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# 1 Industry analysis of the Incumbent and the emerging industry of digital video players

## 1.1 Choice of industries for analysis

The analysis covers the Consumer Electronic industry with specific focus on the producers of digital movie watching equipment for the home. The analysis includes the traditional manufacturers of consumer electronics such as the large Asian corporations of Sony and Samsung who manufactures physical disc players which are often known as DVD players and Blu-ray players.<sup>1</sup> Secondly does the analysis covers companies who up until now were exclusively producing consumer computer hardware equipment. These include companies such as the computer manufacturers such as Asus, The networking equipment producers like Linksys and Netgear, and the computer storage producers such as Western Digital and Seagate.<sup>2</sup> The market also includes newcomers of smaller independent hardware producers. These companies are entering the Consumer electronics market by producing computer consumer electronics that replicate and enhance the functions and usage models of the traditional consumer electronics. Specifically the emerging market of non-physical disc based digital media players are the focus of this industry analysis.

### **1.1.1 Converging Industries?**

The reason for choosing to analyze the parts of the IT hardware and the consumer electronics industries is that the two industries are converging together into one industry.<sup>3</sup> They are increasingly relying on the same buyers and suppliers and approaching the same complementors. The collapsing of industry boundaries and the role of complementors and standards is a central theme of alternative industry evolution as defined in the managerial model and theory. This analysis of the industries here will elaborate on that perspective. The model and the analysis will then be able to help managers understand and measure the shifts happening in their markets.

Since the shift from analog to digital see figure 3, the two industries have started sharing one key supplier, namely various types of semiconductors chips that handle video and

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<sup>1</sup> For a complete list of affected Consumer electronics companies covered see Appendices

<sup>2</sup> For a complete list of entering IT hardware companies covered see Appendices

<sup>3</sup> Research from Park Associates, ABI and Isuppli are predict that products offerings from these industries are starting to overlap each other, see references and the activities section of the industry analysis .

audio.<sup>4</sup> The internet has enabled digital devices with built in networking to be connected and download media files, which also is leading to an overlap between the two industries since buyers can now use a digital media file instead of their physical disc for playing the content. The analysis will reveal if the trajectories and the phase in their life cycle of the industries are affecting each other by analyzing their buyer's suppliers and complementor's relationships, and whether they share technical platforms and standards.



**Figure 1 Evolution of Consumer Electronics,  
Source: Intel Corporation**

### **1.1.2 Incumbent and Emerging industry of Digital media players**

To clarify the different industries in this industry analysis, a separation of companies from different industries needs to be applied. The companies that focus primarily on physical disc players of digital media such as movies, and rely on closed standards for digital video formats are termed the Incumbent industry. The companies that rely on open standards of digital media formats and that focus on providing digital media players that rely on non physical means of playing media, i.e. so-called digital media files are

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<sup>4</sup> Semiconductor firms Like Sigma Designs, Boradcom make chipsets that can be used both in Physical disc players and the seem chipset can be used in the digital media players.

termed the emerging industry. The illustration below show the common products offered from these industries.



**Figure 2 Examples of products from the incumbent industry of Physical Disc Players**  
Source: Sony and Samsung Corporation



**Figure 1 Examples of Emerging Digital media players and services**  
Source: Park Associates

### **1.1.3 Network externalities and Complementary Services and products**

The analysis will include a review of the current and upcoming complementors to the industries. Here a complementor is not defined as a supplier or buyer to the industry but instead the complementors products and services can enhance or decrease the value of the products offered by the industry being analysed. They are part of the important creation of standards that govern the industries and thus co-creators to potential network effects in the analysed industries.

#### **Digital content industry**

The Digital content industry consists of mainly large Hollywood movie studios, but also more recently self generated video content on internet sites like YouTube and the more

professional created content on Hulu.com which shows content from the main television broadcast networks. Many of the firms in the video players industries know that in order for their product offering to appeal to consumers they need premium content from this industry. Content as such is unique in its form. It is an asset that cannot easily be substituted. If a blockbuster movie or top notch new computer game is requested by the consumer, you cannot offer another second rate movie or video game, and it has to be the specific game or movie. Therefore the firms in the digital content industry can be seen as complementors to the firms in the two industries that are being analyzed. The digital platform industries need the assets from the digital content in order to be successful.

### **Digital Transfer Industry**

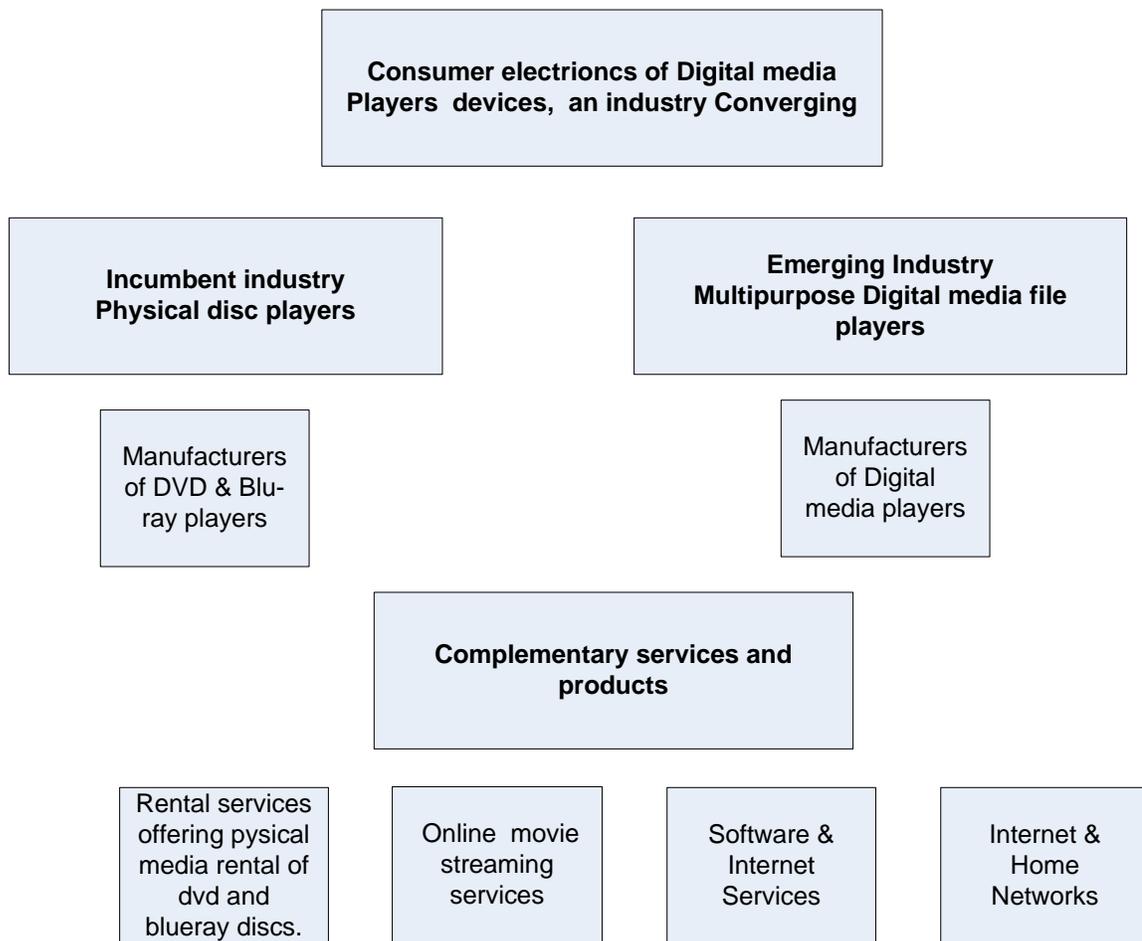
The distribution of digital content has in many years been owned by the movies studios. The distribution have in the past been based upon brick & mortar retailers like Blockbuster for renting movies and other retails outlets for selling physical disc of movies. Viacom, a major movie studio, owned the largest rental chain of movies Blockbuster up until 2004. Movie theaters in the US and Europe are often owned by the movie studios. Major movie studios also own many of the channels that show digital content, i.e. Fox TV is owned by News corporations that again own the movie studio Fox Filmed Entertainment, HBO a cable TV movie channel is owned by Viacom. However there has been a diversification over the last years between the ownership of distribution channels of and the creators of content.

Recently have the internet been drastically changing the distribution of digital content such movies and TV series. Today it is possible to rent or buy movies online through an online merchant in a non physical digital format. The content, such as music on a CD, movies on a DVD, are also becoming available in other formats and distribution forms. The forms are related to streaming movie internet service, and streaming movies in the home network. Consumers have been used to tuning in to a specific TV channel to see

their favourite TV show are now experiencing that then can see this show on the internet or even download the show and take it with them on the road.

**Illustration covering industries and complementors in the analysis**

The model illustrates the new and the old producers of devices that can play movies either on a physical disc or through a digital file, and the old and new complementors to the industries.



**Figure 3 Overview of the converging industry and its complementors**  
**Source: Authors creation**

## 1.2 Determining if the industries are converging

The industries in this analysis are narrowly defined by segmenting what groups of firms that offer the same category of products or technologies and thus target the category of markets. As described in the introduction to the analysis the industries are consumer electronics companies that primarily produce physical disc players and the IT hardware procedures that produce non physical media players. They fulfil the same customer need,

namely watching movies and other video content in the home. They however at the moment not share the same core assets and activities.

### **1.2.1 The Incumbent Industry, Evolution of the Digital Video in the Consumer Electronics Industry.**

This market for physical media players have for years been dominated and held by large consumer electronics manufacturers mainly from Japan such as (Sony), (Panasonic, Hitachi, JVC) and from Korea Samsung, LG and Philips (Europe) and a lot of producers from China with lesser known brand names.

The following section provides a brief history of home consumer video entertainment and the technological shifts that have governed the industry in the past. This will help determining the trend of convergence between the incumbent industry and the emerging industry.

The business of selling and renting video cassettes with movies on them, started in the early 80's with the emergence of recordable video cassettes that allowed consumers to watch movies in their home without going to the cinema. At first the movie studios were afraid of this new medium and resisted the change, since they were afraid that it would hurt their primary revenue source at the time, the movie theaters. However the VHS castes business soon became the single largest revenue source for the movie studio's sales of their products.

At first there was what is now classical marketing case study in battle for the winging format standard between the Sony Betamax standard and the JVC sponsored VHS system (Wiki). The VHS and Betamax systems were analog systems built upon tape and tape players. The Japanese electronic companies overtook the global market for VHS players since they owned the standard and defined the technologies, and their products were of a much higher quality than their American and European counterparts. The VHS system

spurred the creation of a new industry of video entertainment in the home and generated new revenue and profits for the Consumer Electronics (CE) producers.

In the 1990's the digital revolution came to the movie industry with the launch of the DVD system like it had done for music industry with the compact disc years earlier. Here played also out a format standard battle between the DVD and DIVX system, but it ended much faster than the previous VHS versus Betamax battle. (Besanko 2007)

Movie studios and CE producers earned large profits on the format change since users replaced their home video libraries from VHS to DVD and upgraded the hardware platform from the VHS to the DVD player.

However the copy protection of the media content in the DVD system were hacked, this was possible since the format of the DVD were digital. Soon movies began to appear on the internet around the world without paying for the movies to the movie studios and royalties and licenses to the CE producers for the DVD format.

Consumers thirst for higher video quality in the home and the launch of the HD TV technology started the next evolution of the video content for home movies. Sony Corporation developed the blu-ray disc and Toshiba the HD-DVD. Another format battle like the VHS/Betamax was under way. The battle lasted a little over 4 years and ended up in 2007 with the Sony backed the Blu ray standard as the winner. At the same period between 1999 and 2002, but outside the incumbent industry of the consumer electronics, the digital video formats of Div-x;) and MKV were developed. These open source formats like x.264 standard made it possible for consumers to rip, store and transfer HD video online.

Today the problem that current producers of physical disc DVD and blu-ray players are facing is much alike to what producers of portable CD players were facing the in 1990's. Over a period of less than 10 years, portable compact disc players were replaced by digital MP3 players. Sony and other consumer electronics producers lost the whole market of listening to music on the floor to newcomers from the IT hardware industry, i. e. Apple and Creative and Microsoft with their Ipod, Zen and Zune players The same could arguable be happening now in the digital media player industry. Consumers are

opting to use digital media players with digital video file formats such as div-x:) and x.264 MKV files that can be stored on a hard drive which can hold hundreds of movies on instead of DVD and blu-ray players that only hold one movie on a physical disc, having to change disc each the consumer wants to watch another movie.

### **1.2.2 The New Emerging Industry; Data on recent development**

The company's products offerings in this industry are termed digital media players. Basically they rely on a new digital video format to watch movies in the home. IT vendors have in this industry focused on providing media players that integrate seamlessly and other computer and networking equipment plus it the players provide direct access internet services for video distribution. In contrast, Incumbent Consumer electronics producers have put more effort in improving product features and manufacturing efficiencies, offering CE standalone devices such as Blu-ray players with no linkages to content or other platforms.(NPD Group)

Consortia's such as DLNA of IT hardware producers and suppliers have worked on networking standards and digital video file formats, that have enabled consumers to enjoy videos on their computer. The IT hardware industry is leading to transferring the computers video playing capabilities to the creation of small digital file media players than can play movies without a physical disc inside them.

There is a proliferation of entrants that are joining the industry. According to the mpcclub.com, a website for DMA followers. Over 30 new DMA products have been introduced in the market over the last years (Mpcclub). Large storage companies like Western digital, Seagate and QNAP, are entering the scene. Network companies like Netgear, Linksys and DLink have their offerings. Computer maker Asus just announced their O!Play digital media player. Asian OEM producers and European producers are experimenting with new products coming out monthly; they include, Bloobbox in Italy, RaidSonic and Fantec in Germany, Blusen in Spain, Tivx and Xtreamer in Holland.

The analysis of the incumbent and the emerging industry of digital video players will reveal whether the Consumer electronics producers again are facing similar threat to their assets and activities as the producers of portable CD players did in the 1990's

## **1.3 Evaluating the Trajectories of the converging industries**

### **1.3.1 Defining the boundaries of the industries**

#### **Incumbent industry**

As told in the introduction, the market for physical media players have for years been dominated and held by large conglomerate consumer electronics manufacturers. The industry consists of firms from Japan, such as Sony, Panasonic, Hitachi, Toshiba, and JVC and from Korea, Samsung, LG and from Europe, Philips plus many low cost producers from China with lesser known brand names. To further define whether these firms are situated in the same industry, an analysis of the industry's common buyer suppliers and technical standards.

#### **Common Buyers and suppliers**

The retail prices of the products are very similar between the firms in the industry. The price elasticity between both the DVD players and the High definition blu-ray players do not variate much as seen in the price comparison figure. If prices of one of the firm where much higher consumers would opt for another brand. Therefore are the price comparisons a good indicator that the firm s can to be defined as competitors operating in the same industry. Around a quarter of all consumers would not express any difference between the offered players, This is reflected by that none of the Players hold a market share over 25% in the US market. It is a very fragmented market with many firms offering the same product and consumers opt for price and features. Some consumers opt for the brand of the player but at least 25% do not have any preference in that way.

	<b>\$34.77 - \$59.98</b> Toshiba SD-4100 Tabletop DVD Player Saved 7/8/2009 <input type="button" value="Delete"/>		<b>\$313.89 - \$361.81</b> Pioneer BDP51FD. Single-disc black. Saved 7/8/2009 <input type="button" value="Delete"/>
	<b>\$39.00</b> Samsung DVD-HD870 Tabletop DVD Player Saved 7/8/2009 <input type="button" value="Delete"/>		<b>\$358.98 - \$399.99</b> LG BD390. Single-disc black blu-ray Saved 7/8/2009 <input type="button" value="Delete"/>
	<b>\$69.99</b> JVC Progressive Scan DVD Player Saved 7/8/2009 <input type="button" value="Delete"/>		<b>\$254.00 - \$399.99</b> Panasonic DMPBD80K. Single-disc black Saved 7/8/2009 <input type="button" value="Delete"/>
	<b>\$48.99 - \$51.74</b> Philips DVP5140 Tabletop DVD Player Saved 7/8/2009 <input type="button" value="Delete"/>		<b>\$179.99 - \$249.99</b> Sharp BDHP21U. Single-disc Blu-ray Disc Saved 7/8/2009 <input type="button" value="Delete"/>
	<b>\$49.99</b> LG DN798 Tabletop DVD Player Black Saved 7/8/2009 <input type="button" value="Delete"/>		<b>\$209.00 - \$399.99</b> Samsung BD-P1500 Blu-ray Disc Player Saved 7/8/2009 <input type="button" value="Delete"/>
			<b>\$249.88 - \$299.99</b> Sony Blu-Ray Disk Player Saved 7/8/2009 <input type="button" value="Delete"/>

**Figure 4 Price comparison between individual offerings of blu-ray and DVD players**  
Source: Smarter.com

### Common Suppliers

As a physical disc player is a digital electronic device. It relies heavily on Semiconductors manufacturers that produce and price the different the player. There are many Semiconductor firms supplying various part to the firms they include firms such as Mediatek, SunPlus, Zoran and ESS.

But the firms all rely on specialized semiconductor chips for optical disc drives for procuring the players. An example of a common supplier is Lite-on supplier that produces optical drives for customers electronics firms such as Sony and NEC. Lite-on holds a 27 percent share of global production (Infoworld) in the optical drives in the world and thus is a common supplier to the industry.

## **Emerging industry**

### **Common Buyers**

The retail prices of the products are very similar between the firms in the industry. The price elasticity does not vary much as seen in the price comparison table. If prices of one of the firm were much higher, consumers would opt for another brand. Therefore, the price comparison is a good indicator that the firms can be defined as competitors operating in the same industry.

Around a quarter of all consumers would not express any difference between the different players. This is verified since none of the players hold a market share over 25% in the US market. It is a very fragmented market with many firms offering the same product and consumers opt for price and features. Comparing their price to the incumbent industry however shows that the players are priced comparative to DVD player and Blu-ray players.

### **An overview of prices of the currently sold players in this industry are:**

Western digital WDTV \$120

Seagate FreeAgent Home Theater

Xtreamer Xtreamer \$135

DLink DSM-520 HD Media Player \$190

Syabas Popcorn hour A-110 \$215

Asus O!play \$129

Qnap NMP 1000 \$200

Linksys Media Center Extender \$200

Tivx 6500A \$250

Netgear EVA 9150 \$350

### **Table of Digital media players**

**Source: various source, from company websites and retailer shops**

### **Common suppliers**

The common suppliers of the emerging industry are the semiconductor firms that supply the chipset that can decode the digital video files. The players that were present under the common buyers section all share the Chipset the SMP8036. This chipset is made by the semiconductor firm Sigma Design. Secondly the software for controlling the user

interface is made by the company Syabas. The firm has created an optical user interface that they sell to the other producers in the industry. However, Syabas also themselves market the digital media player Popcorn A.110, which was the first player and thus the one that has the largest group of followers at the moment of the players in the industry. Some of the players rely on the semiconductor competitors to Sigma design, called Realtek and use a different user interface, but these players still play the same digital video file formats as the rest of the players.

### **1.3.2 Determining the threats of the incumbent industry's core activities**

#### **Incumbent industry**

The core activities of the industry include the selling and marketing of the industry products and their buyer's willingness to pay the price demand and the firm's ability to sustain profit in the business.

Looking at the latest annual report from the largest CE firms in the incumbent industry, there seems to be a trend that the profitability of the incumbent industry is hurt badly at the moment. Over the last quarters, 14 of the largest Consumer electronics producers have posted massive losses in profitability and drops in their revenues. Here are a few recent examples:

Panasonic slumps to \$4 billion annual loss for 2008 (USA Today)

Philips reports a net loss of EUR 57.00 million in Q1-09 (The Street)

Sony posts \$1 billion loss, first in 14 years for Q408 and Q109 (Engadget)

Toshiba posts \$1.76 billion in profit loss for 2008 (Channelweb)

Samsung Reports First Net Loss of \$14.4 million (Wall Street J)

LG posts loss of \$499 million for Q4 2008 (Reuters)

From looking at the reported financial data of the annuals report of Consumer electronics there must be a conclusion that they are hit hard on their ability to profit from their products.

To better understand these numbers an analysis of the buyers willingness to pay for the products especially for the new physical disc blu-ray player that is supposed to help return profit in the physical disc business is needed. The primary factor for the failure to generate profits on income is that Consumers are not willing to upgrade their current DVD players to the more advanced units with better picture and sound quality. The Os Sony pictures in USA even say in Forbes magazine that “It appears there is already price erosion in Blu-ray, so we are not making the price point we originally hoped for. We haven't really charged a premium for it. That makes consumers more likely to buy Blu-ray but less likely to pay a premium for it.” (Michael Lynton, CEO of Sony Pictures in Forbes magazine) (Forbes) An industry insider wrote on his blog that Blu-ray may be the winner in the optical hi-definition market, but the real war may be in getting customers to actually ditch the standard DVD first. It seems that Blu-ray is struggling. Sales for Blu-ray devices dropped a massive 40% at the beginning of the year, and have since only risen 2% back up.(Techspot) It seems that there is a problem for the industry to ask buyers to pay the demanded prices of their products.

### **1.3.3 Determine the threats of Incumbents industry's core assets**

The core asset that have made the firms in the incumbent business able to sustain profit in the long run have been their ownership of Intellectual property rights, patent and licences around their digital video format of the physical disc either it be DVD or Blu-. These patents and licenses have made it possible for the Consumers electronics lobby to hold out cheaper producers and set a floor on the prices of the players over years and technology shifts.

**This patent & license regime of the physical disc player**

The basic principle since the VHS cassette have been to firstly win the standard war between competing formats, and then secondly monetizing on the standards of the physical disc by requiring other electronics producers and content creators to pay license fees on every player, recorder or empty media sold. In addition, there are license fees for the use of compression system, the audio system, and the entering the club of producers have required upfront annually license fees. This has helped keeping the alliance of CE producers that defined and created the standard an exclusive club and has also deterred entry of new producers in the low end.

### **The value of owning the format for digital video**

Japanese Consumer electronics producers have in the past owned the patent and licences to the DVD and blu-ray standards, besides the revenue from sales of compatible players they have to a large extent profited from the revenue that the royalties from the patent and licence sales have given them. It is not possible from the revenue and annual reports of the large incumbent Consumer electronics firms to estimate how the rate of depreciation are on these assets of patents and licenses on the standards bring in. However the consortium of Blu-ray licence holders the BDA has dropped the price of licensing the blu-ray standard by over 40% in 2008.(Gizmag) This could indicate that the backer of the format the incumbent firms are not able to earn their return on the investment in the format. This could also indicate that buyers (i.e. smaller producers) that want to manufacture and sell players using the patents licenses are not willing to pay the demanded prices for using them.

Complementors like content providers such as movie studios, had to pay for using the standard, the disc and the whole ecosystem. The power over the standard gave the firms room and time to develop and research new technologies. They could also control the migration and profit from users converting their media libraries from one physical format to the other (Forbes)

This core asset has become under threat over the last year from the development of so-called open source digital video formats.

### **Development of alternatives to the closed Digital video formats**

Many entrepreneurs in this IT hardware industry do not want and cannot pay the high license fees, therefore they have used reverse engineered Digital video file formats created by software developers to circumvent the licenses. *“Last I checked with EGreat China they said it was too expensive. Syabas reported that it was upwards of 100,000 USD for the license for the DVD format“ (Mpcclub 2)*

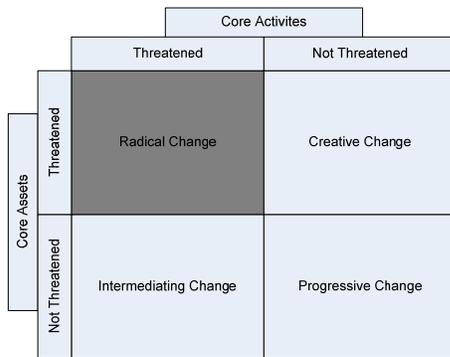
This led to the popular Div:) format 1998 that made it possible to compress and make a digital video file the same quality as a DVD, In 2002 the digital video for X.264 and the competitor KV have made it possible to stream and download digital video file format in high quality as blu-ray physical disc. These file formats were first used on the computer platform and mostly used to watch video online. However in the last 5 years these digital video formats have been used to create the consumer devices that can connect to a flat screen TV and watch the digital video by a non physical disc player in the living room. The source of players that through open source digital video formats can handle the same video and sounds without paying for the license is hurting the traditional producers. The loss of profit and revenue for the incumbent CE firms is stemming from this approach. With non physical disc players and the ability to stream movies online, CE producers loses the power and revenue stream and become mere box producers with no say on the direction of the digital video format standard and the revenues that come from owning it. Basically standards were the way to sustain profits in a highly competitive market. The network effects assured them sustained competitive advantages and profits streams. This development is a major threat to their core assets of patent and licenses around the physical disc format such DVD and Blu-ray.

### **1.3.4 What trajectories are the converging industries on?**

#### **Incumbent industry**

The analysis has revealed that the incumbent industry of physical disc players is under threat from the emerging industry. Their core assets of patents and licences are being eroded by new open source video file format that require no fees to use. their activities is

also under threat because early adopters and later on mainstream buyers do not value their products capabilities high anymore and not willing to pay a premium for new technologies of i.e the blu-ray disc players. Therefore the conclusion is on the analysis of the incumbent core assets and activities that the CE industry is under the worst form of industry change that an industry can be in where both their assets and their activities are under threat.. They are on a radical trajectory one change where both their assets and activities are starting to fail to generate profits and revenue. The trajectory of evolution for the industry is therefore on a radical

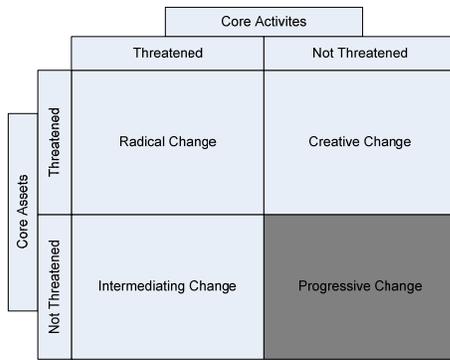


**Figure 5 Trajectories of Incumbent Industry of physical media players**  
**Source: Authors creation**

### Emerging industry

The emerging industry is slowly but surely building up their core assets and activities around the connected digital video file players. They are still in the process of moving toward the consumer electronics industry but the threat they pose is very clear, their intent are to over take the market for physical disc players, as the CEO of the on of the Emerging firms stated their online consumer forum *It is our strategy to make the media players a real alternative for DVD machines. (Xtremer)*

Even though the analysis have not provide an in depth analysis into the core assets and activities of the emerging industry, they are assumed to be on progressive path of evolution in their industry.



**Figure 6 Trajectories of Emerging Industry of non physical media players**  
**Source: Authors creation**

### 1.3.5 Determining the stage of evolution between the two industries.

To assess if profits are being lost to newcomers from the emerging industry the following assessment of volume and growth rate for the physical disc player industry is done.

#### **Total market volume of incumbent industry**

The total market of physical disc players in the US households today is around 150 million DVD players. DVD players can be found in 85 percent of U.S. homes (NPD research, 2008) and the number of US households according to US Statistics bureau is 111 millions. The average household in the US has 1.5 DVD players. So the total number of DVD in the US amounts to 141 million players.

The total number of High definition blu-ray players in the US market in 2008 is between 2.2 and 2.6 million players. This number also includes the sales of the Sony Game Console that has a blu-ray player built in. Since the game console also is used for gaming, it does in this analysis not classify as a dedicated blu-ray video format player. According to Sony Computer Entertainment America they sold over 1.2 million PlayStation 3 units during the holiday period from November 23 to December 31, 2007. So the real number is actually only between 1 million to 1.4 million players.

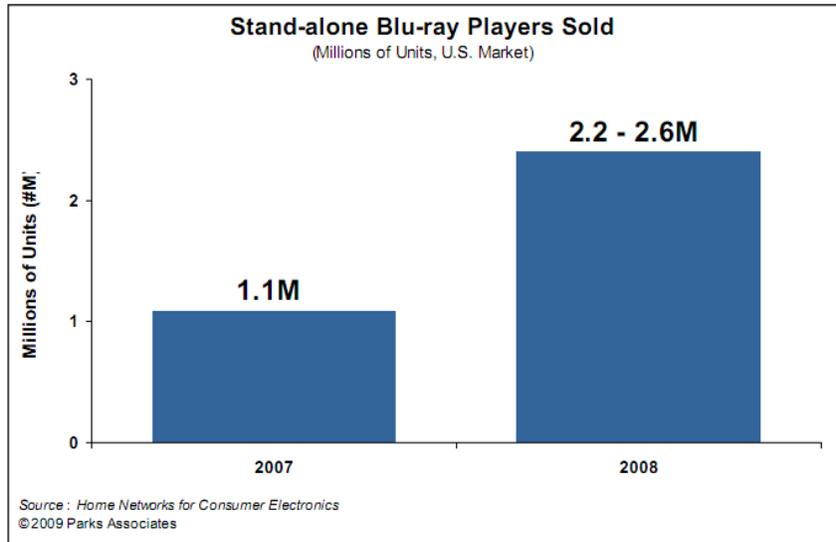


Figure 49 Stand-alone Blu-ray Players Sold in U.S.

Figure 7 Sold blu-ray players in the US  
Source: Park Associates

## Emerging industry

Since the market for digital media players is in its starting phase, there is little industry reports on its total volume and market size. One research firm Park associates number the amount of DMP to current number of Digital media adapters in the US: 1.3 million. Another measure of the total market can be done by estimating the number of players based upon revenue of the chip company Sigma Designs since all of the DMP rely on the same CPU chip from the same supplier. Only recently have Realtek began to be seen in the market place.

Sigma Designs states in their 2008 annual report that 81% of their net revenue 221.206.000 million \$ came from their SMP8630 Chipset series which is the chipset used in the DMP's. This amount to \$179.000.000. However the chipset is also used in HD-DVD physical media players. (Sigma Annual report 2008 Investor call)

Sigma designs states in their annual report that the revenue from HD-DVD and other media players Chipsets amounted to \$49 million in 2008, 24 million in 2007 and 11 million in 2006.

Of the sales of these chipset an estimated number of 50% are sold to DMP producers. That amount to the 25 million of the \$49 million. The average selling price is \$25 per chip which divided equals up to about 1 million DMP's sold. So the number 1.4 million players seem like a good measure of total volume of the emerging DMP market ending 2008.

### **Differences in total volume between incumbent and emerging industry**

comparing the volume of the emerging industry with the total number of DVD players in the market and the new blu-ray players, they incumbent industry have a total market volume of around 113 million units, whereas the DMP industry for now have sold between 1 to 1.3 million players. The incumbent industry has such a higher volume than the digital media players form the emerging industry, that the stage of radical trajectory is still in its infancy. They would be in stage Emergence based on these findings.

However if the firms compares the total volumes of new Blu-ray players versus the volume of the Digital media players each account for a significant share of the total volume of new high definition media players and by that metric alone the stage of radical trajectory would already be in the stage of Convergence. To further set the stage a look into the growth rates of both industries is needed.

Emergence	<i>Growth in the new industry compared to growth in the old industry is high enough to cause convergence in volumes between the two industries.</i>
Convergence	<i>Grow rates in the new industry is slowing but higher than old industry. Each account for a significant share of volume yet growth is slower than in the convergence phase.</i>
Co-existence	<i>When the volume of the new industry in higher than in the established industry.</i>

Dominance

Table 5 source: Authors creation adapted from McGahan (2004)

## **Growth rates between the industries**

Since there is hardly no public data on the growth rates of the emerging digital players and the growth rates of the sales of BD players is questionable because the research firm that publishes data of the sales of blu-ray players (NPD Group) will not publish specific data because they are afraid the data will unveil retailers names because of low sales, other measures must be applied. However one indicator of the % of sales from NPD group have been published. Blu-ray standalone players plummeted 40 percent from January 2008 to February, then rose a scant 2 percent from February to March.(NPD group)

The growth rates for the incumbent and the emerging business can be implicitly be measured by the expectations in sales of physical and non physical video players over the next years. The key chipset supplier to both Blu-ray players and to Digital media Players, Sigma Designs states in the their latest investor meeting that: *Next (is the) digital media adapter market for which Sigma has enjoyed a dominant position while the market interest develops. Recent events have increased the appeal of this market and we are now **expecting increased contributions** over the next several quarter, (and further on) we are hopeful it will continue it's growth and become a long-term revenue stream.*(Sigma quarterly investor call Q1 2009)

Leading research firm Isuppli studying the industries estimate that global shipments of consumer-electronics devices capable of supporting Internet video are set to rise by nearly a factor of five from 2009 to 2013 (Isuppli Research) and Yankee group expects that by 2013. By 2013, U.S. households will have: 30 million connected Blu-ray players and 11 million digital media adapters (Yankee) If the assumption of the numbers by Yankee holds true that would mean according to the table above, that the growth rates of the Blu-ray player would be higher than the growth rates of the Emerging digital media players. Since they both start at 1.4 million in 2009. The other expectation of a five fold increase in connected internet video devices is a two board measure of growth rates since it could easily be applied to both industries. In conclusion, there is not enough data to

understand, where the industries are at the stages toward each other. To be sure of the stage of the trajectory between the two industries, an analysis of mainstream buyers and specialized buyers are opting for at the moment.

### **Analysis of mainstream buyers and specialized buyers view on the product capabilities**

Researching relevant data on what specialized buyers in the industry of digital video players is not an easy task for outsider to the industry, The internet however host many discussion forums for hobbyists and videophiles that discuss the latest and greatest product from the industries.

These online discussion forums such as avforum.com and avfourm.co.uk talk about all types of digital video products both blu-ray and digital media players. A forum is built on threads and one can see how many times a given thread have been read, the higher number of time it has been read the more interesting the product must be to buyers of these products. The two most popular thread on digital media adapters have gained a number of read times (views) of over 191,943 and 150,248 on avfoum.co.uk (Avfourm)on the other discussion forum the five most popular threads on the digital media players have a combined read of over 2.5 million views.(Avsforum)

From these numbers it can be concluded there is an interest among viodephiles buyers of the products of the emerging industry.

In order to understand why early adopters are using the one has to look at the attributes of the products capabilities in comparison with the old products. In reading the discussions in the forum on the new products 4 key attributes of the new digital video file media players.

1. Digital movie catalogue, no need to change discs,
2. Ability to stream online video content

3. digital meta data on digital movie collection such as movie posters and plot and of the movie
4. Windows like GUI
5. Ability to Copy and Stream movies without limitations.

Early adopters' value the new capabilities that the DMP offer over the traditional players from the incumbent industry. The capabilities are numerous, but the most important are, the ability to store more movies on one device, not having to change disc each time the consumer wants to see a new movie, The ability to copy and stream movies to the device from the internet or from a computer in their home network. The ability to connect to meta data info on the movies the ability to create a digital media catalogue of their movies on the hard drive . A rich user interface that resembles the GUI on their PC. The ability to watch internet video services such as Youtube and Picasa. The ability to update the player, when new firmware is issued. Secondly most movie devices also support the view photos on it and some even support playing music on them. Some users like the jpg to be able to show their photo album on the device. The physical media players also support the viewing jpg photos, but the photos have to be burned to a physical device beforehand , which is unfortunate, because most users already have their photos on a computer hard drive. More importantly it seems that early adopters are opting for DMP instead of Blu-ray players because of these new attributes and features.



**Figure 8 Example of digital movie collection program**  
**Source: Mymoivs.com**

**Where are they in the phase of converging industry market.**

At the moment according to early adopters the new media players are judged better in most aspects in comparison with the old. However the old players still handle some video and sound formats better such as high definition surround sound. The performance of the new players have improved dramatically the last two years, but mainstream buyers do not yet rate the overall value of the products to be the same as the old ones, since they do not know them yet, and they do not fully understand the capabilities of the new devices.

From a buyer's analysis, the two industries are on the face on convergence, but have still not moved to the stage of co-existence.

Emergence	Some buyers opt for the new industry's products
Convergence	Performance by new approach improves dramatically
Co-existence	Mainstream buyers rate the overall value of the new products to be the same as the old product. New products perform in some way better on one or more attributes

Dominance	When new products are judged better in all aspects of performance than the old by mainstream buyers.
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Table 6 source: Authors creation Adapted from (McGahan, 2004)

## 1.4 Aligning Strategies, Assets, Activities and Investments.

The following part of the analysis concerns only the incumbent industry, since the emerging industry did not show signs of threats of their assets and activities, they should focus on expanding their industry and polishing their current business model for further growth. The incumbent industry however will need to see how they can align their assets and activities to the change coming from the emerging industry.

The companies in the incumbent industry should try to partner with entrants into the emerging industry for access to technology and key supplier relationships. Having assessed that their current core assets and activities are failing to generate revenue, they should begin to partner with firms in the emerging industry. Their focal point should be that of gaining knowledge of the new industry.

In the radical trajectory of evolution the managers of the firm should develop a strategy for either exiting the business in the long term and or decide where its current assets and activities could be deployed in another industry or try to leapfrog the evolution of the industry by diversifying away from it in

Toshiba one of the largest firms have already begun to align their investments, they have decided to exit the business of physical disc media players. The quote from the manger Brass f Toshiba

*“Bass went on to defend the company’s decision to side-step Blu-ray and concentrate on developing online products. ‘We’re one of the most patented companies in the world,’ said Bass. ‘We’re big in storage and semi-conductors, not just electronics. And our strategy to focus on download (of movies) has already paid off. If you look at sales data, it wasn’t a Blu-ray Xmas; sales of DVD players and DVD software continue to dwarf*

*sales of BD. (Home Cinema)* The statement clearly shows that Toshiba has evaluated their current assets and found out that it does not create value in the long. They are divesting from the business and scaling down their commitments.

Firms in this phase can also massively reinvest in the emerging industry. That has been the path that Sony has chosen. As their CEO announced in their annual investment meeting Thursday, Sony began to publicly outline their blueprint for restoring profitability. In their consumer business; “At the center of it (strategy) a keystone will be networking – connected entertainment appliances”. *Sony is planning to spend \$16.7 billion over three years (through March 2011). The aim will be to become “the leading global provider of networking consumer electronics,”* *Stringer says. By the end of the process 90% of Sony’s product categories will have networking and wireless capabilities.*(Metue)

Sony is trying to invest in the new business and are indicating with these moves that they are trying to catch up with the competition and trying to make their precuts like the merging industry by connecting them to the internet.

### **Aligning the investments to the stage of industry evolution**

Which of these two strategies will be the most suitable for the respective firms?

According to the analysis on where in the phase of change between the emerging and the incumbent industry the industries are in the phase of convergence where *Growth in the new industry compared to growth in the old industry is high enough to cause convergence in volumes between the two industries.* So the strategic response would be, like Toshiba have chosen, to exit the incumbent industry for a radical change, however since the phase of change is at the moment only causing the volume of sales to merge, the incumbent might have time to reconfigure their assets and activities to the change. So in case of Sony current strategy, Sony might have time to catch up with the competition since the industries are still in converging phase and not already in the coexist or dominance phase. In the converging phase the firm should try to choose to become the standard in the industry by focusing on distinctive features of their products offerings, while at the time starting to understand how they can optimize their production and make

costs a issue. For Sony that means to actively participate with the competitors in standards creation of i.e. the network capabilities of the new digital media players. As their experience with low cost products and manufacturing can help them in gaining a foothold in the new industry by focusing on managing cost of their products. However it is the highest risk of the two strategies, and Sony have had troubles as we saw in the third section of keeping product, and seeing their revenue decreasing over the past year.

## **1.5 Creating Partnerships, Standards and luring Complementors**

The incumbent industry will need to create partnerships with the firms in the IT hardware and networking industry to be part of the process of creating the new standards for transmission of video and sound in the home. They will furthermore need the knowledge and know how of the networking industry in order for them to make their products connected to the internet.

The firms in the incumbent industry need to create partnerships with online content providers such as the self generated content site Youtube.com, in order to lure the content complementors to support and their online services into the incumbent products.

The incumbent industry need to embrace the digital video format used in the online world. Therefore do the firms in the incumbent industry need to form partnerships with the digital video format complementors that hold and administer the licenses and patents to the online world's digital video format. .

The incumbent need to create partnerships with software firms that create software application such s meat data on movie collections and software their make the user interface in their products more appalling and easy to navigate.

### **1.5.1 Creating Partnerships – with complementors that have assets and activities**

The incumbent industry will need to create partnerships with the firms in the IT hardware and networking industry to be part of the process of creating the new standards for transmission of video and sound in the home. They will furthermore need the knowledge and know how of the networking industry in order for them to make their products connected to the internet.

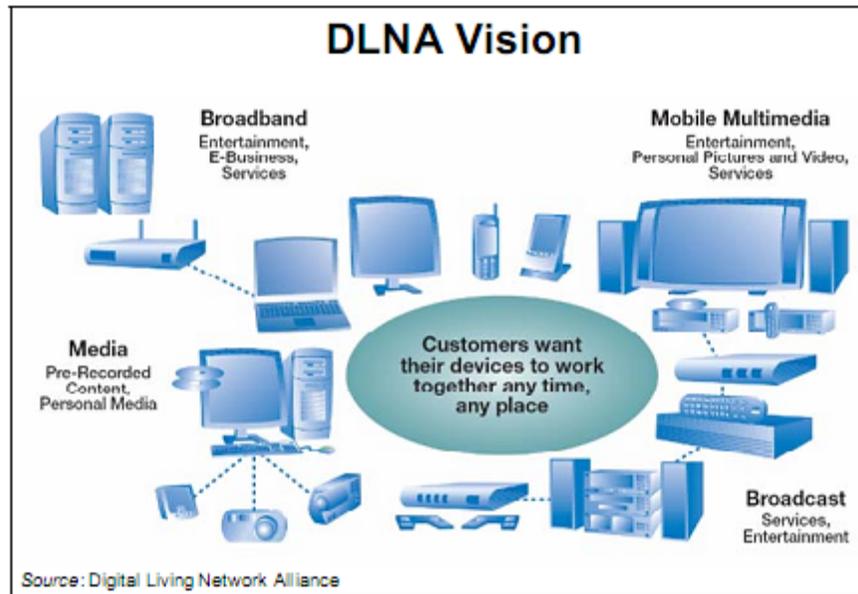
The firms in the incumbent industry need to create partnerships with online content providers such as the self generated content site Youtube.com, in order to lure the content complementors to support and their online services into the incumbent products.

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### **1.5.2 Creating Standards with competitors to form an standard**

Some Consume electronics companies are trying to gain a foothold in the process of creating standards for transmission of video and sound in the home. The most prominent partnership alliance for promoting a technological standard at the moment is the Digital network living alliance called DLNA and UPNP. DLNA was founded in 2003 by 17 PC and CE companies to provide guidelines and a standard for building interoperable electronic devices. DLNA is viewed by many consumer electronics companies as the “starting glue” for creating connected product ecosystems.



**Figure 70 DLNA Vision**

**Figure 9 Source: Digital Living Network Alliance  
Source: DLNA**

The Vision of the DLNA is shown in the illustration above. Basically what CE firms and the Hardware firms have entered into this open alliance where they share knowledge and define the standards for how to transmit video over the network, and how different consumer devices can guide each other on the home network. The standard for the DLNA have been initiated by firms for the IT domain such as Intel and Microsoft. They have together with CE firms decided on what on how physical and digital medias can find and connect to each other and to computer and devices that i.e., hold a movie catalogue. (DLNA)

The big difference here is that it is not only the Incumbent firms that decide the standards but they do so in cooperation with the IT hardware industry, thus they are actually collaborating with their competitors. The intent of the IT hardware industry is to sell their chipset and software stack to the large CE industry and the CE can offer them their brand and large installed base of customers their making and manufacturing power that some of the IT hardware industry do not have at the moment. This example shows that firms in the incumbent industry are actively trying to catch up the emerging industry and are collaborating with them in order to gain the needed assets and create the standards for the future of the digital video players.

### 1.5.3 Luring Complementors

The firms in the incumbent industry need to create partnerships with online content providers such as the self generated content site Youtube.com, in order to lure the content complementors to support and their online services into the incumbent products.

The incumbent industry need to embrace the digital video format used in the online world. Therefore do the firms in the incumbent industry need to form partnerships with the digital video format complementors that hold and administer the licenses and patents to the online world's digital video format.

An example is LG an consumer electronics firm from the incumbent industry. *LG entered into agreement with the DIVX so that their physical disc Blu-ray player allows consumers to enjoy Div-X(R) HD videos up to 1080p on the TV via DVD, USB or streamed over a home network (DIVX) DivX creates, distributes and licenses digital video technologies that span today's consumer media environment. Over 100 million Div-X Certified devices have shipped into the market from leading consumer electronics manufacturers. (DIVX)*

The incumbent need to create partnerships with software firms that create software application such s meat data on movie collections and software their make the user interface in their products more appalling and easy to navigate.

An example of meta data, the data that display information about a movie and picture of the cover of the movie, is called YE another movie box , this has been very popular on the digital media players. Sony has copied this approach with their new service for their Blu-ray players. Instead of luring a complementor software firm to supply meta data to their players, Sony instead bought the firm Gracenote(Paidcontent) and have recently announced that the new software called MovvieIQ will be enabled on Blu-ray Discs and an internet-connected Blu-rat player. The software lets movie fans access continuously-updated information on cast and crew, and shows pictures of the movie cover.

Another popular feature of the digital media player offer above the traditional physical disc players is the ability to watch free online content such as home videos on youtube.com. The incumbent firm have realised that it is a 'must have' feature, but so far only the electronic producer LG have offered this feature on their upcoming Blu-ray player. LG announced today that as their new BD370 Blu-ray player will also stream content from YouTube. (Techdisgest)

#### **1.5.4 Industry Analysis Conclusion**

The analysis revealed that the incumbent industry of physical disc players are on a radical trajectory of evolution where their ability to earn a return on investments since their core assets are failing to generate the needed value and their ability to generate a profit on their activities are struggling. Furthermore did the analysis conclude that the incumbent industry is on converging stage where the industry's where core assets and activities are being valued less much less than the attributes of the emerging industries products attributes, and thus are some of their buyers opting for the other industry's products. Another conclusion of the industry analysis is that The incumbent industry of physical disc players need to align their current assets and activities, One way for them is to enter into partnerships to gain hold of the emerging industry s new assets and to participate in standards creation with the emerging industry players in order to sustain competitive advantage in the long run.

## **1.6 Discussion of findings.**

The analysis of the industries in the converging industry of digital consumer video unveiled a few shortcomings of the applied managerial models methods for industry definition. First, when attempting to define the boundaries of the incumbent and the emerging industry, the managerial model proved insufficient to draw the boundaries around the fragile and very dynamic structures of an emerging industry. The framework of the model worked out well in analysis the incumbent industry, but alternative methodologies and theories, on how to measure the emerging industry could be better defined. Especially with the perception and the needs of the business practitioner, because it is typically those, who create and define the new markets and are in command over the industry's developments. Furthermore should the model be used on other industries to see its applicability in these other industries. Specifically industries that rely on technology standards or technologies that are moving from an analog platform to a digital, i.e. the book & magazine industry could be of interest in using this model.

## 2 References

### 2.1 List of literature

#### Books

Besanko, D et al (2007) *Economics of Strategy*, 4th Edition February 2007. Wiley

Bradley, S. Hausman, J. & Nolan, R. (1993) *Globalisation, Technology and Competition. The fusion of Computers and Telecommunications in the 1990s*. Boston, MA. Harvard Business School Press.

Collins, D.J., Bane W. & Bradley, S.P. (1997), *Winners and Losers, Industry structure in the converging world of telecommunications computing and entertainment*. In *The fusion of Computers and Telecommunications in the 1990s*, Harvard Business school press

D'Aveni Richard A. (1994) *Hypercompetition 1994 Free Press*

Gilbert *Mobility Barriers and the value of Incumbency. In Handook of Indsutrial Organisation, Elsevier , 1989*

Greenstein, S. & Khanna, T. (1997). What does Convergence mean? In Yoffie, D.B. (Ed.), *Competing in the Age of Digital Convergence*. Boston, MA: Harvard Business School Press, pp. 201-225.

McGahan, A. M. (2004). *How Industries Evolve, Principles for Achieving and Sustaining Superior Performance*. Boston, MA: Harvard Business School Press.

Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York, The Free Press.

Porter, M.E. (1980). *Competitive Strategy*. New York, The Free Press.

Porter, M.E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York, The Free Press.

Rienecker, L. & Jørgensen, P. S.(2006). *Den Gode Opgave*. Forlaget Samfundslitteratur.

Rumelt, R. (1987), "Theory, Strategy, and Entrepreneurship," in D. Teece (Ed.) *The Competitive Challenge: Strategies for Industrial Innovation and Renewal*. Ballinger Publishing, Cambridge, MA.

Yoffie, D.B. (Ed.)(1997), *Competing in the Age of Digital Convergence*. Boston, MA: Harvard Business School Press, pp. 159-201.

Yoffie, D. B. (1997) Introduction, Chess and Competeting in the age of digital convergence. In Yoffie, D.B. (Ed.), *Competing in the Age of Digital Convergence*. Boston, MA: Harvard Business School Press, pp. 1-36.

Varian, H.R. & Shapiro, C. (1999) *Information Rules. A Strategic Guide to the Network Economy*. Boston, MA: Harvard Business School Press.

## Articles

Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120

Bresnahan, T. F. and Greenstein, S. (1999), “ Technological Competition and the Structure of the Computer industry” *Journal of Industrial Economics*, Mar99, Vol. 47 Issue 1, p1-40

Katz M. L. and Carl Shapiro (1994) *Systems Competition and Network Effects* The Journal of Economic Perspectives, Vol. 8, No. 2 (Spring, 1994), pp. 93-115

Klepper, S. (1997) “Industry Life Cycles” *Industrial & Corporate Change* Oxford University Press journal Issue 1 Vol 6 P. 145-81

Lieberman, Marvin B., and David B. Montgomery. "First-Mover Advantages." *Strategic Management Journal* 9 (1998): 41–58.

Yoffie, D. B. (1996) Competing in the age of digital convergence. *California Management review*, 38(4), 31-53

Utterback J. M. and Suarez F. F. (1993) “Innovation, Competition, and Industry Structure

“

Research Policy (1993), Volume: 22 Pages: 1-21

## Industry Reports

ABI Research            *Digital Video Adapters in the Living Room*, 2009 Author, ABI Research

IDC (2006)            *Australian Digital Home Convergence: One Box to Rule All*

February 2006 Author(s): Sophie Lo Landry Fevre and Jerson Yau

Park Associates. *Networks in the Home: Connected Consumer Electronics*. (2009)  
Author Kurf Scherf, Harry Wang

Yankee Group *Connected Consumers, Connected Devices: 2009 U.S. Forecast, Part 1* Published May 07, 2009 Analyst Joshua Martin

Isuppli *Consumer Platforms Topical Report; More than 375 million consumer platforms to support internet Video by 2013*; Sheri Greenspan,

### **Internet Sites and Press articles**

Listed in order of Appearance in the thesis

#### *Wiki*

No Author given (2008, July 10) Betamax A overview of Blu-ray standard and its specifications

*Wikipedia* Retrieved 10 July 2009 at 13:48, from <http://en.wikipedia.org/wiki/Betamax>

#### *NPD Group*

NPD PResse release (April 2008) The NPD Group: DVD Sales Flattening, But Don't

Blame Digital Downloading, *NPD Group* Retrieved 10 July 2009 at 13:48, from

[http://www.npd.com/press/releases/press\\_080916.html](http://www.npd.com/press/releases/press_080916.html)

#### *Mpclub*

HiJack (2009, July 10) MPC reviews. *MPCclub* Retrieved 10 July 2009 at 12:00, from

<http://mpclub.com/modules.php?name=Reviews>

#### *Infoworld*

Nystedt, Dan (April 10, 2006) Lite-On acquires BenQ's optical drive factories.

*Infoworld* Retrieved 10 July 2009 at 13:48, from

<http://www.infoworld.com/t/storage/lite-acquires-benqs-optical-drive-factories-754>

#### *USA Today*

Associated Press (May 15 2009) Panasonic slumps to \$4B annual loss. *USA Today*  
Retrieved 10 July 2009 at 12:00, from  
[http://www.usatoday.com/money/companies/earnings/2009-05-15-panasonic-loss\\_N.htm](http://www.usatoday.com/money/companies/earnings/2009-05-15-panasonic-loss_N.htm)

#### *The Street*

Editor (April 15, 2009) Koninklijke Philips Reports A Net Loss. *The Street*. Retrieved 10 July 2009 at 12:00, from  
<http://www.thestreet.com/story/10486507/2/koninklijke-philips-reports-a-net-loss.html>

#### *Engadget*

Patel, Nicky (May 2009) Sony posts \$1b loss, first in 14 years. *Engadget* . Retrieved 10 July 2009 at 12:00, from  
<http://www.engadget.com/2009/05/14/sony-posts-1b-loss-first-in-14-years/>

#### *CRN*

Berndtson, C (Jan. 29, 2009) Chip Decline Spurs Big Toshiba Loss *ChannelWeb*  
Retrieved 10 July 2009 at 12:00, from  
<http://www.crn.com/hardware/212903449;jsessionid=H2FEO3FXFFYCSQSNLPCCKHSCJUNN2JVN>

#### *Wall Street J*

No Author given (Jan, 2009) Samsung Reports First Net Loss. *The Wall Street Journal*.  
Retrieved 10 July 2009 at 12:00, from <http://online.wsj.com/article/SB123267737147708941.html>

#### *Reuters*

So-eui Rhee (Jan, 2009) LG Display suffers record loss. *Reuters*. Retrieved 10 July 2009 at 12:00, from <http://in.reuters.com/article/hotStocksNews/idINTRE50F1TA20090116>

#### *Forbes*

Pomerantz Dorothy (April, 2009) Sony's Chiefs On What's Next For Movies. *Forbes*  
Retrieved 10 July 2009 at 12:00, from <http://www.forbes.com/2009/04/21/sony-pascal-lynton-business-media-sony.html>

#### *Techspot*

Mann, Justin (May 2008) Blu-ray sales slow despite of lack of competition

*TechSpot.com*

Retrieved 10 July 2009 at 12:00, from

<http://www.techspot.com/news/29907-bluray-sales-slow-despite-of-lack-of-competition.html>

*GizMag*

Qucik Darren (Feb, 2009) Blu-ray licensing changes offer hope for cheaper players and discs. *gizmag.com* Retrieved 10 July 2009 at 12:00, from <http://www.gizmag.com/blu-ray-licensing-cheaper/11114/>

*Mpcclub 2*

Egreat Product Manager (April, 2009) New EGreat EG-M34A Model announced. *Mpcclub.com* Retrieved 10 July 2009 at 12:00, from <http://www.mpcclub.com/modules.php?name=Forums&file=viewtopic&t=20937&postdays=0&postorder=asc&start=15>

*Xtreamer*

Xtreamer CEO Some personal words before the device get to your hands. *Xtreamer.com* Retrieved 10 July 2009 at 12:00, from <http://forum.xtreamer.net/viewtopic.php?f=28&t=457>

*Ney York Times*

Taub, Eric A. (April, 2008) Blu-ray: The Future Has Been Delayed *New York Times* Retrieved 10 July 2009 at 12:00, from <http://bits.blogs.nytimes.com/2008/04/30/blu-ray-the-future-has-been-delayed/>

*Avforums*

No Auhtor, (June, 2009) Most read threads on Streamer and Media players.

*Avforums.com* Retrieved 10 July 2009 at 12:00, from <http://www.avforums.com/forums/streamers-network-media-players/?daysprune=-1&order=desc&sort=views>

*Avsforum*

No Auhtor, (June, 2009) Most read threads on Digital Media Servers & Content Streamers. *Avsforums.com* Retrieved 10 July 2009 at 12:00, from

<http://www.avforums.com/avs-vb/forumdisplay.php?f=39&daysprune=30&order=desc&sort=views>

#### *Home Cinema choice*

May Steve (March 2009) Toshiba unveils Net Player and 2009 LCD TV range, says it was right to bail out on Blu-ray. *Home Cinema Choice* Retrieved 10 July 2009 at 12:00, from

[Http://www.homecinemachoice.com/feature/toshiba+unveils+net+player+and+2009+lcd+tv+range+says+it+was+right+bail+out+blu+ray+14+03+09](http://www.homecinemachoice.com/feature/toshiba+unveils+net+player+and+2009+lcd+tv+range+says+it+was+right+bail+out+blu+ray+14+03+09)

#### *Metue*

Gilbert, Seth (June 2008) Sony Plants Flag in Living Room: Aims for Lead in Connected Electronics *Metue Media entertainment and Technology Blog* Retrieved 10 July 2009 at 12:00, from <http://metue.com/06-27-2008/sony-connected-entertainment-devices/>

#### *Divx*

Press Release No author (May, 2009 ) LG and DivX Announce World's First DivX(R) HD 1080p Certified Blu-ray Player *Divx.com* Retrieved 10 July 2009 at 12:00, from

<http://investors.divx.com/releasedetail.cfm?releaseid=384821>

#### *Paidcontent*

Rafat Ali (April, 2008) Sony Buys Media Metadata And Tech Firm Gracenote For \$260 Million Plus. *Paidcontent.com* Retrieved 10 July 2009 at 12:00, from

<http://paidcontent.org/article/419-sony-buys-media-metadata-firm-gracenote-for-260-million/>

#### *Tech Digest*

Weaser, Susi (Jan, 2009) CES 2009: LG brings YouTube to Bluray. *Techdigest.com*

Retrieved 10 July 2009 at 12:00, from [http://www.techdigest.tv/2009/01/ces\\_2009\\_lg\\_bri\\_1.html](http://www.techdigest.tv/2009/01/ces_2009_lg_bri_1.html)

#### *DLNA*

Digital Living Network Alliance (2004) *User Case Scenarios, Whitepaper*. Retrieved 10 July 2009 at 12:00, [www.dlna.org](http://www.dlna.org).

Digital Living Network Alliance (2007) *DLNA Overview and Vision Whitepaper*. Retrieved 10 July 2009 at 12:00, [www.dlna.org](http://www.dlna.org).

## Interviews

Hvid, Erling                      Linksys Kiss technology, Email and Telephone interview

Ken Lowe                         Sigma Designs, Investor Transcript

## 2.2 Glossary of Terms

<b>Codec</b>	Device or computer program capable of encoding and/or decoding a digital data stream or signal.
<b>Blu-ray</b>	HD Digital Video format for physical discs
<b>DVD</b>	Normal Digital Video Format for physical discs
<b>GUI</b>	Graphical user interface
<b>MKV</b>	Free HD Digital Video codec Container
<b>Divx;)</b>	Free Digital Video codec Container
<b>Divx</b>	Licence based HD Digital Video codec Container
<b>Xvid</b>	Free HD Digital Video codec Container
<b>DTS</b>	Licensed based Digital audio format
<b>VoD</b>	Video on Demand refers to the transmission of movies via digital cable or IPTV on the internet
<b>X.264</b>	x.264 is a free software library for encoding video streams into the H.264/MPEG-4 AVC
<b>H.264</b>	H.264/MPEG-4 AVC is a standard for video compression.
<b>M2TS</b>	M2TS file is a Sony high definition video file type. TheM2TS file format is one of the three mandatory supported codecs (MPEG-2, H.264/MPEG-4 AVC, and SMPTE VC-1) used on Blu-ray discs.

## **3 Appendixes**

### **3.1 Overview of the firms in the incumbent and the emerging industry**

#### **Traditional Consumer electronics Industry.**

Philips  
Samsung  
Sony  
Toshiba  
Panasonic  
Pioneer  
Sanyo  
Hitachi  
Sharp

#### **Players in the Emerging Industry of Digital Media Players Computer Network Industry**

DLink  
Netgear  
Zyxel  
Linksys

#### **Storage Industry**

Western Digital  
Seagate  
Lacie  
Iomega

#### **Network attached storage industry**

Qnap  
Raidsonic, Buffalo

#### **Newcomer Hardware producers**

Asus  
Syabas  
Mvix Xtreamer  
ACRyan  
Conceptronic                      Emtec                      Freecom                      Dvico

## Connected Consumer Electronics

Connected Game Consoles  
Media Center PCs  
Multi-room DVR and Connected Set-top Boxes  
Digital Media Adapters  
Cloud Media Set-top Boxes  
Connected TVs  
Connected Blu-ray Players

### 3.2 Example of royalties payment for use of the DVD license

#### Royalty Rates under DVD6C Licensing Program

The current royalty rates applicable to new licensees who entered into the DVD6C License Agreement ("Agreement") are as follows:

As of July 1, 2008

Category	Royalty Rates
DVD-Video Player	The greater of (i) 4% of the net selling price or (ii) US\$4.00 per player or, US\$3.00 per player on or after the effective date of the DVD6C license agreement US\$8.00 at maximum on or after January 1, 2003
DVD-Audio Player	The greater of (i) 4% of the net selling price or (ii) US\$4.00 per player or, US\$3.00 per player on or after the effective date of the DVD6C license agreement US\$8.00 at maximum on or after January 1, 2003
DVD-ROM Drive	The greater of (i) 4% of the net selling price or (ii) US\$4.00 per drive or, US\$3.00 per drive on or after the effective date of the DVD6C license agreement US\$8.00 at maximum on or after January 1, 2003
DVD-ROM Disc	US\$0.075 per disc;

	US\$0.065 per disc on or after January 1, 2002; US\$0.05 per disc on or after January 1, 2004; US\$0.04 per disc on or after the effective date of the DVD6C license agreement
DVD-Video Disc	US\$0.075 per disc; US\$0.065 per disc on or after January 1, 2002; US\$0.05 per disc on or after January 1, 2004; US\$0.04 per disc on or after the effective date of the DVD6C license agreement
DVD-Audio Disc	US\$0.075 per disc; US\$0.05 per disc on or after January 1, 2004; US\$0.04 per disc on or after the effective date of the DVD6C license agreement
DVD Decoder	The greater of (i) 4% of the net selling price or (ii) US\$1.00 per decoder US\$0.50 per decoder on or after the effective date of the New DVD6C License
DVD Video Recorder	The greater of (i) 4% of the net selling price or (ii) US\$6.00 per recorder
DVD (Recordable Disc) Drive	The greater of (i) 4% of the net selling price or (ii) US\$6.00 per drive
DVD Encoder	The greater of (i) 4% of the net selling price or (ii) US\$1.50 per decoder US\$0.75 per encoder on or after the effective date of the New DVD6C License
DVD-R Disc	The greater of (i) 4% of the net selling price or (ii) US\$0.075 per disc; US\$0.045 per disc on or after January 1, 2006
DVD-RW Disc	The greater of (i) 4% of the net selling price or (ii) US\$0.075 per disc or, US\$0.065 per disc on or after the effective date of the DVD6C license agreement
DVD-RAM Disc	The greater of (i) 4% of the net selling price or (ii) US\$0.075 per disc or,

	US\$0.065 per disc on or after the effective date of the DVD6C license agreement
Recordable Disc Case	The greater of (i) 4% of the net selling price or (ii) US\$0.005 per case
+R Disc	The greater of (i) 4% of the net selling price or (ii) US\$0.075 per disc or, US\$0.045 per disc on or after January 1, 2006
+RW Disc	The greater of (i) 4% of the net selling price or (ii) US\$0.075 per disc or, US\$0.065 per disc on or after the effective date of the DVD6C license agreement

### **Price for using the blu-ray licensees**

The partners expect a license to cost **USD\$9.50** for a read-only Blu-ray device and \$14 for a burner. Discs will cost 11 cents for read-only discs, 12 cents for write-once BD-Rs and 15 cents for rewritable BD-RE discs. The creation of the one-stop is designed to avoid the problem DVD player manufacturers faced of having to negotiate deals with three separate organizations representing various patent holders<sup>5</sup>

Guidelines of Licensing DVD Copy control, DVD Copy Control Association,  
<http://www.dvdcca.org/css/>

Advanced access content system, Association for copy protection on Blu-ray discs  
<http://www.aacsla.com/specifications/>

### **3.3 Overview of Suppliers connected media devices**

*Silicon – Media Processing and System on Chip*

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Broadcom 35xx and 74xx series  
Intel CE 3100  
Mediatek MT5xxx, MT8xxx, and MT13xx  
Micronas  
NXP 225 and TV550  
Sigma Designs 86xx series  
STMicroelectronics STi71xx  
**Complementors and suppliers**  
Netflix to xbox  
Mymoives meata data application

**Non-connected consumer electronics**  
Dvd palyer, Blu-ray palyer

**Devices that have two or more functions put into one box**

- NAS drives, with built in communication and computer functions and storage
- Tivo/roku/blobbox/WD tv/ popcorn players
- Xbox 360/PS3/Wii Movie players/game console etc.
- HTPC, Living room pc , movie player, pc etc. bit torrent downloads
- Apple TV, movies player, TV player

## 3.4 Company Interviews

### Interview with Sigma Designs

Interview with Sigma Designs, ( January 13, 2009) Investor call Full Transcript from the investor meeting; 01312009 can be found at

[Sigma Designs, Inc. F4Q09 \(Qtr End 01/31/09\) Earnings Call Transcript -- Seeking Alpha](#)

Ken Lowe

*Next is digital media adapter market for which Sigma has enjoyed a dominant position while the market interest develops. Recent events have increased the appeal of this market and we are now **expecting increased contributions** over the next several quarters. The driving force behind this change is linked to mobilizing your video library, somewhat again to the iPod concept. If you break down the iPod demand, you would find the two facets of appeal. First, it is a convenient mobile device for playing music and second it is a repository for accessing your entire music library, whether that access has playback on the iPod or in your home stereo or in a car.*

*The new digital media adapter market is tapping into the second facet of appeal as it relates to your media library, and we are hopeful it will continue this growth and become a long-term revenue stream.*

## **Interview with Linksys/KISS Technology Transcript**

Hey Erling,

I am currently writing a thesis regarding the digital convergence in consumer electronics market. Basically the driving force behind the convergence is that; Everything from a laptop to a mobile phone to a television to a games console is now, arguably, the same kind of device: each consists of a microprocessor, a screen, some storage, an input device and a network connection. All these devices will be able to record, play and stream digital information.

I am investigating how companies can make smart investment based on their evolutionary trajectory of their industry. Secondly, the thesis builds upon the evolutionary trajectories and how companies can use partnerships and standards or other investment alternatives to follow/lead the changes happening in their industry or in the new converging industry.

The argument in the thesis is that the main players in the new converging industry will come from these Industries.

### **Digital Transfer**

ISP's Satellite, cable, Telco's

### **Digital Content**

Content providers of premium paid/non-paid content, such as major TV channels, movie studios, Music, Games , Internet community created media (i.e. Youtube, I-radio)

### **Digital Platforms**

- I.e. K.I.S.S./Cisco/linksys devices
- Intel Viiv/AMD Live
- Integrated settop boxes/cable/satellite solutions
- Tivo/DVR devices
- Apple FrontRow
- MS Media center/Xbox/Zune

The input from you and how you as an representative from K.I.S.S./Cisco would be valuable primary data to my thesis.

Q: What was your position at K.I.S.S. Technology?

A; Responsible for HW development and Manufacturing and in periods also for SW development

Q: What did you primarily work with at K.I.S.S./Cisco

A; DVD players, Hard disk recorders, DVD receivers, LCD and Plasma TV , Set-top boxes for T-online, Vista mediaextenders

Q: Can you briefly explain K.I.S.S. primary product's and what they can help you as a consumer do?

A; It enables the consumer to watch digital copies of movies and videos in their living room

### **Partnerships for standards creation**

Q: Do you consider it important for K.I.S.S. to have partnerships and alliances with companies outside the electronic industry? If yes, why?

A; Yes , it is important for Linksys to part of the standard setting alinces that form the new digital format and technologies.

Q: Do K.I.S.S. have any partnerships/alliance with other companies such as content providers, Telco's ISPs, Cable satellite providers? (i.e co-marketing, bundled sales or more strategic partnerships, i.e. K.I.S.S. produced set-top boxes for Calbe/Sat providers)

A; We have participated in the DLNA alliance

Q: In your opinion what was the reason Cisco/Linksys acquired K.I.S.S.?

A; KiSS has demonstrated that it was possible to utilize content from the internet and play back this content on a DVD player with an Ethernet connection, without using a PC as a gateway.

KiSS had and has an online website with content like Web radio channels, EPG for TV channels, Weather forecast and simple games

KiSS had, at the time of takeover, the largest installed base of DVD players in the market ( DP500 and DP1500 ) with enabled Ethernet / internet access..

Q: Could one of the reasons maybe be a fast way to gain access into the consumer electronic space, where Cisco as a network producer with primarily access to business segments?

A; Cisco/Linksys wanted to go into the market of integrating consumer products and their functionalities over the network in the home, and also enable access to Content from the Internet. This is considered a market with high growth potential and KiSS was selected as the best positioned company out of a total of 28 companies' world wide.

Q, Did you see Kiss holding technology in hardware design and or software design that Cisco did not hold themselves at the time of takeover?

A; Cisco is not developing Consumer electronics at all, and Linksys was/ is primarily an ODM company within network products like router and switches. Therefore they had no HW or SW experience within this field.

Q: What mediachip was the Kiss DP series build on? What OS was the Kiss hardware built on a small Linux variant?

A; Sigma Design. 85xx and 86xx series of ARM based chipsets running Linux