

Exploring the intrinsic nature of video game achievements

By
Henrik Aabom



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AAU-Cph

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1 Introduction

Ever since the infancy of video games, game developers have come up with countless of ways of motivating players to play their games. Motivational systems such as leveling systems where the player's avatar will get better and better the more the player is playing, or point systems where the player gets more points or stars depending on how well he/she is doing within the game, are all systems that have become natural part of gaming experiences. These systems are rely on rewards to motivate the player to keep playing.

This research will reveal that games which tends to motivate the player through gameplay that is rewarding to play in itself, are better at motivating the player compared to motivating the player through rewards. This is because these kinds of games are focusing on intrinsic motivation, where leveling systems and point systems are focusing on extrinsic motivation.

In 2005 Microsoft introduced a new motivation system called Gamerscore through their Xbox Live (Microsoft, 2002(B)) service and with it came Achievements (Griffith, 2013), small extrinsic rewards which are awarded the player for doing a specific task within a game. These tasks are created by the game's developers and do not necessarily have anything to do with progressing in or completing the game. These extra rewards are optional, thus the player will actively have to choose to pursue them. The motivation to pursue achievements have gained relatively little academic attention and thus this is a study on intrinsic and extrinsic motivation and how they affect players' motivation to pursue achievements in games.

The paper will start out by narrowing down the problem through players' own statements collected from internet forums and reader comments to study papers done by others on this particular subject. After defining the problem, research and theories on general extrinsic and intrinsic motivation will be broken down in order to find a method for enhancing intrinsic motivation. Afterwards other similar research on game achievements will be analyzed to reveal what have been done in the field already and what can be learned from it. Combining these findings with the methods on enhancing intrinsic motivation will form a new motivational system to use specifically on achievements. Lastly, the system will be implemented and tested through multiple iterations and the results will be discussed to conclude if the system indeed affects the players' motivation.

2 Defining achievements

In order to analyze how players' perception of achievements affect their motivation to pursue them, one option is to break down the word "achievement" as used in everyday life.

According to dictionary.com an achievement is:

"1. something accomplished, especially by superior ability, special effort, great courage, etc.; a great or heroic deed: his remarkable achievements in art.

2. act of achieving; attainment or accomplishment: the achievement of one's object.

[...]ACHIEVEMENT connotes final accomplishment of something noteworthy, after much effort and often in spite of obstacles and discouragements[...]." (Dictionary, 2014)

This definition can be divided into three main uses of the word.

Firstly, an achievement is something that is obtained through utilization of a unique skill set that is special for the person who obtains it. This skill set have to be special in the sense that it has to be superior to other's skills, meaning that only the person with this particular skill set can obtain the achievement.

Secondly the utilization of the person's superior skill set will lead him or her to accomplish great deeds and thus achieving heroic status in his/her social community. The achievement creates a social status, for the person who achieves it, that other people in the community will admire.

Thus an achievement is, thirdly, a symbol of accomplishment. In order to accomplish something the person have to fulfill some sort of requirement as accomplishment is "to bring to its goal or conclusion" (Dictionary, 2014). This means that in order to obtain an achievement the person have to meet the requirements set by a goal. This goal can either be set by the person him/herself or by an outside source.

Obtaining an achievement gives the person the right to bare a symbol of the achievement for others to admire. However, it must be said that it is possible to achieve something, which only the person who achieved it will know about, thus the symbol does not have to make other people admire the achiever, as long as the achiever is proud of it him/herself.

Overall:

An achievement is a symbol of accomplishment that is obtained through the display of special skills which may give the individual a superior status in his/her community.

With this definition of achievements, one question arises: Can achievements in games even be considered achievements according to this definition?

Games are affected by the fact that everyone can buy a game and potentially finish it and obtaining all the achievements the game may offer along the way. It can be argued that most games does not take a unique set of skills to complete, because most games are developed so that many different types of players can play them, regardless of how skillful they are, making the game as accessible to the average player as possible. This seems to be in contrast to the definition of achievement, since the player is not displaying any skills that other players cannot display.

2.1 Three definitions of achievements

According to the definition of achievements above, an achievement can be described as these three elements:

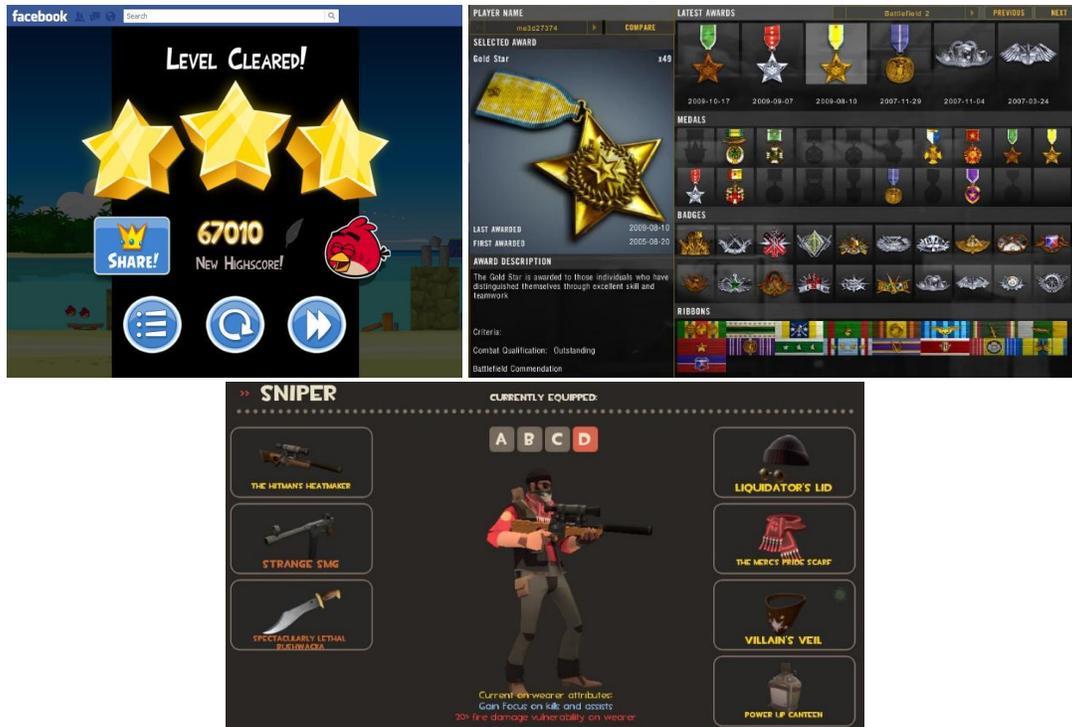
1. An achievements is something that requires the player to utilize a special set of skills,
2. which will grant him/her significant status within a social community and
3. unlocks some kind of symbol of accomplishment.

In games, these three elements are utilized in three different achievement concepts:

1. Game defined achievements
2. Player defined achievements
3. Platform defined achievements

2.1.1 Game defined achievements

Firstly, game defined achievements are in-game rewards like stars, badges, ribbons, in-game items etc. These are implemented inside the game and are often the main reward system (Hamari & Eranti, 2011). They are symbols of skills that can be shown off to other players in order to achieve superior social status. Just like the head of a deer hung, from a hunter's wall. These graphically represented achievements are elements that the player can admire and show off to other players, after they have been acclaimed. In-game rewards have become common use for awarding the player something more than a sense of accomplishment and they are a way for the developers to give the player an achievement symbol, which they can show off to their friends.



Stars rewarded when completing a level in Angry Birds (Rovio Entertainment, 2009) (top left), badges rewarded when completing multiple matches in the Battlefield 3 (EA Digital Illusions CE, 2011) (top-right), in-game items rewarded for doing something special in Team Fortress 2 (Valve Corporation, 2007) (bottom)

2.1.2 Player defined achievements

Even though game defined achievements are digital implementations of achievement symbols, it must be argued that, because an achievement does not have to be admired by others, but can be admired by the achiever him/herself, it does not necessarily have to have a graphical representation. All goals that the player thinks is hard to accomplish can be seen as an achievement.

Thus, achievements are subjective and are the result of a task that, in the achiever's mind, was hard to accomplish. Take a look at Grand Theft Auto V (GTA V) (Rockstar North, 2013) for instance. The highest point in the terrain of GTA V is on top of a mountain called Mount Chiliad. Players set goals of riding a BMX bikes to the top of the mountain without falling down. This is not part of any of the games main missions or side quests and thus it is a goal that players have to set for themselves. The symbol of the achievement in this example would be the player sitting on his/her bike on top of Mount Chiliad admiring the view. There are no other graphical representation or other kinds of evidence of his/her accomplishment. Never the less he/she has obtained a sense of accomplishment through his biking skills of which he/she can be proud.



Players on top of Mount Chiliad admiring their achievement (Rockstar North, 2013)

These achievements have no effect inside the game and are not rewarded by the game in any way. Thus, they are player defined achievements because the player is the one that defines them and awards him/herself for achieving them.

Even though the sense of accomplishment might be a reward in itself, what seems to be missing in player defined achievements is a symbol that other players can admire. There are no graphical takeaways that the player can show off to his/her friends as proof of the heroic deed. Unless he/she takes a screenshot.

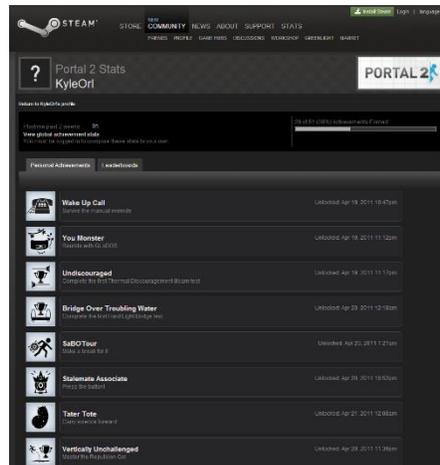
Therefore, in these situations, players tend to create their own rewards to get more than the feeling of accomplishment out of the achievement. For instance by riding their bike off a cliff side of Mount Chiliad, enjoying the freefall all the way down. This shows that the sense of accomplishment does not seem to be enough for the player, especially when it is not possible for the him/her to show off the achievement to others.



Player on his bike in a freefall from Mount Chiliad (Rockstar North, 2013)

2.1.3 Platform defined achievements

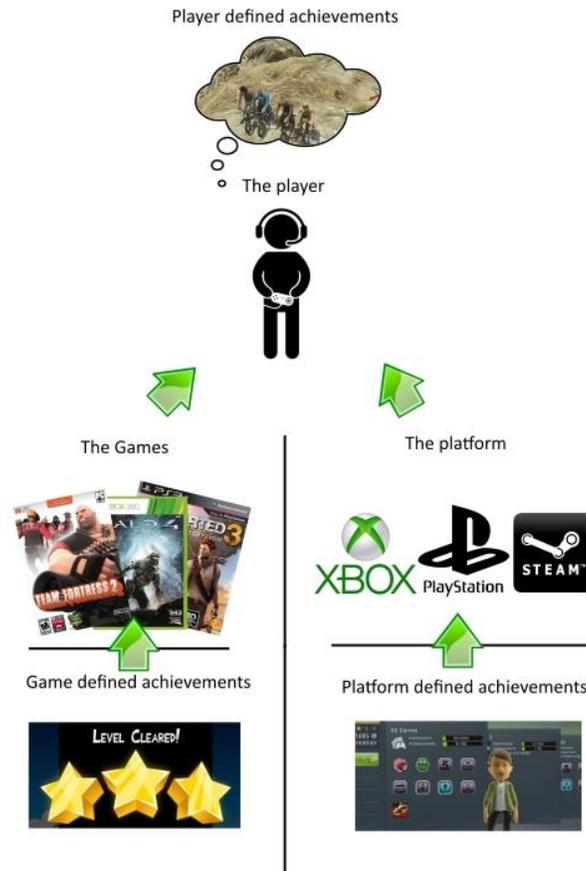
A third way of using the word seem to be more commonly used in player communities, than the two others; i.e. the platform defined achievements. When used in player communities, an achievement most commonly describes the achievement system on Microsoft's Xbox (Microsoft, 2002(A)), the trophy system on Sony's PlayStation (Sony, 2008) and the achievement system on Valve's Steam (Valve Corporation, 2008). They are part of the user interface on the platforms and work as meta games that plays out between game sessions.



Steam achievements (Valve Corporation, 2008) (top), Xbox achievements (Microsoft, 2002(A)) (lower-left), PlayStation trophies (Sony, 2008) (lower-right)

Platform defined achievements are unlocked by reaching certain goals which set by the developers of the games. Every goal reached will unlock a symbol represented by a small logo, a name and a description. The achievement is then added to the player's achievement collection, which also is an integrated part of the player's profile on the Xbox, PlayStation or Steam platforms.

These achievements are not as incorporated into the game as game defined achievements in the sense that they do not affect the game. However, they are not completely outside the game either since they will pop-up during the playtime.



Achievements can be categorized into these three types. Game defined achievements are displayed inside the game, platform defined achievements are displayed in the platform's interface and player defined achievements are not displayed at all.

Presenting platform defined achievements

The achievement system on the Xbox 360 is developed in a way that forces every game, created for the console, to have predefined achievements for the player to pursue. The achievements has to cover 1.000 "game score points", but the developer decides how many achievements there should be in their game and how many of the total 1.000 points the different achievements should unlock (Jakobsson, 2009).

The main difference between the achievement system on the Xbox and the systems on PlayStation and Steam is the way the achievements are presented. Xbox players have a total game score starting at zero and rising according to achievements unlocked, where PlayStation players have a more RPG (role playing game) inspired presentation, with experience levels that rises according to achievements unlocked. Furthermore, the system on the PlayStation awards the player with one further achievement, the Platinum trophy, upon obtaining all other achievements in a game. On Steam, the player has a level like on the PlayStation, however the player is not granted a platinum achievement.

Juan Gril, studio manager at casual game developer Joju Games, argues that the main difference between achievements on the Xbox and trophies on the PlayStation is that trophies are about accomplishments

and Gamerscores are about bragging (Irwin, 2009). By naming the achievements “trophies”, Sony alludes that these achievements are for the player to gather in a collection, where the player can look back at his/her accomplishments. Emulating trophies in a cabinet or a hunter’s trophy room.

As will be explained in the next chapter, platform defined achievements has become the subject of much debate on whether they enhance or weaken the play experience. This is a debate that have been escalating ever since platform defined achievements’ debut on the Xbox 360 in 2005 (Griffith, 2013). Players’ opinions range from deep devotion to profound disgust, thus some players are very motivated to pursue platform defined achievements, where others are very demotivated. It is a debate that has created a sense of guilty pleasure in the players who like to pursue platform defined achievements, which in turn has created an undesirable tension between the two groups of players.

The rest of this research will be centered around platform defined achievements, i.e. Xbox achievements, PlayStation trophies and Steam achievements, and how to enhance motivation to pursue them as an attempt to minimize the clash between players with different opinions.

For the sake of simplicity, platform defined achievements will be described as “achievements” from here on out.

3 Initial problem area

Before conducting any further studies into achievement motivation, it seems of essence to specify the debate that has arisen between players who are in favor of achievements and the players who are against them. This chapter will show that this debate pushes players from the two groups apart and thus has a bad influence on the gaming community, creating conflicting poles.

3.1 The achievement debate

The two groups of players has different opinions because of their conflicting perceptions of achievements. Comments on articles and forum posts about achievements has been analyzed to get to the core of their views. This chapter breaks down this debate and concludes in a summarization of specific elements in achievements that are either motivating or demotivating to the players, depending on their point of view. These elements are held up against each other to clarify the main differences between the two groups of players.

It is not possible to determine whether a comment is reliable or not, since everyone can be writing them with no regards to whether they have experience with pursuing achievements or not. However, no matter how reliable the comments might be, they all have an impact that forms the debate.

As defined in chapter 2 an achievement is a symbol of accomplishments, which is actually one of the most common arguments in favor of achievements:

"[Achievements show] what I have accomplished in the game." by THE 246 GAMER (XboxAchievements.com, 2010)

"They give me a continuous display of my accomplishments, which I feel is an added bonus to playing games." by BruDrew (XboxAchievements.com, 2010)

Furthermore, many players mentions that achievements are a way to create a sense of completion. When the game is completed and all achievements are unlocked, the player gets a feeling of having done and seen everything the game has to offer:

"Perfectionism. I just have to get most of those achievements that the game has, or I can't get a peace of mind." by Unterofficer (XboxAchievements.com, 2010)

However, on the other side of the spectrum, many players do not see achievements as part of the completing a game:

"[...] if I beat a game and I haven't gotten most of the Achievements I feel ripped off. Somehow I didn't play the game "correctly." It's a cop out. If you (as a designer) have a feature that you want people to use, design it to be a more integral part of the experience. Don't attach it and point at it and expect people to play it." by Eric Carr (Irwin, 2009)

Carr points out that achievements are demotivating because they are a way for the developer to command the player to play in a certain way, rubbing the player his/her free will. Players, like Carr, argue that games should be designed in a way that motivates players to try out new ways to use game mechanics in themselves, without the need of achievements. Often achievements are used as a "patch" to make players play the game in new ways that was not suggested by the game itself, for the sole purpose of unlocking the achievements. This method is often criticized as being a lazy solution to a problem in the game design:

"First and foremost, the core gameplay should provide intrinsic rewards to the player such as a sense of accomplishment, feelings of mastery, and the ability to make meaningful choices. As soon as players start to play the game purely for the artificial rewards of earning achievements, we have failed as designers." by Joel McDonald (Irwin, 2009)

Hereby, McDonald argues that achievements should not be the main reason for a player to play a game, but should be seen as bonus features to a game, as such, there are both people who say that achievements should be an integrated part of a game and others who say that they should not.

However, not all players share this opinion, as some thinks that achievements should create new ways to play the game and as so, the achievements should not be unlocked by playing the game normally:

"If I get an achievement for something I'm supposed to be doing anyway, like beating a boss, or completing a level, I feel like it is unjustified, even though it does serve a purpose of proving to my friends that I did indeed make the progress I said I did." by Tom Newman (Irwin, 2009)

Thus for some players achievements are about the replay ability. They are a way for the player to get more out of the game after completing it, either by having achievements that tasks the player to complete the game again in another difficulty level, or by showing him/her game mechanics he/she have not tried yet:

“They add a sense of enjoyment to the game and they make me do things i wouldn't normally do.” by siamese snake (XboxAchievements.com, 2010)

“I don't own alot of games so it's a way of getting the most out of the games I've got” by kasers (XboxAchievements.com, 2010)

“In fallout 3 I never played with Melee of Unarmed weapons but because they were achievements in New Vegas I had to play with them and found that I enjoyed them immensely. Thank you achievements!” by PenderPowguin (XboxAchievements.com, 2010)

On the other hand, too time consuming and too difficult achievements have a tendency towards being demotivating to begin playing a game in the first place. If a player is deciding whether to play a game or not, some give up on the game entirely before starting because of achievements, even though they usually like them:

“[I will] avoid games that I want to play due to the Trophies being too long or difficult. [...] I'd also like to buy the [Shadow of the Colossus], loved it on PS2 but the trophies seem to hard. ICO too, that's another game I'd like to play, but again I've avoided it due to the trophy requirements.” by CreativeRhino (playstationtrophies.org (A), 2014)

In CreativeRihno's example Shadow of the Colossus (Team Ico, 2005) and Ico (Team Ico, 2001) are games that he would like to play, but the achievements has demotivated him to begin playing the games in the first place. Even though CreativeRihno claims to like Shadow of the Colossus and ICO, he does not think that they are so good that they justify the amount of time he will have to put into them in order to get the achievements. This show that some players cannot play a game without pursuing its achievements and if the achievements do not appeal to the player, he/she will not be playing at all. As mentioned in the definition in chapter 2, achievements are extra features that are added to the original game, resulting in more playtime. As soon as the player decides to pursue the achievements in a game, he/she will have to plan which achievements to unlock and how he/she will do it, before actually doing it and thus put more time into the game.

However, it is interesting to notice that some players are motivated to pursue achievements, even though they think the task that is required to unlock them is mundane and time consuming:

“[Free Realms] wasn't a hard game to platinum [get all achievements in], but damn was it boring. [...] Only saving grace of it was that almost 40 of the trophies are ultra

*rare and the platinum has less than a .5% earned rating.” by ggamer15
(playstationtrophies.org (B), 2014)*

ggamer15 finds the achievements in Free Realms (SOE San Diego, 2009) boring, which can either be an indication of the achievements either being too time consuming or not matching the his skill level. He says that boring achievements are demotivating, but for some reason he is motivated to get them anyway.

*“[...] I do see some [games] I wont bother with. Gta 4 and 5, blops [Call of Duty: Black Ops] 1 and 2. Most online trophies I ignore“ by gaminghermit
(playstationtrophies.org (B), 2014)*

In contrast to ggamer15's comment, gaminghermit is only pursuing the achievements that he finds fun to do. He will for instance not be pursuing multiplayer achievements at all, even though he is pursuing other achievements.

Multiplayer achievements seem to be criticized because they either forces the player to depend on other players or because players, who are trying to unlock achievements, are ruining the game for the rest of the players, because their goal is not to win the game, but to unlock the achievement.

One of the most commonly mentioned cons of achievements is that they do not award the player anything more than the graphical symbol of accomplishment. As mentioned earlier in chapter 2.1.2 players tend to want more than the symbol of accomplishment and it is not enough that the achievement adds to the player's game score or achievement level.

*“I think [achievements] are a step in the right direction, but most definitely aren't there yet. Yes, they pat you on the back for doing something "special", but other than that, they do nothing to really enhance your gaming experience.” by Jon Boon
(Irwin, 2009)*

“What bugs me the most about Achievements is that they're not good for anything. They're just for their own sake.

I enjoy the bonus points in the "Ratchet & Clank" games a lot more, because they're part of the game. Not just part of my PS3's operating system looking over my shoulder and watching me game. I wish achievements worked a lot like that.

Take Resident Evil 5, for example. It's essentially got TWO achievement systems. The one that actually makes the game more fun by unlocking new weapons, new "figures", new costumes, etc, and the one that adds to your trophy list on PSN or Live.” by Andy Lundell (Irwin, 2009)

As Boon and Lundell points out, some players would like to get in-game rewards or something else so that the achievements are not just for “their own sake”. The game score and achievement levels are not enough for them, which might be because that these systems are only developed for the means of showing progression. However these progression systems are, like achievements, not for anything else than “their own sake”. They do not progress towards anything. In addition more value are taken from them because every game have to have the same amount of achievement points, which results in the difficulty level between games and between platforms to be very diverse and unbalanced:

“The biggest problem with achievements is a lack of consistency... You can get all the achievements in some games in a couple hours, while other games might take you thousands of hours. It really makes the gamerscore kind of worthless.” by Michael Lattanzia (Irwin, 2009)

“One problem is that generalised achievement systems tend to conflate a large number of distinct objectives that aren't at all comparable in difficulty or required time investment in a simplistic way, at worst into the completely meaningless cross-title Gamerscore.” by Alexander Symington (Irwin, 2009)

Lattanzia and Symington both argues that achievements are demotivating when a game has achievements that are a lot easier and faster to achieve than others. They think that achievements are unfair, because they deliver the same amount of points no matter how difficult or time consuming they are to unlock. Furthermore, this also relates to games that are developed with a certain target audience in mind, resulting in achievements being easier to unlock if the player is playing a game that is designed for a younger audience.

3.2 Players' opinions

Leigh Alexander, a critically acclaimed author on Gamasutra (Alexander, 2013(A)), argues that achievements and trophies are not as popular as they were in their early days. She mentions that the player's opinion towards achievements has changed from eagerly wanting to collect them, when they were first introduced, to generally not caring about them. She says that such a system is “rewarding play instead of making play rewarding” and that such a system is bound to fail, when players realize that they do not get anything out of hunting achievements.

On Twitter she had a poll going (Alexander, 2013(B)) where she asked people whether they care about achievements and whether they ever had cared and if their enthusiasm about them have changed. She got 26 comments of which most of them were negative towards achievements. Players who were using

them only used them in games they really liked and only to squeeze more playing time out of the game when they had finished it.

Most of the players were against achievements because they found them disturbing the way they play games. They found achievements as a cheap way of making players keep playing, which reduced their desire to continue.

According to the comments the worst achievements are the ones that are out of the player's control, the ones that takes a very long time to get and the ones that are too difficult to get.

All comments listed in this chapter are the most commonly mentioned opinions both in favor of and against achievements. To recap what the two groups say, here is a comparison of the opinions in favor and against achievements.

Achievements are good because they...

...prolong playtime:

- They are a way to play a game again, but with new goals in mind.
- They challenge the player to try harder difficulty settings.
- They entice the player to try new game mechanics.

...create a sense of accomplishments:

- They let the player display what he/she have accomplished.
- They work as proof of what the player have done.
- They evoke the feeling of being special when unlocked.

...create a sense of completion:

- They work as a checklist for the player to make sure that everything is done.
- They create a feeling of mastery of the game.

...have a social aspect:

- They have a natural element of competition, gives the player bragging rights.
- They encourage cooperative gaming, such as Achievement boosting.
- They have created a community of forums and web pages.

...give the player a digital praise:

- They complement the player for doing something special.
- They release tension after a long build-up, which is concluded in a small sound.

...create a sense of collection:

- They are something the player can be collecting.

Achievements are bad because they...

...are too time consuming:

- They assign mundane tasks for the player to do.
- They assign repetitive tasks for the player to do.
- They are only for gamers with more spare time.
- They forces the player to replay a game he/she has already completed.

...mismatch in difficulty level:

- They are too easy, resulting in a boring task.
- They are too hard, resulting in frustrating tasks.
- They are not valued according to their difficulty level, thus incomparable across games.

...robs players' sense of control:

- They make the player feel that he/she is obeying orders set by the developers.
- They force players to rely on other players' skills in multiplayer achievements.
- They are ruining other players' game when some players are boosting.

...have no purpose:

- They do not award the player something useful they can use in their game.
- They do nothing besides being added to the players' achievements list.

When comparing the two groups' opinions it is clear that most of the mentioned elements are unrelated. This could be an indication of the two groups disagreeing with each other, but that players see one side of opinions dominate the other, and chooses side accordingly.

However, it seems that the two groups disagree in one of the element, i.e. "prolong play time" and "too time consuming". The two groups seem to disagree upon whether achievements being used as a way to create longer playtime is good or bad for the overall experience. Players in favor of achievements argue that achievements gives them a reason to play the game again with new sets of goals, by enticing them to play on new difficulty settings or by trying new game mechanics. They argue that the prolonged playtime generates more value for the players' money.

On the other hand, players against achievements argue that achievements are used as a forged way of putting more playtime in the game, because the tasks that are needed to unlock them often are either mundane, repetitive or completely out of context of what the game normally is about.

3.3 Future achievement debate

With the debut of the next-gen consoles it seems that achievements will be having the same influence on the gaming community in the future as they have now. Comments and forum posts that have been found for this research dates back to when achievements were introduced and goes up until now. It seems that there were more positive feedback towards achievements earlier than now (Alexander, Steam Trading Cards: The next-gen of achievements?, 2013(A)), but the different arguments that have been recorded are the same now as they were back then. Which suggests that the debate has not changed since the beginning of achievements' lifespan. Thus, it can be expected that the debate will continue and will not be resolved without an intervention that will alter the players' opinions about achievements.

One way of resolving the debate, will be to remove achievements altogether. However, because achievements already have a big fan base, it is expected that neither developers nor publishers intent to remove them.

Another solution to resolving the debate could be to find a way to close the gap between the two groups' opinions.

It is assumed that opinions are based on players' experience with achievements when they play, thus it can be expected that altering the experience of pursuing and unlocking achievements will change the players' opinions. From here on out the research will be focused on finding such a solution.

3.4 The initial problem statement

If a positive achievement experience, i.e. the player's experience of pursuing and unlocking achievements in a game, is to be constructed, the elements that constitutes the opinions against achievements should be downgraded and the elements of the opinions in favor should be enhanced. It should be said that it is not the purpose of this research to force players to like achievements, but to find a way enhance the experience of pursuing achievements. It is believed that a more positive achievement experience could, in time, create a more positive attitude towards achievements, making them more socially accepted.

As such, the initial problem statement is formulated as follows:

How can a new experience of pursuing and unlocking achievements, that enhances the positive side and reduces the negative side of players opinions, be created in order to reduce the undesirable tension between the two groups of players on each side of the achievement debate?

Thus, the goal of further research will be to identify a possible solution to positively enhancing the achievement experience.

4 Pre-analysis

What has been covered thus far have been to define achievements and the problems they cause in the gaming community. Analyzing the two sides of the achievement debate has resulted in defining the reasons to the clash between the two sides of the debate.

In order to answer the initial problem statement, i.e. finding a way to reduce the clash between the two sides, a new experience of pursuing and unlocking achievements should be analyzed.

As mentioned earlier some players, who have never tried to pursue achievements, might have posted their opinions on forums and comment sections as well. Those players are not basing their opinions on actual experiences of pursuing achievements in a game. They must be building their opinions on expectations. Expectations that are formed through other players who have tried to pursue achievements.

Thus, based on the analysis of the achievement debate it is perceived that the players' opinions are formed through their experience of playing games that had achievements in them or by hearing about others' experiences. Meaning that altering the experience with pursuing and unlocking achievements should alter their opinion on achievements.

Therefore, in this chapter further analysis of altering the players' motivation will be discussed and related in order to find a possible approach to alter the achievement experience.

4.1 Positive and negative reinforcements

Systems that awards the player some kind of prize, such as the achievements systems, are commonly used in many games as the main motivating factor.

Jesse Schell (Sheffield, 2013), an American video game designer, author and professor at Carnegie Mellon University, says that some of the widely used methods to make people play and to keep playing, are reward systems that both uses positive and negative reinforcements.

Positive reinforcements are rewards such as stars and badges that symbolizes mastery or improvement. In contrast negative reinforcements are feedback such as "Your pet Tamagotchi¹ just died" or "Your crops in FarmVille² (Zynga, 2009) are deing". These reinforcements are elements that embarrass the player in front of his/her friends. According to Schell (Sheffield, 2013) these reinforcements work just as well as positive reinforcements, but only if the player have been experiencing positive reinforcements beforehand. Negative reinforcements have to be the minor part of the motivational system or else the player will leave the game.

This motivational factor is highly based on the social aspects of the game and are driven by the player's fear of not being accepted by his/her friends.

¹ Tamagotchi, a small handheld console with the sole purpose of providing the player a digital pet to take care of.

² FarmVille, a farm simulation, social network game developed by Zynga.

“Farmville’s crop-withering mechanic, in particular, was referenced as a not-fun mechanic that compels people to play out of a sense of shame. (What if my real-life friends see how poorly I am maintaining my digital farm?)” by Schell (Sheffield, 2013).

However, as defined in chapter 2, achievements are by nature developed as rewards for doing something extraordinary, meaning that they are mostly used as a way to give positive feedback. However educational game designer and PhD at University of Central Florida Lucas Blair (Blair, 2011) argues that some achievements are negative achievements (Blair, 2011), meaning that they are awarded when the player does something that contradicts the game’s normal objectives. According to Blair (Blair, 2011) these achievements has only bad influences on the player. However players who has set the goal of unlocking all achievements in a game, has to get these achievements as well.

This show that achievements has one fundamental problem. A problem, which lies in their nature of being a symbol of accomplishment. Because even though they give the player their advantages of awarding the achiever high status in his/her social community, they have to be something that is granted when a task is done. In order to be a symbol of accomplishment they have to be granted at the end of a journey and not during it. Meaning that they mark the end of an era. Alluding that whatever task the player have been resolving, he/she is done when the achievement unlocks. This can of course be seen as a good thing if the task is boring, but if the task is fun, unlocking the achievement can be a sad experience. The journey is over and the player will not be doing it again.

This also alludes that achievements are granted as the product. There is an important difference to notice here. A difference that lies in the word “achievement”. As achievements are not activities in themselves. The players cannot say; “I’m *achievementing*” like they can say “I’m running” or “I’m biking”. They have to say “I’m achievement *hunting*” or “I’m *pursuing* achievements”. The *achievement* is the reward and *hunting* or *pursuing* is the activity. Thus “achievements” cannot be the activity the player is doing in the game only the act of *hunting* or *pursuing* them can be the activity.

Pursuing achievements implies that the player has created the goal of pursuing them for him/herself. The next section will analyze motivational processes that leads the player to start pursuing achievements.

4.2 Player self-efficacy

When a player decides to play a game, he/she will have to choose whether he/she wants to pursue achievements. This decision-making is based on the player’s opinion. It is believed that how achievements are promoted and perceived has a big impact on the player’s decision-making. If a player have not already heard about achievements, the most probable way he/she will discover them, is by coincidentally unlocking one while playing. It can be expected that the player will take a closer look at newly unlocked achievements out of curiosity, resulting in the discovery of all the other achievements in the game he/she is playing. At this point, the player is presented by the tasks needed to unlock all achievements and the

player will choose whether he/she wants to pursue them or not. Thus, the player's motivation to pursue them is altered by this presentation of the achievements in the game.

If the player already knows about achievements it is believed that he/she will already know whether he/she will be pursuing the achievements or not in a particular game. The only point, at which a player will be looking at the achievement list, is if the player knows that, he/she will pursuing them or if he/she is in doubt.

If a player is in doubt, it is seen as natural for the player to take a closer look at the achievements' description in order to decide whether the tasks are something he/she would like to do. Thus, whether he/she is motivated to do the task at that moment.

This leads us to what Blair (Blair, 2011) calls "player self-efficacy", which is the players own sense of being able to complete a task. If a player do not have a high self-efficacy, he/she will be giving up on trying to get the achievement before even trying. With higher self-efficacy, the player will develop a stronger commitment to a goal or task and there will be a bigger change of him/her developing and using new mechanics and strategies in the game. Moreover, a player with high self-efficacy will be taking negative feedback better. Thus the higher self-efficacy a player has, the better changes there are for him/her to be motivated to pursue achievements even though the task seem too difficult.

4.2.1 The four elements of self-efficacy

Blair (Blair, 2011) argues that there are four factors that influences the player's self-efficacy. Firstly is the player's level of skill. If he has been doing good in a game so far he/she will have more confidence in trying to unlock achievements, on the other hand if a player have been having a hard time completing the main game, chances are that he/she will not be trying to unlock the achievements.

The second is the player's social circle's enjoyment and success in the game. Meaning that if the player's friends are having a good time unlocking achievements, chances are that he/she will also be trying. However, this can also be damaging for the player. If his/her friends are having an easy time unlocking achievements, but the player is not, his/her self-efficacy will drop.

The third is verbal praises. Messages on the screen or from the sound effects in the game, like "Good Job!" or "Amazing!", will enhance the player's self-efficacy, according to Blair (Blair, 2011). For achievements, there are no verbal praises like that, however the notification that pops on the screen when the player unlocks an achievement and the sound of "pling" or "pop" that plays together with the notification, can be seen as praises.

The same can be said about the notifications that pop when the player does something that partially fulfils the requirements of an achievement. For instance when the player loots container number 145 out of 200 in Bioshock Infinite (Irrational Games, 2013) this notification is displayed:



Steam notification that makes the player know how far he/she is in completing the achievement "Coins in the Cushion" from Bioshock Infinite (Irrational Games, 2013)

However Alfie Kohn (Kohn, 1993), an American author and lecturer on reward systems in education, argues that praise is a way to falsely award the player. Meaning that praising a player will make him feel acknowledged in a social context, however praising will also enhance the feeling of the student being undermined by the person giving the praise. Praise can also have a negative effect on the student's reason to do the task, meaning that he/she might be doing it solely for being praised and not for doing the task, and the task become a tedious obstacle that have to be done in order to get the praise.

The last factor is the player's state of mind at the moment he/she decides whether to go for an achievement or not. If the player feel stressed or in a bad emotional condition, chances are that, he/she will not be pursuing the achievements.

However, the problem with the player's self-efficacy is that it is momentarily. Meaning that a high self-efficacy might be enough for the player to take a deeper look into the achievement list of the game he/she is playing and it creates a firm foundation to evolve a motivation to start pursuing. However when the player has made up his/her mind to pursue an achievement it does not necessarily mean that he/she will be motivated to keep pursuing them in the longer run.

Therefore, the last part of this chapter will analyze different ways of maintaining the player's motivation when doing a task or challenge.

4.3 Extrinsic vs. intrinsic motivation

In this chapter, extrinsic motivation and intrinsic motivation will be defined and compared in order to determine how they affect players' motivation to pursue achievements. This is done by determining how player's motivation to pursue achievements are related to the two phenomena in order to define the potential of enhancing the players motivation to pursue achievements through existing theories on extrinsic and intrinsic motivation.

Daniel Pink, an American sociologist specialized in human motivation, argues that motivation is divided into extrinsic and intrinsic motivation (Pink, 1995). Extrinsic motivation is the drive to complete a task in order to get an external reward, such as a money price or a trophy. Intrinsic motivation is the drive to do a task because the activity is fulfilling to do in itself.

According to Pink (Pink, 1995) extrinsic motivation has been and is often used in various work environments. However awarding employees with money bonuses for doing a job faster or better is actually more damaging than enhancing his/her motivation in the long run. Pink argues that giving a

reward will boost the motivation and the will to do a task, for a short period of time. After the employee has been rewarded for his/her job, he/she will be demotivated to do it again without getting the reward.

Pink (Pink, 1995) has conducted an experiment with children who used their breaks for drawing pictures. He granted one group of children a reward for drawing a picture during their break and another group was not awarded anything. After a couple of awards, the group of children who were awarded for drawing were no longer drawing in their breaks unless they were promised a reward for doing so. Furthermore they were no longer satisfied with the first rewards that they were granted at the beginning of the test. On the other hand, the group of children who were not rewarded showed no change in their behavior. This show that rewarding people for doing something can not only take away their drive to do it, but also raise their need for bigger and bigger rewards.

Pink (Pink, 1995) also describes a scenario where three groups of coworkers who all had to do the same task. The first group was not awarded for their work at all, the second were awarded a small monetary bonus and the third group was awarded a large monetary bonus for their work. Group one and group two were doing the task equally efficient, but the third group were doing the task 30% slower.

This show that rewards work as a burden for people, because with a price comes expectations from others, and it is these expectations that strain the employee's mind. The larger the reward the higher expectations.

These two examples show that extrinsic motivation can be source of discourage if the reward is not balanced out with the task. Pink also argues that extrinsic motivation should only be used in situations where the task that needs to be done is undesirable in such a degree that the person, who should be doing the task, has no chance of evolving intrinsic motivation in the first place.

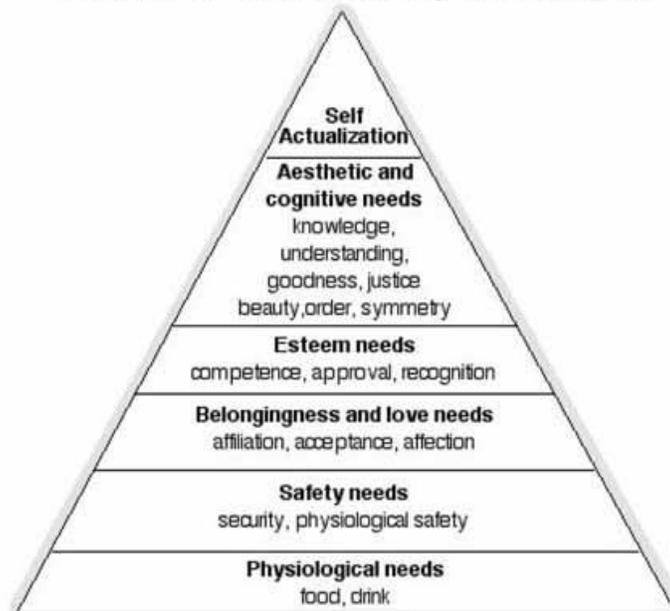
4.3.1 Human needs hierarchy

According to Jesse Schell (Schell, 2008) the nature of extrinsic rewards relates to the "basic human needs hierarchy" proposed by Abram Maslow (Simons, Irwin, & Drinnien, 1987) (See figure 1). People are not motivated to pursue the higher level needs before the lower level needs are fulfilled. Schell (Schell, 2008) says that most games are about achievement and mastery, thus in the region of "Esteem needs" (competence, approval and recognition). He suggests that game designers should be designing tasks that lies in the lower regions of the pyramid.

Schell (Schell, 2008) argues that by fulfilling the lower need levels, like "Belongingness and love needs", the player is given a better incitement and motivation to try to fulfill the upper levels of needs.

The game have to deliver the promised fulfillment according to the pyramid, otherwise the player will give up on the game.

Maslow's Hierarchy of Needs



(Figure 1 – Maslow's Hierarchy of Needs)

According to Mihaly Csikszentmihalyi extrinsic rewards are good for fulfilling the basic needs of survival (Csikszentmihalyi, 1975), i.e. the lower levels of Maslow's hierarchy of needs (see figure 1). He argues that extrinsic reward systems are by nature less expensive for the person who sets up the task. It is easier for a game developer to set up a task and create a fitting reward, than it is to create a task that do not need a reward because it is fulfilling to do in itself.

When extrinsic rewards are used for fulfilling the upper levels of the hierarchy this is where the true problem arises, because then people's happiness are based on other's view on themselves. When using extrinsic rewards for fulfilling the upper levels of the hierarchy the rewards become a symbol rather than a needed resource. This could be an indication of extrinsic rewards are based on requiring basic needs, e.g. getting food on the table and paying rent, where intrinsic motivation is based on enjoyment. This means that in order to get intrinsically motivated, a person's need for extrinsic rewards has to be fulfilled first.

4.3.2 The three elements of intrinsic motivation

According to Pink (Pink, 1995), intrinsically motivated employees are working because they like doing the work and not because of what they are paid. An extrinsic motivated person can be equally happy about his/her work, but the difference is that he/she will only be doing it to get the reward at the end. According to Pink (Pink, 1995), intrinsic motivated employees are better motivated to do a task, because they do not feel controlled by anyone else, but themselves.

In order for intrinsic motivation to flourish, the person have to have his/her basic needs met. Meaning that intrinsic motivation will only evolve if it is possible for the employee to feel free, and according to Pink (Pink, 1995), this can only be done if he/she is feeling secure. This means that employees will only be intrinsic motivated if the bottom levels of Maslow's hierarchy of needs are met, i.e. the employee's salary is enough for him/her to live for, so that he/she does not have to worry about the bills and feeding his/her family.

Furthermore, when these basic needs of security are fulfilled, intrinsic motivation is triggered through three elements: autonomy, mastery and purpose (Pink, 1995) (Przybylski, Rigby, & Ryan, 2010). It is not possible for an outside source to evoke intrinsic motivation in another person since it springs from the person's own free mind. However, outside sources are able to make the person's environment ideal for awaking intrinsic motivation in a person. According to Pink (Pink, 1995) autonomy, mastery and purpose are the elements that can be modified in order to create the ideal intrinsic evoking environment.

Autonomy

Autonomy is about the player's possibility to handle a task in his/her own way. A good example of such an environment is the work environment at Google Inc., where all employees are granted one day a week (20% of their work time) to do whatever project they want. According to Google, products like Google Translate, G-mail and Google News were invented in these days of total autonomy (Pink, 1995).

As such, Pink (Pink, 1995) argues that rewards that are granted for doing a task, such as money or an achievement, takes away the person's autonomy. This can mean that tasks that are vague and open, gives the person more freedom to solve it the way he/she wants, but by offering a reward the task is seen as undesirable. If the task was desirable it would not need a reward.

According to Przybylski et al. (Przybylski, Rigby, & Ryan, 2010) autonomy in games is about creating player choices to alter their play through. Either by making branching story structures or by multiple gameplay possibilities, for instance through mission selection, choosing avatar appearance, choosing skill sets for their avatar, etc.

Players' autonomy seem to be highly regarded in sandbox games like Minecraft (Mojang, 2011) or the Grand Theft Auto V (Rockstar North, 2013), where the player has so many that options the main gameplay becomes figuring out what to do.

However, autonomy in achievements can only be seen as the player's capability to find his/her own way of solving a task, if the achievement's description is vague. For instance if an achievement's task is to "Capture five criminals using a net", the player do not have the autonomy to choose to capture the criminals with traps or another tool. The only choice the player has is whether to do the task or not. Thus, the autonomy of achievements lies in the player's choice of pursuing an achievement or not.

Mastery

Mastery is the person's possibility to try the task more than once to become better at solving it. Mastery is achieved through engagement. A person will only pursue mastery of a task if the task is engaging and according to Pink (Pink, 1995) engagement is about being in flow.

Csikszentmihalyi (Csikszentmihalyi, 1975) argues that a state of flow is triggered in the player when they are presented by a task, with a difficulty level they can relate to according to their skill level. The process of matching the two levels determine the player's perception of his/her capability to complete the task. Thus, the difficulty level of the task should be well balanced according to player's skill level if the player is to experience mastery.

Przybylski et al. (Przybylski, Rigby, & Ryan, 2010) also argues that intrinsic motivation through mastery can only be achieved if the game's difficulty is regulated in a way that constantly match the player's skills. Meaning that if the player is presented by a task that is too difficult he/she will get frustrated, where if the player is presented by a task that is too easy, he/she will get bored. In order to maintain the player's interest the game have to rise in difficulty level according to the the player's skill development.

However, being in flow will not guarantee mastery, simply because flow is a momentary experience where mastery is achieved after a long period of time. Flow is however, necessary for a person to feel engaged in a task, which is essential for creating an environment that evokes possibility for mastery.

Like the player's self-efficacy, the mastery element of intrinsic motivation is highly dependent on the player's own sense of being able to complete a task. As such in the terms of achievements, this relates to the player being able to successfully pick out the achievements that fits his/her skill level, without ending up doing a task that are either boring or frustrating.

Purpose

Purpose is the person's possibility to set the task into a context. In a work environment, it is very demotivating for an employee to be doing a task that does not have a clear impact on the organization (Pink, 1995).

Giving purpose to a game is more about not taking the purpose from the player. It is related to the relationship between difficulty level of the task, time consumption of the task and the skill level of the player. The player have to feel that, what he/she is doing serves a bigger purpose of some sort. It is about the player's choices having an impact that is easy to detect. For instance, this can be by making a choice in a key moment of the game's story or by choosing to do what the player finds most fun to do in the game. However, this feeling is subjective as players can either feel the task gives a feeling of purpose inside the game or outside the game.

The purpose part of intrinsic motivation is believed to be the most difficult element of the three to enhance in the player, because playing games is about entertainment at its core. Doing a piece of work is about surviving, i.e. making an income. As mentioned earlier, entertainment lies further up Maslow's hierarchy of needs (See figure 1, chapter 4.3.1).

Because Pink (Pink, 1995) argues that doing something for the purpose of money, i.e. for the purpose of surviving, it is extrinsic motivation. This raises the question whether intrinsic motivation only can be done if the tasks, which are extrinsic motivated, are completed.

Przybylski et al. (Przybylski, Rigby, & Ryan, 2010) also argues that purpose in games is also affected by the social interaction. Games has potential to create motivation through cooperation and competition. However, as will be discussed later (see chapter 6.3), multiplayer achievements have been granted a bad reputation because the players' control is taken from them when they have to rely on other players.

Furthermore, Csikszentmihalyi (Csikszentmihalyi, 1975) argues that even though prestige and social status are a vital part of any society, when the roles of a society rely exclusively on extrinsic rewards, such as achievements, the members of the society are alienated.

This problem relates to the achievement debate, where players against and in favor of achievements has been alienated from each other. However, the debate is formed by the opinions on whether achievements are good or bad for the gaming experience, whereas Csikszentmihalyi's (Csikszentmihalyi, 1975) argument relies on the alienation of two people because of jealousy and envy. This problem seem to be an issue that lies within the community of players in favor of achievements and is not part of the debate between players against and in favor of achievements. Thus, the issue is out of the scope this research.

4.3.3 Imposing intrinsic motivation

Even though it is believed that Pink's (Pink, 1995) theories on enhancing intrinsic motivation indeed are able to alter the player's intrinsic motivation, it is not without complications. Pink (Pink, 1995) argues that if autonomy, mastery and purpose are fulfilled, the player will be intrinsic motivated. However, Kohn (Kohn, 1993) argues that it is impossible to "*motivate another person*". Intrinsic motivation have to come naturally to the player. He argues that when a student starts in school he/she is already intrinsically motivated to begin learning and he/she does not have to be further awarded. However, Kohn's (Kohn, 1993) research show that the natural motivation will disappear around the time that the student is introduced to the grade systems in elementary schools. Kohn (Kohn, 1993) argues that the intrinsic motivation is already inside the student's mind and that no extrinsic motivators can get it out. The tasks have to be tied to something that already is intrinsically interesting to the student in order to connect more intrinsic motivation to the task.

Kohn (Kohn, 1993) agrees that rewards are as bad as punishments. He wants educators to act WITH the student instead of giving a reward TO them. He argues that teachers have to be working with the student as on the same level as the student.

Kohn (Kohn, 1993) further argues that extrinsic rewards are most damaging when the student is awarded for doing something he/she already finds intrinsically interesting to do. Meaning that players should not be rewarded for doing something they already like doing, because it will bring back the feeling of not being treated as equal, and thus destroying the fun experience he/she is experiencing.

Students do not want to feel tempted by others through things they like. Doing so will make the student experience a demeaning behavior towards them. If educators are using rewards, they denote extrinsic

motivation, meaning that extrinsic motivation leads to the feeling of degrading view on the student, because of the student not being treated as an equal to the teacher.

Therefore, extrinsic motivators demolish the student's desire to learn, which, in the case of games, can be translated to the desire to do the tasks the game asks him/her to do. However if this was completely true, achievements would remove the player's desire to play the game and there would not be any fan base for achievements in the first place. However, this might be what is happening for players who are against achievements.

In order to intrinsically motivate students, the students have to discover what is the best way of doing a task by themselves. This way the student is not trying to mold themselves into trying to fit others' perception and opinions.

This means, in the case of games, that the game designer has to be very careful to what he/she chooses to give extrinsic rewards for, since doing so will reduce the player's motivation to do the task again without getting the reward. Thus, extrinsic rewards destroys the intrinsic motivation that might already be inside the player.

Overall, motivating the player to pursue achievement should be done by changing the achievement experience through intrinsic motivation. In order to create possibility for intrinsic motivation to evolve the player will have to have a high player self-efficacy. A high self-efficacy should make the player willing to start trying to pursue an achievement. It has been defined that intrinsic motivation cannot be imposed onto a player, but has to be evoked by him/herself through the right intrinsically motivating conditions. Thus the player should be given these conditions through an environment that enhances the player's attention to his/her level of autonomy, mastery and purpose in relation to the task an achievement asks of him/her.

5 Delimitation

So far, it has been argued that In order to create an improved achievement experience it should be intrinsically motivating to do the task that achievements are asking of the player. Because all achievements are different and because players' opinions are subjective, it is believed that the only way to do so is to evoke the players' own intrinsic motivation.

Thus far methods for evoking intrinsic motivation has been defined as an environment that enhances the player's autonomy, mastery and purpose over a task. However, it has argued that it is not possible for an outside source to create intrinsic motivation in another person.

In this chapter it will be discussed what part of the achievement experience can be improved. This is done to determine how the theories discussed in the last chapter can be used to motivate players to pursue achievements.

This leads to the question of what can be done from outside the role of the developers and publishers who creates the achievements. It will not be possible to alter how the game is played or how the achievements looks and how they are unlocked.

However, it will be possible to alter how the player perceives the game's achievements by acting as the middle ground between the player and the game, i.e. by replacing the platform (See figure 2).

Game defined achievements will emerge just by playing the game. Player defined achievements will emerge by the player setting his/her own goal. Meaning that these two kinds of achievements are a natural part of playing a game. However, the platform defined achievements, will only emerge as a notification through the platform. The player will have to actively go to the interface of the platform to look at the achievements and when doing so, he/she is represented by the platform's presentation of the achievements in the game he/she is playing, which essentially consists of a long list of achievements. This is where improvements can be made.



Figure 2 - The player's perception of platform defined achievements can be altered by replacing the platform's representation of its achievements

It is believed that the player defined achievements acts as the base motivation for player. This means that these achievements are what the player is aiming for when playing. If he/she is aiming for completing a level in a game or pursuing an achievement, he/she has made this goal into a personal goal, i.e. the player has made it a player defined achievement.

When promote the achievements of a game to the player, the platform does not take into account, what kind of player is playing and what kinds of achievements there are in the game he/she is playing. In order to improve the experience it will not be possible to alter the achievements themselves, but altering the motivation to pursue them by developing a substitute for the platform, seems to be the only way to improve how achievements are motivating the player to pursue them. By creating a system that replaces the platform's representation of achievements, it is possible to control how the achievements are presented and promoted to the player. If the player is using the system for looking at the achievements in the game he/she is playing instead of their representation in the interface of the platform he/she is

playing on, the system will be able to create an environment ideal for evoking intrinsic motivation towards achievements.

This leads to the final problem statement:

To what extent can a system take advantage of an intrinsically motivating environment in order to reform the extrinsic motivational nature of achievements?

The research from here on out will be focusing on answering this question by analyzing the development possibilities and possible use of such a system.

6 Analysis

In order to answer the final problem statement this chapter will analyze how achievements are promoted, what tasks they are presenting the player and how these benefit or prevent intrinsic motivation. Furthermore, a breakdown of player typology will be executed in order to localize how an intrinsically motivating environment can motivate the players the right way. Both the analysis of achievements and players will be executed through the cooperation of online forum members of achievement hunting sites, specifically the sites psnprofiles.com, psntrophyleaders.com, ps3trophies.com and playstationtrophies.org.

This is done to ensure that the development of an intrinsically motivating environment can be done in a way that matches the right achievements with the right player types.

6.1 Defining achievement motivation

In order to define which achievements would be beneficial to use in an intrinsic motivated environment one problem arises: How is it possible to define which achievements are not discouraging to the player? They cannot be defined according to how many players have unlocked them, because the achievements that have been unlocked by many players might just be easy to unlock. Furthermore it is not possible to define the achievements according to the number of games sold, because that does not have a direct correlation to the achievements.

Therefore, this section looks at how achievements are categorized by other research done in the field and relates it to players' opinions from the achievement forums mentioned above.

6.1.1 Measurement and completion achievements

Blair (Blair, 2011) categorizes achievements into progression and completion. Measurement achievements are the ones that are given to the player after completing a task in a way that can be measured up against other players' performances. These kinds of achievements are rarely used as platform defined achievements, because platform defined achievements can only be awarded once, but are more often used as game defined achievements.

The game *Mirror's Edge* (EA Digital Illusions CE, 2008) has a game mode called Time Trial, in which the player is granted between zero and three stars according to how fast he/she completes a running track.



By playing the Time Trial game mode in Mirror's Edge this player has been awarded three stars for completing the level OFFICE in the time he/she did (EA Digital Illusions CE, 2008)

With these stars, the player is able to measure himself up against his/her own or other players' times. Blair (Blair, 2011) argues that measurement achievements enhance the player's own intrinsic motivation because measuring the player's performance forces the player to judge his/her performance and competence to do the task, which in turn enhances the player's intrinsic motivation. Thus, Blair (Blair, 2011) argues that rewarding the player extrinsic rewards will increase the player's intrinsic motivation as long as the extrinsic rewards are used as measurement achievements.

Przybylski et al. (Przybylski, Rigby, & Ryan, 2010) argues that enhancing the player's skills in a game is by nature intrinsically motivating, but if the player is not given some kind of indication of his/her improvement, he/she will not detect it and thus in turn will not want to improve his/her skills even further.

The collection of platform defined achievements in Mirror's Edge (EA Digital Illusions CE, 2008) includes achievements which are unlocked when the player gets 20, 35 and 50 stars in total, i.e. over multiple running tracks.



Completion achievements from Mirror's Edge that are unlocked when the player gets more and more stars in the Time Trial game mode (EA Digital Illusions CE, 2008)

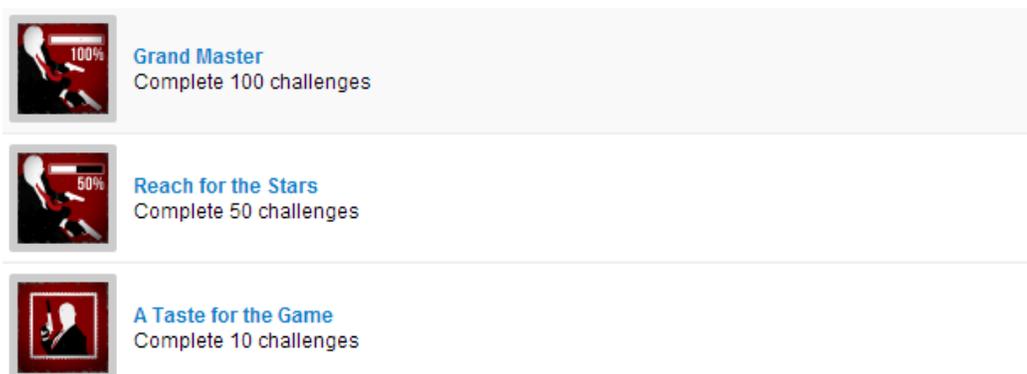
Even though these achievements are linked to the game defined measurement achievements, they are not what Blair calls measurement achievements, but completion achievements (Blair, 2011), because they mark a milestone. These achievements are not indications of how well a task have been done, but are unlocked when the task is finished.

Thus in order to enhance intrinsic motivation in the player, the game's achievements have to be of the measuring type and not the completion type. The completion types are extrinsic rewards and after getting the reward, the player is likely to not do the task again, whereas measuring achievements are given to the player while he/she is learning to execute the task, and shows how well he/she is doing. This will in turn make the player want to do better, thus enhancing the player's intrinsic motivation to do the task through mastery. Thus, measurement achievements are intrinsic motivating achievements, because they give the player incentive to do the task better.

Unfortunately, because platform defined achievements can only be unlocked once, these are rarely used as measurement achievements, meaning that dividing achievements according to whether they are completion or measurements achievements, will not work for all games.

6.1.2 Dividing tasks into smaller tasks

Blair (Blair, 2011) also defines some achievements as "incremental". Incremental achievements are achievements that the player gets for doing the same task more than once, for instance achievements awarded for getting 100, 200, and 500 kills.



These three incremental achievements from Hitman: Absolution (IO Interactive, 2012) are used to divide the task of completing 100 challenges into 3 smaller tasks, i.e. the first task requires the player to complete 10 challenges, the next requires him/her to complete 40 additional challenges and the last requires him/her to complete 50 additional challenges.

Incremental achievements helps the player to overcome more difficult tasks, because they divide the task into smaller and more manageable parts (Blair, 2011).

However, these kinds of achievements might also make the player feel that there is no end to the task he/she is doing, because every time one incremental achievement has been unlocked, there is a new one that needs to be unlocked. This might seem tiring, especially if the player cannot see how many achievements he/she has to unlock beforehand and they may lose their sense of autonomy.

However Blair (Blair, 2011) argues that these kinds of achievements, lets the player form mental schemas and models of the game's gameplay and thus are ideal for use in tutorials for training the player to play the game. He also argues that players are more willing to spend their time trying to get these kinds of achievements than achievements that are unlocked after a longer play session because the smaller tasks are the faster they are to complete.

6.1.3 Expected vs. unexpected achievements

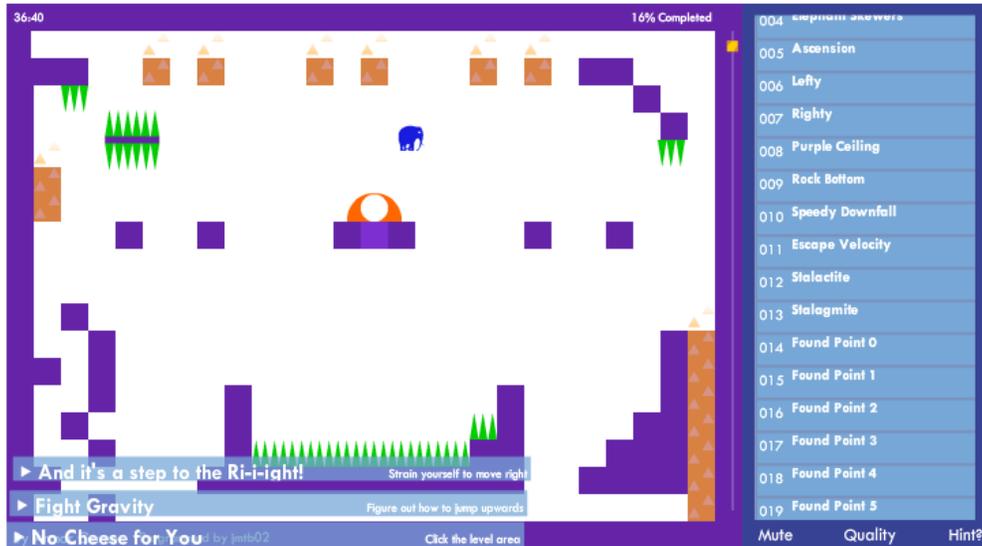
All achievements are listed in a game's achievement list and presented in the platform's interface. However, even though they are still on the list, some achievements are hidden to the player. They only let the player know that there are some of the game's achievements that the player will have to figure out him/herself how to get, without the help of either the achievement's name, description or picture. This can be seen as a unfair job, as the task that needs to be done for achievements are very diverse.

However Blair (Blair, 2011) argues that expected achievements lets the player set goals for him/herself and he/she will be planning his/her playtime even when the game is not running, meaning that he/she will have to find resources in him/herself, or in others to complete the goal. For instance by allocating time to be better at a specific skill or asking a friend for help.

Self-set goals motivates players to keep going even though they may be facing a difficult task, where players without a self-set goal, will give up when facing the same tasks. Players with defined goals are willing to put more effort into achieving the goal than players who have not set the goal themselves. Free roaming sandbox games, like Minecraft (Mojang, 2011), are about making the player come up with goals for him/herself and the game takes advantage of players who have set their own goals will be motivated to acquire new knowledge and skills on their own

In the same way, setting goals of achieving certain achievements in a game, before the player begins playing, will build a mental schema/model of how he/she is going to play the game, and thus he/she will be developing a better understanding of the game.

Blair (Blair, 2011) argues that unexpected achievements are beneficial in the way that they encourage experimental play, meaning that if the player knows that there are hidden achievements, which tasks are unknown to him/her, the player will be experimenting with different strategies and gameplay in order to try to unlock the achievements, without knowing exactly what to do to unlock them. Achievement Unlocked (Armor Games, 2008) is an exaggerated example of this. Here the player's only goal is to get all the achievements and all of them are only described by a name and no description. The description is only shown on the achievements the player has already achieved. The player controls an elephant which only job is to jump around the level, unlocking as many achievements as possible.



The only level of Achievement Unlocked. The player is controlling the elephant trying to unlock the achievement listed in the right side of the screen. Whenever an achievement is unlocked, a notification pops in the lower left corner of the screen. (Armor Games, 2008)

The game is a critique of games that have too many achievements for doing silly tasks. The game has no objective, the only progression in the game is the amount of achievements the player unlocks. There are 100 achievements in total and they are unlocked by doing tasks ranging from getting killed by spikes 10 times, standing still for 10 seconds to opening the main menu. Many of the achievements unexpected achievements unlocking without the player trying to pursue them.

Play testing the game show, that because most of the achievements are easy to unlock, the ones that are left when the player have been playing for a while, are so few or fun, that trying to find exactly how the achievements are unlocked becomes the main game. Thus, the player is not frightened by the amount of time he/she will have to spend, getting the rest of the achievements.

Achievement Unlocked (Armor Games, 2008) is an example of a sandbox game in which the players are motivated to try out, sometimes foolish, strategies and gameplay mechanics in order to unlock the achievements, without the game being frustrating.

However, unexpected achievements neglects the player's ability to create mental models of his/her journey to unlock achievements, because the player will not be able to foresee what achievements the game offers.

"I like them when they're a surprise, and they're clever. The expected, prosaically-named achievement is never interesting." by Todd Harper (Alexander, 2013(B))

This comment suggests that achievements are actually most fun when they pup without the player knowing they will. This contradicts Blair's (Blair, 2011) idea of achievements being most motivating when the player have created a mental model/schema of the achievements in the game, before playing. Harper suggests that achievements are most fun when they are unlocked at points in the game where the player

is doing something special on his/her own, without first looking at the achievements. This way the discovery of an achievement is perceived more as part of the player's normal play and not part of a list of orders the developers wants the player to do.

6.2 Achievement types

When the player is presented by the achievements of a game for the first time, it is crucial that they do not undermine the intrinsic motivation that is already in the player. This means that this first glance of the achievements has to be presented in a way that do not undermine the player's self-efficacy, i.e. the achievements that undermine the player's self-efficacy should be omitted for an environment to be intrinsically motivating. In order to localize these achievements it is deemed necessary to categorize achievements according to the tasks they ask the player to do.

With the purpose of analyzing player's opinions a thread has been started on psnprofiles.com (Aabom, 2014(A)) in order to define achievement categories that embrace all types of tasks that has yet been created for achievements. By using forums like psnprofiles.com, it is expected that people answering the thread are players who have firsthand experiences with pursuing achievements.

It should be mentioned that psnprofiles.com is dedicated to the players of the PlayStation system, meaning that their opinions are mostly based on the PlayStation system's trophies. However, since the tasks that needs to be done in order to unlock an achievement are identical between Xbox, Steam and PlayStation, the experience of unlocking an achievement is seen as being identical regardless of the platform. Thereby the following list of achievement categories is created on background of a thread created on psnprofiles.com (Aabom, 2014(A)), where the users were asked to come up with all the types of tasks and challenges that they have experienced were requirements for achievements. On basis of their answers the following 12 achievement categories were defined. The entire thread can be found on the DVD at D-A.

Name of achievement	Task
Normal play achievements	Achievements that are unlocked by playing the game normally.
Difficulty dependent	Achievements that requires the player to play a game on a certain difficulty setting.
Choice dependent	Choice dependent achievements.
Collectible achievements	Achievements that unlock when the player finds x amount of collectibles.
Defeating enemies	Achievements that are unlocked when the player defeat x enemies.
Time dependent	Achievements that are unlocked when the player does something within a specific timeframe.

Level and upgrades	Achievements that are unlocked when the player gets to a certain experience level or gets a certain upgrade.
Perfection achievements	Achievements that requires the player to do something to perfection, i.e. not getting any negative feedback throughout his/her attempt to do the task.
Luck dependent	Luck-based achievements require the player to get lucky at something.
Negative achievements	Achievements that are unlocked by doing something that is against the game's objective of progression.
Challenges and tasks	Challenge and task achievements, this category covers the achievements that have not been mentioned thus far and requires the player to do activities that he/she is unlikely to be doing without the knowledge of the achievement.
Multiplayer achievements	Achievements that require the player to play with other players either online or offline.

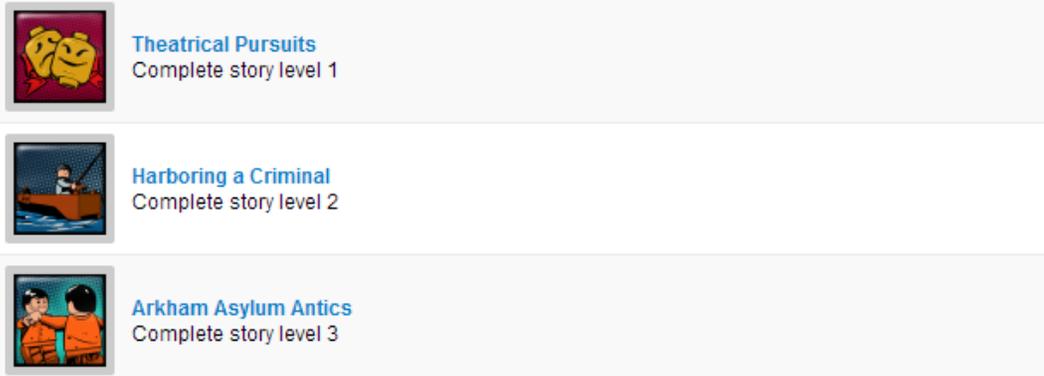
Table 1 – 12 categories of achievements based on their tasks.

In the next section each of these categories will be discussed in relation to intrinsic motivation and compared with players' opinions in order determine which achievements that encouraging or discouraging to the player.

6.3 Exclude discouraging achievement types

As discussed in chapter 3.2 achievements that should be omitted are ones that are too time consuming, outside the player's control or do not fit the player's level of skills. As such, this section will go through the categories of achievements, defined in the last section, with the purpose of describing how they are motivating or demotivating the player and whether they fit in an intrinsically motivating environment. Thus, every category is related to players' opinions in the achievement debate (see chapter 3.2) and on whether they support autonomy, mastery and purpose.

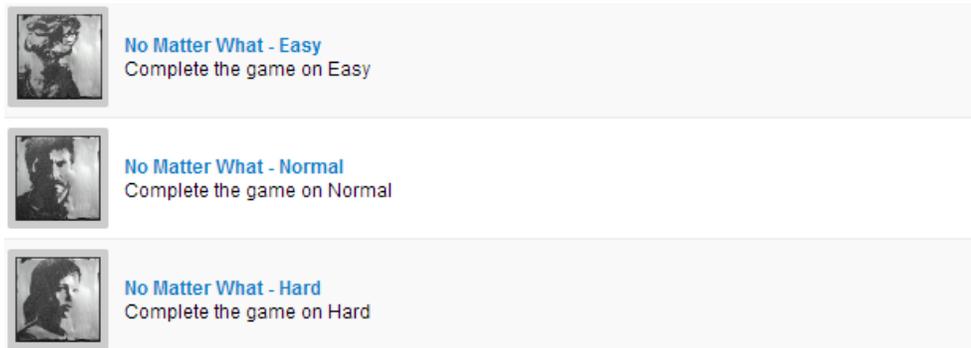
Normal play achievements - Achievements that are unlocked by playing the game normally.



These achievements from LEGO Batman 2: DC Super Heroes (Traveller's Tales, 2012) do not require the player to do anything special other than completing the game normally

These achievements are used by the developer to track how far the players are getting in their game and how fast (Irwin, 2009). It is believed that these achievements are used to introduce the player to achievements in the game. So that players who do not know about achievements in the first place become aware of them, triggering their curiosity. These achievements do not encourage the player to play in new ways and thus do not play a significant role in the player's motivational level. However, some players argue that, through the pictures, titles and description, these kinds of achievements can work as spoilers to what is to come throughout the game. Therefore, these should be omitted.

Difficulty dependent - Achievements that requires the player to play a game on a certain difficulty setting.



These achievements from The Last of Us (Naughty Dog, 2013) unlocks when the player completes the game on a specific difficulty level. In most games, unlocking a hard difficulty level achievement also unlocks the easier difficulty level achievements.

These achievements often comes in pairs of three or more, depending on how many difficulty settings there are in the game. They require the player to play through the game multiple times. Other games has only achievements for the harder difficulty settings and not for the easier settings, forcing the player to play a game on a difficulty setting that might not fit their level of skill. Therefore, these achievements should be completely omitted.

“Without a doubt difficulty trophies that don't stack, the unenviable task of playing a game on easy when you have done it on hard is awful!!” by freddie1989 (psnprofiles.com, 2014(A))

Choice dependent - Choice dependent achievements.



Good Finish
Beat the game as a Hero.



Evil Finish
Beat the game while Infamous.

These achievements from Infamous (Sucker Punch, 2009) require the player to play through the whole game either as a hero or as a villain. This is a choice the player have to make through the game and he/she will not be able to be both hero and villain in one play through, meaning that to get both achievements, the player have to complete the entire game twice.

These achievements unlocks when the player chooses one branch in a branching story. These achievements often comes in pairs, meaning that unlocking one achievement means not being able to unlock it's counterpart, unless the player plays through the entire game again. This is seen as too time consuming and should be omitted as players do not like to be forced to replay a game multiple times as seen in these comments:

“Games that require an insane amount of playthroughs” by omar280792 (psnprofiles.com, 2014(A))

“Going through a second playthrough of a game and getting near the end before you realize you missed 1 missable collectible required for the trophy and thus forced to go through the game a third time.” by LeonXilofin (psnprofiles.com, 2014(A))

“multiple ending which needs more than 2 times of play through.” by weh2cat (psnprofiles.com, 2014(A))

Collectible achievements - Achievements that unlock when the player finds x amount of collectibles.



Achievements like this one from Uncharted: Drake's Fortune (Naughty Dog, 2007) requires the player to find all the hidden treasures scattered around the levels of the game.

According to the players' opinions, these kinds of achievements are both loved and hated. What people seem to agree upon is that these are demotivating when they require the player to put too much time into finding whatever the game wants them to find. As such, achievements that requires the player to find only a small part of the total amount of collectibles in the game are not demotivating. However, achievements that require the player to find all collectibles should be omitted.

"[...] I don't mind "Find 20 "of this collectible"" trophies though. It's just "Find All" that's annoying and pointless." by Dangisuckatgamin (psnprofiles.com, 2014(A))

"Collectibles are fine but crazy like 159 cards thing in mafia 2 is too much (30 to 60 is good)" by CaesarClown (psnprofiles.com, 2014(A))

Defeating enemies - Achievements that are unlocked when the player defeat x enemies.



David & Goliath
In the Main Campaign, killed 20 "Heavy Hitter" enemies.



A Real Pistol
In the Main Campaign, killed 25 enemies with the Broadsider Pistol.

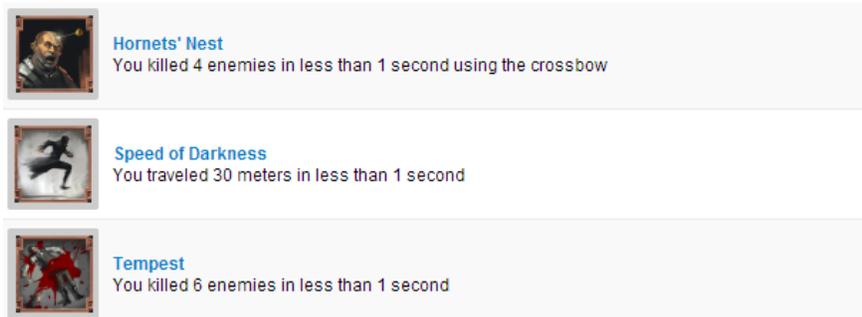
These achievements from Bioshock Infinite (Irrational Games, 2013) are unlocked when the player defeats a specific amount of enemies. "David & Goliath" gives the player freedom to choose how he/she wants to defeat these enemies, but "A Real Pistol" challenge the player to use a specific weapon. The player might not have used this specific weapon before, thus the achievement encourage the player to explore new game mechanics.

These achievements can be time consuming if they are requiring the player to defeat too many enemies. However some of these achievements encourage the player to try new game mechanics by require him/her to defeat the enemies with a weapon or a method that he/she might not have tried before. As such, these achievements should not be omitted. Lead Designer at Naughty Dog, Richard Lemarchand, says:

"The most compelling trophies are those that are a benchmark of player skill that test their combat or traversing prowess" by Lemarchand (Irwin, 2009)

According to Lemarchand achievements are for making the player explorer and develop new skills in the game (Irwin, 2009).

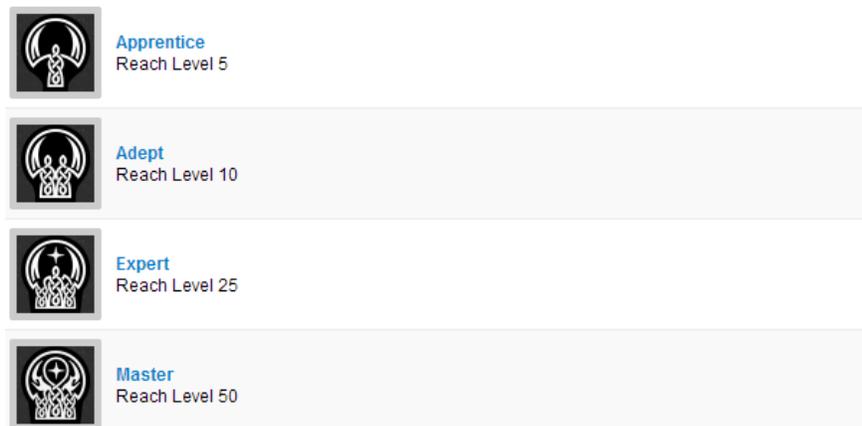
Time dependent - Achievements that are unlocked when the player does something within a specific timeframe.



These achievements from Dishonored (Arkane Studios, 2012) require the player to do a task within one second, encouraging the player to challenge him/herself at being faster at specific activities in the game.

These achievements are about mastering the game and should not be omitted. They are seen as a way for the player to challenge him/herself to be better and faster at the tasks set by these achievements and thus better and mastering the game.

Level and upgrades - Achievements that are unlocked when the player gets to a certain experience level or gets a certain upgrade.



These incremental achievements from The Elder Scrolls V: Skyrim (Bethesda Game Studios, 2011) require the player to get to a specific level of experience

As with the collectible achievements, these are hated when they take too long to complete. These should only be omitted if they require the player to put too long time aside to complete.

“Ranking up trophies are tedious if you have to do the same thing over and over” by closertim (psnprofiles.com, 2014(A))

Perfection achievements - Achievements that requires the player to do something to perfection, i.e. not getting any negative feedback throughout his/her attempt to do the task.



Child of the Shadows
Finish a single chapter without alerting anyone



Mint Condition
Finish 3 consecutive missions without taking damage

As with the time specific achievements, these achievements from Thief (Eidos Montreal, 2014) encourage the player to master the game, not by being faster, but by perfecting his/her skills.

These achievements are not omitted as they encourage the player to master the task to perfection. These achievements require the player to show how good he/she has become at playing the game, as these achievements often are some of the hardest ones to unlock, without getting too time consuming.

Luck dependent - Luck-based achievements require the player to get lucky at something.



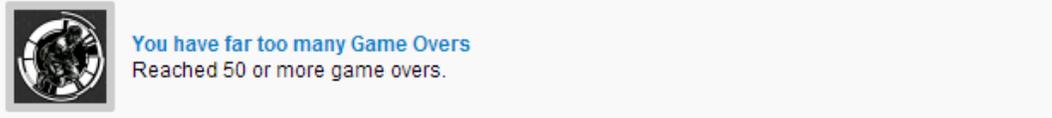
Keep Rollin' Rollin' Rollin'
Demonstrated your skill, or lack thereof, at rolling the magical treasure orb of many sides

This achievement from Borderlands 2 (Gearbox Software, 2012) requires the player to roll a 20-sided dice and hit either 1 or 20. The player's skills do not play any role in getting this achievement.

These achievements are most often seen as out of the player's control and should therefore be omitted, because they do not require the player to show any kind of skill, but solely relies on the player's luck. These should be omitted because they do not give the player reachable goal to aim for. The player do not know how many times he/she will have to try to unlock the achievement as it unlocks at a random attempt.

“Luck based trophies, I hate how I have to put up with those who say they got it in the first attempt while I'm stuck at them for months” by omar280792 (psnprofiles.com, 2014(A))

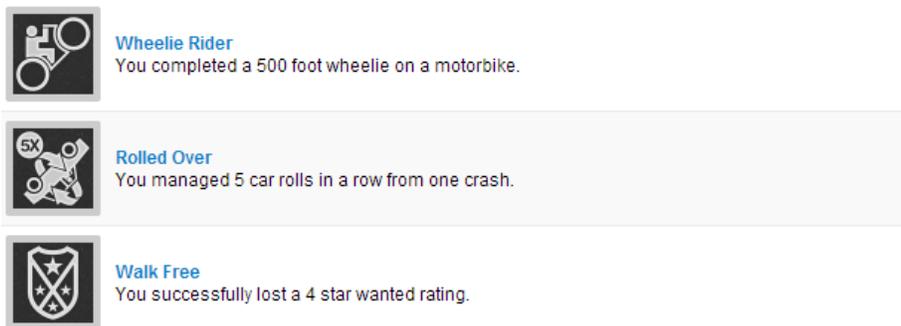
Negative achievements - Achievements that are unlocked by doing something that is against the game's objective of progression.



This achievement from Metal Gear Solid: Peace Walker (Kojima Productions, 2010) is unlocked when the player dies for the 50th time

Negative achievements like this one can make the player think about new ways of using a game mechanic and they are used as an encouraging reinforcement when the player is losing. Furthermore as mentioned by Schell (Sheffield, 2013) negative achievements are just as motivating as positive achievements, but only if the player has already experienced positive achievements first. It is not possible to determine whether the player has experienced positive achievements before unlocking a negative achievement, thus these achievements should be omitted.

Challenges and tasks - Challenge and task achievements, this category covers the achievements that have not been mentioned thus far and requires the player to do activities that he/she is unlikely to be doing without the knowledge of the achievement.



These achievements from Grand Theft Auto IV (Rockstar North, Grand Theft Auto IV, 2008) requires the player to do certain activities that are not part of the main game and are not likely to be done without the player's knowledge of these achievements.

These achievements are the achievements that asks the player to do things that do not fit any of the above categories. These achievements are often those that makes the player discover new ways of playing, by asking him/her to do activities that are completely out of context of the game's normal play. These should not be omitted as they make the player think outside the box and encourage him/her to do something that he/she might not have done otherwise. These achievements are divided into challenges and tasks where tasks are the achievements that might not be as interesting to do. As user, Frisendal, is arguing:

"A way to define the difference between challenging trophies and task trophies might be that you have to go out of your way for a challenge trophy. This means

that you have to actually put effort into it to be certain of success. [...] With the task trophies the objective is just something trivial that can't fail.” by Frisendal (Aabom, 2014(A))

Challenge and task achievements relate to what Blair (Blair, 2011) categorizes as “Performance contingent” achievements, which are unlocked after a task that requires skill to complete is finished, for instance by completing a game in hard mode. “Non-performance contingent” achievements, are unlocked by the players who just attend an activity without necessarily completing them. As an example the achievement “The Birth of an Assassin” from Assassin’s Creed II (Ubisoft Montreal, 2009) is awarded when the player starts the game and presses the first button.



The Birth of an Assassin
Be reborn as Ezio Auditore Da Firenze.

This achievement from Assassin’s Creed II (Ubisoft Montreal, 2009) is believed by many to be the easiest achievement in the world, since it only requires the player to start a new game and press the first button indicated on screen in a cutscene where the main character of the game is being born.

Multiplayer achievements - Achievements that require the player to play with other players either online or offline.



Master Blaster
Kill 2 multiplayer enemies with a single explosive.



Monkey Around
In multiplayer, escape death 3 times by using the rope ascender.



Narcissistic
Purchase a new multiplayer character.



On My Way Up
Reach level 10 in multiplayer.

All achievement types mentioned thus far have a multiplayer equivalent. These achievements from Tomb Raider (Crystal Dynamics, 2013) all fall in a category mentioned above, except that these tasks needs to be done in a multiplayer environment. This means that the player will have to rely on other players to be playing with, in order to get these achievements.

These achievements seem to be the most hated achievement types, as the player have to rely on other players to get them. Multiplayer achievements seem to have gotten a bad reputation, because of bad implementation of multiplayer modes in games that were focusing on single player experiences. A user on the site psprofiles.com named SolidWolf has started a poll (psprofiles.com, 2014(B)) on whether

players want multiplayer achievements or not, where 26% voted that they wanted multiplayer achievement completely removed from all games, 31% wanted them only to be part of DLC's³, only 16% wanted multiplayer achievements to stay the way they are and the rest wanted them made easier or less time consuming.

"Any online or multiplayer trophies. I think the trophies need to be for single player only." by TheUnknown6_5 (psnprofiles.com, 2014(A))

"Multiplayer trophies. Not because they are difficult, annoying, couldn't care less for them. It's the sheer fact that at some point, the company will close the server rendering them impossible to obtain." by daftprophet (psnprofiles.com, 2014(A))

"Online trophies, especially if not many are playing the game or that specific mode" by BlueFireReaper (psnprofiles.com, 2014(A))

"MP should NOT have trophies" by Gwinambele (psnprofiles.com, 2014(A))

It can be expected that some multiplayer achievements are liked by some players and do not have a bad influence on the online play, but in order to keep it simple for this research there will be no definition of good or bad multiplayer achievements, thus all multiplayer achievements will be excluded from further study. This also includes achievements that are unlocked by playing local multiplayer, i.e. playing more than one player on the same console, since these achievements also forces the player to rely on other players.

6.3.1 Omitted achievements

Presenting the right achievements to the player in an intrinsically enhancing environment means only presenting the achievements that are not discouraging. This section has defined the achievements that are motivating and demotivating in order to omit the ones that has a negative effect on the player's motivation. To sum up, here is an overview of the achievements that should be omitted and which should be included in an environment that presents the achievements in an intrinsically motivating way:

³ DLC (Downloadable Content) is extra content to the original game that can be bought separately.

Name of achievement	Included	Partially included	Omitted
Normal play achievements			X
Difficulty dependent			X
Choice dependent			X
Collectible achievements		X	
Defeating enemies	X		
Time dependent	X		
Level and upgrades		X	
Perfection achievements	X		
Luck dependent			X
Negative achievements	X		
Challenges and tasks	X		
Multiplayer achievements			X

Table 2 – Achievements categories that should be included, partially included or omitted. Partially included achievements if they are not too time consuming. For instance with the Collectible achievements, where only the achievements that requires the player to find a part of the entire set of collectibles in the game, should be included. Collectible achievements that require the player to find all collectibles in a game should be excluded.

6.4 Autonomy and mastery in achievements

In the section above it seems that the achievements that are discouraging to the player are the ones that robs the player his/her freedom to control his/her own play session. For instance, the luck based and multiplayer based achievements are both disliked by many players because they do not depend on the player's playing skills, but on something the player do not have any control over.

According to Brian Lindley (Irwin, 2009), EA producer for Skate 2 (EA Black Box, 2009) achievements are badly designed if players feel that they have no control over getting them themselves. Lindley (Irwin, 2009) mentions that they had put too many achievements in Skate 2 (EA Black Box, 2009) that were outside of the player's control, like the achievement "Skate Celebrity" which were unlocked when 20 different players had viewed one of the player's photos on their website. As a result, players found the achievements unfair and few players were motivated to pursue them.

Besides achievements that rob the player his/her autonomy other discouraging achievements seem to be achievements that do not match the player's skill level or are too time consuming, either because they are too difficult or simply because they take a very long time to do.

The player might feel that he/she is being taken for a fool, if achievements are too time consuming, too difficult or too easy. It is more satisfying for a player to unlock an achievement that he/she has been striving for and had put many resources into unlocking, than it is to get an achievement every now and then without noticing (Irwin, 2009). Achievements that are more difficult are better if the player knows

about it and it does not unlock at seemingly random by playing the game normally. The player should be encouraged to read the achievement list and pick the ones he/she finds interesting and challenging to complete and then focus on pursuing them.

If achievements are unlocked without the player noticing, they will not be giving the player the feeling of being special. As mentioned earlier, the player should only be presented by achievements matching the player's skill level in the game he/she is playing.

The next section an analysis of player typology will be conducted in order to relate the categories of achievements, which has just been created, with the players' drive for pursuing achievements. This is done in order to find a possible way to match the right achievements with the right players.

6.5 Achievement player types

In order to find a solution to matching the right achievements with the right players, it is deemed necessary to find a way to categorize player typology in relation to their drive at pursuing achievements.

This chapter will take a critical look at how Mikael Jakobsson, a Swedish game researcher and member of MIT Game Lab, through his research on achievements, has categorized players according to how much they care about achievements when they play (Jakobsson, 2009). His results are compared to players' opinions on the forums of psnprofiles.com (Aabom, 2014(B)) in order to find a more correct categorization of players.

Jakobsson (Jakobsson, 2009) defines three different kinds of achievement gamers:

Achievement casuals.

These players do not care about achievements. They will not go for an achievement unless the task that needs to be done is one that they are planning on doing anyway.

Achievement hunters.

These players play games to get more achievements. They are much focused on getting a high game score and in extreme occasions, they tend to cheat by getting saved games from other players or by playing the same game from two different regions to get the same achievements twice.

Achievement completists.

These players will not feel that they have finished a game before they have collected everything in the game including all the achievements. These players tend to prefer trophies on the PlayStation because of the Platinum trophies that mark a complete collection of all the trophies in a game.

These three categories seem to cover most playing styles in regards to pursuing achievements, however when presented to the players on psnprofiles.com (Aabom, 2014(B)), it did not seem that everything was covered. See the whole thread on the DVD at D-B.

Most comments were made about achievement hunters not being sufficient as a category. As Jakobsson (Jakobsson, 2009) is arguing that an achievement hunter will use different kinds of cheating systems in order to get achievements, such as playing the same game twice from different regions.

“I think *Trophy Hunters* should be split into 2: *White Trophy Hunters* who would never cheat, and *Black Trophy Hunters* who would. That way the *White* can still include the more extreme non-cheaters” by StrickenBiged (Aabom, 2014(B))

It is believed that a player can be cheating his/her way to an achievement no matter how badly he/she wants the achievements. Meaning that all player types can be either non-cheaters or cheaters.

Furthermore, user Cobby1995 argues that there should be a category between achievement casuals and achievement hunters, as it seems, according to Jakobsson (Jakobsson, 2009), that achievement hunters are only playing games to get more achievements.

“No, I'd had to add a separate category. I don't play games solely based on trophies. I play a game, complete it and then I focus on the trophies, and if there is a game that is too hard to platinum I leave it... I guess it is kind of casual, but I do enjoy actually collecting the trophies, so it's kind of a mix between the first 2...” by Cobby1995 (Aabom, 2014(B))

It seems that many players are pursuing achievements in the same way as Cobby1995, i.e. only pursuing the achievements that they find rewarding for the game and its gameplay.

Therefore, another category defined as “Non-achievement players” should hold the players who has and will never pursue achievements. The achievement casuals then holds the players who only pursue the achievements they find fun and enhancing to the gaming experience.

User bmj14772 pointed out that there should be a category that holds people who are only playing games for the sake of getting more achievements:

“Trophy Whore” is commonly included as a 4th category. Basically people that play [essentially] anything that will not take much time/effort and increase their trophy count.” by bmj14772 (Aabom, 2014(B))

Thus, a category called achievement fanatics were created as the absolute motivated player of the player types. These players will only play games in order to get more achievements for their collection.

The last of Jakobsson’s categories (Jakobsson, 2009), the achievement completist were not altered, as any user did not disagree upon it.

Therefor the final player typology that emerged from the debate looks like the following:

Achievement Player Type
<u><i>Non-achievement players</i></u> <i>(Players who will never and has never, consciously, pursued achievements)</i>
<u><i>Achievement casuals</i></u> <i>(Players who will only pursue an achievement if they find the game and achievement fun)</i>
<u><i>Achievement hunters</i></u> <i>(Players who will pursue achievements that might not be fun to them)</i>
<u><i>Achievement completists</i></u> <i>(Players who finds it thrilling to get all Achievements in a game)</i>
<u><i>Achievement fanatics</i></u> <i>(Players who only play games to get achievements)</i>

Table 3 – The resulting five achievement player types, created through forum users’ opinions in relation to research done by Jakobsson (Jakobsson, 2009)

It is believed that players can be more than one type and the game’s entertainment value to the player has a critical impact on which kind of player type the player is when playing a specific game.

Further research will be focused on these achievement player types and their level of motivation towards pursuing achievements.

7 Methodology

So far it has been determined that in order to create more motivating achievement experiences, the player has to be intrinsically motivated. Thus, intrinsic motivation has been defined as the concepts of autonomy, mastery and purpose. However, it is not possible to enforce players to be in a state of intrinsic motivation, therefore the focus of the research has been to create an environment that encourage the player's own intrinsic motivation.

To develop such an environment, achievement types have been related to theories of intrinsic motivation as well as players' opinions, in order to exclude those achievement types that diminish the player's motivation. Subsequently the player typology has been defined according to the drive for pursuing achievements, with the purpose of making it possible to propose the right achievements to the right player.

The next step will be to design and implement an environment that is based on the results of the analysis and test it to determine whether such an environment can create a better achievement experience. However, before such an environment can be designed and implemented, it is deemed necessary to describe the methodological approach that will show whether a player's intrinsic motivation to pursue achievements have been improved.

7.1 Testing players' typology

In order to decrease the clash between the players against and players in favor of achievements, the analysis thus far say that the players who are against achievements have to be motivated to pursue achievements, in an intrinsic way. To do so, it is deemed necessary to compare their motivational drive towards playing for achievements, with the motivational drive of the players who are already encouraged to pursue.

In the last chapter it was discussed how to categorize players according to their motivation to pursue, and the result was five player types each with their level of motivation to pursue achievements.

In order to define the player's type a questionnaire has been developed with questions that both define how much they are playing games normally, how much playing time they spend on pursuing achievements and which one of the 5 player types they are. See the complete questionnaire in appendix A.

The questionnaire starts out by determine the players normal playing habits through questions like "How many hours do you play video games pr. week?" and "For how many years have you been playing video games?" This is done because players who are not playing games regularly do not have the time to pursue achievements in the first place, as achievements are seen as something extra for the game and not the main reason for playing.

The next section of the questionnaire is dedicated to the player's own perception of his/her achievement habits. The player is asked whether he/she is actively pursuing achievements when playing normally and their opinion about achievements in general. He/she is then asked to give an estimate of how many

achievements he/she thinks he/she has unlocked already, without actually looking at his/her achievement list. This is done to determine how interested the player is in his/her collection of achievements.

Furthermore, the player is asked whether any of his/her friends are actively pursuing achievements and what they feel about that. This question is designed to determine how they relate to the achievement debate discussed in chapter 3.1. Lastly, the player is asked to determine which of the 5 achievement player types he/she best relates to.

The final questionnaire should be presented to the player before any testing can be conducted in order to relate the testing results to the player type.

7.2 Testing players' motivation

Another questionnaire have been developed in order to test whether an intrinsically motivating environment actually has an influence on the players' motivation and to relate the two player groups' intrinsic motivation to each other. The questionnaire is based on other research done on intrinsic motivation which have been analyzed and compared in order to find the best solution for measuring players' intrinsic motivation level. As such this section will compare the research done by Ryan et al. (Ryan, Mims, & Koestner, 1983), Rigby et al. (Ryan, Rigby, & Przybylski, 2006) and Huang (Huang, 2011).

Ryan et al. (Ryan, Mims, & Koestner, Relation of Rewards Contingency and Interpersonal Context to Intrinsic Motivation: A Review and Test Using Cognitive Evaluation Theory, 1983) did a research in 1983 on how performance contingent rewards and non-performance contingent rewards affect the test participant's intrinsic motivation. The test participants were asked to do a task and were granted a reward depending on various conditions. The test participants' intrinsic motivation to do the task was then measured through Likert scaled questions about interest and enjoyment of pursuing achievements. Furthermore, their perceived level of tension, outside source pressure, their degree of effort to complete the task and the extent to which they think the task was important and worthwhile were also measured.

Rigby et al. (Ryan, Rigby, & Przybylski, 2006) did a research in 2006 on self-determination in players and its effect on game enjoyment. The study was conducted online on multiplayer communities and questionnaires were used to define players' intrinsic motivation in relation to autonomy, player control and immersion. Their questionnaires involved Likert scale questions like "I felt very capable and effective", "I felt controlled and pressured to be a certain way" and "Given the chance I would play this game in my free time".

Huang (Huang, 2011) did a research in 2010 on players' motivation in an online game-based learning environment. Huang (Huang, 2011) also measured the test participants' intrinsic motivation through Likert-scale questionnaires about attention, relevance, confidence and satisfaction.

In table 3 the different subjects which are studied in these research are compared in order to specify the right questions to ask in order to define the players' intrinsic motivation to pursue achievements.

Question types	Ryan et al.	Rigby et al.	Huang
Interest/attention	X		X
Enjoyment/Wurthwhile/satisfaction	X	X	X
Mastery/Perceived level of difficulty	X		X
Autonomy /Pressure to do the task	X	X	
Degree of effort	X		X
Purpose/importance/relevance	X		X
Replayability		X	
Competence/self-efficacy/Self-esteem/confidence		X	X

Table 3 – Intrinsic motivational elements used by the three different studies (Ryan, Mims, & Koestner, 1983) (Ryan, Rigby, & Przybylski, 2006) (Huang, 2011)

Based on these subjects the final questionnaire that should determine the players' intrinsic motivation level was developed with seven elements:

- 1) The test participant's self-efficacy level.
- 2) The test participant's interest in achievements.
- 3) The test participant's mastery of the achievements.
- 4) The test participant's perceived autonomy to choose the achievements they wanted to pursue.
- 5) The test participant's perceived level of purpose the achievements gave them.
- 6) The test participant's enjoyment of pursuing achievements.
- 7) The test participant's desire for pursuing other achievements (Replayability).

Even though element 7, i.e. Replayability, was only mentioned by one of the three studies, it is perceived as a vital part of this research, since motivating the player to pursue achievements on his/her own is one of the main goals of this study. Therefore, it was included as the last question in the questionnaire.

The questionnaire also asks the player to state how much he/she has been using the intrinsically motivating environment as well as what he/she thinks about it. This is purely to validate whether the results made by the test participant is actually affected by the environment. It should be said that because of the length of the questionnaire, the seven elements only has two Likert-scale questions each in them, which might affect the results. See the complete questionnaire in appendix B.

7.3 Final test design

With these two questionnaires it should be possible to compare the player's typology and his/her intrinsic motivation level. This means that the player's enjoyment of the achievement experience can be measured through their intrinsic motivation level. Thus by developing a system that provides an intrinsically motivating environment for the player to use when pursuing achievements, the player's enjoyment of the achievement experience can be measured through his/her answers of these questionnaires. This section describes how a final test that uses these questionnaires together with intrinsically motivating environment should be conducted.

It was discussed earlier (see chapter 6.3) that a system which should motivate the player, can only motivate by presenting the achievements in a motivating manner. This should be done as a substitute for how the platform is presenting the achievements; as such, the player will be using the system for looking up the achievements in the game he/she is playing instead of the platforms' interface. Furthermore, as it is the purpose of this system to motivate the player the best way possible, it is believed that the player should be able to play whatever game he/she wants during the test. Therefore, the system should be something the player can use at home when he/she is playing his/her own games. This way the player is not forced to play a specific game on a specific time, which leads to minimum decrease in the player's intrinsic motivation to play. Thus, the test will be depicting a more realistic use of the system.

All in all this means that the player should be asked to play the games he/she is already planning on playing and play them when he/she wants. Furthermore, the player should also be asked to use the system while playing, i.e. either just before playing, while playing or just after playing, just like he/she would use the platform's achievement list.

It should be mentioned that players who usually do not care about achievements might find it unnatural to put time aside to look at the achievement list of the game they are playing. However to make the test possible the players who usually do not look at the platform's achievement list, will be asked to do so anyway, for the duration of the test.

Test participants should be players from both sides of the achievement debate, thus both users of the achievement forums and non-users of the forums should be used for the test. The player typology questionnaire should be answered before the test participant is allowed access to the system in order to categorize the test participants. Subsequently the player should be given access to the system and the second questionnaire that should determine the test participant's intrinsic motivation level at the start of the test.

Because the test should be conducted at the test participant's own time schedule, the test phase should be running for a few weeks. This will ensure that the player have been playing the game regularly and at the player's own pace.

At the end of these weeks, the player should be given the second questionnaire again in order to determine his/her intrinsic motivation at this point. The answers will be compared to the player's answers at the start of the test, which should indicate whether the player's intrinsic motivation to pursue achievements has been affected by the use of the system.

Thus, the finished system should be designed and implemented to use this methodology in order to answer the final problem statement.

8 Designing a system for autonomy and mastery

This chapter will cover the design of a system that will be enhancing the achievement experience in order to alter the player's opinions towards pursuing achievements. This achievement system (AS) will be designed in accordance to what have been uncovered thus far:

1. It will be designed to reduce the bad elements that create player opinions against achievements (See chapter 3.2).
2. It will be designed to heighten the elements of intrinsic motivation (See chapter 4.3.2), i.e. autonomy, mastery and purpose in achievements.
3. It will be using the defined player types (See chapter 6.5) in relation to the defined achievement types (See chapter 6.3).

AS will be further studied through implementation and test phases in order to prove its ability to alter the player's experience of pursuing achievements.

8.1 Delimitations of the Achievement System

The main purpose of AS is to enhance the experience of pursuing achievements through enhancing the players' intrinsic motivation. The problem with this is that, because of the nature of intrinsic motivation, it is not possible for an outside source to impose this type of motivation. Intrinsic motivation evolves from the player's subconscious. Meaning that AS will only be able to consist of an environment that will provide an optimal framework for the player to evolve this motivation him/herself.

To achieve this it has been argued that, AS should be a substitute for the platform's achievement list (See chapter 5). As mentioned before it is not possible to alter the achievements themselves, but by substituting the platform's achievement list, AS will be able to present the achievements in ways that enhances the changes for the player to be intrinsically motivated.

As AS is going to substitute the platform, the main objectives of the platform, in regards to achievements, should also exist in AS. Meaning that it will include achievements, the player has unlocked as well as the achievements he/she has not unlocked. The achievements will be presented with a picture, a name and a description.

Moreover, the platform is also holding the players' game scores and achievement levels. However, this is deemed unnecessary to include in the AS, because the system's main purpose will be to motivate the players to pursue achievements through evoking intrinsic motivation. As mentioned earlier Pink (Pink, 1995) and Kohn (Kohn, 1993) argues that extrinsic motivation reduces intrinsic motivation. This means that external rewards, such as points and levels, will not be utilized by the AS. Thus, achievement levels on the PlayStation and Steam as well as Gamerscore on Xbox will not be included.

It is recognized that achievements in nature are external rewards, but the main purpose of this research is to uncover what intrinsic motivational possibilities that may lie in achievements, regardless of their nature.

As stated earlier another function of the platform, i.e. Xbox, PlayStation and Steam, is to notify when the player has unlocked an achievement. However, since AS is going to be an outside source, it will not be able to pop a notification to the player's screen while playing. However, the platform will still be doing that part, regardless of the player using the AS or not.

8.2 Presenting and proposing achievements

It has been discussed (See chapter 4.3.2) that autonomy, mastery and purpose are the elements that can be modified in order to create the ideal intrinsic evoking environment. This section will go through the opinions of the players' who are against achievements, in order to resolve the issues underlying these opinions by enhancing the player's feeling of these three elements. From chapter 3.2 the following elements were determined as players' main opinions against achievements:

Achievements are bad because they...

1. robs players' sense of control.
2. mismatch in difficulty level.
3. are too time consuming.
4. have no purpose.

These opinions reflect the lack of the three elements of intrinsic motivation. As such, the first issue is that players tend to feel that achievements robs them of their free will, i.e. autonomy. Meaning that they feel that the achievements are used by the developer to make the player play in a certain way, for instance by requiring them to play with other players online.

When it comes to achievements, the only autonomy the player has is whether to pursue an achievement or not. However, it is perceived that the circumstances in which the player will be making the choice can make a difference in his/her choice. Meaning that the platform will only be giving the player a long list of all the achievements for the game the player is playing and the player will have to make his/her choice based on scrolling through the list, reading titles and descriptions of the achievements.

In order to make this choice easier the AS will break the long list of achievements into smaller lists defined by the achievement types created earlier (See chapter 6.3). By dividing the achievements into these different categories, it will be easier for the player to find the kind of achievements that has tasks that he/she finds fun to do. For instance, a player might like to use a specific weapon in the game he/she is

playing. Going to the category of “Defeating enemies”, he/she will find that there might be an achievement for defeating a certain amount of enemies by using this weapon in a specific way.

It is less likely that this will happen if the player would have to scroll through the whole list of all achievements, reading every title and description, in order to find that particular achievement, especially if he/she does not know if it even exists. Categorizing the achievements gives a better overview, is faster to browse through and thus gives the player better basis for choosing the right achievements.

To give the player more control over his/her choice, the achievements will also be presented in a sequence going from the easiest to the hardest achievements. This way the player will be able to see how difficult an achievement is, thus being able to choose an achievement that matches his/her playing still and mood at the moment of play.

This leads to the opinion of achievements mismatching the player’s skill level. This is perceived as a lack of the player’s feeling of mastery. If the player does not feel that, he/she is able to complete the task he/she will be demotivated to try.

In order to resolve this issue, it has been determined (See chapter 6) that the player should be presented only by tasks that match the player’s skill level in order to improve the player’s chances of experiencing flow. For a player to remain intrinsically motivated he/she have to be challenged, to a degree where he/she will not lose self-efficacy (Ryan, Mims, & Koestner, Relation of Rewards Contingency and Interpersonal Context to Intrinsic Motivation: A Review and Test Using Cognitive Evaluation Theory, 1983) (Csikszentmihalyi, 1975) (Pink, 1995).

In chapter 6.3 it was determined which types of achievements are demotivating to the player and thus should not be part of the system. However even with these achievements removed, it is believed that the player will still think some of the achievements are demotivating because of the way he/she prefers to play. The AS will have to make sure that the player is not given the opportunity to choose between achievements that are demotivating to his/her playing style and skill level. Thus, the AS will only be showing achievements that matches the player’s typology in relation to the difficulty level of the achievements. For instance, a player who are playing games regularly will be presented by more difficult achievements than players who are playing more irregularly.

Furthermore AS will give the player the possibility to evaluate the achievements by a score representing the player’s enjoyment of unlocking the achievement. AS will then be able to determine what types of achievements that particular player likes to unlock, in order to consider this when presenting the right achievements to the player.

This leads to the third point of the opinions against achievements, because it is often not possible for the player to determine the time consumption of an achievement based on the achievement’s name and description alone, especially if the player has not been playing the game before. Thus, besides rating the entertainment value of the achievements the system should also be giving the player the opportunity to rate each achievement’s difficulty level and time consumption. AS will then be able to propose achievements to the player depending on his/her preferred difficulty level and achievement type and if an achievement has been rated too time consuming by most players they will be removed from the system.

This way the time the player have to put aside in pursuing achievements is reduced and only the good achievements are included, leading to players not giving up on their pursue.

The last point in players against achievements' opinions is that they do not see any greater purpose of pursuing achievements, as achievements does not grant them anything other than a digital symbol of achievement, unless the achievements are linked to unlocking in-game items.

In order to find a solution for evoking a feeling of purpose, an early version of the AS has been implemented, presented and tested upon. This early version of the AS is focused on the elements designed so far to create an environment that enhances the elements of autonomy and mastery and thus is not created to enhance the player's feeling of purpose. This version of the AS is tested upon to get players' feedback as early as possible as well as to get input on the users' view on how to give purpose to achievements. From the results a solution for designing an AS that enhances the player's feeling of purpose, will be derived.

9 Implementing autonomy and mastery

This chapter will look at the first version of the Achievement System (AS), where the elements of autonomy and mastery, designed above, are implemented. This system will be tested upon in order to find a solution to enhancing the last of the three elements of intrinsic motivation, i.e. purpose.

The system is developed in a Unity 3D version 4.5.0f6. As a result, the system will not be as integrated nor as easily accessible for the player as the Xbox, PlayStation and Steam operating systems are. This has the downside that the player will not be able to pause the game and open the system by using the operating system he/she is playing on. Instead, the player will have to pause the game and open his/her computer with the system installed. To create a system that runs on the player's preferred gaming system would have been preferred, but not deemed necessary for this research.

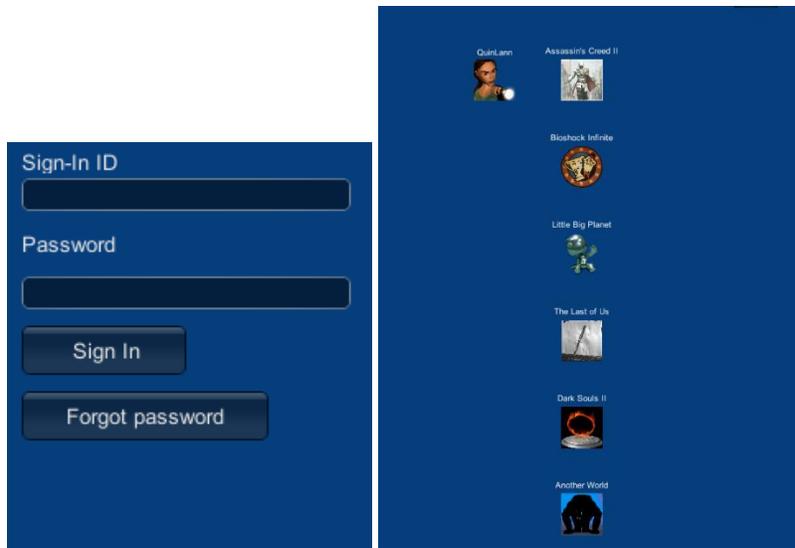
The achievements, trophies and player account information is extracted from psntrophyleaders.com and Steam. This is done to avoid spending time on creating a database and getting enough users to generate reliable rarity calculations of each achievement. Every achievement has a rarity, which is calculated on basis of how many of the players who own the game, has unlocked the achievement. This can be directly translated to the difficulty level of the achievement, as the fewer who has unlocked the achievement, the harder it is to unlock. This is not entirely true as some achievements are just too time consuming or boring for most players to pursue them, thus these achievements will also have a high rarity score. However for the purpose of this research the difficulty of achievements will still be calculated this way.

9.1 Functionality

When the player starts up the AS, he/she is met with a login screen. Once logged in the player will be taken to his/her main page where his/her games are presented. These games are both from the player's Xbox, PlayStation and Steam account.

Clicking a game will open its achievement list. Every achievement is presented with its picture, title and description. As described earlier (See chapter 6.3), not all achievements from the game will be presented as some are excluded because of their discouraging impact on the player. The achievements are visually grouped into the different categories of achievement types, to give the player a better overview.

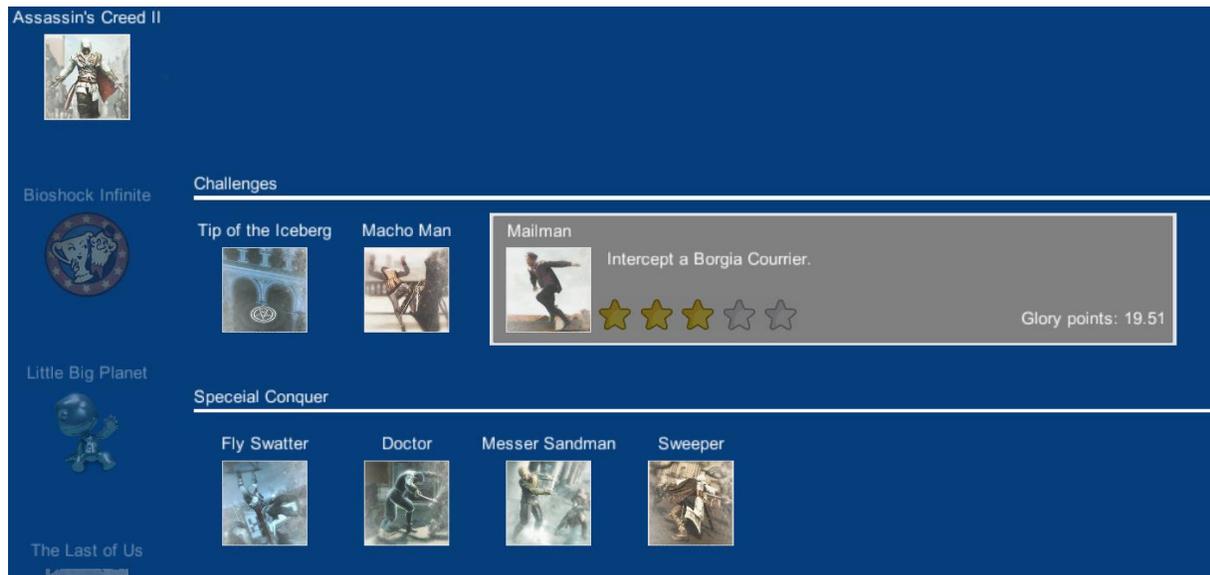
Clicking on of the achievements will open the specific achievement's information box. In this box the player is able to rate the entertainment value of the achievement. The achievement's rarity/difficulty is presented as "Glory points" and goes from 0 to 100. The harder the achievement the higher the score it has. As mentioned earlier the achievements are sorted by their Glory points.



When starting the AS the player is met with a login screen (left) and when logged in the user sees a list of the games he/she own on Xbox, PlayStation and Steam (right). The user “QuinLann” has six games.



Here the user “QuinLann” has logged in and clicked the game Assassin’s Creed II (Ubisoft Montreal, 2009) in order to see the achievements in the game. The game has achievements in the categories of “Challenges”, “Defeating enemies”, “Time dependent” and “Level and upgrades”. These categories are defined in chapter 6.3.



When clicking an achievement an info box opens with the specific achievement's title, description and Glory points score. Here the player can rate the entertainment value of the achievement in order to let the AS know which achievements the player likes to pursue.

9.2 Initial testing

In order to determine players' usability of the AS and to get input on how to design for an enhanced feeling of purpose, this chapter describes how the earlier version of the system was tested. The results will be discussed in order to find a solution for designing and implementing components that will enhance the players feeling of purpose, to complete the AS's ability to create an intrinsically enhancing environment.

The test is not meant to determine whether the test participant's intrinsic motivation is actually altered through the use of the system, but is conducted in order to discover how the players will interact with the system. The test participants were observed and interviewed while using the system. This way the test participants were able to ask questions about features they did not understand and it was possible to ask questions about how they perceived the system.

The test was conducted on two players who do not pursue achievements, but still play games regularly, two who do not play games regularly at all and one player who regularly pursued achievements. The last participant did the test over the internet and his comments and feedback can be seen in appendix C.

9.2.1 Initial test results and discussion

This chapter presents and discuss the resulting feedback and observations made during the initial test.

The most common observation was that test participants did not find it intuitive to interact with the system. The participants was trying to scroll with the mouse wheel, but the AS is designed to let the player move the view around by holding down the left mouse button and drag. Others did not find it intuitive to

zoom in and out by scrolling the mouse wheel, resulting in making some of the text harder to read. Therefore, a short introductory text was added in the login screen stating how to navigate the system (See appendix D).

Some test participants did not know that the pictures of their games were a representation of all their games. It was not intuitive to them that they were able to click their games in order to reveal the achievements, thus the text “Your games” were added at the top of the list and the possibility to click the games was noted in the introductory text. Furthermore test participants did not know what the different categories stood for, thus a button with a question mark was added near the “Your games” text, which opens an info box with definitions of all the different categories.

When asked if the participants would want to use a system like the AS, they responded that they could not see what to use the system for, as it had no particular use other than giving a bit better overview. They were then asked how the system could be modified in order for them to find it interesting to use and they came up with many different ideas. The next section will go through the most commonly mentioned ideas and in the next chapter; these ideas will be discussed in order to design a purpose full solution to the AS.

Discussing purpose

One commonly mentioned idea was to be able to drag the achievements around and use them in a building game. For instance by giving every achievement special features that has some sort of impact in a mini game. Some mentioned that the game should be about creating a village, where the achievements represented different buildings. Others mentioned that the achievements should be building blocks for building your own “player CV”. Meaning that the achievements should be used by others to determine the player’s playing style, e.g. the player can combine the achievements he/she likes into an “achievement Curriculum Vitae” so that the AS can generate a digital gamer CV. Such a CV could, for instance, be used by developers to find the right players for beta testing.

Others mentioned that the AS should give the player a shopping cart in which the player can pick out the achievements he/she thinks are fun and put on a “shelf of fame”.

It was also mentioned that the achievements should be used as cards in a card game or bricks in a digital board game, where the players would use them to battle each other. The strength of these cards/bricks should be determined by the rarity, i.e. Glory points, of the achievements.

Further suggestions included achievements being used to challenge one’s friends. For instance by unlocking achievements with a specified rarity level, in a specified order, within a specified period. The player should challenge, first himself by “locking” three achievements to a “challenge card”. If he/she unlocks the achievements in the order he/she locked them, he/she will be granted the right to send the “challenge card” to other players, challenging them to do the same.

All in all when asked how the system could be modified in order for creating a greater purpose in pursuing achievements, most participants answered with ideas that included some sort of mini game. This suggests that a meta game would grant a sort feeling of greater purpose in the player. As such the component in

AS that should encourage purpose, will be a mini game using achievements as the main gameplay element. By combining some of these ideas and suggestions it will be possible to design a way for the AS to give the player an environment that enhances the player's change of feeling a sense of purpose.

In the next chapter the AS will be further designed in order to implemented the last of the three elements of intrinsic motivation.

10 Designing for purpose

Intrinsic motivation consists of three elements, autonomy, mastery and purpose. So far, the Achievement System (AS) has been designed to enhance the players' feeling of autonomy and mastery. This chapter will use the ideas that were generated in the initial test of AS in order to design a way for the system to enhance the feeling of purpose in the player.

The results of the initial test show that in order to evoke a feeling of purpose in pursuing achievements, the act of unlocking achievements have to be part of a clearly defined meta game. The nature of intrinsic motivation is about the player doing tasks because he/she enjoys doing them. It has been argued that setting his/her own goals, i.e. player defined achievements, will only be done if the player finds the goal/task interesting to do, i.e. is intrinsically motivated. Thus creating a meta game that encourage the player to come up with his/her own goals will arguably put the tasks into perspective of the player's own feeling of freedom of choice.

As such, the AS will be about "building" the best way through a game while getting the achievements that are most interesting to the player, along the way. The idea will be to encourage the player to pick out the achievements he/she finds most interesting, find out what tasks they require him/her to do and put the tasks into context of his/her normal play through.

Through the meta game, the player will choose a couple of achievements that he/she will be going for, before unlocking any achievements in the game. These achievements will give extra Glory points in the game when unlocked and will encourage players to find the ones he/she likes the most and go for them.

The downside will be that players might just give the extra points to the achievements that are easy to get or to an achievement that they are very close to achieving. As such, the achievements that the player plans to unlock first will be granted a high multiplier and the achievements that he/she plans to unlock last is granted a small multiplier. This should encourage the player to pursue the hardest achievements first, but because they are the rarest achievements, it can be expected that these achievements are hardest to get early on in the game. This will encourage the player to challenge him/herself to aim for the hard achievements when planning his/her play through and to do so, create mental models of how to achieve them. This way AS will encourage the player to create his/her own schema of the game's achievements in order for him/her to be motivated by his/her own-set goal.

As such the system will be used as a way for the player to manage their achievement pursue, meaning that the player will be able to plan his/her play session through the achievements as well as admire the achievements he/she has already unlocked. The player should be able to set his/her own goals and plan how he/she will be doing them. Because of the mental models/schemas of how the player will be playing the game the system will evoke the players' intrinsic feeling of purpose.

The down side of a mini game where the player plans his/her way through the achievements of a game, is that he/she will have to already know what the game is about and how it is played, otherwise he/she will not be able to foresee how the achievements are unlocked. This has to be considered in the final test, as players will have to play games in which they already have, at least, the basic idea of the gameplay.

Besides using the AS as a fast overview of the achievements in a game, the player can use the AS as a meta game. This meta game not only puts the achievements into a context of a larger game, but also encourages the player to challenge him/herself in mastering the game, by doing so on the terms of the player's own free will as he/she will be the one that sets the goals.

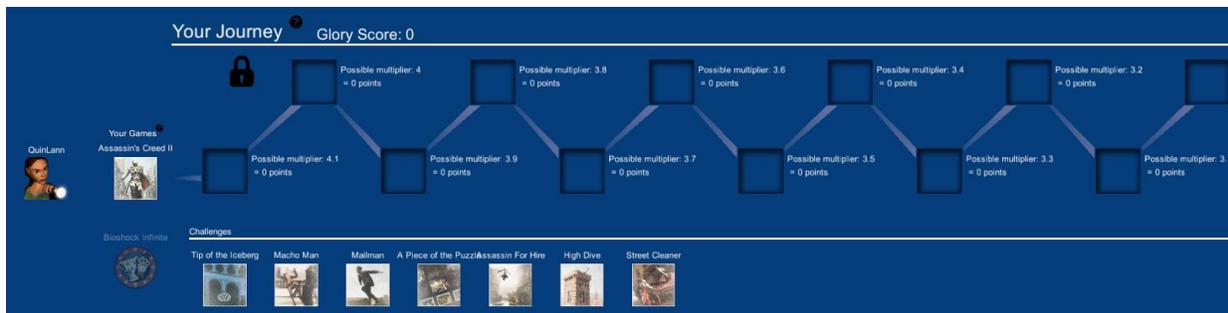
In the next chapter, the final product will be presented with focus on explaining how the meta game works.

11 Implementing purpose

In this chapter, the implementation of the meta game, that was designed in the previous chapter on basis of the initial test participants' input, will be described in order to clarify how the meta game will evoke intrinsically motivated feeling of purpose.

As described in previous chapter, the meta game should be about the player planning his/her way through the game he/she is playing. As argued earlier (See chapter 8) every achievement has a specific Glory point value that represents its difficulty level. The main goal of the game is for the player to challenge him/herself to pursue as difficult achievements as he/she thinks he/she can master. Thus, the meta game is created with a "path" of the achievements the player has unlocked and the ones that he/she has planned on unlocking in the future. As such, the meta game is called "Your Journey" as it describes a map of the player's journey through the achievements.

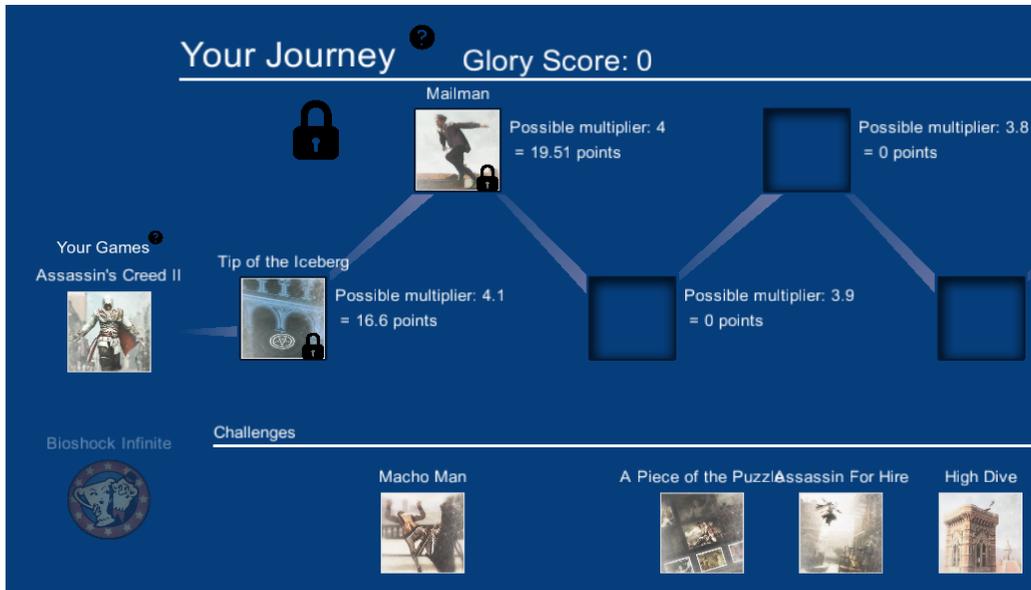
Every game has its own Journey and the path of every Journey consists of milestone-squares, which can hold all the achievements of that particular game. This gives the player the opportunity to plan as many of the achievements he/she desires for each game.



"Your Journey" through the achievements is represented by the player's "path" which consists of "milestones". In this picture the user "QuinLann" has opened the game "Assassin's Creed II" to see his Journey through the games achievements. At the moment he has not unlocked any achievements and all the milestones of the "path" is empty. Therefore he has 0 Glory points so far.

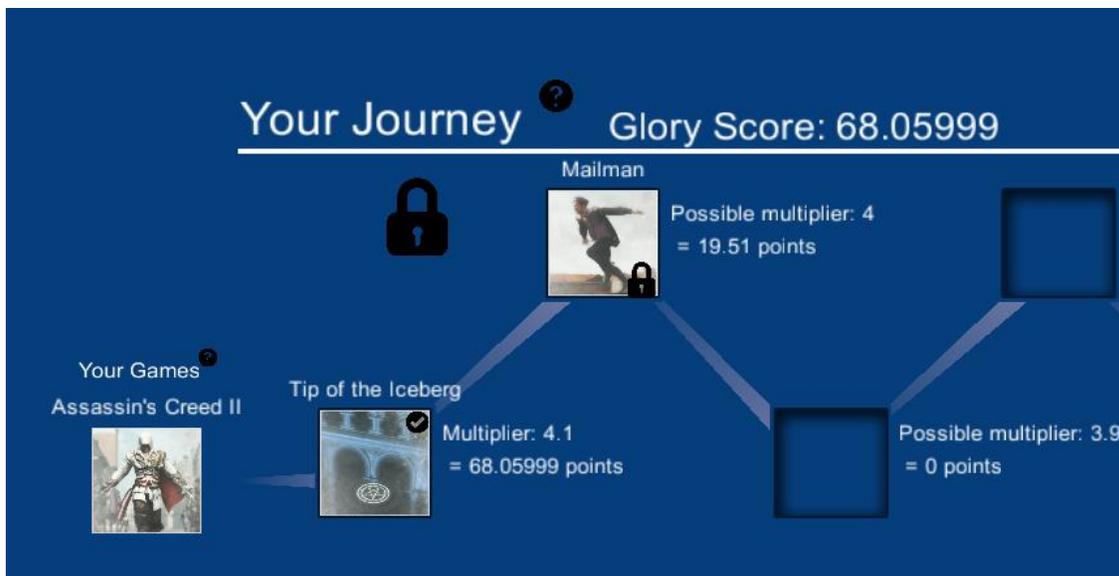
Every milestone has a multiplier, which is added to an achievement's score if the achievement is unlocked in the correct order. The order, in which the achievements should be unlocked, is determined by the player him/herself. As mentioned earlier, the first milestone has the highest multiplier and the last has the lowest, encouraging the player to challenge him/herself to pursue achievements that has a high Glory point score early on in his/her play through.

The player plans his/her way through the achievements by dragging them up onto the milestones and locking them in place by clicking the padlock. Only when the player has successfully achieved the achievements, will their score be added to the player's total Glory score.



The player will plan his/her way through the achievements by dragging them up onto the "milestones" and locking them into place. The default Glory point score for the "Tip of the Iceberg" achievement is 16.6. Notice that it has not been multiplied by the milestone's multiplier, because "QuinLann" has not unlocked the achievement inside Assassin's Creed II (Ubisoft Montreal, 2009) yet. The same is true for the "Mailman" achievement, however this achievement is a slightly more difficult and thus has a higher Glory point score.

When the player obtains an achievement, the Achievement System (AS) will check to see if the player had planned to unlock it beforehand. If the achievement was planned, it will check if it was unlocked in the order of the planned Journey. If it was unlocked in the right order, it will be granted the multiplier of the milestone it is locked to.



At this point "QuinLann" has been playing Assassin's Creed II (Ubisoft Montreal, 2009) and unlocked his first achievement the "Tip of the Iceberg" and he did it before unlocking the "Mailman" achievement, which grants him the milestone multiplier. Therefore, he now has a total Glory score of 68.06

See more pictures of the final Achievement System in appendix D.

With this last element of intrinsic motivation implemented in the system, the AS is ready to be tested upon in order to determine whether the system is capable of altering the player's achievement experience in order to evolve a more intrinsically motivated opinions in the player.

In the next chapter the execution of the final test, which was designed in chapter 7.3, will be described and the results will be discussed.

12 Final test

In this chapter the final test will be described and the results will be analyzed and discussed. The test was conducted according to the designed test described in chapter 7. The results will show whether the designed and implemented Achievement System (AS), will have an intrinsically enhancing impact on the test participants' motivation to pursue achievements.

12.1 Test procedure

As described in chapter 7, the final test was designed to determine players' typology and their intrinsic motivation level, based on two questionnaires. The test participants were asked to answer the first questionnaire in order to determine their playing habits and their relation to achievements, before introducing them to the AS. Based on that it was possible to put every participant in one of two groups, i.e. players who pursue achievements regularly (hunters) and players who do not pursue achievements regularly (non-hunters).

As a last part of the first questionnaire, the test participants were asked to pick a game that they would be playing in the nearest future, to use in the test. It was crucial that the game they picked was a game that they were going to play anyway. If the player is forced to play games that he/she do not like in the first place, it is believed that he/she will not be able to experience any intrinsic motivation.

After the test participants had answered the questionnaire and picked a game, they were given access to the AS. If the test participant have had previous experience with pursuing achievements beforehand, they were immediately asked to answer the second questionnaire, which measured their intrinsic motivation level. If the participants had no previous experience with pursuing achievements at all, they were asked to answer the second questionnaire after unlocking their first few achievements. This was done to make sure that the test participants had some knowledge about what an achievement is and what it takes to pursue them.

Hereafter the test participants were asked to play the game they choose, the way they choose, when they choose and for as long as they wanted. This means that the test participants were asked to play their own games at home, as they would normally do.

While the test participants' achievement progression and use of the AS was remotely monitored, they would be playing as usual and when they have been using the AS for a week or two, depending on the game they choose, they were asked to answer the third and final questionnaire. This questionnaire was the same as the second and thus their results could be compared in order to determine whether their intrinsic motivation level had been altered.

The results will be presented and discussed in the next section.

12.2 Findings

The test was conducted between the 2. of July to the 22. of July. During this time, 46 participants answered the initial questionnaire and were granted access to the AS, 2 women and 44 male players. To get players from both sides of the achievement debate, i.e. to find test participants that are in favor of achievements the questionnaire was posted on psnprofiles.com, psntrophyleaders.com, ps3trophies.com and playstationtrophies.org. To get test participants that are not in favor of achievements the questionnaire was sent to players who were believed not to have a user account on any of these sites. Test participants came from all over the world, i.e. Denmark, America, Portugal, Brazil, Britten, Angola, Canada and Ireland, their age span ranged from 16 to 43 and all have been playing games for 3 years.

After granting access to the AS the test participants were asked to answer the second questionnaire in which their initial motivation level were measured. Of the 46 participants, who answered the first questionnaire and were granted access to the AS, 22 answered the second questionnaire and these participants will be the ones that will be further discussed in the next section.

12.2.1 Dividing test participants

To divide the participants into groups of participants in favor and participants against achievements the participants' answers to the first questionnaire, about their opinions towards achievements, was analyzed. The questionnaire consisted of five questions that defined the player's opinion towards achievements (See appendix A). To easily divide the participants, the answer to each question was granted a percentage that described how much the participant felt in favor of achievements, where 100% was completely in favor and 0% was completely against achievements. The average percentage of all these five questions show whether the participant was in favor of achievements or not. The last of these questions was directly mapped to the achievement player type defined in chapter 6.5, thus the participants' answers to this specific question was added twice to their average calculation. For more information on how each question, affect the participant's percentage see appendix E.

As such, the 22 test participants were divided into two groups. Players with an average percentage of 50% or above were defined as players with opinions in favor of achievements and players with percentage below 50% were players with opinions against achievements. Thus the 22 test participants were divided into one group of 12 participants against achievements (non-hunters) and 10 participants in favor of achievements (hunters), see table 4.

User name	Average achievement percentage score
	<i>Participants against achievements (non-hunters)</i>
Setola	11.97
sabor	13.72
PvtNielsen	25
spoisen	29.86
Shaded soul	34.72
Aske1988	36.28
Oecon	37.83
DBP7	37.83
kgrande	37.83
nichico	37.83
zaran_	42.69
Solethia	43.86
	<i>Participants in favor of achievements (hunters)</i>
ATAa	50.86
MikaelOlsen	52.42
angelgarou	54.43
sonofvenom	55.72
MaverickXS	59.72
Móll	61.28
khadaffy	62.83
corbintm2	71
joedaviot	87.8
Frisendal	94.44

Table 4 - 12 non-hunter type test participants and 10 hunter type test participants

In order to answer the final problem statement (See chapter 5), the next section will compare the two groups' motivation levels in order to determine whether the non-hunters' motivation level to pursue achievements has been altered towards the level of the hunters' motivation level.

12.2.2 Comparing the starting motivation level

Before these groups can be compared it is necessary to determine, whether they in fact has motivation levels that differ. This is done by comparing the two groups' answers to the second questionnaire, i.e. the measurement of their motivation level at the beginning of the test.

As defined in chapter 7 the questionnaire that measures the player’s motivation level is used both in the start of the test and at the end of the test and it consists of these 7 elements:

- 1) The test participant’s self-efficacy level.
- 2) The test participant’s interest in achievements.
- 3) The test participant’s mastery of the achievements.
- 4) The test participant’s perceived autonomy to choose the achievements they wanted to pursue.
- 5) The test participant’s perceived level of purpose the achievements gave them.
- 6) The test participant’s enjoyment of pursuing achievements.
- 7) The test participant’s desire for pursuing other achievements.

Each element has two 7-point Likert scale questions. These two questions were designed to equally show the test participant’s level of the element they represent. For instance, the test participant’s feeling of self-efficacy is determined by the average of the two questions: “I want to be better at this game.” and “I feel confident with my skill level in the game.” (See the entire questionnaire in appendix B)

Each element’s average score from all test participants in each group was calculated and reads as follows:

Average score of first motivation level

Questionnaire Element	Non-hunters		Hunters	
	Average score	Probability of normal distribution	Average score	Probability of normal distribution
Self-efficacy	4.83	0.9999	4.95	0.9986
Interest	3.38	0.9849	4.6	0.9275
Mastery	4	0.991	5.2	0.9554
Autonomy	5.21	0.8825	5.7	0.9356
Purpose	3.71	0.9999	5.1	0.9985
Enjoyment	3.92	1	4.85	1
Replay ability	4.88	0.9979	4.65	0.9886

Table 5 – The two groups’ average score for each intrinsic motivation element, at the beginning of the test

The charts of these answers suggest that most of the answers for each element were normally distributed (See the charts of all the scores in appendix F). However, at a level of significance of 5%, calculations show that the answers for Autonomy from both groups are not normally distributed. The same is true for the answers to the element Interest from the Hunter groups (see the calculations in appendix G). This means that these two elements cannot be statistically compared between the two groups. It should be noted

that because of the few amount of test participants, these calculations might not be completely comparable to the actual population.

To compare the two groups' differences all the elements, besides Interest and Autonomy, a t-test have been performed to calculate whether the two groups' average scores are different.

With a level of significance of 5%, the null-hypothesis reads as follows:

H0 : There is a statistic significant difference between non-hunter players and hunter players.

The following table show the results of the t-test (See the calculations in appendix G).

T-test of first motivation level

Questionnaire Element	t-value	Two-tailed probability	Significant difference
Self-efficacy	0.44	0.6681	No Difference
Mastery	2.53	0.02	Difference
Purpose	4.28	0.0004	Difference
Enjoyment	1.33	0.1983	No Difference
Replay ability	0.6	0.5583	No Difference

Table 6 - The two groups' t-test results for each intrinsic motivation element, at the beginning of the test

This show that when the two groups' level of Self-efficacy, Enjoyment and Replay ability are statistically indifferent. However, Mastery and Purpose levels are significantly higher with the hunter group. This indicates that the two groups' intrinsic motivation at the beginning of the test is indifferent. Since three of the five elements has a two-tailed probability above 0.05, the null-hypothesis is rejected in these elements, resulting in no significant difference in the two groups' motivation level in these elements. However, the two elements, Mastery and Purpose have a probability below 0.05, meaning that in these elements the null-hypothesis cannot be rejected. Thus, the only elements in which there is a difference between the two groups of players are Mastery and Purpose.

It was expected that, at the beginning of the test, the two groups would indicate the most significant difference. However, the results show that, in three of the five elements, they do not. This can be an indication of the test participants not being properly divided or an indication of the questionnaires, measuring the motivation level, being too ambiguous.

12.2.3 Comparing the ending motivation level

The same procedure is used to compare the two groups' intrinsic motivation level at the end of the test. Here the results of the third and final questionnaire is compared. (See the charts of all the scores in appendix H)

Average score of final motivation level

Questionnaire Element	Non-hunters		Hunters	
	Average score	Probability of normal distribution	Average score	Probability of normal distribution
Self-efficacy	5.05	0.9966	3	0.9892
Interest	3.45	0.9487	4.39	0.9913
Mastery	3.91	0.9972	4.94	0.9693
Autonomy	5.23	0.9111	5.39	0.9752
Purpose	4.18	1	5.28	0.9891
Enjoyment	4	1	4.33	0.9999
Replay ability	4.6	0.9597	4.67	0.9934

Table 7 – The two groups' average score for each intrinsic motivation element, at the end of the test

As with the first measurement of motivation, this resulted in the Interest and autonomy not being normally distributed with non-hunters. Thus, these cannot be used in the t-test (See the calculations in appendix I).

T-test of final motivation level

Questionnaire Element	t-value	Two-tailed probability	Significant difference
Self-efficacy	5.77	0.0000	Difference
Mastery	3.11	0.0061	Difference
Purpose	3.42	0.0029	Difference
Enjoyment	1.04	0.3111	No Difference
Replay ability	0.13	0.8964	No Difference

Table 8 - The two groups' t-test results for each intrinsic motivation element, at the end of the test

This show that the two groups' level of Self-efficacy has gone from being indifferent at the beginning of the test to being statistically different, as the non-hunters' average score has been heightened from 4.83 to 5.05 and hunters' score has fallen from 4.95 to 3.00.

There seems to be no change in the remaining four elements, as the t-test results are the same as with the first motivation measurement.

To get a better understanding of why only Self-efficacy is affected during the test, the next section will analyze the two groups' results by comparing the first motivation level of the non-hunter group at the

beginning of the test with the motivation level of the same group at the end of the test. The same will be analyzed with the hunter group.

12.2.4 Comparing motivation levels of non-hunters

So far the hunter group's and the non-hunter group's motivation levels has been compared at the start of the test and at the end. This was done to determine whether the non-hunter group's motivational level would go from being different at the beginning of the test to being the same at the end.

It is deemed necessary to also compare each group's motivational level within itself, at the beginning and at the end of the test. This is done to determine whether the groups' motivational level is heightened, during the test. As such the non-hunter group's average score and t-test results reads as follows:

Non-hunters average score of

Questionnaire Element	First motivation level	Final motivation level
Self-efficacy	4.83	5.05
Interest	3.38	3.45
Mastery	4	3.91
Autonomy	5.21	5.23
Purpose	3.71	4.18
Enjoyment	3.92	4
Replay ability	4.88	4.6

Table 9 – The average motivational level of the non-hunter group at the beginning and end of test

The Interest and Autonomy elements were not normally distributed within a level of significance of 5%. Thus, the five other elements are t-tested:

T-test of non-hunters

Questionnaire Element	t-value	Two-tailed probability	Significant difference
Self-efficacy	0.669	0.5184	No difference
Mastery	0.576	0.5775	No difference
Purpose	1.392	0.1914	No difference
Enjoyment	0	1	No difference
Replay ability	1.148	0.2779	No difference

Table 10 – T-test calculation between the non-hunter group's motivational level at beginning and end of test

This show that the non-hunter group's level of intrinsic motivation is constant regardless of their use of the AS. No significant drop or rise in intrinsic motivation is to be detected in the non-hunter group's results.

12.2.5 Comparing motivation levels of hunters

Furthermore the hunter group's average score and t-test results reads as follows:

Hunters average score

Questionnaire Element	First motivation level	Final motivation level
Self-efficacy	4.95	3
Interest	4.6	4.39
Mastery	5.2	4.94
Autonomy	5.7	5.39
Purpose	5.1	5.28
Enjoyment	4.85	4.33
Replay ability	4.65	4.67

Table 11 – The average motivational level of the hunter group at the beginning and end of test

As above, the Interest and Autonomy elements were not normally distributed within a level of significance of 5%. Thus, the five other elements are t-tested:

T-test of hunters

Questionnaire Element	t-value	Two-tailed probability	Significant difference
Self-efficacy	3.512	0.0079	Difference
Mastery	2.8	0.0323	Difference
Purpose	0.816	0.4379	No difference
Enjoyment	0.308	0.7662	No difference
Replay ability	0.45	0.6646	No difference

Table 12 – T-test calculation between the hunter group's motivational level at beginning and end of test

These results show, unlike the non-hunter group, that the hunter group's average intrinsic motivational level was altered during the test, in the elements Self-efficacy and Mastery. Self-efficacy fell from 4.95 to 3.00 and Mastery fell from 5.2 to 4.94. This could be an indication of using the AS forces the player to look at achievements in another way than they are used to, thus making it unmanageable to figure out how to use the AS in relation to the game he/she is playing.

As such, the results seem to indicate that the AS has no impact on players who are against achievements where as it has a negative effect on players who are in favor of achievements. In the next chapter the

results will be discussed to evaluate the AS's ability to enhance the player's intrinsic motivation to pursue achievements.

13 Discussion

The results of the final test show that the non-hunter group's motivational level did not change during the test, but the hunter group's motivational level fell, especially in the element of Self-efficacy. When comparing the two groups' results, the element of Self-efficacy is also the only element that is statistically significant different between the two groups. The drop in Mastery and Self-efficacy could be an indication of the hunter group being demotivated by the AS.

However, because of the few test participants representing each group, it might not be accurate to determine the normal distribution of the actual target population. Thus analyzing the test results statistically by using normal distributed methods, might give an inaccurate responds to the test results.

The following table show the mean of each motivation element at the beginning of the test and after the test as well as the difference between the two measurements within the separate groups. Comparing the means could suggest a tendency, even though it is not statistically measurable.

Motivation Element		Non-hunters	Hunters	
Self-efficacy - beginning	0.22	4.83	4.95	-1.95
Self-efficacy - after		5.05	3	
Interest - beginning	0.07	3.38	4.6	-0.21
Interest - after		3.45	4.39	
Mastery - beginning	-0.09	4	5.2	-0.26
Mastery - after		3.91	4.94	
Autonomy - beginning	0.02	5.21	5.7	-0.33
Autonomy - after		5.23	5.39	
Purpose - beginning	0.47	3.71	5.1	0.18
Purpose - after		4.18	5.28	
Enjoyment - beginning	0.08	3.92	4.85	-0.52
Enjoyment - after		4	4.33	
Replayability - beginning	-0.28	4.88	4.65	0.02
Replayability - after		4.6	4.67	
Average difference:	0.07			-0.44

Table 12 - Average motivational scores

Table 12 indicates that even though the hunter group is scoring highest in most of the motivation elements they are also the ones that drop the most after using the AS. The element that drops the most is Self-efficacy (on average dropping 1.95 points), which could be an indication of players who are already pursuing achievements, when playing normally, will be less convinced of their ability to unlock the remaining achievements in the game they are playing. This contradicts the general perception of achievement hunters in general, being motivated to pursue all achievements in a game. However as defined earlier (See chapter 6.5) there are different types of players depending on their motivation to get some or all achievements in a game. Thus, the hunter groups' fall in Self-efficacy could indicate that they

have gotten all the achievements they wanted in the game, leaving only the hardest or least preferred achievements, which could be the reason to the drop in Self-efficacy.

It is interesting to notice that the non-hunter group's Self-efficacy is rising, with an average of 0.22. This could be an indication of these players not being experienced with pursuing achievements and thus not having unlocking all achievements yet and therefore still has achievements, they see as interesting, left to pursue. On the other hand, their falling level of Replay ability indicates that they do not want to pursue new achievements in other games.

However, Replay ability was the only element in which the non-hunters had a higher score than the hunters. This could be an indication of the non-hunters not completely understanding what it takes to pursue achievements, when the first motivation measurement was done. Which could lead to the drop in the score at the end of the test, when they have learned what it takes to unlock the achievements in the games they were playing.

One of the commonly mentioned complains about achievements is that they do not offer the player any reason to pursue them. However, the AS seem to have some effect on the player's motivational element of Purpose. The non-hunter group's Purpose score has been heightened by 0.47 points and the hunter group's score has been heightened by 0.18 points, indicating that the system does give the player more purpose in pursuing the achievement.

Because there are no statistical basis for any of these observations, it is not possible to determine whether they realistically depicts players' actual reaction to the AS. More testing have to be conducted to make assumptions that are more precise.

13.1 Methodology

The methodological approach used to compare the motivational level of the two test participants, has been to divide them into two groups based on the achievement player score (See chapter 12.2.1). As can be seen in table 4 (See chapter 12.2.1) there are no clear separation in the score between the test participants in the two groups. The scores are evenly distributed between the 22 test participants, going from 11.97 to 94.44 points. A decision was made to set a boarder at 50 points, as the maximum score was 100 points. This could have led to an error source in the test results, as dividing players this way does not ensure that the test participants in the hunter group actually were pursuing achievements in their spare time.

Another method could have been used where test participants were divided according to the amount of achievements unlocked already. However, having more achievements might not mean that a player thinks about them more than other players, but that he/she play more games.

A method that excludes the first questionnaire could be to define the two groups by comparing their first motivational level with the average motivational level of players on psnprofiles.com,

psntrophyleaders.com, ps3trophies.com and playstationtrophies.org. Test participants who at the beginning of the test had a motivational level that fall within the normal distribution of the general player from these forums, could be defined as the hunter group and test participants that did not, could be defined as the non-hunter group.

One of the main error sources, besides the number of participants, were the use of questionnaires. Even though the motivation questionnaires were developed on basis of research done by Ryan et al. (Ryan, Mims, & Koestner, Relation of Rewards Contingency and Interpersonal Context to Intrinsic Motivation: A Review and Test Using Cognitive Evaluation Theory, 1983), Rigby et al. (Ryan, Rigby, & Przybylski, 2006) and Huang (Huang, 2011), the test participants still subjectively interpret the questions. To prevent this, each of the motivation elements could have been assigned a higher number of questions, resulting in a more accurate average score for each element. However, this was omitted in order to get as many players to keep participating in the test, as the test was running for several weeks for each participant.

13.2 Design and implementation of the Achievement System

Some test participants have stated that they did not understand the AS (see appendix J for all comments on the system), i.e. how it worked and how they were supposed to use it. Some stated that they liked the idea of the Journey meta game, but that they did not use it. It can be argued that the design and implementation of the final AS has been too sparse, resulting in test participants not knowing what the overall purpose and right use of the system was. The solution of creating text boxes describing how to use the system does not seem to be enough. The test participants might not have found the text boxes, they might not want to read them or the text could have been ambiguous.

To properly resolve this issue the AS should be visually more compelling and fulfilling in terms transparency, with less text and more intuitive controls. The Glory point system should be easier to understand and the purpose of the Journey meta game should be clearer.

Other test participants stated that the system was only or mostly useful in games that had achievements that were unlocked regularly or in games where the player is put in a open world with as few boundaries as possible. In such games, the player is able to choose between all achievements, instead of being forced, choose between the achievements that are available in the stage he/she is in, in games that are not as open. This indicates that the system is only useful in games that has specific kinds of achievements. These games are not defined by the achievements' tasks, but by the order in which the achievements can be unlocked. Indicating that the categorization of the achievements could have been on different terms than their tasks. They could for instance be categorized in accordance to their time consumption instead.

This also holds true in relation to the journey meta game, as the more linear a game is the less choices between different achievements the player has. As the Journey meta game is about the player planning his/her way through the achievements, creating a path through the achievements that lies outside of a games normal progression will be impossible to execute if the game is linear.

This leads to the fact that in order to create a possible Journey of the achievements, to use in the meta game, the player will have to know how to play the game in advance. Preferably, the player should be playing a game that he/she has already completed, in order to create the best conditions for him/her to know what it takes to complete an achievement. Thus in order for the player to create a possible play through of the achievements in a game, they will have to know the time consumption of each achievements and in which stage each achievement can be unlocked.

14 Conclusion

The basis for researching achievements and their effect on players' motivation was formed by the debate on whether achievements are enhancing the gaming experience or not. This debate has been going on since the birth of achievements in 2005 and is still going to day. It is the belief of the author of this research that, when treated correctly by the developer, achievements can be used as positive expansion to great games. Therefore, this research was conducted as an attempt to make more players try pursuing achievements and thereby increase the chances of getting more attention, both from the players as well as the developers.

In order to make more players try pursuing achievements, a new method that enhanced the experience of pursuing was to be created and thus research was done in the field of motivating players to play games. It was uncovered that achievements in their nature are extrinsic motivation, which could be the reason to their perceived bad reputation, because according to research done in the field, intrinsic motivation seem to be a superior motivational drive. It was discovered that in order to enhance the experience of pursuing achievements, a system that presented them in a new way should be developed and therefore the following problem statement was reached:

To what extent can a system take advantage of an intrinsically motivating environment in order to reform the extrinsic motivational nature of achievements?

To create such a system a framework for categorizing achievements was created in accordance to the achievements' tasks. By comparing the study on intrinsic motivation and players' opinions with the achievement types, the achievements that were discouraging were found and excluded from use in the system. Furthermore player's typologies were determined in accordance to their view on achievements in order to create a test method that compared the intrinsic motivational level of players who are against and players who are in favor of achievements.

On basis of the intrinsically motivating players to pursue achievements an Achievement System was designed, implemented and tested. The system was designed to enhance the players' intrinsic motivation through the three elements: Autonomy, Mastery and Purpose, by presenting achievements in a new way, thus replacing the way they are currently presented in the interfaces of Xbox, PlayStation and Steam. Test participants' motivation level was measured at the beginning of the test and at the end of the test, in order to determine whether the Achievement System had an impact on their motivation to pursue achievements.

The test results show that the motivational level of players with opinions against achievements was not affected by the use of the Achievement System, but the motivational level of players with opinions in favor of achievements drop while using the system.

All in all the test results show that the Achievement System does not have the capability to positively enhance the experience at its current stage. This could be the result of bad or incomplete design of the

system or that the idea of using such a system when playing games normally simply is not something the average player wants to do.

One of the most important discoveries of this research is that, to intrinsically motivate a player, he/she has to be setting his/her own goals. As such, it was concluded that the best way to do so was to make the player choose the achievements he/she wanted to pursue, for themselves and not to develop a method that proposed the right achievements for the player to pursue. Such a method would rob the player the autonomy he/she is feeling. However an Achievement System that proposes the right achievements to players who are new to achievements might show a of better use than the version developed for this research.

However, it is believed that the concept altering how achievements are presented to the player has potential of enhancing the players' motivation to pursue them. As such with more design, implementation and test iterations it is believed that the Achievement System can be successfully enhance the experience of pursuing achievements.

15 Future perspectives

The concluding note on this research is that the Achievement System that has been developed does not have the capability to enhance the players' motivation to pursue achievements. In order to create a system that might will this chapter will propose and discuss the next step that will bring the Achievement System closer to its original goal.

15.1 Proposing the right achievements

One property, which was discussed in chapter 8.2, but never realized in the final product, was the ability to propose the right achievements to the player in accordance to his/her playing style and skill level. It was determined that the player should be presented only by tasks that match the player's skill level in order to improve the player's chances of experiencing flow. For a player to remain intrinsically motivated he/she have to be challenged, to a degree where he/she will not lose self-efficacy (Ryan, Mims, & Koestner, 1983) (Csikszentmihalyi, 1975) (Pink, 1995).

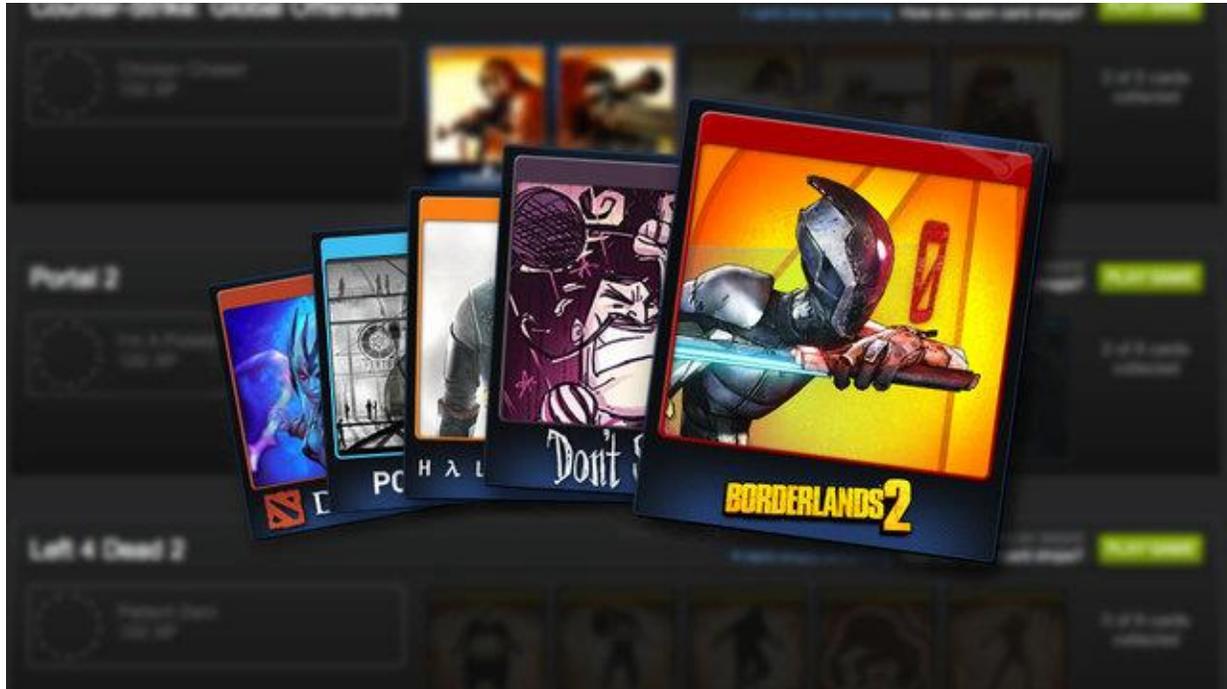
In chapter 6.3, it was determined which types of achievements are demotivating to the player and thus should not be part of the system. However even with these achievements removed, it is believed that the player will still think some of the achievements are demotivating because of the way he/she prefers to play. The AS will have to make sure that the player is not given the opportunity of choosing between achievements that are demotivating to his/her playing style and skill level. Thus, the AS should only be showing achievements that matches the player's typology in relation to the difficulty level of the achievements. For instance, a player who are playing games regularly will be presented by more difficult achievements than players who are playing more irregularly.

Furthermore a completed rating system for each achievement, where the player is able to, not only rate the achievement's entertainment value, but also its value in relation to its time consumption, will give the system better basis for proposing achievements that falls within the players preferred playing style.

15.2 Future purpose of the Achievement System

What have been shown to be one of the biggest issues with achievements, is that players do not see any greater purpose for pursuing achievements. This issue have been tackled by implementing game mechanics to the achievements, though the meta game Journey. However, other methods could be used to evoke purpose in the player.

Valve has developed a new method of creating purpose into collecting artificial prizes through their Steam Trading Cards system (Valve Corporation, 2013). These digital cards are not dependent on a specific task, but are randomly rewarded for playing a game normally.



Steam trading cards are virtual cards earned by playing games on Steam. They are randomly unlocked and the player does not have to a specific task in order to unlock them.

The trading cards are Valve's new take on achievements and they are a new way of putting value to achievements (Alexander, 2013(A)). These cards are an addition to Valve's group of collectibles in their system, which already consists of achievements, coupons and in-game items. When the player has unlocked and traded him/herself to all the trading cards from a game, he/she is given bonus items to use in Steam's community, such as background pictures for their profile site and special smileys to use in the chat. This way Valve is giving value that is based on goodies that can be used outside the game and in other contexts than games.

This is Valve's solution to the issue of gaming not having any greater purpose in real life. Because one of the biggest issues with developing greater purpose in achievements, lies in the fact that they are not related to real life outside gaming. The final version of the Achievement System does not take advantage of the social aspect of achievements. Achievements does not seem to have any apparent value to people outside gaming, but by unlocking goodies, like Valve is doing with the trading card system, for instance on social networks like Facebook and twitter. Achievements could be stepping into the realms of achieving purpose outside the gaming world, and thus acquiring more apparent purpose than they have now.

16 References

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Appendix A

Achievement player type questionnaire

Thank you for your interest in this research!

This questionnaire is part of a test on players' habits of collecting achievements and trophies.

An achievement/trophy is a small reward, which is granted for doing a special task, inside the game you are playing. On the Xbox and Steam systems, these rewards are called achievements. On the PlayStation system, they are called trophies.

To participate in the test you are not required to have any experience in pursuing achievements/trophies beforehand. You only have to be playing games either on a Xbox console, a PlayStation console or on Steam.

I sincerely hope that you will finish this questionnaire and participate in a test afterwards.

The test is simple. You will be playing your own games, on your own platform, in your home. You should play like you normally would over a couple of weeks' time. During this period you are asked to consult an application that proposes which achievements/trophies you might like pursuing.

* Required

Your playing habits

Age: *

Gender: *

- Male
 Female

Nationality *

Which gaming platform(s) are you using?

- PlayStation
 Xbox
 PC
 Wii
 Handheld consoles
 Mobile phones
 Other:

How many hours do you play video games pr. week? *

- Below 5 hours
 5-15 hours
 16-30 hours
 31-45 hours
 46-60 hours
 above 60 hours

For how many years have you been playing video games? *

- less than 1 year
 1-3 years
 3-5 years
 5+ years

Achievement/trophy habits

Are you actively pursuing achievements/trophies when playing normally? *

- Yes
- No
- Sometimes

How do you feel about pursuing achievements/trophies? *

1 2 3 4 5 6 7

I hate it I love it

Would you like to try pursuing achievements/trophies? *

1 2 3 4 5 6 7

Definitely not I'd love to

Put a few words on your opinion about achievements/trophies.

How many achievements/trophies do you think you have? *

Please answer from the top of your head without actually checking your collection.

Approximately how many percent of your playing hours do you spend on playing with a specific achievement/trophy in mind? *

- I don't play for achievements/trophies at all
- less than 10%
- between 10% and 25%
- between 26% and 50%
- above 50%

Approximately how many percent of your playing hours are you willing to put into pursuing achievements/trophies? *

- None
- less than 10%
- between 10% and 25%
- between 26% and 50%
- above 50%

Is any of your friends actively pursuing achievements/trophies, that you know of and how do you feel about that?

How much does achievements/trophies affect the way you play games? *

Please select the level that best fit your playing habits

- I have never consciously, pursued an achievement/trophy.
- I might pursue achievements/trophies if they sound fun to do and it will not interfere with my normal play.
- I like pursuing achievements/trophies even though they require me to put extra playtime into the game to unlock.
- I like to unlock all achievements/trophies in a game before putting it down for good.
- I mostly play games to expand my collection of achievements/trophies.

Find a game

What is your favorite game genre?

Specify at least three games that you have been playing most recently on either Xbox, PlayStation or Steam. *

Please note the platform you played the games on as well.

Do you prefer one of them over the others? If yes which one and why? *

Choose one of these games in which you haven't started to consciously collect the achievements. It doesn't matter if you have unlocked a few of the achievements/trophies as long as more than half of them are not unlocked. *

IMPORTANT: ONLY CHOOSE A GAME THAT ALREADY HAS ACHIEVEMENTS OR TROPHIES IN IT. If you do not own any of these games, or you have all achievements/trophies in all of them select "other" and write the game you want to use in the test. The game you choose can be a game you have already played before. During the test phase, this game will be the game that will be used by the test system. All you have to do is to play that game like you would normally. If you have already unlocked over half of the achievements/trophies in all the games you mentioned above, please specify a game that you are planning on playing from now on.

- Assassin's Creed II
- Bioshock Infinite
- Little Big Planet
- The Last Of Us
- Mafia II
- Another World
- Wolf Among Us
- Dark Souls
- Dark Souls II
- Pure Chess
- Uncharted Golden Abyss
- Skyrim
- Fallout New Vegas
- Counter Strike Global Offensive
- Total War Shogun 2
- GTA V
- Dishonored
- Ni no Kuni
- Tomb Raider
- Thief
- XCOM: Enemy Unknown
- Europa Universalis IV
- Banished
- DuckTales: Remastered
- Killzone: Shadowfall
- Portal 2
- Contagion
- Endless Space
- Other:

Please specify the platform you will be playing the game on. *

Xbox, PlayStation or Steam

For how long have you been playing the game you choose? *

How many days do you think you will spend on playing the game you have chosen? *

Playing the game normally, when do you think you will be putting it back on the shelf, either because you completed it or because you don't want to play it anymore?

How many of your friends are playing the same game?

Appendix B

Motivation level questionnaire to use both at beginning and end of test.

Motivation level

Thank you for playing!

Please take a moment to answer this questionnaire.
You will be asked questions about your motivation to pursue achievements in the game you choose to use for the test.

* Required

Your Xbox, PlayStation or Steam ID: *

Your ID is only used to bind your answers to your account in the achievement system. No personal information will be stored.

How much have you been using the achievement system? *

How many times during the test period have you used the system to follow up on you achievements/trophies?

- Every time I play
- Almost every time
- Half of the time
- A few times
- One time
- I did not use the system

What do you think about the system?

Any questions, suggestions or bugs to report?

Approximately how many percent of your playing hours did you spend on playing the game you choose with a specific achievement/trophy in mind? *

- I didn't play for achievements/trophies at all
- less than 10%
- between 10% and 25%
- between 26% and 50%
- above 50%

How much do you agree with this sentence? *

I used more time on achievements/trophies than I normally do.

1 2 3 4 5 6 7

Completely disagree Completely agree

How much do you agree with the following statements?

I want to be better at this game. *

1 2 3 4 5 6 7

Completely disagree Completely agree

I feel confident with my skill level in the game. *

1 2 3 4 5 6 7

Completely disagree Completely agree

Self-efficacy

How much do you agree with the following statements?

I am curious to learn more about achievements/trophies. *

1 2 3 4 5 6 7

Completely disagree Completely agree

I unlocked achievements/trophies in the game because they interested me. *

1 2 3 4 5 6 7

Completely disagree Completely agree

How much do you agree with the following statements?

I felt very capable at unlocking achievements/trophies. *

1 2 3 4 5 6 7

Completely disagree Completely agree

The achievements/trophies kept me on my toes, but did not overwhelm me. *

1 2 3 4 5 6 7

Completely disagree Completely agree

How much do you agree with the following statements?

I was able to set my own goals. *

1 2 3 4 5 6 7

Completely disagree Completely agree

I felt in control of my own play session. *

1 2 3 4 5 6 7

Completely disagree Completely agree

How much do you agree with the following statements?

Achievements/trophies are important for my normal play. *

1 2 3 4 5 6 7

Completely disagree Completely agree

I can see how achievements/trophies can be important to other people. *

1 2 3 4 5 6 7

Completely disagree Completely agree

Interest

Mastery

Autonomy

Purpose

How much do you agree with the following statements?

I enjoyed unlocking achievements/trophies. *

1 2 3 4 5 6 7

Completely disagree Completely agree

I think the achievements/trophies were boring. *

1 2 3 4 5 6 7

Completely disagree Completely agree

How much do you agree with the following statements?

I would like to unlock the achievements/trophies in another game. *

1 2 3 4 5 6 7

Completely disagree Completely agree

In the game I played, I can see myself during some of the same tasks again, without getting another achievement/trophy for it. *

1 2 3 4 5 6 7

Completely disagree Completely agree

Enjoyment

Replay ability

Appendix C

Comments by psnprofiles.com user Frisendal

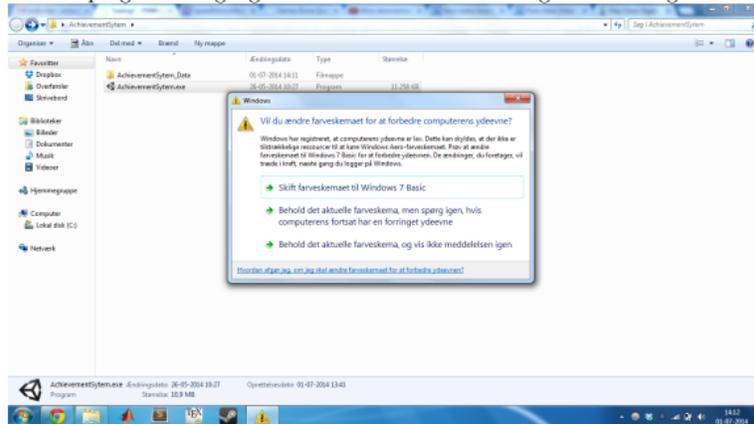
July 6, 2014

Kommentarer til AchievementSystem

Hej Henrik.

Din email provider virker fint. Jeg har haft travlt de sidste par dage, og har ikke haft tid til at spille another world og teste dit produkt. Dog har jeg stadig lidt kommentarer.

Fra den computer jeg har arbejdet fra (Lenovo B570) har jeg haft et problem med dit program. To gange er det crashed fordi den brugte alt for meget RAM.



GUIen opfører sig ikke pænt når man kører i laveste opløsning, windowed mode. Der er felter der ikke kan skrives i.

På login skærmen er der under disclaimer sektionen to fejl: i ordet early mangler der et r. Occur har et e for meget i slutningen.

Selvom jeg ikke har spillet another world, har jeg spillet Pure Chess(vita) som du også har sat ind i systemet. Jeg kan endnu ikke se at trophiesne er blevet opdateret. Hvordan holder du systemet opdateret?

Som det er nu yder systemet ikke nogen motivation for mig. Det er interessant at have en visuel, organiseret oversigt over ens trophies. Mulige ændringer der vil gøre det gribbart kunne være:

- Statistik for ens profil. Hvor mange point/trophies/etc. er der opnået. Completion % mm.
- Personlige mål. Sæt deadline for opnåelse af trophies/gennemførelse af spil mm.
- Når der kommer flere spil vil det være smart at kunne sortere spillene og trophies. Hvis nu f.eks. man vil lede efter et challenge trophy at arbejde på at opnå el. lign.

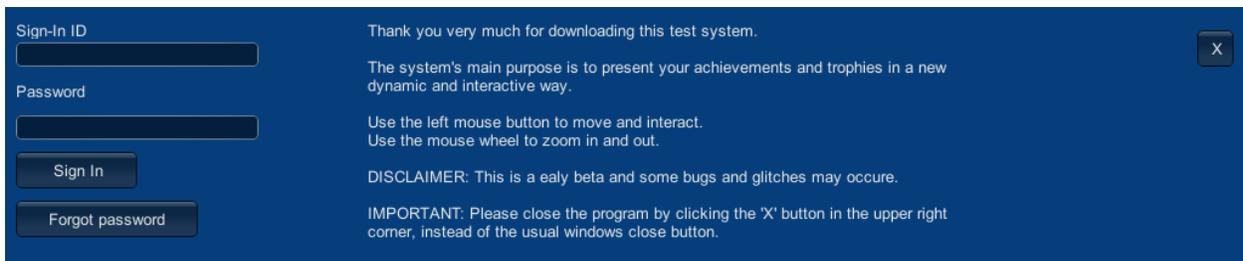
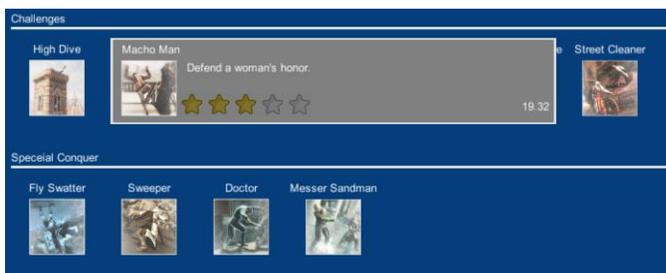
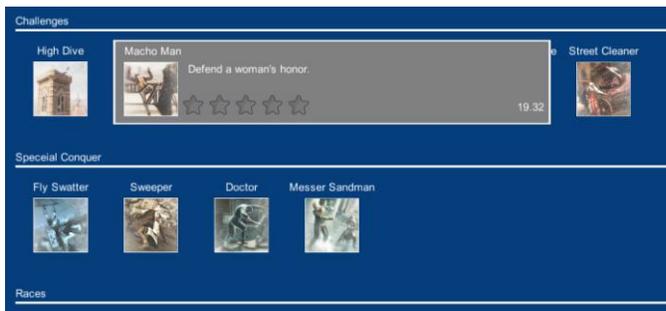
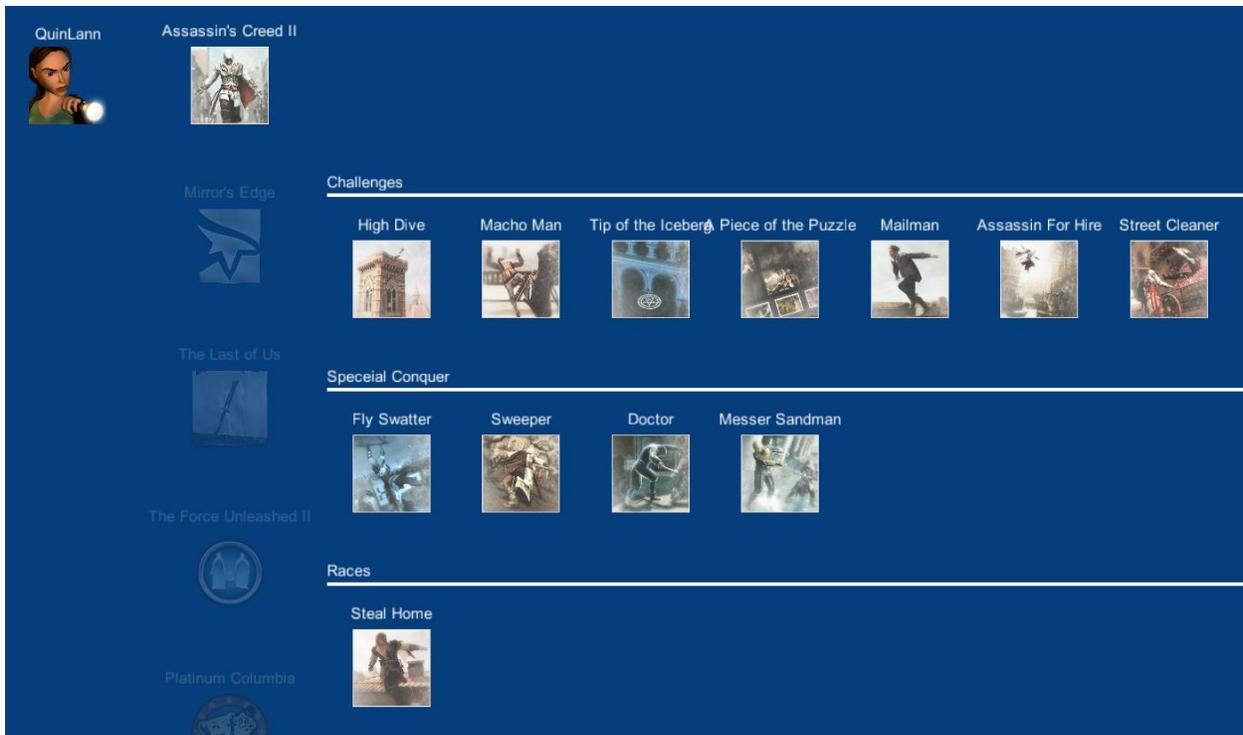
Mere har jeg ikke lige nu. Jeg er i udlandet indtil næste fredag. Hvis du stadig er interesseret i kommentarer på projekt så sig til.

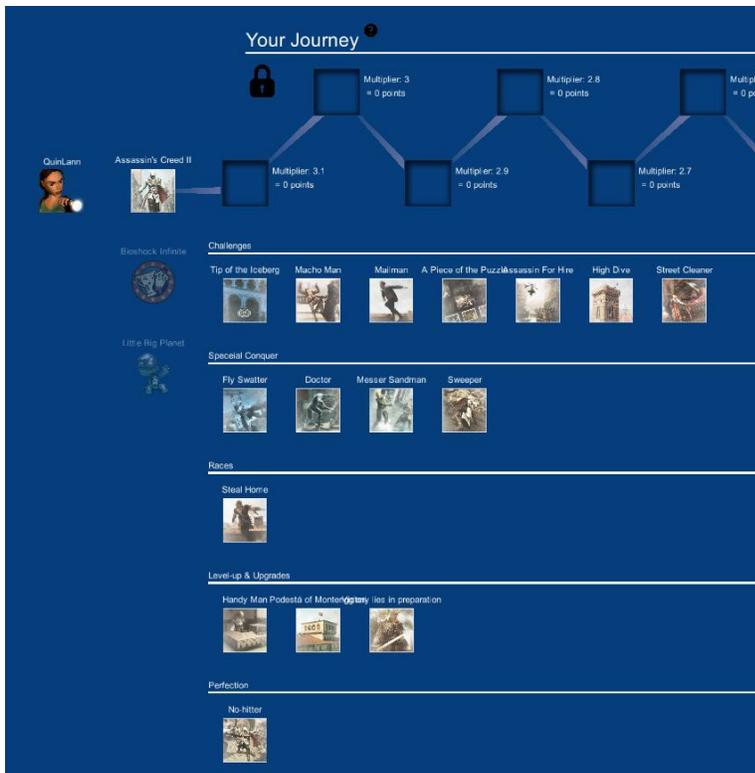
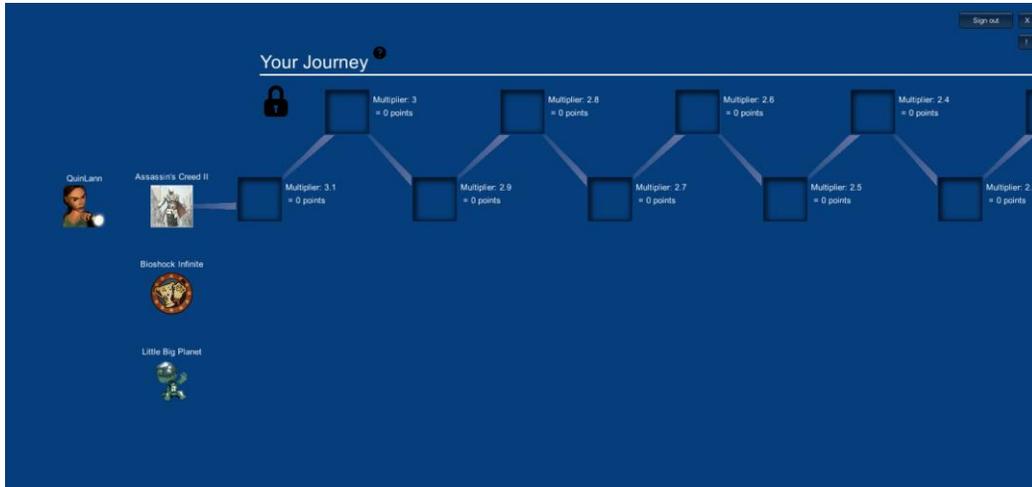
Mvh. Simon.

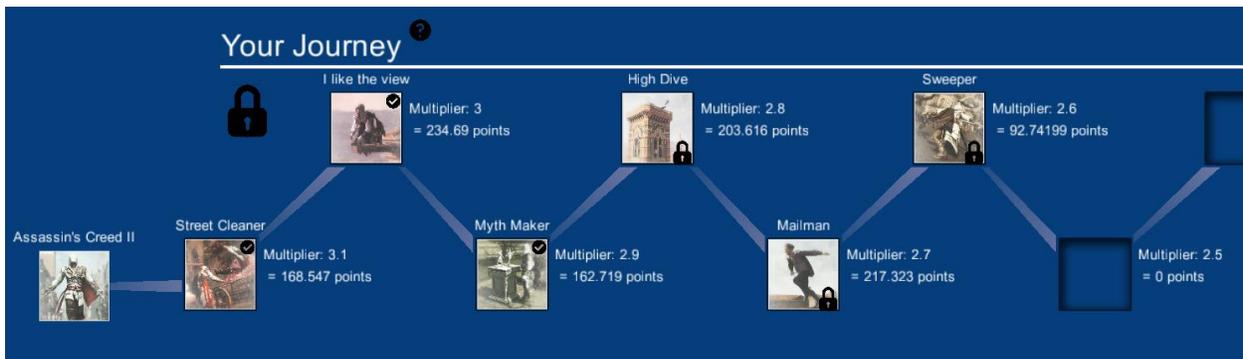
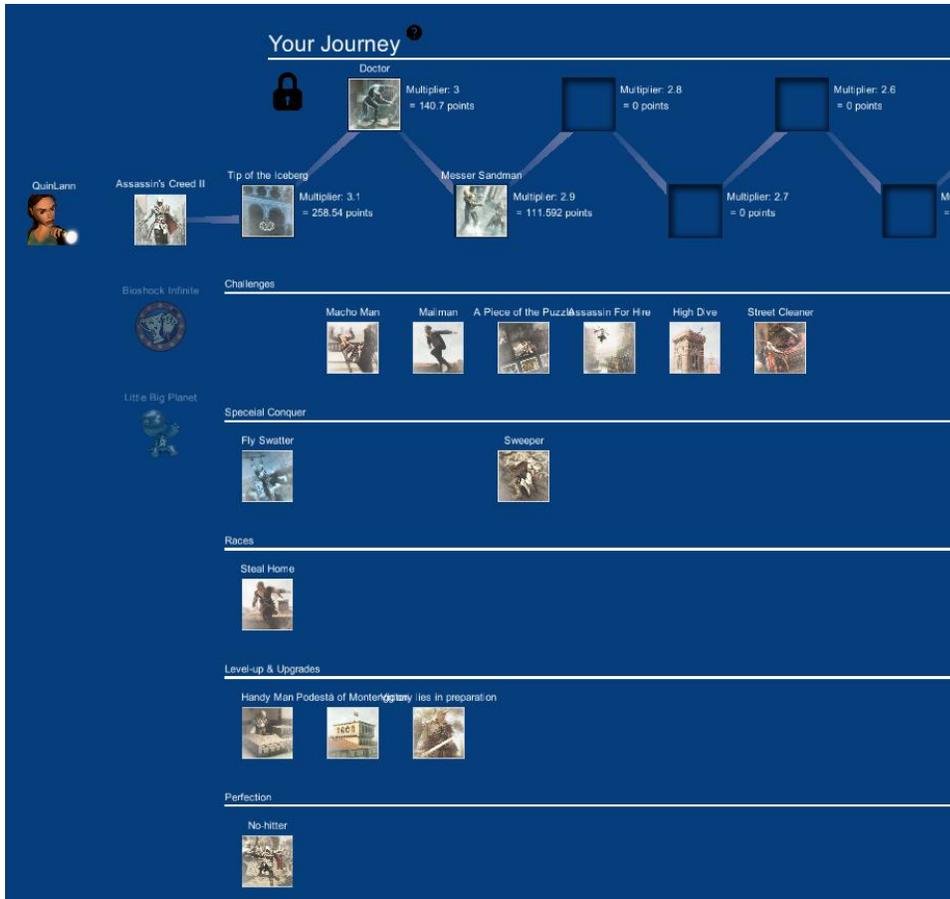
Appendix D

Screen caps of the achievement system









Your Journey

This is the path of your Journey. It represents the achievements you have obtained thus far. Every obtained achievement grants a specific amount of GLORY POINTS depending on their difficulty level. These GLORY POINTS can be multiplied if you PLAN your Journey through the game BEFORE you obtain the achievements.

The rules are simple.
Every MILESTONE in your Journey has a fixed multiplier. The first milestone has the highest multiplier and the last one has the lowest. Obtained achievements will automatically be placed from left to right.

HOWEVER the multiplier will only be granted to the achievements that you have PLANNED before obtaining them!

You PLAN your way through the achievements by placing them in a milestone and locking them into place by clicking the padlock.
But be careful! You cannot unlock them again, so you have to think carefully which achievements you choose to pursue and in what order.

Good luck and good hunting!

close

Your Games

Clicking a game will reveal a list of the available achievements you have yet to obtain. These are the achievements you can drag to your Journey. They are categorized according to their type and all achievements in a category are ordered by their difficulty level.

The achievement categories are:

Challenges:
These are the ones that are unlocked by doing something that won't come naturally during normal game play.

Treasure Hunts:
Find X amount of X, for instance: Find 50 treasures.

Exploration:
Find location X or reveal X amount of the map.

Conquer Enemies:
These are the ones that unlocks when you defeat X amount of enemies.

Speceial Conquer:
These are the ones that unlocks when you defeat X enemies in a special way.

Level-up & Upgrades:
These are achievements that are unlocked by leveling up or obtaining upgrades.

Races:
Achievements that are unlocked by doing something within a specific timeframe.

Perfection:
Achievements that requires you to be perfect at something, for instance: Killing 5 enemies without getting spotted.

Tasks:
These are the achievements that cannot fail.

For more information on how to unlock a specific achievement, take a look at their description by clicking their picture.

close

Appendix E

Calculation achievement-player-type percentage

In this appendix it is described how the average percentage of the test participants' achievement player type is calculated. This is done to determine test participants' opinions in favor or against achievements, for the final test see chapter 12.2.1.

1) Are you actively pursuing achievements/trophies when playing normally?

Yes	(100%)
Sometimes	(50%)
No	(0%)

If the player answers "Yes" or "Sometimes" to question 1) they will be taken to question 2.a), if they answer "No" they will be taken to question 2.b)

2.a) How do you feel about pursuing achievements/trophies?

Likert scale 1 to 7, 1 = "I hate it", 7 = "I love it"

1	(0%)
2	(17%)
3	(33%)
4	(50%)
5	(66%)
6	(83%)
7	(100%)

2.b) Would you like to try pursuing achievements/trophies?

Likert scale 1 to 7, 1 = "Definitely not", 7 = "I'd love to"

1	(0%)
2	(17%)
3	(33%)
4	(50%)
5	(66%)
6	(83%)
7	(100%)

3) Approximately how many percent of your playing hours do you spend on playing with a specific achievement/trophy in mind?

I don't play for achievements/trophies at all	(0%)
less than 10%	(25%)
between 10% and 25%	(50%)
between 26% and 50%	(75%)
above 50%	(100%)

4) Approximately how many percent of your playing hours are you willing to put into pursuing achievements/trophies?

I don't play for achievements/trophies at all	(0%)
less than 10%	(25%)
between 10% and 25%	(50%)
between 26% and 50%	(75%)
above 50%	(100%)

5) How much does achievements/trophies affect the way you play games?

This question is directly mapped to the five achievement player types defined in chapter 6.5. As such the answer for this question will be added twice to the player's average percentage score.

I have never consciously, pursued an achievement/trophy. (0%)

I might pursue achievements/trophies if they sound fun to do and it will not interfere with my normal play.(25%)

I like pursuing achievements/trophies even though they require me to put extra playtime into the game to unlock. (50%)

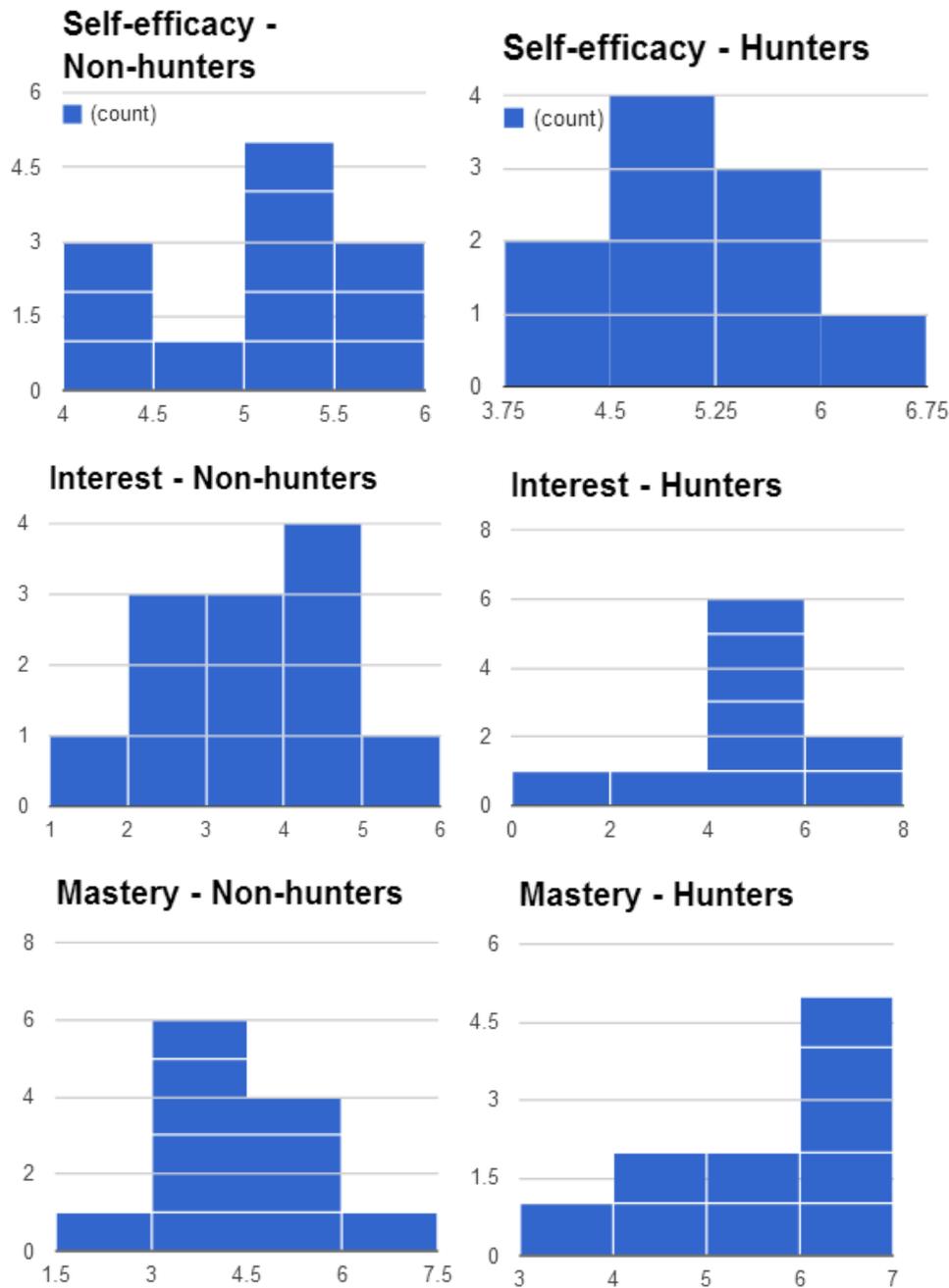
I like to unlock all achievements/trophies in a game before putting it down for good. (75%)

I mostly play games to expand my collection of achievements/trophies. (100%)

Appendix F

Test participants' answers to the first measurement

Test participants' answers to the first measurement of their intrinsic motivation level at the beginning of the test. As can be seen in appendix B, each element had two 7-point Likert-scale questions to them. These charts show the average between the test participant's answers on those two questions. All elements could score between 0 and 7 points (x-axis). The y-axis show how many participants scored the different average scores.





Appendix G

Results and calculations of the first motivational level

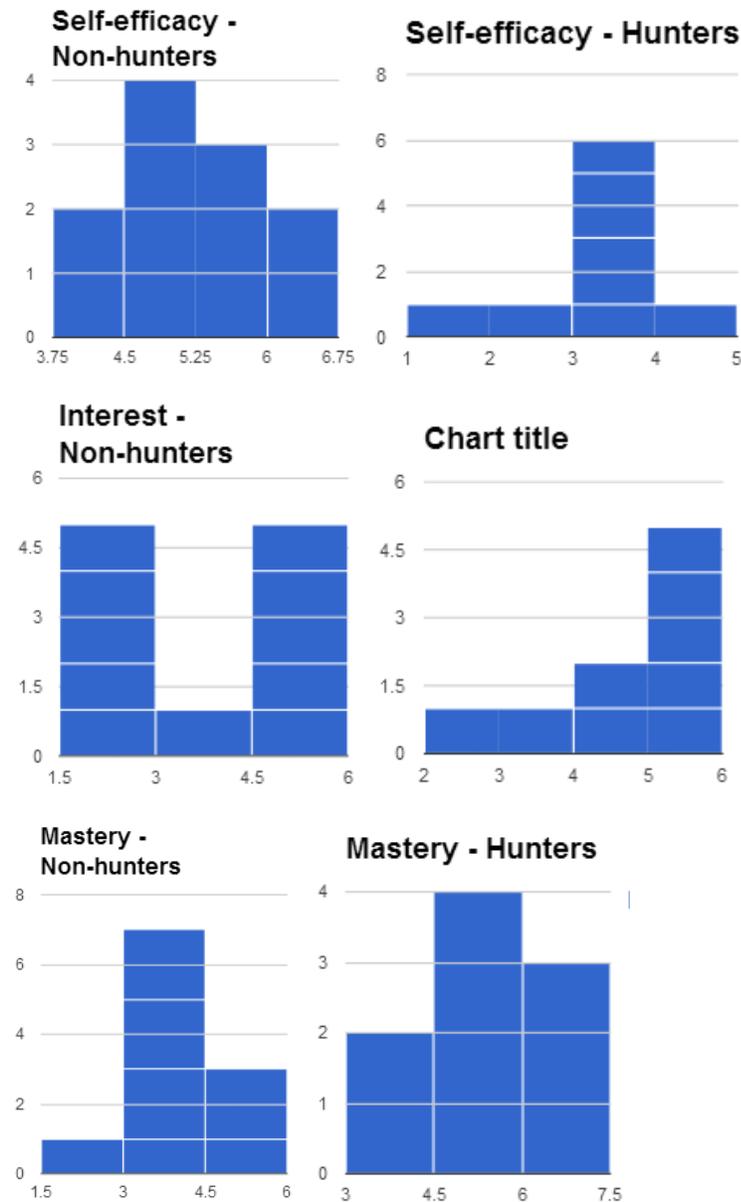
	Question 1	Question 2	Self-efficacy	Question 1	Question 2	Interest	Question 1	Question 2	Mastery	Question 1	Question 2	Autonomy
Non-Hunters (n=12)												
Selda	4	4	4	3	2	2	2.5	4	4	4	4	4
Sator	4	3	3	4	1	3	2	1	3	4	7	4
Fulhusen	5	6	5	3	2	2	2	2	2	2	2	2
Spoisen	4	4	5	5	6	6	5	6	6	6	6	6
Shedossoul	6	4	5	5	4	4	4.5	3	3.5	4	5	5
Asa1988	4	4	5	5	4	4	4.5	2	4	4	4	3.5
Oecon	4	6	5	5	2	2	3	2	3	3	3	4
DEP7	4	7	5	1	2	1.5	1.5	3	3	7	7	7
kyranda	4	6	5	4	4	4	3	4	6	5	5	5.5
notico	5	3	4	4	2	2	3	5	4	6	5	5
zara1	6	3	4.5	5	4	4.5	4.5	6	6	6	4	4
Saetha	5	6	5.5	3	2	2.5	2.5	6	6	7	4	6.5
Mean	4.833333333	4.833333333	4.833333333	3.833333333	2.916666667	3.375	3.375	4.25	3.75	4	5.25	5.208333333
Unbiased standard deviation			0.577			1.09		1.148		1.059		1.439348544
Standard error of the mean			0.167			0.315		0.331		0.433		0.433
Median			5			3		3		4		5.25
probability of normal distribution			0.9999			0.9849		0.991		0.991		0.9925
t-value			0.435			2.528		2.528		2.0		2.528
Degrees of freedom			20			20		20		20		20
Two-tailed probability			0.6681			0.02		0.02		0.02		0.02
Hunters (n=10)												
ATA	4	7	5.5	6	5	5	5.5	7	3	5	7	6
Miraflores	4	3	4	4	3	4	4	4	4	4	4	4
angelarou	4	5	4.5	1	2	1.5	1.5	4	3	3.5	5	5
sonderom	5	6	5.5	5	6	5.5	6	6	6	7	6	6.5
Ilaveticks	4	6	5	6	7	6	6.5	8	8	8	8	8
M88	6	6	5.5	4	1	2	2	7	4	4	7	5.5
Kindaff	5	5	5	5	5	5	5	5	5	5	5	5
contanz	6	6	6	6	6	6	6	6	6	6	6	6
joselud	3	5	4	3	6	4.5	4.5	6	6	6	6	6
Frisenst	4	5	4.5	4	6	5	5	6	7	6.5	7	7
Mean	4.9	5.3	4.95	4.5	4.7	4.9	4.9	5.7	4.7	5.2	5.4	5.7
Unbiased standard deviation			0.85			1.56		1.66		1.059		1.566
Standard error of the mean			0.27			0.483		0.483		0.335		0.271
Median			5			5		5		5		5
probability of normal distribution			0.9986			0.9275		0.9275		0.9954		0.9954

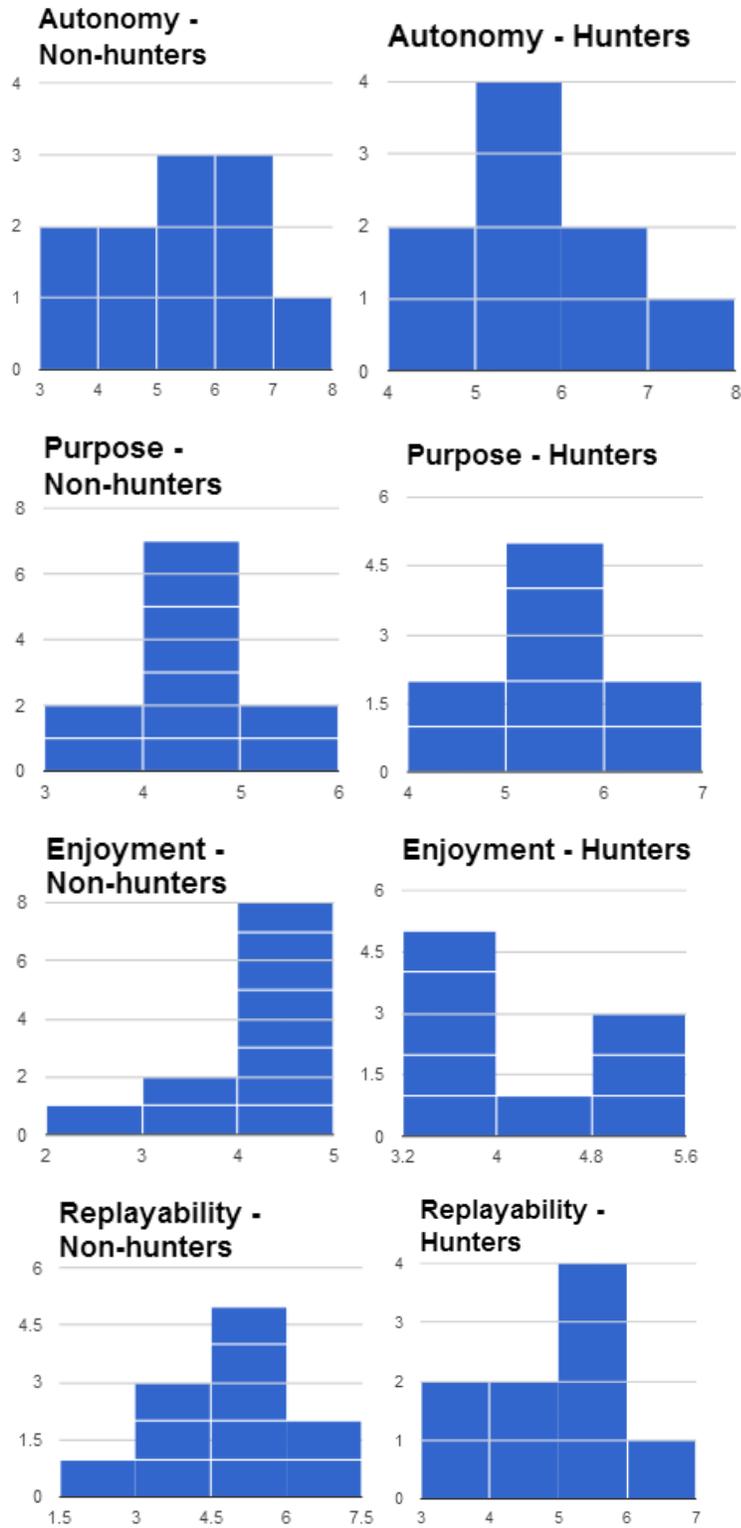
	Question 1	Question 2	Purpose	Question 1	Question 2	Employment	Question 1	Question 2	Replayability
Non-Hunters (n=12)									
Selda	1	4	2.5	4	4	4	4	4	5.5
sator	1	7	4	4	5	4.5	5	7	6
Fulhusen	1	6	3.5	4	4	4	4	4	4
Spoisen	3	6	4.5	5	4	4	4	4	4
Shedossoul	3	6	4.5	5	4	4	4	4	4
Asa1988	2	2.5	2.5	2	2	3.5	5	5	5
Oecon	2	5	3.5	4	4	4	6	4	4.5
DEP7	1	7	4	5	5	3.5	1	7	4.5
kyranda	2	7	4.5	5	3	4	7	2	4.5
notico	2	6	4	5	4	4.5	6	5	5.5
zara1	3	5	4	6	4	4.5	6	6	6
Saetha	1	5	3	5	3	4	3	6	4.5
Mean	1.916666667	5.9	3.708333333	4.416666667	3.416666667	4	4.656666667	5.083333333	4.875
Unbiased standard deviation			0.7276978395			0.359		0.7142	
Standard error of the mean			0.208			0.107		0.214	
Median			4			4		4.75	
probability of normal distribution			0.9999			1		0.9979	
t-value			4.283			1.331		0.595	
Degrees of freedom			20			20		20	
Two-tailed probability			0.0004			0.1983		0.5583	
Hunters (n=10)									
ATA	3	6	4.5	6	3	4.5	6	4	5
Miraflores	5	5	5	5	3	4	4	3	3.5
angelarou	2	7	4.5	4	6	4	2	3	2.5
sonderom	4	6	5	6	1	3.5	6	5	5.5
Ilaveticks	7	5	6	7	1	4	6	2	4
M88	3	7	5	4	5	4.5	6	5	5.5
Kindaff	4	4	4.5	5	4	4	6	4	5
contanz	3	6	4.5	6	4	5	6	5	5.5
joselud	6	6	6	6	2	4	6	3	4.5
Frisenst	6	7	6.5	7	1	4	7	4	4.5
Mean	4.3	5.9	5.1	5.6	4.1	4.25	5.5	3.8	4.85
Unbiased standard deviation			0.81			0.889		1.029	
Standard error of the mean			0.255			0.154		0.225	
Median			5			4		5	
probability of normal distribution			0.9986			1		0.9986	

Appendix H

Test participants' answers to the second measurement

Test participants' answers to the second measurement of their intrinsic motivation level at the end of the test. As can be seen in appendix B, each element had two 7-point Likert-scale questions to them. These charts show the average between the test participant's answers on those two questions. All elements could score between 0 and 7 points (x-axis). The y-axis show how many participants scored the different average scores.





Appendix I

Results and calculations of the second motivational level

	Question 1	Question 2	Self-efficacy	Question 1	Question 2	Interest	Question 1	Question 2	Mastery	Question 1	Question 2	Autonomy
Non-Hunters (n=11)												
Sasha	3	5	4	2	2	2	4	4	4	4	7	5.5
sebor	5	3	4	4	2	5	5	3	4	7	6	6.5
Frithjof												
spolsen	6	3	4.5	2	3.5	3.5	5	3	4	5	6	6.5
Shadesof	6	5	5.5	6	5.5	5.5	5	4.5	4	4	4	4.4
Aske 1988	3	6	4.5	5	5.5	4.5	5	4.5	6	6	6	7.65
Oecon	5	5	4.5	5	4.5	4.5	4	4.5	5	5	5	5.5
DBP7	6	5	6	2	2.2	2	5	7	3	4	7	4.35
Kyranid	6	6	5	3	1.2	1.2	1	2.5	3	2	4	4.35
nichio	6	4	5	4	5	4.5	4	4	4	4	4	4.4
zaran	6	5	5.5	5	5.5	5.5	6	4	4	4	3	3.5
Softhia	5	6	5.5	2	2.2	2.2	5	5	1	3	7	6.5
Mean	5.272727273	4.918181818	5.045454545	3.693693693	3.272727273	3.454545455	4.454545455	3.363636364	3.990909090	4.890909090	5.564545456	5.227272727
Unbiased standard deviation			0.7292881025			1.439360528			0.959441677		1.310794346	
Standard error of the mean			0.218			0.434			0.3		1.311	
Median			5			3			4		5.5	
probability of normal distribution			0.9986			0.9487			0.9972		0.9111	
t-value			5.772			3.109			3.109		18	
Degrees of freedom			18			18			18		18	
Two-tailed probability			0						0.0061			
Hunters (n=9)												
A.Ta	5	5	3.333333333	4	4	4	4	5	4	4.5	7	7
MikaelOlsen	2	1	1	4	2	3	2	2	4	3	6	5
angelarou	4	2	2.333333333	2	3	2.5	5	2	3.5	4	5	4.5
sonofenom	5	7	4	5	5.5	5.5	6	6	6	6	6	6
Mavericks	4	6	3.333333333	7	4	5.5	6	5	5.5	3	6	4.5
Midi												
knadrfy	5	5	3.333333333	5	5	5	5	5	5	5	5	5
confrimz	5	5	3.333333333	5	5	5	5	5	5	5	5	5
joesid	3	3	3	2	2	4	4	6	6	6	6	6
Fisensid	4	6	3.333333333	4	6	5	6	6	5	5	5	5
Mean	4.111111111	4.888888889	0.8902541028	4.222222222	4.555555556	4.388888889	5.111111111	4.777777778	4.944444444	5.222222222	5.555555556	5.388888889
Unbiased standard deviation			0.8902541028			1.063333333			1.1029358		0.8207361507	
Standard error of the mean			0.289			0.361			0.367		0.274	
Median			3.333333333			5			5		5	
probability of normal distribution			0.9892			0.9913			0.9913		0.9752	
Non-Hunters (n=11)												
Sasha	1	7	4	4	4	4	2	7	4	4.5	4.5	4.5
sebor	3	6	4.5	3	3	3	7	6	6	6.5	6.5	6.5
Frithjof												
spolsen	1	5	3	5	3	4	4	4	4	4	4	4
Shadesof	5	6	5.5	6	3	4.5	7	4	4	5.5	5.5	5.5
Aske 1988	4	6	4	4	3.5	3.5	5	3	4	4	4	4
Oecon	3	5	4	5	4	4.5	5	3	3	4	4	4
DBP7	1	6	3.5	2	3	2.5	2	1.5	1.5	1.5	1.5	1.5
Kyranid	2	6	4	5	4	4.5	3	6	4.5	4.5	4.5	4.5
nichio	2	6	4	4	4	4.5	4	5	4.5	4.5	4.5	4.5
zaran	3	6	4.5	5	4	4.5	5	6	5.5	5.5	5.5	5.5
Softhia	1	7	4	5	4	4.5	5	6	6	6	6	6
Mean	2.363636364	4.181818182	4.181818182	3.818181818	4	4.454545455	4.722222227	4.590909091	4.590909091	4.590909091	4.590909091	4.590909091
Unbiased standard deviation			0.6809090644			0.707107812			1.338248516		0.403	
Standard error of the mean			0.211			0.215			0.403		0.403	
Median			4			4.5			4.5		4.5	
probability of normal distribution			1			0.997			0.997		0.997	
t-value			3.437			1.042			1.132		1.132	
Degrees of freedom			18			18			18		18	
Two-tailed probability			0.0029			0.3111			0.8924		0.8924	
Hunters (n=9)												
A.Ta	5	5	5	5	3	4	5	3	4	4	4	4
MikaelOlsen	5	5	5.5	3	5	4	6	1	3.5	3.5	3.5	3.5
angelarou	2	7	4.5	2	5	3.5	3	4	4	4	4	4
sonofenom	5	6	5.5	7	5	5	6	5	5.5	5.5	5.5	5.5
Mavericks	7	6	6.5	6	5.5	5.5	6	2	4	4	4	4
Midi												
knadrfy	5	5	5	5	3	3.5	7	3	5	5	5	5
confrimz	3	6	4	6	2	4	6	6	6	6	6	6
joesid	6	6	6	5	4	5	6	6	6	6	6	6
Fisensid	5	6	5.5	7	4.5	4.5	7	4	4.5	4.5	4.5	4.5
Mean	4.777777778	5.777777778	5.277777778	5	3.888888889	4.333333333	5.666666667	3.666666667	4.666666667	4.666666667	4.666666667	4.666666667
Unbiased standard deviation			0.754614262			0.707107812			0.935414267		0.312	
Standard error of the mean			0.252			0.228			0.312		0.312	
Median			5.5			4			4		5	
probability of normal distribution			0.9891			0.9999			0.9934		0.9934	

Appendix J

Test participants' general opinions and comments on the Achievement system, at the beginning and at the end of the test

At the beginning of the test

meh
I haven't unlocked any achievements, so I just logged in to see what it looked like. Aesthetically it isn't the nicest, but it's okay.
It's fine, seemed intuitive and simple to use.
A bit crude
unorganised
It's a fine try to make achievements more fun, but it doesn't remember my settings (the way i choose to progress with my achievements)
I could not open it
I dont understand it
Haven't used it yet.
Since the achievements of the game i play are slow to get (game Banished) the achievement system is of very limited use.
It's a better overview than steam provides! :)
Planning the achievements out before actually really trying the game, makes it really easy to make a sequence that is very hard to achieve. E.g. my 3rd slot was for "gain 3000 gold" which turned out to be really difficult
Still haven't figured out the concept completely.
neat concept, slow to load at times.
played once and it didn't record anything/give me achievements
It seems it did not save my intended line of trophies.
Think the limited use was due to the fact you had to launch it everytime you wanted to use it.

At the end of the test

Did not really look too much at it
Glory points seems, like a good idea. I found no use of the system after I'd locked in my 'achievement path' to get the multipliers. Not sure if there were more features, if so they weren't aparent.
Good
This sort of achievement system is great in big sandbox-games that doesn't have any clear objectives. Like Europa Universalis. But it doesn't add anything to the gaming-experience when used in games focused on doing a objectives like Total War and Xcom: Enemy Unknown.
It is best suited for games where achievements are earned regularly
I like the alternate groupings.
It was hard to know exactly how the system should be used.
im not sure if it worked at all
neat concept, slow to load at times.
great idea
The biggest problem is: Useing it first time it exposes ueually hidden story achivements. (Its a spoiler =P)