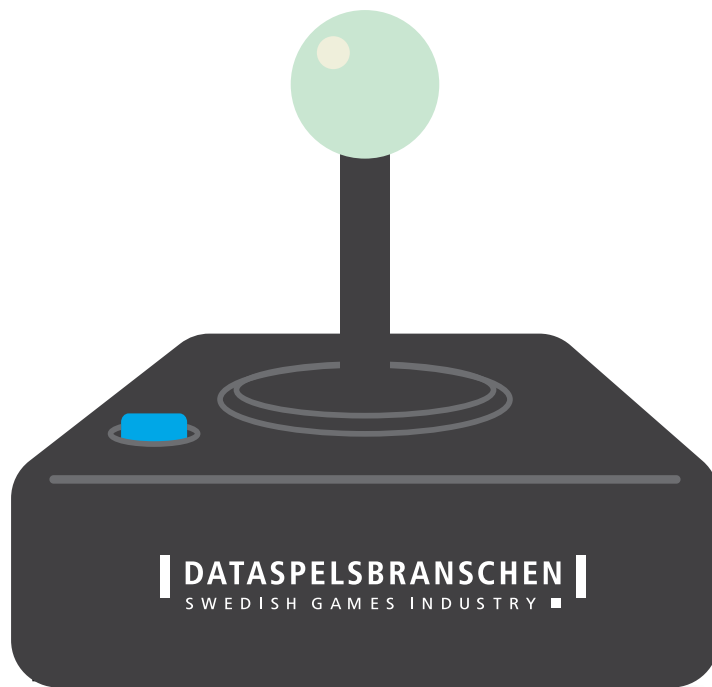


SWEDISH GAME DEVELOPER INDEX

2016



GAME DEVELOPER INDEX

First Edition

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2016

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SUMMARY

Game Developer Index analyzes the growth of Swedish video game companies and international trends by compiling the annual accounts of the companies. Swedish game development is an export industry operating on a highly globalized market. The domestic industry has grown from a hobby of enthusiasts to a world-wide industry with cultural and economic significance under just a few decades. The Game Developer Index 2016 summarizes the growth of the latest fiscal year. The summary in brief:

- ▶ Revenue increased by 41 per cent to almost EUR1,3 billion in 2015. A 200 per cent increase in two years.
- ▶ A majority of companies are profitable and the industry has reported a total profit for seven years running.
- ▶ Employment increased by 19 per cent, more than 550 full-time positions, to a total of 3709 employees.
- ▶ The compound annual growth rate (CAGR) 2006-2015 is 39 per cent.
- ▶ 40 new companies have been established. Which amounts to a total of 236 active companies, an increase of 11 per cent.
- ▶ Adding up the industry's total revenue and the value of transactions the acquisition of King, for instance) the total sum is over EUR 600 million.

Game development is a growth industry; more than half of the companies were registered after 2010. The games are often launched directly on an international marketplace, which also results in a global labor market. The largest companies are multicultural and it is not unusual for them to have employees representing over 30 different nationalities.

Swedish game developers are characterized by diversity and quality. Sweden has world-leading developers within AAA, indie games, mobile games, VR and tools.

Everything points to continued growth for Swedish game development in 2015. The biggest challenges are questions surrounding access to capital, access to competence and laws and regulations around digital markets that are out of step with the development of the market.

PREFACE

The spectacular growth of Swedish game developers continued unabated in 2015. A EUR 1.3 billion return is more than ten times that of 2010, i.e. an increase of 1000% in five years. Looking at these continuously growing figures, a new phenomenon gets introduced: anticipation. Anything but continued record growth would have been a disappointment. The industry's progress has created a state of affairs where 35% annual growth is more or less the norm. It is an almost absurd situation, and yet a logical one based on the rapid growth of the past few years. Can it continue? It appears so. It is not a lack of demand that is holding back development and the companies are not scrapping over market shares, on the contrary, the appetite of gamers is far from satiated. The questions to be asked instead are: how do we continue to create world class games, how do we keep the attention of the players and how do we reinvent ourselves. The companies and the industry can influence a lot of these issues themselves, but some factors are somewhat beyond our control, such as competence, financing and digital markets.

The industry is sometimes criticized because employment does not increase at the same pace as the income. This criticism is unwarranted in many ways. An increase in income is positive – after all that could be said to be the very idea of business. However, can you really accuse an industry that has tripled employment in five years and created 2500 qualified, well-paid jobs of not doing enough? The logical error is to disregard the possibility that the companies might well have employed more people if there were more people to employ. Many, perhaps most, companies in the business have vacancies and are advertizing for competence. Many have opened offices abroad to reach a larger labor market. Specialists are recruited from abroad but are delayed by bureaucracy and lack of housing. These bottle necks not only hinder increased employment but long-term competitiveness as well.

Access to funding also influences future growth. In competitor countries, such as Finland, United Kingdom and Canada, there are ambitious investor incentives that attract foreign capital. Of course, the quality of a company is key for an investor, but all things equal, other kinds of co-financing helps. In addition, there are soft effects such as how business works with public operators to spread knowledge or present themselves to investors. In Sweden, there are good examples on a local and regional level, but nothing like the above competitors national programs.

Accordingly, the domestic financial sector has a limited presence in Swedish game companies. The value and the potential is obvious in multi-million deals such as King and Mojang in the last few years, or Toca-Boca, a company acquired by Canadian Spin Master this spring. But Swedish savers, pension funds and other kinds of investors rarely get a share in that development, quite simply because too few Swedish operators are involved in the early stages. This report is part of our work to change that.

The third factor that shapes the future and that is beyond our own influence is the terms of digital markets. The discussion is usually about copyright, but today it's equally about competition issues as large parts of all game sales are centred on a few global digital retailers. The terms and conditions are non-negotiable, it can be difficult to know exactly when a game is released (to draw up a business plan without being in control of the launch date is a challenge!), and what happens in the event of a dispute or an infringement? There is a great uncertainty, not least for smaller operators.

All told, the future is bright for games and not least Swedish games. For three years running, Sweden counted top rankings in GDC Europe's poll for the hottest game developer region in Europe. A new area like Virtual Reality receives a lot of attention and there are several Swedish companies in global top positions. Starbreeze has even launched its own hardware and several start-ups have received notable investments. The big revolution that everybody now plays games, not only gamers, continues and is strengthened by the smartphone evolution. *Pokémon Go* has hardly reduced that interest but shows that you can launch an innovative game concept and have commercial success. Some of the world's biggest entertainment brands are re-imagined into games in Sweden: *Star Wars*, *Mad Max*, *Walking Dead*, *Vampire: The Masquerade*, *Tom Clancy*, to name a few. The companies are increasingly listed on the stock market, which is of course gratifying, but something which will also give more people the chance to be a part of the Swedish video game boom.

If we continue to innovate and create world-class games, Swedish game makers will continue to capture the attention of gamers and we can look forward to more impressive reports like this in the future.

Per Strömbäck
Spokesperson, Swedish Games Industry

The future looks bright for Swedish video games

REVENUE & PROFIT

There is high global demand for games developed in Sweden. This is evident when revenue for Swedish game developers doubles in two years (2013-2015), increases by 39 per cent to EUR 1.3 billion in 2015, when 33 education programs train over 3300 new developers in Sweden every year, when people travel around the globe to work in the country and when a gaming company with its creative headquarters in Sweden is sold for almost EUR 5 billion. It is also clear that the demand remains insatiable. The industry has had an annual growth of on average 40 per cent since 2006. Swedish games development has, as the foremost contemporary cultural expression, gone from anonymity to a world-famous cultural export. Every tenth individual in the world plays a Swedish game.

Employment increased with 19 per cent, 40 new companies, and a steady current of engaging new game experiences. With a combined profit of 515 million Euros, the companies have never been more profitable or created more municipal and national tax revenues.

2015 was another year of big deals in the Swedish games industry. The sensational EUR 1.8 billion acquisition of Mojang by Microsoft in 2014 was followed by Activision Blizzard – one of the singularly biggest gaming companies in the world – buying up King. Despite the sale, the operation remains in Sweden and is growing apace. In addition to the studios in Stockholm and Malmö, King has opened yet another office in the Swedish capital.

Fatshark has a long history of making quality games, but the studio's big breakthrough came in 2015. *Warhammer: End Times – Vermintide*, based on the popular Warhammer franchise, became a

critically lauded success and sold more than half a million copies within the year.

Paradox Interactive, already one of Sweden's biggest game companies, tripled its revenue in 2015. A reason is the company's successful venture into a broader array of game genres, from publishing mostly strategy games to giving out world-renowned titles like *Cities: Skylines* (simulation) and *Pillars of Eternity* (RPG). More than million people play Paradox games, every month.

Avalanche Studios released no less than two AAA games in 2015, for two different international publishing giants: *Mad Max* with Warner Bros. and the studio's own IP *Just Cause 3* with Square Enix. Few other developers in the world share this kind of confidence and ability to work with more than one AAA publisher at a time.

There are evidently many reasons for the big success of Swedish game developers, one of the major ones, and the briefest, is the excellence of the companies. Swedish game developers are simply world-class.

Despite fierce competition, Sweden remains at the absolute forefront according to the latest industry survey (*GDC: European State of the Industry Survey*).

A TEAM EFFORT

Regardless of the many large and successful companies, the Swedish video game boom is a cycle of exchange where all companies and individuals are important. If you look at the history of Swedish game developers, you can see a silver thread of progress running through the start-ups, indie developers, small, medium-sized and large companies. Swedish game developers create successful games in all genres and for all platforms. A robust



Fe, Zoink

KEY FIGURES	2010	2011	2012	2013	2014	2015
N.o companies	106 (+5%)	117 (+10%)	145 (+24%)	170 (+17%)	213 (+25%)	236 (+11%)
Revenue EUR M	121 (+22%)	237 (+96%)	380 (+60%)	670 (+76%)	905 (+35%)	1280 (+41%)
Rev/Employee EUR T	100 (+12%)	157 (+56%)	193 (+23%)	264 (+37%)	290 (+10%)	345 (+19%)
Profit EUR M	1.5 (-59%)	13 (+747%)	35 (+164%)	254(+635%)	344 (+35%)	485 (+41%)
Employees	1203 (+9%)	1512 (+26%)	1967 (+30%)	2534 (+29%)	3117 (+23%)	3709 (+19%)
Men	1082 (90%)	1300 (86%)	1674 (85%)	2128 (84%)	2601** (83%)	3060 (82%)
Women	121 (10%)	212 (14%)	293 (15%)	405 (16%)	516* (17%)	651 (18%)

*See page 31 for notes on currency conversion

**Adjusted for inaccuracies

synergy creates opportunities for smaller developers to grow. A connection can be drawn between incubators, universities, a do-it-yourself attitude a born global objective. In Sweden, you will find some of the world's most successful independent developers, some of the world's largest developers and a growing number of innovative companies in-between.

So, is the industry a bubble about to pop? The answer is no. Growth is driven by real consumers on a growing global market, not by speculations of future profits. On the contrary, the level of venture capital is low compared to the achievements

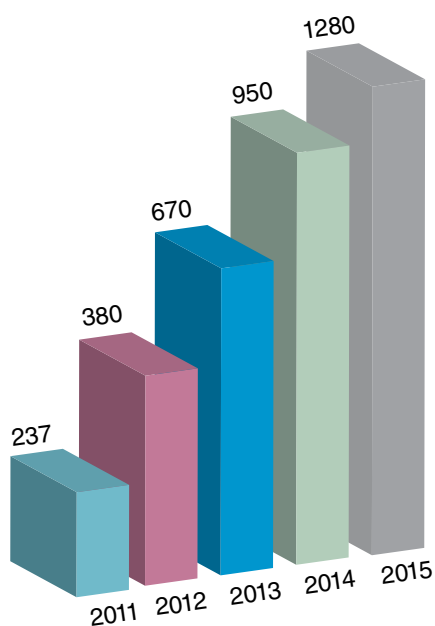
of the companies. Games are adaptable to new technology and new platforms, and not even downturns and financial crises have had any real effects on the industry. The expectations on the games industry are realistic and often underestimated. If you add the value of acquisitions to the total revenue of the Swedish industry, the number exceeds EUR 6 billion in 2015.

THIS YEAR'S FIGURES

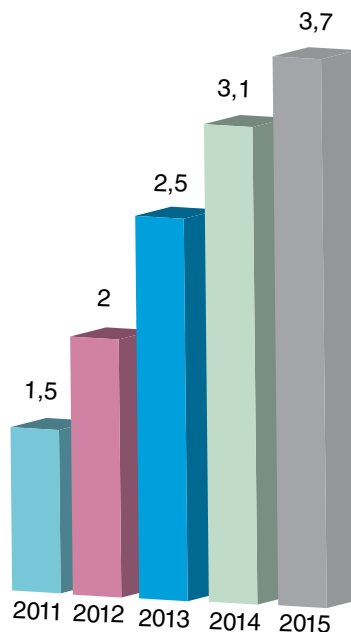
Mojang is per usual a strong contributor to the growth this year, not least because the annual report that forms the basis of the company's revenue comprises an 18-month period, owing to an extended financial year. Mojang's

previous annual report for 2013 was therefore used for the Game developer index in both 2013 and 2014. This means that the total numbers of the industry are slightly higher in 2015 than they would otherwise have been. At the same time, everything points to strong growth for the *Minecraft* creators. The game has sold more than 107 million copies worldwide. Similarly, Starbreeze has changed its financial year and therefore contributes an extra six months to this year's report. The information regarding the number of employees is only gathered from the latest annual report. The numbers for revenue and profit have been merged.

REVENUE (MILLION EUR)



EMPLOYEES (THOUSAND)



EMPLOYMENT

Employment increased by 18 per cent, which equated to a further 592 full-time positions. Among them, start-ups have created over 100 new jobs. The number of employees is calculated using the average number of full-time staff according to the companies' annual reports, but in actual fact there are a lot more individuals that have worked on game development during the year. Similarly, many freelance consultants are working for Swedish game developers but are not listed as employees in the companies' annual reports. Given these hidden numbers, the real figure is likely to be at least 15 per cent higher, which would mean that around 4,200 persons are employed within the industry.



Little Nightmares, Tarsier Studios

NUMBER OF COMPANIES

The industry remains buoyant with close to 40 new companies formed. A growing entrepreneurship has created clear results in the form of enterprise, employment and experience. Several of the new companies have already become very successful; Raw Fury, Hazelight Studios, Gumi Sweden and Robtop Games are examples of companies that have enjoyed

sustained growth from their outset.

For reporting reasons, the Game Developer Index only includes limited companies, but if you count game developers with other corporate forms, such as trading companies and sole proprietorships, there are at least 50 per cent more businesses in the market. That number is higher

than that of Finland, which has had success similar to Sweden's, but the successes are confined to a smaller number of companies. Group holdings also increase and many of the biggest companies have subsidiaries both in Sweden and abroad. If you count these you have to add another twenty or so companies to the total.



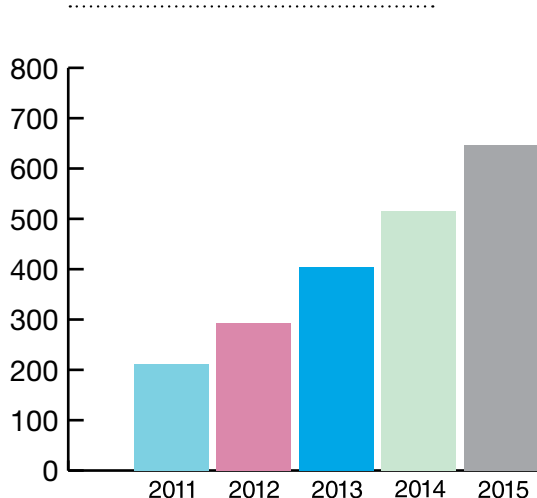
Snow, Poppermest Productions



GENDER DISTRIBUTION

The number of women employed increased by 25 per cent, compared to 16 per cent for men. Larger discrepancies between these numbers are needed to reach a more even gender distribution in the long-term. Apart from the long-term efforts to attract more women to development and game companies, equality is just as important in the games industry as in the rest of society, not least to safeguard the best competence and increase the games' target audiences. Women in the industry are mostly found in medium-sized and large companies and a definite challenge is to have more developers and start-ups include more females at the inception stage, as well as encourage women to start gaming companies themselves. Today it is chiefly the large mobile game companies that employ the most women. A challenge (and opportunity) when it comes to attracting more women to the industry is their tendency to work in more cross-industry roles than their male colleagues.

NUMBER OF WOMEN



Game development is still a young industry. Games are often launched directly on an international market, which also results in a global labour market. The biggest companies are multicultural and 30 different nationalities in one company is not uncommon. Diversity issues also concern culture, sexuality, identity, age, and ability, both for the companies and for the content of the games.

DIVERSI

Diversi was created in 2013 as an initiative to emphasize and strengthen diversity in the Swedish game industry. The goal is to make more people feel at home in games, communities, game education and game development companies. Gaming is not the reserve of a few; it is an important part of society: artistically, socially, pedagogically and economically. Increased diversity is essential for the growth and development of the industry. More information about the initiative can be found at diversi.nu.

EMPLOYEES & REVNUUE PER COMPANY

This compilation is made according to the EU definitions of small and medium-sized enterprises. To qualify as a certain type of company it must fulfil one of the criteria. Mojang, for example, is defined as a large company because of its revenues, even if the number of employees matches that of a small company. Paradox Interactive has

qualified as a large company since 2014, and many medium-sized companies are well on their way. A broad entrepreneurship also contributes many micro companies, with initially small earnings but that are vital for the industry in the long term. See page 12 for a geographical distribution of the companies.

DEFINITIONS

Sole Proprietorship: Companies run by one individual, that otherwise do not meet any standards for small or larger companies.

Micro Companies: Fewer than 10 employees or maximum revenues of EUR 2 million

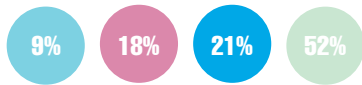
Small Companies: Between 10 and 49 employees and revenues not exceeding EUR 10 million

Medium-Sized Companies: Between 50 and 249 employees and revenues not exceeding EUR 50 million

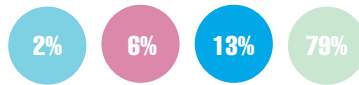
Large Companies: Companies that have greater revenues or number of employees than a medium-sized company

EMPLOYEES PER COMPANY

Mikro Små Medel Stora



REVENUE PER COMPANY



LARGEST COMPANIES

Despite strong growth, the five largest companies' share of the industry revenues and number of employees is identical to last year's. It indicates a wide variety of companies are developing side-by-side. Even discounting the five largest companies, the industry is still growing by over 36 per cent.

LARGEST COMPANIES	Revenue EUR M
1. Mojang	437*
2. King	333
3. EA DICE	94
4. Paradox Interactive	62
5. G5 Entertainment	39

**Based on an 18-month period*

LARGEST COMPANIES	Employees
1. EA DICE	560
2. King	559
3. Ubisoft Massive	319
4. G5 Entertainment	262
5. Avalanche Studios	239

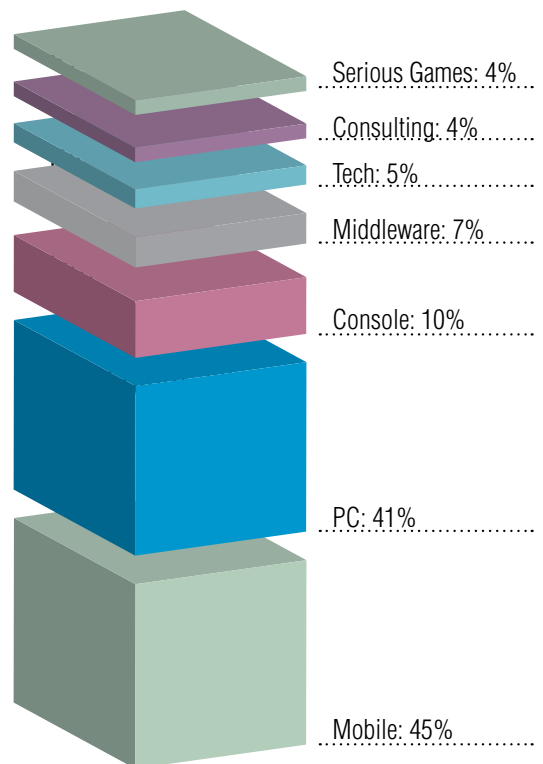
DISTRIBUTION PLATFORMS

One of the distinctive features of the Swedish games industry is the amplitude of development. It may seem natural to go in for all the biggest formats (PC, console, mobile) but in reality few countries attain overall success, notable exceptions being the US, Canada, and Finland (Japan, too, has a great range apart from a certain weakness when it comes to PC development). Sweden differs from most in that it is a world-leader on more or less every platform, and things are also looking good for the future. The promise of VR has seen many Swedish developers adopt the platform and catch interest from the rest of the world, including several investments.

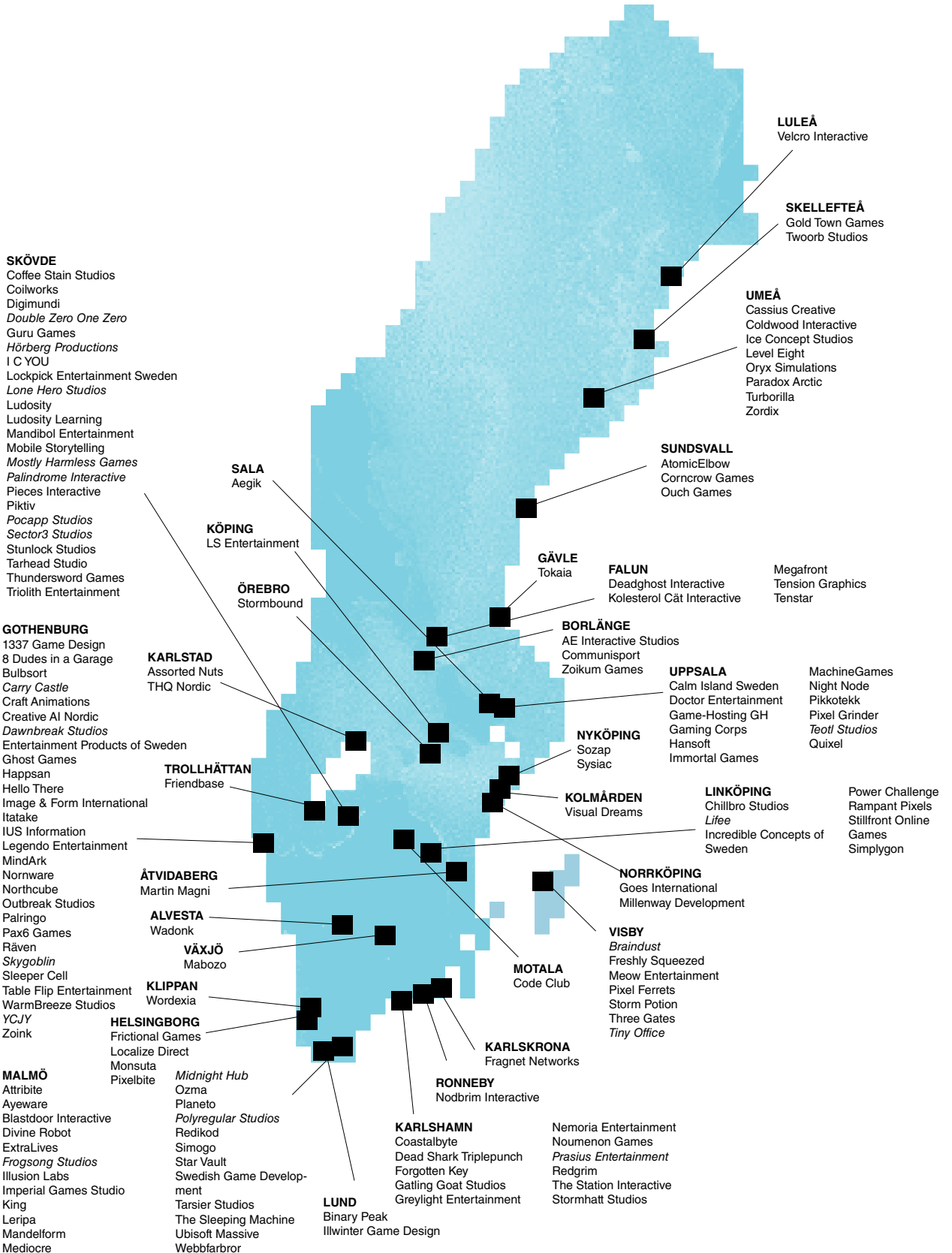
In addition to its developmental breadth, another cornerstone of the Swedish video game boom is that it's not as

platform-bound as it once was. The launch of new consoles in 2013 and 2014 had a relatively small influence on Swedish game developers. Instead, it became another digital display window for an affluent audience. Several games can effectively be converted to different platforms and it is particularly AAA titles that have been dependant on a strong console market. The question is rather where to find your particular type of audience. There is often more than one answer.

The image to the right gives an overview of the types of distribution platforms developers are working with, by highlighting what developers are currently working on. A developer can appear in two or more categories when they have focussed on several formats.



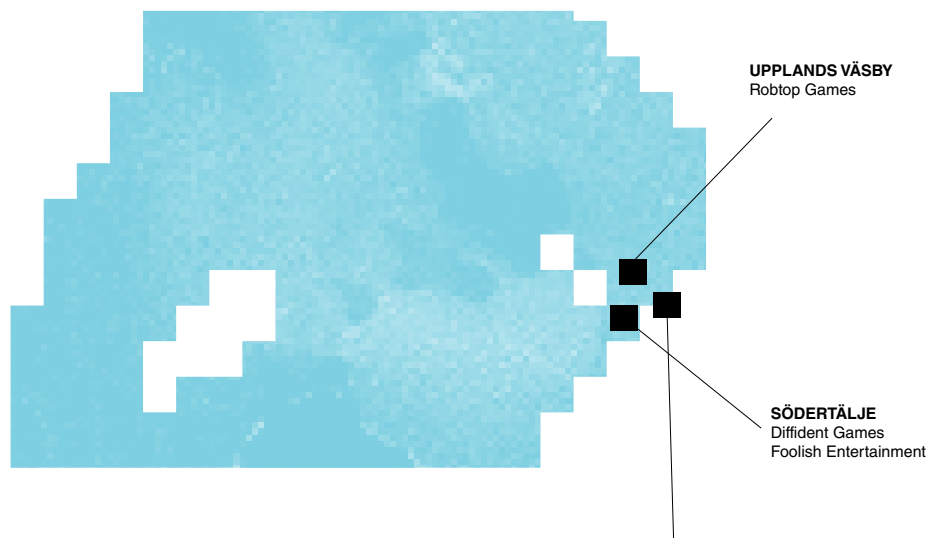
COMPANY MAP



MUNICIPALITY	Employees	% of Total	Companies	% of Total
1. Stockholm	2396	66	92	39
2. Malmö	481	13	21	9
3. Göteborg	247	7	25	11
4. Skövde	109	3	16	7
5. Uppsala	177	5	10	5

Above: a table of the biggest regions ranked by number of employees and number of companies. The table follows the sum of the percentages and does not take company revenues into account. Stockholm consists of Greater Stockholm and neighbouring areas. Although the majority of the employees are based in the capital, there are significantly more companies outside in other regions. Some Stockholm companies, for example King, Paradox Interactive and DICE, have offices in more than one part of the country. In 2015, 115 people worked at Ghost in Gothenburg and 85 people worked at King in Malmö.

Companies listed in italics are not limited companies or have not yet turned in their first annual report, and are therefore not officially included in the report's calculations.



STOCKHOLM

10 Chambers Collective
 Arrowhead Game Studios
 Avalanche Studios
 Axolot Games
 Blackbeard
 Bläck Studios
 Bridgeside Interactive
 Bublar
 Bumblebee Studios
 CasualGames FK
 Clifftop Games
 Codarica
 Collecting Smiles
 Crackshell
 Daikonsoft

Deadbreed
 Defold
 DekkoDash
 DeNA Sweden
 DigiArts Entertainment
 DICE
 Elias Software
 eMocial Gaming Ventures
 Expansive Worlds
 Fablebit
 Fast Travel Games
 Fatshark
 FEO Media
 Filimundus
 Frojo Apps
 Frosty Elk
 Funrock Development
 G5 Entertainment
 Glorious Games
 Gone North Games
 Goo Technologies
 Good Night Brave Warrior

Gro Play Digital
 Gumi Sweden
 Happy L-Lord
 Hazelight Studios
 IMGNY International
 Interactive Productline
 Isbit Games
 King
 KJ Interactive
 Landfall Games
 LaughLoud:labs
 LeadTurn Gaming
 Light & Dark Arts
 Like a Boss Games
 Lionbite
 Liquid Media
 MAG Interactive
 Massive Shapes
 Might and Delight
 Mojang
 Morgondag
 Nekomata Games

NeCo
 Neonode Technologies
 Nuday Games
 Oxeye Game Studio
 Paradox Development Studio
 Paradox Interactive
 Peppy Pals
 Pixel Tales
 Pixeldiet Entertainment
 PlayCom Game Design
 Polarbit
 Poppermost Productions
 Primus Appus
 Quel Solaar
 Quizye
 Raketspel
 Raw Fury
 Resolution Games
 Reverse Game Studios
 Rigid-Soft Studios
 Rovio Sweden
 SimWay

Snowprint Studios
 Spelagon
 Spelkraft Sthlm
 Spelkultur i Sverige
 Star Stable Entertainment
 Starbreeze Studios
 Stockholm App Lab
 Sunhammer
 Talawa Games
 Talecore Studios
 Tealbit
 That Brain
 Toadman Interactive
 Toca Boca
 Tomorrowworld
 TwifySoft
 Unity Technologies
 Visiontrick media
 Xpert Eleven

“ The World Comes
to Sweden



THE FUTURE

Swedish game development has a bright future ahead of it. If nothing unforeseen happens, it should continue to grow according to the average annual growth of 30-40 per cent. A small sample:

That the world comes to Sweden in games industry terms is a bold statement that remains true. In 2016, Starbreeze began collaborations with South Korean Smilegate to develop a west-friendly version of *Crossfire*. *Crossfire* is a typical example of cultural differences still dividing the gaming world. It is one of the world's most played FPS games with over 500 million users. Despite this, few people in the west have heard of the game. But, it is hardly a coincidence that Starbreeze has been tasked with popularizing the game on the western market.

Swedish game companies are also good at promoting their own. Coffee Stain Studios (the developer behind the Dadaist phenomenon *Goat Simulator*) have invested in their Skövde neighbours Stunlock Studios' promising arena fighter *Battlerite*. Coffee Stain has previously released *Westport Independent*, a game by Double Zero One Zero, another Skövde company. One of many reasons for the success of the companies from Skövde is the local university and incubator. In 2016, a spin-off of the concept was established in Gothenburg and several unconnected incubators are on their way in Malmö and Stockholm.

Massive's long-awaited major game *Tom Clancy's The Division* was launched in March 2016. The Malmö developers had worked on the game for several years. It ranks as one of owner Ubisoft's biggest games ever. A risky project, but

following the launch its success was a fact. *The Division* has sold in the millions and beaten a number of records. It is Ubisoft's best-selling game ever and the best-selling new IP in one week of release. A film based on the game starring Jake Gyllenhaal and Jessica Chastain has since been confirmed.

Other Swedish AAA titles have broken records in 2016. When DICE announced *Battlefield 1* – the next instalment of the best-selling Battlefield series – the game's trailer quickly became the most liked game trailer in the history of Youtube. The demo

A reassuring amount of promising games are developed in Sweden

version of the game became an audience favourite at the big trade shows. Two of DICE's works are furthermore joining *The Division* in being dramatized: *Mirror's Edge* and *Battlefield* are currently both being made into television series.

Another Swedish game making a splash at the trade shows, particularly at Gamescom (the world's largest), is Tarsier Studio's upcoming *Little Nightmares* (previously known as *Hunger*). The game, which is being released by Bandai Namco, had a busy exhibition stand and was awarded as the 'best indie game' at the show. *Little Nightmares* is a new IP and a game that Tarsier has developed with the support of Creative Europe and the Nordic Game Institute.

Children's game developer Filimundus acquired another Swedish company, Codarica, this year. The idea behind Codarica is

to teach children coding through enjoyable games about game development. The merging of the two companies should safeguard a continued interest in game development in the younger generations. Another prominent Children's game developer is Toca Boca with more than a hundred million downloads to its name. The company was bought up by the Canadian toy company Spin Master in April 2016. The operations will remain in Stockholm.

The Helsingborg developer Frictional Games rendered great success with its horror game *Soma*, released in late 2015. This is the studio's first self-developed game since the Youtube favourite *Amnesia: The Dark Descent*. The company is also currently working on two new projects.

Coldwood Interactive released *Unravel* last year which was lauded by critics and players alike. The game was top focus for EA during a high-profile press conference at the E3 expo in Los Angeles. Similarly, EA put another Swedish indie game in the spotlight this year – Swedish-sounding *Fe* from the Gothenburg studio Zoink.

Paradox Interactive's triumphant progress continues with the acquisition of Whitewolf Publishing, several self-developed games with new expansions, a successful publishing of other developers' titles, as well as a felicitous IPO. The Whitewolf deal ensured Paradox the ownership of brands such as *Vampire: The Masquerade*.

Quite simply, there are a reassuring number of promising, announced (and probably just as many unannounced) games being developed in Sweden.

ACTUAL REVENUES

When it comes to Swedish game developers, there are primarily two kinds of large companies. One type is for example DICE (EA) and Massive (Ubisoft). Their games have high revenues at a consumer level, but belong to a value chain with several middlemen (retailers, wholesalers, distributors) and, moreover, are part of international groups with parent companies abroad. The games from these developers earn much larger sums than those appearing in the annual accounts that form the basis of this study. The other type is represented by Mojang and King, who report considerable shares of profits and revenues in the companies that handle the actual development. One of the biggest challenges in illustrating the enormous success of Swedish game developers is showing the actual income from a company's sales. In some

cases, the majority of a company's activities are included in the Swedish annual accounts. Mojang is a good example of that. It is more difficult to tell what kind of revenues games such as *Star Wars Battlefront* or *The Division* create just by looking at the game developer's annual report, since income is apportioned among the operators in the supply chain and is to a great extent accounted for in the foreign parent company. If we roughly calculate the proceeds at the consumer stage for *The Division* (presupposing that 10 million people bought the game, without including other income such as DLC) that would be ten times an average price of SEK 500 (for instance), or circa EUR 500 million in total. This is 22 times more than the reported Swedish limited company's revenues of EUR 23 million.



DOMESTIC MARKET

The domestic market in Sweden had revenues of circa EUR 400 million in 2015, which roughly puts it in 20th place in the world rankings (source: Newzoo). The figure does not include costs of hardware, merchandise or various accessories. Over 75 per cent of the market is completely digitalized, in comparison, the share is 56 per cent in the US (source: ESA), and 68 per cent in the United Kingdom (source: Ukie).

With export income at almost 99 per cent, the domestic market has hardly any influence on Swedish game development. The Swedish audience, however, is generally well-informed, curious, early adopters and frequent players. The national youth organisation Sverok has also elevated digital games as a part of the gaming hobby and contributed to the involvement and interest of many young players. Read more about Swedish game sales in Swedish Games Industry's report *Digital Game Sales in Sweden 2013 – 2015* and ANGI's report *Nordic Game Sales 2015*.



WORLDWIDE

The global video games market consumer spending amounts to USD 99.6 billion in 2016, according to Newzoo, an annual growth of 8.5 per cent. Fifty-eight per cent of the global growth is from the APAC area. We anticipate more developers will pivot to this demand. The global market is roughly divided in a third each for console, PC and mobile games. But the wider question is whether a division by screens rather than platforms will soon not be more relevant (for example entertainment screen (TV), personal screen (mobile phones) computer screen and floating screens (tablets)). The average annual growth until 2019 is estimated at 6.6 per cent. The worldwide value of public transactions within the industry totalled nearly USD 16 billion in 2015. One of those transactions was the acquisition of King at USD 5.9 billion.

DEAR PC

PC as a gaming platform is the golden-child in Sweden – both for developers and players – and the analysts DFC Intelligence predict that the market will be valued at USD 42 billion by 2020. The market reached record levels in 2015 with earnings of USD 30 billion (+11% YoY) from a combination of subscriptions, sale of virtual objects, advertizing and digital distribution. According to DFC, 300 million people fit the description Core and Moderate players, i.e. the core users of the platform. There is still healthy growth potential among the moderate users as they attain higher disposable income (in other words young people growing up and getting jobs). Game as a service is still the most popular model, but now, when many casual games have transferred from PC and social networks onto mobile phones, classic single sales has grown stronger again. A good example is *Cities: Skylines*, published by Paradox Interactive.

China is by far the biggest market for PC games. Quite different to the world's third biggest market, Japan, where PC gaming is a mere parenthesis. PC is also big in Europe, which exceeds North America. Not that long ago, the trend was fewer and fewer AAA titles released on PC. Now AAA is having a comeback on the platform, and most major games are released on both console and PC. Western games have traditionally struggled to get a release in China. Today, companies have to enter into contract with a Chinese publisher to reach the users, and the giants Netease and Tencent have

The worldwide value of public transactions within the industry totalled nearly USD 16 billion in 2015. One of those transactions was the acquisition of King

successfully started to distribute western PC games to the Chinese audience. This is a good sign for Swedish game developers, and Mojang is one of the companies to reap the rewards – *Minecraft* is now released in China in collaboration with Netease (where the game is called *Myworld*).

That one particular segment periodically grows strongly – for example mobile games – is often falsely interpreted as if another segment must decrease as a result. That is not always the case in the video game industry; the segmentation, with affluent users with very different preferences, allows several parts to grow in parallel.

THE WORLD'S LARGEST COMPANIES

Among the ten listed companies that had the greatest game-related income in 2015 only Activision Blizzard, EA and King are game companies in the true sense (two, if you count King as a part of Activision Blizzard). Apple and Google stand out, clearly showing the power and the earnings of strong platform holders (App Store and Google Play respectively). Other companies are entertainment conglomerates like Warner Bros., hard- and software companies like Sony and Microsoft, as well as the Chinese internet giants Tencent (highest gaming earnings) and NetEase. The biggest companies are growing by 14 per cent annually, significantly more than the market in general.

According to a voluminous report by DFC, software sales increase by a compound annual growth rate of 9 per cent to USD 100 billion in 2019 (this figure was 73 billion in 2015). Unlike many estimates, this only includes software sales. In reality, the industry is much more than that: it has long since contributed to other segments, such as home electronics. In fact, gamers spend almost as much on hardware as they do on the actual games. Not including ubiquitous units like smartphones, laptops and tablets, but including performance desktop computers (i.e. gaming computers),

The industry's segmentation allows several parts to grow in parallel



peripherals and specially manufactured game hardware (computer mice, mouse pads etc.), the industry is closer to the double, USD 200 billion.

VIRTUAL REALITY

VR – or Virtual Reality – is a way to become visually immersed by a gaming (or other visual) experience, often with the help of an accessory similar to a pair of glasses. Unlike the past, one thing that talks up VR today is that a large number of international companies with purchasing power have invested vast sums in the technology. Examples of these are Google, Samsung, Sony, Valve, HTC and Facebook. Some of the Swedish companies working with VR are Starbreeze Studios who have developed their own technology – Star VR – used by the likes of IMAX, Resolution Studios with its successful fishing game *Bait!* and Fast Travel Games,

spearheaded by Oskar Burman (ex EA- and Rovio executive). VR has not yet developed into its own segment. The earnings have rather been absorbed by existing platforms and will probably continue to be marginal for the next couple of years. In the short term it will rather be AR – Augmented Reality – which, due to lower technical requirements, can grab a piece of the pie. *Pokémon GO* is a good example and there are already Swedish companies working with similar solutions.

ESPORTS

Esports is no longer a niche. In 2015, esports generated USD 612 million in global revenues according to a report by SuperData Research. The revenues originate principally from Korea and China, but North America and Europe contribute the largest growth. During 2014, in North America alone, USD 111 million has gone into event sponsorship. The type of brands that want to be seen in connection with these events is also becoming more varied. The final prize money in Valve's latest *Dota 2* tournament was over USD 20 million. Esports is very much a spectator sport,

viewed both online and in physical arenas. Twitch gets the biggest traffic in the western world but Youtube Gaming is a freshly launched competitor. The growth potential is enormous and includes everything from merchandise and cash prizes to sponsors, advertizing and spreading gaming culture. In 2015, Swedish media conglomerate MTG bought one of the world's biggest esports organisations, ESL. The audience profile is heavily weighted towards men who account for 87 per cent of the total audience. Likewise, there are more initiatives to attract women, both as spectators and players. It is clear that media and sport companies are using esports as a way to reach beyond their aging demographics and engage so called millennial (generation Y). Among these are BBC, ESPN, FOX Sports, MTG and Swedish public service. The Swedish esports legend Emil 'Heaton' Christensen is even taking part in the 2017 edition of *Mästarnas Mästare* ("The Champion of Champions" – a primetime Swedish game show in which former elite sportsmen compete).

INTELLECTUAL PROPERTY INFRINGEMENT

Digital services are sometimes judged to be less at risk of illegal copying and there are of course certain advantages compared to for example physical distribution which can easily be illegally consumed via, for example, illegal file sharing or pirate copied discs. Digital content services can be exposed to various intrusions and attempts at unauthorized use, although in many cases these are hacking or trademark infringements, rather than copyright violations. Examples of

this may be fake websites selling accounts for popular games, hacked user accounts, pirate servers for online games and pure hacking where for example credit card information may be the intended target. Paid apps for the mobile marketplaces can also be hit, but these cases tend to concern more traditional file sharing via the established torrent services. Many game developers have testified in the international press about how the number of logins on their mobile servers is many times higher than the

actual number of apps sold, confirming this view. Another common problem is that of stolen content published in so-called "app clones" where someone takes content from a legitimate app, creates their own program code around the same content and then publish it as their own. Here, the game creators rely on help from the marketplace (e.g. AppStore, Google Play or Steam) to obtain redress. Digital services, therefore, have many advantages for game developers, but it is no definitive solution to the problems of illicit use.

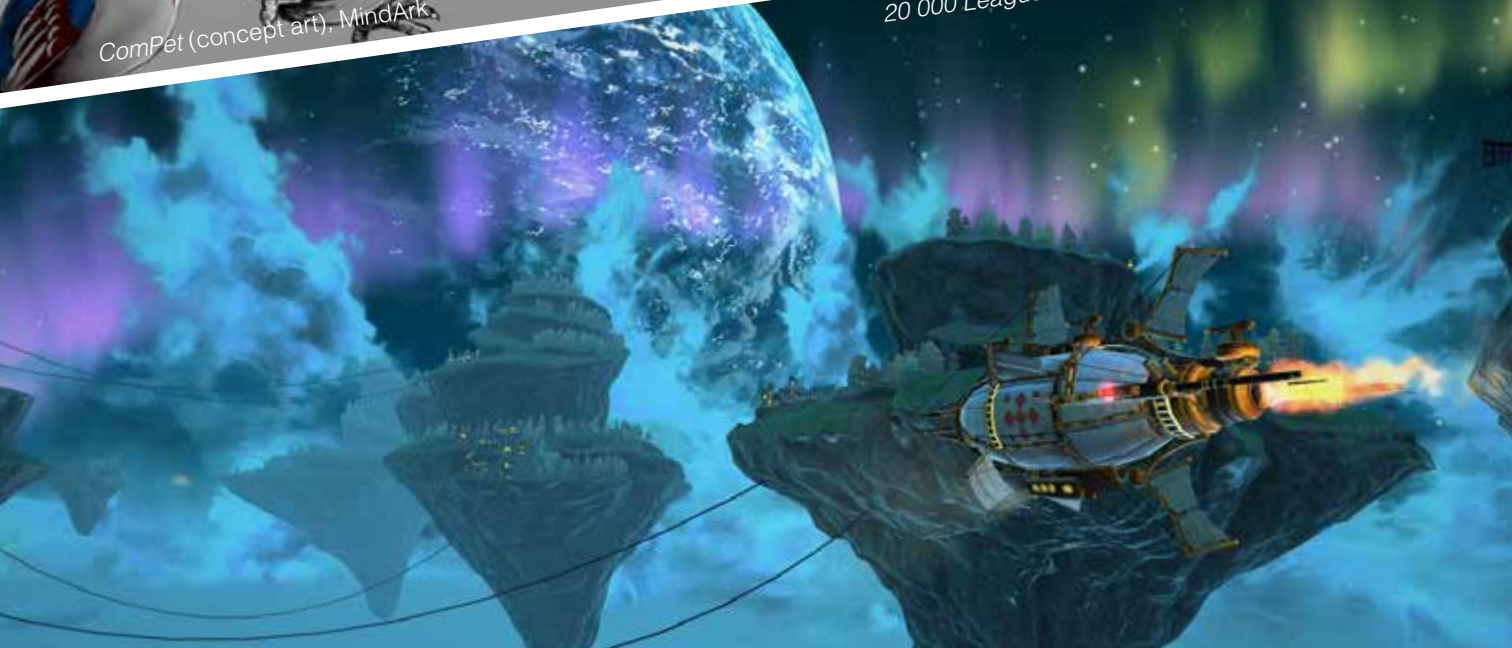


Dead by Daylight, Behaviour Digital Inc. (published by Starbreeze Studios)



ComPet (concept art), MindArk

20 000 Leagues Above the Clouds, That Brain



The *Battlefield 1* trailer is Youtube's most liked game-trailer, ever.



THREATS & CHALLENGES

Competition and access to capital and personnel are among the threats and challenges to the positive future of the Swedish game developers. The fiercest competitors are from countries like USA, Canada, UK and Finland. Several of these countries have very generous subsidies aimed at giving domestic companies advantages in international competition, such as tax rebates, “soft” loans to start-ups and various cash allowances. In comparison, Swedish public investment in the competitive edge of the games business is limited. For instance, this leads to less foreign equity investment compared to Finland. Issues regarding digital competition, such as different types of infringements (data, copyright and trademark infringement) and legal rights in digital markets also require increased focus.

Unfortunately, sometimes, the great success of the Swedish games industry is given as a reason why no investment in it is required, but the Swedish companies have succeeded in spite of the lack of support, not because of it. Looking at the few investments made, these have turned out well, and helped build new independent companies. Tarsier Studios with the award-winning *Little Nightmares* is a good example. But the lack of alternative financing opportunities and the lack of capital make it difficult for a small company to stand on its own two-feet, and it makes it even harder to explore new game concepts and raise the level in the culture form to which games belong.

Access to capital is a critical issue for entrepreneurs in many sectors and video games are no exception. It is a well-known fact that availability of capital in Sweden is weak, especially for business in the size order of EUR 500 000-5 million. The availability of qualified personnel is another factor that could hinder

the continued development of Swedish game companies. Sustained investment in education and research is needed, but also shorter processing times for work permits. In the longer term, the industry is calling for industry investments in programming and aesthetic subjects in schools.

Lastly, the digital development also challenges many established structures, with double VAT on apps in 2011 a recent example. These kinds of “bureaucratic glitches” can arise unexpectedly and must be resolved swiftly. A cloud looming is the EU deliberations on proposals for a single digital market and the implications new regulations will have on small and medium-sized game developers. Another worry is the national Swedish “chemicals tax” that will strike

at the Swedish retail sales of game consoles without helping the environment. As shown, most threats are political in nature, or else they can be easily remedied with policies that

would quickly result in increased employment and higher tax revenues. The companies are successful, but with political aim, success can be even bigger and longer lasting.

Game development is an intellectual, artistic, technical, and predominantly a business-oriented job. You do not have to mine ore or invest in big machinery for the industry to grow. It is about the interaction between the individual’s creative abilities and the conditions for effective enterprise that can compete in a global arena. With relatively small funds, the Swedish decision-makers can be involved in making Swedish game development into the world sensation of the century. Without much external help, game developers are already well on their way.

LISTED GAME COMPANIES

GUEST ARTICLE BY MAX BJURUD, GRANT THORNTON



At the end of 2015, Activision Blizzard announced the acquisition of King, at the time trading listed on the NYSE. The deal received a lot of media attention, one reason being the considerable size of the transaction, with an acquisition price of approximately USD 5.8 million. The deal meant that Activision Blizzard valued the operations in King at 2.3 times its revenues for the last 12 months, and 6.8 times EBITDA for the same

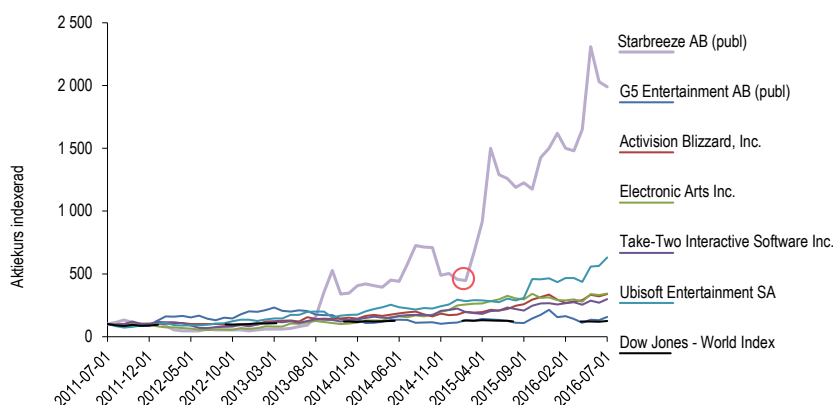
period. What does this mean in practice? How does the valuation compare with previous transactions and valuations of other listed video game operators? This fact sheet aims to provide an insight into the past and present valuations of publicly traded game companies to show the performance of the shares and how they differ from companies in other industries.

TERMINOLOGY

Enterprise value (EV)	Simplified, it represents market capitalization + debts – cash and cash equivalents
Market Cap	Market value at a point in time of the shares of a publicly traded company
NYSE	New York Stock Exchange
LTM	Last twelve months
EV/Sales	Valuation multiple, Enterprise value divided by annual sales
EV/EBITDA	Valuation multiple, Enterprise value divided by EBITDA
EBITDA	Earnings before interest, taxes, depreciation and amortization
Q1	1st Quarter, the first three months of the financial year
NM	Not Meaningful
N/A	Not Applicable

Looking at the global market, there are several publicly traded game companies. Some of the largest and well-known are Electronic Arts (acquired Swedish DICE in 2004), Take-two Interactive, Ubisoft, and East-Asian companies Nintendo, Square Enix, Konami and Tencent (who bought 5% of Paradox in their IPO). The graph below shows the indexed share price development of six listed companies in the last five years. Indexing is used to show what the share price of each individual company would have been today, given that they were all at SEK 100 on June 30th, 2011. Dow Jones World Index has been added as a point of reference.

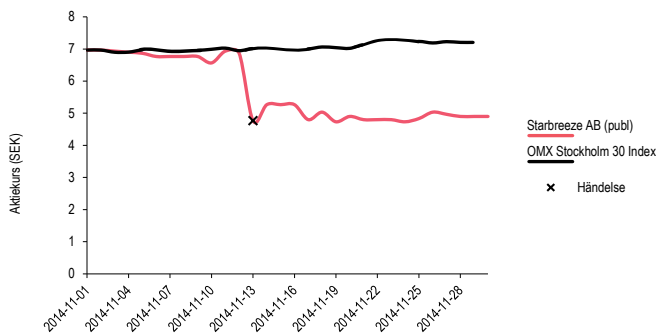
SHARE PRICE DEVELOPMENT OVER THE PAST FIVE YEARS



The share price development in the last five years has been very positive for these six companies. Starbreeze's share price has increased by 1890% in five years. In the next example, we look at two occasions where the

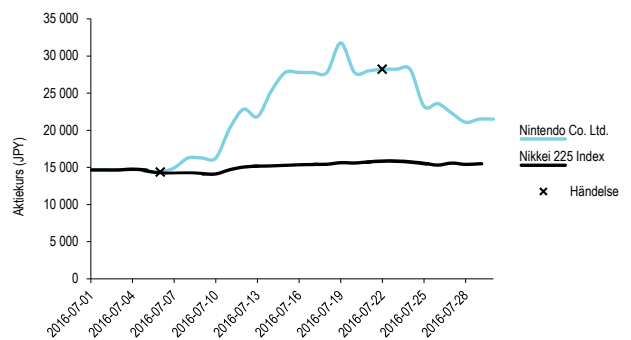
stock market has reacted strongly to new information: Starbreeze's Q1 report of November 2014 and Nintendo's recent summer of *Pokémon Go*.

STARBREEZESHARE PRICE POST Q1 (NOV 2014)



Starbreeze published its Q1 report on November 13th 2014, before the opening of the stock exchange. Expectations were high and shareholders had high hopes that the studio's new game *Storm* would be released within six months. Net revenues were SEK 30 million, SEK 60.3 million lower than the same period in the previous year. Important to remember is, however, that revenue in the same period the previous year was relatively high, following the successful release of *Payday 2*. Starbreeze commented on the *Storm* rumors that the game was in production according to an unaltered schedule. The market reacted and the share lost 31% in the course of the day. We can only speculate about the investors' motivation to sell; an overreaction to the report or a misunderstanding of the earlier year's results. Understanding the revenue model of a video game company is crucial for making correct assumptions and not draw short term conclusions. The period is marked with a red circle in

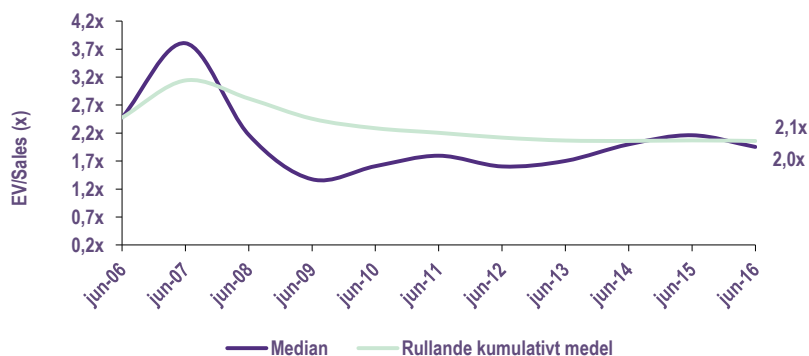
SUMMER OF POKÉMON GO



the preceding page's graph, where the subsequent share price development can be seen.

The second example is the launch of *Pokémon Go*, which created a media buzz in the summer of 2016. The game was released on July 6th and by Monday July 11th the success was firmly cemented. Nintendo's share jumped 25% and at most reached 121% (compared to the July 6th share price). However, it was often noted that the game was actually developed by Niantic, that The Pokémon Company owned a large part of the trademark, and that Nintendo's earnings were only from licensing fees and a certain stake in Niantic. The brand and other Pokémon products of course benefitted from the attention, but when Nintendo stated that the game would only have a limited influence on the profits of the company, the positive trend of the share price was interrupted.

DEVELOPMENT OF EV/SALES MULTIPLES, 2006-2016



When exploring the valuations of some 20 publicly traded game companies globally (as of June 30 2016), a maturing trend is evident. That is the median valuation of the Enterprise Value level

is approximately two times net sales. It should be noted, however, that the majority of the companies analysed are major companies with Enterprise Value exceeding SEK 10 billion.

LISTED SWEDISH COMPANIES

COMPANY	STOCK MARKET	IPO/MARKET CHANGE	ENTERPRISE VALUE SEK M	EV/SALES	EV/EBITDA
Three Gates AB (publ)	Nordic MTF	2016	n/a	n/a	n/a
Gold Town Games AB (publ)	Nordic MTF	2016	33,49	45,3x	NM
Paradox Interactive AB (publ)	First North	2016	5 717,60	10,5x	23,8x
Stillfront Group AB (publ)	First North	2015	257,34	3,1x	19,8x
Gaming Corps AB (publ)	First North	2015	19,82	3,0x	NM
King Digital Entertainment plc	NYSE	2014	n/a	n/a	n/a
Starbreeze AB (publ)	First North	2014	5 766,50	19,4x	153,7x
G5 Entertainment AB (publ)	Nasdaq Sthlm	2014	308,44	0,8x	7,1x

Looking at the Swedish publicly traded game companies from a valuation point of view, it is clear that every ratio is high in relation to global comparable companies. This signifies to some extent a different maturity for the Swedish companies, and that investor expectations are high, given that they are ready to pay a relatively high price for the companies. For example, the growth of Paradox Interactive has historically been very high, 241% in 2015, with EBITDA margins of 40.6%.

Because of big and various differences between companies, the video game industry is hard to evaluate. Business and revenue models vary and the companies are often in different stages of maturity. It is easy to reach false conclusions without the right knowledge. An increased knowledge about the industry contributes to a more accurate evaluation of the companies, where the differences between valuations are connected to the actual potential of the companies and how successful they have been in building a stable operation.

TRANSACTIONS ON THE SWEDISH MARKET (EXAMPLES)

YEAR	TARGET	BUYER	TRANSACTION VALUE (SEK M)	IMPLIED ENTERPRISE VALUE/ REVENUES (X)	IMPLIED ENTERPRISE VALUE/ EBITDA (X)
2016	Starbreeze AB (publ)	Smilegate Entertainment Inc.	344	n/a	n/a
2015	King Digital Entertainment plc	Activision Blizzard, Inc.	49 900	2,33x	6,77x
2015	Delinquent Interactive Limited	Mobile Access Group Interactive Sweden AB	n/a	n/a	n/a
2015	DreamHack AB	Modern Times Group Mtg AB	244	3,54x	n/a
2015	Resolution Games AB	Partech International; Creandum AB; GV; Initial Capital LLP; Bonnier Growth Media	51	n/a	n/a
2015	White Wolf Publishing, Inc.	Paradox Interactive AB (publ)	n/a	n/a	n/a
2015	Farm Clan	G5 Entertainment AB (publ)	n/a	n/a	n/a
2014	Mojang AB	Microsoft Corporation	17 795	7,67x	n/a
2014	Geminose Inc.	Starbreeze AB (publ)	120	n/a	n/a
2014	Bitsquid AB	Autodesk, Inc.	n/a	n/a	n/a
2014	Free Lunch Design AB	Palringo Limited	n/a	n/a	n/a
2012	Starbreeze Production AB	Starbreeze AB (publ)	16	1,04x	n/a
2010	Illuminate Labs AB	Autodesk, Inc.	n/a	n/a	n/a
2010	MachineGames Sweden AB (nka: ZeniMax Sweden AB)	ZeniMax Media Inc.	n/a	n/a	n/a
2008	Ubisoft Massive	Ubisoft Entertainment SA	n/a	n/a	n/a

“Increased knowledge about the industry contributes to a more accurate evaluation”





Stellaris, Paradox Interactive

CONCLUSION

Swedish game development is driven by strong IP created by a good variety of companies that make games for all commercial platforms on the market. Games today is a maturing market, with several early developers and entrepreneurs having gone on to create new companies, some of which re-invest in new games, Raw Fury being a prime example.

The growth of Swedish games export is driven by a growing demand from large parts of the world, not least because brand new target groups appear, and because existing audiences become more valuable. This trend shows no sign of abating in the foreseeable future and the Swedish companies have a very strong competitive position in the global market. This provides a good overall basis for further growth. Game development is sometimes mentioned as a future industry - a future hope for the Swedish economy. It is true of course, but the numbers speak for themselves: Swedish game development was relevant for the Swedish economy yesterday, is undoubtedly very important today, and represents an unlimited opportunity tomorrow.



Need for Speed, Ghost Games



Little Nightmares, Tarsier Studios



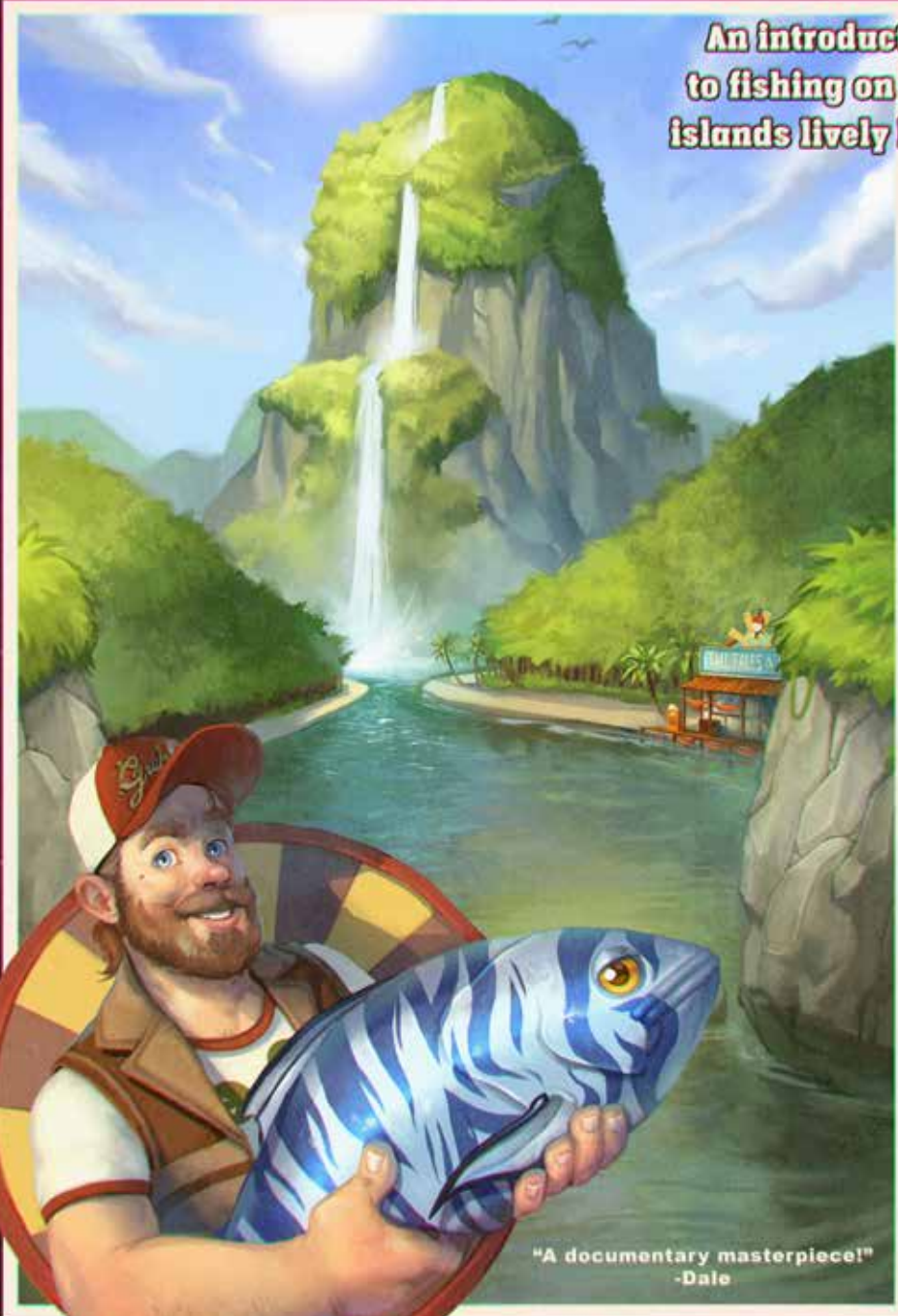
Kathy Rain, Clifftop Games (published by Raw Fury)

Documentary

VIDEO CASSETTE

Bait!

LAKE FISHING



An introduction
to fishing on Bait!
islands lively lakes!

mono
PDS
1.5

TV
PG

"A documentary masterpiece!"
-Dale

"Bait! Island Fishing: an introduction to fishing on
Bait! Islands lively lakes" is a production by Jim-Bob
& Dale Video Productions Inc.



RESOLUTION

METHODOLOGY

This report presents a summary of annual reports from the industry register of the Swedish Companies Registration Office, from companies with game development, game publishing or specialized subcontracting as a major part of their operations. Examples of subcontractors are Simplygon (3D optimization), Game Hosting (hosting), and Localize Direct (localization/translation of games). Not included are game companies focusing on poker, gambling or casino games. The method has several flaws: corporate forms other than limited companies fall outside the scope of the data, as do foreign-registered companies active in Sweden. These result in a grey area, and key figures such as revenue and employment are in reality slightly higher than those stated in this report. The strength of the method is that the data is audited and officially published by an authority.

Non-game related parent companies also present a problem, more precisely when a company's game development operation is reported in the parent company, which means it cannot correctly be identified for the Game Developer Index. A problem shared by the majority of industry organizations. In the instances where annual reports have been unavailable, last year's figures for profit/loss, revenues and number of employees have been used. These companies are: Defold, DeNA Sweden, Divine Robot, Frosty Elk, I C YOU, Isbit Games, Kolesterol Cät Interactive, LaughLoud:labs , Light & Dark Arts, Stockholm App Lab, och Thundersword Games.

The annual reports are in SEK, but for translation purposes the currency has been converted into Euro. EUR 1 = SEK 9.77.



Little Dew 2, Ludosity

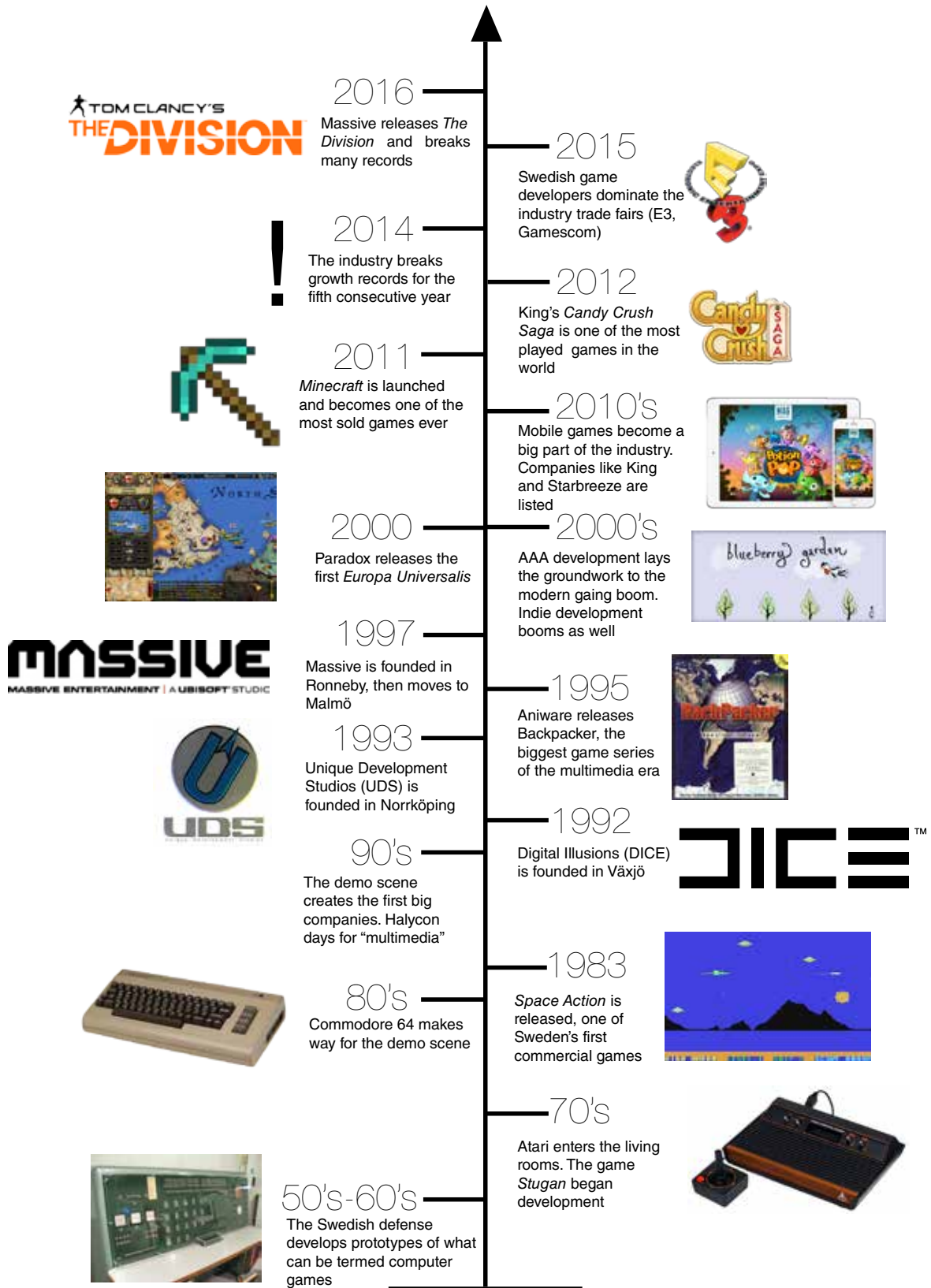


Snakebird, Noumenon Games



Clustertruck, Landfall Games

TIMELINE - A SELECTION



GLOSSARY

AAA: Popular term for lavish games with a big budget and high staff turnover. Normally released by the biggest publishers in the business, primarily via physical distribution.

Alpha: Signifies the phase in software development in which the product is ready for software testing.

AR/Augmented Reality: Direct or indirect observation of a natural environment whose elements are amplified (or supplemented) by computer-generated sensory input (audio, video, graphics or GPS data).

Beta: Follows the alpha phase. This is normally the phase available for software testing for other than those developing the software. These external users are called beta testers.

Casual Games: Games of the simpler kind. Often with a minimal storyline, shorter learning curves and designed to be played for a shorter length of time.

Cloud gaming: Also known as gaming on-demand, a type of online games allowing streaming of a game onto the servers of an operator or a gaming company. This allows you to play a game without requiring a console or high performance computer, since all processing is carried out elsewhere.

CPM: Cost per mille or cost of a thousand advertisement impressions.

Crowdfunding: Financing of a project through crowdsourcing. In recent years this has been expressed through various web platforms that collect their financial support for various projects from interested private individuals or companies.

Streaming: Direct playback of digital material simultaneously transmitted via the internet.

Crowdsourcing: Outsourcing to an undefined group of people, rather than paid employees.

DAU: Daily Active Users; the number of unique users per day

Digital Distribution: Sales of digital software through digital channels.

DLC: Downloadable content; downloadable add-ons for computer games, often on a smaller scale than traditional "expansions".

eCPM: Effective cost per mille; effective cost per thousand ad impressions.

Freemium: Collective term for a business model where the a product or service is offered for free, but where the player has the possibility to unlock advanced functions and virtual objects or bypass waiting times, by means of micro transactions.

Free-to-Play/Free2Play: Games that offer the user to play the game for free in its basic version, but where the income is instead generated through for example adverts, or the option to unlock the full version for a fee.

In-App Purchase: A purchase made in an app or game, rather than externally or through a linked payment system. The goods purchased usually consist of new runs, equipment, experience points or subscription services.

Indie: From "independent". A prefix characterizing games from independent developers, usually of the smaller kind, with few involved in the development process. Lately, indie represents the stream of developers that have reached a wider audience thanks to digital distribution, which has made them financially viable.

IP: Intellectual Property, a company's immaterial rights.

MARPPU: Monthly Average Revenue Per Paying User.

MARPU: Monthly Average Revenue Per User.

MAU: Monthly Active Users.

Middleware: Software used to develop games. Middleware acts as "glue" between two existing software components.

Micro Transactions: A transaction involving smaller sums, carried out online. There are different definitions of the amount of money they can consist of, but in the gaming business the term is used to describe payment of for example DLC and in-app purchases.

Off-shoring: Outsourcing internationally

On-shoring: Outsourcing domestically.

Outsourcing: To hire external personnel and specific competence from other companies. Production tasks for other companies.

Retail: Games sold at retail.

Serious Games: Games with a principal purpose other than entertainment. It can refer to simulators, exercise games, learning games, rehabilitation games or commercial games, so called advergames.

Smartphone: Collective term for cellphones with a large computing capacity, with graphical screens and an internet connection. Popular operating systems are Android and iOS.

Social Games: Collective term for social network games, for example Mobage and Facebook.

Tablet: Devices like the Ipad.

Virtual Goods/Items: Term referring to virtual objects, such as those existing in computer games in the form of puzzle pieces, weapons or other items.

VR/Virtual Reality: A way of being visually emerged in a gaming experience, often with the help of a goggle-like accessory.



Goat Simulator: Waste of Space, Coffee Stain Studios



Magicka 2, Pieces Interactive (published by Paradox Interactive)

DATASPELSBRANSCHEN
SWEDISH GAMES INDUSTRY ■