprint we would put the tasks on the backlog from “To do” to “Doing” if we are working on that task, when done with the task we put it on “Testing”, and when we have tested it ourselves on multiple devices and or have others test it to a degree where we personally feel it is really working as is intended by the task, we are allowed to take the responsibility upon ourselves to put the task on “Done”. Ending the Sprint of with a Sprint review to see if we have achieved our Sprint goal. Followed by a Sprint retrospective to discuss what went well in the development process as a team, what could be improved and what we will commit to improve in the next Sprint.

3.4 Software



3.4a - Unity Logo. Retrieved from: [wikimedia.org](https://commons.wikimedia.org/wiki/File:Unity_Logo.png)

As the game Governor of Poker was built in the Unity game engine, so was I also required to join the project within Unity.

"Unity is a cross-platform game engine developed by Unity Technologies, which is primarily used to develop both three-dimensional and two-dimensional video games and simulations for computers, consoles, and mobile devices." (Wikipedia, 2018)

The project I worked on was a two-dimensional game, so I didn't have much to worry about with the third axis, but rather with layering. For that however OrangeGames used the NGUI plugin.



3.4b - NGUI Logo. Retrieved from: [forum.unity.com](https://forum.unity.com/threads/ngui-next-generation-user-interface.111111/)

As Unity's own UI system is quite lacking, the Governor of Poker team at OrangeGames chose to use a plug-in for Unity called NGUI which stands for Next Generation User Interface.

"NGUI is a powerful UI system and event notification framework for Unity written in C# that closely follows the KISS principle (Keep it simple, stupid!). It features clean code and simple, minimalistic approach to everything. Many behaviour classes are kept under 200 lines of code. For a programmer this means a much easier time when it comes to working with the kit – from extending its functionality to tweaking the existing one. For everyone else this means better performance, less frustration, and more fun." (tasharen.com, 2011)

As the name already says, this plug-in is to create the UI of the game. That is anything intractable or visual (images, buttons, text, etc.).



3.4c - Android Studio Logo. Retrieved from: [steptoinstall.com](https://www.steptoinstall.com/android-studio/)

"Android Studio is the official integrated development environment (IDE) for Google's Android operating system." (Wikipedia, 2018)

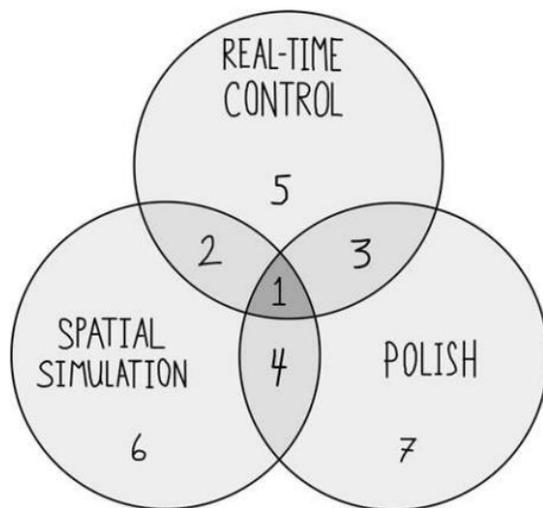
I did have to make game builds regularly to test my changes on the game's mobile functionality as well. Usually this would be possible right through Unity, but as this game had a lot of external dependencies, I had to use a custom builder inside Unity to get an Android Studio project, which I then would use to create the builds for Android Devices inside Android Studio itself.

4. Background information

4.1 Game Feel

4.1.1 Game Feel definition.

There is no standard definition of Game Feel. We only know that good Game Feel will make a game “feel better”, thus making players enjoy the game more. To achieve this goal, we can divide Game Feel into 3 main building blocks: real-time control, simulated space and polish.



4.1a –Figure 4.1 from the book *Game Feel: Types of Game Feel*.

4.1.1.1 Real time control

This is the starting point of the definition of Game Feel. It is a specific form of interactivity as Steve Swinks likes to call it. One that includes at least two participants. In the case of a game, that is the system the game is run on and the person who is playing the game. The process goes as follows:

- The user has some intent, which is expressed to the computer in the form of the user’s input.
- The computer reconciles this input with its own internal model and outputs the results.
- The user then perceives the changes, thinks about how they compare to the original intent, and formulates a new action, which is expressed to the computer through another input.

This process is happening almost instantly and repeats on constantly as long as the player is playing the game.

4.1.1.2 Simulating space

To be able to get feedback on your actions however the player would need reference material inside the game to compare with.

“Imagine a ball suspended in a field of blank whiteness. How would you be able to tell if it were moving? Without the backdrop of space to move through, there can be no motion. More importantly, there can be no physical interaction between objects. For the sense of interacting physically with the game world, there needs to be some kind of simulated space.” (Steve Swink, 2008)

Level design is a valuable skill needed for simulating such a space, everything needs a reason to be there in the game, may it be objects that interact with the player directly, or anything that rather indirectly give a meaning to the motion of the player.

4.1.1.1 Polish

“Polish refers to any effect that artificially enhances interaction without changing the underlying simulation.” (Steve Swink, 2008)

In comparison with simulating space, polish doesn’t directly give impacting feedback on your actions, but rather does it in an illusionary way.

“Polish effects add appeal and emphasize the physical nature of interactions, helping designers sell those objects to the player as real.” (Steve Swink, 2008)

So if you were to remove all the polish in a game, everything would still function completely the same. However the experience would be, as Steve Swinks puts it, “less perceptually convincing and therefore less appealing”. That makes the “polish” building block despite its low importance to the game’s overall functionality, one of the most important and yet hard to implement element of Game Feel.

“Assembling these three elements—real-time control, simulated space and polish—into a single experience, we arrive at a basic, workable definition of Game Feel:

Real-time control of virtual objects in a simulated space, with interactions emphasized by polish.”
(Steve Swink, 2008)

4.1.2 Game Feel experiences

Game feel is a sum of experiences blended together, all presenting themselves simultaneous or a single one at a time. These five experiences of Game Feel tell us a lot of things about the way players experience Game Feel and the ways game designers apply Game Feel. According to Steve Swink the most common experiences of Game Feel are the following;

4.1.2.1 The aesthetic sensation of control

This is the experience that makes you lean left and right in your chair during a racing game, just because you as a player think you can control the car even further to that direction, while in reality the game is controlling you. The feeling when you see something on the screen responding to the buttons that you press. This is the experience of Game Feel as an aesthetic sensation of control.

To perceive this experience, you have to see it in action. As you control objects and they move around,

feedback flows back through them to your eyes, ears and fingers.

4.1.2.2 The pleasure of learning, practicing and mastering a skill

This is the experience that makes you notice how every time you play the game, you keep getting better and better at it. Just like how at first in a platformer game a jump was simply pressing the jump button, but the more you play and get to understand that the length of time you hold onto the jump button the higher your jump gets. Getting used to dealing with enemies, gaps in the floor and other obstacles. This is the experience of Game Feel as a skill.

To perceive this experience, action is required. *“We don’t usually think of it this way, but perception is in some ways just a set of skills, honed across one’s lifetime”* (Steve Swink, 2008). Meaning this experience can just be perceived by trying to perceive it, and getting better at perceiving it.

4.1.2.3 Extension of the senses

This is the experience where your intuition gets a grasp on the mechanics of the game. If you are playing a large clumsy character in a game, you sense the heaviness and understand the possibilities of the character as if it is just an extension of your own body. This is the experience of Game Feel as an extension of the senses.

To perceive this experience, your mental model needs to be on sync with the actual technical way that the game works. If you for example know that in a shooter game there is actually also a hitbox in-between the legs of the characters, you will for sure shoot there as well. Or knowing that in the game, looking over a shelter won’t expose your head to the other players, you will never have any need to stop looking.

4.1.2.4 Extension of identity

This experience goes a step further on the previous one, where extension of identity is where objects in the game like the character you are controlling become one with yourself. Steve Swink mentions a really good example on this, where he was driving a car and hit a pole. In this situation rather than thinking “Oh, darn the car in which I’m sitting has come in contact with a concrete pole”, his thoughts were “Oh, crabapple, I hit a pole!” Another example is where in a game your character dies, and unconsciously you say “I died!”

To perceive this experience, you need to have immersion. If a game world’s stimuli gets substituted for those normally created by interacting with the real world, your brain will accept it. However what your brain won’t accept are inconsistencies. If an enemy his arms go through a wall, your brain will think “Hey, that’s not right!” as Steve Swink says. Your brain can just not ignore these small details, as they would never happen in the real world.

4.1.2.5 Interaction with a unique physical reality within the game

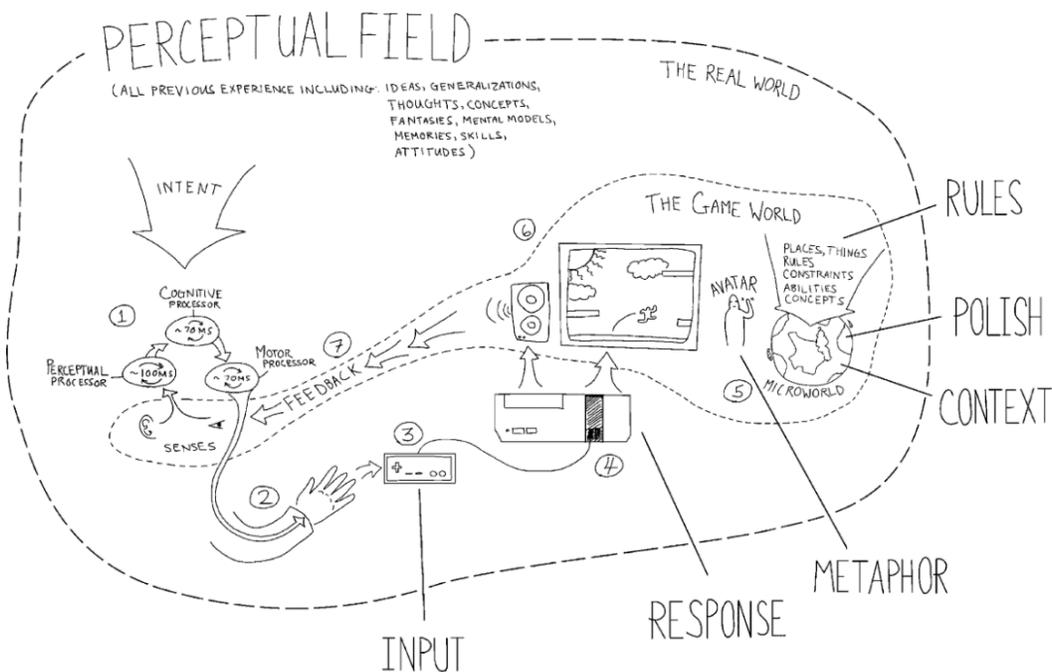
This is the experience where you get a feeling for the exceptions inside the game world that go against your expectations. As normally something in a game which is big is expected to be heavy, and something small is expected to be lightweight. There could be exceptions where this is not the case.

When for example you see your character struggling to pick up an object with the size of an apple. This kind of experience also happens in real life when someone would give you an apple sized piece of lead. This is the experience of Game Feel as a unique physical reality.

To perceive this experience, you need a combination of skill and a mental model. Getting used to objects in the game will come with practise. However for special cases that do not co-respond with the mental model of the real world, one could only explore it with the virtual bodily space of the character.

4.1.3 Game Feel ingredients

“As an approach, creating an experimental garden or playground in which to test a developing mechanic and Game Feel is an arresting notion. The trick is not to allow the problems of Game Feel to become intertwined with the problems of the design as a whole. Here is one possible way to separate the pieces of Game Feel to make them a bit more manageable:



4.1b - Figure 3.1 from the book Game Feel: The model of interactivity.

Input -- How the player can express their intent to the system.

Response -- How the system processes, modifies, and responds to player input in real time.

Context -- How constraints give spatial meaning to motion.

Polish -- The interactive impression of physicality created by the harmony of animation, sounds, and effects with input-driven motion.

Metaphor -- The ingredient that lends emotional meaning to motion and provides familiarity to mitigate learning frustration.

Rules -- Application and tweaking of arbitrary variables that give additional challenge and higher-level meaning to motion and control.” (Steve Swink, 2007)

4.1.2.1 Input

The ingredient “input” is about how the player can express his/her intentions to the system. It is the only way for the player to talk to the game, and actually get a response. Things like buttons, sticks, triggers, a touchscreen, a gyroscope, etc. all make input possible for the player. With input in Game Feel you want it to feel intuitive to the player, so that (almost) no explanation is needed to interact with the game. An interaction with the game should also not have any inconvenient movements that are illogical. As an example; even a game like Dance Dance Revolution might seem impossible for new players when they see 2 arrows at the same time coming down, but experienced players will know that you have to just jump to get both feet timed right. Furthermore the sensitivity of the input is really important, with some games you would be alright with smooth controls, while with other games the input has to be on point.

In other words from Steve Swink: “The physical construction of the device through which player intent is expressed to the system and how this changes Game Feel”

4.1.2.2 Response

The ingredient “response” is how the system processes, adjusts or reacts on each of the inputs of the player. This is where the wishes of the player get fulfilled. If there is any friction on the movement of the character in-game, this should be communicated back in a way that the player can feel it. If the player moves its analogue stick only by a slight bit to start sneaking, it would not be a desired response that the character in game starts running. It is the relationship between the inputs that the player sends, and the game’s parameters that respond to that input.

In other words from Steve Swink: “How the system processes, modulates and responds to player input in real time.”

4.1.2.3 Context

The ingredient “context” is how the environment, boundaries, and objects give a meaning to the characteristics of your actions. For example if your character has 3 different kind of jumps based on the kind of input you give as a player, a short jump, a long jump and a high jump. These different kinds of jumps have no meaning or reason to exist if there is nothing to interact with. The short jump you would need to maybe jump on enemies’ head, the long jump to get over a gap in the level, and the high jump to maybe get over a wall. But with no enemy, gap, nor a wall, there is no need for the player to have all these jumps. Context exists to emphasize the game mechanics, by giving the game space its own unique physics, extents and constraints.

In other words from Steve Swink: “The effect of simulated space on Game Feel. How collision code and level design give meaning to real-time control.”

4.1.2.4 Polish

When it comes to the ingredient “polish”, it is a combination of animation, sounds and effects that create an interactive impression of physical elements and their properties. Polish is a layer to a game that is nonessential. When you remove polish from a game, it still functions just the way it should not effecting the input nor the response of the game. Because the list of physical elements and properties

of an object is really long, we only want to focus on the ones that can be easily perceived by visual, aural or tactile observation. According to Steve Swink these would be the following 5 sub categories;

Animation:

“The end goal for a polish effect is the same in every case—to convey some sense of the physical properties of an object (weight or mass or whatever) by offering clues when objects interact and move.” (Steve Swink, 2008). So when it comes to animation polish, it uses the principles of animation to sell the physical interaction between objects. This way the player’s perception of the physical nature of the animating objects directly changes. As an object inside the game is spongy and box shaped, then it should animate like something spongy, being able to dent, squash and even stretch a little bit. Also not be able to roll as easy as a ball, but rather tumble or shove around when moving. So by animating differently the object changes the player’s perception of what it appears to be.

Visual Effects:

According to Steve Swink visual effects are quite similar from animations except in 2 fundamental ways. The first one being that visual effects are temporary, appearing only for short times to indicate interaction with or between objects. And the second one is, that the cause of visual effects is by other objects and not the object itself. It only gets created to emphasize the interaction of that object with other objects. When for example two swords clash and create a spark, that spark and its trail aren’t part of either of those swords. Another point when it comes to visual effects is that they don’t have to look good on their own as an image, but rather look good in motion. So even a very unrealistic cartoony spark could emphasize the power of the impact that the swords collide with, as long as the motion manages to create the right impression to the player.

Sound:

The element sound works the same as visual effects, but instead of seeing this kind of polish the player hears it. A certain interaction could have a single sound or a combination of sounds to emphasize the properties of the objects in the interaction. But it is also possible to have a whole range of sounds only for a single interaction of which 1 from the list is (randomly) chosen each time. This is to prevent a certain sound that the player will hear a lot of times like footsteps to becoming annoying or distracting. Steve Swink mentions that sound effects are less bound than visual effects in some way, because satisfying sounds can be conveyed with a noise much different from the apparent reality of the object.

Cinematic Effects:

These are effects which are not applied to the in-game objects, but rather to the camera through which the player sees the game. Examples of these are things like screen shake, changes in view angle, motion blur and stains on the screen like blood, water, dust or frost. The camera is the main organ for the player his or her visual perception of the game, which makes it a great chance for developers to apply their filmmaking or photography skills on it.

Tactile:

Tactile effects are not always possible, as they are a form of feedback that is given to the input device. A mouse or a keyboard might not have any capability to perform any tactile effects yet, but a controllers of most consoles and mobile phones do have a rumble function. When in a game there is a great explosion, having the controller in the hands of the player vibrate to it, adds a lot to the experience. Or pressing a button on a touchscreen and getting haptic feedback, can make it up for the

fact that it is not a physical button.

Even if polish is practically “unessential to a game”, it is still one of the most important elements of Game Feel. As it provides the visual, aural and tactile clues of virtual objects, it has a huge impact on Game Feel. Polish is what attracts the player to the game, the eye candy that can make a player like a game without even playing it himself/herself.

In other words from Steve Swink: “Effects that artificially enhance impression of a unique physical reality in the game.”

4.1.2.5 Metaphor

Metaphor is the Game Feel ingredient that consists of elements that give an emotional value to interactions corresponding on the expected values of the player, to prevent frustration. Metaphor is what objects appear to be, what each object is representing to the player at a conceptual level, and how the player expects the objects to act. Some elements sometimes rather have to be completely unrealistic, because that has become the standard in video games that players would expect. If done well a game’s metaphor can correspond perfectly to the ingredients “response”, “polish” and “context”. Steve Swink says that the ingredient metaphor has two aspects that make it a whole.

Representation: *“the idea of the thing, or what it appears to be.”*

Treatment: *“the cohesive whole formed by visual art, visual effects, sound effects, tactile effects and music.”*

In other words from Steve Swink: “How the game’s representation and treatment change player expectations about the behaviour, movement and interactions of game objects.”

4.1.2.6 Rules

The ingredient “rules” is what makes a game a game. The game developers decide these themselves, which means there is no “right way” of doing it. Steve Swink mentions the following random set of rules in his book about Game Feel;

- Collect 100 coins to get a star.
- Collect 5 stars to open a door.
- Orange triangles upgrade weapons.
- Defeating Woodman gets you the Leaf Shield.
- You can only hold two weapons at once.
- It costs 5 hearts to throw Holy Water.
- To score a capture, your team’s flag must be in your base.
- It takes 3 hits to kill a Skelerang.
- Experience points required to level up increase exponentially.

He does this to show that all these rules make no sense outside of the context of game they were made up for. However if you would connect them to their context again, they would hold all the power of the game. The effect that rules have as an ingredient of Game Feel however, is that they can alter Game Feel in a measurable way. For example if in a platformer game a rule didn’t exist to collect all the coins before you can actually finish the level, all the players would go straight ahead to the finish

without exploring the level and its many interactions. The amount of coins one needs can be changed, and so will the amount of interactions change, which then alters the Game Feel.

Rules however come in three levels.

High-Level: *“consist of broad sets of goals that focus the player on a particular subset of motions, such as collecting coins. High-level rules can also take the form of health and damage systems.”*

Medium-Level: *“are rules for specific objects in the game world that give immediate meaning to an action, such as capturing the flag in a capture-the-flag multiplayer game.”*

Low-Level: *“further define the physical properties of individual objects, such as how much damage it takes an avatar to destroy an enemy”*

In other words from Steve Swink the ingredient rules is: “How arbitrary relationships between abstracted variables in the game change player perception of game objects, define challenges and modify sensations of control.”

4.2 Slot machines

Before even talking about how to implement Game Feel on slot machines to stimulate the addiction to them, we first need to know what a slot machine is functionally without going into its origins or bonus games.



4.2a – Picture of a Bally model 1090.
Retrieved from: icollector.com



4.2b – 3D Render of a Golden Guardians Class II video slot machine. Retrieved from: casinojournal.com

4.2.1 Name and looks

“A slot machine, known variously as a fruit machine, puggy, the slots, poker machine/pokies, or simply slot, is a casino gambling machine with three or more reels which spin when a button is pushed. Slot machines are also known as one-armed bandits because they were originally operated by one lever on the side of the machine as distinct from a button on the front panel and because of their ability to leave the player impoverished or in debt and because bandit can be a synonym for “thief” in modern usage.” (Wikipedia, 2018)

Looking at this definition we can verify that a slot machine is a machine made for gambling purposes as it is a “casino gambling machine”. They come in all kinds of designs with picture 4.2a being more like a slot machine you would see in a bar or saloon, while 4.2b is a revolutionary type slot machine with video effects and usually no real mechanical parts spinning.

4.2.2 Reels



4.2c – Picture of 3 real reels ready for replacement.
Retrieved from: <https://youtu.be/RhBr8ksrliE>



4.2d – Picture of a video slot machine and it's 5 reels.
Retrieved from: <https://youtu.be/pWOMJ4ANVKI>

The reels are the main component of a slot machine. They are the mechanical parts that do the actual spinning. The amount of reels can differ from slot machine to slot machine, with a usual minimum of 3 reels. Nowadays with most digital (video) slot machines and virtual slot machine games, these reels are no longer mechanical parts but just a simulation.

4.2.3 Symbols

The previously mentioned reels can't lead their purpose without actually having symbols on them. These symbols are almost different on every slot machine, with some of them using the same classic symbols like lucky 7's, gold bars, clovers, bells, diamonds, lemons and cherries. Each of these symbols having a different value, depending on the frequency it appears in on the reels.

4.2.4 Payouts

Payouts are the symbol combinations that deliver a win. For example 3 times a 7 in a sequence is a payout. Slot machines usually have a pay table, where the players can see all the possible payouts for that specific machine. The lesser the chance for a certain combination, the higher your payout, thus giving you more money. Payouts can differ from sizes, with the most basic one being 3 of the same symbol in a row. However they are allowed to be shorter or longer, and even in some cases the symbols don't have to be the same one.

4.2.5 Paylines



4.2e – A single payline supported by a red line in the game Couch Potato - A Classic Slot Machine
Retrieved from: vegasslotsonline.com



4.2f – 20 different paylines supported by numbers and colors in the game Reel King Slots.
Retrieved from: vegasslots.co.uk

These are the lines where payouts can occur. A classic old 3 reel slot machine which shows only 1 row of symbols, only has 1 horizontal payline. When it comes to more advanced slot machines these can however become as much as 50 or even a 100. The more paylines you have, the higher the chance is to actually get a payout. However something that is not always clear is that your bet gets divided over all the paylines or in rare cases multiplied by the amount of paylines. This means if you have a total bet of a 100 euros with 5 paylines, each payout only gets calculated with a 20 euros bet. In case of a payout of x2 you will not get a 200 euros, but only 40, meaning you lost 60 euros.

Because too many paylines could become confusing very easy, there are some times colours and numbers to visualise every payline.

4.2.7 Jackpot



4.2e – Picture of the Tplay Casino Slot Machine Bank Toy With Sound and Flashing candle.
Retrieved from: toybloom.com

A Jackpot is the phenomenon where the user gets the rarest payout possible for that slot machine. This will most of the time make the slot machine make lots of noises, show a lot of animations, and make a light go off on the top of the slot machine referred to as the candle (if there is any).

4.2.6 Random value

Random values need to be calculated to know how far a reel should spin. There are two types of random values one is a true random and the other a pseudo random. True random values can be anything from only a single step spin to a couple of full spins of the reel, with no one having any chance knowing the outcome. Where as in pseudo random is rather a list of values (that could have been created true randomly) which will repeat over time, giving the slot machine creator more control over the amount of wins and losses that can be achieved with that certain setup. To prevent players to hold track of this list, and figure out when the next win might happen, most slot machines will run their pseudo random number generator even when nobody is playing, making it almost impossible to know what the next number will be.

4.2.6 Wild & Scatter

“Some slot machines, have a “wild” symbol added to the reels. These symbols not only substitute for any other symbols on the line but can also double or triple the pay out of the combination it is substituting for. (Pacyniak. J.M, 2002)

These “wild” symbols increase the number of ways symbols line up on a single line, increasing the amount of payouts.” Except for this there are however also “scatter” symbols;

“Sometimes referred to as a slot player’s best friend, the scatter symbol is basically a key to unlocking various fun bonus features designed within a slot game. Unlike symbols that have to be lined up on a payline to win anything, the scatter just has to appear on the reels to open up free spins, mini-games, or other bonuses. Scatter symbols are typically one of the highest paying symbols in a slot game and are represented by a specific graphic that is unique to the theme of the particular slot title.” (VegasSlotsOnline.com, 2018)

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5. What is Game Feel for slot machines?

To understand what kind of Game Feel in slot machines could create addiction, we want to filter on only the “Game Feel” of slot machines and not the other components. As the ingredients of Game Feel are a clear way to measure Game Feel elements, we would like to keep using them to categorize our findings. Trying to find out to what degree they each effect the experience of playing a slot machine.

5.1 Finding Game Feel ingredients in slot machines.

It is important to be able to measure the Game Feel of games, if you wish to implement it yourself. We have already decided to measure it with the help of the Game Feel ingredients, which we now already have a basic understanding of what they are and what they are important for. What we do not know however, is how to measure each of them. For that reason we will extend on the background information, in combination with examples from slot machines, to have a toolset of findings that we can work with in the rest of the research.

5.1.1 Input

When it comes to measuring input, it is important to know the physical properties of the input device. Let’s say a slot machine game is played on a physical slot machine, important factors are the buttons or handle. How sensitive are they? Do they have a spring mechanism that requires a lot of power from the user? Do you feel a click feedback when pressing/pulling them? What material are they made out of? All these factors can make a huge change on how the slot machine feels to control. On virtual slot machines however, the player is usually interacting through a mouse, keyboard, or a touchscreen. In this case the only factors you could change to alter the feel of input, would be the required motion to interact with the slot machine. For example sliding on the screen, long pressing or pressing with more force (in some cases where a touchscreen can respond to different pressures).

5.1.2 Response

Once the input comes in as a signal, a slot machine can respond in many different ways. We want to look at how these incoming signals are mapped to make changes in the game. As Steve Swink says: “What parameter does it modulate, and how does it change that parameter over time? Or, more generally, what parameters are changed by what inputs, and what are the relationships between the parameters?” If in the case of a slot machine game, a button is pressed to raise the current bet amount, by which amount will it change? Will it go down instead? Will that button also automatically spin the slot machine’s reels? Will it make the user win a jackpot right away? Anything is possible, but what is the expected behaviour that the player has of the game? Is this behaviour the most pleasing one to the player?

5.1.3 Context

According to Steve Swink, the best way to measure “context” is to examine the feel of control in different contexts. Meaning that if the same input done at a different place or in a different case in the game has a different response. An example when it comes to slot machines would be, trying the input of pressing the spin button when you still have enough credits, compared to when you are out of credits. Pressing the spin button no longer holds any power in the second case, making it useless for

the user. Another example is by removing all the buttons on a slot machine all together. Is there even a reason to be able to press the screen now? Swiping then? With a context like this, all the input methods lost all their power, and the player has no freedom to experiment with the controlling the game.

5.1.4 Polish

Polish is the easiest of all the ingredients to notice, but really difficult to have the right amount of. When does a game have 'enough' polish? Any game can definitely have a lack of polish. So can it also have too much polish? Polishing a game is the process that in most cases of game development takes up the most time, as game developers never know what enough is. As polish its goal is to make an interaction more appealing, without getting involved with the interaction itself, we can for starters go through all the intended interactions of the game and see what animations, visual effects, sounds, cinematic effects and tactile effects it has. If the user presses on the spin button of a slot machine, but instead of the reels spinning, they just instantly change to their new values. The response of the input is still the same, but it is just less appealing. When the player wins a jackpot, instead of all the lights, animations and sounds going crazy, the machine just gives you the credits you have won. In a situation like this, a user would for sure be happy that he/she has won the credits. However for such an achievement, to have no other feedback stimulating the senses of the player, it will definitely feel lacking.

5.1.5 Metaphor

We know that metaphor is connected to expectations from the users total life experience, so for measuring this we would need to use common sense. These expectations are influenced by all the other Game Feel elements, so measuring metaphor is not easy. What is easy however is noticing it, when it is not implemented well. If a car drives vertical and the wheels are spinning in the wrong axis, the player will notice something is very wrong with this car. The same can be said about slot machines. If the reels of a slot machine are expected to spin vertically, making them spin horizontally instead will feel weird for people who have experience with slot machines. Using spinning dices instead of reels gives the same gameplay, but if the dice doesn't act or look like a dice would in reality, this will go against the player's expectations and make them think the whole slot machine is broken.

5.1.6 Rules

Measuring the effect that rules have on Game Feel, we have to focus on seemingly inconsistent relationships between variables that can change the meaning of objects in the game world for the player. With each interaction we should think about; what we are trying to do, why we are trying to do that, where we are trying to do it, and how we want to do that. For each of these answers there are rules of the game connected. Let's say we want to spin the slot machine, because we want to gamble with our money and win more, we press the spin button on the slot machine to activate this process, hoping to get it in as few tries possible and not lose much money in the slot machine.

Saying this, we know the following set of rules;

- The slot machine can be spun.
- Only by entering money in the slot machine, you have a chance of getting more money.
- The slot machine has a spin button that can activate spins.
- This button can be pressed.
- Each time you want to spin more, you have to put money in again.

If let's say we made a slot machine that can be spun a couple of times by just entering a coin ones, the players would get more out of their money, making them like that slot machine more than other ones. But at the same time making a jackpot feel less special, because it was less difficult to get it compared to only 1 try per coin.

5.2 Game Feel analysis on Poker Slots vs. Slotomania

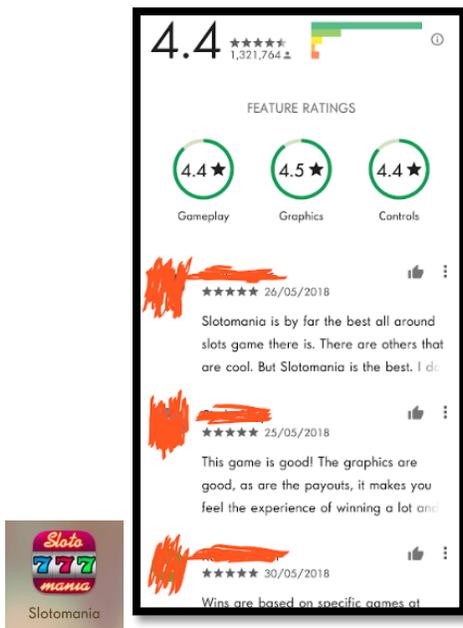
To analyse Game Feel in slot machines, comparing already existing slot machine games (a successful one and another one which is unsuccessful) would be a good method to see differences and similarities. With the help of these differences and similarities, we can more easily distinguish where the Game Feel lies and get an insight into why some slot games feel good and others do not.

Usually when comparing games on their Game Feel, Steve Swink likes to use the 3 building blocks diagram as shown in figure 4.1. Because in this case, both games are too similar (both being slot machine games), we will compare them on their Game Feel ingredients.

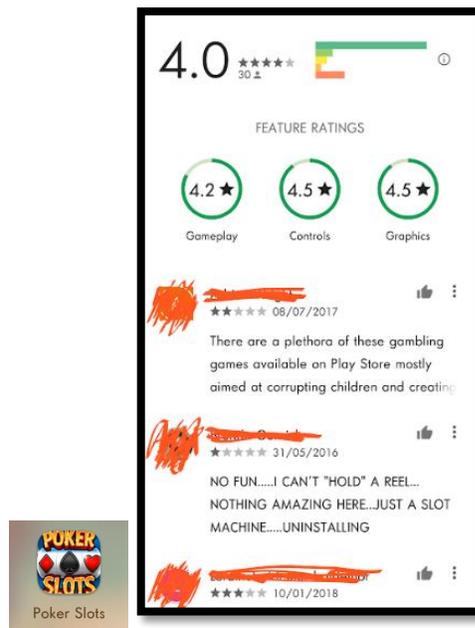
The two games that we will be comparing are,

Slotomania Slots; The #1 casino game on the Android play store, and making it the world's #1 Free Slots App with more than 10 million downloads and a 4.4/5 rating by over a million users.

Poker Slots; The failed creation of OrangeGames which didn't get any more than 1 thousand downloads and a 4.0 rating by just 30 users.



5.2a – Google Playstore rating of Slotomania



5.2b – Google Playstore rating of Poker Slots

At first glance the review of both games don't seem that much off, with Poker Slots even scoring higher on the Graphics field. Looking closer however, shows that the amount of users who have rated

differ by a huge amount and so does the positivity in the top comments.

The next thing we can see once we open both apps, is that with Slotomania there is a full lobby, where you can choose between more than a hundred different slot machines. As most of them are locked at the start, we will only focus on the very first one called Vegas CASH, which is available for every new user. While with Poker Slots once you start up the game, you get to see 1 slot machine, and nothing else.



5.2c&d –Slotomania Lobby and the very first game Vegas CASH.



5.2e –Poker Slots' slot machine.

5.2.1 Input

Looking at the input of both games, they both seem very similar when you only focus on the fact that there are buttons you have to single press. But if you look more closely with Slotomania, it is possible to long press the normal spin button to enable to automatic spinning. The automatic spinning on Poker Slots however is a red checkbox button on the left of the normal spin button, which you need to normally press. Another input method that Poker Slots doesn't have, is that in Slotomania you can swipe vertically on the reels to spin the slot machine. However pressing with pressure or with multiple fingers does not have any function within both of the games. Making it really easy for players to learn how to interact with the slot machines.

5.2.2 Context

This time rather than talking about all the response of our inputs, we first want to know what the player can achieve with its input. Because Slotomania has a lot of features and intractable sections outside of the slot machine itself, we would like to filter only on the interactions that have a direct influence on the slot machine. In both cases the players can raise and lower their bet by clicking the plus and minus buttons, get directly to the maximum betting option by pressing the "MAX BET" / "MAX" button, and spin the slot machine by clicking on the "SPIN" button. In Poker Slots however the

“AUTO” spinning function can make the slot machine truly spin forever until the player is out of money, while at Slotomania the player gets a choice of 4 possible amount of times the player wants the automatic spinning to continue, not allowing infinite spinning.



5.2f - Slotomania auto spinning options.

Something that can be done in Poker Slots, yet not in Slotomania is the possibility to change the amount of paylines you want to bet on. This is done the same way as changing the amount you want to bet, with the plus and minus buttons. A note here is, that in Slotomania by changing the bet amount, you change the total amount of credits you put in the machine, while with Poker Slots it is changing the amount of credits being bet on a single payline. With the latter, the bet amount still needs to be multiplied by the amount of paylines that are active.

5.2.3 Response

First of all pressing the spin button does indeed spin the reels of the slot machine, but so does the button for putting your bet on the maximum in both games. This is something that does go against your expectations as a player, as those buttons don't particularly seem to have any connection with the spin buttons. With Slotomania however you will get a warning the first time you press it, that from that point on that button will function just like in Poker slots, automatically performing a spin as well.



5.2g - Slotomania max bet initial warning.

The plus and minus buttons for the bet do increase and decrease the value you are betting with like they should, however with Slotomania the bet amounts are looping. This means that when you are at the highest bet, instead of having the plus button greyed out and unclickable like in Poker Slots, the

bet goes back to the lowest value. The same counts for the minus button, but then looping backwards. This too would go against the expectations of a player who presses the increase button to increase its bet, yet it becomes a lower value. Another thing that would go against a player's expectations is when with Slotomania having the possibility to swipe vertically instead of pressing the spin button to make the reels spin, even swiping up makes the reels spin downwards. With Poker Slots the plus and minus for increasing/decreasing the paylines you wish to play with, do increasing/decrease them in the numbers they are ordered in, one by one. And finally, after long pressing the spin button in Slotomania it makes a list of automatically spinning values slide up, and cancel out the button press on the spin button itself, making it possible to release the button without spinning the reels.

5.2.4 Rules

As both games are still slot machines, the rules are pretty much the same as any other slot machine. With just a couple of differences and some extra's.

First of would be the fact that the paylines are different. Poker slot has a maximum of 20 paylines, while this slot machine from Slotomania has 50. With for both only the highest payout won on each payline is being paid out.



5.2h&i -Poker Slots and Slotomania paylines.

For both slot machines counts that the more you play and level up, the higher bets you will be able to choose. You have the possibility to win more free spins during a free spin. Both have a wild symbol as a substitute for any other symbol, yet only Slotomania has a scatter symbol which triggers a mini game. On the other hand Poker Slots has special symbol that can lead into a direct jackpot if 5 are visible anywhere on the screen.



5.2j&k -Poker Slots and Slotomania payouts.

Looking at the payouts a huge difference becomes clear about the combinations needed to actually get

a payout. While Slotomania is working with normal symbols of which duplicates need to appear in a sequence, with Poker Slots the player needs to acquire poker hands to win.

5.2.5 Metaphor

Not much can be said about the metaphor of both games, meaning that nothing strange is happening that a physical slot machine wouldn't do. As earlier mentioned there are some points where the slot machine doesn't "respond" like a player would expect, like with the swiping up on the reels or the looping bet buttons in Slotomania, but once the slot machine is spinning it is perfectly normal.

5.2.6 Polish

Both games are full of polish, if we divide them again in groups we can more easily compare the difference.

Animation:

First of is the spinning animation, as for both games the reels stop spinning from left to right. With Poker Slots when already 2 free spin symbols have appeared, the next reels will spin for a longer time to keep the player on edge about the outcome. While Slotomania doesn't have that, it does have animating symbols which make the wins feel more special than a static image. When the reels stop in Poker Slots they almost click into place with a very short bounce, while with Slotomania the reels spin a lot smoother and when they stop, they also bounce very soft and for a longer distance.



5.2l -Poker Slots longer spins animation and green highlight.



5.2m -Slotomania symbol animation.

Other animation feedbacks are the usual ones for mobile games nowadays. Like buttons being pressed in when you click those, menus (like the one for automatic spins) sliding in, and level bars filling up slowly with the player's progress.

Visual Effects:

Slot machines are full of visual effects. With one obvious difference in Poker Slots is that you always see your won credits fly through the screen and add up to your currency, while Slotomania doesn't focus too much on the won amount if it's not a lot. Also with Slotomania the spin button keeps glowing if you don't press on it, inviting the player to press it, making them play more.

For payouts both games are quite similar. First showing all the winning paylines at once, and then going through them one by one. These helping lines for the paylines are all in different colours and only flash on for Slotomania, while for Poker Slots they are all the same colour but actually animate from the beginning point left to the end point at the right.



5.2n&o –Poker Slots paylines effect.



5.2p&q –Slotomania paylines effect.



For both games the big win effect when you win a big amount of credits is one that really takes up all the space on the screen, making sure you can not miss it, with the amount that you won counting up really fast. But if you compare the two you can see that Slotomania is more subtle, and even gives a new option to share your win to give your friends credits as well. While with Poker Slots the whole screen becomes bright yellow with even more highlights flashing around the screen and lots of poker chips raining down the screen.



5.2r&s –Poker Slots and Slotomania big win effects.

There are a lot more visual effects with Slotomania in the mini-game section or all around the other features of the application. But as Poker slot doesn't have these features, there is no point in comparing it.

Sound:

When you listen to both games, you can clearly notice the difference in pace. Slotomania is using sounds with a relaxed Jazz like feel, while Poker Slots aims to the Country/Blues type of more energetic sounds. An example of this is also audible when you win quite a lot, but not enough for a big win. In this situation in Poker Slots you hear an audience going like “Wow”, while with Slotomania you hear a deep manly voice saying motivating words like “Great Job”, “This is the business” or “Come on”.

When it comes to the paylines Poker Slots uses very high pitched sounds first all at the same time, and then one by one, while Slotomania has more of a low pitched tune playing first, followed by the same guitar lick repeating for each payline.

The music playing when the reels are spinning is also always the same, except when you get free spins with Poker Slots and the Coin Grabber feature in Slotomania, then the music changes in Slotomania and for Poker Slots it gets sped up.

When changing the bet amounts with Poker Slots the plus and minus button have the same tactile button sound, while in Slotomania pressing the plus button sounds as if you are receiving coins in a game and the minus button is just a lower pitched glass ring sound.

Cinematic Effects:

There are no cinematic effects of any form applied to the view of the game. The only things coming close to it are only the full screen visual effects like the super win in Poker Slots and when the screen becomes darker because of a pop-up in Slotomania.

Tactile:

There is no form of tactile polish in the game. No vibrations, and no haptic feedback on interactions or outcomes.

5.3 Survey: experiencing Game Feel.

“As every designer knows, the only valid way to take the temperature of a design in progress is to watch players play it. There’s no way around it; the output of a game system is player experience. To master it, you’ve got to measure it. To measure it, you need live players” (Steve Swink, 2008).

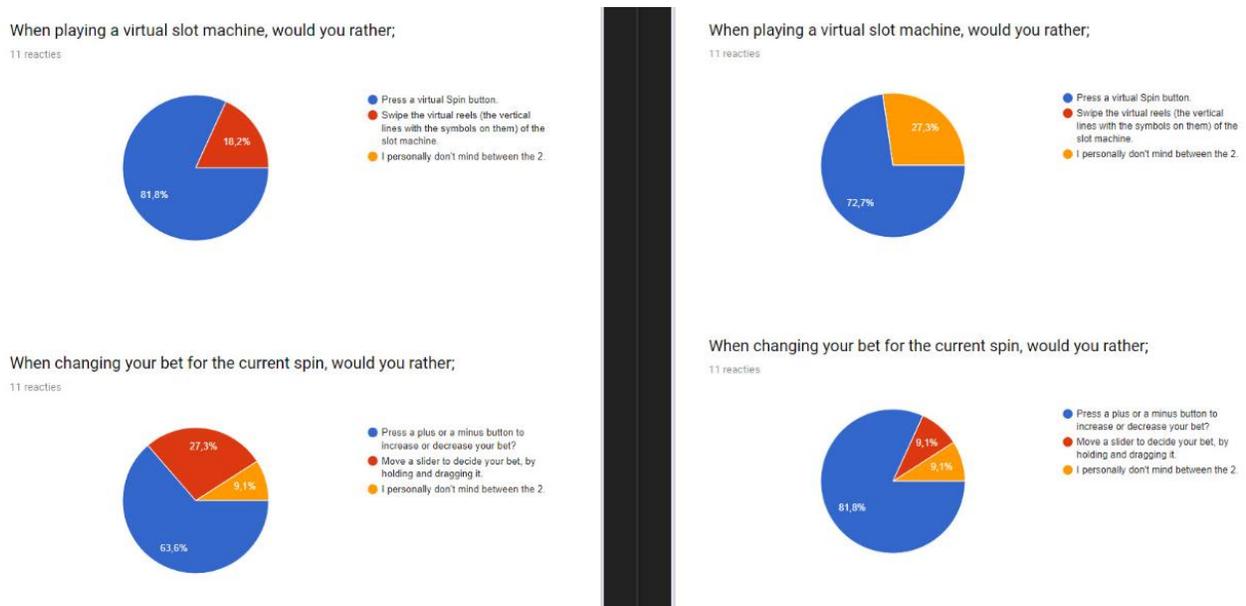
This is why to understand the impact of the Game Feel ingredients on players their experience, 2 groups of people filled out a survey. The participants had to answer 2 questions for each Game Feel ingredient. Each of the questions has 3 choices, the first being a normal choice for the standard of virtual slot machines, the second choice being a different implementation with more impact on Game Feel, and the final option “both or neither” meaning that this question doesn’t impact the player that much. The first group consists of game developers (from OrangeGames) only. These developers that were selected do have knowledge of and experience with Game Feel, and their opinion will have quite an influence from a design point of view. While the other group consists of slot machine players, who regularly gamble their real money on slot machines and don’t have any connection with game design or development, giving their opinion based on gambling experience only.

When looking at the results of the amount of times the third choice got selected we get the following data:

	Developers	Gamblers	Sum %
Input	9.1%	36.4%	45.5%
Response	27.3%	54.6%	81.9%
Context	36.4%	45.5%	81.9%
Polish	27.3%	27.3%	54.6%
Metaphor	36.4%	36.4%	72.8%
Rules	27.3%	45.5%	72.8%
Sum %	163.8%	245.7%	

First things first, Looking at the Sum of percentages that selected the third option overall. We can conclude that game developers with a 163.8% care a lot more about Game Feel elements, than gamblers do. By choosing the third option a lot more, we could say that the gamblers made clear that they have a more open mind when it comes to accepting design. Now if we look more specific on the Game Feel ingredients, we can rank them on their impact. In case of a tie in the sum of the percentages, we will look which has a greater gamblers percentage, because they are the primary user group.

First off is Input, with only a percentage of 45.5. Here we asked the following 2 questions;



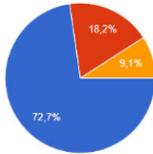
5.3a -Input questions results. (Left is Game Developers, Right is slot machine Gamblers)

The biggest preference definitely goes to pressing a button to spin the reels instead of swiping a screen, no one of the gamblers has even chosen the swiping option, rather than that the third option was chosen. When looking at the second question, once again the plus and minus buttons to change your bet, are the preferred over the slider input method.

Second is Polish, with a percentage of 54.6. Here we asked the following 2 questions;

When winning a small amount of money on the virtual slot machine, would you rather;

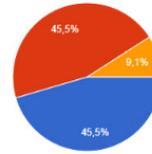
11 reacties



- See that money flying through the screen to your balance amount?
- Not have any animations going through your screen if the amount of money isn't anything to be proud of?
- I personally don't mind between the 2.

When winning a small amount of money on the virtual slot machine, would you rather;

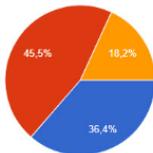
11 reacties



- See that money flying through the screen to your balance amount?
- Not have any animations going through your screen if the amount of money isn't anything to be proud of?
- I personally don't mind between the 2.

On the reels of the slot machine, would you rather have;

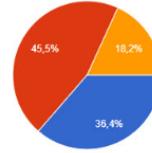
11 reacties



- Static clear symbols, that are easy to recognize?
- Animated symbols. (Like in the video)
- I personally don't mind between the 2.

On the reels of the slot machine, would you rather have;

11 reacties



- Static clear symbols, that are easy to recognize?
- Animated symbols. (Like in the video)
- I personally don't mind between the 2.

5.3b – Polish questions results. (Left is Game Developers, Right is slot machine Gamblers)

Even if the most chosen choice in the first question here is, that the players want to see rewarding animations even if they have just small wins, the gamblers seem to be more against any animation bothering them for small wins that don't matter too much. As for the second question, the animated symbols were chosen over the static symbols, by just a small margin.

Third is Metaphor, with a percentage of 72.8. Here we asked the following 2 questions;

Would you rather play;

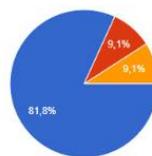
11 reacties



- A classical slot machine with reels spinning down and the winning combinations are horizontal.
- An innovative new type of slot machine where the reels spin to the left or right, and your winning combinations are vertical.
- I personally don't mind between the 2.

Would you rather play;

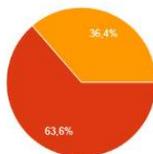
11 reacties



- A classical slot machine with reels spinning down and the winning combinations are horizontal.
- An innovative new type of slot machine where the reels spin to the left or right, and your winning combinations are vertical.
- I personally don't mind between the 2.

Which of the 2 styles of slot machines seems more fun to you?

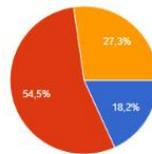
11 reacties



- The first one, which is shaped like a pyramid.
- The second one, which is normal square shaped.
- I personally don't mind between the 2.

Which of the 2 styles of slot machines seems more fun to you?

11 reacties



- The first one, which is shaped like a pyramid.
- The second one, which is normal square shaped.
- I personally don't mind between the 2.

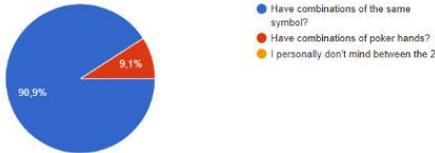
5.3c – Metaphor questions results. (Left is Game Developers, Right is slot machine Gamblers)

Once again looking at the first and second question here, the gamblers seem to be more open for different types of slot machines, but overall the classic formula wins.

Fourth is Rules, with a percentage of 72.8. Here we asked the following 2 questions;

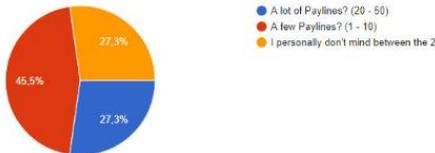
To get a winning payline on the slot machine, would you rather;

11 reacties



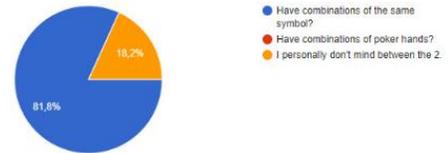
As the amount of paylines increases your chance to win, yet it decreases the amounts that you win. Would you rather have;

11 reacties



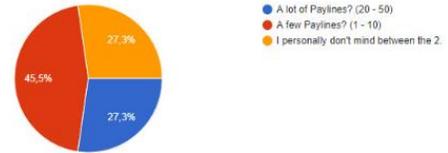
To get a winning payline on the slot machine, would you rather;

11 reacties



As the amount of paylines increases your chance to win, yet it decreases the amounts that you win. Would you rather have;

11 reacties



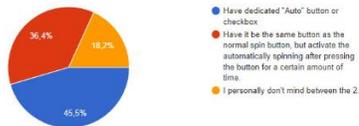
5.3d -Rules questions results. (Left is Game Developers, Right is slot machine Gamblers)

In the first question here it becomes clear that the group of game developers consists of people who do enjoy playing poker, or do have interest in it. While in the group of gamblers there is nobody who specifically chose for the option of having poker hands as payout combinations. Even if some curiosity can be seen from the amount of third option choosers in the gamblers group, having a classic same symbol combination still has the most votes. The second question however seems to have been quite a difficult one to answer. The fewer paylines option seems to be chosen the most for both groups, but there still seems to be an interest to have an option to play on more paylines, if wanted.

Fifth is Context, with a percentage of 81.9. Here we asked the following 2 questions;

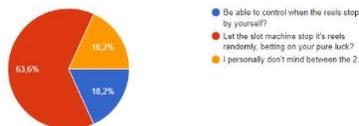
Activating a mode to automatically let the slot machine spin forever. Would you rather;

11 reacties



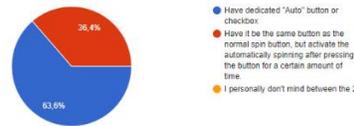
When the reels of the slot machine are spinning, would you rather;

11 reacties



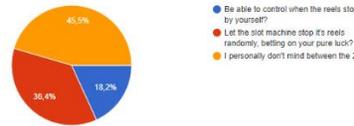
Activating a mode to automatically let the slot machine spin forever. Would you rather;

11 reacties



When the reels of the slot machine are spinning, would you rather;

11 reacties



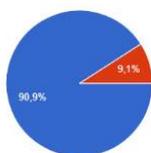
5.3e -Context questions results. (Left is Game Developers, Right is slot machine Gamblers)

This time looking at the first question, the game developers seem to have a more open minded opinion, on whether the functionality of automatically spinning the slot machine should work through a dedicated checkbox or button, compared to having the normal spin button activate the automatic spinning when holding down for a certain amount of time. The gamblers rather seem to prefer keeping both functionalities apart from each other, so that they can switch on automatically spinning without the machine starting to spin. Comparing the results of the second question we can see that the game developers rather wouldn't want to influence the result of the spin, while the gamblers do agree on that for the most part, they would like the option to be there.

Sixth and last is Response, with a percentage of 81.9. Here we asked the following 2 questions;

When changing the amount of money you want to bet at the slot machine, would you rather;

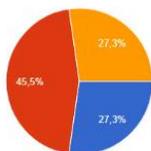
11 reacties



- Press the plus icon to increase your bet all the way to the maximum amount, and the minus to decrease your bet all the way to the minimum amount?
- Want the bet amounts to loop around once you press the plus button on the maximum bet, and the minus button on the minimum bet?

Let's say you're playing a Mobile slot machine game. If you press a button, would you rather;

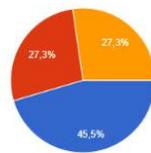
11 reacties



- Have the phone vibrate a little bit and give a haptic feedback of pressing a button?
- Only show show visual feedback of your desired action being done.
- I personally don't mind between the 2.

When changing the amount of money you want to bet at the slot machine, would you rather;

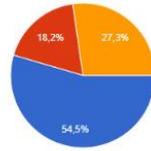
11 reacties



- Press the plus icon to increase your bet all the way to the maximum amount, and the minus to decrease your bet all the way to the minimum amount?
- Want the bet amounts to loop around once you press the plus button on the maximum bet, and the minus button on the minimum bet?
- I personally don't mind between the 2.

Let's say you're playing a Mobile slot machine game. If you press a button, would you rather;

11 reacties



- Have the phone vibrate a little bit and give a haptic feedback of pressing a button?
- Only show show visual feedback of your desired action being done.
- I personally don't mind between the 2.

5.3f -Response questions results. (Left is Game Developers, Right is slot machine Gamblers)

Once again the game developers do not seem to like the idea of having a non-traditional type of response, while the gamblers are more open to the benefits of having a minus button going to the maximum betting value when you were at the minimum. For gamblers it is a type of luxury to not have to press the plus button a lot of times, or if we look at the amount of third option chosen, we can say that they do feel like it will not cause any issue to their usual behaviour. With the second question there is finally a huge difference in preference between the game developers and the gamblers. While most game developers don't want their smartphones to vibrate or give haptic feedback, most gamblers on the other hand would love to have it.

This all concludes that experiencing Game Feel elements does really change depending on the skill of the player. Steve Swink also mentions this in his book, how when picking up the controls of an unfamiliar game, the player will feel inept, clumsy and disoriented. While the same game will feel smooth, crisp and responsive to an expert player. Another important factor is the player's intent. What motivates the players to do what they do? If the game developers have a complete different intent while playing a slot machine game than the gamblers, then their preferences on what elements of the game are fun would also differ.

5.4 Answer

One thing is sure, Game Feel is really noticeable in slot machine games. As slot machine games don't have enemies, obstacles, levels, power-ups or a story like a usual games do, they have to shine more on the field of feeling fun. That is when it comes to "input" which we ranked highest in impact on the player's experience, the simpler it is for the user, the better. As proven from the survey results gimmicky input styles don't seem to be preferred. "Response", which we ranked the lowest, is a field in which gamblers seem to have a lot of tolerance, so this would be a field where Game Feel could be freely altered without it effecting the experience of the players too much. Next is "context" which we ranked 1 place higher than "response, does also provide space for freedom and creativity. Adding more functionality to the game doesn't bother the gamblers, but not having certain functionalities will not make them miss it either. "Polish" we ranked the second highest. This is usually the element that is on the front line of a game, and when it comes to slot machines, it is definitely not subtle. With this ingredient having so much effect on the player his/her experience, we should keep to the rule of not overdoing it if we don't intent to distract the player. If we however do want to distract the player, "polish" should really be outdone, so it triggers all the player his/her senses. Finally as "metaphor" and rules ended up being ranked in the middle spots, it should be more easily changeable without impacting the Game Feel, but not too drastically. These two ingredients of Game Feel, are best left untouched. Meaning that going with the standard, is the safest choice, as making changes doesn't seem to be worth the risk.

A disclaimer however on the fact that these values from my survey were based on my desired target group, and the impact of the Game Feel elements might need to be re-evaluated depending on the type of players.

6. How does addiction in games get stimulated?

To find a relationship between Game Feel and addiction, implement these findings into a slot machine, and create an addicting slot machine for OrangeGames, we first need to have a good understanding in what that “addiction” is that we’re trying to stimulate.

6.1 Definition of addiction

First off we need to know what we mean by addiction. One definition of addiction by MentalHelp.net is;

“Addiction is the repeated involvement with a substance or activity, despite the substantial harm it now causes, because that involvement was (and may continue to be) pleasurable and/or valuable.”

Which according to them consist of 4 key parts:

1. Addiction includes both substances and activities (such as sex and gambling).
2. Addiction leads to substantial harm.
3. Addiction is repeated involvement despite the substantial harm.
4. Addiction continues because it was, or is, pleasurable and/or valuable.

Noticeable is that addiction on its own is already somewhat too broad of a term and as we would like to focus on slot machines which are essentially games, I chose to keep it only at addiction in games. Doing this we could connect the 4 key parts to games as follows;

1. Games do not provide any physical substances to the player’s body, but playing games is definitely an activity. While the player is interacting with the game, it is repeatedly giving inputs and receiving responses. This activity could lead into a point where it is a never ending cycle, making it a “process addiction”.

2. There might definitely be consequences to game addiction that could substantially harm the player, but as this research is focussed on stimulating addiction, we would only like to know which of these side effects lead to more addiction.

Obvious harms that we can think of when it comes to game addiction would be loss of time in one’s day, loss of money spending on the game, which both together or even on its own in some cases could lead to worsening of relationships with loved ones, and then finally stress. If any of these substantial harms lead into more gaming, that could be the proof of it acting as addictive.

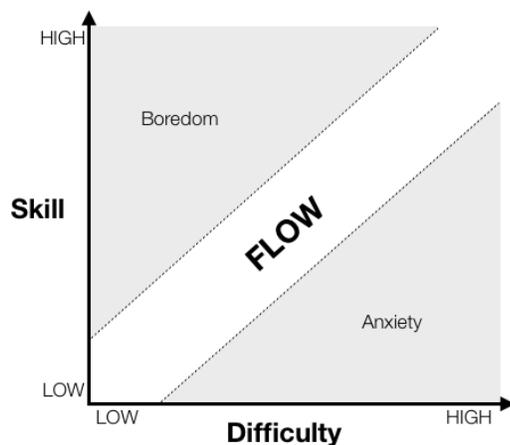
3. Players who are addicted, will continue playing repeatedly. In a talk called “How to Design Addictive Games” at the Computer Systems Colloquium Seminar, Chuck Clanton put the term addiction in other words; “irresistibility engaging”. Meaning if a game is so engaging that it becomes irresistible to play it, resulting in addiction.

4. In games, players receive rewards or achieve goals that they set, which they would experience as pleasurable and/or valuable. In the previously mentioned talk Chuck Clanton also mentions that people who play a game, are actually paying someone to frustrate them. This frustration of course is more fitting to point 2 that was earlier mentioned, but the reason the players accept this frustration is, because they have a goal. Just like wanting to play violin, you will have a tough time learning it, causing yourself frustration and substantial harm. But in the end the reward of being able to play the violin, seems to be worth it all. So as long as there is a rewarding goal that can be achieved, the way to get there is just an investment for the players. But this also concludes that a reward/goal will feel more rewarding if it needed more effort to gain/achieve it.

When we go for the earlier mentioned term “irresistible engagement” instead of addiction, there is a famous phenomenon in game design called “Flow” in which a player is experiencing optimal engagement. In this state the player has an intense and focused concentration on the present, merging of action and awareness, a loss of reflective self-consciousness, the player is being so engrossed that other needs become negligible and that there is an alteration of the subjective experience of time.

6.2 Getting in “Flow/the zone”

6.2.1 Flow



6.2.1a -Flow, boredom, and anxiety as they relate to task difficulty and user skill level. Adapted from Csikszentmihalyi, 1990.

In a Gamasutra article about “Cognitive Flow: The Psychology of Great Game Design” Sean Baron says that in the 1970s a psychologist named Mihaly Csikszentmihalyi experimentally evaluated Flow. And that he found that a person's skill and the difficulty of a task interact to result in different cognitive and emotional states. When skill is too low and the task too hard, people become anxious. Alternatively, if the task is too easy and skill too high, people become bored. However, when skill and difficulty are roughly proportional, people enter the Flow state.

According to Chuck Clanton from the previously mentioned seminar, this means that in a game the player needs to meet the following conditions.

1. The player needs a clear set of goals, knowing what its main objective is that he/she is trying to achieve, and what the smaller tasks are that the player needs to complete to get there.
2. The main purpose why these goals have to be achieved, needs to be meaningful for the player.

-
3. The game needs consequential actions, players want to feel as if their actions actually changed the possible outcome of a game.
 4. Clear and immediate feedback, as in the player needs to know what the state is, what the progress is and what the actions that he/she has done have accomplished.
 5. Fairness. The difficulty of the current challenge should always be around the same level of skill the player is supposed to have during that time. So that the player's frustration is at a manageable level.

Going further on condition 1, Sean Baron gives a really good example of where this condition is not met, the player doesn't know what its goals are, how he/she is expected to accomplish them, or what new game techniques/items he/she is supposed to use to solve a certain puzzle and Flow breaks down;

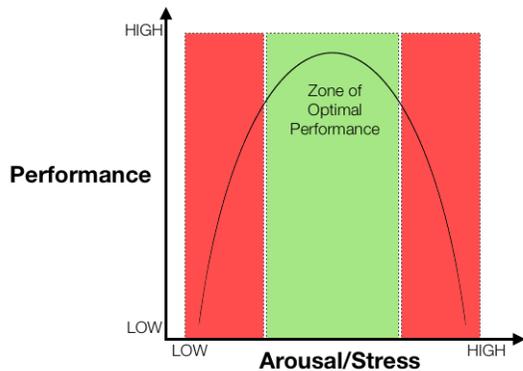
"I'm lost. An NPC just told me what I was supposed to do, but I was distracted by the loot in the middle of the room and the Giant Spiders coming at me from all directions. It doesn't help that that I can't access the NPC anymore, or that all of the rooms in this dungeon are the same shape and colour. Lost. I have no idea where to go or how I'm supposed to get there. Fifteen minutes pass before I find the puzzle I need to complete. But now I have no idea which of the 20 quest items in my inventory I should use to solve it. After a while, I give up in frustration."

Luckily we also get tips on how to fix or prevent problems like the mentioned example;

- Everything from the user interface to the play screen should clearly direct or cue the gamer to their task.
- Because divided attention hurts comprehension, goals and directions should not be given to a player during high-stimulation times.
- Care must be taken to provide important information so that congruency between the information and the task/goal is achieved.
- When the gamer may be expected to try new variations of gameplay techniques developed throughout the game, it needs to be introduced at the right time so the player has enough chance to train it.
- Linking small goals to larger goals and so on, creates a series of rewarding experiences that can hook gamers to a game and create the goal-achievement-reward cycle.

Then comes an example for condition 2 and condition 5, where the player knows what he/she needs to do and finds it logical, but just doesn't have the skills yet with the game to actually accomplish it;

"I know I'm supposed to swipe in the opposite direction of the Fiend's attack. This should parry his attack, opening him up for my own counter. But I just can't do it. Whether it is lack of reflexes, or the fact that I just started playing the game, I'm hopelessly inept. I'm also seriously frustrated."



6.2.1b - Performance as a function of Arousal/Stress. Adapted from Yerkes & Dodson, 1908, and Hanin, 2007.

A way to fix this issue, is to stay in the Zone of Optimal Performance, as shown in the picture above. Another issue however is that this zone is different for every type of player, and the simple Easy, Normal, Hard game difficulties might not work for the game as its whole. Instead of that the difficulty should be able to dynamically adjust to the player's performance. We do however need to keep in mind that the meaning behind the action should not disappear. If a player is raiding a huge castle, and the game only sends out a single enemy knight to stay within the Zone of Optimal Performance, it will not feel like a castle raid anymore to the player. Instead the health points or maybe the damage the knight's deal should rather be changed.

Then finally condition 3 and condition 4:

"I did that right, right? Is the axe I just made actually in my inventory? Is this action adding to my enchantment abilities?"

Players need to know how they are doing, at the right time. According to Sean Baron, simultaneous timing of feedback with the onset of an action, is actually not a good thing. Having some slight delay of 200-400 milliseconds, making it occur directly after or midway through the completion of an action does lead to better associations between action and outcome. Especially medium and long-term goals like consequential actions that give feedback during progress, instead of when the consequence is highly visible, will drive the players into further engagement.

To keep it simple, time your feedback correctly to keep the associations with the right actions. If too late, the action might be forgotten by the player. While too early, the player might disassociate the feedback with an earlier action.

Not mentioned by Chuck Clanton as a condition, while it actually is, is that games should not have too much information that inhibits concentration, unless that is what the game is trying to accomplish;

"These animated spell and item icons across the bottom and top of my screen sure look cool! See the particle effects on my Ice Storm spell... Wait -- is someone attacking me?"

Because of an overload of information, the gamer is unable to evaluate important stimuli. As too much cluttered visual fields could disrupt the information that the player needs to process, it could affect feedback being noticed and getting in the way of the previously mentioned condition 3 and 4.

Something to note however is, that distracting the player from certain stimuli inside the game that could have gotten the player out of Flow, would on the contrary keep them in Flow.

6.2.2 The zone

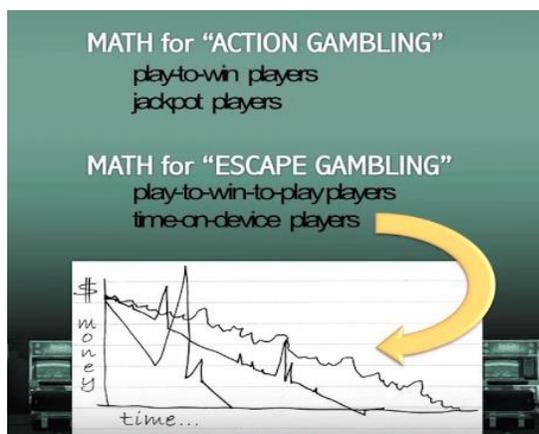
Natasha Dow Schüll who has written the book “Addiction by design”, talks about Flow in the context of slot machines. She does however like to call it “the zone” instead. She mentions how gamblers just want to get into the zone, and use the slot machine as a trustworthy reassuring mechanism to quickly get into it. That they are not trying to win, and are rather aiming at nothingness itself. Being in the zone, there is no more sense of time, because of the lack of interruption. Chuck Clanton adds up to this with a story about him testing out a game that he bought for the kids to play during a party, but without noticing his evening had become the next morning, and when he did realise he still continued for 2 more hours. This all without any sleep, food, or any basic human needs. There have even been cases of gamblers completely forgetting their kids’ names, while being in the zone. According to Natasha, gamblers don’t even care if they make the right choices that could lead them to win, they just want to stay in the rhythm. Some gamblers do even get disappointed or get frustrated when they win, the machine freezing up for the win animations, all the sound the machine makes that makes other people look at them and so getting them back into the real world, does result in them getting out of the zone. Chuck Clanton also mentions this as you wouldn’t want players to stop playing your game early on, you should think of a way to implement a tutorial that doesn’t slow the players down. To keep them in the zone, you should of course make the game clear to the player, but for experienced players this could prevent forward momentum in their play, which is needed to stay in the zone. As long as the players are moving, they will stay.

This gets even more confirmed by Natasha who notes the goal of the slot machine industry; to harness technology so that it creates continuous gaming productivity. These are things like making it easier for the player to insert their money in the slot machine, easier to spin the reels by only pressing a button, having an auto button to even reduce the amount of clicks needed. These buttons are all carefully places to compliment ergonomics, reducing the energy needed for players to interact with the slot machine. In some casino’s there are even special seats in front of the slot machine, that are designed to make your legs fall asleep, making you as a player unable to leave without disrupting your ergonomic state. All these kind of ergonomic designs add up to the continuous gaming productivity and so increases the time players spend on the slot machine. Except for the technical form that ergonomics come in, there is also something called “sensory ergonomics”, which are all the sounds, lights, virtual feedback that the players want to see, hear and feel.

“Math is what will make them stay” is what Natasha appears to be hearing over and over. If a slot machine is not delivering at the right payout schedule, it does not matter how pretty it looks or what kind of great machine it is. She at some point compares a slot machine with a “Skinner box”;

“Slot machines are just “Skinner boxes” for people! Why they keep you transfixed is really not a big mystery. The machine is designed to do just that. It operates on the principles of operant conditioning. The original studies on conditioning were done by B. F. Skinner and involved rats. I’m sure you remember this from grade school: The rats are in a box without outside stimulus (like a casino!). There is a lever (or pedal) in the box. When the rat hits the lever a pellet (food) comes out (like a slot machine and quarters). The rat learns that by pressing the lever he gets a treat (positive reinforcement).

Now comes the sneaky part. If every time the rat hit the lever he got a treat, that would be the end of it—he would just hit the lever when he was hungry. But that’s not how conditioning works. Enter the concept of intermittent reinforcement. Simply put, it means that the rewards (pellets) are dispensed on a random schedule—sometimes the rat gets none, sometimes a few, sometimes a lot of pellets (sounding familiar yet?). He never knows when he’s going to get a pellet so he keeps pushing that lever, over and over and over and over, even if none come out. The rat becomes obsessed—addicted, if you will. this, then, is the psychological principle that slot machines operate on, and how it operates on you.”



6.2.2a – Screenshot from the video “Addictions Old and New: Natasha Dow Schull”. (2015, December 16)

This leads into “Escape Gambling” becoming more popular than the previous high-risk high-reward payout system called “Action Gambling”. With escape gambling, players are playing to win credits that they can use to play even more. With their main priority being, to play for a longer time. This can be seen in the picture above, where the bottom 2 lines are action gambling, and the top line which never actually seems to have any spikes of high wins, is escape gambling. Having more payouts of smaller values, results into a smoother game experience. In this kind of experience the players don’t even recognize that they are actually slowly losing all their money. This is done by something called “false winning”, where the machine gives you feedback of actually winning something, while in reality you did lose a little bit. So let’s say you put 20 euro’s into a slot machine and spin, after which it starts to congratulate you that you have won 16 euro’s, this actually would mean that you have lost 4 euro’s. By giving the player back the 16 euro’s, it will become possible for them to keep playing for a longer time, making them stay in the zone. Chuck Clanton once again adds on to this by saying that in a game, the player should always be rewarded for his or her actions with small rewards. These small rewards should slowly make other things in the game possible, or could act as a kind of power-up, making it once again possible for the player to extend its playtime.

6.3 Ethical responsibility of stimulating addiction.

Creating addiction might now sound like something that’s easy to be done, but with such a great power comes great responsibility. That is why in Annex 1 at the end of this paper, an analysis of the current situation by making an ethical cycle report on stimulating gamble addiction is included. From this report can be concluded that in the case of OrangeGames who want to create a slot machine that is as addicting as possible, to at the very least stick with a “cooperation strategy” while stimulating addiction, to keep the creation of this product on an ethical acceptable level. Through this kind of midway solution, the slot machine would still be able to be designed as addicting as possible, but

warning the players frequently for gambling addictions. This does however have a risk of getting the players out of the forward motion, if not implemented as subtle as possible. If per example for every 20 spins the player would get a warning pop-up that has to be pressed away, it would be a cause of getting players out of optimal immersion. On the other hand however, this strategy would save the players from becoming too addicted, and falling into the trap of a problem gambler.

6.4 Answer

To simply answer this question, we want to get the players in the zone. As this is where optimal engagement lies, this zone is what the gamers truly are after, and they want it for as long as possible. This feeling could be compared with, the feeling when you just want to play a game without a definite purpose of finishing it. Your goal is to just have fun in the process of playing the game, getting engaged with it and forgetting all else. For a player to get addicted to this activity, the engagement with the game needs to be irresistible for that player. The game needs to keep the player in a forward motion, created by repeated cycles of interactivity, that trough time get more difficult, as the player becomes more skilled. The cycles also need to lead into clear goals that have a meaning the player, and the connection to these goals should be obvious to the player. This being said, the cycles should provide clear and well-timed feedback that informs the player that their actions did count. This all to prevent “stagnation” as Tracy Fullerton likes to call the act of Flow being interrupted. In her book *Game Design Workshop*, she says that stagnation is caused by a player repeating the same task over and over without anything seeming to progress. Natasha does however note that players do become more tolerant to stagnation in time. So not being able to prevent it completely is not a problem, as long as it is not visible in the early stages of the game. To wrap it all up, everything that we design that gets the players into the zone, is basically how to stimulate addiction.

7. What is the relation between adapting Game Feel and stimulating addiction?

In the earlier mentioned talk called “How to Design Addictive Games” at the Computer Systems Colloquium Seminar, Chuck Clanton at some moment says that for a game developer to try and make a game fun, you will first need to make the game. You will not know what product you are building, until you have built it and try to rebuild it. To follow this logic, we will now implement our gained knowledge to build a slot machine for OrangeGames, and then we will see through successes and failures, where the connections lie between adapting Game Feel and stimulating addiction. While finding the connections, there will not only be a reflection on our previously gained knowledge, but also a further expansion on it where explanation is needed.

7.1 How to build a slot machine with Game Feel?

Now that we know about how Game Feel and slot machines connect to each other, we don't need to reinvent the wheel anymore. We will rather go through the steps of creating a slot machine as requested of OrangeGames with our acquired toolset of slot machine Game Feel ingredients.

In Annex 2 there is a document made for the brainstorm session at OrangeGames, to get an understanding of what kind of slot machine OrangeGames wants, which was a bit too long, so it had to be changed to a one pager style as can be seen in Annex 3. Presenting these documents and discussing the questions on it, concluded into the notes written down in Annex 4, to start creating a slot machine.

This time however we will go through the ingredients in a different order as that is how the workflow of development works technically.

7.1.1 Rules

With that being said, first off are the rules. OrangeGames wanted to have a more classic style slot machine that looks more like something that you can find in a bar or saloon than the currently popular casino video slot machines. This being said, we decided on keeping the slot machine with only 3 reels (of 3 symbols high), 5 paylines and the payouts based on having the same symbol in a sequence, starting from 2 in a row.



7.1.1a - The 3 reels with 5 paylines.

A pay table for the slot machine. It shows the symbols and their corresponding payouts. The symbols are: 7 (red), BAR (black), Wild (gold), Diamond (blue), 7 (red), and Clover (green). The payouts are: 1500 for three Wilds, 500 for three 7s, 150 for three BARs, 150 for one Wild, 50 for three Diamonds, 50 for two 7s, and 25 for three Clovers. There is also a payout of 15 for two BARs.

Wild Wild Wild	1500
7 7 7	500
BAR BAR BAR	150
Wild Wild -	150
Diamond Diamond Diamond	50
7 7 -	50
Clover Clover Clover	25
BAR BAR -	15

7.1.1b - The pay table with payouts of the same symbols.

amounts). The last button is a blue “i” button that brings up the pay table with information about the payouts. Scrolling through this pay table is possible with swiping on the table itself, or using the scroll bar next to it. When you want to close the pay table again, you can press the red “X” button on the right top.



7.1.2a - Plus, Minus, Spin, and the i button.



7.1.2b - The payable scrollbar and the close button.

7.1.3 Response

First off looking at the response of the plus and minus buttons, they stop functioning when the minimum or maximum bet is reached correspondently, but before that it will make 1 step to the next or the previous bet amount per click. Even if the gamblers in the survey did see potential in having the bet amounts loop, overall the choice was to let the buttons only function for their main functionality, raising or lowering the bet only. Pressing the buttons will also not have effect when the player has a free spin that needs to be spun first. Pressing the information button, a side panel will slide out of the right side of the slot machine. Pressing the button again, will close this side panel. Swiping on the side panel will scroll through its content, but this can also be achieved by pressing and moving the scrollbar to the right of the side panel. Pressing the red “X” button will slide the panel back inside the slot machine. Pressing anywhere outside the slot machine (except for the top bar of the game) will make the side panel slide in the slot machine, and the slot machine itself slide out of the left side of the screen where it came from. Pressing the spin button will spin the reels, bringing the main purpose of the slot machine in action. Pressing it again is not possible until the slot machine is done spinning. One last point is, if you try to press the spin button without having enough chips, it will not spin. Instead you will get a pop-up message giving you a chance to buy more chips.



7.1.3a - Pop-up insufficient amount of chips.



7.1.3b - Unclickable bet buttons when free spin is available.

7.1.4 Context



7.1.4a - The slot machine during poker.

When it comes to context we wanted to focus on ergonomics. That is why we chose to place the slot machine on the left side of the screen, taking up as little space as possible, and still making it possible to see the game of poker being played on the table. If we had put the slot machine on the right side, it would not be possible for the player to see what action the previous player took, as the poker rounds go clockwise. Stopping the reels is not possible and there is also no auto spin functionality. But as we concluded from the survey, context does not have a too big of an impact on Game Feel, so missing functionality will not get in the way of creating engagement.

7.1.5 Metaphor

Another thing we've learned from the results was to stick with a classic style of slot machine that functions how people are used to it, making them able to trust it. Just like any other 3 by 3 slot machine the reels of this slot machine spin vertically downwards, and the paylines are either horizontal or diagonal.

7.1.6 Polish



7.1.6a – Slot machine in WSOP.



7.1.6b – Slot machine in GOP3

Then we get to the main attraction of creating a slot machine, adding polish. First of the art style which is greatly inspired by the slot machine in the game World Series of Poker (WSOP). Our version is however made more to fit the setting of Governor of Poker 3 (GOP3). That is also the reason why during big wins, the player will see poker chips flying through the screen.



7.1.6c – Super Win.



7.1.6d – Mega Win.



7.1.6e – Ultra Win.

On smaller wins however, the players will not get bothered by chips that fly through the screen holding them back from their continuous motion of playing. The only thing you will see are the paylines flashing in loops, on which lines you have a winning combination. These lines are illuminating, “because luminous works better than colour at getting people their attention” as Chuck Clanton mentioned in his seminar talk when talking about a new research that has been done on cognitive psychology. Also will the static symbols light up and animate in scale.



7.1.6f – Flashing payline.



7.1.6g – Reels spinning, middle one just started, but the right one not yet.

The spinning of the reels will start and end in order from the left reel to the right one. This will create anticipation for the player to get a combination from 3 symbols long, when the first 2 are already there. When the reels start spinning, first they go up a slight bit and then fall down. When the reels are stopping again, they will have a slight bounce before locking into place.

No tactile polish has been implemented in this slot machine, but sound we do have. Starting from the button presses that are not spinning the machine. These have the normal button press *knock* sound from the rest of the game's buttons. Pressing the spin button however, makes a mechanical *clank* sound that feels like the reels have been freed from their mechanical blockers. Followed by an energetic Country/Blues spinning music. And each time a reel stops you will hear a digital *beep* sound. Every payline has its own high pitched sound, and getting a big win, plays electric guitar sounds which are pitched higher based on the better your big win was.

7.2 What improvements can be made with addiction in mind?

As the slot machine feature released in GOP3, it has seemed to become a great success. Not only are the GOP3 players loving the slot machine, but also the developers of the GOP3 team are spinning frequently during development. Looking at the numbers of repeated interaction by the users of the slot machine, and the amount of money that has been spent on it (which is confidential information that I am sadly not allowed to talk about in detail), we can conclude at least some form of addiction being created by what has been implemented so far. However looking back in the same order that we have created the slot machine with, to see what we had decided to not implement yet. We can find potential improving points to make the slot machine more engaging to a level it becomes irresistible, thus more addicting.

7.2.1 Rules

Having more rules in theory sounds like not a thing the players will enjoy, but as we already figured out that rules are the most impacting factor to keep players engaged, adding rules to make the game more fun should be welcome. An option would be to add new symbols that have a special function, like the scatter or the wild symbols of a slot machine. Adding small tasks or missions that the player can achieve by continuing to play the slot machine, will also create the goal-achievement-reward cycle that has been proven to be a condition for reaching the Flow state when repeated.

7.2.2 Input

To add up to the continuous gaming productivity, we need to make the interaction with the machine as ergonomic as possible. Meaning every action the player wants to take, will cost him/her almost no energy. By adding an automatically spin function to the game, this might make a huge improvement, as players will have to press the spin button less. Another point where they can press buttons less, is by adding a maximum bet button, which will motivate the players to bet higher, as doing so doesn't require a lot of effort.

7.2.3 Response

One thing that could improve the engagement of the player with the slot machine, is when the first two reels have already stopped, creating a payout combination of 2 symbols, the last reel will spin for a longer time to keep the player on edge. The player will be focussing on the last reel, with hope that it will be the same symbol making it a payout combination of 3 symbols.

7.2.4 Context

Giving the players more options as long as it doesn't create confusion. First of the ability to decide on how many paylines you are comfortable betting on, might be a real good way to give the player more freedom. If a player wants to be more of an "action gambler" than an "escape gambler", looking at the impact of context from the survey, we can conclude that it would definitely not hurt to implement this. When talking about giving the players freedom, giving them control is another interesting point to consider. Making it able to stop the reels by player input, will lower the risk of the player thinking that the machine is making them lose. The same counts for adding a small mini-game where the won amount for each spin, can be further wagered to increase it or lose it all.

7.2.5 Metaphor

From the survey in combination with all the research done to this point, it is clear that it would be a wise choice to not alter with the metaphor of a slot machine. Except if you are trying to build something else that is not a true slot machine.

7.2.6 Polish

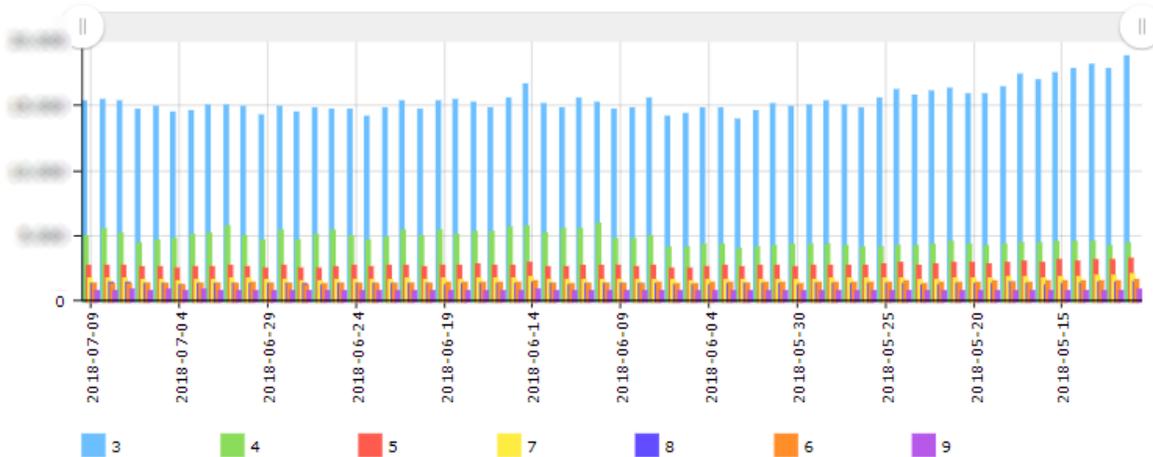
The first feedback that we got from the players was a complaint about the sound effect and the music being annoying over time. We want to achieve a design in which the sensory ergonomics are also on the right level, making sure to not get the players out of the zone. Nothing too flashy or bright, you rather want to create a small viewing theatre kind of feeling for the player, to pull them in and not overstimulate them. Natasha mentions about a company which made all the audio in their game in the "supposedly pleasant to hear" key of C. When talking about keeping visual effects in a subtle way, selecting a maximum bet amount could make small sparkles to reward the player for making that choice. One thing to mention here is however that inside that small viewing theatre, we should be free to distract the player from their losses, by making the "false wins" feel more special.

And then another thing that we didn't implement yet is haptic feedback on touch. Things like snaps, pulses or vibrations depending on the players' actions, which also according to Natasha gives the players a "definitive transactional confirmation" that reinforces what they are doing, so that they want to do it longer. To create this earlier mentioned theatre kind of feeling, it might even be necessary to isolate the slot machine from the poker game in GOP3. As the players can get distracted by the poker game, they will have a harder time to stay in the zone.

7.3 Results

Having finished and published this version of the slot machine, underneath here is a graph of the amount of different users per segment (kind of users) that use the slot machine. The time period is of the first 2 months and even if the amounts are hidden because they are confidential, looking at the line of the graph, it remains steady. Meaning that the same amount of players are playing every day without any drop.

Slots - Unique users per segment per day



7.4 Answer

To answer the question of what the relation is between adapting Game Feel and stimulating addiction? We have found that by adapting Game Feel a game will become more engaging, and by having this engagement at the right level for it to stay in Flow, and thereby having the players stay in the zone, the game can stimulate addiction. What we however need to keep in mind is, that some Game Feel elements have a bigger impact than others. As some elements give full freedom to game designers to have a chance at stimulating addiction, the other ones are better left untouched. A good thing however is that Game Feel is something that is easily changeable without breaking the whole game, knowing this, it should be possible to make a non-addicting game into an addicting one. Then finally looking at the graph, we can clearly see that the players of this slot machine are consistent over time, which could mean that they see potential in using the slot machine on a daily basis, which then again could conclude in a form of repeated engagement or in other words addiction.

8. Conclusion

Looking back at our main question that we wanted to answer: “How can OrangeGames, using Game Feel, make a virtual slot machine addicting?”, I believe that we have come quite a way to answer this. First off, Game Feel is really noticeable in slot machine games. As slot machine games usually don't have enemies, obstacles, levels, power-ups or a story like a usual games do, they have to shine more on the field of feeling fun. These Game Feel elements all have a different impact on creating fun and engagement. This impact is as I already disclaimed, based on OrangeGames' desired target group, and might need to be re-evaluated depending on other type of players. Then on to the question of how we can stimulate addiction. To simply answer this question, we want to get the players in the zone. As this is where optimal engagement lies, this zone is what the gamers truly are after, and they want it for as long as possible. For a player to get addicted to playing a game, the engagement with the game needs to be irresistible for that player. The game needs to keep the player in a forward motion, created by repeated cycles of interactivity with clear meaningful goals, that trough time get more difficult, as the player becomes more skilled. This being said, the cycles should provide clear and well-timed feedback that informs the player that their actions did count, to reduce “stagnation”. Then finally the connection between Game Feel and stimulating addiction. We have found that by adapting Game Feel a game will become more engaging, and by having this engagement at the right level for it to stay in Flow, and thereby having the players stay in the zone, the game can stimulate addiction.

9. Postface

One thing I will say right away is that I did not expect that the key behind something as difficult as addiction can just be stimulated by something taught to game developers in basic game development theory, Flow. As mentioned at the beginning of this document, I could not understand how my own father could become such a gambling addict. But now if I compare it with how I have a certain addiction to playing certain games, and it makes me forget all my worries in life, just by how well the Game Feel is implemented in that game. I do wish that I could introduce him to the world of normal videogames instead, as a way to get him in the zone through a safer media. With the idea of him choosing it over slot machines. But this might be something for a next research. For now I will continue on implementing Game Feel in my products, having learnt that it truly holds a lot of power in creating engagement to a level in where it is irresistible. The points that I have discussed definitely don't cover everything, but I do believe it is a good start on making a product addictive.

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Annex 1: Ethical Cycle Report; stimulating gamble addiction.

Moral problem statement

What is the problem?

Tristan Harris, a former Google design ethicist and product philosopher, says smartphones are becoming like addictive slot machines – only they're sitting in billions' of pockets instead of in casinos.

At Google, Harris worked to ensure that the company designs were ethical: optimal for the user with minimal deceit or manipulation. But, in a "race to grab your attention," Harris emphasized in a recent Medium post, many product designers try to exploit psychological vulnerabilities.

To illustrate just how technology can exploit your vulnerabilities, Harris drew on his experience as an amateur magician. Magicians, he said, look for blind spots, edges, and the limits of people's perception, the weaknesses of their minds where they can be influenced without even realizing it.

With smartphone apps, product designers will employ variable intermittent rewards – unpredictable oscillations between important and meaningless notifications – to hook users on mobile devices. The more variable the rate of reward, the more addictive. Just like playing slots.

How Harris described it:

When we pull our phone out of our pocket, we're playing a slot machine to see what notifications we got. When we pull to refresh our email, we're playing a slot machine to see what new email we got.

-When we swipe down our finger to scroll the Instagram feed, we're playing a slot machine to see what photo comes next.

-When we swipe faces left/right on dating apps like Tinder, we're playing a slot machine to see if we got a match.

-When we tap the # of red notifications, we're playing a slot machine to what's underneath."

'Ex-Googler slams designers for making apps addictive like 'slot machines' (Bambenek. C, 2016)

Holding this article in mind, the current situation where as a developer of OrangeGames you now get a task to create a real slot machine mini-game for their successful game Governor of Poker 3, trying to get the players addicted to the machine and making them lose all their money while psychologically tricking them into thinking that they are winning. Does this make the game developers themselves, or OrangeGames as a company unethical?

For who is this a problem?

-One of the main parties that could be blamed for any gambling addiction being motivated or players ending up bankrupt is the company whose name is written under the game, in this situation OrangeGames.

-The developers of the company are in the end the ones who are designing the slot machine in such a way that it becomes addictive, making them also blamable.

-The players of Governor of Poker 3 who get addicted to the slot machine. As they are the victims.

What is the moral reasoning of the problem?

The game developers at OrangeGames get a task to make the Governor of Poker 3 game give a chance to players to have something to do while waiting on their turn. Requirements of this feature are however to make this feature as much fun as possible so that a lot of players end up using it, making it a new source of income from the game. While working on this feature the developers are not thinking ethical enough about the consequences of their creation. All that counts in the end for them are just the numbers. Also the fact that gambling games are not something that isn't made before already, no big concerns pop into anyone's mind while creating a slot machine or playing with one. The only trap here is that in Governor of Poker 3 and other mobile gambling games, you play with fake currency that can also be earned through playing the game. Serious players however will without a doubt buy more in-game currency with real money, and spend it all without noticing how much money they actually lost.

Problem analysis

Stakeholders

- The players of Governor of Poker 3 and their families; if the players get addicted and spend too much money on the game ending up bankrupt or getting addicted to real slot machines.
- The game developers; they wish to complete the tasks that have been given to them by the company as good as possible, without however creating any ethical issues.
- The company OrangeGames; which wants to deliver a game with more variety so that their players end up liking it more, and playing it more, making it more successful, and like that raising the income of the company.

Their interest and values

The values that count in this situation are for example, the goals that the game developers are striving for; succeeding with their given tasks and making sure they can be a valuable asset to the company, keeping their position as a developer and being able to earn money to live their lives.

Another one would be the company wanting to have their game to be as successful as possible, earning enough money from it to pay their employees.

Finally we would have the emotions that the players and their families are left with in the worst possible outcome of a player becoming a problem gambler.

Relevant facts

- There are a lot of gambling games online on websites or even gambling apps for mobile. Which of most are using in-game currency and don't really allow players to earn real money from it.
- Problems caused by excessive gambling are not just financial. Too much time spent on gambling can also lead to relationship and legal problems, job loss, mental health problems including depression and anxiety, and even suicide.
- Digital slot machines work the same way as old-school slot machines as seen in casinos or bars. The chances of a jackpot should always stay the same no matter what the previous outcomes were. Truly

giving the players the chance to win the jackpot an infinite times in a row if they actually happen to be that lucky.

Options for actions

Black-and-white-strategy

This strategy gives us two options, one in which game developers stop developing gambling games that are addictive, and start to think of designing a gambling game in such a way that it would be impossible to get addicted to it. This would mean that the feature however will not be played as much, or even leaving players unsatisfied with it and leaving the game Governor of Poker all together. This would lead into a huge loss for the company OrangeGames and its employees. But make sure that no players become a victim of gambling addiction.

The other option is where they continue on creating gambling games that are addictive without worrying about anything. Getting players addicted to the new feature, and making them end up spending more money on the game, which ends up being a positive outcome for the company OrangeGames and its employees. But in opposition to what was stated in the previous option, victims of gambling addiction could be created between the players of Governor of Poker 3.

Cooperation strategy

The parties involved could find a midway solution. For example making sure that the slot machine is addictive, but warning the players frequently for gambling addiction dangers just like with cigarette packages and Nintendo games telling you to take a break so now and often. Giving them the chance to snap out of their immersion, without making it impossible to continue playing if they really want to. The developers would not have to hold back on making the slot machine as good as they can, the company OrangeGames would still profit from the new feature (just a little bit less), and the players would be given a chance to not get tricked.

Whistle-blowing strategy

The players could start a campaign against game companies like OrangeGames for creating addictive gambling games. Making it into a public issue where it would not be something for OrangeGames to decide on what the best solution is, but rather one where there would be a need for online non-real money gambling game company laws. As these kind of laws would rather be in the favour of the victims, it would indefinitely lead into game companies being given restrictions when developing gambling games.

Ethical evaluation

Personal opinion

Me as a game developer myself who is developing a slot machine game, I would hate to be restricted on making it as good as possible. Also I would not like to disappoint my higher ups who are giving me the task. I personally think that addiction is the fault of the player itself, as being a gamer who never got addicted to any game at all. I personally think getting addicted is a combination of multiple issues with the player his or her life. So for game developers to make it more accessible for these kind of players to get addicted is also giving them more of a chance to actually get over their addiction without directly losing a lot of real money.

Utilitarianism

Is the success of the company OrangeGames and their employees with their new feature more valuable than the despair of the few players getting really addicted with the slot machine and then becoming a problem gambler who end up spending all their money, ruining their relationship, losing their job, get mental problems or even end up committing suicide? That is the question we have to answer when it comes to utilitarianism. If we look at it very objectively we could say that success of a company is not worth more than other humans their lives, this would be the same situation as already is happening in some third world countries, where people work with their lives only to deliver the company they work for success, which then leads into them getting paid. This might be accepted in some third world countries, but it happening from a company in The Netherlands would not be accepted. Thus leading into the conclusion that creating addictive gambling games should be stopped, before any causalities arise.

Consequentialism

Like I just mentioned the consequences are very dire, as it involves human lives. With consequentialism only focussing on the consequences, this would let us weigh the consequences of all parties, in which OrangeGames and its employees would lose. The reason behind this is, because the value people becoming bankrupt and not being able to support their families after which the future of their kids will get ruined and leading into a positive feedback loop of negativity which then might end up in people losing their lives, compared to the value of an already successful company earning a little bit less money, the first does weigh a lot more.

Kantian theory/Deontological ethics

Then from a complete opposite point of view we have the Kantian theory or also known as deontological ethics. We look at the motive of creating addicting gambling games. OrangeGames and its developers would never create something to bring despair into people their lives. The new feature is only created to give players a new chance to play around with their in-game currency, with sometimes at a reasonable level spending real money to get more in-game currency to continue playing. The more money OrangeGames makes, the more successful they can become, and so bringing more happiness to all the employees of the company. The game developers just want to add on to this motive by making the slot machine experience as much fun as possible for the players. Even the

gamers themselves when playing with the slot machine never have an objection to get addicted, they just want to try their luck, with a fair chance to actually multiply their bet in-game currency. As none of these actions have a bad motive they can be concluded as good motives.

Virtue ethics

Looking at it from a virtue ethics point of view, the actions taken by the gamers, the game developers, and the company OrangeGames are “Praxis” as that would have been said by Aristotle himself. Because the actions taken are all actions that they are their own responsibility. Games only deliver their goal while playing, the happiness created by the game disappears when the player stops playing the game. According to virtue ethics, we should strive for “praxis” actions. That being said, the next question would also be answered then: if playing addicting gambling games itself delivers happiness? Even if the consequences could take away the happiness of the players, the game developers or the company OrangeGames, the actions themselves while playing with the addicting slot machine does bring happiness.

Code of Conduct

The following are the code of conduct for Game Developers from the international game developers association and the code of conduct for Casino Owners from the European casino association;

Code of Ethics IGDA

Section 1: Principles

As individual developers, we commit that we will:

1. Continually strive to increase the recognition and respect of the profession; uphold the integrity of our work and credit contributions where they are due, never representing another's work as our own, or vice versa;
2. Present ourselves and our skills accurately;
3. Respect intellectual property rights;
4. Seek fair rights to ownership of content that we create;
5. Honour signed legal agreements in spirit and in letter;
6. Promote proper, responsible, and legal use of computing technology at our disposal;
7. Strive to create content appropriate for our stated audience, and never misrepresent or hide content from committees assigned to review content for communication to the public, and specifically we will work strenuously to cooperate with and support local/regional ratings boards (the ESRB, PEGI, CERO, USK, etc.).
8. Strive to share knowledge even while protecting intellectual property, for the growth of our peers as professional craftspeople and our industry;
9. Strive to promote public knowledge of technology and art, and the strengths of our industry in expanding the boundaries of art and science.
10. Promote this code of ethics within one's company, with third-party contractors and within the entire profession.

Section 2: Workplace

As professionals committed to excellence in our field, we hold that:

1. Workplace safety, including physical and mental safety and comfort, is a basic right for every developer;

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2. Discrimination or the tolerance of discrimination of any kind, whether on the basis of race, gender, creed, age, sexuality, family status, disability, or national origin, harms us as professionals, limits our craft, and violates this Code;
 3. For the integrity of ourselves as professionals and as a professional organization, we will be aware of and adhere to all local laws in the region in which we operate, unless there is an overwhelming ethical conflict in so doing;
 4. Fair treatment for developers at all levels, whether full time, part time, temporary, or student employees, is required for our operation at a professional standard.

Section 3: Leadership

As leaders in our professional field, we commit that we will:

1. Understand that an informed and physically healthy workforce benefits game development on ethical, creative, and business levels comprehensively;
2. Be forthright in communicating information pertinent to the talent that we lead, and will never knowingly deceive those whom we lead;
3. Adhere to fair schedules and contracts, never committing to delivering more than we can reasonably achieve while maintaining standards of workplace quality of life;
4. Ensure that all employment agreements are fair and legal;
5. Provide for the health of our employees to the best of our abilities;
6. Uphold trust between ourselves and those we lead by ensuring confidentiality of legal documentation and private information;
7. Promote the growth of our industry by supporting the exchange of knowledge and ideas between developers, for our mutual benefit;
8. Provide for the future of our developers and our industry by providing support for families and future developers, and acknowledge and respect the value of our veteran talent;
9. Ensure to the best of our ability the mental and physical well-being of those whom we lead, maintaining highest standards of workplace quality of life.

Code of Conduct ECA

1. We act with social awareness, striving to channel the demands of gambling in a manner which endorses high, common ethical standards, whilst maintaining harmonious and energetic corporate governance.
2. We pursue sustainable business success in a prudent and diligent manner, based on a fair, transparent and progressive dialogue with our stakeholders. With this goal in mind, we cooperate efficiently in areas of common interest to protect their welfare and interests and achieve optimal results.
3. We provide safe, licensed and responsible gambling services and foster a proactive and dynamic approach in order to minimize the threat of compulsive or illegal gambling among vulnerable members of society and underage users.
4. We are committed to legal and responsible advertising which promotes our services to consumers in an honest and appropriate manner.
5. We proactively enforce effective anti-money laundering measures and apply control and prevention methods against criminal or fraudulent activities.
6. We require from our members strict compliance with all applicable laws, policies and regulations, as well as an awareness of any new legislative developments, thereby ensuring that they act in good faith at all times and thus demonstrate their integrity towards society.

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7. We ensure that we continuously develop our industry-specific knowledge in the areas of economics, technology and human resource management. We consider this to be a prerequisite for maintaining and sharing our expertise in the field and upholding best practices.
 8. We are committed to pursuing a precautionary approach to environmental challenges and to undertaking initiatives which go above and beyond local and European legislative requirements to promote greater environmental responsibility, reduce our environmental footprint and deploy environmentally friendly technologies, practices and actions.
 9. We respect internationally proclaimed human rights and ensure that we are not complicit in any form of human rights abuse. We are committed to providing equal opportunity, non-discriminatory working environments and respecting the individuality, dignity and diversity of our employees.
 10. We educate our employees in mindful professional conduct, hospitality and extensive customer care practices by providing them with regular training and guidance.
 11. We offer reliable games of chance using the most sophisticated equipment available, thus providing a secure, professionally monitored gaming environment for our customers.
 12. We consider customer confidentiality and privacy to be paramount and we adopt a discreet and responsible approach to handling and storing sensitive information in accordance with the highest data protection standards.
 13. We are a dedicated and resilient force in legal decision-making at the heart of our industry. We provide valuable expertise and competence in our quest for fair and objective legislation.

We work to establish ourselves greater recognition within Europe as we seek to cement our status as a diverse and reputable body, whose licensed members serve to protect the interests of both the casino industry and its customers.

Annex 2: Pre-Research for brainstorming

Slot Machine in Governor of Poker 3

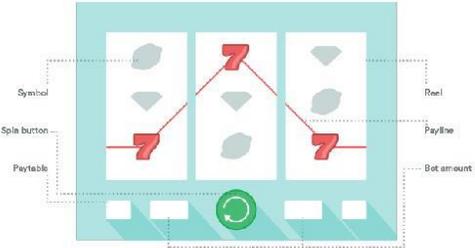
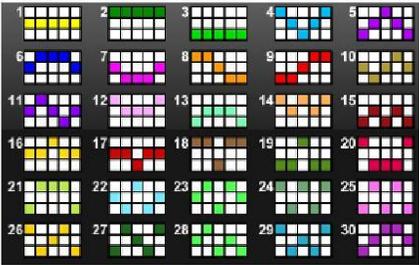
**GOVERNOR
OF
POKER 3**



Specific Questions and Remarks



- 5-reels or 3 reels? Video Slots or Classic Slots?



- What kind of pay lines?



- What is the Demographic? !!!



- Where inside GOP3 will the slot machine be placed?



- Is there a need for a bonus game?

Game Feel Questions & Remarks

Input (How the player can express their intent to the system.)



What will be the way to spin? A button or a handle? Or perhaps any other way?

Flick? Shake? Long Press?

Response (How the system processes, modifies, and responds to player input in real time.)

Players need feedback on their input. So...

- What kind of Visual Effects?
- What kind of Audio Effects?
- Any form of Haptic feedback?
- Screenshake?

Should we keep it subtle? Or go over the top? What is the right balance?

Context (How constraints give spatial meaning to motion.)

Is the slot machine just a slot machine? Or does it have a premise build around it? Are there connections to the characters and the world of GOP3? Does playing the Slot Machine give the player anything inside of GOP3? Exclusive Hats maybe?

Polish (The interactive impression of physicality created by the harmony of animation, sounds, and effects with input-driven motion.)

“Celebration What type of feedback does the game provide when the player wins a jackpot or achieved a game milestone? Casino gaming is typically a very social experience, and providing feedback to the player that he or she has accomplished something special is critical to a game’s success.”

This goes together with what is written at Response, however more focussed on comforting the user than just giving feedback.

Metaphor (The ingredient that lends emotional meaning to motion and provides familiarity to mitigate learning frustration)

“Playing slots is about having fun”

How can we gamify the slot machines in such a way that it is fun, yet feels realistic enough to have the trust of the users as with real mechanical reel slot machines?

Rules (Application and tweaking of arbitrary variables that give additional challenge and higher-level meaning to motion and control.)

Not only things like what the pay lines are, but also how to make them easily understandable for the players? So they don’t feel overwhelmed.

Annex 3: One Pager

GOP3 SlotMachine Blueprint

Game Placement

UI-Button



- Too close to the leave button?
- +Nearby the Table Tabs, so just like a new game.
- Weird if the slot pops from Left now.



-Swiping can activate statusbar on Android, or minimize app on new iPhone X, so best is clicking the button.

Slot Machine Window

-Half transparent overlay to focus on the machine instead of the poker play area, yet keep an eye on the real game.



-Blocks the chat.



-Blocks the table tabs.

Slot Machine

Machine Style

- 3 Reel Style Classic Slot Machine.
- Small size, so it feels like it's natural for it to fit on the screen.
- Body of the slot machine can be used for explanation.
- Wild west looks to fit Governor of Poker theme.



Spin Input

-Button is more inviting to press.



-Handle is more theme-fitting and juicier.



-Spring knob gives a feeling as if you have more control.



-Different input methods are also possible;
 -click on the reels
 -shake phone

-Auto-Spin?
 -Long press?
 -Full pull?
 -Checkbox?

Other Input

-Plus and Minus buttons to Increase or Decrease your current bet.

-Max Bet button to just throw in everything you have on your balance.

-Information button?

-This can be used open an information window to give information about the paylines if it is not clear enough, or explain the values of the symbols. (if not already displayed on the Machine itself.)

Displays



-Can be more simple than this with just

1. Balance
2. Current Bet + Slider?
3. Win Amount!

Reels



-3x1 Classic

-Simple

-1 Payline



-3x3

-Still simpler than the 5 reel slots.

-5 Paylines

Annex 4: Brainstorm Session Notes

GOP3 Slot Machine Brainstorm Notes

1. Window & call button placement

First of the placement of the slot machine as it would function during poker. If on the right side, the window blocks the previous player, making it unable to anticipate when it is your turn and what kind of actions have been taken by the user before you. That is why we want to go with the Left side.



Then of course we need a button to call the slot machine window, which we thought it was logical to place it on the left side, as that is the location the window slides out from.



Further notes;

- Outside of poker the slot machine can be a full screen variant. (not important yet)
- The slot is unavailable during the tutorial.
- It can be annoying if the window automatically closes/opens when the poker game goes to fast. (So maybe a setting for this? Like a checkbox for auto-opening?)
- If the reels finish spinning on the background (when the window is closed), the user will not have gotten the feedback it needs to be sure that he/she won or lost. That is why the result animation needs to keep looping until a new spin is made.
- For every pokertemplate we want another type of slotmachine? Or maybe just for Las Vegas. (Might bring issues with multi-table, with different templates) (So for now just 1)

2. Theme

Poker cards as slot symbols doesn't work as we've seen with the Poker Slots game. As it is too gimmicky compared to a normal slot machine. The difference in-between the card values is not as big, making it feel less spectacular to get all A's compared to all K's. Also the poker combinations are not easy to see.



We want the reels to feel juicy and modern, but the machine's itself can be wild-west style fitting GOP as long as it doesn't feel cheap. We want to have **3 reels** with each having 3 slots, making it a **3x3 slot machine**.



3x1



3x2.5 (Reels can stop halfway)

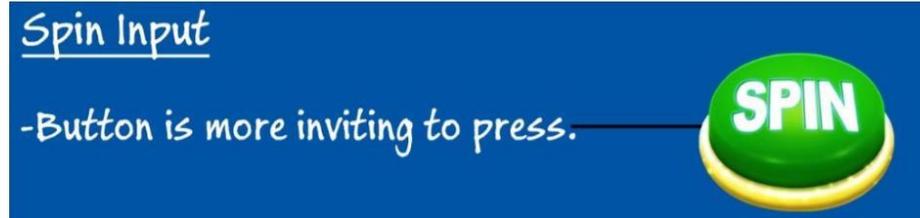


3x3

- A Sheriff star or Horseshoe might be wild-west style, but don't feel as good as getting a **777**

3. Buttons

To spin the reels, we decided the input to be just a pressable button, to keep it simple. (No Auto-spins on longpress)



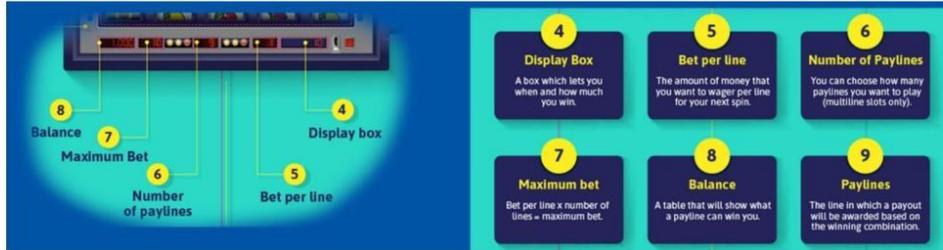
Plus and Minus button to change the bet, no sliders. We want to keep the bet-amount options as few as possible. That's why the available values of betting should be pre-decided, maybe always the same or differentiating based on the table your sitting at (issues with multi-table). The bet values are pre-set, and the **plus/minus or anything like arrow keys** are just cycling through the list.



Information button should be placed on the right side of the machine where also the information window will slide out of.



4. Displays



- We don't need a balance display as it is already shown in the poker screen, except if of course you are not in-game, then maybe it would be good to make your balance visible.
- Maximum bet is not needed, only current bet.
- Bet per line in case of multiple paylines; doesn't need to be shown. (Just explain the concept in the information window)
- ^ Same goes with the number of paylines.
- Display box for wins, IS A MUST! It needs to show the last win, until a new win is made

5. Symbols

1		<p>SPECIAL SYMBOL</p> <p>Feels Special as it also takes in more (almost all) space of the slot.</p>
2		<p>Lucky 7</p> <p>The traditional Jackpot.</p>

3		<p>(Gold) Bar(s)</p> <p>\$\$\$</p>
4		<p>Diamond</p> <p>(Diamonds shine & Bells make noise making the slot machine go crazy)</p>
5		<p>Clover</p> <p>Lucky Symbols for believers</p>
6		<p>Watermelon</p> <p>Holy Fruits!~</p>
7		<p>Lemon</p> <p>When life gives you lemons...</p>
8		<p>Cherry</p> <p>(I think we know enough jokes with cherries, and they're not good)</p>