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Sales Potential of Social and Multiplayer Features in Mobile Game *Last Planets* by Vulpine Games

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<p>The purpose of this thesis was to find out how social and multiplayer features affect the sales of mobile games, and prove to Vulpine Games that their mobile game Last Planets has potential to become successful thanks to these features. Vulpine Games can use the results of this thesis to prove to investors that Last Planets has potential to generate notable revenue.</p> <p>The background for the thesis is set by presenting the history of mobile devices, and how mobile platforms became the biggest gaming platform. The thesis then introduces the mobile device and mobile game markets, and how the vast growth of the markets will continue for years to come. Different types of mobile games, mobile game business models, general mobile game design solutions, and mobile gamers are examined in section 2 of this thesis. All of these topics introduce the reader to the many factors that affect a mobile game and the sales potential of mobile games.</p> <p>Section 3 of this thesis focuses on the theory behind the free-to-play business model funnel, and the eight top grossing mobile games in the United States on the iOS platform. The free-to-play business model introduces industry terms and metrics which are used to determine the success of a mobile game. Then the data of the eight top grossing games are introduced, and this data is then used in the next section of this thesis.</p> <p>Last Planets, the mobile game that Vulpine Games is developing, is introduced in section 4. The social and multiplayer features are explained, and then compared to other top grossing games' features. The estimated sales of Last Planets is evaluated to be the same as other strategy game type games, with an additional increase of 39% in sales if Last Planets manages to attract the correct players.</p>	
Keywords	Mobile games, social and multiplayer features, sales potential

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<p>Tämän opinnäytetyön tarkoitus oli tutkia miten sosiaaliset ja moninpeli ominaisuudet vaikuttavat mobiilipelien myyntiin, ja todistaa että Vulpine Gamesin mobiilipeli Last Planets voi menestyä näiden ominaisuuksien takia. Vulpine Games voi käyttää tämän opinnäytetyön tuloksia todistamaan potentiaalisille sijoittajille, että Last Planets-mobiilipelillä on mahdollisuuksia tuottaa huomattavia tuloja.</p> <p>Opinnäytetyön toinen osio esittää taustatietoa seuraavia osioita varten. Toinen osio kertoo mobiililaitteiden historiasta, ja miten nykyiset mobiilipelialustat kasvoivat isoimmaksi pelialustaksi. Opinnäytetyö sitten esittää mobiililaitteet, mobiilipelimarkkinat ja miten markkinoiden jatkuvalla kasvulla ei näy loppua. Erityyppiset mobiilipelit, mobiilipelien liiketoimintamallit, yleiset mobiilipelien suunnitteluratkaisut sekä mobiilipelaajat esitellään opinnäytetyön toisessa osiossa. Kaikki nämä aiheet tutustuttavat lukijan moniin tekijöihin, jotka vaikuttavat mobiilipeliin ja mobiilipelin myyntipotentiaaliin.</p> <p>Opinnäytetyön kolmas osio keskittyy free-to-play liiketoimintamallin teoriaan ja Yhdysvaltojen iOS alustan kärki kahdeksan myydyimmän pelin esittämiseen. Free-to-play liiketoimintamalli esittää alan termistöä ja metriikkaa, joita käytetään mobiilipelien menestyksen mittaamiseen. Näiden kahdeksan myydyimmän pelin data esitetään, ja pelien dataa käytettiin opinnäytetyön seuraavassa osiossa.</p> <p>Vulpine Gamesin mobiilipeli, Last Planets, esitetään opinnäytetyön neljännessä osiossa. Last Planetsin sosiaaliset ja moninpeli ominaisuudet selitetään, ja ominaisuuksia sitten verrataan muiden myydyimpien pelien ominaisuuksiin. Last Planetsin potentiaalinen myynti arvioidaan olevan noin 39 % parempi kuin muiden strategia pelien myynti, jos Last Planets saa houkutelua oikeinlaiset pelaajat pelaamaan peliä.</p>	
Keywords	Mobiili pelit, sosiaaliset ja moninpeli ominaisuudet, myynti potentiaali

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## Abbreviations

Android      Mobile operating system developed by Google

ARPU      *Average Revenue Per User*

ARPPU      *Average Revenue Per Paying User*

CPI      *Cost Per Install*

iOS      Mobile operating system developed by Apple

KPI      *Key Performance Indicator*

LTV      *Lifetime Value*

MMO      *Massively Multiplayer Online Game*

PVE      *Player versus Environment*

PVP      *Player versus Player*

UI      *User Interface*

## 1 Introduction

This thesis is focused on the social and multiplayer features of mobile games. To understand these features and why they are implemented in mobile games, this thesis introduces the mobile game market, mobile games and mobile gamers. To develop a successful mobile game, game development companies have to take many factors into consideration. Companies have to consider the market, the target consumer, in-game monetization, game design, and other factors. Creating a successful mobile game that is popular, fun and generates profit is extremely challenging. On top of this the mobile app market is constantly evolving with trends changing quickly, and there are thousands of competitors to stand out from.

One of the first mobile games was Snake which was introduced back in 1997 by Nokia. About 400 million copies of Snake were shipped ready on Nokia devices. Mobile games were very different 17 years ago, when devices were equipped with a one color pixelated screens and numeric keypads were the controls for mobile games. In the early 2000's mobile phones accessed the internet through WAP (Wireless Application Protocol) and soon after the devices were equipped with color screens. With the internet access, developers became more interested in mobile games and publishers began to license or port their games to mobile devices. [Wright 2008]

Today's mobile apps are mostly developed for smartphones and tablets with high resolution touchscreens. The touchscreen revolution started in 2007, when Apple launched the first iPhone. The first iPhone had WiFi, touchscreen, and a big battery. This allowed faster download times, bigger games and added new opportunities to game design and control. More importantly, however, the launch of the AppStore in 2008 changed the market completely, as it allowed people to customize their mobile phones by downloading apps which give customers new features. Modern tablets and smartphones have better performance levels than computers in the late 1990's. [Wright 2008]

Picture 1 compares the Nokia 6110, which was released in 1997, to the Samsung Note Edge, released in 2015. The differences are clear. New mobile phones have big touchscreens and can be used to do multiple functions, such browse the internet, take pictures, play games, listen to music and more. With the Nokia 6110 users could call and send text messages, and play Snake.



Picture 1. Nokia 6110 vs Samsung Note Edge

## 1.1 Business Problem and Objective of the Thesis

### 1.1.1 Business Problem

Vulpine Games is a startup mobile gaming company founded in May 2014 and it currently has 8 employees. The company has released 3 small project mobile games that can be downloaded from Google Play, Apple Appstore and Windows Phone Marketplace.

Currently, Vulpine Games has a new ambitious game under development named Last Planets. In order to take the development project to the next level, the company needs to attract further external financing. To do this the company needs to convince the financial community of the customer sales potential of Last Planets. The characteristics and features of Last Planets makes it a unique product in the mobile game market, so proving that these characteristics and features will produce more sales is crucial.

### 1.1.2 Objective

Accordingly the objective of this thesis is to estimate and concretize the end customer sales potential of the multiplayer and social features. The thesis first investigates key figures of successful games from numerous sources. These games are similar to the game Vulpine Games is developing. The aim is to gather information of about 8 top grossing games on the iOS platform in the United States.

By managing to prove the sales potential of social and multiplayer features in their game, Vulpine Games has a better chance to attract external financing, because these features are at the core of the product. Vulpine Games can use this thesis to show investors the benefit of social games and features. These new characteristics are social and multiplayer features, which affect the retention and enjoyability of a mobile game. Finding an answer to the research question can improve the chances of Vulpine Games finding funding. The research question is as follows:

How do social and multiplayer features affect the sales potential of Last Planets?

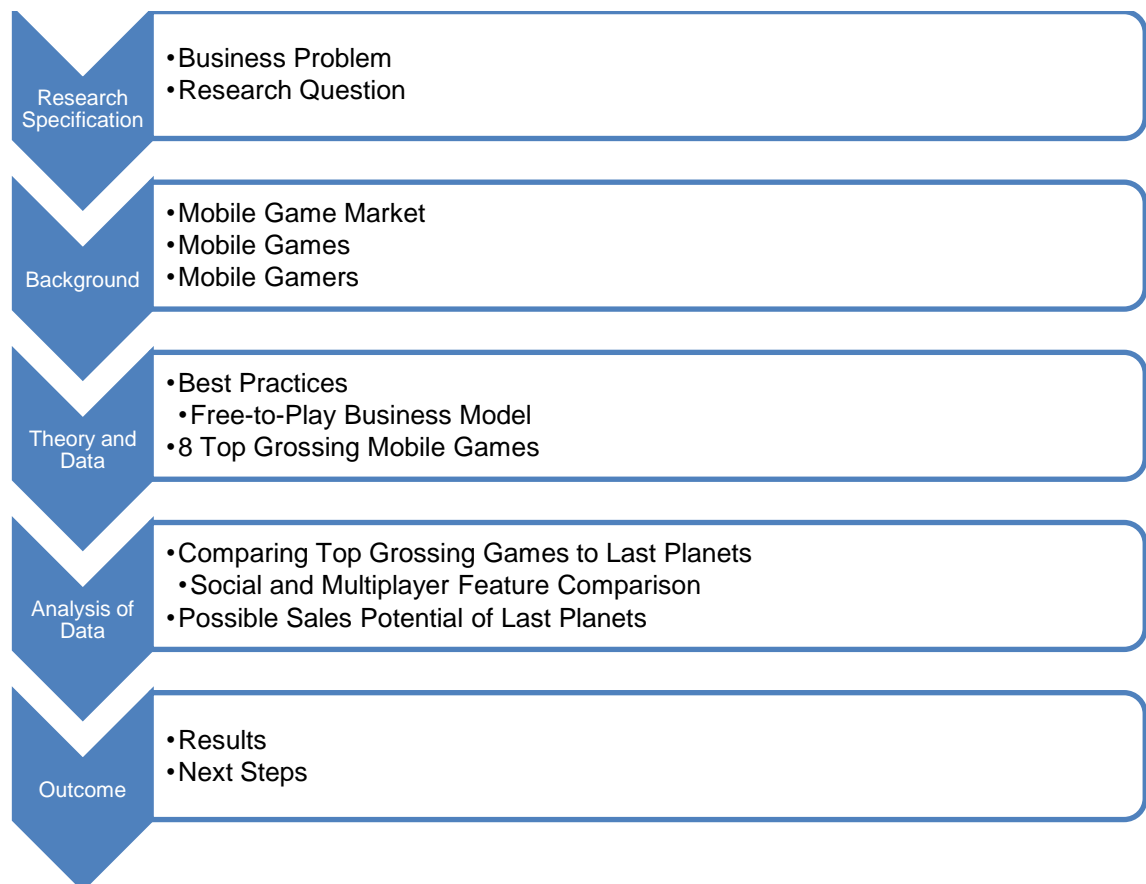
### 1.1.3 Expected Outcome of the Thesis

The expected outcome of the thesis is to find practical evidence of the importance of social and multiplayer features in assisting the sales success of Last Planets. If the results of this thesis are positive, Vulpine Games can then use the results of this thesis to prove to investors that the social and multiplayer features affect the sales of Last Planets.



## 1.2 Research Process

This thesis starts by explaining the business problem and research question. The thesis uses quantitative research to try to find answers to the research question. The background data about the mobile game market, mobile games and mobile gamers give the reader extensive knowledge of the factors that affect a mobile game and its sales. The theory of free-to-play games and data of the eight top grossing games are introduced, and this data is then compared to that of Last Planets. Using the background data, the theory learned and data gathered from the top grossing games, results are concluded. Picture 2 is a block diagram of the research process of this thesis. Picture 2 introduces the logic behind how the thesis progresses, and what topics the thesis introduces



Picture 2. Research Process block diagram

This thesis was conducted using multiple sources, consisting of internet articles, databases and books. The background data and other data for the thesis were found from numerous sources.

## **2 Background on Mobile Game Market, Mobile Games & Mobile Gamers**

### **2.1 Mobile Game and Device Market**

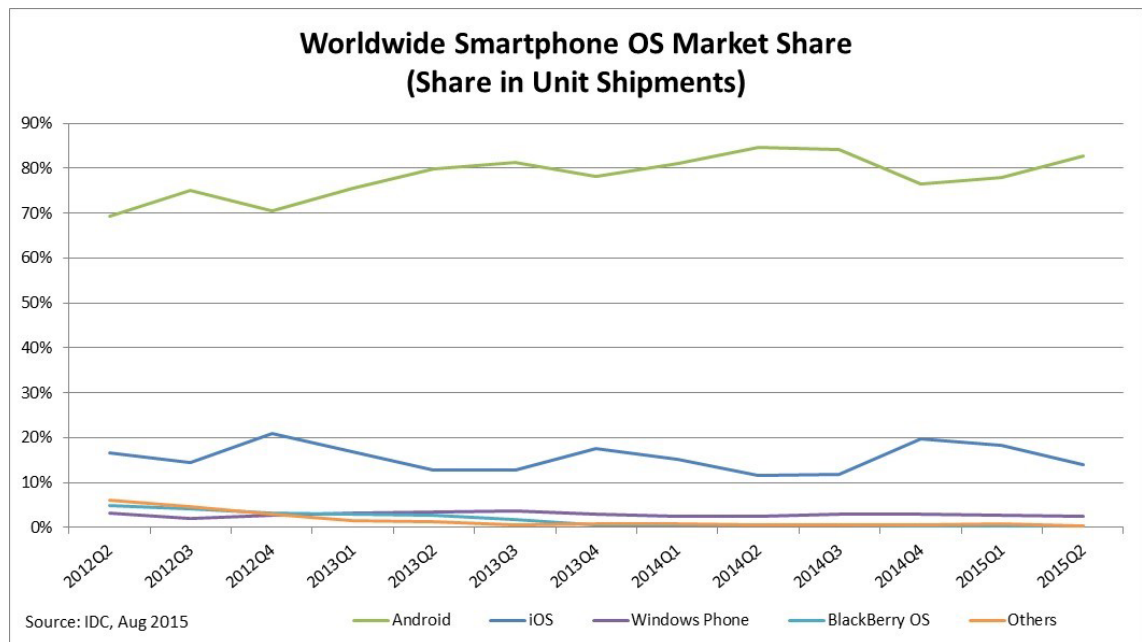
#### **Mobile Platform**

A mobile platform refers to the operating system of a mobile device. A mobile device is made out of hardware, and runs an operating system. Operating systems again run programs, or apps as everyone calls them on mobile devices.

The two biggest operating systems in mobile devices are Apple's iOS and Google's Android. Apple iOS is a closed mobile operating system that is only used by Apple's own mobile products and distributed only by Apple. These products include the iPhone, iPad, iPod Touch, Apple Watch and Apple TV. The current release of iOS is 9.0, and major new versions are released every year. Apples iOS currently has an 11.7% share of the worldwide smartphone operating system market. The AppStore is Apple's digital distribution platform that only Apple products can use. The AppStore has over 1.3 million apps available to consumers and over 75 billion apps have been downloaded through the AppStore since its launch in 2008. [IDC 2015]

Android, the biggest mobile phone operating system is based on Linux, and is developed by Google. Android was launched in September 2008 and by the fourth quarter of 2010 Android had grown its market share to 33%, making it the world's most popular smartphone platform. Android is designed for touchscreen devices, and is an open source mobile operating system, even though most Android devices come with closed source software made by the device manufacturers. Google profits by licensing the Android trademark to these manufacturers. The biggest manufacturers include Samsung, LG, Motorola, and HTC. The latest release of Android is 6.0 "Marshmallow", which was released in October 2015. In January 2015, Android had a worldwide smartphone market share of 84.4% which means that Android and iOS together hold 96.1% of the market. The most commonly used app marketplace for Android is Google

Play and it has almost 1.5 million downloadable apps. Other marketplaces can also be used by Android devices, and they are very popular in Asia. [IDC 2015]



Graph 1. Worldwide Smartphone OS Market Share (IDC 2015)

Graph 1 introduces the worldwide smartphone operating system market shares. It is clear that Android and iOS are the two biggest operating systems today. AppStore and Google Play services have cut out publishers and mobile operators from the mobile app supply chain, which makes apps and games cheaper to develop. These digital distribution platforms have truly connected the developer and consumer, and offer consumers a huge variety of apps to choose from. Anyone can develop an app and publish it on Google Play or Appstore with minimum effort.

### Device Market

The global device market consists of PCs (Personal Computers), which include both desk-based computers and notebooks, ultramobiles, tablets, mobile phones and other hybrids or clamshells. Mobile phones include both regular cell phones and smartphones. The amount of tablet devices sold has passed the amount of PCs sold worldwide, and mobile phones are sold almost 6 times more than PCs worldwide. With smartphones shipments estimated to rise to 1,3-1,6 billion devices shipped in 2015,

and with more and more smartphone devices being equipped with larger screens (5"+), the mobile game market continues to grow. [GFK 2015]

Picture 3 introduces worldwide device shipments and expected shipments from 2014 to 2016. According to Picture 3, tablets will sell more than traditional PCs, and mobile phones selling almost 2 billion units in 2016.

**Table 1**

Worldwide Device Shipments by Segment, 2014-2016 (Millions of Units)

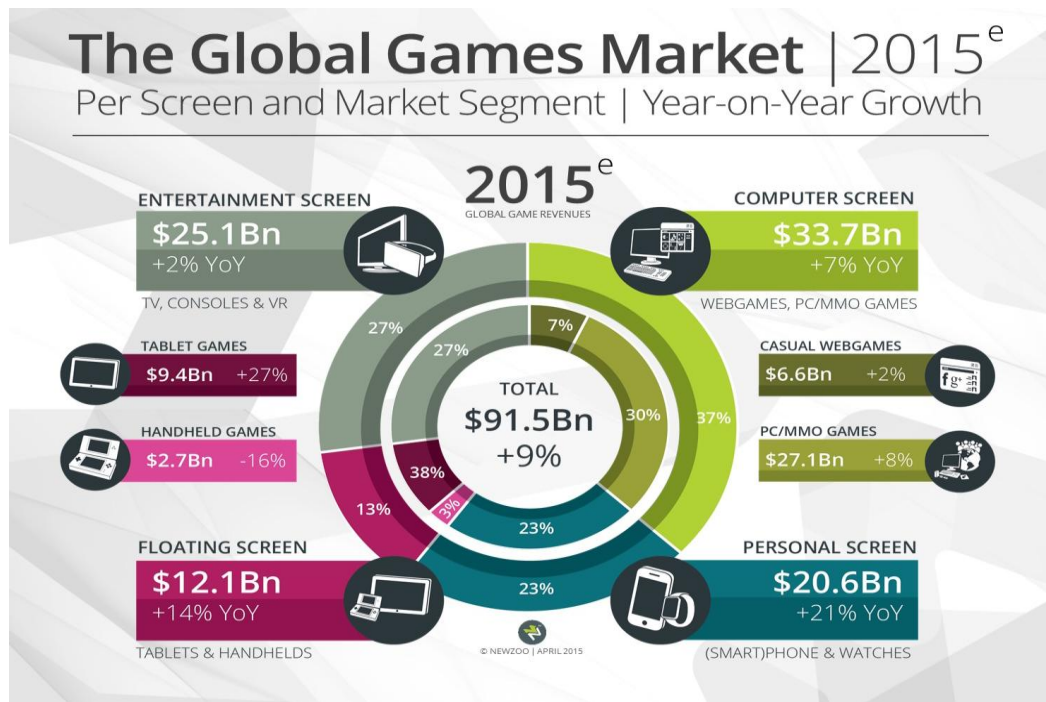
<b>Device Type</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Traditional PCs (Desk-Based and Notebook)	279	259	248
Ultramobile Premium	39	62	85
<b>PC Market Total</b>	<b>318</b>	<b>321</b>	<b>333</b>
Tablets	216	233	259
Mobile Phones	1,838	1,906	1,969
Other Hybrids/Clamshells	6	9	11
<b>Total</b>	<b>2,378</b>	<b>2,470</b>	<b>2,572</b>

Source: Gartner (January 2015)

Picture 3. Worldwide Device Shipments by Segment, 2014-2016 (Millions of Units)

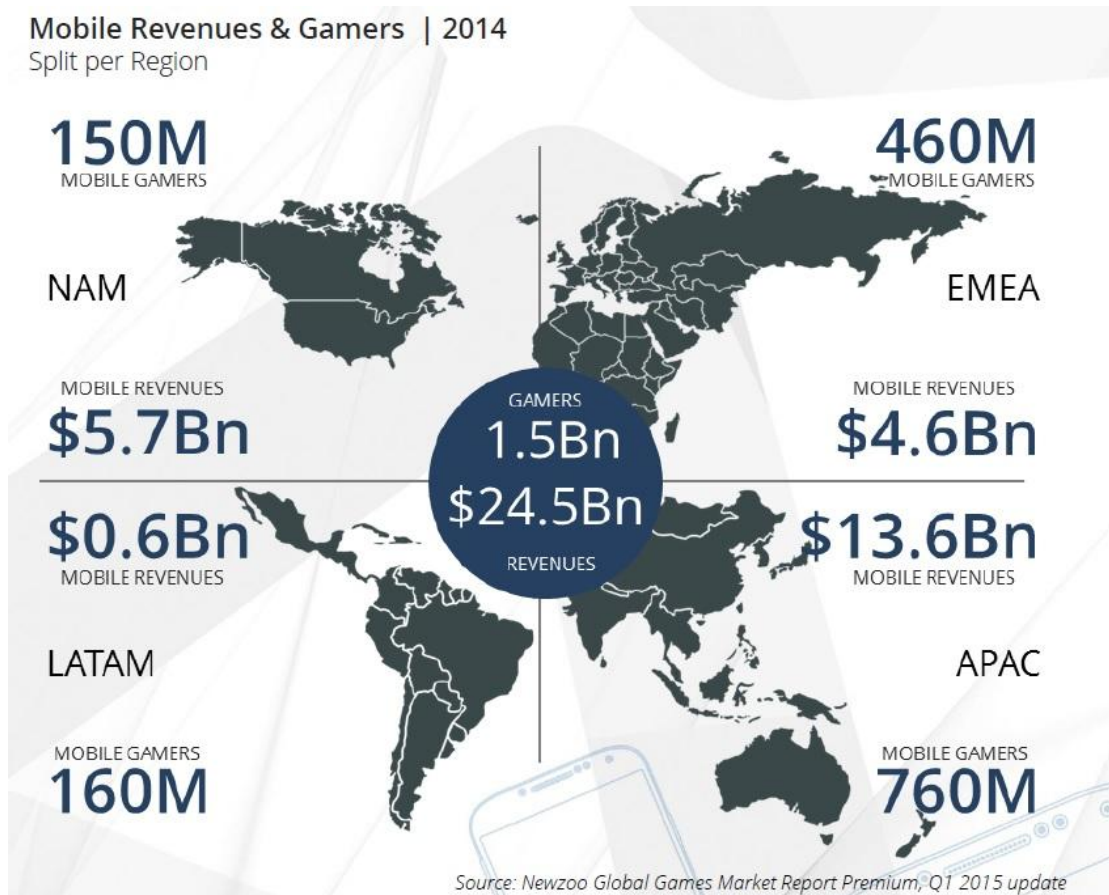
### Mobile Game Market

Vulpine Games has decided to develop games for tablet and smartphones. This is a conscious decision by the company, because the mobile gaming market has been rapidly growing since the launch of online marketplaces. Picture 4 shows the global games market revenues in 2015 according to device. According to Picture 4, the growth of the mobile gaming market has been extremely positive, as device sales of tablets and smartphones continue to increase, and the year-to-year growth of the gaming market this year is +27% for tablets and +21% for smartphones. This will grow the total tablet and smart phone gaming market revenue for 2015 to 30 billion USD. It is also expected that the mobile gaming market will surpass the console gaming market in revenue this year. [Newzoo 2015]



Picture 4. The Global Games Market (Newzoo 2015)

Mobile gaming continues to grow and revenues rise across all regions. Picture 5 displays the mobile game revenues according to region. Picture 5 indicates that there are 1,5 billion mobile gamers that account to \$24,5 billion in revenues in quarter 1 in 2015. According to Picture 5, the Asian markets are the biggest, followed by the North American market. In the Western markets the number of paying gamers and time spent playing increases revenue, while in the emerging markets smartphone penetration, online connectivity and the development of 3G and 4G has fueled huge growth in revenue. The Chinese mobile game market is on its way to become the largest in the world by next year. China will pass the US, with the increasing amount of smartphone users and paying gamers as the Chinese market becomes wealthier. Already in 2014 there were 383 million Chinese mobile gamers, while the US only had 137 million. The US still has the highest average revenue per paying gamer which still makes it the most important market in the West. [Newzoo 2015]



Picture 5. Mobile Revenues & Gamers 2014 (Newzoo 2015)

In mature Western markets the battle between iOS and Android seems to be leaning towards Android, as Android smartphones generate more revenue than the iPhone and Android devices have a larger market share. Tablet gaming however keeps iOS ahead of Android, because Android tablets have very fragmented device specifications and share lower average spending. This is why this thesis will use the iPhone US mobile game market as its main reference, as it reflects the market Vulpine Games want to penetrate with Last Planets.

Competition for a share of the mobile game market is fierce. Big development studios develop their own games, port their previous console or PC games, publish games for other studios, or buy a mobile game studio to penetrate the mobile game market. For example Bethesda Softworks released the mobile game Fallout Shelter as a marketing trick to grow hype for their upcoming huge multi-platform launch Fallout 4. Fallout Shelter made the top grossing list when released and generated millions in profit for the developers. EA Games, one of the biggest game companies in the world, port a lot of



their games to mobile, for example Sims, SimCity and sport games like MADDEN NFL. There are a few mobile game developers that have become huge players in the gaming market, such as Supercell and King. Supercell has only released 3 games, and all of them are in the top 20 grossing games on iOS. King is known for the extremely popular match 3 game family Saga, and the most popular being Candy Crush Saga. On top of the big players there are thousands of independent studios and start-ups creating games for mobile devices, and acquiring players and market share is extremely hard without proper contacts and marketing budget. Independent game development studios have to innovate and create a game that will be noticed, but without marketing and advertising the game might never acquire enough users to be profitable. The top ten grossing games get the major portion of the revenues in mobile games, and 80% of apps in app stores do not get any downloads at all. For Vulpine Games it is essential to break into the top 100 lists to make sure Last Planets has a possibility to succeed. [Brightman 2015]

## 2.2 Mobile Games

Mobile games have evolved immensely in the past 7 years since the launch of the Appstore. The huge size and growth of mobile game revenues and market has opened the eyes of game developers to see the huge potential in mobile games. Many big game companies from console and PC markets have expanded into mobile games and hundreds of startups have been formed to create games exclusively for mobile and touch devices.



Picture 6. Vain Glory vs. Flappy Bird

Mobile games have traditionally been simple games that people play few times a day for a couple minutes while waiting for the bus. With devices getting more and more powerful every year, mobile game developers can now create and innovate more, and not only develop simple 2d games. Developers can now make games that look better, engage players longer, and that let players play against each other. There is now a greater variety of games that players can download to their mobile devices. Players can play simple games that require only one tap to play, or more complex strategy or MOBA games. Both types of games have a place in the market and have succeeded in the past. Picture 6 shows two very different mobile games, a complex competitive multiplayer online battle arena game called Vain Glory, and a one touch control game called Flappy Bird. Both of these games have their own demographic that they appeal to.

### Mobile Game Business Models

To create a successful mobile game Vulpine Games has to build a sustainable business model for Last Planets. There are different business models that have been used in the past and that are currently being used on mobile games, with freemium being the most successful up-to-date. There are many different business models that can be used to make money from mobile games, and developers have to know which business model works best with their type of mobile game. Game developers might have different end goals with their games, which affect what type of business model they might want to implement in their game. It is crucial to decide the business model before development. The game has to be wrapped around the business model to create a good mobile game, and it will have an impact on the design and playability of the game. [Narinen 2014]

There are two different types of mobile game business models, freemium and premium games. Freemium games can use different monetization strategies, such as in-app advertising and in-app purchases. Premium games can use subscriptions or single purchase to play. The freemium business model is called free-to-play, and premium pay-to-play. Free-to-play games are free to download and play, and earn money from advertisements, in-app purchases or by charging the player for more features. Pay-to-play games charge players once to download the game, or by subscription which charges weekly/monthly/yearly depending on the game. [Localytics 2014]



The free-to-play business models have been the most successful, and all the top grossing games today are free-to-play. More accurately, games with in-app purchases generate almost all of the revenue in the market. Top grossing games mostly use the in-app purchase monetization model, and some games use both in-app advertising and in-app purchases. Using only in-app advertising has become unpopular because the amount of players needed to make a profit and keep a game development studio running is in the millions. [Localytics 2014]



Picture 7. Angry Bird level selection menu

Before the potential of in-app purchases was realized in the western markets, games charged players to unlock more features or levels in the game. A Finnish mobile game company called Rovio is known for using this monetization method in their hit game Angry Birds. Picture 7 shows the selection menu of Angry Birds. In Picture 7 the first 5 levels are free, and the rest have to be unlocked by paying. Players get a taste of the game for free, but have to pay for additional features like more levels and power-ups for the game characters. In-app purchases however have proven to be more effective, and Rovio have had trouble changing their business model. [Localytics 2014]



Picture 8. Boom Beach in-app purchases

Free-to-play games have been more successful than pay-to-play games, because free-to-play games do not limit how much money players can use on in-app purchase. Picture 8 displays the in-app purchases available in Supercell's mobile game Boom Beach. Players can pay up to 100\$ in in-app purchases, and players can buy this as many times as they want. This means that one player can use anything from nothing to thousands of dollars on a mobile game. Pay-to-play games charge a certain amount to download the game, so pay-to-play games are usually single player games that are not updated or sustained. Top grossing games with in-app-purchases are frequently updated to keep players interested in the game for long periods of time. Free-to-play game developers have started thinking about games as a service for players. Players that play a game daily are more likely to buy in-app purchases. Free-to-play games are also easier to approach because players do not have to pay to try out the game. Subscriptions have been popular in multiplayer role-playing PC games, but have not been used in any popular mobile game.

### Mobile Game Design

The most downloaded and top grossing mobile games have been specifically designed to be played on mobile and touch devices. To work well on mobile platforms, mobile

games have to be designed correctly, and take into consideration the limitations of the platform and touch devices. The user interface, game flow, controls, gameplay and game mechanics have to be fairly simple to work well on mobile devices, as players have a lot less to work with. Compared to more complex game platforms such as consoles or PCs, mobile and touch platforms have a much smaller screen and lack physical controls. Game developers have to overcome these obstacles by innovating, and adding new gestures that players use to play mobile games. [Narinen 2014]

Mobile games usually have a very simple and easy to understand user interface. The user interface icons are commonly found in the sides and corners of the screen area, giving more visibility and control area to the player to interact with. Picture 9 is a screenshot from Supercells mobile game Hay Day. The user interface in Picture 9 is colorful and clear, and placed in the sides of the play area. The main gameplay elements and content in mobile games are seen in the middle of the screen, and giving the player more space to interact with the game is crucial. Mobile games should be easy to learn and play, and mobile games should let players execute important actions in the game every time they play the game. [Fields 2014: 44]



Picture 9. Example of mobile game UI, Hay Day

Many successful mobile games please everyone, from hardcore players who play multiple hours every day, to casual players who play once a day for 2 minutes. Mobile

games should be simple enough for everyone to enjoy, but possess complex mechanics to hook players to come back for a very long time. This does not mean that all games have to be designed to please everyone. There are many mobile games that are targeted for a niche, and are successful in their own market space.

The tutorial of a mobile game should be designed to be intuitive and effortless for the player. If a player downloads a free-to-play game to try it out, they want to get to the action as fast as possible. If a player feels frustrated during the tutorial, it is quite certain that the player will not continue playing the game. This means that designers have to get rid of long texts and teach players the mechanics of the game effortlessly. The tutorial should teach the player the core mechanics of the game. However, it is not required to teach the player everything about the game during the first play session. Mobile game developers have learned to teach the mechanics of the game to players as the players progress in the game. For example, when a player encounters a new feature in the game, the game will quickly teach the player how to use the new feature. This can happen at any point in the game, even to players who have played the game for 6 months. [Narinen 2014]

Making the game fun is the most important aspect in game design, because this will keep players coming back to the game. There are many design aspects that make players return to the game. Leaderboards and high score game mechanics continue to bring players back to the game. Competition that these mechanics drive can be used to get players to compete against friends or against themselves. Designing the in-game currency to be valuable enough so that players care about how much they have achieved in-game will make it harder for players to forget about the game. Other design decisions that will determine what type of players will play the game and how well it will succeed are; reward loops, limiting energy or turns, and making players care about what happens in a games "living" world.

While mobile games have to be designed to be fun, they also have to be profitable to the developer. Depending on what kind of monetization strategy the developer wants to use, the game will have to be designed to fit this strategy. As stated in the previous chapters, free-to-play games have been the most successful in the mobile game market. Free-to-play titles made 90% of the revenue on Apple App Store in 2014, which clearly indicated free-to-play is the strategy to use when creating a mobile game. Free-to-play games monetize with ads or by selling virtual goods in the game, so called in-



app purchases or microtransactions. These virtual goods can be progression enhancers, special items, cosmetic changes that do not effect gameplay in any way, or buying in-game virtual currency. Designing a free-to-play game to use the right in-app purchases for that specific game is very important for developers. [Grubb 2014]

### 2.3 Mobile Gamers

Mobile games have become available for everyone with a mobile device. In the U.S. there are over 200 million mobile device owners and 142 million of these are active gamers. This means that about 70% of mobile device owners play games. The majority of mobile gamers are over 18 years of age, with 39% of mobile players being over the age of 36. 56% of mobile gamers are female and 44% male. These numbers break the idea that a typical gamer is an underage male. Mobile games have proven that when gaming is made easy and fun, everyone can enjoy games. [Morris 2015]

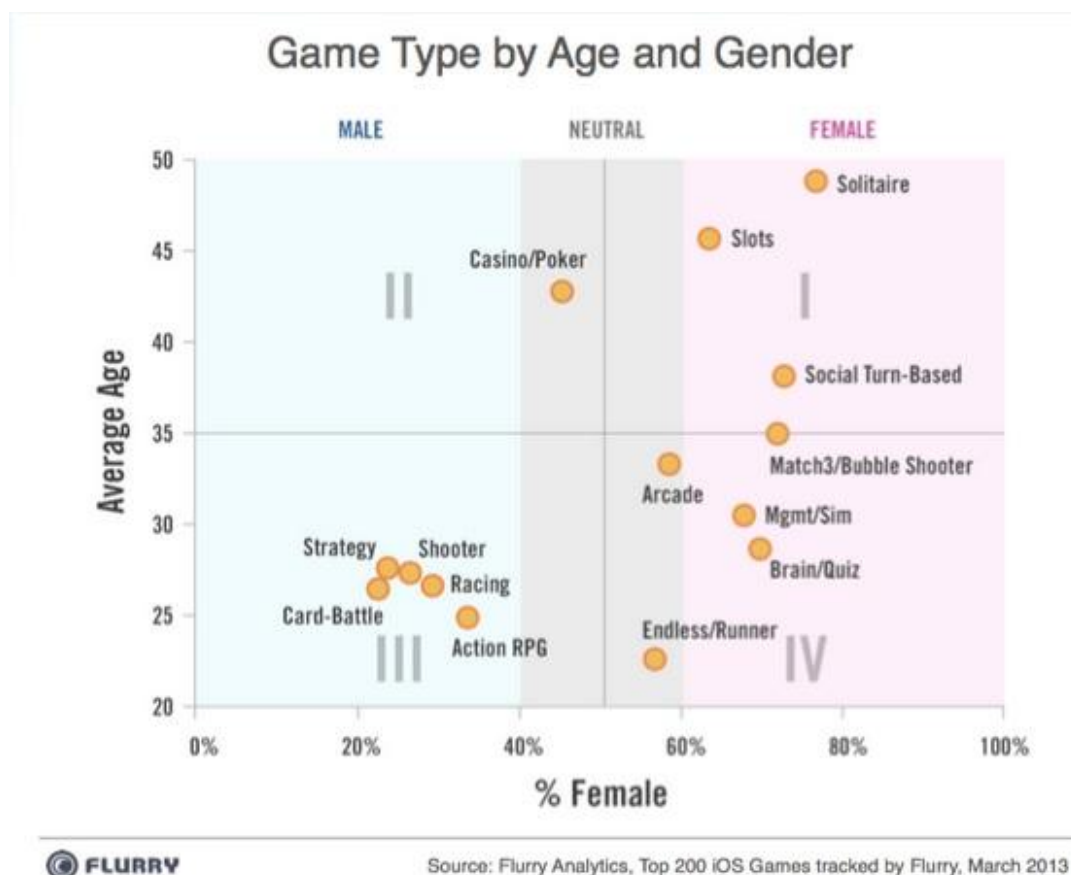


Figure 1. Game Type by Age and Gender (Apptopia 2013)

Male and female gamers prefer different types of games. Figure 1 shows the types of games different aged mobile gamers play according to gender. From Figure 1 we can deduct that female players like to play casual and non-competitive games, while male players prefer competitive player vs. player games. In the article "Who plays and who pays for mobile gaming" it is stated that female gamers account to 70% of non-paying gamers. This means that male gamers tend to use more money on mobile games than female gamers. It is also stated that 70% of the high spenders in mobile games are male. High spenders in free-to-play mobile games are called "whales", and these whales are the gamers that keep free-to-play games alive. [Morris 2015]

Out of all mobile gamers it is estimated that only 1,5% of players spend money in mobile games, and that 0,13% of players make up 62% of all mobile game revenues. This means that high spenders, or whales, generate 62% of the market. For developers this means that attracting paying players to their game is very important if they want to make a profit. Male and female gamers differ in what type of games they play, and how much they spend on mobile games. Different game types generate different amounts of revenue, and this is mostly effected by how attached players are to the game. Games that require competition and skill are usually games that players use more money on. In mobile games, engagement is measured by retention, and the retention and usage of different game types can be seen in Figure 2. Table 1 shows that strategy games have the best Day 1 retention, average revenue per user at day 60, and percent of spenders converted during first session. However, the percent of users converted to spenders is lower than other game types. [Takahashi 2015]

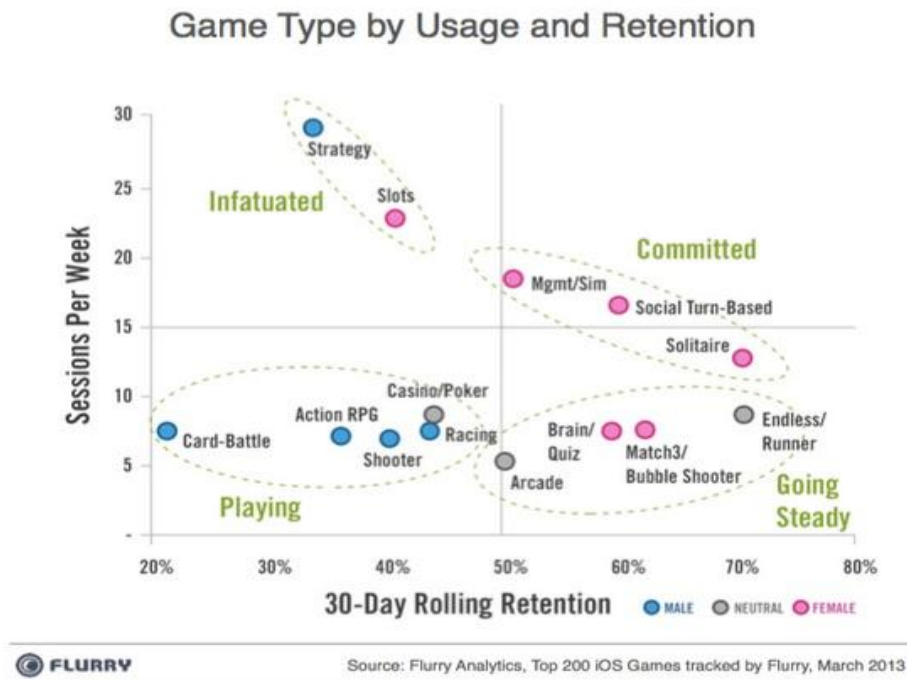


Figure 2. Game Type by Usage and Retention (Apptopia 2013)

According to the information shown, developers should concentrate in creating a game that attaches paying players, and according to Figures 1 and 2, and Table 1, the best game type to do this in would be strategy. Developers have to attract the correct mobile gamers to their game, and whom they believe to pay for the game. Developers would rather have 100 players that pay then 10 000 players that don't.

Genre	%Convert		%Convert To Spender	ARPU (@D60)	Minutes 1 <sup>st</sup> Session	%Spenders Convert During 1 <sup>st</sup> Session
	D1	D7				
1 Action	29%	8%	1.4%	\$1.40	24	36%
2 Strategy	30%	9%	1.3%	\$1.80	16	50%
3 Puzzle	27%	11%	1.5%	\$0.61	15	33%
4 Social Casino	24%	15%	1.6%	\$0.90	13	32%

Table 1. KPIs according to game type (Roseboom 2015)

### 3 Evaluation of Free-To-Play Mobile Game Sales Potential

#### 3.1 Theory of the Free-to-Play Business Model

This section will introduce the main concepts and terminology of the free-to-play business model and theory behind mobile game sales potential. The free-to-play business model has many concepts and indicators that have to be taken into consideration, and many factors affect how much revenue a mobile game generates. The free-to-play business model is primarily made out of three basic steps; acquisition, retention, and monetization. As seen in Figure 3 below, the figure is shaped like a funnel, which represents the decreasing amount of players that move through the funnel. Only some of the acquired players are retained, and even less of the retained players are monetized. For free-to-play games, using metrics and analytics to measure players and improve the game through the three steps is crucial for a mobile game to succeed. Using these indicators and metrics, different successful games and their features can be evaluated and measured. Using the results of the measurements, one can deduce how different features affect the sales potential of mobile games.

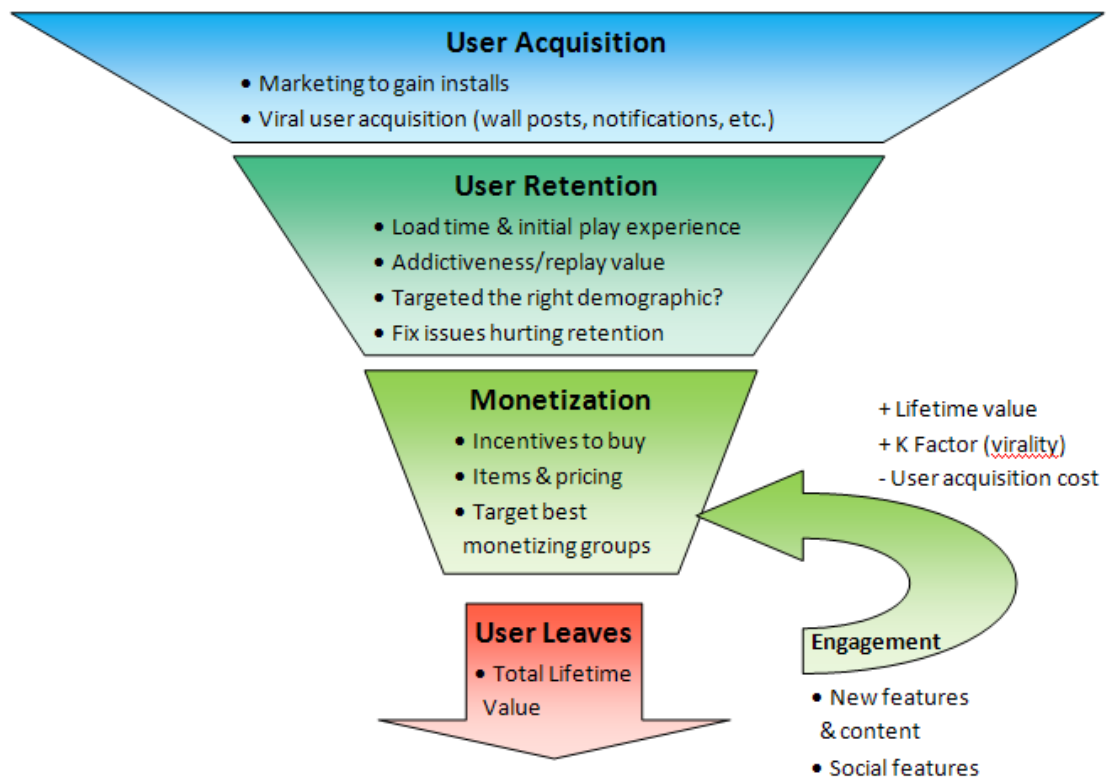


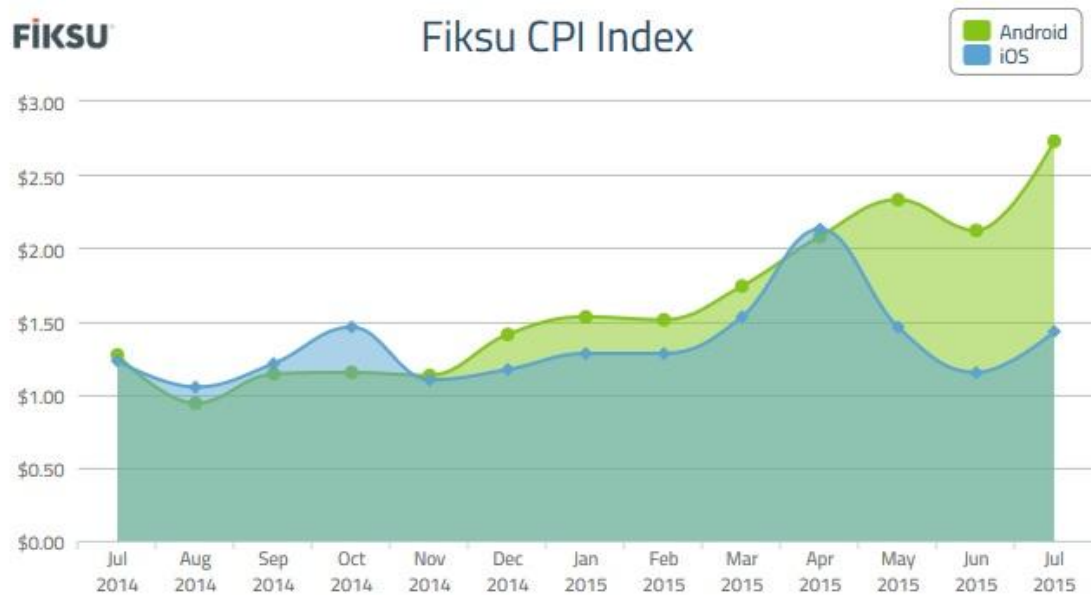
Figure 3. Free-to-Play Business Model Funnel (Social Times 2011)



## Acquisition

The first step in the free-to-play business model is player acquisition. When a mobile game development studio is about to launch a mobile game, they have to know how they will acquire players. Without players, the game will fail. Game developers have to market their game for players to know about the game. Big game studios use vast amounts of money in advertising their mobile games, such as Supercell did with their Superbowl advertisement, while some small independent game studios promote their games without using any money. Acquiring players has nothing to do with how fun the game is, it is only about how well the game is marketed to acquire players to play the game. One of the best ways to market a mobile game is to get "featured" in Apple's Appstore or in Google Play. This way all the players that enter these virtual stores to download games will see the featured games, and most likely try them out. [Lai 2015]

Acquisition can be measured using metrics and key performance indicators, or KPIs. Metrics and KPIs allow developers to improve their mobile game, if they know what to measure and how. In acquisition, developers have to know how much acquiring players costs for them, and how much money these players generate for them. This alone will tell if the mobile game is cost-efficient or not. **CPI** (Cost Per Install) is the figure that developers have to calculate to see how much one install costs for them. CPI only directly measures the cost per install attributed to advertising, so actually CPI ignores other marketing methods like promotions. CPI has been rising in the past years, meaning that developers have to use more money to get the same amount of new players into their game. According to Graph 2 by Fiksu, the average cost of a loyal player in 2011 was \$1. That cost has now risen to \$3 per loyal player. Loyal players are defined as players that open a game three times or more. High user acquisition costs have made developers concentrate on engaging and retaining players for longer periods, so that developers get a return on made investments. [Reyburn 2015]



Graph 2. Fiksu CPI Index (Fiksu 2015)

Another important KPI is the k-factor. The k-factor measures the viral growth of a game, so in short the virality of a game. Virality refers to the ways and the rate a game attracts new users. Virality is affected by many factors such as word-of-mouth, game type, art and theme of the game, and social aspects of the game. K-factor can be measured by multiplying the amount of players that one player exposes the game to, by the conversion rate of these players that are exposed to the game. For example if players expose 10 other players to a mobile game, and 2 of these exposed players downloaded the mobile game, the k-factor would be 2. When a k-factor of a game is greater than 1, it indicates an exponential growth, while a k-factor of less than 1 indicates exponential decline. Figure 4 displays with a clear diagram how virality works. As seen in Figure 4, only by sharing an app do other users find the app. The virality of a game is usually not enough to sustain a mobile game, which is why developers have to "buy" users by spending money on marketing. [Seghete 2015]

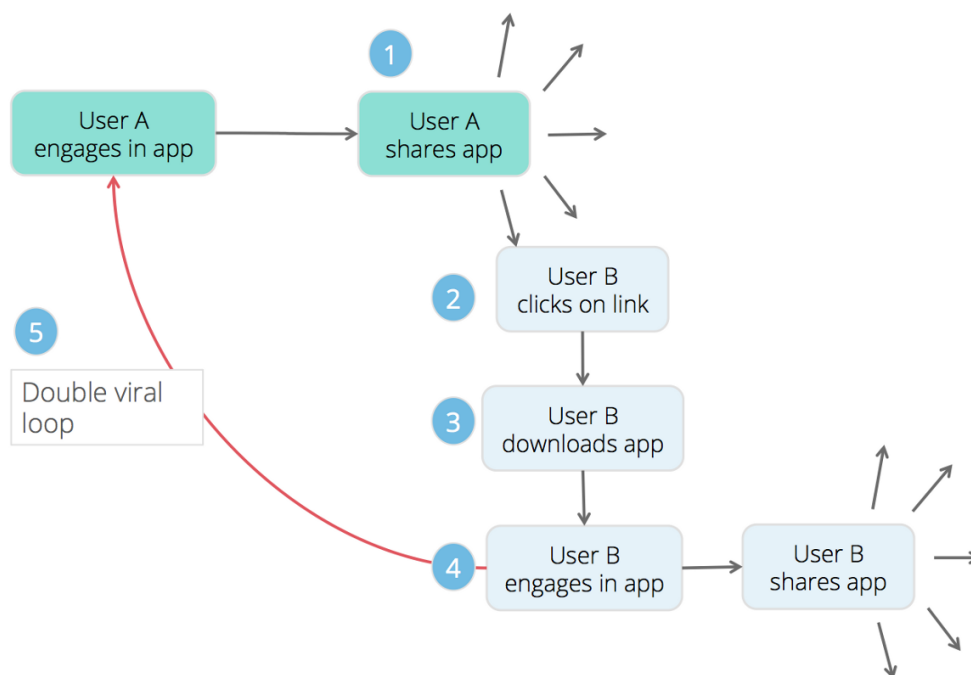


Figure 4. Virality diagram (Seghete 2015)

## Retention

Retention is the second step in the free-to-play business model funnel. After acquiring a player, a mobile game has to retain the player for a period of time to be successful. Retention refers to engagement, so mobile game developers want to keep players coming back to their game. To do this, players should have a reason to come back to the game. This means that the game has to motivate players to come back to the game. The design of the game has to feed player motivation to keep them coming back. Different types of games use different retention methods to keep players engaged in the game for long periods of time.

Player retention measures how many players return to the game after a certain amount of time after their first play session. The longer a player plays the game, the more likely they are to buy in-app purchases. Retention is thought of being the most important KPI in free-to-play, because it indicates how fun and engaging the game is. Retention can be measured using metrics, such as **Retention rate**, **Churn rate** and **Duration**. Retention rate is the calculated the percentage of players that return to the game after a specific amount of time. Retention rate can be calculated for any duration since the first play session. In mobile games the most common retention rates are day 1, day 7, and

day 30 retention rates. For example if 100 players played the game a month ago, and 50 of those players played the game today, day 30 retention would be 50%. The minimum bar across all game genres for retention rates are 40/20/10% for 1/7/28 day retention. Very successful mobile games have day 1 retention rates of 50% and day 7 retention rates of 30%. [Xicota 2014]

Player retention can also be measured by churn rate. Churn rate is the number of players, in percentage, that did not return to the game after a certain amount of time. For example, if 80% of the players returned after day 1, the churn rate is 20%. Simply, the churn rate is calculated 1 minus the retention rate in percentage. Another retention metric, duration, is the average time that players play the game. Using duration developers can easily find out how long the average lifespan of a player is in their game. [Xicota 2014]

For the purposes of this thesis, retention is the most important KPI, because retention will show if players will find Last Planets more engaging and fun as a result of the social and multiplayer features in the game. If these features generate better retention rates, they will also generate more in-app purchases, if the correct monetization methods have been implemented.

### Monetization

The third step in the free-to-play business model is monetization. Users have to be monetized for the free-to-play business model funnel to work. Players are monetized through in-app purchases and/or advertisements. In-app purchases are most commonly used to progress through the game faster, or to stand-out from other players inside the game. As stated in the previous chapter, only a very small percentage of players pay in free-to-play games. Retaining players will contribute to the monetization of players, because active and committed players are more likely to buy in-app purchases.

Monetization can be measured using KPIs such as **Conversion rate**, **Average revenue per user (ARPU)**, **Average revenue per paying user (ARPPU)**, and **Lifetime value (LTV)**. The conversion rate indicates how many players are converted into paying players out of all the players in a game. The higher the conversion rate is, the better it is for the developer. As stated in previous chapters, different game types attract dif-

ferent types of players, and this directly affects the conversion rate of a mobile game. It is normal in free-to-play games to have conversion rates of only 2-5%. [Lovell 2015]

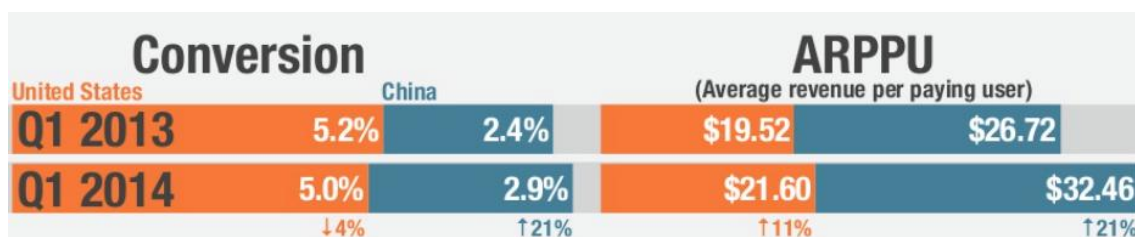


Figure 5. Conversion and ARPPU, United States compared to China (Pearce 2014)

ARPU can be easily calculated by taking the total revenue during a certain time period and dividing it by the total amount of players during that time period. This will give the average revenue per user, and it tells the average amount of revenue a developer can expect from a player. ARPPU is calculated the same way, but the revenue from a certain time interval is divided by the total amount of players that paid during that time. ARPPU will generally be a lot higher than ARPU because most of the players in free-to-play game do not use any money in the game. ARPPU displays how much money paying users on average pay. Figure 5 compares the conversion rates and ARPPU of mobile players in the United States to China in 2013 and 2014. Figure 5 indicates that conversion rates are better in the US, but average revenue is better in China.

Lifetime value is the total amount of money developers expect to receive from a player during the entire relationship. For example if a player plays a game for 12 months and pays 2€ each month, the LTV for that player is 24€. LTV is usually compared to the cost per install of a player to find out if the game is profitable or not. Again, the longer a game can engage players, the more a player will pay. [Xicota 2014]

### 3.2 Top Grossing Mobile Games in the United States on the iOS Platform

#### Game of War: Fire Age

The top grossing game in October 2015 in the United States on the iOS platform is Game of War: Fire Age. Game of War is a free-top-play massively multiplayer online (MMO) strategy game released in 2013 and it is available for both iOS and Android. The game was developed by Machine Zone, a mobile game development company based in the United States.

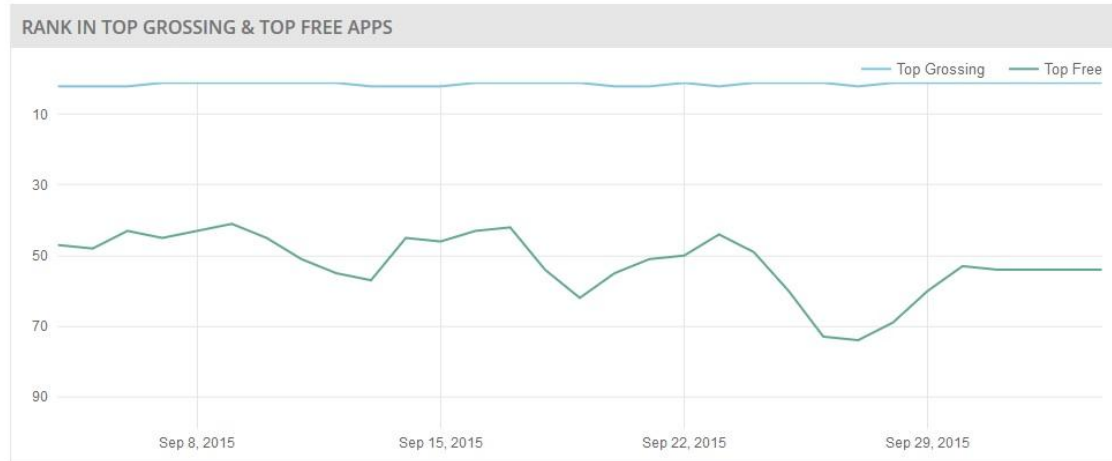


Picture 10. Game Of War icon

Game of War is the top grossing mobile game on the iOS in the United States in October 2015. The game is not critically acclaimed (67/100 in Metacritic), and it has been criticized for its aggressive style of seeking payments, a cluttered UI with huge amounts of ads and incomprehensible gameplay elements. The reason behind the success of Game of War is how the game brings the massively multiplayer aspect to mobile. Game of War has a automatic translation engine that allows everyone in the game to communicate and work together in alliances. All the players in the game are in the same game world, and the players can create alliances that can join different kingdoms, and these kingdoms have one player that is the king. Playing with other players and against other players has made Game of War extremely successful. Players pay for skipping waiting timers and to buy more resources. When there is a real time war inside the game where players feel social pressure to win, players seem to be more open to buying in-app purchases. According to Graph 3, Game of War generates over 1,4 million dollars daily, with 1,35 million daily active users in the United States on iOS alone. This means that the daily average revenue per user is over 1\$. [Tassi 2015]



RANKED **#1** on Top Grossing Games & **#54** on Top Free Games - Oct. 4, 2015



Graph 3. Game of War data (Think Gaming 2015)

Machine Zone has used huge sums of money on advertisements and user acquisition, approximately 40 million dollars in 2014. Game of War: Fire Age does not have as many daily active users as other top mobile games. However, Game of War has managed to retain many of the most important users, which are the paying ones.

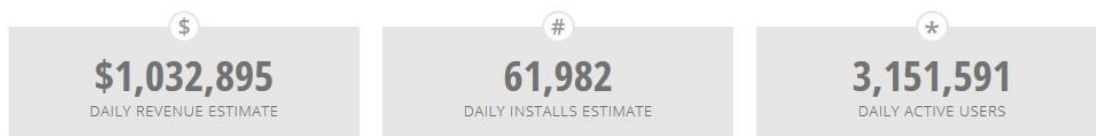
### Clash of Clans

Clash of Clans, the top grossing mobile game of all time, was released in August 2012 and is currently available for both iOS and Android. Clash of Clans was developed and published by Supercell, a Finnish mobile game company based in Helsinki.

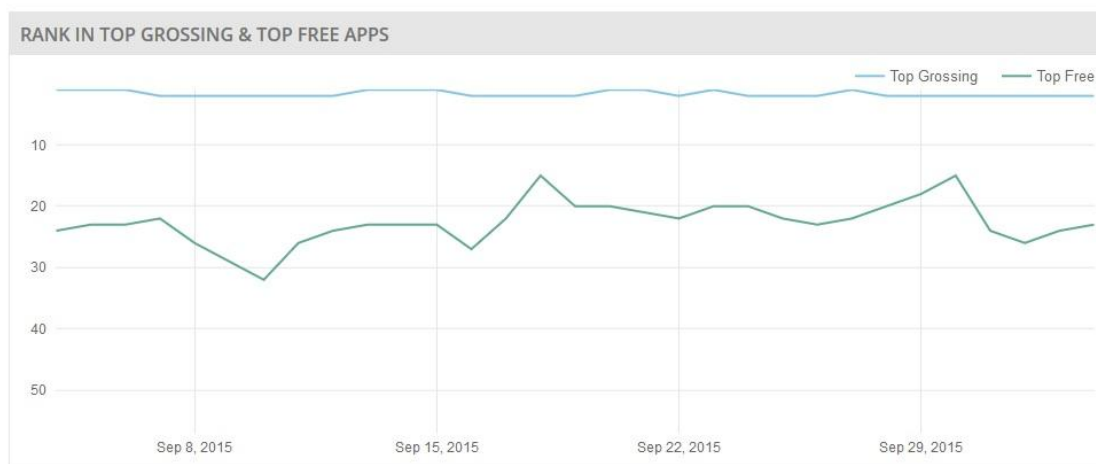


In October 2015 Clash of Clans was the second highest grossing game in the United States on iOS. Clash of Clans is a free-to-play online multiplayer strategy game where players can build and expand their own village, attack other players' villages, create and join clans, and participate in clan wars. Clash of Clans has a score of 74/100 on Metacritic, which is a mediocre score for such a successful game. Clash of Clans is a very well-made game with elegant user interface, smooth gameplay, colorful and memorable characters, and a subtle monetization

strategy. Clash of Clans also offers communication through a simple chat system, where players can talk with other players and clan members. The competitive multiplayer and social aspect of Clash of Clans is what has kept the game in the top grossing charts for almost every day since its launch in 2012.



RANKED **#2** on Top Grossing Games & **#23** on Top Free Games - Oct. 4, 2015



Graph 4. Clash of Clans data (Think Gaming 2015)

In October 2015 Clash of Clans has over 3,1 million daily active users in the United States with daily revenues of over 1 million on the iOS platform. This means that the daily average revenue per user is 0,33\$. The main demographic of strategy games are male gamers over the age of 10, as seen in Figure 6. As stated in the previous section of this thesis, male gamers are more prone to pay for mobile games, and paying male gamers enjoy competitive games.



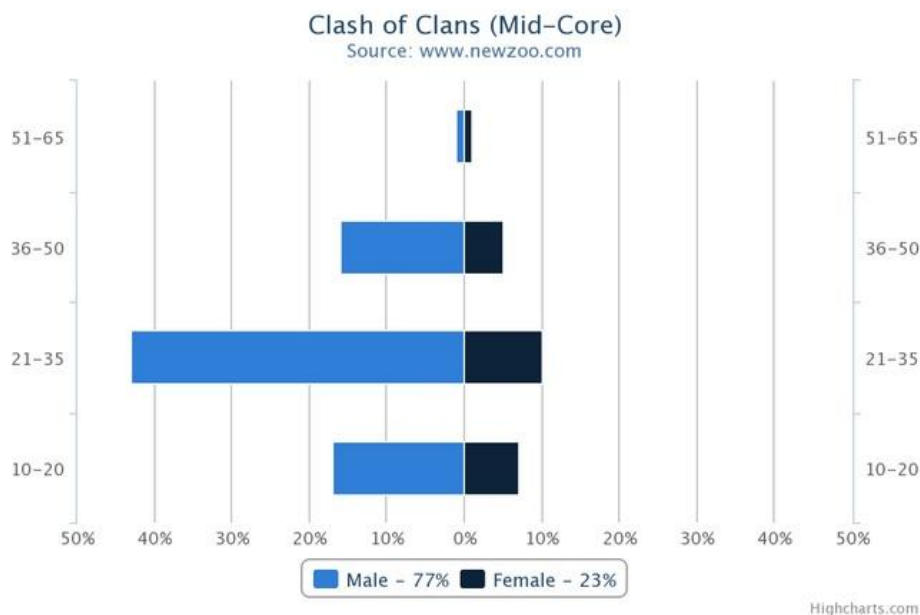


Figure 6. Clash of Clans Demograph (Mason 2013)

### Candy Crush Saga

Candy Crush Saga is a free-to-play match-three puzzle game published by social game company King. A social game company refers to social media platforms such as Facebook. King published Candy Crush for Facebook in April 2012, and later in November 2012 for mobile platforms.

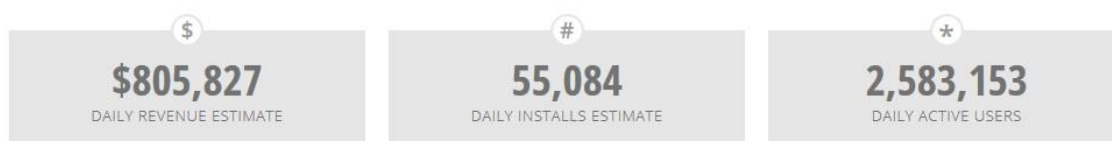


Picture 12. Candy Crush icon

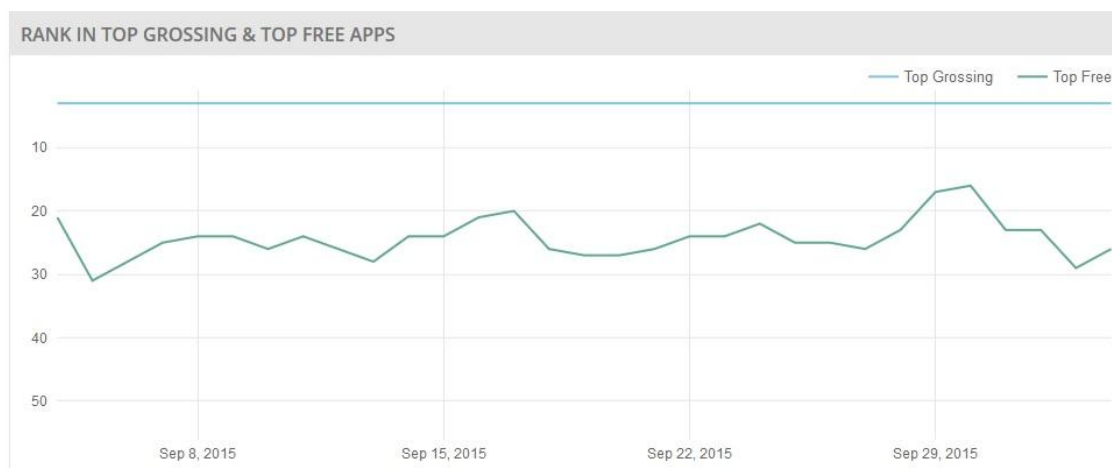
Candy Crush is a single player puzzle game where players have to match the same color candies to complete a level and advance to the next level. Different levels have different objectives the players have to complete, such as gathering a certain amount of points, create special candies or destroy a certain amount of a specific candy. Candy Crush Saga is frequently updated, and in October 2015 the game has 879 levels. Players can link the game with their Facebook profile, which allows players to see their Facebook friends level scores and progression in Candy Crush. The level friend leaderboard is the only social feature Candy Crush Saga has, because players cannot play against each other.

Candy Crush Saga is the second most grossing mobile game ever, after Clash of Clans, according to app marketing data platform AppAnnie. Candy Crush grossed huge

revenues after launch in 2012 and 2013, after which revenues have kept dropping at a steady pace. In the first 18 months Candy Crush grossed 2,37 billion dollars, with the peak being the third quarter of 2013 with 551 million dollars in revenue. Quarterly revenues then dropped to 264 million in the last quarter of 2014. In 2014 King was reported to have 356 million unique monthly users playing one or more of its games. Out of these 356 million monthly users 8,3 million users, or 2,3%, used money on Kings games. These paying users had a monthly average spending of 23,42\$, which is 0,78\$ daily. [Craig 2015]



RANKED **#3** on Top Grossing Games & **#26** on Top Free Games - Oct. 4, 2015



Graph 5. Candy Crush data (Think Gaming 2015)

On the iOS platform in October 2015, Candy Crush Saga was the third highest grossing game in the United States. Candy Crush had almost 2,6 million daily active users and 55 thousand daily new downloads. According to Graph 5, the daily average revenue per user was 0,31\$. Candy Crush Saga has more female players than male players, as seen in Figure 7. This makes the target audience of Candy Crush Saga a lot bigger than that of strategy games. Casual games have a wider range of players, but the average revenue per user will drop because a bigger percentage of players will never pay. When comparing two very successful and top grossing mobile games, Clash of Clans and Candy Crush, the different types of player bases can clearly be seen. Clash of Clans is mostly played by men under 35, and Candy Crush has more

female players in all age groups. Clash of Clans is a strategy game, while Candy Crush is a casual game.

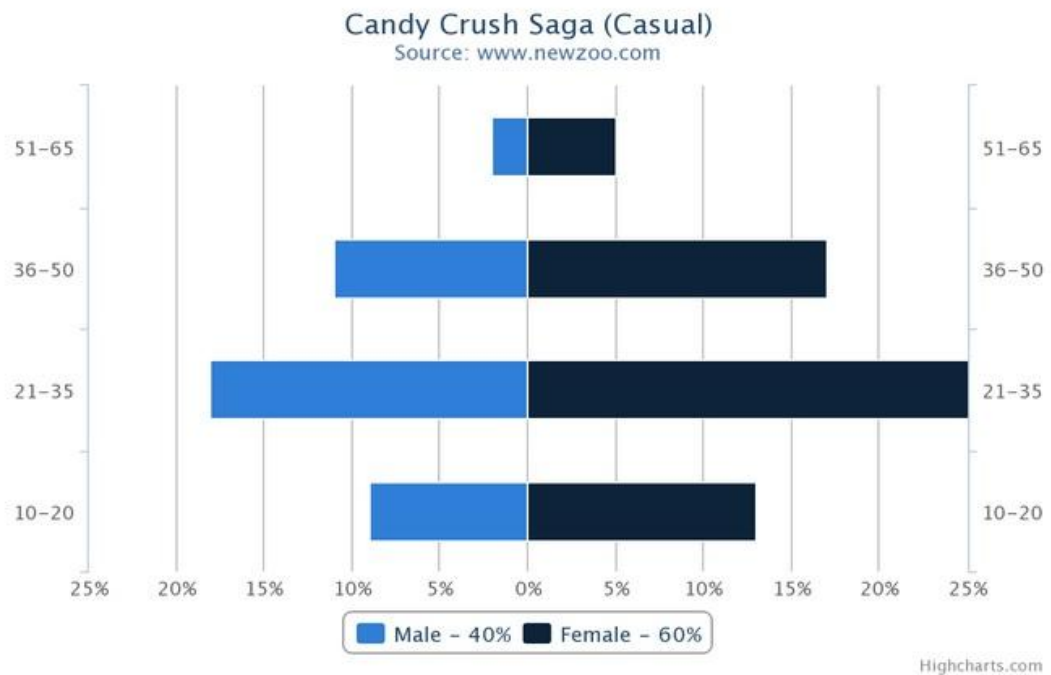


Figure 7. Candy Crush Demograph (Mason 2013)

### Big Fish Casino

Big Fish Casino is a free-to-play social casino game that can be played on mobile platforms and Facebook. Developed by Big Fish, a casual gaming company based in Seattle USA, Big Fish Casino was released in August 2012 as a relaunch of Card Ace: Casino. Card Ace: Casino was a game made by Self Aware Studios, a game company that was bought by Big Fish in March 2012.



Picture 13. Big Fish Casino icon



Graph 6. Big Fish Casino data (Think Gaming 2015)

In Big Fish Casino players can play casino games, such as slots, Blackjack, Texas Hold'em, Roulette, Word Ace, and Craps. Players gamble in-game chips on the different casino games, and by winning they can earn more chips. Chips cannot however be transferred into real money, so Big Fish Casino is a virtual casino. Gold is the in-game currency and it can be bought with in-app purchases, and players can also purchase more chips, gifts, and bonuses with gold. The game gives players a certain amount of free chips every four hours to keep players coming back to the game. Players can find their Facebook friends in the game and also add friends in-game. Players can then share gifts and chips with friends.

Big Fish Casino was the fifth highest grossing iOS game in the United States in October 2015. Figure X shows that Big Fish makes 240 thousand dollars daily from 366 thousand daily active users. This makes the daily average revenue per user 0,66\$. Big Fish Casino targets players that want to gamble, and they have brought a social aspect to the game as well. Players that want to gamble might also want to put real money into the game to make the game more exciting. This is how Big Fish Casino generates revenues and keeps the game alive, even though the game has only 2400 daily downloads.

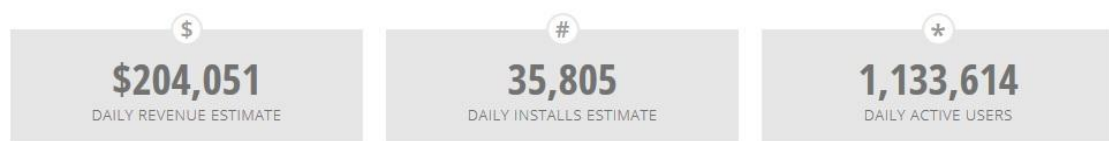
## Marvel: Contest of Champions

Marvel: Contest of Champions is a free-to-play action fighting game developed for mobile devices. Developed by Kabam, a San Francisco based game company, Marvel: Contest of Champions was released in December 2014 and it is set in the Marvel universe.

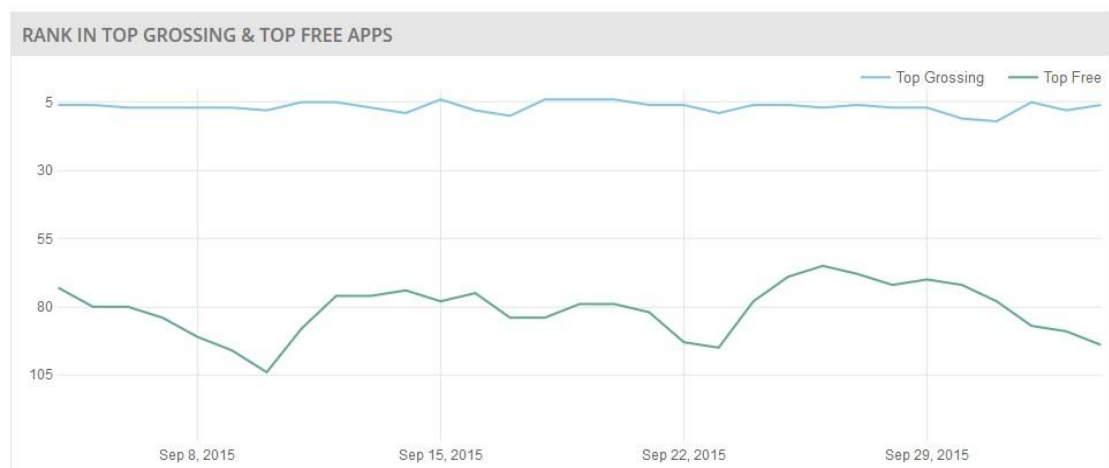


Picture 14. Marvel Contest of Champions icon

Players can play as characters like Hulk or Spider-Man who all have their own abilities and moves. The game features quest-based battles and Player versus Player (PVP) battles. All the opponents in quest-based battles are actually computer controlled A.I. In PVP battles players can battle against their friends in arenas. To compete in these battles players use up energy that recharges automatically over time. Players can buy more energy to play longer with in-app purchases. Marvel: Contest of Champions does feature alliances which brings a social aspect to the game. Through alliances players can access alliance quests that give players different types of rewards, and help other alliance members in their quests.



RANKED **#6** on Top Grossing Games & **#94** on Top Free Games - Oct. 4, 2015



Top Grossing High-Low (90-day): **4 - 104**

Graph 7. Marvel Contest of Champions data (Think Gaming 2015)

Marvel: Contest of Champions was the sixth highest grossing game in October 2015 on the iOS platform in USA. With 1,13 million daily active users the game had daily revenues of \$204,051. This makes the daily average revenue per user 0,18\$.

## Boom Beach

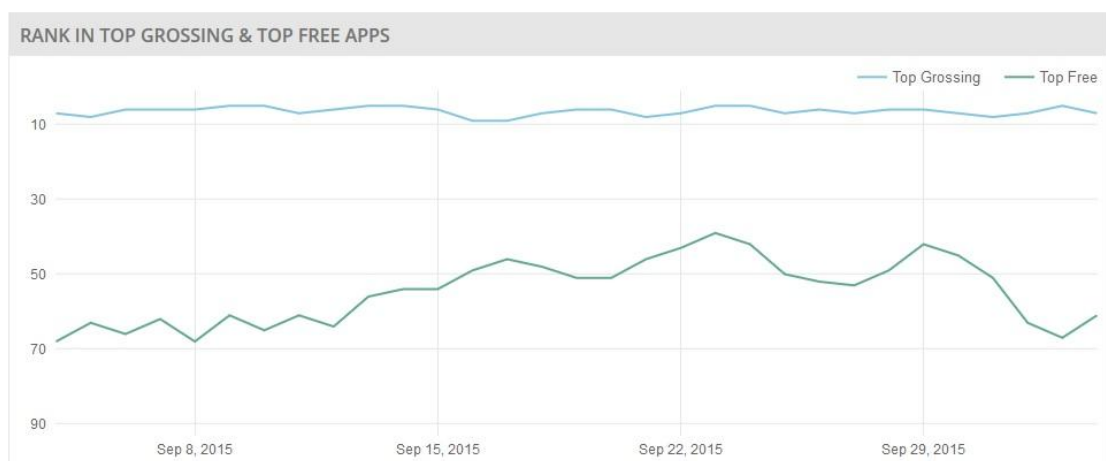
Boom Beach is the newest game from the Finnish mobile game company Supercell. Boom Beach was launched in March 2014 on Android and iOS platforms. Boom Beach is also a free-to-play strategy game that features building and defending the players base and attacking other players for resources, like Clash of Clans. In Boom Beach players can join a Task Force, which is a group of players that collaborate to destroy A.I. bases to win rewards. Players can buy the in-game currency, diamonds, through in-app purchases. With diamonds players can skip upgrading times and progress faster in the game.



Picture 15. Boom Beach icon



RANKED **#7** on Top Grossing Games & **#61** on Top Free Games - Oct. 4, 2015



Top Grossing High-Low (90-day): 5 - 68

Graph 8. Boom Beach data (Think Gaming 2015)

Boom Beach was the seventh highest grossing game in October 2015. 743 thousand active daily American iOS users used \$171,072 daily on Boom Beach. This makes the daily average revenue per user 0,23\$.

### Madden NFL Mobile

Madden NFL Mobile is a free-to-play sports game developed by one of the worlds biggest video game companies, Electronic Arts. Electronic Arts, or EA, is an American video game company that develops, markets, publishes, and distributes video games. Madden NFL Mobile was published on both iOS and Android and launched in August 2014.

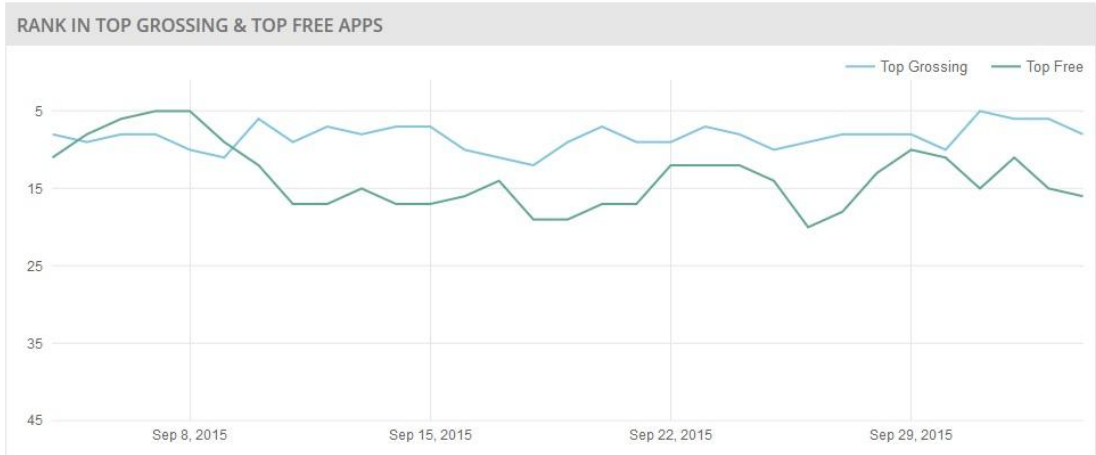


Madden NFL Mobile is a American Football game where players can choose their own NFL team from the real NFL franchise teams. Players can then collect, manage, upgrade, and play with real NFL players. The game allows players to play multiplayer PVP games against friends or full singleplayer 16-game seasons. The game also offers live events and challenges that offer players rewards. Players have a limited amount of stamina which is used to play games and participate in events. Stamina regenerates after a certain amount of time, or players can pay to get more stamina. [Shaul 2014]





RANKED #8 on Top Grossing Games & #16 on Top Free Games - Oct. 4, 2015



Top Grossing High-Low (90-day): 5 - 20

Graph 9. Madden NFL Mobile data (Think Gaming 2015)

Madden NFL Mobile had daily revenues of 145 thousand dollars in the United States in October on the iOS platform. The game had 1,3 million daily active users, which makes the daily average revenue per user 0,11\$.

### Summoners War

Summoners War is a free-to-play role playing game (RPG) developed and published by Com2uS. Com2uS is a South Korean mobile game developer and publisher. Summoners War was released worldwide on June 12, 2014 on both the iOS and Android platforms.



In Summoners War players have to concentrate on collecting various Monsters. Monsters can be leveled up to make them stronger, and this can be done by using them in different areas in the game. Players can buy crystals through in-app purchases. Players can use crystals to gain experience faster, refill energy to play more, or buy mana to use on monsters. Players can play either Player versus Environment (PvE) in different dungeons or PVP in Arenas.

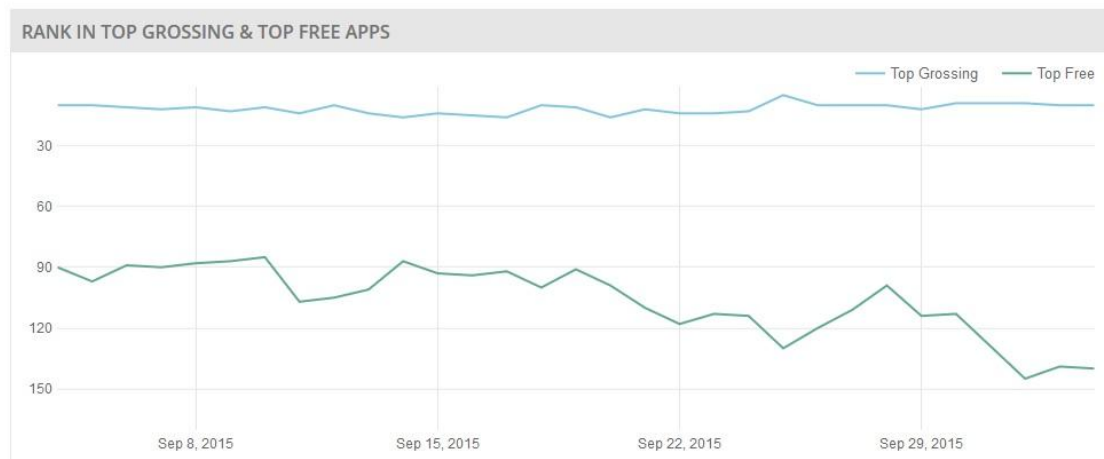
Picture 17. Summoners War icon



Summoners War also has Guilds that players can join and battle against other Guilds. Summoners War has a battle chat, but does not have important social features such as a private chat or trade options.



RANKED **#10** on Top Grossing Games & **#140** on Top Free Games - Oct. 4, 2015



Top Grossing High-Low (90-day): 5 - 145

Graph 10. Summoners War data (Think Gaming 2015)

Summoners War had 427,000 daily active users in America on the iOS platform in October 2015. Daily revenues were about \$112,000, and daily average revenue per user was 0,26\$ per user.

### 3.3 Summary of the Free-to-Play Business Model and Top Grossing Mobile Games

The free-to-play business model funnel is made out of 3 key sections; acquisition, retention, and monetization. Mobile game companies can measure these sections using different key performance indicators, metrics and analytics to tweak and improve their game to alter player satisfaction, retention, and monetization. Factors such as game type, game features, game design and player demographic affect the sales of a free-to-play game. The next section of this thesis estimates the sales potential of Last Planets when comparing Last Planets to the top grossing mobile games and their sales.

## 4 Estimating End Customer Sales Potential of Last Planets Features

The end customer sales of Last Planets is estimated by comparing the social and multiplayer features to other top grossing games, and calculating the possible revenue fluctuations that social and multiplayer features produce by attracting social players into the game. The next paragraphs introduce Last Planets and the special social and multiplayer features it possesses.



Picture 18. Last Planets icon

Last Planets is a massively multiplayer online strategy game (MMO), where all the players in the game are in the same universe. This allows players to interact with anyone in Last Planets. Players build, upgrade and defend their own planet and attack other players' planets to win rewards. Players can pay to buy Gems, which is the in-game currency in Last Planets. Gems allow players to buy more resources and skip waiting times for troop and building upgrades. This section compares features found in Last Planets to the top grossing games on the iOS platform in America, and then estimates the sales potential of Last Planets.

### 4.1 Social Features

Social features are features that allow people to interact with each other. Tim Fields [2014: 8] defines social games in his book as follows; a social game is one in which the user's interactions with other players help draw adoption of the game and help retain players and that uses an external social network of some type to facilitate these goals. All mobile games with Facebook or other social network login features can be called social games, even if they do not have other social features in the game. Vulpine Games want to bring a deeper social experience to mobile games with Last Planets, where players can interact with each other in more ways than only sending requests.

Last Planets has social features that many other top grossing games are lacking. Last Planets has a social feed where players can comment, share screenshots and replays from the game, and vote them up or down in the global social feed with likes or dislikes. The social platform in Last Planets also contains a chat system. The chat system features an area chat, Alliance chat, and private friend chat. Players can add Facebook

contacts as a friend in-game, and also send friend requests to anyone in the game. Last Planets also features a leaderboard which portrays the top players and Alliances in the game. Players can also donate resources to Alliances, and this way help each other to reach certain goals.

Social Features						
Mobile Game	Global Chat	Group Chat	Friend Chat	Social Platform	Global Leaderboard	Sending Help to Others
Game of War: Fire Age	yes	yes	no	no	yes	yes
Clash Of Clans	yes	yes	no	no	yes	yes
Candy Crush Saga	no	no	no	no	no	yes
Big Fish Casino	no	yes	no	no	no	yes
Marvel: Contest of Champions	yes	yes	no	no	no	yes
Boom Beach	yes	yes	no	no	yes	yes
Madden NFL Mobile	no	yes	no	no	no	yes
Summoners War	yes	yes	no	no	no	yes
Last Planets	yes	yes	yes	yes	yes	yes

Table 2. Social Features of Top Grossing Games Compared to Last Planets' Features

When looking at Table 2, none of the top grossing games have a private chat system with friends or a social platform for players to share experiences, replays and screenshots. Candy Crush Saga has the least social features, with the only social feature being asking Facebook friends for help. All the top grossing strategy games have more social features than other game types, and these features help players plan and create tactics. Helpshift reviewed Summoners War, and found out that players requested for more community features into the game. Players have asked for a trade system, private chat and more actions to be done with guilds. These are social features that Last Planets possesses. [Helpshift 2015]

Social features bring social players and sharers to a mobile game. Sharers share game content and market game they like in social networks and to friends by word-of-mouth, which is free marketing for the developer. This increases virality, retention, and sharers are more likely to convert to paying players. Whales, the players that bring in most of the money in free-to-play games, are usually social players. Social players usually play

more competitive games, which allow them to play with friends and share content from the game. [Grubb 2013]

## 4.2 Multiplayer Features

Multiplayer features are features that let more than one player play in the same game environment at the same time. A multiplayer game allows players to play against other one or more human players, cooperate with another player to achieve a common goal, or supervise other players' activity.

Last Planets offers players various multiplayer features. Last Planets offers PVP attacking, where players can attack other players and try to win resources and rewards. Last Planets also features Alliance versus Alliance battles. Alliances leaders can initiate attacks against other Alliances, and Alliance members have a certain amount of time to defeat the defending Alliance defenses to win rewards. Players can also participate in multiplayer events. Players that participate in these events can perform certain tasks, and this will benefit everyone participating in the event.

Multiplayer Features			
Mobile Game	Player Versus Player	Group versus Group	Multiplayer Events
Game of War: Fire Age	yes	yes	yes
Clash of Clans	yes	yes	no
Candy Crush Saga	no	no	no
Big Fish Casino	no	no	no
Marvel: Contest of Champions	yes	no	no
Boom Beach	yes	no	no
Madden NFL Mobile	yes	no	no
Summoners War	yes	yes	no
Last Planets	yes	yes	yes

Table 3. Multiplayer Features of Top Grossing Games Compared to Last Planets' Features

As seen in Table 3, only Game of War: Fire Age has all the same multiplayer features as Last Planets. Other top grossing games that offer extensive competitive multiplayer battles are Summoners War and Clash of Clans.

### 4.3 Estimated Sales Potential

Out of the top grossing games in the United States on the iOS platform, Game of War: Fire Age possesses most of the same social and multiplayer features as Last Planets. Game of War: Fire Age, Clash of Clans and Boom Beach are closest to Last Planets when looking at the game types of these titles.

Mobile Game	Game Type	DARPU	Number of Same Features
Game of War: Fire Age	MMO Strategy	1,056\$	7/9
Clash Of Clans	Multiplayer Strategy	0,327\$	6/9
Candy Crush Saga	Puzzle	0,312\$	1/9
Big Fish Casino	Casino	0,664\$	2/9
Marvel: Contest of Champions	Action Fighting	0,180\$	4/9
Boom Beach	Multiplayer Strategy	0,230\$	5/9
Madden NFL Mobile	Sports	0,110\$	3/9
Summoners War	RPG	0,262\$	5/9
Last Planets	MMO Strategy	(>0,230\$?)	9/9

Table 4. Top Grossing Games DARPU and Estimated Last Planets DARPU

When comparing the daily average revenue per user amounts, Game of War: Fire Age has the highest value. Big Fish Casino has the second highest, and Clash of Clans the third highest. Last Planets has more social interaction than the top grossing games, which should in theory improve retention, conversion rate and virality. All of these factors increase revenue when looking at the free-to-play business model funnel.

If purely looking at social and multiplayer features, Game of War: Fire Age is the most similar to Last Planets with 7 same features, and Clash of Clans the second most similar with 6 same features. Game of War: Fire Age earns about 70% more than Clash of Clans per user. This is because Clash of Clans has 2,5 times more players than Game

of War, and many of these players are players that do not pay. Game of War: Fire Age has succeeded in acquiring paying players, or acquiring whales, players that pay huge sums. As stated earlier, social and multiplayer features are the features that drive player retention and conversion. Because of this, Last Planets should in theory have the same, or better, daily average revenue per user as Game of War: Fire Age and Clash of Clans.

If only social and multiplayer features would be the features that improved monetization, daily average revenue per player of Last Planets would be better than Game of War: Fire Age. This is not the case, however, because game type, game design, marketing, game art, theme, overall “fun” of the game, and type of gamer affect how players enjoy and pay for games. If Last Planets succeeds in attracting the correct players to the game, which are whales, sharers, and social gamers, the sales of Last Planets will increase. According to a study by Everyplay, players motivated by socialization use 95% more money in a game than casual players. Then again, around 20% of players are sharers. If Last Planets attracted the correct demographic with social and multiplayer features, in-app purchases in Last Planets would sell 39% more than without social and multiplayer features. If Game of War: Fire Age had the same nine social and multiplayer features as Last Planets, with 20% of its player base being social players, daily average revenue per player would potentially increase by 8,6% from 1,056\$ to 1,15\$. [Everyplay 2014]

Depending on how well the game is developed and produced, and how well Last Planets finds its target audience and how many people pay for the game, the daily average revenue per player of Last Planets in the United States on the iOS platform can be anything from 0,230\$ to over 1,15\$. These values are the lowest and highest values of the strategy games that Last Planets is compared to. 0,230\$ is what Boom Beach generates, to the theoretical highest revenue of 1,15\$ that Game of War: Fire Age could achieve if it possessed more social features. The total daily revenues of Last Planets would then be calculated by multiplying the amount of daily players with daily average revenue per player value.

## 5 Conclusions

### 5.1 Summary

The main objective of this thesis was to find out how social and multiplayer features affect the sales potential of Vulpine Games' mobile game Last Planets. This thesis describes the mobile game market, other factors that should be taken into consideration when estimating the sales of a mobile game, introduced the theory behind the free-to-play game business model as well as the 8 top grossing mobile games. This thesis then compared the social and multiplayer features of Last Planets to the 8 top grossing mobile games.

It was concluded that social and multiplayer features are likely to benefit Last Planets, in both retention and monetization. It was inferred that if Last Planets attracts the correct players, the game can sell up to 39% more because of social and multiplayer features. The potential sales of Last Planets per daily active player can be estimated to be the same as other strategy mobile games, and that is why the daily average revenue per player of Last Planets can be from 0,230\$ to 1,15\$. The margin of what Last Planets is estimated to sell per player, is huge because of other factors, which have been explained in this thesis, also have an immense impact on the sales of a mobile game.

### 5.2 Next Steps for Case Company

Last Planets is under development, and receiving investment would help Vulpine Games secure its future as a mobile game development company. Vulpine Games can use this thesis to prove to potential investors, that their mobile game Last Planets has an advantage when comparing to other mobile games. The social and multiplayer features of Last Planets can increase the sales potential of Last Planets up to 39%. Vulpine Games can also be assured that Last Planets has better chances of succeeding, if the game is launched as a complete and functional mobile game.



### 5.3 Objective vs Outcome

The objective of this thesis was to study the effects of social and multiplayer features to the sales potential of mobile games. The outcome of this thesis proves that social and multiplayer features have a positive effect on retention and monetization, which leads to the increase of sales, or in-app purchases, in mobile games. This is what Vulpine Games set out to find, and this thesis proves that their game, Last Planets has beneficial features that increase the chances of the game becoming a success.

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