



INVEST IN FINLAND

Finnish gaming industry

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Finnish gaming industry in general

The Finnish gaming industry is growing. From an industry of a few companies in the late 1990s, the industry has, since the mid 2000s, become an integral part of the Finnish content export industry. According to a study published by Neogames in 2006, the growth rate in 2004-2005 measured both by net sales and employment effect was 50%¹. The growth rate for 2006-2007 is, based on this study with a smaller sampling (11 companies), estimated to be approximately 20% in both sectors.

In 2005, the annual net sales of the gaming industry were estimated to be approximately EUR 65 million and involved the employment of approximately 1,000 people. There is no aggregate figure for 2006 but simply in light of this study we have reason to claim that the above mentioned figures grew in 2006 and the growth seems to continue at approximately a 20% rate in 2007.

According to our estimate, the 2006 net sales of the Finnish gaming industry was EUR 70-80 million and involved the employment of 1,200-1,300 people. In a gaming industry culture export report compiled by Neogames for the ministry, the 2012 vision includes the following figures:

- Employment 2,500-3,500 people.
- According to our estimate, this is the structural employment of the gaming industry in Finland. In addition, the Finnish gaming industry is likely to employ approximately 1,000 people in international subcontracting companies. In addition, a considerable number of Finnish gaming industry professionals also work abroad.
- Net sales EUR 500-700 million of which 90% from abroad
- Net value of sales EUR 1.3-1.5 billion. The figure takes into consideration unit sales but not the indirect employment effect of the industry or the skirt industries.
- 50-60 gaming companies. The industry becomes centralised.
- Average company size approximately 50 people (now approximately 10 people).

In an earlier study, the strong development of the Finnish gaming industry was estimated to be based on four factors:

- technological and content know-how of the companies
- excellent price-quality ratio of gaming production
- delivery reliability
- international growth in the mobile entertainment sector.

In light of this study, the above mentioned issues have remained strong competitive factors.

The study also confirmed the finding that the dependency of the Finnish gaming industry on mobile operations is no longer true. For instance Max Payne (Remedy), FlatOut and FlatOut II (Bugbear) and Habbo Hotel (Sulake) prove that the front extends to PC and console games as well. This side also shows signs of new implementations in utilising digital distribution.

Mobile game operators are, however, still strongly represented and in the mobile sector in particular the technological lead gained in the late 1990s seems to be important especially as the number of mobile devices increases and, in order to be successful, a single game must be developed for several hundred different handsets both in the European and US markets.

An interesting growing trend is in handheld devices. Both PSP and to a wider extent DS seem to interest new players. It remains to be seen whether it is possible to build a solid business only on these devices.

¹ Publication of Finnish Gaming industry, Finnish Game Companies 2006 / Neogames

Gaming industry operators in 2006

In 2006, there was an estimated 120-140 companies in Finland with a permanent relationship with the gaming industry.

These companies can be divided into three categories:

1. Companies for whom game development and games are the core business, i.e. more than 50% of net sales is generated by games. Share 70/120.
2. Companies where the gaming business supports other operations. Share 30/120.
3. Companies where games will represent a considerable share of the strategy in the future. Share 20/120.

The companies in category 1 are actual game developers. There are no significant game publishers, i.e. companies that only publish games, in Finland so game developers form the core of the industry in Finland.

Category 2 includes, e.g. telecom operators, broadcasters, certain software and hardware manufacturers and terminal manufacturers like Nokia.

Category 3 contains, e.g. software and middleware manufacturers who, due to the nature of their current operations, are likely to be interested in focusing their operations towards games or game-like applications in the future. As an example we could mention, e.g. Hybrid Graphics acquired by Nvidia and Bitboys acquired by ATI, now owned by AMD.

The companies that participated in this study all belong to category 1 Game developers, even though one company also has publishing operations and one company has a product that is a communal service with game-like elements.

International gaming industry markets and finnish companies' position

The Finnish domestic market is of marginal size. According to FIGMA, the value of Finnish game sales using retail prices in 2006 was EUR 68 million, divided between PCs and consoles as 33% / 67%. Only 29 products sold at over 10,000 copies and the biggest seller only amounted to 75,000 copies². These figures are so low that operating purely on the domestic market is practically impossible on the PC and console side.

The figure does not include mobile games or online gaming but the situation is practically the same in both sectors. In this situation, Finnish game developers must design their operations to be international from the start. This was also mentioned as a strength of the Finnish gaming industry in the interviewee's answers.

Internationally, the media and entertainment industry is a significant business throughout the world. In 2004, the industry reached global net sales of USD 1,300 billion and the estimates indicate an annual growth of 7.3% for the industry until 2009, when annual net sales of USD 1,800 billion will be reached.

The esteemed research institute PriceWaterhouseCoopers'³ estimates the industry to be divided into 14 segments: the movie industry, TV content, TV content distribution, music recordings, radio, outdoor advertising, Internet advertising and connections, video games, operational information services, magazine publishing, book publishing, amusement parks, casinos and the sports industry.

The 2004 global net sales of the video game segment of USD 25.5 billion represents approximately a 30% share of the entire media and entertainment industry.

² Finnish Games and Multimedia Association FIGMA's research on game sales in Finland in 2006

³ PriceWaterhouseCoopers 2004

The video game industry is often compared to the movie industry. In 2004, the movie industry reached global net sales of USD 84 billion. Thus the net sales of video games in 2004 were three times smaller than those of the movie industry.

Growth in the video game industry is among the strongest in the industry only falling behind the net sales growth in Internet connections. The annual growth estimate for 2005-2009 is 16.9% which means that the total net sales for the industry in 2009 are estimated to be USD 54.5 billion. In the same forecast, the movie industry is expected to grow by 7.1% p.a., which would mean that the total net sales in the movie industry in 2009 would be USD 119 billion. Thus the gaming industry would already represent nearly half of the movie industry net sales. The magnitude of the change is also emphasised by the fact that the gaming industry is the same size as the music industry measured by net sales in 2009.

The estimated growth figures for Finnish gaming companies in the same period is approximately 20%. In practice this means that the gaming industry will grow faster in Finland than the market on average.

Finnish gaming industry in the international markets

The general situation of the Finnish gaming industry can be summarised into a few findings:

The company size is small even though the average size is growing.

The companies are skilled, innovative and protean.

A few larger companies have already made an international breakthrough and some are on the verge of one. These companies are expected to become the engines of the industry in the future.

- The tone in the industry is positive. The companies are positive about their future.

The estimated growth of the mobile entertainment market favours small Finnish companies due their good mobile readiness.

The readiness of Finnish gaming companies for the common production of several platforms is relatively good due to strong technological know-how and good work organisation.

Competitive situation

The international structure of the gaming industry best describes the competition in the sector. A good example of the structure is the largest gaming market in the EU, Great Britain.

A game developer can act as an independent company (external studio) or as part of a publisher (internal studio).

There are no statistics on the exact number of independent game developers but it is estimated that there are 150 game development studios in Great Britain alone. We estimate that there are over a thousand companies globally. The sector is highly labour and expertise intensive. British game development studios (internal and external studios) are estimated to employ over 5,000 people. The size of external studios varies from small companies with a few employees that develop Java mobile games to so-called super developer companies employing hundreds and developing several AAA class console games simultaneously.

On the globally largest game markets in the US and Japan an addition to the structure are console manufacturers, Microsoft in the US and Sony and Nintendo in Japan, whose presence furthers the competitiveness of the local gaming industry. On the mobile side, the effect of terminal manufacturers is lower, so the Finnish gaming industry does not benefit from the fact that Nokia is Finnish to the same extent, even though Nokia is an important operator in terms of the gaming industry. It should, however, be noted that Nokia does have a considerable effect on the technological know-how of Finnish mobile game developers.

Transformation trends

A radical change is taking place both on game console and mobile markets. The maturing of the game console markets and introduction of new console platforms has led to centralisation in the markets in terms of game development studios and game publishers.

In the mobile game markets, fast technological development of phones, terminal fragmentation and strong centralisation in the industry as well as the large amount of corporate restructuring create a challenging operating environment.

On the web side, emphasis on communality and the shift in games from a product to a service are clearly visible.

The following significant trends can be summarised from gaming industry market analysis:

- Clearly faster growth in gaming industry net sales compared to other entertainment industries.
- A considerable opportunity created by the shift in the console gamer generation and the risk that some extent is already visible in company operations, e.g. striving to utilise digital distribution.
- A decrease in the number of game developers and higher standards.
- Hit products generate most of the net sales in the gaming industry especially in the PC and console sector.
- Expected growth in mobile and online gaming offers new opportunities but also threats mainly in terms of increased competition. Among all of the main markets, Asia and Korea in particular focus most on web games. An invasion of Korean companies in the European markets decreases the possibility of Finnish companies succeeding in the markets.
- Increase in IP value. When large players focus on series and license products, the market for products based on original IPs changes and also offers an opportunity for independent game developers.

Interviews

The study was carried out as interviews including 14 questions in different categories.

The questions were general in nature and the companies' orientation within the gaming industry was not considered.

The interviews lasted for approximately an hour / company and in some cases more than one company representative participated in the interview. The interviews were recorded.

Current technology and its future / lifecycle

The gaming industry can, based on main platforms and distribution channels, be divided into four sectors that deviate from one another. PC and console games, mobile games, web games and handheld games.

The platforms for *PC and console games* are normal computers and game consoles (PS2, PS3, Nintendo Wii and Xbox 360). The traditional distribution of these games has been normal box distribution, i.e. distribution through retail channels but now new business models that enable digital distribution have opened up and are appearing.

Mobile games are games that are played with a mobile phone. The level and quality of mobile games is highly varied. There are simple casual games but also clearly more developed premium mobile games. The distribution channel of mobile games to the consumer is traditionally managed by operators.

Web games are games that are played on the web. These are represented, e.g. by highly popular MMORPGs such as World of Warcraft (WoW). Gaming communities built on games can also be viewed as web games (such as the Finnish Aapeli). Downloadable usually casual games are also distributed on the web.

The platforms for *handheld games* are portable game consoles the most important currently being Nintendo DS and Playstation Portable (Sony PSP).

Technology in PC and console games

"The camera with which the film is shot must constantly be developed"

An interviewee on the importance of production technology in console game development

The console war (or more accurately console hype war) between the large manufacturers has temporarily seized since the PS3 was launched. According to gaming company views, the composition and used device platforms have now been established for the next 5-7 years.

Stabilisation of the composition alleviates the work of console game developers. No new console is on the horizon that could for instance like the PS3 affect the decision of game publishers for years to come. 'Old consoles' (mainly PS2) tail end is also expected to continue for another 2-3 years. Sony has announced that publication of PS2 games will continue at least until 2009⁵. The new console generation places high demands on game development. Increased capacity and thus growing data amounts are, in game developers' opinions, a clear transformation.

In all interviewed companies the production line consists of own and licensed technology. Licensing of technology is, especially in certain cases, such as the production of multi games, seen as sensible. In console game companies in particular, technology is next to a motivated staff as the main competitive advantage. Therefore technology is not licensed much, i.e. there are no engine sales.

In PC games the situation is quite similar. The problem on the PC side is the constantly evolving device environment. Therefore the future of traditional PC gaming is uncertain and companies that develop games only for PC platforms clearly want to expand their development to other platforms as well. Of these, Xbox 360 is the most natural. The advantage of PCs is its high penetration in the markets, an estimated 850 million at the beginning of 2007.

All interviewed console game developers were, however, confident regarding their own technology also for next generation platforms. It is highly typical for Finnish console game developers to have invested heavily in production technology over the years; production technology is specialised in the companies genre and its level is seen as good and competitive even internationally. The money invested by companies in technology and technology subsidies from, e.g. Tekes support this view.

Simultaneously it was, however, admitted that technology must be constantly developed. In the future, the full capacity of next generation game consoles will be utilised, and the extravagance of games, production costs and the technology requirement for game development will increase further.

Technology in mobile games

Mobile games are produced roughly in three different ways. The most popular platform with the highest install base on consumer markets is Java. In addition to Java, development is carried out with Flash Lite which in some ways is more user friendly than Java due to easy scalability, for instance. The third way to manufacture mobile games is to develop them for, e.g. smart phones' Symbian operating system.

Java is the oldest and most widespread of the above. It is estimated that there is approximately 2.7 billion mobile phones globally and the majority supports Java, i.e. Java-based games work in these phones. This ensures a wide potential user base for Java-based development. In terms of game development, Java's problem is, however, that it is not scalable. Of

⁴ According to one gaming company, they deducted in 2004-2005 that PS3 will be delayed from the planned launch (was delayed by approximately 18 months). Therefore they offered the publisher a game developed on PS2 platform which was not accepted because the publisher believed PS3 would be launched already in early 2006.

⁵ E.g. In Finland, approximately 430,000 PlayStation 2 consoles have been sold and it is the most common console on the market throughout the world. Globally the console has, depending on the estimate, sold in 85-100 million units.

each developed Java game separate versions have to be built for as many terminals as possible. In practice this means as many as 600 different versions in order to make the potential user base as wide as possible.

Making different builds requires a lot from the technology. Therefore companies that produce Java-based games have invested a lot in production technology. As in console games, these companies view their own technology as a competition factor and for not distribution to outsiders, even outsourcers more than necessary.

Flash is a development environment owned by Adobe and familiar to the web sector for years. The advantage of Flash compared to Java is that Flash uses a scalable web graphic that enables the implementation of one game for all Flash terminals simultaneously. So no terminal specific builds are needed, only language specific. The Flash used on the mobile side is called Flash Lite.

Counterbalancing the lighter development work compared to Java, Flash's problem is the small install base. Currently it is estimated to be approximately 200 million terminals mainly in Asia. Flash is, however, clearly a growing platform and it is assumed to increase its share in Europe and the US within the next few years. In 2006, for instance, approximately 70% of Flash Lite mobile terminals were delivered to Europe or the US. ⁶The investments in the production technology of companies that use Flash Lite is clearly lower than those of companies that use Java. Flash is commercially interesting due to its communication features and it is often seen more as a Communication enchantment tool than an actual gaming environment.

Gaming development directly on **operating systems** is carried out by a few companies in Finland. None of these have been interviewed in connection with this study. For instance, Symbian-based game development has the same problems as with Flash. The install base is still small, based on estimates, e.g. Symbian has approximately 100 million devices. Things are not made easier by the fact that contrary to Flash, there is competition in the operating systems on which smartphone operating system will become dominant in the future.

Technology in web games

"Casual games is so much of mass gaming that there is no point of too much jealousy"

An interviewee on the importance of production technology in the development of web-based Casual games

The interviewed companies represented the casual and communality emphasis of web games. It is no surprise that unlike extensive MMORPG productions, the game development in itself was seen as relatively simple in terms of technology. Casual games are small in size, technologically simple and fast to play.

The nature of the web, which the above quote depicts well, partly explains the different attitude compared to, e.g. console companies. Among the interviewed companies' web products, the game is part of the attractiveness of the service and therefore technology orientation is also lower.

In the future, it was technologically-wise seen as most important to have access to as standardised a community development environment as possible, which enables the growth of the community and the generation of user generated content, for instance.

Technology in handheld games

In the development of handheld games, the development of an individual technology was seen as a possible option to, e.g. lower license costs. More essential than own technology was, however, the ability to apply existing technologies as efficiently as possible. The overall efficiency of the process was also seen as more important than the actual technology.

⁶ Information Adobe: <http://www.adobe.com/aboutadobe/pressroom/pressreleases/200702/0212073GSM.html>

Opportunities offered by technology

"Super rich web platforms are rather inadequate these days"

An interviewee on the opportunities offered by the web

In general, the current technology both in production and in the target devices was, in all areas, seen as sufficient in view of game development.

Some thoughts on new technology were expressed.

On the **console side** the progressiveness of terminal technology is determined by the price of the terminal. For instance, the price of the PS3 is currently approximately EUR 650 in Europe. The price for the same device in the US is USD 600. This price can be seen as some sort of limiting value for game devices. The demand for a console with a higher price than this would probably be weak. In practice this means that the console is always a technological compromise between performance and price. Taking this fact into account, next generation consoles were seen to be as good as possible.

In the new console generation, improved web capacity was seen as a considerable improvement as well as web distribution enabled by new consoles which in addition to new technology also enables new business models. The amount of memory is usually the biggest restriction for consoles.

As said before, console companies are happy with their technology and the opportunities it provides.

On the **mobile side**, technology was seen as more restrictive. Progressing fragmentation in the terminal portfolio is a continuous challenge for Java developers in particular. Certain communicative features are still underdeveloped in view of communal mobile games. Neither Java nor Flash, in their current state, enable Server-Client connection within the game, which would be a precondition for an easy communal gaming experience. For instance on current device, Java cannot run in the background.

On the mobile side, device development and its direction also causes questions and uncertainty. The above mentioned terminal fragmentation affects all aspects of development work.

On the **web side**, technological problems are created by the "seams" in the user experience. There are still some plug-in installations required. Microsoft's decision to stop extensive Java support also to some extent affects the generation of "seams". The problems on the web side in Casual games and gaming communities, as well as "online entertainment" pages, is also increased by the lack of "rich" web platforms mentioned in the quote at the beginning of this section.

Particularly on the casual side, another problem is the lack of a micro payment system that also creates a problem for other content trading on the web. Even though this problem is more financial than technological, it weakens the seamless user experience which is crucial in communal web games.

Developers of **handheld games** found the technology to be relatively sufficient. Both Sony and Nintendo offer developers tools for implementation. The platforms are, however, surprisingly complex and require a lot of optimising. Nintendo DS' production was considered both easier and cheaper than Sony PSP's. This is probably one reason for Nintendo DS becoming technologically and operationally a popular entry level platform next to mobile.

Future technologies (time span 3-5 years). Which technologies will rise, what to invest in?

"Mobile is the world's largest game platform that is always on the web and always with you"

An interviewee on future game platforms

The biggest expectations for **PCs, consoles and handheld consoles** focus on web distribution and related technologies as well as the business enabled by the technologies.

The general view seems to be that the web distribution of games will clearly alter the nature of games towards service operations. The original game is bought on the web, expansion packs and new features are downloaded when necessary and as a whole console games move closer to web games in this sense.

Continuous game evolution, i.e. game development and supplementing it throughout its lifecycle is also an efficient response to piracy. The introduction of servers and web connections also enables a new more communal game form and gaming experience for consoles.

Of future technologies the most important ones technologically on the console side are applications that utilise the multi-processor technologies of next generation consoles. This also places a challenge on game production lines whose scalable technology architecture becomes emphasised. As mentioned before, an efficient platform requires efficient development tools.

Another challenge lies in the (innovative) utilisation of the new opportunities offered by the web.

So the companies believe that there are no major technological leaps expected on the PC, console and handheld console side, but stable development and maximum utilisation of existing technologies (naturally updating and updated) maybe apart from web distribution.

Mobile

"The only real cross platform that works is Flash"

An interviewee on Flash Lite's future possibilities

The situation in the mobile world is slightly different than on the console side. The previously mentioned terminal fragmentation is accelerating. This in turn opens up opportunities for the competitors of unscalable Java like Flash Lite. Based on some estimates, Flash Lite will surpass Java in terms of user base and install based in the next five years. Therefore, Flash Lite is an interesting technology on the mobile side worth watching. The value of Flash is also emphasised by the fact that in addition to mobile, it works on the web.

Another interesting factor on the mobile side is a wide introduction of IP-based networks into mobile devices. An IP-based network enables distribution in the revolution of mobile games because a fixed price connection and downloading directly from the IP address enables operation independent of the operator and its WAP deck like on the normal web side. This opportunity in itself weakens operators' possibilities to maintain their current share of revenue.

It is clear that IP-based distribution will create new business and new business models like digital distribution on the PC and console side.

Communal services have already been previously mentioned in connection with the mobile side. They are seen as one clear game development direction in the future. Many interviews showed that the creation of normal Java games is no longer enough. The value added received by companies from these is small.

According to several views, profitable mobile game development is currently very challenging and the threshold for new companies to enter this business has become clearly higher.

Three things are emphasised in **web games**. Technologies that enable communities, super rich web platforms and technologies that combine mobile and the Internet. As previously said, the web games discussed in this study rely heavily on community and the whole technology is mostly a tool to create the community.

New technological opportunities

"You have to be good in order to succeed"

An interviewee on the opportunities and challenges of future technologies

New technology enables a lot of things both in terms of game substance and the gaming business. At least the following were mentioned as new opportunities:

- Mobile gambling. The biggest enabling factors are IP-based mobile terminals and an increase in fixed-priced (fast) mobile web connections like GPRS, GPRS + edge and UMTS. On the other hand, gambling may also be problematic in terms of legislation.
- Advergaming. The enabling factors are the same as in gambling and an increase in so-called push technologies on the mobile side.
- Micro payment systems on the web. This alleviates, for instance, an increase in casual web games.
- User-generated content. For instance Sony drums this issue strongly in its gaming services.
- The effect of communality on the gaming experience changes and strengthens. In the future, the competition for the consumer's soul will be fought for with the help of the game substance and the gaming community. Communality will become stronger also in mobile and console games.
- Internal advertising in games will strengthen and its financial weight will increase.
- Digital distribution enables the redistribution of the value chain. Currently, game developers have little power compared to the publisher or distributor. Digital distribution changes the relative strength. In digital distribution, the royalty share of the game developer increases from the current 20 per cent in Box distribution to as much as 70 per cent.
- The barriers of terminals in the current form will be lowered or disappear all together.
- Games will develop from a product into a service.
- An increase in bandwidth will enable richer content.
- In the future, Java will enable the use of a Client server connection. Currently a majority of handsets do not support this, when the game is launched it connects directly to the server and carries out Client synchronisation. The gaming experience cannot, however, be fully dependent on such a connection.

Technological competitiveness of Finnish companies in the future and the reasons for it

"Mediocre is worthless, poor is worthless and excellent is immeasurably valuable"

An interviewee on the basis for technological competitiveness

The estimate of the interviewed companies on Finnish companies technological competitiveness in the future was mainly positive, even though some challenges mainly in terms of training and business know-how is visible. Below are a few quotes from the interviews:

"Technological competitiveness is good, education on the technological side is good. Support from Tekes is important, Finnish employees have good self-control and efficiency."

"In the future, the importance of quality will increase. We have shortcomings in sales and production."

"Competitive in terms of quality. Finland generates products that have high quality. It is not worth while making generic stuff in Finland."

"Technological competitiveness is not emphasised as much in console games as in mobile games. You cannot get a competitive advantage from technology. It would, however, be good if there were more players in Finland that focus more on technology. There is a demand for innovations on the gadget side. It would be good to have players on the hardware side."

"Cooperation with a hardware manufacturer could bring benefits to game developers in the future."

"Companies that are established in the PC and console side have a good basic technological level. One reason is the long history of the developers. Investments are required to maintain the gaming culture and education."

"Top companies have an extremely good technological base."

"Currently good and improving. New companies are entering technological development. Tekes has had an important role."

"We can utilise Nokia's reputation but there is not necessarily that much technological competitiveness. The transfer of Nokia's production abroad has also moved the technology abroad. The Nokia connection is a good investment for Finnish companies. The technological competitive advantage is decreasing."

The statements by the gaming companies strengthens the general view that the strength of Finnish gaming companies lies partially in process and technological know-how.

Most interviewees saw a few main reasons behind the technological know-how: strong technological education, Tekes technology subsidy, established companies' personnel's long history in the gaming industry and, at least on the mobile side, Nokia's effect.

Based on the study, technology cannot be seen as the weak link in the Finnish gaming industry in the future either. Many respondents emphasised, however, that the current technology supports the network; hobby activities and education must be preserved to maintain the current level.

Competitiveness of Finnish gaming companies

The competitiveness of gaming companies in global markets is not directly linked to the location of the company. Naturally companies located in the large target markets (the US, Japan) benefit from their location but this does not mean that gaming companies from other areas are excluded from the global market.

In terms of the markets, Finland's location is challenging. Large individual markets are far away and, e.g. on the console side, the big publishers are far away. The competitiveness of Finnish gaming companies does not owe anything to our

country's geographical location. Simplistically one could say that only Iceland has a poorer location in Europe than Finland and it also has successful gaming operations.

So how is competitiveness generated? The following chapters discuss this through the companies own views.

Finnish companies' competitiveness on global markets and the reasons for it

"Others have products that are as good but Finns are cost efficient."

An interviewee on the competitiveness of Finnish companies

"Mediocre is worthless, poor is worthless and excellent is immeasurably valuable"

An interviewee on the preconditions for competitiveness

"From day one, companies must look at things globally"

An interviewee on the reasons behind the competitiveness of Finnish gaming companies

"Perhaps it is a blessing that we have a small domestic market"

An interviewee on the reasons behind the competitiveness of Finnish gaming companies

In general, the competitiveness of Finnish companies in the global markets was seen as good. The companies saw many reasons behind this.

Finland has a good reputation as a mobile country. This is not too surprising as such. The mobile reputation is to some extent based on Nokia's strong influence. It is also noteworthy that a majority of Finnish gaming companies focus of mobile products.

As mentioned above in connection with technology, Finnish gaming companies generally have good technological know-how. Tekes role in connection with technology development is almost purely praised. Not even criticism on too much bureaucracy that is typical of companies was given.

The general reputation of Finland was also seen as positive. Gaming companies price-quality ratio, delivery reliability, staff expertise and motivation were seen as positives.

It may be surprising that only a few of the respondents mentioned innovativeness and creativity even though substance know-how was considered high. It seems that the companies in the gaming industry perceive competitiveness through technology, commitment, professional substance know-how and concrete actions.

Surprisingly enough most of the respondents saw a small domestic market as positive. Unlike in, e.g. UK and France, the companies never had a realistic chance to rely on a sufficient domestic market. This has directed companies towards international markets from the go.

The effects of the top companies in the industry, mainly Remedy, were also deemed highly positive. The volume of the Finnish gaming industry is still so low that the industry is easily identified with its most visible representatives.

The factors outside the industry that were mentioned included a good public school system and demoscene that has long gaming industry traditions, of which the most visible representative is the Assembly event arranged for the 16th time in 2007.

Problems of competitiveness

"The amount of investment required before a game is sold."

An interviewee on the problems of gaming companies competitiveness

"The recruiting crisis is landing in Finland. The lack of global gaming industry expertise will affect us in the future." *An interviewee on the problems of gaming companies competitiveness*

"Shoestring budgets do not work in the large markets."

An interviewee on the problems of gaming companies competitiveness

There are naturally problems in companies' general competitiveness. The responses regarding the problems were surprisingly unanimous.

The main problems are listed below

- The markets and customers are far away. How to entice customers is a big issue.
- Lack of money and corporate financing. In the past years, it has become nearly impossible to get VC for gaming companies in Finland. This issue was raised in nearly all responses. For instance, Tekes' technological subsidy is not sufficient to compensate for this shortcoming. Pre-seed VC is also seen as inadequate.
- Gaming industry companies are on average too small for the international markets. The persons that enter the gaming industry and establish companies are usually programmers or graphic designers. Business know-how is only developed with time and this is the reason behind shoestring budget companies.
- There is still no proper demo financing / production support (cf. AVEK in the movie industry) in Finland. Structural support often consists of subsidised consulting support. This has its value but it does not compensated production support. Sales pitches are not enough in the gaming industry; the demo material must also be good.
- There is also a lot of room for improvement in companies' internal training and its financing.
- The resource pool is not sufficient in view of the future. The resources created by the demoscene that has "fed" the gaming industry thus far have all been utilised. New resources are not created quickly enough in view of growth. Investments should be made on a general level in gaming industry education.
- Branding, sales and marketing is clearly a weak point based on company perception. This lack of business and marketing know-how has been recognised but fixing it has proven difficult.

Development suggestions

In early 2007, Neogames created a culture communication strategy for three ministries.

The following measures were suggested:

The improvement of operating possibilities of the gaming industry export organisation (Neogames). Neogames has operated as the converging export organisation of the Finnish gaming industry since 2004. The plan is to strengthen export operations during 2007-2009, for instance, through cooperation with Nordic Game and European EGDF. The financing base is, however, currently insufficient for the planned operations.

Improving the export readiness of gaming industry companies. For instance training and tutoring must be linked to joint export trips of the gaming industry. In addition, the after care of export trips must be seen to.

Demo fund. Particularly on the PC and console side companies preparedness to fund game demos themselves before the actual publication agreement affects the company's chances of success considerably. On the mobile side, companies' own financing preparedness in turn alleviates the maintenance of incorporeal rights.

Gaming industry education. Due to fast growth, the gaming industry is facing the risk of a lack of personnel in the coming years. The personnel shortage can be fought both through traditional education measures and companies' own education measures. In order to ensure the availability of personnel in the future as well both are needed.

The suggested measures are well suited to the companies' views on the biggest downfalls in the industry.

Reasons to invest in the Finnish gaming industry

"Finland must specialise on content production with high added value"

An interviewee on the preconditions of success in the future

In connection with the interview, each company was asked to give three reasons of why to invest in the Finnish gaming industry. As there were eleven interviewed companies there were more than three answers. All of the reasons given by the companies were valid arguments in different connections considering the industry.

- Gaming companies' know-how especially on the mobile side is of a high quality.
- Good education system in particular in technology but also in graphics.
- Entrepreneurs have a high level of commitment and work motivation. This is also true for employees.
- Technological know-how. Low level of resources requires the companies to operate efficiently which is enabled by high technological expertise.
- Top companies have a proven track record in producing hits⁷.
- Cost efficient operations are a convention in Finland. One player is able to generate more.
- Based on research, Finland is one of the world's most competitive countries.
- Finland is well positioned geographically in terms of, e.g. subcontracting from Russia and the Baltic countries.
- Companies understand what the gaming industry is about.
- It is (still) easy to put together teams in Finland.
- Structural change is ongoing. Now is the right time to invest.
- For instance on the China-India axis, the input-output ratio is no longer as good as before. The cost structure in the US is hopeless. England in turn is stuck in the old console generation. The gaming industry hot spots are currently Canada, Eastern Europe and the Nordic countries.
- Companies are willing and able to create innovations.

⁷ Finnish game history has five PC / console games that have sold over 1 million units globally: Max Payne, Fall of Max Payne, FlatOut, FlatOut2 and Supreme Snowboarding. Bugbear's FlatOut is currently Empire's game series with the highest sales.

- Finland has a good and working infrastructure.
- Finland has many small companies with strong technological know-how.
- Some views on the investment fashion were also expressed. One clear model was that the investor invests in several small companies and consolidates them into one large company. If the investor is also able to provide management, sales and productivity for the company success is possible.
- The respondents did not feel that traditional investment methods are well-suited for the gaming industry. According to the companies' views, smaller investments would work better.
- All in all, games as a business is difficult in terms of investments due to the nature of the industry at the intersection between the process industry and creative industry.

Finnish gaming industry and cooperation

Finnish gaming companies are best characterised by a few findings. The companies have mainly been created out of hobby activities. Many companies are based on, e.g. a group of friends created in the demoscene that have turned a hobby into a profession. On the other hand, company growth especially in the beginning has mainly been organic. Possible investments have been acquired relatively late. Thirdly the centre of the gaming industry is traditionally a tight core group where everyone knows each other. In the past few years, the situation has changed in this respect as the number of companies has increased.

Cooperation is a resource in the industry of a small country. Based on the study it seems that this factor is under control in the Finnish gaming industry even though there are signs of change, e.g. in the form of recruiting competitions. Traditionally, competition between gaming companies has been limited. This is affected by gentlemen's agreements within the industry and the fact that the companies' products deviate so much from each other that there is no direct competition. When financial interests increase, this may change. This also makes cooperation easy. Traditionally, cooperation and information sharing in particular has been easy and even axiomatic. As the industry grows and new entrepreneurs enter the field, companies that grow aggressively at least will find it more difficult to create relationships within the industry.

Cooperation in Finland and abroad and cooperation forms

"Cooperation is extensive and informal and very brotherly. There is not much competition between the companies and they strive to cooperate. The resources must, however, be kept happy."

An interviewee on the cooperation between Finnish gaming companies

"Game developers' are poor in outsourcing as their computer is tuned for designing games."

An interviewee on outsourcing

The cooperation forms can be divided into four categories:

1. Sharing of know-how and other informal cooperation
2. Subcontracting
3. Distribution cooperation (aggregation)
4. Development of joint IPR

The first form of cooperation sharing of know-how and other informal cooperation seems to work well. The functionality of informal cooperation is based on the small size of the industry, a common language and work culture and, as mentioned before, human relations that stem from history.

In terms of informal cooperation, the highly active Finnish IGDA- chapter⁸ holds a key role. The effect of monthly IGDA meetings in the Helsinki region was seen as particularly important. In IGDA meetings, old and new employees can meet the employees of other companies. Companies located outside the Helsinki region are naturally not able to attend the meetings as regularly so the effect of IGDA is most visible in the Helsinki region.

Another factor that was mentioned in several responses was the operation of Neogames, the Finnish Centre of Game Business, Research and Development founded in 2004. In particular, export trips and seminars organised by Neogames were seen as serving internal industry communication as well.

A new activator of cooperation is Suomen Pelinkehittäjät Ry (Association of Finnish game developers) founded in February 2007. There is no experience on their operations yet but the industry clearly expects it to take responsibility for supervising the interests of gaming companies and partly for internal industry communication as well. Younger generation gaming companies in particular saw a need to increase cooperation in the industry.

In terms of subcontracting the views were somewhat varied. It can be said that on the mobile game side subcontracting, even subcontracting of entire games and small scale publication, is more common than on the console side. For some mobile companies, subcontracting to other Finnish companies is even a clear strategic choice. Subcontracting also had a clear opportunity and demand in web games.

The situation is slightly different on the console and PC side. A full scale console game is so big that certain specific parts are subcontracted, these are quite extensive. Few Finnish game studios can offer, e.g. a 10 person graphic designer resource for subcontracting. Luckily console game companies can outsource business to, e.g. Estonia and this is being done.

Distribution cooperation is one of the cooperation forms mentioned. This is done to some extent but there is no company in Finland that specialises in extensive aggregation so game studios do this in connection with their own operations. This means that aggregation is often connected to subcontracting.

Creating a joint IP is seen as quite challenging. The general view was this type of cooperation is best suited for the technology side. In the substance side, legal problems and the division of IP rights makes it more difficult to create a joint IP. Some responses said, however, that in the future the development of a joint IP can also hold a key role as the size and complexity of games increases.

All in all, cooperation in the gaming sector seems to be working quite well. It should be noted that the gaming industry is, despite its young age, one of the best organised content industries in Finland.

IGDA, Neogames and in the future also Suomen Pelinkehittäjät Ry offer possibilities for many types of extensive cooperation and interest supervision.

Public support for games and the role of Tekes

*"If one public actor has affected the development of a Finnish gaming cluster considerably it is Tekes."
An interviewee on the role of Tekes*

⁸ The Finnish IGDA chapter received the award for most active chapter in connection with the 2007 GDC. This proves how active the chapter is.

"Tekes is a great father figure for many young companies."

An interviewee on the role of Tekes

"Can one emphasise it too much. Because technology is important, the chance to develop technology mainly through support from Tekes is invaluable for the Finnish gaming industry."

An interviewee on the role of Tekes

Finnish technology intensive sectors are supported by the State through Tekes.

Tekes – the Finnish Funding Agency for Technology and Innovation has also funded the product development of Finnish gaming companies either directly or through its different technology programmes (e.g. Fenix 2003-2007) in the past years. This funding model, which is quite unique even internationally, is well known to the companies in the gaming industry and many companies have sought and received funding through Tekes.

The companies' view on Tekes' funding is extremely positive. According to company views, Tekes' funding enables early stage technology and innovation investments without oversized risk taking on the company's part.

Two things in particular were seen as highly positive in Tekes' subsidies. Even small companies with short histories can apply for Tekes funding. This enables a company to gain access to production technology it will also need in the future at an early stage.

On the other hand, Tekes' application process was seen highly educational especially for smaller companies. The application bureaucracy is relatively simple and the main focus of application assessment lies on the substance know-how proven in the application. Tekes' evaluation process also works as a business development tool for the company.

Some criticism was given to Tekes for not being able to support content development sufficiently. On the other hand, the companies understood that this is not Tekes' core business area.

In addition to Tekes, AVEK (the Promotion Centre for Audio-visual Culture) that has since the beginning of 2006 provided so-called digidemo funding was also mentioned as a supporter. The funding sums are small but they have played a role especially in the product development of small companies.

The companies hoped that public financiers like Tekes and AVEK would continue to fund the gaming industry. A common and quite well founded view was that the efficiency of, e.g. Tekes' funding is excellent in the gaming industry.

Tekes' funding does not, however, fully correct the investment problem in the Finnish gaming industry. In the future, activation of VC was seen as crucial. As the industry grows and expertise levels develop, the opportunities in the industry also increase. One can naturally reach results through organic growth but proper investments next to Tekes' funding would enable faster growth.

The gaming business and its changes

Digital games is a fast changing industry. Some of the changes in the industry are foreseeable and others are difficult to anticipate. Companies were, in connection with the interviews, asked about the biggest change factors on the horizon and how one can prepare for the change. Many of the factors mentioned below have already been mentioned in connection with technology.

What are the main change factors that will affect the gaming industry in the future?

"Where are the global brands of the Finnish content industry?"

An interviewee on the change factors in the gaming industry and shortcomings in Finnish content production

"Everyone who plays Windows' solitaire can potentially be converted to a casual player."

An interviewee on the future of casual gaming

"User-generated content is big. The time of format entertainment is over. The community creates its own story."

An interviewee on the future of playing.

"Even big companies do not really know what to do."

An interviewee on the problems of the business

"If you have money and know-how to create your own IP and own funding, you can get a publisher. Big publishers do not innovate they create sure sellers."

An interviewee on future possibilities

Three factors were seen as the biggest individual change factors in the gaming industry: Games shifting from products to services, an increase in communality and a change in distribution channels. In all of these changes technology is an enabler, but the changes in themselves are operationally motivated and they are based on development in playing, an evolution towards new game forms and ways of playing.

Turning games into services means in practice that thanks to digital distribution, the focus of games shifts more towards the player's choices, the possibility to chose and emphasise the player's own preferences. A game purchased from a digital distribution channel is no longer a ready-made entity but more of framework around which the player modifies his/her own gaming experience. The game lives, changes and updates throughout its lifecycle. This development is already visible in extensive web games but it is expected to enter the world of console games as well.

This does not mean that in practice the traditional forms of gaming will disappear, rather that its dominant position is broken. Games turning into services does not mean that the value of the game developers diminishes either, quite the contrary. This development is likely to have an effect on the value chains of the gaming industry. The game publisher may become more dependent on the game developer. This in turn increases the game developers' possibilities, for instance, in terms of revenue and game content. Simultaneously, this development at best alleviates and strengthens the game developer's communication with the large purchasing public.

The change is so big and extensive that in some sense we could even speak of a change in the game paradigm. The time span of the change is difficult to assess and its analysis would require a huge amount of work. An increase in the importance of **communality** was mentioned in both PC and console as well as mobile and natural web games. This change is clearly connected to the above mentioned changes as well as those below.

Communality in games can refer to a user community within the game or a community that collects around the game. A good example of the first mentioned is, e.g. WoW where the communication between players is carried out within the game and the game in itself is the main point. An example of the other case is the Finnish web game community Aapeli where the game aspect is created by small easily adopted Casual games, but the core of the business is the users that gather around the games. Both of these models will have a key role in game communality in the future.

Changes in distribution patterns enable new business models and a redistribution of the cake. On the mobile side in particular, a fixed-price connection and IP distribution will change the operator lead distribution towards independent distribution.

On the console side, e.g. Sony's and Microsoft's new services in turn enable the development of console games for small operators as well. The reason for this is that less extensive games whose distribution using traditional channels would be impossible at a price that is sensible from the consumer's viewpoint, can be distributed digitally. It is highly likely that this will increase the number of gaming companies interested in console development. Only time will tell what gaming companies' earnings through digital distribution will be.

Interesting but slightly smaller changes are also visible in the ways games are played. For instance **competitive gaming** is already possible in some games. In large tournaments award sums to the winners can be hundreds of thousands and it is likely that this sum, as well as the number of games played in competitions, will increase in the future.

The fact that **money is entering digital gaming** is also visible in an increase in gambling. For instance internet poker is currently one of the most popular forms of gaming on the internet. A clear trend is that in certain game types, the motivator for playing lies outside the game. The motivator may be money but as previously stated, belonging to a community can also be a motivator for playing.

The general view is also that **the amount of casual gaming will increase**. This is a natural development boosted by, in addition to technological development, an increase in generations with the willingness and ability to play⁹.

All of this leads to **higher expectations concerning games in the future** across all terminals. For instance, mobile games are expected to also take communality into consideration. Increased device power and improved device portfolios enable this, but increase complexity in games naturally places more demanding expectations on the economics, development technology and designing of games.

How can a company prepare for change?

"The ones who don't prepare for a change in the operating environment will die."

An interviewee on the importance of preparing for change

"You must be prepared for the fact that some things change."

An interviewee on the constant change in the gaming industry

"Tighter focus. On the PC side for instance Battlefield, i.e. niche focus. Survival method a clear division into project business and product business."

An interviewee on the preparation for change

The companies in the gaming industry have internalised the industry that is changing constantly well. None of the interviewees had any quick fixes for preparing for change. The main preparation methods for change were following the industry and its changes, sufficient product development work, networking, business flexibility, monitoring of competitors and risk distribution by carrying out several projects at once.

All of these things are or should be self-evident in the gaming industry.

The answer reflected also to some extent the companies' realistic approach to their own operating environment. There are no magic tricks to help you survive.

Relatively many respondents also emphasised that instead of technology one should look at the opportunities it offers and what the technology enables for the user.

⁹ Casual gaming refers to occasional playing as recreation that does not last for a long period at a time. The demography of casual gamers deviates clearly from so-called hard-core gamers. Casual gamers are generally older and less technologically oriented.

One way to prepare for change is to ensure that the company is scalable. Small fixed costs and the use of subcontractors enable, at least in theory, the company's ability to survive problems better. Subcontracting is naturally based on strong networking that enables charting of the field. Scalability and efficiency is represented by good process management and optimisation.

What was interesting in all responses was that they were relatively introspective. None of the respondents emphasised, for instance, preparation through sales and marketing; the basis was their own processes and their management.

As mentioned a couple of times before, the biggest weakness in Finnish gaming companies' operations seems to be the position of sales, marketing and brands in the companies' mindset.

Which Finnish gaming companies could be good investment objects, why?

The last question we asked was which Finnish gaming companies could be potential investment objects. As one might expect, not many company names were mentioned. Instead features that the company should have were mentioned.

"Flash Lite companies and companies who focus on gambling or advergaming on the mobile or web side."

"Those who have already proven that their business model works. Someone that is developing a technology that will become a big thing."

"The most interesting are the ones whose operations include other businesses besides game development. Those whose model is something other than project business model."

"The possibility to invest in several Finnish companies and consolidate them into one strong player."

"Second generation gaming companies and mid-sized and small companies who have launched their first product."

"Companies that focus on the web side and companies that understand the importance of the web side."

"Companies that have communality and the web as strong driving factors."

In conclusion

"Carpe diem"

Horatio on the importance of the present.

The above discusses the gaming industry and its players' views quite extensively. Below is a small summary of the industry's self-analysis in the form of a SWOT chart. The SWOT chart of the gaming industry has striking similarities to similar charts relating to other creative industries¹⁰. Some factors in the industry deviate from these however.

All in all, one can say that the gaming industry in Finland is in a stage of rapid growth, products and companies are internationally competitive and the sentiment in the industry is positive. When future changes seem to favour the Finnish gaming industry to a large extent there seems to be ample opportunities for investments and development work.

STRENGTHS

- Technology know-how among the best in the world¹¹
- The products are good
- Finland's good reputation
- Strong gaming culture
- Good infrastructure in economics, society and technology
- Good price-quality ratio
- Innovation ability
- The Baltic and Russian subcontractor markets are close
- Players' good know-how and high motivation
- A few spearhead products
- Tekes subsidies

WEAKNESSES

- Deficiencies in business know-how in particular compared to technology know-how
- Insufficient marketing and sales know-how
- Difficulty to acquire VC
- Small domestic market
- A lot of micro entrepreneurs
- No demo financing

OPPORTUNITIES

- The general determination in the gaming industry is maintained and is refined
- Digital distribution opens up new business models and market utility opportunities for small companies
- Game demand grows as estimated, there is increasing product demand
- Demo financing is arranged
- Training both in schools and inside companies rises to the required level
- Opening the opportunities of creative fields to business developers and decision-makers
- Improvement of producer and manager know-how
- Internationalisation and increase of exports
- Utilisation of finance instruments and their development
- VC financiers become interested in the industry and find the right instruments for financing it

THREATS

- Lack of employees
- Education falls behind the industry's development
- Internal conflicts in the industry
- The possibilities of the gaming industry are not understood on different decision-making levels
- Unsolved copyright issues limit growth (digital distribution)
- Financing cannot be targeted sufficiently
- The growth in the size of gaming companies stops
- Companies that are internationally credible in terms of size are not generated

¹⁰ See for instance Ministry of Trade and Industry's "Development strategy for entrepreneurship in creative fields 2015"

¹¹ Esim Tekesin Fenix- teknologiaohjelman ja sitä seuraavan Verso teknologiaohjelman aikana Tekes investoi pelialan tuotekehitystyöhön n. 8,5 milj € Tekesin keskimääräinen rahoitusprosentti huomioden voidaan arvioida, että 2003-2007 pelialan teknologian ja prosessien kehittämiseen on investoitu kaikkiaan n. 20 milj €. Summa on suuri yritysten määrä huomioden.

Appendix: Questions

Technologies

- Current technology and its future / life cycle
- Possibilities offered by the technology
- Future technologies (time span 3-5 years). Which technologies will rise, what to invest in?
- New technological opportunities (vs. Web 2.0, etc.)
-

B. Competitiveness of Finnish gaming companies

- Finnish gaming companies' competitiveness in global markets
- Reasons for competitiveness or lack thereof
- Three reasons to invest in the Finnish gaming industry

C. Finnish gaming industry and cooperation

- Cooperation in Finland and abroad
- Cooperation forms
- Ease of cooperation
- Public support for games and the role of Tekes

How do foreign investors react to Tekes funding?

D. The gaming business and its changes

- Which are the largest change factors affecting the gaming business in the future?
- How can a company prepare for change?
- Which Finnish gaming companies could be good investment objects and why?

Appendix 2: The short history of the Finnish gaming industry

Gaming industry hobby activities and game development began in Finland at the beginning of the 1980s when VIC-20 (1981), Amiga (1982) and Commodore 64 (1983) entered the markets.

In the early years, game development was a pure hobby activity. Commercial game production can be seen to have started in Finland in 1986. Below are some significant companies and products from different years. The list is not extensive and the focus is on companies that still operate and are known.

1986

The first commercial games "**Sanxion**". The developer Stavros Fasoulas. Platform Commodore 64

1992

The first gaming company *Terramarque* is established.

The first demoscene's Assembly event is arranged. A majority of the Finnish gaming companies' founders and employees are trained for the industry through this event.

1995

Gaming companies *Bloodhouse* and *Terramarque* merge. The new company is called *Housemarque*.

Housemarque's "**Super Stardust**" game is launched for international distribution. Platform Amiga1200.

Remedy Entertainment is established.

1996

Remedy's first game "**Death Rally**" is published. Housemarque's "Super Stardust" for PC.

1998

Red Lynx Oy's first game "**Phobia 2**" is published. The game is distributed for free.

1999

Housemarque's "**Supreme Snowboarding**" is published. Supreme Snowboarding is the first game in Finnish gaming industry to sell over one million (approximately 1.3 million) copies worldwide.

2000

The mobile gaming developer *Sumea* is established.

Sulake known for Habbo Hotel is established. The origin of Habbo "**Hotelli kultakala**" is opened.

Bugbear Entertainment Oy is established.

2001

Bugbear's first game "**Rally Trophy**" is published.

Remedy's "**Max Payne**", Finland's best-known and most successful game is published.

Sulake's "**Habbo Hotel**" is published in the UK.

2003

Remedy's Max Payne 2 "**The Fall of Max Payne**" is published. The game series sells over 7 million copies in total. The gaming industry centre *Neogames* is established. Bugbear's "**Tough Trucks**" is published.

2004

Bugbear's "**FlatOut**" is published. Digital Chocolate buys the mobile gaming developer *Sumea*. The estimated net sales of the Finnish gaming industry is EUR 40 million. €

2005

Frozenbyte Oy's "**Shadowgrounds**" is published. *Shadowgrounds* is the first Finnish game distributed through Steam. RealNetworks buys the mobile gaming developer *Mr. Goodliving*. The game industry grows heavily. The estimated net sales of the Finnish gaming industry are EUR 65 million. €

2006 - 2007

Bugbear's "**FlatOut 2**" is published. The FlatOut series (1 and 2) both sell over one million copies. The sequel will be published in the summer of 2007. *Sulake*'s Habbo Hotel operates in approximately 30 countries. Microsoft buys Remedy's new game "**Alan Wake**" to be published exclusively on Microsoft's platforms. Housemarque announces it is developing a game for the new PS3 console. The mobile gaming house *Universomo Oy* publishes an agreement with Sega.