Gamification on IPTV

Towards Gamification on IPTV for User Engagement

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2014

Master’s Thesis at ICT
TRITA-ICT-EX-2014: 158

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Abstract

This thesis explores how to use gamification for an IPTV platform to increase user engagement. Gamification has been defined as the use of game elements in non-game contexts. This thesis describes the fundamental concepts about gamification and taps on the practical use of these concepts for media and TV consumption. Based on interviews and an online survey we developed and evaluated low-fi prototypes to study some key aspects of Gamification for IPTV solutions. 19 people, not real users, participated in the final evaluation of the last designed low-fi prototype providing qualitative results through an evaluation survey. The result of this case study is a set of game techniques that could be valid for a platform like Ericsson Multiscreen TV, which is the base platform in this thesis. None precedent studies have been found in the research community on the use of gamification on an IPTV platform.

Keywords: Gamification, IPTV
Acknowledgements

I would like to express my deep gratitude to Konrad Tollmar and Francisco Aleo Monteagudo, my research supervisors, for their patience, guidance, and critiques in this research work. I am particularly grateful for this opportunity, assistance, and support to Francisco for letting me work in the Multiscreen TV Client project where the IPTV Screen department is so enthusiastic about it.

I would also like to extend my thanks to EIT ICT Labs Master School who gave me the opportunity to enroll in this international master experience between Université Paris Sud and KTH.

Finally, I would also like to extend my thanks to my family and friends who always supported me.
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## Abbreviations

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<th>Description</th>
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<tbody>
<tr>
<td><strong>B2B2C</strong></td>
<td>Business to Business to Consumer</td>
</tr>
<tr>
<td><strong>IPTV</strong></td>
<td>Internet Protocol Television</td>
</tr>
<tr>
<td><strong>MMORPG</strong></td>
<td>Massively Multiplayer Online Role Playing Game</td>
</tr>
<tr>
<td><strong>STB</strong></td>
<td>Set-top Box</td>
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1 Introduction

The number of devices for watching TV has been increasing over a period of time. In the beginning, users could watch TV content in their televisions. Back then, computers were also able to play back content by plugging in TV cards. Later on, users could also enjoy through content broadcasted by satellite signals using antennas and set-top boxes (STB). Nowadays, this trend is moving to IPTV (television over IP protocol) where users still have STBs at home but they do not need antennas anymore because the content is streamed online. The evolution of other telecommunication technologies such as 3G and 4G, and the broadly usage of the mobile phones and tablets has opened a new potential market for TV. The possibility of having portable screens makes TV consumption ubiquitous, pushing IPTV platforms to cover users’ needs and/or desires of being able to consume TV everywhere they are. Ericsson has developed Multiscreen TV\(^1\), this Business to Business to Client (B2B2C) solution developed by the Multiscreen Client Suite department allows providers to deliver any kind of content, from live video to video on demand, in any kind of device due to this cross platform solution. This solution goes further than the traditional STB placed at home allowing users to consume TV content whenever they want and wherever they are. A more detailed description on Ericsson Multiscreen TV client can be found in chapter 4.

According to Ericsson ConsumerLab report [1], second screen interaction while watching TV has become more common. This worldwide studio collected 15,000 online surveys equally divided in 15 countries from different continents. This sample is representative of over 550 million people in the world. 62% of viewers use mobile devices as second screen device to interact while watching TV. Among these users, 40% use these devices to look for related content on the show they are watching in different ways such as comments, voting, or information.

The market for IPTV is huge and numerous companies are competing for this market. Functionalities are one of the things that mark the difference between them. Developing interesting functionalities for users is one of the key strength that contributes to the company success. A possible functionality to incorporate in an IPTV platform is gamification and this thesis will cover the study of game elements in the IPTV platform aforementioned.

Gamification has become a new trend, which is adopted by non-game products. Gartner Group has predicted that by 2015 more than 70 per cent of Forbes Global 2000 working on innovation will adopt gamification in at least

\(^1\)\url{http://www.ericsson.com/ourportfolio/media-industry/multiscreen-tv}
one of their applications to increase the customer retention as Zichermann and Cunningham reflect in [2].

1.1 Gamification

Gamification was defined as “the use of game design elements in non-game contexts” by Deterding in [3]. The concept is not new but it gained traction few years ago when companies such as Stack Overflow, Nike, and Mint adopted several of these game mechanics successfully to strengthen their businesses. Gamification is not just a group of game mechanics and rewards on top of a system. Elements such as rules, meaningful actions, design, users’ motivation, recognition, or status, among others, play an important role in the system. There is a psychological influence inside gamification in relation to users’ motivation and persuasion that will be introduced below and with more detail in chapter 2.

Motivation is a big field of study where gamification concentrates many of its efforts. There are two branches in the study of motivation. The first branch tackles the dualism between extrinsic and intrinsic motivation and the internal fight on explaining the how and why. The second branch states that motivation is much more complex than this dualism and states that intrinsic-extrinsic studies fail in in the following three tasks: construct validity, measurement reliability, and experimental control [4]. Studies related with motivation are introduced and analyzed in section 2.1.

Reward systems (extrinsic motivators) can drive motivation. Nicholson studied how to make a user-centered meaningful gamification in [5]. Nicholson research studied reward systems in depth and analyzed the two existing types: intrinsic and extrinsic. Intrinsic rewards are those that users can benefit inside the system. On the other hand, users get extrinsic rewards to spend outside the system. Explicit conclusions cannot be drawn whether extrinsic rewards are good or bad; it highly depends on the purpose, refer to [2] and [6]. Zichermann and Cunningham [2] claimed that it does not matter which reward system is used, but once started using a reward system there is the need to keep in this reward loop forever. The action of stop using a reward system could have drawbacks. Nicholson discuss further that in order to avoid negative feelings “the game-based elements of the activity need to be meaningful and rewarding without the need for external rewards”. Meaningful activities are those relevant for the user. Creating a meaningful gamification is tied to the concept of motivational affordance, introduced by Deterding in [7]. Nicholson stated that intrinsic rewards are more straightforward to maintain by any organization, which constitutes a long-term positive benefit for any organization. However, thinking in short-term benefits for an organization, it might not be good for users because they could
J. Thom et al. [8] studied what is the effect of removing extrinsic rewards from a system, demonstrating that users’ motivation goes down dramatically.

Social motivations (extrinsic) are pointed to be important in gamified systems as Hamari and Koivisto reflected on [9]. Although they based their experiment in a known exercise application, the results can be applied to other kind of gamified system. The possibility for a user to get exposure to receive feedback from other user is perceived positively. This fact “promotes willingness to continue using and recommending the service and thereby an increase in retention and acquisition of users” said the authors. Intrinsisc motivators are more valuable by their nature and can be stimulated by understanding the audience. Moreover, Zhang has written a list of design principles for motivational affordances in [10] which helps on the understanding of the user.

Game mechanics and dynamics are motivators for user engagement. Previous related work shows that some of these are: badges, points and leader boards [11, 12, 13], or narrative [14, 15], although the spectrum is wider.

1.2 Problem
IPTV providers are facing a problem in terms of customer retention. In many situations, IPTV provider’s commitment with their customers is to provide them with content like movies, series, or sport events among other types of content. This is nothing that a customer cannot find in other providers. The purpose of this project is to investigate how gamification can be used in an IPTV platform. More details are provided in section 5.1.

1.3 Purpose
TV consumption is an engaging activity that touches intrinsic motivation. People watch TV because they feel motivated to watch it. It is not a problem of mere engagement what this thesis aims to solve. IPTV platforms suffer of a common problem: nothing prevents users from leaving the platform. Gamification can address this kind of problems by introducing a completely new functionality where users and provider can benefit from each other. The use of game techniques can help to solve this problem.

The purpose of this master thesis is to study different game techniques to encourage user engagement that would be suitable for an online TV platform. We also want to know which techniques could retain users in the platform. Therefore, there are several research questions to formulate and answer:

- Which of the game techniques used are more suitable?
- Which retention mechanisms create the desired effect?
- Is it an IPTV platform more engaging for users when it is gamified or on the other hand is it less engaging?
1.4 Goals, Benefits, Ethics and Sustainability

This study is focused on discovering and understanding which game mechanics and dynamics would be more suitable for an online TV platform that wants to be gamified and the concept of gamification itself in this kind of systems. The study will be supported with the research methods, specified in chapter 3.

The main beneficiaries of this thesis will be TV platform providers who want to take gamification as an approach to implement new features in the system. No precedent study of gamification in relation with IPTV has been found in the research community relating both. This study brings the first case study in this relation benefiting the research community.

The purpose of gamification on TV platforms is not to make people addicted or more addicted to TV but to offer them an alternative way of consuming TV tackling engagement. As the platform is gamified, people could become more addicted to TV by this game thinking approach on TV interaction and consumption. The measurement of addiction is out the goals in this thesis, but observations on how people reflect upon this risk will be taken.

The proposed solution brings social connection but privacy must not be neglected. The already existing platform contemplates multiple users for a same subscription and this solution brings social connection. The user must have the authority to choose which of the actions taken on the platform he wants to make public. This feature is a similar to what users can find in other social networks as Facebook. Although privacy is an important topic regarding social networks and social connection, it stays outside the scope in this thesis.

The concepts this thesis transmits are not only restricted to this platform. Results could be applied to other IPTV platforms of the same kind.

1.5 Methodology

Two methodologies were analyzed for this master thesis. First methodology to study was ethnography and, second one, a methodology that comes from the study of what other case studies related to gamification have done in the past. While ethnography is analyzed and discarded below, the methodology used in this case study is explained in chapter 3.

Ethnography involves the use of three main methods: observation, interviews, and participation. Observation is useful to see how real users use the application in real-life contexts. Interviews add deep knowledge on the research process about people opinions, thoughts, and problems. Participation helps the researcher to understand the system deeply by using it and facing the same situations as the users have. Nevertheless, participation
should be practiced carefully as Lazar et al. state in [16] because results can be biased by pre-informed opinions. Observation could be a potential method to use in this thesis. Sitting down with users of Multiscreen TV and to study how they interact with the system and the kind of content they watch could be used to analyze the users in real contexts to design a solution. This process of observation could be done video recording these users. On the other hand, due to the limited amount of time, this thesis has to take and the impossibility to reach real users, observation to gather information from real users is discarded. The impossibility to use this method forces to discard ethnography as a methodology to use.

For the purpose and structure of this thesis, a methodology based on what previous case studies have done is the decision taken. The methods involved in the methodology are explained in detail in chapter 3.

1.6 Delimitations

Ericsson Multiscreen TV solution is a complex system that integrates different software layers. Due to the complexity of the system, the outcome of this study is neither to implement a full working gamification system, nor to deploy this system on top of the existing platform. In order to evaluate and test this concept, a low-fi prototype has been developed based on this platform. The interaction proposed is prototyped for tablet devices. This study does not contemplate how the interaction would be in other kind of device supported by Ericsson Multiscreen TV solution.

This study attempted to have real users of the platform, but finally it was impossible to contact them. This study uses students as possible users of such a platform.

The proposed solution includes a point system and a game economy that are impossible to balance with this low-fi prototype.

1.7 Outline

This thesis is composed of 9 chapters. The preceding section provides a background on gamification, which is useful to build up key concepts and insights that highlight the importance of gamification. Chapter 2 will also tap on motivation, player types, previous research case studies, and some examples from industry. Chapter 3 introduces the methodology that drives this study. Chapter 4 presents a description of Ericsson’s Multiscreen TV solution. A detailed analysis about data collected for understanding the context and the description of users’ requirements is provided in chapter 5. Chapter 6 explains and describes the design solution and process carried in this case study. Next, in chapter 7, the experiment is presented and its results are analyzed which aim to answer the research questions previously
mentioned. Subsequently, the conclusion is discussed in chapter 8 as well as future work. Lastly, chapter 9 summarizes the content of this master thesis.
2 Gamification background and related work

This chapter presents some of the most important concepts related to gamification, and includes the study of motivation, the player, different research case studies done in the past, and some examples in the industry to show how important this tool is.

2.1 Motivation

Motivation can be defined as what makes people move. This definition comes from the Latin *motere*, to move [17]. Gamification is a field of study that takes special care about the study of motivation. The study of motivation is controversial, as it will be stated in this section. There are two branches in the study of motivation. The first branch studies the intrinsic-extrinsic dualism. The second one, leaded by Reiss [4], states that it is not as simple as classifying everything in two categories.

2.1.1 Intrinsic and Extrinsic motivation

The first branch in the study of motivation is related with the dualism intrinsic-extrinsic motivation. Intrinsic motivators depend on each person and his or her perception, which requires a process of assimilation from the person. Thus, these cannot be quickly changed. Daniel Pink's in his book *Drive* [18] defines the three meta-motivators that drive intrinsic motivation: autonomy, mastery, and purpose (see Figure 1):

- Autonomy: the impulse that drives our lives, the freedom to control whatever we do.
- Mastery: the desire of being better in something that matters.
- Purpose: the intention of doing something.

![Figure 1. Daniel Pink's intrinsic motivators](image)

R. M. Ryan and E. L. Deci in [19] states that some authors give more importance to intrinsic motivations because they are the nexus between the person and the task. Intrinsic motivation refers to perform an activity just for the fact of enjoying the activity itself. On the other hand, extrinsic motivators
are all those factors that are external to the person. The activity itself is no longer enjoying, now it has an instrumental value. Some examples of extrinsic motivators can be money or someone pushing a person to do some actions. These authors conduct further research and deep dive into the study of motivation defining amotivation, intrinsic motivation and dividing extrinsic motivation in four categories: External regulation, Introjection, Identification and Integration. The authors also define the associated processes in each category and sub-category, and where they are perceived as it is demonstrated in Figure 2.

Figure 2. A Taxonomy of Human Motivation [19]

Deterding in [7] introduces the concept of Situated Motivation Affordances cited below:

"Situated motivational affordances describe the opportunities to satisfy motivational needs provided by the relation between the features of an artifact and the abilities of a subject in a given situation, comprising of the situation itself (situational affordances) and the artifact in its situation-specific meaning and use (artifactual affordances)."

Nicholson [5] gives an example of this concept: a user drives a hybrid car with a gamification system based on points for the user that reflects the amount of energy saved. If the action of saving energy is meaningful for the user, the point system will be relevant for the user. If the user is not interested on saving energy then the system will not be relevant for him. This means that there could be other meaningful experiences on driving, that users could experience, and that could be more effective to gamify.
Deterding summarizes the concept of Situated Motivational Affordances with the Figure 3, which reflects that artifact and situation are key elements.

![Figure 3. Situated motivational affordances by Deterding [7]](image)

### 2.1.1.1 Rewards

The process of winning rewards is motivating. They reflect pleasure, which comes from the realization of knowing that a process was well done, that a special action was discovered, or the user mastered something. Rewards are classified as extrinsic motivators. They are given to the user as a complement to his performance and to attract them more to continue using the system.

Rewards are classified into two types. Intrinsic rewards are intangible and arise from inside the user due to recognition, sense of achievement or conscious satisfaction. On the other hand, extrinsic rewards are tangible and some of the examples are points, badges, trophies, etc. There is nothing demonstrated in relation to which one is better, but the closer the reward is to the action and the system, usually, the better the result is [2]. Generally, it is difficult to maintain an extrinsic reward system where the rewards have a monetary value like vouchers or coupons.

### 2.1.2 Reiss’ motivators

Several authors, previously mentioned, have studied the intrinsic-extrinsic motivation duality. The majority of them defend the point that while designing a motivational system, designers should aim for intrinsic and not extrinsic motivation. In this second branch, Steven Reiss [4] stated that human motives are genetically multifaceted and, therefore, are not just divided into two categories. Reiss described sixteen universal reinforcements or basic desires that are related to motivation (see Table 1). Even more, several researchers have validated these universal reinforcements. Not everyone is motivated in the same way by these 16 universal reinforcements; the influence depends on each individual. His conclusion to the motivation discussion is relevant:

“Intrinsic-extrinsic motivation in social psychology fails each of three essential scientific criteria. First, the distinction between intrinsic and extrinsic motivation is construct invalid because universal human motives are multifaceted (genetically diverse) and do not divide into just two kinds. Second, the cognitive and behavioral measures of intrinsic motivation often yield different or even opposite results. Cognitive measures show mostly enhancement effects or no effect of
rewards on intrinsic motivation. Behavioral measures require a subjective judgment of what research participants expect; these measures may thus be unreliable. Third, nearly every experiment on intrinsic and extrinsic motivation failed to control for reward novelty effects, even though there is replicated evidence that distraction undermines intrinsic motivation. Consequently, virtually every demonstration of reward undermining intrinsic motivation can be reinterpreted as evidence that people do not enjoy activities when they are distracted.”

Steven Reiss studied this multifaceted view of motivation from a psychological point of view but never from a perspective related to games. It was Jon Radoff the first game researcher to use these 16 motivators and to show a list of 42 fun facts. In this list, it is possible to see which motivators affect each one of these fun facts, see Appendix C: Jon Radoff’s 42 fun facts.

Past studies related to motivation offer substantial information and all seems to be demonstrated in a valid way, even when they contradict each other. Dealing with motivation is one of the main tasks on the design of a gamified system and therefore, the complexity of making the system appealing to the users. In this case study, a relation between the 16 motivators and different fun factors in the solution proposed will be introduced as Jon Radoff did, see section 6.4.

Table 1. Steven Reiss 16 motivators

<table>
<thead>
<tr>
<th>Motivator</th>
<th>Desire</th>
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<tr>
<td>Acceptance</td>
<td>Positive self-regard</td>
</tr>
<tr>
<td>Curiosity</td>
<td>Understanding</td>
</tr>
<tr>
<td>Eating</td>
<td>Food</td>
</tr>
<tr>
<td>Family</td>
<td>Raise children and spend time with siblings</td>
</tr>
<tr>
<td>Honor</td>
<td>Upright character</td>
</tr>
<tr>
<td>Idealism</td>
<td>Social justice</td>
</tr>
<tr>
<td>Independence</td>
<td>Self-reliance</td>
</tr>
<tr>
<td>Order</td>
<td>Organized and clean</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>Muscle exercise</td>
</tr>
<tr>
<td>Power</td>
<td>Influence for leadership</td>
</tr>
<tr>
<td>Romance</td>
<td>Beauty and sex</td>
</tr>
<tr>
<td>Saving</td>
<td>Collect</td>
</tr>
<tr>
<td>Social contact</td>
<td>Peer companionship</td>
</tr>
<tr>
<td>Status</td>
<td>Respect based on social standing</td>
</tr>
<tr>
<td>Tranquility</td>
<td>Be free of anxiety and pain</td>
</tr>
<tr>
<td>Vengeance</td>
<td>Confront those who offend</td>
</tr>
</tbody>
</table>
2.1.3 Persuasion

Motivation is also influenced by persuasion. Fogg introduced in his behavioral model for persuasive design [20] three factors that affect people’s behavior: Motivation, Ability, and Triggers. For each of these factors he defines different influence elements:

- **Motivation (core motivators):** pleasure/pain, hope/fear, acceptance/rejection.
- **Ability (simplicity factors):** time, money, physical effort, brain cycles, social deviance, and non-routine.
- **Triggers (behavior triggers):** spark, facilitator, and signal.

Fogg claimed with this model that for any behavior to occur a level of motivation and ability should be reached. These factors are used by designers to focus on the different elements to be taken into account in the process of designing behaviors that they want to trigger on users in systems. This model is represented in Figure 4.

![Figure 4. All three factors in the Fogg Behavior Model have subcomponents](image)

Marache-Francisco and Brangier [21] studied how the attractiveness and legibility of the graphics elements, and persuasive interactions, motivate and engage users. In this study, they interviewed several Visual and Interaction Designers, and Interface Developers about 10 screenshots from different gamified platforms. These participants had to describe what makes the interface ludic.
2.2 Player

Designing interaction is a complex task that requires having in mind the kind of users/players a system could have. Previous research theory on game thinking adds value to this research with the analysis of the player types and the flow of a player in games. Although the game theory is wider, we only took these two elements to describe, starting from game theory to give the gamification approach.

2.2.1 Player types

Bartle defined in [22] four different types of players. These four types represent the huge majority of players. See Figure 5.

- **Achievers**: these players like to achieve goals and evolve in the game throughout levels and see the progress of their character in a ranking system.
- **Socializers**: they are players for whom the best reward is to interact with other people through the virtual world. Some of these players do it as themselves, showing their real identity, but others prefer to be hidden under a mask.
- **Explorers**: are people who enjoy discovering the virtual world, seek out for what is new.
- **Killers**: their main characteristic is the desire to dominate others.

![Figure 5. Bartle's types of players](image)

Bartle generated this kind of players thinking on how people play MMORPG games. In gamification, the question to solve is not how but why players play, as Andrej Marczewski stated. Marczewski created a player’s categorization, similar to Bartle’s model but with the influence of Dan Pink’s motivation theory, introduced in section 2.1.1. He came up with 6 player types defined in [23]:

- **Players**: they play motivated by rewards, their purpose is to collect rewards that are in the system
- **Socializers**: Their focus is to create social connections interacting with others.
• Free Spirits: They want to create and explore in the platform and are motivated by autonomy.
• Achievers: They look for mastery. They want to improve themselves by learning through challenges.
• Philanthropists: they want to help others in the system to become better.
• Disruptors: They try to look for breaks in the system to destroy it or help to improve it.

The most common case in both models is to find players influenced by different categories at same time.

An analysis of the expected types of players to have in the designed solution is given in section 6.3.

2.2.2 Flow

Mihaly Csikszentmihalyi in 1975 introduced his Flow theory. This theory in a simpler way, Figure 6, is used in game development to design the player journey and therefore it is useful in gamification. On the X-axis are the skill levels and on the Y-axis, the challenge levels. The optimal path is what it is known as flow channel, over the main diagonal. Below the flow channel users experience boredom and above it they feel frustration with what they do in the system. It is difficult to drive all the experience in the flow channel, but most successful games stay inside it for a long part of the player journey. In Figure 6 some of the phases can be found: onboarding, habit building or scaffolding, and mastery or endgame.

![Figure 6. Flow and the player's journey from Andrej Marczewski](image_url)
2.3 Gamification case studies in research

The interest of using game techniques in non-game context has been growing in the research community. Its use is related to the improvement of motivation and engagement. Previous research case studies on gamification address cases related to education, but there is also research material related to other areas like blogs, forums, or recycling on sustainable communities. Some of these cases are introduced below.

S. O’Donovan et al. in [24] designed a case study about a game development course at university level to improve lecture attendance, content understanding, problem solving skill, and general engagement. In this case, they used experience points, steam points (used to buy extra time for assignments), progress bars, badges, and a leaderboard as game mechanics. As a result, they got a higher attendance to the course; the average mark of the course moved from C to B, and students agreed that the use of gamification during the course encouraged them to engage more the assignments.

S. Villagrasa and J. Duran [25] studied the effect of incorporating gamification into a course for learning 3D Computer Graphic Arts at Universitat Ramon Llull in Barcelona. They used experience points, levels, quests, a knowledge map express the progression of the student and storyline to drive to tasks the students had to do along the course. Khan Academy, a famous online portal for learning, includes different game elements to engage its users in their process of learning [26]. Probably education is the area where gamification is trying to have more presence. Some other examples are [27, 28, 29, 30, 31, 32].

J. Jones and N. Altadonna [11] studied the role and influence of badges in The Huffington Post, showing that not every user needs badges to be engaged with the blog and the activity of commenting news. They showed that users with no badges had a bigger average of fans than users with badges. Moreover, they showed that 6 of the 21 top users do not use the badges system.

S. Grant and B. Betts [12] studied how users of Stack Overflow, a forum for software developers, behave when they are near to reach a badge. In lot of cases, users increase their interaction frequency when they are near to their goal and after achieving the goal they calm down.

Narrative has also been studied as a game technique in [14, 15]. Narrative is used in [14] as the main and only game technique to gamify the experience of running by including a story related to zombies. R. Langer et al. [15] study the use of narrative to construct meaning. Narratives are built on the principle of progressive disclosure, which can be used to drive the user through different features in an application. They studied how to introduce elements as
suspense, fantasy, emotion or memory combined with avatars. They applied this in MyFoodFacts iPhone app, which is used to scan barcodes on food packing.

J. Berengueres et al. [33] made use of gamification in a recycling system to demonstrate that the action can be more engaging. They demonstrated how social rewards are more appealing than monetary rewards. Greenify [34] makes use of gamification on sustainable communities.

The research on this thesis is focused on emulating examples as [24] or [25] where different game techniques are used in educational platforms providing qualitative results. In this case, the area of application is an IPTV platform. Other research material as [11] or [12] are focused on exploring quantitative data on gamified systems already existing. Although their research is interesting, they are not in the focus of this thesis in terms of methods used in the methodology. Details about the decisions taken related methodology are introduced in chapter 3.

2.4 Gamification in the industry

The gap between research and industry in gamification is huge. While research on gamification is quite new and the path walked is still short, industry seems to be more advanced but in some aspects more superficial. The relation between psychology studies in motivation and its impact over gamification is more detailed in research. On the other hand, in industry the range of game techniques and related examples is bigger. Industry has adopted gamification to improve different experiences such as education, practice physical exercise, finance, and others. Its close relation to motivation attracts companies to include it in different processes. In this section, different examples of gamification in the industry will be introduced to make wider the spectrum of possibilities for the reader.

2.4.1 Gamification in education

As it was stated in section 2.3, gamification has been largely applied in education. Some of the most famous examples in the market are Duolingo\textsuperscript{2}, Ribbon Hero\textsuperscript{3} or ClassDojo\textsuperscript{4}. Duolingo is an online platform to learn languages based on practicing. Duolingo incorporates points, achievements, levels, and paths to master in different languages (see Figure 7). Ribbon Hero is a Microsoft product to learn how to use Microsoft Office. ClassDojo is

\textsuperscript{2} http://www.duolingo.com
\textsuperscript{3} http://www.ribbonhero.com
\textsuperscript{4} http://www.classdojo.com
oriented to education in schools, where teachers can fill in the progress of their students by giving them points in different key aspects such as participation or staying in tasks among others. Students have constant feedback on their progress from their teachers.

2.4.2 Gamification on the practice of physical exercise

Probably Nike Plus\(^5\) is the most famous case of this kind of applications. Nike Plus makes use of gamification to engage their users in a healthy life-style by running. Another case is Zombies, Run!\(^6\) Described by Kan et al. in [14]. They use narrative as a game technique to gamify the sport activity of running. In this mobile application, users need to run wearing their earphones to listen to the narration. The narration is used to give directions on where to run towards if the user does not want to be captured by zombies.

\(^5\) [http://www.nikeplus.com](http://www.nikeplus.com)
\(^6\) [http://www.zombiesrungame.com](http://www.zombiesrungame.com)
2.4.3 Gamification in blogs and forums
Gamification has been used in different blogs and forums. The main use in blogs is to increase the user engagement by using experience points, leaderboards, badges and levels on the activities of reading posts, watching related videos, commenting on post and sharing the content in social networks. An example is Yu-Kai Chou’s blog7.

On the other hand, forums like Stack Overflow8 make use of gamification to engage users on acquiring knowledge and getting a higher status in the community by asking questions, answering questions, reviewing answers and detecting issues as can be duplicated topics. Ever action a user does affects directly to its status. The higher the user status is the more the number of actions he can complete on the forum. Stack Overflow incorporates badges that represent levels that users are willing to have as [12] reflects. Stack Overflow has become a site with a high reputation among developers. See Figure 8.

2.4.4 Gamification in finance
Mint9 is one of the early adopters of gamification in the finance sector. Mint set up different mechanics as challenges and goals, progression and leaderboards.

BBVA Game10 from BBVA, makes use of gamification in their online platform to capture the attention of its users. Each time users watch video tutorials, access the website, check their account movements, contract services, use of credit card, etc. they receive points. These points are possible to exchange for extrinsic rewards as music, movie downloads or to enter in lotteries.

2.4.5 Gamification in other areas
The previous areas are not the only ones where gamification can be found. Its application in different fields is increasingly growing every day and its presence is more noticeable each day. Foursquare11 has gamified the world of location services. SCVNGR12 is a treasure hunt gamified experience full of challenges all around the world. Google Maps launched Pokémon Challenge13

7 http://www.yokaichou.com
8 http://www.stackoverflow.com
9 http://www.mint.com
11 http://www.foursquare.com
12 http://www.scvngr.com
13 http://www.youtube.com/watch?v=4YMD6xELI_k
in a campaign to recruit and hire people. The challenge consisted on exploring places with Google maps and to capture 150 different Pokémon. Users’ have a progress bar and a list of achievements where each entry is mapped to a different Pokémon.

Figure 8. User profile example from Stack Overflow
3 Methodology

The methodology to use in this case study is based on what previous research case studies related to gamification did in the past. In this case, the methodology has been divided in three phases as it can be seen in Figure 9. The first phase is related to understanding and specifying the context of use. The second phase is related to the iterative usability evaluation on the design process. The last phase is related to the final evaluation to be done over the designed solution. All phases are explained below.

Figure 9. Phases of the methodology

In the first phase, different kinds of interviews are used to gather data from users of IPTV solutions similar to Multiscreen TV, gamification, and games. More details are provided in chapter 5. Interviews are useful to find different opinions, previous critical incidents, what works well and bad, and to go into details depending on the answers provided by the participants. In addition, during this step, online surveys are used to gather data from a larger amount of people. Results from interviews and surveys complement each other on the process of analysis of the context of use. These interviews and surveys are not done to users of the platform because it was not possible to contact them, as it is specified in section 1.6.

In the second phase, the decision taken is similar to what [27] did, a usability evaluation of the prototype to discover which elements worked well and bad before doing a final evaluation. In the case study presented in this thesis, a low-fi prototype is designed on top of the existing product and several iterations on the design must be done. To control the changes from iteration to iteration usability tests are performed on the prototype. In these tests, observation and think aloud methods are used to gather information from the users. Observation is used to capture the interaction of the participant with the prototype. Think aloud is used to gather comments from the participant while he or she is using the prototype. Both methods allow detecting different errors in the design such as navigation mistakes, what participants find interesting and what is not interesting for them, detecting the wrong placement of different elements in the interface among other kind of problems. These usability studies are done with a reduced number of users, 3 to 5 per iteration. More details are provided in section 6.5.
The third phase of this methodology is also inspired on what previous case studies did. The authors in [24] and partially [27] based their evaluations in a survey to learn the opinion of the users after using the gamified course platform created. The studies conducted in [11] and [12] are focused on exploring quantitative data on already existing gamified systems. The purpose of this study is to observe and explore participant’s opinion. Hence, the methods used in [11] and [12] to collect quantitative data are not applicable. The authors in [14] used interviews to gather opinions from its participants, the runners. Although interviews’ results provide meaningful insights and relevant data for building up a qualitative result, as it is demonstrated in [14], this method will not be used. In [14] this evaluation method is appropriate due because participants of the study were using the application for a long time and no one was observing them. The case study carried in this thesis will not use interviews as part of the evaluation. During the final evaluation three methods are used: think aloud and observation while completing a series of tasks specified in the experiment, chapter 7, and an evaluation survey after completing the tasks proposed. Think aloud is used to gather live comments while participants are using the prototype. The observation of the user interacting with the prototype is needed to fully understand the comments provided by thinking aloud. Finally, an evaluation survey is used to collect information about the different game techniques and other information related to the experiment. An evaluation survey was the method used in [24] and [27] to collect the opinion from the participants in the case study. This method best fits in the case study carried in this thesis. The inclusion of Likert scales, one choice, multiple choice, and open questions allow participants to reflect their impressions in a more direct and concrete way than interviews for the purpose of this study. This final evaluation is done with 19 participants. The results gathered in this evaluation are summarized in section 7.2.
4 Ericsson Multiscreen TV

Ericsson Multiscreen TV\textsuperscript{14} is the solution developed by Ericsson to address the IPTV market. This B2B2C solution, developed by the Multiscreen Client Suite department, allows providers to deliver any kind of content, from live video to video on demand, in any kind of device due to this cross platform solution. This ubiquitous solution goes further than the traditional STB placed at home allowing users to consume TV content whenever they want and wherever they are. Figure 10 shows a possible use case of the system.

![Multiscreen TV use case](image)

Ericsson Multiscreen TV solution has a similar interface across all devices and the content distribution is the same in all devices: TV (with the use of STB), PC, tablet, and smartphone. In order to take advantages from every type of device, there are particular ways of interacting to harness full potential of each one. This solution allows each user to set up an individual profile, have personalized lists of content and the possibility to pause the content in one device to continue watching it in another device due to its high synchronization. Figure 11 shows a sketched situation of the interaction pause-resume between devices described before.

\textsuperscript{14} http://www.ericsson.com/ourportfolio/media-industry/multiscreen-tv
Figure 11. Pause-resume between devices

1. Peter is watching movie A in his smartphone while he is travelling back home from work by underground.

2. In the last stop, he decides to stop the video. It is time to continue walking to home.

3. Once Peter arrives home...

4. He decides to take his remote controller, browse for movie A and, automatically, play it on his big TV screen from the exact same moment he stopped watching it.
5 Gamification of the IPTV platform

In this chapter, the process for understanding the context of use and its outcome is stated. This analysis process could have been done extracting information from market research studies as [1], but I wanted to know some of this data by myself in this study and gather some information that could not be found.

The first section describes the different interviews and the online questionnaire done to gather data related to IPTV platforms, gamification, and gaming. Moreover, an analysis of the results extracted from both interviews and questionnaire is presented identifying different habits and problems. The second section presents the user requirements as an outcome of the previous analysis.

5.1 Context of use analysis

Initially, the process of data gathering for understanding the context of use has been done using interviews and an online questionnaire. Both methods were used with IPTV users from different platforms such as Netflix, Hulu, BBC, or Com Hem, among others. Participants provided useful insights about IPTV and gamification on what they like, they do not like and their interests. More details about these interviews and questionnaires are presented below.

Interviews were done to 8 people and they covered different areas of interest for this thesis:

- Semi-structured interview: Four people participated in these interviews, Appendix A: Users’ Interview (semi structured), where two interviews were done to users of Netflix, one was done to a user of ONO TiVo, and the last one to a user of Netflix and Com Hem. The results will be commented below.
- Gaming interviews: two informal interviews were done to people who are not professional gamers and play at least 20 hours per week to different kind of videogames. These interviews provided insights about what gamers generally like, what do they like inside games, and what motivates them to play games.
- Expert interviews: two experts in gamification participated on informal interviews providing insights and personal points of view about gamification and motivation.

75 people answered the online questionnaire, Appendix B: Users’ questionnaire. This questionnaire was posted on social networks as Facebook, Yammer, Google +, and LinkedIn, in this last case in a special interest group on Gamification. In consequence, participants of this survey are from all around the world. Users of a wide variety of IPTV platforms answered this
online survey. This survey was divided in two parts, the first part attempts to gather information on IPTV, and the second one on gamification. While the first part of the survey was optional, 61% of the participants answered it, the second part was mandatory. Therefore, market research studies are still used to support this study.

5.1.1 Analysis

5.1.1.1 IPTV information analysis and findings

The most interesting findings in the analysis process are shown in this section. There were more problems found than the ones showed in the section but most of them are related to usability problems and this is something that the use of gamification cannot solve.

Both interviews and questionnaires reflect that the most valuable content for the users inside IPTV platforms are series and movies, followed in the distance by general entertainment content. Sport and games are not attractive for users in this platform. See Table 2 and Figure 12.

Table 2. TV content relevance for users

<table>
<thead>
<tr>
<th></th>
<th>Really not relevant</th>
<th>Not relevant</th>
<th>Neutral</th>
<th>Relevant</th>
<th>Really relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movies</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
<td>20%</td>
<td>74%</td>
</tr>
<tr>
<td>Series</td>
<td>0%</td>
<td>2%</td>
<td>2%</td>
<td>13%</td>
<td>83%</td>
</tr>
<tr>
<td>Sports</td>
<td>35%</td>
<td>11%</td>
<td>9%</td>
<td>20%</td>
<td>26%</td>
</tr>
<tr>
<td>General Entertainment</td>
<td>15%</td>
<td>22%</td>
<td>30%</td>
<td>26%</td>
<td>7%</td>
</tr>
<tr>
<td>Games</td>
<td>35%</td>
<td>24%</td>
<td>17%</td>
<td>17%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Survey participants were also asked about social activities both online and offline. Social online activities are related to social network activities. They were asked if they knew about any kind of social activity they could perform
throughout the platform. It is interesting to notice that lot of them cannot recognize these features. See Figure 13.

![Figure 13. Recognize of social interactions](image)

Those 20 users who recognized that there are social interactions in their platforms were asked if they used them, Figure 14 shows the result. 55% declared to not use them, only 15% use them frequently, and a 30% use them from time to time.

![Figure 14. Social interactions usage](image)

In terms of social offline interaction, users were asked about their habits on watching TV in company. 42% of them stated that most of the time they watch TV alone but it is interesting to find that people gather in family to watch TV and sometimes they do it with friends as Table 3.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost never</th>
<th>Sometimes</th>
<th>Lot of times</th>
<th>Most of the times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone</td>
<td>2%</td>
<td>7%</td>
<td>31%</td>
<td>18%</td>
<td>42%</td>
</tr>
<tr>
<td>With my family</td>
<td>4%</td>
<td>18%</td>
<td>33%</td>
<td>29%</td>
<td>16%</td>
</tr>
<tr>
<td>With my friends</td>
<td>11%</td>
<td>27%</td>
<td>47%</td>
<td>13%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Another question about their behavior related to what they feel more engaging while watching TV content was asked. Figure 15 reflects that most of the people like to talk about the content with others.
Figure 15. Engaging activities while you are watching TV

Some of these results and some other not presented from the online survey are similar aligned with what reports like [1] from Ericsson Consumer Labs bring from 2013 global analysis.

Three of the interviewees reflected that they would leave their IPTV service reflecting that there is no reason more than the content that could make them feel loyal to a platform.

Interviewee 1: “I only have it for House of Cards, when I finish it I will probably leave Netflix because I can’t find the other kind of content I like updated in the system.”

Interviewee 2: “I only use Netflix because of House of Cards. I’ve just finished it so I will unsubscribe.”

“I don’t like the fact that the content is old.”

Interviewee 4: “I will cancel my Com Hem subscription because I don’t use it. I have a 4G router in my summerhouse and I can use Netflix and SVT over it without having to watch advertisement.”

5.1.1.2 Gamification information analysis and finding’s

Survey participants’ were asked how important they consider different possible elements to incorporate in gamification. Most of them result to be important with clear denotations to be really important. Status and collaboration are more in the neutral-important relation. While transparency on what to see from other users seems not to be as interesting or important for users as the other elements. See Table 4.
Table 4. Rating of some characteristics in games

<table>
<thead>
<tr>
<th></th>
<th>Really not important</th>
<th>Not important</th>
<th>Neutral</th>
<th>Important</th>
<th>Really important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>9%</td>
<td>7%</td>
<td>29%</td>
<td>43%</td>
<td>12%</td>
</tr>
<tr>
<td>Collaboration</td>
<td>7%</td>
<td>8%</td>
<td>25%</td>
<td>41%</td>
<td>19%</td>
</tr>
<tr>
<td>Competition</td>
<td>8%</td>
<td>11%</td>
<td>19%</td>
<td>37%</td>
<td>25%</td>
</tr>
<tr>
<td>Leveling-up</td>
<td>8%</td>
<td>4%</td>
<td>17%</td>
<td>41%</td>
<td>29%</td>
</tr>
<tr>
<td>Story/Narrative</td>
<td>9%</td>
<td>13%</td>
<td>17%</td>
<td>36%</td>
<td>24%</td>
</tr>
<tr>
<td>Achievements</td>
<td>8%</td>
<td>7%</td>
<td>16%</td>
<td>41%</td>
<td>28%</td>
</tr>
<tr>
<td>Community</td>
<td>7%</td>
<td>9%</td>
<td>23%</td>
<td>33%</td>
<td>28%</td>
</tr>
<tr>
<td>Transparency</td>
<td>7%</td>
<td>13%</td>
<td>37%</td>
<td>29%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Participants were asked about their preference in being challenged about the content they watch. Only 33% stated that they are not interested about these challenges. See Figure 16.

![Figure 16. People interest on challenges related to TV content](image)

More than 50% of people find interesting to be rewarded for their consuming activities and 21% might find it interesting. See Figure 17.

![Figure 17. People interest on being for your consuming activities on TV](image)

Different comments were gathered related to gamification in the interviews and in the questionnaires. These opinions have a lot of value giving hints on what people like and do not like on gamified systems or how they consider it should be depending on previous experiences:

**Interviewee 1:** “I think it has potential if it is not done in an intrusive way.”

**Interviewee 2:** About the usage of gamified applications: “I do it because I like it, I decide when I want to
do it or not. I feel under control and I'm responsible for doing it.”

“It is nice to engage but it can get boring easily. But this can be because it is bad or poorly designed. Generally, I think it is a really good idea. People like achievements, goals, and be notified by that.”

Interviewee 4: “If it is related to something that I do anyways it is ok, or if it is aligned. I won’t go to a store for playing a game if it is not part of my day by day”

From surveys: “Watching TV itself is intrinsically rewarding. Gamification needs to carefully consider motivation.”

“Introducing monetary rewards takes the fun away.”

“Don’t overdo it. It should not be too overwhelming”

Generally, people like the idea of gamification and its application in different fields as education or physical sport. Focusing on IPTV platforms, some people are a bit skeptic if its implementation would be intrusive. On the other hand, a large amount of participants showed that it could be interesting. Next section highlights some requirements that can be extracted from the comments provided in interviews and surveys.

5.2 User requirements
Participants expressed some of their desires and expectations of a gamified TV platform:

• Use simple things to not overload the platform.
• Do not interfere on TV watching experience by distracting the user while watching TV.

People declared that most of the content they consume or are interested in are movies or series. Therefore, the effort will be focused mainly on the activities of watching movies and series. Although they consume content alone, they declared that they have some social time with family and friends.
6 Design Solution

The prototype design tries to mimic the same look and feel of the current TV platform, and adapt to the interaction users can already find in the system. It is important to offer to the users new features but these features must not break the current design and experience that the users have learnt already. In this way, there is less impact and the learning process becomes easier for the user.

This gamified prototype solution for the IPTV platform has been set in the world of movies and series. Creating a theme that makes sense for the users could provide them a better feeling and a closer relation to the product. From the point of view of the product, it creates an interesting way of communication. This TV theme has been thought to create a relaxed atmosphere, and to transmit the idea that there is something funny and interactive for the users.

The design of this gamified feature has been done based on the inspiration collected in the results from the survey and interviews, different gamified experiences studied in sections 2.3 and 2.4, and different games. The design has gone under three iterations, described in section 6.5, which are used to define a better and more concrete design. The proposed interaction is based on tablet devices interaction. The use of tablets as a device for IPTV consumption has grown in the recent years as [1] reflects. Therefore, the choice of a tablet device for testing the concept of gamification on the IPTV platform is suitable for this study.

6.1 Game techniques

The set of game techniques proposed are thought in a way to not interfere the activity of watching TV, fulfilling one of the requirements listed in section 5.2. People like the idea of a gamified TV but they do not want intrusive elements that disturb their experiences.

6.1.1 Tutorial

Tutorials are used in games to introduce players to the game, to show the player how to play, to introduce different elements of the game, or to show how the complete game dynamic works. Probably one of the most famous examples in a game comes from Plants vs. Zombies15, where Crazy Dave introduces the player to the different parts of the game.

In the case of the TV platform the decision taken is to have a movie director to guide the user in the onboarding process. The director introduces a taste of

15 http://www.popcap.com/plants-vs-zombies-1
story/narrative that in fact it is an introduction to the theme and system. The user or player journey starts with the tutorial, see Figure 18. The tutorial is driven by a cinema director cartoon that introduces the gamified feature. The cinema director explains how it works by letting the user play a challenge to show some of the features he could find. Not everything is explained to the user in this tutorial, but there are points of access to information in different parts of the application.

![Figure 18. Tutorial](image)

### 6.1.2 Game elements

#### 6.1.2.1 Progress Bar

A progress bar is introduced to offer to the user feedback of the evolution from level to level in the game. This element includes also a number that represent the current level of the user. The progress bar is placed under the avatar (see Figure 19).

#### 6.1.2.2 Friends’ Ranking

Friends’ Ranking, a leaderboard, shows the position of the user among his or her friends in the system. The user representation is always highlighted in this ranking to make it easy to identify (see Figure 19).
6.1.2.3 Virtual economy: Reels

Acquiring reels (see Figure 20) is one of the main goals in this system. The more reels the user gets most benefits he could have. Between this benefits are:

- Upgrade the user avatar with newer items.
- Bet bigger amounts of reels in Friend Challenges.
- Create and participate in more Friends’ Challenges having the possibility to earn more reels.
- Rent or buy blockbuster movies and other contents (see Figure 21).

Reels are not only intended to inflate the user economy, as it will be explained below. There are different ways to get reels: watching movies, series episodes, and trailers, answering challenges, sharing on social media, or renting content. The intention of this system is not only to have a more playful TV experience but also to promote the use of social media that was detected to be low in the surveys, section 5.1.1.1. While users could benefit with reels, the platform or provider could benefit with the posts on social networks in terms of advertisement or information that feeds the system with valuable information.
Reels could work as a motivator. In the analysis, section 5.1.1.1, it was detected that 43% of the people know that it is possible to perform different social interactions in their IPTV platforms and 39% that are not sure if this is possible. From this 43%, 55% stated that they never use them and a 30% only use them from time to time. This behavior to change can be addressed with a win-win relationship, where users and platform benefit from each other. Concretely, the proposed prototype prizes social interactions letting the player win reels in exchange of posts, or comments, so the user can make use of the reels for his or her own purposes. These posts can be used to feed the application with information related to the content.

![Figure 21. Rent or buy extra content](image)

### 6.1.3 Avatar

Users’ avatar is one of the features that make the system more personal for the user. The avatar introduces in the system a fun element. Customizable elements coming from movies and series that are easy to identify by users and the possibility of creating multiple combinations of them make this feature attractive (see Figure 22).
6.1.4 Challenges

Challenges are introduced to let the users compete. Challenges can be found in two different ways in the platform:

- **Predictions** are challenges that must be generated from the system side, i.e. the provider, at the end of series’ episodes or before sport events. Predictions come from the curiosity that people have after watching a series’ episode when viewers ask themselves or their friends what will happen next. It also comes from the idea of predicting what will happen in a sport event. Figure 23 shows an example of a prediction extracted from the experiment, where participants had to watch the last 5 minutes of the first episode of the first season of the TV series “Game of Thrones”.

![Prediction example](image)
Answering a prediction is rewarded with a certain amount of reels that is immediately notified to the user (see Figure 24). As the user is performing a positive action for the game, the game rewards the user. Once the prediction is revealed, those users who answered correctly are prized with extra reels. This feedback cannot be as immediate as the previous one, but users can get notifications and check the results in the Challenges screen (see Figure 25). The answer to a prediction is revealed in forthcoming episodes, in case of TV series, and at the end of the event, in case of sport event or other kind of event.

Figure 24. Immediate feedback after answering a challenge

Figure 25. Challenges screen

- Users can generate Friends' Challenges. Its purpose is to allow the user to interact with his friends by challenging them. The process of formulating a challenge is divided in 3 steps (see Figure 26):
  - Question formulation: where the user generates a question, provides 4 answers, and chooses one of them as the good answer.
  - Time and participation cost: where user sets the deadline time to answer the challenge, 1 to 5 days, and the amount of reels to participate in the challenge.
  - Friends' selection.
The prize is divided between all the ones who provided the good answer to the challenge, plus the challenge generator. Therefore, as harder is the question the more the chances are to win more reels. All users have the chance to report the question if they think it is not correct as it can be seen in Figure 27.

6.1.5 Achievements
Badges have been introduced in the gamified solution to incorporate collectable elements or achievements. Badges also introduce a fun and distended factor with their designs, names, and description messages. Most of them include levels inside it to incorporate a taste of challenge so users do not find easy the act of getting them (see Figure 28).
6.1.6 Watching with

Table 3 in section 5.1.1.1 gathers data about the physical company that people have while watching TV. Lot of them declares that sometimes they watch TV content with family and/or friends, maybe this action could be motivated from the platform by getting benefits when users are surrounded by friends. This game technique addresses social interaction by collaboration. Users gather and state on the system that they are watching certain content. This feature rewards the act of meeting people physically to watch TV.

The presented game techniques have been designed with the influence of the data analyzed in section 5.1. Table 4 collects information about what gamification characteristics people find interesting in games. To demonstrate this influence, the same points that were treated in Table 4 are analyzed from the perspective of the proposed solution:

- Status: avatar, levels, progress bar, and a leaderboard are set in this functionality to address the user status in the system.
- Collaboration: Watching with is the feature designed to introduce collaboration in the system.
- Competition: predictions and friends’ challenges.
- Leveling-up: users go through levels, which are passed depending on the actions taken.
- Story/Narrative: Although there is not a real story or true narrative behind this gamified solution, a taste has been included with the movies and series theme selected, and the onboarding tutorial.
- Achievements: badges have been introduced with the aim of letting users have goals to achieve through consuming habits.
- Community: there is no sense of community in the solution. It can be appreciated as a synonym of collaboration, but its goal is to unlock or
reveal something with the participation of the different members of the community itself.

- Transparency: users can check different information related to their friends as evolution, reels, avatar, position in the leaderboard and badges.

### 6.2 Navigation

Figure 29 presents the navigation map of the gamified feature. This solution has been implemented over the Profile section, with a direct access from the main menu, where there was only the action of logging out of the system. Profile is now the center of the gamified system, where the user can check his performance, statistics, reels, and achievements. From Profile, the user has access to several features as it can be read in the Figure 29.

![Figure 29. Navigation map](image)

Watching with and social network interactions are accessed from consuming content due to its close relation. They cannot be accessed from any of the views in the figure. Therefore, they are not represented in this navigation map.

### 6.3 IPTV player types

Marczewski’s player types model, section 2.2.1, is analyzed to offer the reader an analysis on the kind of players are expected to be found in this gamified
solution. This analysis is important in the process of thinking on the game techniques previously introduced.

- Players: there will be people playing just for the fun of playing trying to get points and rewards.
- Socializers: there will be players using friends’ challenges as a medium to express the desire of socialize.
- Achievers: they are people looking for mastery that is provided by scaling levels answering challenges. Moreover, players focused on winning badges.
- Disruptors: there will be people trying to trick the system forcing the rules to its maximum.

6.4 Motivation

Motivation was presented on section 2.1, where the two branches are introduced. This study considers the one proposed by Reiss as a more natural way of expressing motivation than the dualism intrinsic – extrinsic. Following Reiss’ 16 motivators and 42 fun facts from Jon Radoff, Appendix C: Jon Radoff’s 42 fun facts, it is possible to analyze which motivations could be possible to trigger on users.

Table 5 shows an extract of those fun facts from Jon Radoff’s table that can happen playing this gamified feature. Three motivators are not triggered, which is correct because there was never the purpose of looking for honor, idealism, and family.

Table 5. Jon Radoff’s fun facts subset for this gamified solution

<table>
<thead>
<tr>
<th>Motivators / Fun things</th>
<th>Power</th>
<th>Curiosity</th>
<th>Independence</th>
<th>Acceptance</th>
<th>Order</th>
<th>Saving</th>
<th>Honor</th>
<th>Idealism</th>
<th>Social Contact</th>
<th>Family</th>
<th>Status</th>
<th>Vengeance</th>
<th>Romance</th>
<th>Physical Activity</th>
<th>Tranquility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collecting X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding unexpected treasure X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achieving a Sense of Completion X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaining Recognition for Achievements X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customizing Virtual Worlds X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being the Centre of Attention X</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiencing Beauty and Culture</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
### 6.5 Prototyping Process

A low-fi prototype has been developed to test the research questions stated in section 1.3. This prototype started as a paper prototype and moved into an interactive prototype done with a software tool for presentations. As Marache-Francisco [21] highlights the importance of aesthetics in a gamified platform for its persuasive characteristics, it is important to transmit this feeling in the prototype. Therefore, although the nature of the prototype is low fidelity the design has been treated carefully.

As it was stated in the methodology, the prototype went under different usability tests before doing the final evaluation. This prototype has gone through three iterations, which are described below. This description can be followed with Table 6 that represents when the different game techniques were introduced in the design process:

- **First iteration** consisted on a paper prototype where the first design concepts and game techniques were tested. This prototype was tested with 3 users and was enough to find several interaction problems.

- **Second iteration**: the prototype evolved to an interactive prototype similar to the previous one. This kind of prototype gave the users a closer look and feel to what the platform could look like. Most of the problems from 1st cycle were corrected. The game mechanic “Watching with” was dropped for being a difficult concept to understand. The confusing interaction proposed and the unclear goal for the users were the main reasons to discard it. A new game technique was included in this iteration, collectables. This time, 5 users tested the prototype.

- **Third iteration**: Problems from the second cycle were corrected and more interactions already available in the real system were included with minor modifications, as in Figure 21. A reformulated “Watching with” feature, described in section 6.1.6, was included. 5 users participated in the testing process in this cycle.

These changes gave the users a wider and better understanding of the whole concept. Figure 30 shows the evolution on the main screen of this gamified solution along the three iterations.

Each of the usability evaluations has been done with 3 to 5 users, as it was stated in each cycle. In each of the evaluations, the user was introduced to the prototype by introducing first Ericsson Multiscreen TV solution, and the

<table>
<thead>
<tr>
<th>Predicting the Future</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mystery</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Mastering Skill</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being Silly</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Laughing</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Exploring a world</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.5 Prototyping Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>A low-fi prototype has been developed to test the research questions stated in section 1.3. This prototype started as a paper prototype and moved into an interactive prototype done with a software tool for presentations. As Marache-Francisco [21] highlights the importance of aesthetics in a gamified platform for its persuasive characteristics, it is important to transmit this feeling in the prototype. Therefore, although the nature of the prototype is low fidelity the design has been treated carefully.</td>
</tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>• Third iteration: Problems from the second cycle were corrected and more interactions already available in the real system were included with minor modifications, as in Figure 21. A reformulated “Watching with” feature, described in section 6.1.6, was included. 5 users participated in the testing process in this cycle. These changes gave the users a wider and better understanding of the whole concept. Figure 30 shows the evolution on the main screen of this gamified solution along the three iterations.</td>
</tr>
</tbody>
</table>

Each of the usability evaluations has been done with 3 to 5 users, as it was stated in each cycle. In each of the evaluations, the user was introduced to the prototype by introducing first Ericsson Multiscreen TV solution, and the
The concept of gamification if needed. Users were handed a list of tasks to complete using the prototype, letting them know that time was not going to be taken into consideration, but notes would be taken of their understanding of the navigation and the system, similar tasks to the ones described in section 7.1. Before starting the tasks, participants were asked to think aloud which combined with the observation of their interaction with the prototype could provide useful feedback to evolve the design. The number of tasks grew from 5 to 8 from the first evaluation to the last evaluation.

The prototype evaluations helped to see how people interacted, to detect typos, to identify poorly designed navigations and interactions, and to improve the presentation of the information in the interface. Every change from the first to the last design is supported by the users’ feedback, and the combination of observation and comments collected by using the think aloud protocol. This process took each participant an average of 40 minutes.

Table 6. Game Techniques used per design iteration

<table>
<thead>
<tr>
<th></th>
<th>Iteration 1</th>
<th>Iteration 2</th>
<th>Iteration 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorial</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Predictions</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Friends’ Challenge</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Avatar</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Achievements</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Watching with</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Virtual Economy</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Progress Bar</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Friends’ Ranking</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Figure 30. Profile screen evolution along the time
7 Experiment and Results analysis

This chapter describes how the experiment is carried detailing the different tasks the participants have to perform, section 7.1. In the second section, a detailed description of the results gathered in the experiment is explained. Finally, in this second section, the answers to the research questions are provided.

7.1 Experiment description

The experiment proposed to evaluate the final prototype consists on the use of the prototype through eight tasks. These eight tasks show participants the game techniques described in section 6.1. The experiment starts with an introduction to this thesis work, the concept of gamification, and the methods, as stated in chapter 3, that were going to be used during the experiment: observation, think aloud protocol, and the evaluation survey. Before starting the experiment it was mentioned that time and errors were not going to be taken into consideration, with the aim that participants felt more relaxed. The importance of providing comments and thoughts during the experiment was highlighted to make the think aloud protocol effective. After completing the tasks and before handing the evaluation survey, free time to explore in more detail the prototype was provided to the participants.

The first task participants had to go through was the tutorial, where an introduction to the virtual economy and different elements in the interface is provided. Moreover, the tutorial introduces participants into the first kind of challenges, Predictions. Inside predictions, the participants are requested to choose between the first episode of the first season of the TV series “Game of Thrones” or “Masters of Sex”, two popular TV series nowadays. To not make the experiment too long, it is only requested to watch the last 4-5 minutes of one of these episodes. Second task relates to the customization of the avatar. Task number three asks the user to find information about how to get reels in the TV platform. Friends’ Challenges are introduced to the participants in tasks four and five. While in task four they have to familiarize with the creation of a challenge, task five brings them the perspective of participating in a challenge that a friend has sent them. Achievements are presented in task six, where participants are asked to read the badges they have and do not have, and check how they can get them or upgrade to the next level. Task seven requests the participant to visit the information related to one friend that is better than him or her in the friends’ ranking. Here, they are requested to check the statistics of the user and badges achieved. Watching with is the last task, where the participant is asked to imagine that he or she has rented a movie and three friends have come to his or her home to watch it. The participant is requested to state this social gathering in the system. Figure 31 shows a summary of the tasks.
The experiment finalized with an evaluation survey where participants had to evaluate the different game techniques and the concept through different questions. These questions can be found in Appendix D: Evaluation questionnaire.

Although the time for performing the tasks was not taken, participants spent around 45 minutes in the whole process. Some of the participants decided to spend more time during the free time period going over one hour.

7.2 Results analysis and participants’ comments

Participants’ overview

The evaluation of this low-fi prototype was done with 19 participants, all of them students from Forum campus in Kista, Stockholm, collected by in-person methods. 12 of the participants were male and 7 female, with an average age of 25 years old. Participants were asked about engagement, motivation, and personal opinions as it can be seen in the evaluation survey, Appendix D: Evaluation questionnaire. These questions are oriented to answer the research questions that will be answered at the end of the section. A detailed analysis is offered below where the results for each question are described and some of the participants’ comments are reflected.

Tutorial:

The first task of the evaluation was the tutorial. Participants considered the tutorial engaging with a 42% of the results. Although a 21% of them considered it was really engaging, 32% considered that it was just normal, see Figure 32.

Some of the participants’ comments were:
P2: “I would probably pass it quickly without paying much attention”
P18: “Some of the messages are too long”

![Figure 32. Tutorial evaluation results](image)

**Avatar:**
The second task in the evaluation was related with the customization of the avatar, where participants were asked to modify the avatar according to their preferences. Although the prototype interaction was limited, the paper version of this part was used after the task to give the participant a better perspective. Results tell that the avatar concept is engaging but 32% of the participants stated that it was something normal. 10% reflected that it was not engaging or engaging at all (see Figure 33). Some participants stated that they would prefer to use the same picture they use in social networks, while some others found the avatar funny.

![Figure 33. Avatar evaluation results](image)

**Predictions:**
Prediction is the most successful game technique implemented. 89% of the participants found it really engaging and the rest only engaging. They stated that they like the concept of predicting what would happen in the future, not only in series episodes (which is the example used) but also before sport events or special events like movie awards (see Figure 34).
A participant comment was:

P9: “I like it, this is what we do after watching an episode, we ask ourselves or friends what will happen in next episodes”

Friends’ Challenges:
Results demonstrate that Friends’ Challenge could be also a good feature to take into account in a gamified IPTV solution. The possibility of challenging friends and merge with the gambling concept seems to be attractive for participants. 84% divided in two equal parts considered it engaging or really engaging to have this technique (see Figure 35).

Although the time to answer a question was established to be one-minute countdown, a couple of participants stated that it would be more than enough time to look for an answer on Internet.

Watching with:
“Watching with” was questioned to the participants in two different ways. The first question tried to reflect if this action could be motivating for participants to gather physically with friends to watch TV. “Watching with” carries an extra prize in reels when users are together. From Figure 36, left chart, it can be extracted that it would be motivating. The second question was related to the level of engagement of the activity. Figure 36, right chart, shows the division of opinions is high and it is difficult to distinguish between good or bad.
Most of the comments reflected that cheating in this game technique would be easy. Some of the users said that they would probably not use it, while some others stated that they would use it if it brings an extra value for them. This feature was the most controversial. Participants had to stop to think about it because the purpose or the interaction was not clear for them. Probably this feature would need to be reformulated or, even, removed. A possible modification would be to make all participants state manually what they are watching and keeping the track of the location. Another possible solution comes from one participant:

P14:  “Maybe a picture and tagging your friends could be a better prove to demonstrate that people are together. This could be even more motivating.”

Achievements:
The opinion about collectables is also divided but in this case, it can be appreciated as positive. Almost all results go from normal level of motivation to really motivating where: 42% goes for really motivating, 32% for motivating and 21% for normal (see Figure 37).

Some participants reflected valuable comments that could be used in the future:

P8:  “The description is good but maybe a link to the kind of content that is in related could be useful”

P10:  “There could be more badges and badges’ categories.”

P14:  “I would like to see only the ones that are related to the content I like.”

P17:  “Only three levels inside seem to be few.”
Game elements:
Virtual economy, progress bar, and leaderboard were evaluated in a single question. During the evaluation process some participants had some doubts about how would they work. Explanations were given to them, as it is impossible to see a dynamic change in the prototype. In general, the perception of these three elements was positive as it is reflected on Figure 38.

![Figure 38. Game elements' evaluation results](image)

After this series of specific questions, the results from general questions are analyzed.

Question 10 was introduced to find out if the experience could be overwhelming for the final users. While 55% of the people did not find it overwhelming, 22% stated that it could be overwhelming and 23% reflected that sometimes it is overwhelming. One of the participants, who answered “yes” to this question, commented that he understood by overwhelming that the system has new interactions and then the TV is not as simple as it was before. A comment coming from a “sometimes” answer reflects that it could be a bit overwhelming with features that he/she does not like in the system (in this case, the avatar).

One of the users’ requirements, section 5.2, was related to create a non-intrusive experience. Participants were asked if the solution could disturb their normal way of watching TV. All participants affirmed that it would not disturb it.

Virtual economy is one of the pillars of this solution and participants where asked if they think they could benefit from it. While 79% had not doubts answering “yes”, 21% thought they would maybe benefit from it, offering the following comments:

P1: “It actually depends on how many friends I have using the system as well, and how I can pre-charge my reels.”

P15: “It might get boring after some time.”

Question 13 was focused on discovering if the gamified feature on the system could be a reason for participants to not leave the platform in favor of other ones of the same kind. 42% of the participants reported that they would stay
and 53% communicated that it could be a reason to not leave. Some of the most significant comments are:

P1: “It still depends on what competition does. If I have to many reels here and great movies (new ones) always to watch, I would definitely not change.”

P5: “Winning reels can probably prevent me from moving to another platform.”

P13: “The reels are very motivating and want me to use the platform more in order to freely rent movies.”

**General comments:**

Last question of the evaluation survey was oriented to collect general comments from the prototype and the experience. Some of the comments provide are:

P1: “I would prefer this type of system to today TV.”
“I like the friends’ aspect of it very much.”

P4: “It is important to keep it non-intrusive.”

P5: “It won’t disturb my normal way of watching unless the questions are deliberately asked in-between the show. However, if they are asked between commercial breaks or after the show ends, then it is fine.”

P6: “It is a good idea, besides the gamification feature. I especially find the game more engaging and motivating when I can compete with friends.”

P7: “I found the concept interesting but I think it is still possible to find something more creative and more attractive for the users.”

P8: “I feel that there should be more options in the avatar part.”

P12: “There could be a link from the badge to recommend content to get it”.

P14: “I would like it more adapted to my preferences, what I like, I don’t care about what I don’t like.”

P18: “I would like to see more ways of collecting reels and I would like to get more reels according to the time I spend watching TV.”

These comments reflect that improvements can be done, although each participant has a different preference and there are not common points. The ideas are useful for a future work.
Answers to the research questions:
Three research questions were stated at the beginning of this thesis in section 1.3. Once analyzed the results from the experiment it is possible to provide answers to the formulated questions.

RQ1: Which of the game techniques used are more suitable?

The first part of the analysis was focused on the analysis of the different game techniques and elements used. Table 7 shows a quick summary of all techniques together including media and standard deviation (SD) in each case. From the analysis, it is possible to state that the most engaging technique was Predictions with a media of 4.89 and a low SD of 0.18. Friends’ challenges are the second best appreciated with a media of 4.21. Collectables, based on the badge system, were also motivating for the participants with a media of 4.10. The tutorial and the avatar features dropped down a bit the engagement of the participants with similar results on media and SD. Definitely, “Watching with”, evaluated for engagement and motivation, got the worst and more diverse results in both aspects.

Focusing on the game elements, the virtual economy resulted to be quite engaging, followed up by the friends’ ranking. Both medias are higher than 4. The possibility of having users’ friends on TV was attractive for participants. The progress bar was the less engaging of the studied elements.

Therefore, Predictions, Friends’ Challenges, and Virtual economy are the most suitable game techniques explored. Not so far away from this three mentioned techniques are the Tutorial, Avatar, Friends’ Ranking, Progress Bar, and Collectables, that with a bit of improvement could be part of the pack of suitable game techniques that could work in such environment. Definitely, Watching with is a not a suitable game technique for this IPTV platform.

Table 7. Evaluation summary

<table>
<thead>
<tr>
<th></th>
<th>Not really engaging</th>
<th>Not engaging</th>
<th>Normal</th>
<th>Engaging</th>
<th>Really engaging</th>
<th>Media</th>
<th>SD</th>
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<tbody>
<tr>
<td>Predictions</td>
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<td>2</td>
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<td>2</td>
<td>8</td>
<td>8</td>
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<td>6</td>
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<td>6</td>
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<td>6</td>
<td>5</td>
<td>3.36</td>
<td>1.25</td>
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<td>9</td>
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<td>0.64</td>
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<td>2</td>
<td>7</td>
<td>8</td>
<td>4.05</td>
<td>0.79</td>
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<td>8</td>
<td>3</td>
<td>3.52</td>
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RQ2: Which retention mechanisms create the desired effect?

The Virtual Economy was raised as the main retention mechanism to stay in the platform, although the rest of game mechanics are related to it. As it was stated before, 79% percent of the participants’ opinions reflect that the Virtual Economy would be beneficial for them. In a later question, almost half of the participants stated that they would keep using the system with a solution like this. However, the other half stated that it would depend on the relation between reels and content to get from the platform with them. If the content were valuable for them, they would probably stay. Therefore, customer retention seems to be possible and there is still margin to get better on it, which depends on the content that is provided.

The Virtual Economy together with the most valuable game techniques, aforementioned, could work as a retention mechanism if the content the provider offers to its customers is meaningful for them.

RQ3: Is it an IPTV platform more engaging for users when it is gamified or on the other hand is it less engaging?

Although this question has tried to be answered with the results extracted from the evaluation survey, it is not possible to reflect a real answer. Several reasons support this statement: First, the users who participated in the evaluation are not real users of the platform, as it was stated chapter 1. Second, it was not possible to test how engaging was this platform before the design of the gamification feature. Therefore, it is not possible to make a real comparison of the system without and with gamification. Third, a longer period of time for the participants using a prototype on top of the real TV platform would be required to provide an answer to this question.
8 Conclusions and future work

This study aims to incorporate gamification on IPTV platforms, specifically for Ericsson’s Multiscreen TV solution. Conclusions and future work are described from this study based on the low-fi prototype experiment carried in this chapter.

The main goal of this thesis was to find a set of game techniques suitable for an IPTV platform. Several game techniques have been used in this study of the concept of gamification on Ericsson Multiscreen TV. Predictions, Friends’ Challenges, and the Virtual Economy are the most successful game techniques between the ones selected and are defined as the core set of game techniques suitable for such a platform.

Collectables in a short distance were also well accepted from the audience. An improvement could be to link badges to the kind of content they hide behind by driving the user to the explore page of the system with the proper query already in. Some of the participants perceived the Avatar as a funny element but some others would avoid it if possible using their own profile picture. Therefore, this option should be taken into account to be added in a further step of this prototype. Tutorial falls under the same situation, it should evolve to catch better the attention of the user. Sounds or a more engaging story are possible modifications to improve the tutorial. The leaderboard, Friends’ Ranking, is also good perceived, participants like the idea of having their friends also on the TV, while the progress bar is not enough engaging for the users. A same level of engagement between these two last elements was expected because they are related. A possible conclusion could be that participants did not understand their close relation. This technique should be more emphasized. Animations transmit the idea of progression in the progress bar, and animations to understand the relationship between leaderboard and progress bar are a possible solution. Although the results for these game techniques were not as good as the 3 techniques aforementioned, they could be improved and incorporated into the set of game techniques suitable for such a platform.

On the other hand, “Watching with” was not a meaningful enough activity for participants. It should be modified, as it was mentioned in the result analysis, or be removed from the solution. Therefore, it is not a game technique to include in the previous set of game techniques.

The virtual economy and the win-win strategy designed in the background is something that participants liked. Participants like to get something in exchange of participating in challenges and posting on social networks.
However, the virtual economy would only work as a retention mechanism if the platform can offer to its users interesting content they can get with it.

Another goal in this study was to know how such a solution for the platform would be more engaging when it is gamified than without this modification. This question could not be answered in this study due to at least three reasons. First, the users were not real users of the platform. Second, the users who evaluated the product could not compare with the version of the platform without being gamified. Third, the test period would need to be longer, one to two months, so they could feel the experience. Therefore, answering this question would mislead for future research purposes. This is a question to answer in a future work.

The inclusion of some of the techniques and game elements presented can be beneficial for the system. On the other hand, several aspects need to be treated carefully. In an experiment as such, where the interaction is limited, it is impossible to test pointing systems and rules. The virtual economy needs to be balanced and for that, a measurement of which are the actions that users take into the system needs to be explored in terms of frequency and importance for the company. While tracking accesses to the database could do the measurement of the actions, the balance of economy and point systems are more a matter of calculations in a spreadsheet and adjustment of values during test periods with real users. A significant amount of real users are needed to have a wider range of types of players.

Addiction is stated in section 1.4 to reflect an important ethic matter. Although the solution proposed is not intended to make people addicted or more addicted to TV, some of the participants in the experiment were concerned about this matter. The virtual economy is the first symptom that evokes addiction, the second one is Friends’ Challenges, which evokes the concept of gambling and, therefore, it is tightly related to addiction. Both are oriented to create more interaction in the system by letting the users earn reels through challenges and expend them in more challenges or virtual goods. Virtual goods are not tangible, thus the solution breaks with the real world. The solution does not suggest the idea of exchanging the virtual economy for real money, but real money to buy reels is set as a future work feature to add in the system. A bidirectional money transaction between real world and virtual world could introduce a possible high addiction. This solution cuts this bidirectional relation.

**Future work**

Conclusions on the low-fi prototype support the evidence that the concept can be applied further. Therefore, stepping into a real interactive prototype on top
of the application would be the way of continuing with this idea. This step involves the definition and balance of the virtual economy and point systems in the test phase. For this task, the test phase would require a significant big amount of users to track each user action taken in the system. Gamification has been largely used to change behaviors in people. It would be interesting to check if the implementation of these game techniques affect or modify user behaviors. Concretely, to study the change of some of the behaviors identified in section 5.1.1.1. Therefore, a study on behavior of the users before adding gamification and after adding it is necessary to make a comparison. This further step could be also used to test the third research question that could not be properly answered in this case study. Before these studies, the economy and point systems need of several iterations to adjust the values to the actions that want to be rewarded in the platform. The scores and values of each action can affect users’ behavior.

The prototype’s design must be adapted to fit into the platform’s design. Although the intention was to be careful with it, mistakes are there as it is a low-fi prototype.

Some of the techniques could be improved, as it was aforementioned in the conclusions. Possible solutions are provided to those techniques that were not as successful as the main three ones. On the other hand, Watching with should be removed or reformulated, as it was aforementioned.

Right now, the virtual economy is something users can only get from the system by playing challenges. It should be possible to buy them online with real money by adding a purchase mechanism.

In a further study it would be also good to try and test new game techniques that could be related for example to special events or lotteries, where reels could be used to buy participations.
9 Summary

Gamification has been identified as a new trend in the market and many companies are trying to incorporate it in their products or working process as an innovative tool to change behaviors in a playful way. This thesis has walked through the application of gamification on an IPTV platform, more concretely the Ericsson Multiscreen TV through a low-fi prototype.

The first two chapters of this report introduced gamification and other areas of knowledge related to it like motivation. Identifying which could be the motivation of users to play something new is not an easy task. This thesis work has tried to identify what could motivate people to play on IPTV platforms. An analysis of the previous research case studies with different examples among the related bibliography and the show of examples coming from the industry have been done to offer the reader a broader perspective of the influence of gamification in our lives today. The methodology, influenced by what other research case studies did in the past, was described in the third chapter.

Ericsson provided support to this thesis with Multiscreen TV solution, the IPTV platform developed by the company, where this prototype is focused. The prototype was born after collecting and analyzing information from users of similar systems. Different game techniques were prototyped and tested along this case study, starting from a paper prototype and finishing in a power point prototype that went under 3 re-design cycles. This case study finishes with the analysis of the evaluation done over the final prototype concept and its game techniques and elements, the answers to the research questions formulated in the introduction, the conclusions, and future work.
References


Appendix A: Users’ Interview (semi structured)

Name:                      Age:
TV Platform:

1. Could you describe the kind of content you access in your current IPTV platform?
   • Is there any other kind of content available?

2. What is the package you have contracted?
   • Which parts of the service do you use more?
   • Why do you use them?
   • Are there any parts you don’t use? Why not?

3. What motivates you to consume a specific kind of content more than others?
   Example: movies vs sport
   • Why don’t you feel attractive other content?

4. How do you explore for the content that you like?
   • Is it popped-up to depending on what you have already seen?
   • Do you explore by genre or category?
   • You just follow friend’s recommendations
   • You like to go throughout the system
   • You get automatic recommendations (Netflix)

5. What do you like more from the TV platform/ service?
   • Do you remember any problem or bad experience you had using the platform?
     Could you describe it?

6. Why would you leave the platform?

Gamification:
Gamification is the use of game mechanics and dynamics in non-game context. Some examples of gamification can be Foursquare, Nike+, Stack Overflow, Salesforce, Mint... where people earn points, badges, and or rewards for their activities. We want to study the possible effects of gamification on TV platforms.

7. What experiences do you have within gamification?
   • Which gamified applications have you used?
   • What do you find attractive on them?
   • What don’t you like on them?

8. What is your opinion about gamification?
Gamification takes different elements from games as could be: collaboration, competition, engaging story, social connection, player status, achievements, and others.

9. What kind of elements do you find interesting in games that could be exported to non-game context as TV platform?
Appendix B: Users’ questionnaire

Gamification on IPTV
Gamification, the use of game elements in non-game contexts, is becoming quite popular. In my master thesis, I am studying the possibility to incorporate gamification on TV platforms, more concretely IPTV platforms (Television over internet). Some examples of these platforms are: Netflix, Hulu, Digital+, Imagenio, ViaPLAY, TiVo, Com Hem, Showtime, Atresmedia ...

1. Are you a user of any IPTV platform or watch TV online?  
Examples: Netflix, Hulu, Digital+, Imagenio, ViaPLAY, TiVo, Com Hem, Showtime, Atresmedia...  
   o Yes  
   o No (continue on 17)

TV Questions (Part 1)

2. Which IPTV platform do you use or TV channels online do you watch?  
Multiple choices. Feel free to introduce yours if it is not in the list
   - Netflix
   - Hulu
   - Digital +
   - HBO
   - Com Hem
   - ViaPLAY
   - TiVo
   - Showtime
   - Others:

3. What devices do you use to watch TV?  
Multiple choices.
   - TV
   - Tablet
   - PC/Laptop
   - Mobile phone
   - Videogames console
   - Others:

4. What kind of content can you find in your IPTV platform?  
Multiple choices.
   - Movies
   - Games
   - Series
   - General entertainment (music, classic TV channels...)
   - Sports
   - Others:
5. Which kind of content is more relevant for you on a TV platform?

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**TV Questions (Part 2)**

6. Which kind of content is more relevant for you on a TV platform?

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<td>With my friends</td>
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</tbody>
</table>

7. What activities make you feel more engaged while you are watching TV?
   Multiple choice
   - Talk about what I watching with the people around me.
   - Chat online about what I watching with people.
   - Share in social networks my opinion about what I’m watching
   - Play some games while watching TV
   - Other:

8. How do you explore for content?
   Multiple choice
   - I browse manually
   - Automatic recommendations (like Netflix)
   - Friends' suggestions
   - Advertisement in the platform
   - I use the electronic program guide
   - Other:

9. Do you consume any kind of PPV (pay per view) content on the platform?
   - Yes
   - No (continue on 12)
   - I don’t know (continue on 12)

**Questions about PPV consumption**

10. How often do you use PPV content?
    - Once per week
    - Once per month
    - More than once per month
11. Which kind of PPV content do you consume?
   Multiple choice
   - Movies
   - Series
   - Sports
   - Other:

12. Are you satisfied with the current offer you get from your IPTV provider?

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<tr>
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13. Do you find easy to navigate and browse content in the platform?

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</table>

14. Why do you think the navigation is good or bad?
   Please provide an answer. Your opinion is important.

15. Does your IPTV platform provide any kind of social interaction? Likes on Facebook, share on Facebook or Twitter, share your opinions of a movie or series episode in the platform...
   - Yes
   - No (continue on Gamification)
   - I don't know (continue on Gamification)

Social interactions

16. What is your frequency of use of these social interactions?
   - I use them frequently
   - I use them from time to time
   - I don't use them

Gamification
Gamification is the use of game elements in non-game contexts. Some examples of gamification can be Foursquare, Nike+, Stack Overflow... where people earn points, badges and or rewards for their activities. Gamification can be also seen in the process of going through levels in education. I want to study the possible effects of gamification on TV platforms. I would like you to answer some questions about games and gamification.

17. Please rate how important are these characteristics for you in gamification

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</table>
18. Are you interested in challenges related to TV content? Like quizzes about the content you see or follow.
   - Yes
   - No
   - Maybe

19. Would you find interesting to be rewarded for your consuming activities on TV?
   - Yes
   - No
   - Maybe

20. Could you provide any other insight that you think could be interesting about games and gamification?
    Please provide an answer. Your opinion is important.

Personal Information
Age:  
Gender:
## Appendix C: Jon Radoff’s 42 fun facts

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65
Appendix D: Evaluation questionnaire

For evaluating this prototype concept of gamification on the Ericsson Multiscreen TV platform, we would like you to answer the following questions.

**Tutorial**
A tutorial was introduced in the platform to facilitate the understanding and first steps of the user in this new feature. The same character is used to offer help in different parts of the system.

1. How engaging do you think is the tutorial?

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**Avatar**
Avatar was included in the system to bring a customizable and funny element, from the movies and series area, for users.

2. How engaging do you think is the avatar feature?

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**Predictions**
Predictions were introduced in the system to give the user the chance of predicting what would happen in the next series episode, special event, or sport event.

3. How engaging is to answer questions about what will happen in the future?

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**Friends Questions**
4. Friends' challenges were introduced to allow you to challenge your friends at any time. Did you find engaging to be able to challenge and receive challenges from your friends?

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**Watching with**
Watching with was created to benefit all the users that gather together physically to watch TV.

5. Do you think it can motivate people to gather together and watch content they like together? Example: watching a movie or a series episode

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6. How engaging do you think this action is?

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<td>Not really engaging</td>
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Collectables
Badges were included in the system to have collectable elements trying them to not be simple but funny at same time.

7. Do you think they are motivating? So, you would continue watching content to get next level.

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<th>Not really motivating</th>
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<th>Really motivating</th>
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Game elements
Apart from the game techniques previously questioned, there was some other game elements used in the platform.

8. Could you express how engaging were they for you?

1 = Not really engaging 5 = Really engaging

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<th>Reels point system concept</th>
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<td>Friends’ ranking / Leaderboard</td>
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General Questions
9. Do you find the experience overwhelming?
- Yes
- No
- Sometimes, when:

10. Do you think it disturbs your normal way of watching TV?
- Yes
- No

11. If you would have the system, do you think you could benefit from the points system “reels”?
- Yes
- No
- Maybe:

12. In which measure do you think the experience of watching TV could be more engaging with a system like this?

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<th>Much less engaging</th>
<th>Less engaging</th>
<th>Same</th>
<th>More engaging</th>
<th>Much more engaging</th>
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Imagine you have been using the system for a time with this gamified feature where you have spent your time developing your avatar and winning reels.

13. Do you think it could be a reason to stay in this platform and not move to another one?
- Yes
- No
- Maybe
14. I would appreciate any kind of comment you have related to the prototype or the concept itself.

**Personal Data:**

Age: Gender: