The HD-DVD vs. Blu-Ray Format War Will Be Determined By Porn

By

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“Great art is always flanked by its dark sisters, blasphemy and pornography.”

Today’s plebeian art, media and entertainment, is changing rapidly, and it should not be surprising that once again pornography is playing a major role. Over the last 25 years, porn - or the “adult entertainment business” as it is sometimes euphemistically referred to - has moved from the seedy dark alleys and cathouse theaters into the mainstream, beamed directly into the home through film, television and the internet. Top porn talent is ubiquitous in pop culture. The top female performer, Jenna Jameson, has written a best-selling book, appeared in movies and music videos, and been the subject of several programs, including an E! True Hollywood Story. This kind of acceptance, coupled with the growing number of platforms on which to distribute, has the porn business making enormous profits. Americans spend between $10 and $14 billion a year on adult entertainment, more than the combined revenues of professional football, baseball, and basketball, and more than double the revenues of ABC, CBS, and NBC combined.

Pornography’s history, particularly vis-à-vis new media, is quite extensive and well documented. From Guttenberg’s printing press and early photography, sculptures, and moving images (including animation) to cable television and home video all the way to what today we consider new media such as the internet, DVD, and mobile technology, significant, if not primary usage, has been sexually-related materials. CD-ROMs, “900” number phone lines, laser discs and many others also owe their histories to the adult entertainment industry.

In this paper, I will show why an emerging technology, high definition DVD, will be no different, and the current format war, like the previous one between VHS and

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1 Paglia, Camille, *Sexual Personae*, 1990, pg 24-25
Betamax formats, will be determined by the porn industry. The ultimate winners in Hollywood’s battle of HD-DVD vs. Blu-ray will owe their victory to the “other” Hollywood, of the San Fernando Valley, and the consumers who support it. While the shame factor of adult material makes it extremely difficult to quantify its impact on a consumer’s purchase decision, I will show through historical precedent and empirical evidence that the decision to adopt a new technology is driven by the desire to consume porn.

**HISTORY**

A recent discovery yielded what is thought to be the first piece of erotic art. In April 2005, German archaeologists discovered a 7,200 year-old pornographic scene, depicting a male figurine with exaggerated genitals hunching over a female figurine, ostensibly denoting sexual intercourse. Sketchings on walls and erotic sculptures were common in ancient times, dating back as far as the Paleolithic era. Ancient Roman artwork frequently was intended to titillate or, in the case of the drawing shown below, inform. The drawing in Figure 1 below is from a brothel in Pompeii, where customers would request a service by pointing to a mural of it.

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In the late 1400’s, Gutenberg’s printing press allowed for voluminous printings of great works, most commonly the Bible. But more than the Good Book or the Greek and Latin classics, two salacious works kept the printing presses busy. Pietro Aretino's *Postures* (1524) and Francois Rabelais' *Gargantua and Pantagruel* (1530) were censored shortly after release due to their sexually graphic content, but continued to out-sell other mass produced works. Rabelais famously boasted about *Gargantua and Pantagruel* that "more copies of it have been sold by the printers in two months than there will be of the Bible in nine years."\(^6\)

Four centuries years later, Nicéphore Niépce produced the first photograph, sparking an important transition from the erotic written word, to the more visually compelling photo. Almost immediately, photographic lenses were pointed toward pornographic images. The civil war then provided the litmus test by which the erotic implications of this new technology would be measured. While photos of battles and the soldiers that fought them were transmitted from the front back home, it wasn’t letters that the soldiers were demanding in return. The traffic of erotic photos, as well as texts,

\(^5\) Ibid
\(^6\) Rabelais, Francois, *Gargantua and Pantagruel*, reprint 1979, pg 63
was so great that in 1865 Congress passed the first U.S. law banning obscenity via the mail. 7

The popularity of the visual only increased once pictures became moving pictures. Like the printing press before it, film was thought to be a new medium for high art, but early films, like early texts, were often high in sexual content. The film industry has produced hundreds of thousands, if not millions of movies, over the last century and perhaps not surprisingly the film that may be the most profitable of all time is a pornographic film. Deep Throat, released in 1972, was not the first pornographic film to be released in theaters, but it was definitely the most successful. Shot in only 6 days on a budget of $22,000, the film became a cultural phenomenon. Estimates of total revenue are tricky because theaters in those days were often owned by mobsters who frequently used them as vehicles for laundering money made in drugs, racketeering, and, ironically, prostitution, but estimates put the total gross revenues of the film at upwards of $600 million, which would make it the most profitable movie ever made.

Porn mavens were anxious to find cheaper ways to produce and distribute their films since the crowded marketplace of adult film forces producers to keep budgets extremely low. With the advent of the camcorder, the filmmakers’ wishes came true. These early adopters of the handheld video camera not only drove sales of the new product, but also helped pioneer the technology. Soon a new, low cost form of porn emerged - the “gonzo” picture – which lowered the cost of making a movie to a mere pittance, through a “reality” type format, little or no script, and the use of an inexpensive

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7 Loth, David G, The Erotic in Literature, 1961, pg 143
9 Ibid
10 Aldridge, John, “The dirty secret that drives new technology: it’s porn,” The Observer, 3/3/02, http://observer.guardian.co.uk/focus/story/0,6903,661094,00.html
handycam or VHS-C style camcorder. Suddenly every amateur with a few hundred dollars could be their own Seymore Butts and film pornography. The appeal of making explicit home movies was illustrated in the film “Auto Focus,” which detailed Hogan’s Heroes actor Bob Crane cataloguing his swinging lifestyle via the new gadget, the camcorder. While an estimate of the number of camcorders bought for this specific activity may prove difficult, the prominence of such “leaked” films by celebrities such as Pam Anderson & Tommy Lee, Pam Anderson & Brett Michaels, Paris Hilton and Fred Durst suggest many people are using their handheld video cameras for more than just capturing baby’s first steps. Personal usage by individuals and commercial usage by porn purveyors clearly had a significant impact on the adoption and sales of the camcorder.

THE FIRST FORMAT WAR: VCR & VIDEO CASSETTES

Adult content is frequently acknowledged as the reason VCRs became popular and there is significant evidence to show that porn was a primary reason for the emergence of VHS as the single videotape format. Sony introduced the Betamax home video system in 1975, followed by JVC’s announcement of the rival VHS the following year. Initially, Sony believed that videotapes and recorders would be used for time shifting of TV programs, so the Betamax format was designed with a one-hour playing time. But prerecorded movies, with their longer run times, were in fact what were demanded, and by the time Betamax changed their technology, VHS, which allowed for two-, four- and six-hour recordings, had built an insurmountable lead. But what were people watching on these tapes? National retail chains such as Blockbuster had not yet emerged and the sell-thru market was still immature. The answer, once again, was porn. The early home video rental outlets and sell thru chains were predominantly
pornography focused. By 1983, adult videos accounted for two-thirds of all rented videos. “The first thing that a lot of people did when they got their VCR was rent or purchase an adult movie,” says Paul Fishbein, publisher of The Adult Video News, the porn industry’s trade magazine. “ ‘Deep Throat,’ ‘Devil in Miss Jones,’ ‘Debbie Does Dallas.’ That’s what they asked for. Most people had never seen an adult movie, because they had to go out in public, to a theater to see it. I mean, sex is a very private thing. So, now you can watch it in the privacy of your own home, nobody has to know. And I think that’s what drove (video).”

Al Bloom, adult industry pioneer and director of marketing for California Exotic Novelties, recalls that in 1980, blank VHS stock was two dollars cheaper than blank Betamax, resulting in a five-dollar lower retail price. This difference was critical to adult video manufacturers and their very slim margins. “Sony didn’t quite understand that if they sold their tape to the adult duplicators at a cheaper price that the format would have probably survived because the technology was better. They didn’t understand that people were buying these things to watch porno.” Other sources suggest that Sony not only priced Betamax higher, but even flat out refused to sell inventory to pornography. This fatal decision sealed Betamax’s fate as porn adopted VHS and the format boomed.

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11 Puckett, Jacob, “The Good, the Bad, the Billions: Adult Entertainment,” http://www.jacobpuckett.com/adultindustry/industry.htm
Cable TV / PPV / VOD

Last year HBO set a record with 124 Emmy nominations and booked an astounding $1 billion in profits. The premium channel subscription model has been perfected by HBO, due to its high quality and largely exclusive content, but guess who created the business model of subscription pay cable? That’s right, porn. Pay-per-view, premium cable and satellite TV channels are available because pornographers established premium subscription services in hotels and digital networks years earlier. Now not only does adult programming drive their business, it is their business. One-third of all pay-per-view revenue, $2 billion per year, is from adult programming. In 2002, the largest cable operator in the nation, Comcast, generated $50 million from adult. Every cable and satellite provider offers adult content, although most are reticent to admit how much they make from it. However, analysts who cover the industry have their own estimates. Dennis McAlpine of McAlpine Associates, who has tracked the entertainment industry for more than 20 years, estimates DirecTV’s revenue as “a couple hundred million, maybe as much as $500 million, off of adult entertainment. It’s probably more than what their overall profit is. The other areas are losing money. That’s the only part that’s making money.”

Also cashing in are hotels. An incredible 50 percent of hotel guests at the five largest hotel chains - Hilton, Marriott, Hyatt, Sheraton and Holiday Inn - buy adult films on in-room pay-per-view systems, accounting for nearly 70 percent of in-room charges.

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15 Adlian, Josef, “Emmys aloft with 'Angels'”, Daily Variety, 7/15/2004
17 Supra note 12
19 Supra note 12
Cable and pay-per-view offer even more privacy than home video, since they can be delivered directly into the home, without the shame factor of going to a rental or retail outlet. And just like home video, cable has shown that the more privacy a technology allows the more money can be made from adult programming. McAlpine says “Adult is a major factor in determining the profits of a cable system, an in-house hotel system, or a satellite system. It’s a big profit contributor.”

Even for non-profit areas of cable television, porn leads the way. When cable systems began building an infrastructure of cable channels, communities demanded public-access channels to ensure local programming would have many voices. They hoped civic groups and educational programming would be heard via these leased channels. Instead what they heard was explicit material. Shows such as Midnight Blue, produced by Screw Magazine, and Colin’s Sleazy Friends, are among the most watched public access programs to date.

**THE INTERNET**

It’s no secret that the growth of the internet was largely on the back of the adult industry. Like its technology predecessors, the internet was able to capitalize on the privacy desires of consumers and use its anonymity to drive business. “The computer now, in terms of its penetration into American households – the last figure I saw was somewhere on the order of 70-80 million households, out of the 100 million in this country? So again, we’ve got enormous potential for people to look at things in the privacy of their home,” says Fred Lane, author of the book *Obscene Profits: The*

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20 Supra note 18
Entrepreneurs Of Pornography In the Cyber Age.\textsuperscript{22} The difficulty in regulating the internet also spawns growth in regions of the world, such as Islamic countries and Utah in the United States, where residents were previously denied access to adult materials.

The first and most successful entrepreneurs on the internet were primarily those who operated pornographic websites. Some suggest that AOL was able to win out over Prodigy internet service due to the latter’s refusal to allow sexually oriented content on its network.\textsuperscript{23} Pornography first was posted on Usenet groups, and then porn sites sprang up, becoming increasingly interactive and technologically advanced. Photos, video, and interactive video game-like entertainment became common. Sites increased in both quality (in terms of technology and customer focus) and quantity. “Sex” has been the number one searched-for word for many years, with “porn” not far behind.\textsuperscript{24} Search engines such as Yahoo! and Altavista exclude sex related searches from their usage statistics because it skews the results, making them worthless.\textsuperscript{25} Below are some statistics, showing just how much of the internet in porn related.

\textbf{Internet Pornography Statistics}

Pornographic websites: 4.2 million (12\% of total websites)  
Pornographic pages: 372 million  
% of all internet traffic: 19\%  
Daily pornographic search engine requests: 68 million (25\% of total requests)  
Daily pornographic emails: 2.5 billion (8\% of total emails)  
Average daily pornographic emails/user: 4.5 per user  
Annual growth - 1997-2003: 40\%  
\textit{Source: Internet Pornography Statistics, 2003}

\begin{raggedright}
\textsuperscript{22} supra note 12  
\textsuperscript{23} PMN Networks,“Porn to be major driver of 3G adoption”, http://www.pmn.co.uk/20030121adult.shtml  
\textsuperscript{24} Supra note 10  
\textsuperscript{25} Ibid
\end{raggedright}
Today, porn’s internet entrepreneurs still thrive, although with growth showing signs of maturity, internet porn, like other media, is becoming more niche and fragmented. Some of the early pioneers such as Danni Ashe, reportedly the most downloaded woman on the internet, have cashed out and moved on to new, emerging platforms. Ashe, whose site Danni’s Hard Drive was and still is one of the phenomenally successful sites in internet history, made millions and is now making a second career as strategic advisor and technology consultant to large mainstream corporations.  

No discussion of pornography can be discussed without at least addressing its deleterious effects. I will not debate the morality of the product, as that is a subject of another paper. However, the wild, wild west of internet porn creates particularly troublesome technological issues that need to be addressed. The proliferation of porn spam, the accessibility of porn by minors, internet porn addiction, and spyware are just a few of the downsides of the marriage between technology and pornography. However, these issues have in many ways helped internet commerce through the creation of a new tangential industry. Programs such as Net Nanny and Cybersitter keep adult content away from children. A variety of privacy programs, popup blockers, and spam filters such as AdAware and Spybot help ensure that your computer remains free of internet porn spam, spyware, adware, and Trojan Horses, most of which are put out by porn sites.

**NEW TECHNOLOGY**

Broadband and high-speed cable internet are also driven by the desire for adult content. A recent study in the United Kingdom revealed that fully one-fourth of new broadband users admitted their primary motivation for upgrading was to enjoy adult

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26 Ibid
content; more than listening to internet radio (9%) or keeping up with family and friends (5%). The two industries operate in something of a positive feedback loop, each increasing the other’s business.

![Increased Usage diagram](image)

**Figure 2 – Broadband & Internet Porn**

Another adjunct to the internet porn industry is the peer-to-peer industry. File-sharing is known as the driving force behind music piracy and is blamed for the decimation of the music industry. But as much as 35% of file-sharing activity is porn. And while music companies scramble to stop the flow of illegal downloads, porn has not been quite so eager to put its finger in the dike. The reason is that once again the adult industry was ahead of its mainstream contemporaries. While the music industry was flooding peer-to-peer networks such as KaZaa with phony files, the porn industry was using those same networks as a marketing tool to encourage new paid subscriptions. Now, many files on the network are short clips and after the clip plays the user is taken to the originating site and encouraged to join. Only now are the studios looking at peer-

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28 Supra note 2
to-peer and BitTorrent-like distribution as a means to diversify their revenue streams and aid their marketing efforts.

Even the bells and whistles of today’s darling, mobile, are largely porn. Juniper research forecasts that the adult industry will net $1 billion from mobile phone users in 2005, with that number increasing to $2.1 billion in 2009. Some analysts believe the future of third-generation mobile communication largely depends on sex. Dario Betti of digital media consultancy firm Ovum says, “Like it or not, pornography drives each new, convenient visual technology, and 3G, which combines powerful new media applications, will be no different.” An example of an adult offering is XTCmobile.com’s service that transmits two to four minute video clips to cell phones. They also offer “groan” and “moan” ring tones.

Some technologies that the porn industry has recently started offer a window into how current technology trends and issues may play out.

**Digital-rights management software** – Playa Solutions, a software company that sells technology to porn companies, has developed software that wraps digital content in a high-tech force field. When a user plays a video clip, a computer system asks for payment or has the viewer watch ads. The software has apparently drawn interest from the movie and music industries.

**Video-on-Demand billing** – Vivid entertainment, the leading porn studio, is creating electronic billing systems that allow consumers to burn pieces of content onto CDs for a per-minute charge.

**Geo-location software** – Porn sites are among the leading users of software that enable Web sites to identify the city a user logs in from. The data allows for customizable promotions and advertising based on regional tastes.

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30 Supra note 10
32 Ibid
33 Ibid
34 Ibid
WHY DOES PORN LEAD TECHNOLOGY CHANGE?

All this evidence of porn leading the way for new media begs the question - what is it about the adult entertainment business that makes it an early adopter of technology, consistently leading the charge of new media? The first reason has already been alluded to - money. Porn producers operate on thin margins and high volume, similar to a grocery store. With limited resources, producers must find new and inventive ways of making and distributing their product. In addition, they don’t have access to external capital markets. Unlike mainstream entertainment companies, few, if any, adult entertainment companies can contract Goldman Sachs to help fund its next project. The scarcity of capital leads to a close eye on more efficient and cost effective technologies. Technology can also lower startup costs and barriers to entry, inspiring more entrants into the market.

It’s not just more people who enter the market, but more entrepreneurs. “Porn is more aggressive and less bureaucratic than the mainstream,” says Jason Tucker, former filmmaker and founder of the aforementioned Playa Solutions. “Hollywood doesn’t like taking chances. If you fail, you’re gone.” Porn is rife with risk-takers like Tucker; rebels who reject “regular” jobs in hopes of freedom and fast money. “With no venture capital, we make our own money and rules,” says Gary Kremen, owner of Sex.com. These are just the types to be eager to utilize new technologies. In fact, the demographics for porn and technology are the same – young, mostly white males with a lust for girls and gadgets.

36 Ibid
Technology is driven by demand and companies in the vanguard develop products they think will sell fast and grow quickly. “Our time to market is less than two weeks vs. more than a year in Hollywood,” says Tucker. 37 An analogy in the clothing industry is Zara, which utilizes technology to streamline operations, cutting time from design to distribution to just 15 days, unheard of in the fashion industry. By getting to market quickly, companies can keep inventory costs low and can be responsive to its customers’ changing tastes. By remaining nimble and responsive through utilization of technology, porn companies can remain competitive in the crowded adult entertainment industry marketplace.

THE NEXT GEN-DVD FORMAT WAR

Current DVDs, while a vast improvement over VHS, do not compare to high-definition television in sound or picture quality. New high-definition DVDs employ a blue laser ray which has a shorter wave length than the red laser used in standard DVDs, thus allowing for greater storage capacity per disc. This greater storage capacity allows a full movie, of HDTV quality, to fit on a single disc. Below is a summary of the key differences between the two competing formats, Blu-ray and HD-DVD.

37 Ibid
As you can see from the chart, the basic decision comes down to a trade-off between Blu-ray's advanced technology and greater storage capacity versus HD-DVD's lower cost. Not only do Blu-ray discs cost more than HD-DVD discs, but they also require new manufacturing and replicating facilities, whereas HD-DVDs are similar enough to standard DVDs that existing facilities will be sufficient.  

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38 Boecker, Jeremy, http://www.ece.drexel.edu/courses/ECE-E443/jeremy_other_topics.ppt
There are hopes that a single format will emerge, thus ensuring less consumer confusion and greater adoption. However, on May 16, 2005, *Daily Variety* reported talks in Japan between supporters of the HD-DVD format, including Toshiba, Warner Bros. and Universal, and supporters of the Blu-ray format, including Sony/MGM and Disney, had broken down with little hope of a resolution. The talks were initiated in an attempt to create a unified format and avoid a format war similar to the VHS and Betamax battle more than 20 years ago. At stake, a home video market worth over $25 billion worldwide. Below are charts showing the studios that support each format, and their market shares.

![USA DVD Market Share, By Company](chart1.png)

*Source: Gizmodo*

A worst case scenario seems likely, whereby the backers of each technology release DVDs either only in the format that they support or under both formats, leaving the confused consumer to choose a standard using his or her dollars as votes, much like

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40 Sweetling, Paul, “Hi-Def DVD talks stalling,” *Daily Variety*, 5/16/05
they did with videocassettes. It seems VH1 was onto something, the 80’s appear to be making a comeback.

**WHY PORN WILL LEAD AGAIN**

“High-definition adult programming will be one of the deciding factors in the outcome of the current war between Blu-ray and HD formats,” says Joone43, (just one name, like Cher) founder of Digital Playground, the record-breaking adult DVD studio which owns 40% of the entire adult DVD market. 44 Joone and Digital Playground have been innovators in DVD technology, pioneering multi-angle selection and audio commentary tracks. 45 In September 2004, Digital Playground released Island Fever 3, the first adult movie filmed, edited, and released on HD-DVD. 46 Once again, the porn is ahead of the curve and if history has shown anything, Digital Playground and the adult industry will once again play a major part in determining the outcome of high-definition DVDs.

The porn industry releases over 11,000 new titles on DVD per year, compared to roughly 400 by Hollywood47. Hustler Video director Quinn Roberts says, “Adult produces millions of DVDs every year, and many of its buyers gravitate toward new technology. Adult entertainment could play a significant role in which format gains the majority of the market and the associated hardware gains.” 48 While the number of mainstream DVDs bought per year is significantly higher than the number of adult DVDs, this volume of new product is still significant. First of all, there is a psychological impact of seeing a given DVD format frequently. If a consumer of adult movies sees that

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43 Per email, 5/23/05  
44 Digital Playground, www.digitalplayground.com  
46 Ibid  
one high-definition format is ubiquitous among adult titles, he is likely to remain consistent and adopt that format of high-definition player and purchase mainstream movies in that format. Christen Mann, the owner of Video Team, an adult DVD studio says, “The consumers were the ones that made VHS happen. We were . . . releasing tapes in both formats.”

Second, porn users tend to be young males, the same demographic as early adopters of new technology. As porn titles begin releasing in a given format, these early adopters of higher definition players will be choosing a format based on their porn tastes. So while the overall DVD market may be predominantly mainstream films, the new high-def DVD market will likely be comparatively skewed towards adult faire.

An intriguing alternate possibility is that adult, with its avidity to adopt new technologies, may deem the whole format war irrelevant. High-definition DVD has already been slowed by reluctance of content providers to release in a given format without a clear hardware standard, and vice versa. Consumer adoption of high-

49 Supra note 13
definition DVD will continue to be slow as DVDs are released in both formats and a full out format war plays out. Michael Gartenberg, research director at Jupiter Research agrees, “We’re getting into another round of format wars, and until it shakes out, consumers are not likely to buy much of anything.” 50 Meanwhile, the porn industry and its rapid adoption of cheaper, more efficient means of distribution, may lead the charge towards a different path. Digital delivery offers the immediate gratification and enhanced privacy that has led consumers of porn towards rapid adoption of previous technological advancements. With VOD emerging and new compression techniques improving, even high-definition quality adult programs will be available directly into the consumer’s living room. Apple and Microsoft are releasing new codec’s – compression-decompression algorithms – within their MPEG-4 and Windows Media Player 9 programs, respectively. 51 The latter has already crammed a full-length high-definition version of Terminator 3 onto one DVD, and a third competitor, DivX by DivX Networks, can compress a 20-gigabyte high-definition feature in 2-gigabytes, even less than a standard DVD. If the porn industry can adopt high-definition digital delivery quickly enough, consumers may develop reasons to avoid buying more discs altogether.

**CONCLUSION**

Throughout history, pornography has moved lock and step with technology, frequently leading the way and speeding along advancement. In most countries, pornography is taboo, so a premium can be charged for greater privacy. As porn has become more and more technologically advanced, quality has become more of a differentiating factor. These two aspects of new media allow porn to drive the growth

and adoption of new products. Throughout history, from the printing press to the internet, adult content has enabled the growth of almost every iteration of new media. The so-called mainstreaming of porn, combined with the incredible size of the business, $10-$14 billion by some estimates, give it tremendous clout vis-à-vis consumer electronic issues that relate to it. The outcome of the Blu-ray/HD-DVD battle for the market of high-definition DVDs will likely be determined largely by porn. As porn consumers, who are typically technologically advanced, adopt a high-def format the mainstream consumer electronics and entertainment industries will once again be following pornography’s lead. One major film studio executive sums it up, “The whole (adult) business has driven technology adoption of several platforms. A better, more intensive experience is a good thing for porn.” 52

52 Supra note 47
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