

# The Convergence of PCs & TVs

## Introduction

In 1993, Professor Nicholas Negroponte, Director of Media Lab in MIT, made a magnificent description of intelligence-enhanced digital television<sup>a</sup> sets<sup>1</sup>. As intelligence in the television system moves from the transmitter to the receiver, the difference between a TV and a personal computer will become negligible. It can be argued that today's TV set is, per cubic inch, the dumbest appliance in your home. As the television's intelligence increases, it will begin to select video and receive signals in "unreal time." For instance, an hour's worth of video-based on a consumer's profile or request-could be delivered over fiber to an intelligent TV in less than five seconds. All personal computer vendors are adding video capabilities, thereby creating the de facto TV set of the future. The difference between a television and computer will be limited, eventually, to peripherals and to the room in which it is found.

The insatiable appetite for bandwidth put cable television in the lead position as a provider of information and entertainment services on demand. Cable services today include set-top boxes because only a fraction of TV receivers are cable-ready. Given the acceptance of this box, the idea is to aggrandize it with additional functions<sup>2</sup>. Television is becoming more and more digital. This is a given. The convergence of television and computers will make us think of the TV and the PC as anything but one and the same.

Digital interactive television is not simply a superior television format featuring better pictures and sound, greater efficiency in its use of spectrum, and versatility in its range of applications. Digital interactive television, or ITV, also represents a new technological infrastructure for broadcast television, and thus a new economic and competitive paradigm for the industry. The new transmission technology invites a broad reassessment of established programming practices, business strategies and regulatory requirements, including the public interest obligations that have long been considered fundamental to broadcast television.

Digital interactive television (ITV) is a new, more sophisticated technology for transmitting and receiving broadcast television signals. Using an additional 6

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<sup>1</sup> See Nicholas Negroponte, *HDTV: What's Wrong With This Picture?* (Wired magazine, issue 1.01, January 1993)

<sup>2</sup> See Nicholas Negroponte, *Set-Top Box As Electronic Toll Booth: Why We Need Open-Architecture TV.* (Wired magazine, issue 1.04, August 1993)

megahertz (MHz) of broadcast spectrum temporarily granted by Congress, broadcasters will be able to develop a diverse range of new digital television programming and services while continuing to transmit conventional analogue TV programming on their existing allotments of spectrum, as required by the Telecommunications Act of 1996.

A digital standard is superior to the analogue because of its greater accuracy, versatility, efficiency and interoperability with other electronic media. Digital signals also have the advantage of generating no noise or "ghosting," and being more resistant to signal interference. Within the range of the signal, this results in a perfect signal.

The chief rationale for the nation's transition to digital interactive television is high-definition television, or HDTV<sup>b</sup>. This transmission standard contains as much as six times more data as conventional TV signals and at least twice the picture resolution. HDTV images have a 16:9 screen aspect ratio (the ratio of width to height), providing a wider image than the 4:3 ratio that has characterized television since 1941. Because of its higher resolution and different aspect ratio, HDTV images are remarkably more vivid and engaging than the existing television format, an effect that is enhanced by five discrete channels of CD-quality audio.

However, digital interactive TV is not only HDTV. HDTV is just one subset of digital interactive TV (ITV). As a digital (and not analogue) signal, ITV enables broadcasters to offer a variety of innovations. According to ATSC's<sup>c</sup> specifications, the data rate available in a 6MHz digital TV is 19.4 megabits per second (Mb/s). Given those numbers, a digital interactive TV broadcaster may decide to send as many as five digital "standard-definition television" (SDTV<sup>d</sup>) signals, each of which might consist of 4 to 5 Mb/s (pictures with 480 progressive lines per frame), instead of sending an HDTV signal of 19.4 Mb/s (pictures with 1,080 interlaced lines per frame) or of 10.2 Mb/s (pictures with 720 progressive lines per frame). SDTV images are not as sharp as HDTV, but still superior to existing NTSC TV images. This new capacity, known as "multicasting<sup>e</sup>" or "multiplexing," is expected to allow broadcasters to compete with other multichannel media such as cable and direct broadcast satellite systems. As new advances in compression technology are made in the years ahead, broadcast stations may be able to fit even more SDTV signals into the same spectrum allotment. The most probable scenario of "multicasting" is that the majority of broadcasters will transmit multiple SDTV shows during daytime and late night segments of a station's

broadcast day, and one HDTV program in prime time or on weekends. The HDTV broadcast might be a sport event or a movie.

Another ITV capability is the ability to provide new kinds of video and data services, such as subscription TV programming, computer software distribution, data transmissions, teletext, interactive services and audio signals, among others. These broadcast services are known, under the Telecommunications Act of 1996, as "ancillary and supplementary services." They include such potentially revenue-producing innovations as the providing of stock prices, sports scores, classified advertising, paging services, "zoned" news reports, advertising targeted to specific TV sets, "time-shifted" video programming, closed-circuit television services, and more.

Through the implementation of its functions, ITV over the next ten to fifteen years will usher in a sweeping transformation of broadcast television--its programming and services, its revenue sources, its corporate partnerships and ownership structures. While many existing programming genres and styles will surely continue, many innovative types of video programming and information services will arise fuelled in no small part by the anticipated convergence of personal computer and television technologies. Through digital interactive TV, furthermore, broadcast television may develop new services in alliance with other telecommunications media, such as wireless telephony, a scenario made possible by digital code, increasingly the common language for all electronic media.

According to Steve Perlman, founder of WebTV, convergence and increased interactivity will prevail. "The broadcast-TV experience as we know it today will be viewed as an anachronism of the 20th century. Within a decade, almost all TV programming--essentially everything except for live events--will be available on demand and combined with interactive content. All channels will be virtual, and, just like with the Web, you'll have access to what you want, when you want it. Prime time as we know it will cease to exist<sup>3</sup>."

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<sup>3</sup> Janice Maloney, *Perlmania* (Wired magazine, issue 7.07, July 1999). See also Nicholas Negroponte, *Prime Time is My Time: The Blockbuster Myth* (Wired magazine, issue 2.08, August 1994), in which "...My point is simple: the broadcast model is what is failing. 'On-demand' is a much bigger concept than not-walking-out-in-the-rain or not-forgetting-a-rented-cassette-under-the-sofa-for-a-month. It's consumer pull versus media push, my time-the receiver's time-versus the transmitter's time...In the near future, individuals will be able to run video servers in the same way that 57,000 Americans run computer bulletin boards today. That's a television landscape of the future, which looks like the Internet. Point to multipoint may swing dramatically toward multipoint to multipoint, on my time."

## **The Digital Interactive Cable Television and the deconstruction of the American cable industry**

By the term "digital interactive cable television" (cable ITV) I refer to the cable broadcasting--or Webcasting--television system that:

1. Can receive digitally transmitted TV signals.
2. Can receive and transmit digital--narrowband at least--messages.
3. Can offer superior than the current analogue NTSC<sup>f</sup> picture and sound.
4. Can be used for "Video On Demand" (VOD)<sup>g</sup> and "Near Video On Demand" (NVOD)<sup>h</sup> services.
5. Can be used as a means for receiving and transmitting other bundling services (the "ancillary services") such as connection to the World Wide Web, videophone services, etc.

Describing in details the business model of cable ITV in the near future is not possible. No one really knows what the form of the new business structures will be. However, almost everyone agrees that we have already been in the process of deconstruction--the dismantling and reformulation of traditional business models as a consequence of the application of information rules<sup>4</sup>.

Deconstruction in the American cable TV industry does not mean that the whole business is vulnerable but rather that the critical pieces of the business are vulnerable. One can use the example of the deconstruction of the newspaper business described by Philip Evans and Thomas S. Wurster<sup>5</sup> in order to imagine the process of deconstruction in the cable TV industry. Newspapers will develop a series of vertical publications--business, sports, and news--that will require separate subscriptions. There will be a deconstruction of the "daily-us" newspapers and a reconstruction of the "daily-me" newspapers. The "daily-me" will lead to à la carte pricing, which will effectively increase rates on the total newspaper package. While the core newspaper will remain a daily, each specialty publication will have its own printing and pricing cycle, from daily to monthly. The specialty publications will piggyback on the daily newspaper's distribution.

As is the case for the newspaper industry, the analogy of deconstruction in the cable TV industry will lead to the melting of the glue that binds the cable TV value chain together. The glue is the economics of things that tie the information

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<sup>4</sup> Philip Evans and Thomas S. Wurster, *Blown To Bits - How The New Economics Of Information Transforms Strategy*, p. 39 (Harvard Business School Press, 1999)

<sup>5</sup> Ibid, pp. 39-44

content of cable TV. Cable TV viewers who have experienced interactivity in the WWW are increasingly prepared to shape TV-viewing as an interactive experience. They are not prepared just for customization of TV segments. They seek personalization of the TV-experience<sup>6</sup>. Digital interactive cable TV viewers would not only want to receive customized TV shows, but also they would want to personalize the TV-experience.

Philips' TiVo is a great product that personalizes TV-viewing. TiVo stores its user's viewing history and checks it against programming of the channels it can access. The machine then recommends programs to the user and records them digitally as they are being broadcast. TiVo is an intelligent set-top box that tracks consumers' viewing habits, scans through the myriad of digital services available on broadband network connections, and records information.

But what if the next-generation TiVo could receive feedback from the its user on her preferences on programming that relate not only to what are the viewer's favorite shows, but also to how and why the content of each show makes it favorite to its viewer? In other words, what if digital interactive cable TV broadcasters could receive through TiVo-like machines feedback from their customers that not only customize, but also personalize TV segments? In addition, what if TiVo-like machines could adjust TV-viewing not only to viewer's programming preferences, but also to each viewer's skills in handling ITV-sets<sup>7</sup>?

### **Revenue Sources for the ITV business**

It is hard to tell what the sequence of transformation of ITV's substitutes will be. Yet, one can imagine that the new ITV business model will leverage revenue sources such as the following<sup>8</sup>:

1. Subscription based revenues.
2. Advertising support broadcasting.
3. Performance based revenues.

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<sup>6</sup> See C. K. Prahalad and Venkatram Ramaswamy, *Co-Opting Customer Competence*, pp. 79-87, (Harvard Business Review, vol. 78, number 1). Customization assumes that the manufacturer-the broadcaster, TV-producer etc-will design a product to suit the customer's needs. Personalization is about a customer becoming co-creator of the content of the product's experience.

<sup>7</sup> See *ibid*, pp. 85-86 for the difference between "embedded processor" and "embedded intelligence" in machines empowered with CPUs. Products with embedded intelligence-such as TiVo-enable future modifications and extensions of themselves based on consumers' feedback and manufacturers' capabilities.

<sup>8</sup> Steven M. Abraham, et al., *Digital Television '99: Navigating the Transition in the US (a position paper from PricewaterhouseCoopers Entertainment/Media Group)*. See also Esther Dyson, *Release 2.0: A Design For Living In The Digital Age*, pp. 144-154 (Broadway Books, 1997)

4. Sponsorship support broadcasting
5. Transaction based revenues.
6. Leasing broadcasting time model.

It is quite probable that the combination of all the above business formats will prevail in digital interactive cable TV. A big portion of cable ITV revenues might come from the industry's broad subscription base. Subscription formats might include pay-per-view, pay-per-bit, or pay-per-time schemes. The pay-per-view applications might allow ITV subscribers to purchase ITV segments using electronic credit stored in smart cards or similar means<sup>9</sup>. The pay-per-view application might also allow ITV subscribers to purchase segments through a booking system of upcoming events.

Certain deadlines or surges in demand can propel ITV segments' prices upward. Just as certain items are most valuable right before Christmas and event tickets can fetch enormous premiums, some of ITV's offerings might become "hot stuff" only for certain periods. Imagine also the availability of a sport event at different broadcast schemes--HDTV or SDTV--which the subscribers could purchase. Imagine different price-schemes depending on the subscribers' preferences, too. For instance, subscribers who preferred to view half of the show or subscribers who preferred to view the show through a specific camera angle could pay less than others who opted for the whole show or the best angle. ITV broadcaster could also allow TV segments prices to fluctuate freely with supply and demand.

Aside from the multiple options that pertain to the quantity and the quality of a certain show, ITV might offer subscribers the option to control the kind of ITV segments that want their digital interactive television sets to receive. This service is best understood as a kind of parental control over the context an ITV set could receive. Using a PIN number--secret code--parents might restrict access to certain categories of television programs that they deem inappropriate content for their children. Through the use of PIN numbers, parents might also restrict the spending limits of their own ITV sets. Suppose that the parents of a family decided to restrict the cost of ITV viewership per month to \$ 100 then any

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<sup>9</sup> See Anonymous, *American On Line To Take Stake In Netcentives* (The New York Times, February 1, 2000) for AOL's strategic marketing move to expand product offerings that can be tailored to customers' needs through electronic cash and point systems. See also Nicholas Negroponte, *Being Digital - What's The Next Big Thing?* (Forbes' ASAP - The Bib Issue I: The Digital Revolution: Where Do We Go From Here?, December 2, 1996), where professor Negroponte claims that the next "Big Thing" in the digital world is electronic cash: "What we know today as coins and paper currency will become bits. [By electronic cash] I mean stored value, bits on your hard disk or in your electronic wallet."

member of that household or third party would need to insert the family's secret PIN number to purchase any segment that exceeds the family's monthly budget for ITV viewership.

In addition to the subscription revenue base, cable ITV might provide consumers with free digital broadcast services, which could be supported by advertisers. Support of ITV segments solely by advertising revenues could be the outcome of marketing affiliations between the ITV broadcaster and other bundled service or product providers. An "affiliate marketing" strategy could encourage affiliate partners to add their own value by putting certain subset of the ITV broadcaster's products and services in a unique informational context for their specific audience. Advertisers would see these affiliations as great opportunities to bundle audiences, segregate them, and then target them with the appropriate advertising message<sup>10</sup>.

Broadcasters could use extensively the performance-based revenue model in the show biz. Digital editing techniques could allow broadcasters offer TV viewers a variety of options pertaining to online purchases of show biz products. Music will probably be the first show biz category that broadcasters could use to bring in performance-based revenue<sup>11</sup>.

Sponsorship-based revenues involve investments in TV shows for the purpose of achieving various corporate objectives such as increasing sales volume, enhancing corporate reputation or a brand's image, increase brand awareness and so on<sup>12</sup>. Sponsors and cause-related marketers could financially support TV segments. The opportunity to bundle brand name promotion with product sells through broadcasts enhanced with e-commerce functions makes it reasonable to expect vendors to finance ITV programs with above average viewership.

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<sup>10</sup> See Jane L. Lavere, *Executives Hope Marriage of Interactive TV and Consumers Will Prosper* (The New York Times, February 15, 2000), where Jack Myers-of the Myers Group of New York-presents the results of a recently conducted survey on advertising agencies and interactive television. Among else, the survey found that 94 per cent of the 500 advertising agency, media- buying and planning executives who responded to the survey said it was important to explore interactive television advertising. According to Jack Myers, the advertising community responds proactively to new technology. "In the past, they've been somewhat behind the curve in terms of new technology, reactive rather than proactive, but with interactive television, they're way ahead of the curve."

<sup>11</sup> See Anonymous, *AOL Deal May Change Web Music* (The New York Times, January 13, 2000, provided by The Associated Press)

<sup>12</sup> See Terence A. Shimp, *Advertising, Promotion, and Supplemental Aspects of Integrated Marketing Communications (Fourth Edition)*, (The Dryden Press - Harcourt Brace College Publishers, 1997), pp. 561-567

Broadcasters might also weave subscription formats with transaction revenues coming from e-commerce's products or services purchased via digital interactive TV segments. This could allow the broadcaster to benefit from successful products or services that are promoted through ITV's content; it could also benefit ITV consumers by lowering their subscription fees depending on their purchases via specific ITV's segments. In the hyper-competitive interactive world, only the players that aggregate a unique bundle of information, products, and services will be able to compete. The bigger the bundle, the better. Bundles of goods and services at a single price would earn higher profits than if those goods and services were sold separately. In addition, ITV broadcasters could invent ultra-high-value goods and services and keep them outside the bundle. They could offer those ultra-high-value goods and services to their customers as premium products available at extra fees.

In addition, the bundle of digital interactive broadcast might include:

- Using the digital spectrum to broadcast multiple shows at the same time.
- Using the digital spectrum to rebroadcast the same show at staggered times.
- Remixing an existing segment into new packages.
- Using the digital spectrum to broadcast special events or shows at higher than SDTV quality.
- Distributing TV segments in multiple platforms (digital interactive platform and analogue platform until the phase out of analogue TV, cable TV platform and over-the-air platform etc.)
- Using the digital spectrum to broadcast TV segments to intelligent ITV peripherals, which could store the data and reproduce the TV segments more or less the same way a VCR can store and reproduce a film today.

### **Harnessing ITV viewers and managing personalized experiences**

Successful ITV broadcasters would dominate niche markets. Digital processing of information would permit them to concentrate on specific subject areas with specialized audiences. To make that happen, ITV broadcasters must maintain extensive data that ITV consumers send in for future reference. Harnessing ITV consumer competence and managing personalized experiences requires the cooperation from consumers. Shaping expectations is about engaging current and potential consumers in a continuous debate; it is about educating ITV consumers

and being educated by them<sup>13</sup>. ITV consumers' data will enable broadcasters to better anticipate their audience's preferences. It will also empower broadcasters' audience by allowing them to tailor ITV segments according to their needs and expectations.

Broadcasters could also include in ITV's content specific time allocated exclusively to product or service promotion. Today's late night infomercials are an example of this.

Finally, broadcasters, advertisers, marketers, and public relations professionals could use ITV as a means to reach a broad base of consumers. A variety of promotion tools of the marketing mix could have digital format permitting the use of those tools in ITV's interface. The following table includes some of these digitized promotion tools:

<b>Advertising</b>	<b>Sales Promotion</b>	<b>Public Relations</b>	<b>Direct Marketing</b>
Motion Pictures and Audiovisuals	Contests, Games, and Lotteries	Press Kits	Catalogs
Brochures and Booklets	Samples	Speeches and Reports	e-Mailings
Directories	Demonstrations and Sales Presentations	Publications	Telemarketing
Symbols and Logos	Coupons and Rebates	Corporate Magazines (Digazines)	ITV-Shopping
Ads	Trade Shows	Events	Web sites

The simplest way to add the above public relations and marketing tools to ITV viewership is to add links on screen that connect the viewer of an ITV segment with information that could have any form of all the above digitized tools and promos. The information that the link would lead to could be the segment's home page or a specific web site that hosts marketers, public relations practitioners, and advertisers' material. The web link containing these tools and promos could appear on screen as an icon that could be activated via a remote control or a wireless keyboard.

The synchronous availability of television and Internet content could benefit content providers, program producers, and distributors because they could engage the audience by providing links that complement ITV programs. An example of the successful synchronous availability of materials is the recently shown (February 2000) documentary film titled "The Greeks: Crucible of

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<sup>13</sup> See C. K. Prahalad and Venkatram Ramaswamy, p. 86 (Harvard Business Review, vol. 78, number 1)

Civilization." During the PBS broadcast, a banner showing a web site address popped up on screen periodically informing the viewers of the show that background material on the documentary as well as books, video tapes, CDs, and other promotional materials were available online. Television viewers, who wanted to seek more information on the ancient Greek civilization that marked the dawn of Western civilization and laid the foundations of modern science, politics, warfare, and philosophy, could log on PBS' home page ([www.pbs.org](http://www.pbs.org)). This page hosted for a certain period of time an icon that linked to a web site specially designed for the content and the relevant materials of the documentary film--the address of this web site is now <http://www.pbs.org/empires/thegreeks/index.html>. The viewers' response rate to the segment's extension in the Web was so high that the film's videotape packet has still being among the top five best sellers of ShopPBS' products.

The example of "The Greeks"--a segment that was produced for enhanced TV<sup>i</sup>--indicates:

- The audience's response rate could be very high if both the segment and its cyber extension are of high quality.
- The audience's response rate could generate significant revenues for content producers--the cost of the film's videotape packet was \$ 29.98 a piece.
- The segment's cyber extension could be an excellent hub for advertising, sales promotion, direct marketing, and public relations.

### **Lessons from the past on ITV's future implementation**

Despite not exploring every factor that pertains to ITV, this work aims at discussing key factors of the imminent digital interactive cable television. While being in the advent of digital interactive cable television and waiting for the commercial release of AOL TV<sup>14</sup>, it is interesting to spec on what ITV would look like. However, it is more interesting than that to spec on what ITV would not like, unless aspirant MSOs drew lessons from previous experiments with interactive television. To be sure, ITV would not look like a "killer application" if vendors made the same mistakes as those of early experimenters, or, at least, did not consider all the factors of successful implementation of the new service, especially those that pertain to the marketability of ITV.

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<sup>14</sup> See Jim Hu and Jeff Peline, *Wall Street Gets Glimpse of AOL TV* (The New York Times, February 11, 2000). See also AOL and TiVo alliance for AOL TV, AOL and Hughes Electronics alliance for AOL TV, and AOL and other key alliances for AOL TV

In a large conference at the Waldorf-Astoria hotel in New York that took place in February 2000, several hundred ITV industry executives gathered to promote their industry and learn from one another. John Carey, a consultant who spoke to the group of ITV execs, denied the truth that consumers have rejected interactive television, and attributed failures of early experimentation with ITV to poor implementation or marketing<sup>15</sup>.

Aspirant MSOs<sup>j</sup> and ITV vendors should consider:

- Hong Kong Telecom's Interactive Multimedia Services.
- Time Warner's Full Service Network in Orlando, 1995.
- Is ITV an Immature Technology?
- The Three Golden Rules of Technology Timing.
- Real-Time Marketers as Systems Integrators can see "The Whole View."
- Real-Time Public Relations professionals as System Integrators can see the "Whole View."
- Independent Infomediaries between ITV Vendors and Viewers.
- ITV in the Experience Economy.
- Claude E. Shannon and Warren Weaver's Mathematical Theory of Communication, and the Second Law of Thermodynamics.

### **Hong Kong Telecom's Interactive Multimedia Services**

Not long ago--in February 1998--Hong Kong Telecom's Interactive Multimedia Services (IMS) launched the world's first commercial Video-On-Demand service<sup>16</sup>. The commercial implementation of Hong Kong Telecom IMS' VOD was an expensive venture which provided directives for launching full-service interactive television systems.

Among the major issues Hong Kong Telecom had to deal with was market demand for the new interactive service. In marketing the new service, the company was faced with determining whether market demand existed or whether it needed to be created. The company's prior marketing research indicated that subscribers were willing to pay for the services or products they valued, but the company had no clear indication pertaining to the price subscribers were willing to pay for the new services as well as whether this price could generate sufficient

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<sup>15</sup> See Joel Brinkley, *Do Viewers Even Want To Interact With TV?* (The New York Times, February 7, 2000)

<sup>16</sup> See Anonymous, *New Technologies, New Markets: The Launch of Hong Kong Telecom's Video-On-Demand* (Center for Asian Business Cases, School of Business, The University of Hong Kong) found at Harvard Business School Publishing

revenues for the company to justify the investment in VOD and ITV<sup>17</sup>. Results from various, past trials with television broadcasting enhanced with interactive elements demonstrated that viewers were not willing to pay premium prices for VOD that could sustain viable business models.

In addition, the company was facing another dilemma: technical capabilities of the system enabled the service provider to maximize the technologically feasible options for television viewers--thus, the service provider assumed consumer demand would increase--but television viewers' patterns were not easy to change. The company knew that television viewers would not change from the broadcast mode to the interactive mode overnight. Other things being certain to achieve within a short timeframe, television viewers' quick adaptability to ITV was under question<sup>18</sup>.

Another problem that Hong Kong Telecom's IMS faced was the high cost for rolling out the system's infrastructure, especially the cost of "the last mile<sup>k</sup>" to the subscriber as well as the cost of the set-top box. In 1997, the company had estimated that the equipment needed for the implementation of VOD would cost somewhere between US \$ 1,000-2,000 per subscriber. This was obviously a prohibitive figure compared to the cost of a VCR (US \$ 200-300)<sup>19</sup>.

According to Dr. William Lo, the head of Hong Kong Telecom's IMS, important factors that supported the deployment of the new interactive service were<sup>20</sup>:

- The service was technologically feasible.
- About 90 per cent of the residents where the service would be deployed lived in high-rise flats, which made the city comparatively easier and cheaper to connect than just about any other metropolitan area.
- The demographics of the population indicated that the affluent and sophisticated citizens of Hong Kong were ideal target for VOD and ITV (high levels of spending on recreation per capita).
- The Technographics of the population indicated Hong Kong citizens had a remarkably take up of new technologies.

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<sup>17</sup> Ibid., pp. 2-4

<sup>18</sup> Ibid., p. 2

<sup>19</sup> Ibid., p. 3

<sup>20</sup> Ibid., p. 8

## **Time Warner's Full Service Network in Orlando, 1995**

The same problems that Hong Kong Telecom's IMS has to solve for the successful implementation of VOD and ITV, Time Warner faced in 1995, when it first invested in ITV. By Forrester Research Institute's estimate in 1995, it would have cost just over \$ 1,200 per home to install the necessary infrastructure for ITV. If Time Warner intended to recoup its cost by raising basic cable rates to \$ 40 per month from \$ 30, it would have taken ten years to break even.

According to Mary Modahl, Vice President of Research for Forester Research Institute, Time Warner's mistake was not its judgment about interactive television as an opportunity, but the timing the company invested in it. The company had not correctly assessed the readiness for the market and the market's readiness for ITV<sup>21</sup>.

### **Is ITV an Immature Technology?**

Time Warner's case in 1995 as well as Hong Kong Telecom's IMS<sup>22</sup> in 1998 indicate that a major and difficult to resolve issue was related to the marketability of ITV. Both companies made bets with significant risks. The imminent deployment of AOL TV after Time Warner and AOL's merger will have to resolve the same issues. Seeing it from marketing's perspective, the question to be answered is whether investing too much in ITV equals with an investment in immature technology. In other words, AOL and Time Warner must make sure that the timing is right for AOL TV.

### **The Three Golden Rules of Technology Timing**

According to Mary Modahl<sup>23</sup>, the three golden rules of technology timing--the factors that indicate readiness of the market to accept a new technology--are the following:

1. The technology must work and be easy for anyone to use.
2. The cost of the new technology must be reasonable.
3. The new technology must provide consumers with clear value

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<sup>21</sup> See Mary Modahl, *Now Or Never - How Companies Must Change Today To Win The Battle For Internet Consumers* (HarperBusiness, 2000), pp. 161-163

<sup>22</sup> See Michael Flagg, *Star Hopes HKT Deal Will Speed Linking Between TV, Web in Asia* (The Wall Street Journal, March 7, 2000) for Hong Kong Telecom's deal with Star TV-controlled by Rupert Murdoch's News Corporation-and Pacific Century CyberWorks in the race to package Internet and TV. See also Frank Rose, *TV Or Not TV* (Wired magazine, issue 8.03) about Rupert Murdoch's "interactive leap."

<sup>23</sup> See Mary Modahl, (HarperBusiness, 2000), pp. 164-167

Not only must ITV technology work as promised, but also it must be easy to use without instruction. Complicated systems that required advanced level of familiarity with technology usage would end up in the hands of the very few early adopters. That technology would miss the mainstream consumers. ITV had better off targeting the "couch potatoes" instead of the "mouse potatoes." Mary Modahl illustrates the importance of the issue by comparing Apple's Newton on one hand--a personal digital assistant that was awkward to use--with 3Com's Palm Pilot--a personal digital assistant that was easy to use. The latter has been a great success while the former has not<sup>24</sup>.

The cost of the new ITV technology must be reasonable, too. According to the Vice-President of Forrester's Research, what is reasonable cost for new hardware products depends on market's indicators. In hardware products, there appears to be a no-man's-land for consumer electronic products priced between \$ 400 and \$ 750. A set-top box that sells between \$ 400 and \$ 750 "should raise a red flag." For network services, monthly subscription fees for basic service that exceed the limit of \$ 40 would probably meet consumers' resistance. Mary Modahl illustrates consumers' behavior by comparing cable Internet access on one hand to ADSL high-speed dial access on the other hand. The former, of which current cost is around \$ 40, is preferred by consumers, while the latter, of which cost is around \$ 55, is not preferred--ten times as many consumers use cable modems as ADSL<sup>25</sup>.

The new ITV technology must provide consumers with clear value. MSO's deployment of ITV must persuade consumers on the value of the new interactive television measured in terms of savings, convenience, and entertainment. It would be best for ITV, if consumers did not have to change their behavior in order to use the new technology. In addition, ITV consumers should have evidence that the cost of using a digital interactive cable television service does not exceed the price tag for the total bill of the bundled services when they are used separately<sup>26</sup>.

### **Real-Time Marketers as Systems Integrators can see "The Whole View"**

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<sup>24</sup> Ibid., p. 165. See also Jim Davis, *More People Surfing Web While Watching TV* (CNET News.com, February 15, 2000)

<sup>25</sup> Ibid., p. 166. See also Jim Hu and Jeff Peline (The New York Times, February 11, 2000)

<sup>26</sup> Ibid., p 166. See also Jim Hu and Jeff Peline (The New York Times, February 11, 2000)

The deployment of ITV demands a holistic assessment of the factors that pertain to ITV's successful implementation. AOL TV's management must see the new technology for interactive television in the context of business rather than seeing it as a back-office utility. Forrester Research Institute calls this approach "The Whole View," and means that technology must be managed in tandem with business strategy and consumer marketing. The convergence of PCs and TVs has caused the convergence of separate operations within the organization that does business with converging technologies. "The Whole View" means that companies such as AOL and Time Warner should eliminate the separations between marketing, business strategy, and technology<sup>27</sup>. According to Mary Modahl, in the era of "The Whole View" the new technology executives should possess not only the background and skill to understand technology deeply, but also should develop a broad strategic understanding of the business as well. They should be capable of assessing technology's impact on the business' strategy as well as on consumers' online experiences<sup>28</sup>.

While Mary Modahl speaks about CEO and CIO's marketing literacy, Regis McKenna speaks about marketers' technology literacy. In the era of convergence, marketing professionals should stand with one foot in the market and the other foot in technology. Marketers need not know technical details about ITV, but they do need to develop a business understanding of ITV's technology and how it can be used strategically. Marketers must recognize how ITV can change viewers' behavior in order to assess how to meet their needs<sup>29</sup>.

Regis McKenna's words go beyond the Integrated Marketing Communications (IMC)<sup>1</sup> concept. There is few doubt, IMC is an applicable marketing model to markets of converging technologies. However, there is no doubt at all, IMC is far from being enough for successful penetration in those markets. The old media-either in synergistic operation or not-do not work for the new consumer. The new media such as ITV are about dialogue, communication, and consumer control-not about passivity, broadcasting, or controlling consumers<sup>30</sup>. The new marketing professional is a marketing systems integrator<sup>31</sup>.

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<sup>27</sup> Ibid., p. 154

<sup>28</sup> Ibid., p. 157

<sup>29</sup> See Regis McKenna, *Real-Time Marketing*, pp. 154-158 (in Don Tapscott ed., *Creating Value In The Network Economy*, a Harvard Business Review Book, 1999).

<sup>30</sup> Ibid., p. 156

<sup>31</sup> Ibid., p. 157

The real-time marketer must<sup>32</sup>:

- Replace the broadcast mentality.
- Focus on real-time customer satisfaction.
- Learn how information technology changes consumers and marketers' behavior.

ITV marketers must involve prospect ITV viewers in the design of the product. ITV vendors such as AOL and Time Warner must use information technology to consult with hundreds of thousands of consumers-not only with a handful of focus-group consumers-about the design and utility of ITV. By doing so, AOL and Time Warner could speed up the time it takes for the marketplace to accept AOL TV, thus improve the chances for the new product's success. This process refers to what Regis McKenna calls "time to acceptance," which is different from what he calls "time to market." While the former refers to the improvement of the product's manufacturing process through the early involvement of potential consumers in the product's manufacturing, the latter refers simply to the product's "pushing out" in the market<sup>33</sup>.

Not only must there be dialogue, communication and consumer control before and during the manufacturing process of ITV, but also ITV vendors must keep continuous connections with viewers during ITV's deployment. According to Regis McKenna, marketing traditional connections to consumers are no longer sufficient in the real-time world. Focus groups, market research, consumer surveys, and other tools for probing the consumer's wants and needs are-and always have been-limited<sup>34</sup>. Information technology allows companies to bundle services into every product and turn every sale into a conversation. ITV should exploit information technology's potential, bundle services into every broadcasting, thus turn every segment into a conversation with viewers.

This continuous dialogue could happen if:

- ITV viewers had access to content providers, producers, and distributors.
- ITV content providers, producers, and distributors had access to viewers, and

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<sup>32</sup> Ibid., p. 147

<sup>33</sup> Ibid., pp. 146-147

<sup>34</sup> Ibid., p 149

- Both engaged in two-way symmetrical<sup>35</sup> and asymmetrical<sup>36</sup> communication.

The conversation could take place through interactive links to segments. Through these interactive links-the cyber extensions of ITV segments-viewers could become integral, contributing partners of content providers, producers, and distributors.

### **Real-Time Public Relations professionals as System Integrators can see the "Whole View."**

Since 1995, Middleberg/Ross, a public relations agency that integrates traditional PR with online communications, has been conducting annual "Media in Cyberspace Studies." Among the highlights of Middleberg/Ross' recent studies, the following startling information is found:

- The results of the 1999-year survey are proof positive that the Internet is now fully integrated into the journalists' toolbox. Responses show an increase in use of the Internet for story ideas and pitches, article research, and gathering of reference materials. Nearly three fourths of the respondents report that they go online at least once a day, a huge jump from the 1998-year's 48 per cent<sup>37</sup>.
- Internet has developed into the pre-eminent method for gathering and distributing news and information. At the same time, the Internet is not replacing "old media"--radio, television, print, etc. Rather, it is complementing traditional offline media in expanding the reach and effectiveness of communication, and can be an extremely useful tool for offline reporting<sup>38</sup>.
- 1998 marks a historic moment--news organizations have clearly broken away from their tendency to use online technology as a distribution device more than as a new medium<sup>39</sup>.

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<sup>35</sup> See James E. Grunig, David M. Dozier, William P. Ehling, Larissa A. Grunig, Fred C. Repper, and John White, *Excellence in Public Relations and Communication Management* (Lawrence Erlbaum Associates, Publishers, 1992), pp. 39-40. The Two-way Symmetrical communication model refers to research and dialogue that can change the behavior of both the organization, which uses the two-way symmetrical model, and the organization's stakeholder groups.

<sup>36</sup> Ibid., pp. 29-40. The Two-way asymmetrical communication model refers to research and dialogue that is used by an organization in an attempt to change the behavior of the organization's stakeholder groups. The organization uses research and dialogue in order to develop messages that are most likely to persuade the organization's stakeholders to behave as the organization wants.

<sup>37</sup> See Middleberg/Ross 1999 "Print Media in Cyberspace" study

<sup>38</sup> See Middleberg/Ross 1999 "Broadcast Media in Cyberspace" study

<sup>39</sup> Ibid.

- In 1998, only 2 per cent of the respondents either said they had no access to Internet, or that did not answer the question at all. That compares to the 37 per cent of the comparable sample in the 1995-survey<sup>40</sup>.
- Photos and camera-ready art, along with electronic images are strongly preferred over slides and other transparency forms<sup>41</sup>.
- According to Don Middleberg, "public relations practitioners not truly incorporating Internet communications initiatives into their public relations strategies are doing a disservice to their clients and to the media. To dismiss the new generation of media in cyberspace and the online communication they prefer is incompetent and borders on negligence<sup>42</sup>."
- Increased bandwidth, interactivity, and multimedia means that communicators need to learn to tell stories in nonlinear ways. Multi-media storytelling may become the PR practitioner's most valuable on-line skill<sup>43</sup>.
- The traditional media's online distribution is only just beginning to be enriched by new media tools and the priceless gift of interactivity and medium-to-reader specialization. We are seeing indications that this is about to change as new TV/computer combos, digital TV, and greater bandwidth become more common in the next few years<sup>44</sup>.
- Although fundamental personal relations skills are still paramount, (there will never be a substitute for face-to-face communications), the new media are revolutionizing the practice of public relations as we know it. Real-time news cycles and online scoops are beginning to shape the messages of the traditional print and broadcast media. Push technologies are allowing companies to target their audiences directly to bypass the gatekeepers altogether<sup>45</sup>.

All these highlights stress the importance of interactive elements of the mass media, which professional communicators use to disseminate multi-media messages targeting their various stakeholder groups. In the era of ITV, public relations professionals must develop skills for assessing holistically the factors that contribute to long-term relationship building. Public relations practitioners must become capable of seeing the "whole view" of relationships among the various stakeholder groups of the organizations they work for. They should

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<sup>40</sup> Ibid.

<sup>41</sup> Ibid.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

<sup>44</sup> See Middleberg/Ross 1997 *"Media in Cyberspace" study*

<sup>45</sup> Ibid.

develop background and skills to understand technology deeply as well as develop a broad strategic understanding of business.

The new public relations practitioner is a professional systems integrator. In real-time public relations one must:

- Replace the broadcast mentality.
- Focus on real-time relationship building.
- Learn how information technology changes the behavior of stakeholder groups inside and outside an organization.

The convergence of PCs and TVs signals the emergence of establishment, interactive enhancement, and management of continuous non-linear, two-way communication. Dialogue begins with access. Public relations professionals should see the interactively enhanced TV as an "access pacesetter."

Access between ITV vendors and ITV viewers depends on mutual trust. According to Amartya Sen, the 1998 Nobel Prize winner in Economic Science, successful operation of an exchange economy depends on mutual trust and the use of norms--explicitly and implicitly. Non-profit motives have a central role in the success of capitalism. Mutual trust, a basic code for good business behavior, is "a bit like oxygen: we take an interest in its presence only when it is absent"<sup>46</sup>.

Public relations professionals who stand between ITV vendors and ITV viewers must instil real-time mutual trust, which is the core ingredient of long-term relationships. ITV as an operation of an exchange economy--an exchange of engaging experiences--depends on how much viewers value interaction through their TV sets, and how much ITV contributes to the improvement of viewers' lives.

Trustworthiness in the relationship between ITV viewers and ITV vendors depends on how public relations professionals persuasively coach the dynamics of ITV's stakeholder groups. The best coaches show a genuine, personal interest in those they guide<sup>47</sup>. Persuasive coaching of ITV's stakeholders depends on four essential steps that public relations professionals must take as effective persuaders<sup>48</sup>:

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<sup>46</sup> See Amartya Sen, *Development as Freedom*, (Alfred A. Knopf, 1999), pp. 263-265

<sup>47</sup> See Daniel Goleman, *Working With Emotional Intelligence*, (Bantam Books, 1998), p. 147

<sup>48</sup> See Jay A. Conger, *The Necessary Art Of Persuasion*, (*Harvard Business Review On Managing People, paperback series, 1999*), pp. 227-255

1. They must establish credibility between ITV vendors and ITV viewers.
2. They must frame their goals--and ITV vendors' goals--in a way that identifies common ground with ITV viewers' goals.
3. They must use compelling evidence and vivid language to persuade viewers make use of ITV.
4. They must connect emotionally ITV vendors with ITV viewers.

### **Independent Infomediaries between ITV Vendors and Viewers**

Every continuous conversation involves back and forth exchange of information from both conversing parties. Seeing it from a viewer's side, this information refers to personal preferences, attitude, and viewing behavior. It is quite probable that viewers would hesitate to reveal this information to interactive media behemoths from fear of revealing too much to organizations that have the potential to intrude consumers' privacy. Consumers are becoming increasingly edgy about the amount and depths of information businesses collect about them.

A solution to that problem might be an independent infomediary. An infomediary is a kind of a personal agent, an information intermediary, which aggregates viewers' information and uses this information to negotiate with ITV vendors on the viewers' behalf<sup>49</sup>. It would be best, if the infomediary were not owned by ITV vendors of any kind (content providers, producers, distributors, advertisers etc), and thus were capable of operating as viewers' trusted custodian and information broker. Both viewers and ITV vendors could benefit from infomediaries. Infomediaries could help ITV vendors identify their most loyal viewers and target them with customized segments. Infomediaries could also help ITV viewers to identify ITV segments and personalize the products. According to John Hagel III and Jeffrey F. Rayport, only very few companies will be able to become infomediaries. The best candidates would be companies that have already engaged in ongoing relationships with customers and have earned their customers' trust<sup>50</sup>. AOL and Time Warner's huge customers' database is evidence of the existence of ongoing trustful relationships, which the companies should leverage.

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<sup>49</sup> See John Hagel III, and Marc Singer, *Net Worth - Shaping Markets When Customers Make The Rules*, (Harvard Business School Press, 1999), p.19. See also John Hagel III and Jeffrey F. Rayport, *The Coming Battle for Customer Information*, (in Don Tapscott, ed., *Creating Value In The Network Economy*, a Harvard Business Review Book, 1999), pp. 159-171

<sup>50</sup> See John Hagel III and Jeffrey F. Rayport, (Harvard Business Review Book, 1999), pp. 168-169. See also John Hagel III and Marc Singer, (Harvard Business School Press, 1999), pp. 78-79 about the two key attributes of aspiring infomediaries: a) trust and b) an existing set of relationships and profiles.

## ITV in the Experience Economy

A key point in understanding the importance of ITV as a new interactive mass medium pertains to the potential of this medium within the context of the Experience Economy. Staging experiences in ITV is not about entertaining television viewers; it is about engaging them. According to B. Joseph Pine II and James H. Gilmore, staging engaging experiences involves<sup>51</sup>:

- Participation
- Connection

The level of participation ranges between passive participation and active participation. The level of connection ranges between absorption--occupying a person's attention by bringing an experience into her mind--and immersion--making the person physically or virtually a part of the experience. The coupling of the two dimensions of staging engaging experiences defines the four "realms" of an experience<sup>52</sup>:

- Entertainment
- Education
- Escape
- Estheticism

Entertainment occurs when television passively absorbs the attention of the viewer. Education occurs when television triggers active participation of the viewer. Escape is the polar opposite of pure entertainment, and occurs when the viewer is an active participant completely immersed in television viewership. Rather than simply watching ITV, the escapist viewer participates in television viewership by personalizing the segment. Aestheticism occurs when the viewer is a passive participant completely immersed in television viewership.

Staging engaging experiences that overlap all the four "realms" of an experience is possible for ITV. ITV's segments and their cyber-extensions can produce entertaining, educative, escaping, and aesthetic experiences. While PCs and TVs may not be capable of generating all four "realms" of engaging experiences, when they operate separately, the medium, which converges PCs and TVs, has the potential to engage viewers in any possible way.

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<sup>51</sup> See B. Joseph Pine II and James H. Gilmore, *The Experience Economy - Work is Theatre & Every Business a Stage*, (Harvard Business School Press, 1999), p. 30

<sup>52</sup> *Ibid.*, pp. 31-38

B. Joseph Pine II and James H. Gilmore support that when an experience is customized to make it just right for an individual, then the experience is the means to transform the individual<sup>53</sup>. This match between the experience and the individual might either be the outcome of the ITV vendors' actions--customization of a segment--or the outcome of the ITV viewers' actions--personalization of a segment. In either case, transformation of the viewer is the result of ITV viewership. Individual transformations that sustain over time cannot help but achieving strong long-term relationships between ITV vendors and viewers<sup>54</sup>.

### **Claude E. Shannon and Warren Weaver's Mathematical Theory of Communication, and the Second Law of Thermodynamics**

The Second Law of Thermodynamics, articulated by Rudolf Clausias in 1850--the law is also known as The Law of Increasing Entropy<sup>55</sup> --, states that entropy or disorder in a system can never decrease--thus, it tends to increase. As entropy increases within a system, the system becomes less usable<sup>56</sup>.

In 1949, Warren Weaver and Claude E. Shannon based on Rudolf Clausias' Second Law of Thermodynamics articulated the Mathematical Theory of Communication, which was used for the explanation of linear human communication. According to The Mathematical Theory of Communication, the greater the "noise"<sup>57</sup> between the sender and the receiver of a message, the more difficult it is to achieve accuracy between the sender and the receiver of that message.

Based on Clausias, Weaver and Shannon's theories, we can assume that communication by nature has a tendency to disorder. Therefore, in the era of the Experience Economy and the new interactive means of mass communication, we should expect the entropy of multi-communication systems such as ITV to have an exponential growth compares to linear analogue communication. This expectation should not hinder the deployment of ITV. Technology is impossible to

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<sup>53</sup> Ibid., p. 165

<sup>54</sup> Ibid., pp. 171-176

<sup>55</sup> Entropy is the measure of how close a system is to Equilibrium. Equilibrium is the state of a system whose configuration or large-scale properties do not change over time

<sup>56</sup> See Ray Kurzweil, *When Computers Exceed Human Intelligence - The Age of Spiritual Machines* (Penguin Books, 1999), pp. 311, 316,

<sup>57</sup> "Noise" refers to any category of events that increase the randomness of a message, thus decrease the accuracy of the communicated message between the sender and the receiver. The notion of "noise" in The Mathematical Theory of Communication is associated with the notion of "entropy" in the Second Law of Thermodynamics. See Melvin L. DeFleur, *Communication Theory coursepack* (Book Tech, 1999), pp. 293-296

hold back--"what can be done, will be done"<sup>58</sup>." Rather, it should be seen as evidence for the importance of real-time marketers and public relations professionals aided by intelligent software agents and infomediaries in their difficult job to minimize the entropy of ITV.

## ENDNOTES

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<sup>a</sup> **DIGITAL TELEVISION:** The term has been adopted by the Federal Communications Commission and is used to describe the next generation of broadcast television transmissions.

<sup>b</sup> **HDTV:** The term stands for High Definition Television. HDTV is the highest quality format of digital television. HDTV transmissions have the same letterbox shape and the same clarity as the theatrical motion pictures. An HDTV picture has 720 or 1080 lines of horizontal resolution, compared with today's 480 visible lines, and it comes shaped like a movie screen with the same 16:9 aspect ration.

<sup>c</sup> **ATSC:** The term stands for Advanced Television Systems Committee. ATSC was formed to establish the technical standards for broadcasting HDTV programming and/or standards for better than today's analogue broadcasts.

<sup>d</sup> **SDTV:** The term stands for Standard Definition Television. SDTV has 480 lines of resolution and it can come in either the wide 16:9 aspect ratio of HDTV or in the squarer 4:3 aspect ration of today's television. While SDTV does not look quite as sharp and clear as HDTV, it still looks better than analogue television.

<sup>e</sup> **MULTICASTING/MULTIPLEXING:** It is the technique through which broadcasters can choose to use their portion of the broadcast spectrum to air up to five SDTV programs simultaneously instead of one HDTV program. All HDTV-sets can display SDTV transmissions, but not all SDTV-sets can display HDTV transmissions.

<sup>f</sup> **NTSC:** The term stands for National Television Standards Committee. The NTSC refers to the technical standards and physical characteristics of conventional analogue TV broadcasting.

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<sup>58</sup> See **Andrew Grove**, *What Can Be Done, Will Be Done*, p. 193 (Forbes' ASAP -The Big Issue I: The Digital Revolution: Where Do We Go From Here?, December 2, 1996)

<sup>g</sup> **VOD**: The term stands for Video-On-Demand. VOD enables an individual customer to demand a program or a movie when and where she wants it. A high-speed network is required to support VOD services.

<sup>h</sup> **NVOD**: The term stands for Near-Video-On-Demand. NVOD refers to a system that starts a program many times on different channels with a time interval between start times (e.g. every 20 minutes). A NVOD system allows a subscriber to choose the viewing time and date that best suits her.

<sup>i</sup> **ENHANCED TV**: Enhanced TV creates a number of richer and more engaging experiences for a TV viewer. An enhance TV viewer is able to access a range of value-added and graphically-rich information about specific programs that have been developed for enhanced TV. These programs are supported by informative websites which usually have an e-commerce interface so that the viewer can proceed with electronic transactions while watching a television program or right before/after it.

<sup>j</sup> **MSO**: The term stands for Multi System Operators. These are companies such as Time Warner, Cox Communications, and TCI etc, which have accumulated non-contiguous cable systems.

<sup>k</sup> **THE LAST MILE**: It is the local loop that connects household telephones to telephone company switches.

<sup>l</sup> **IMC**: The term stands for Integrated Marketing Communications. IMC is the process of developing and implementing various forms of persuasive communications programs with customers over time. The goal of IMC is to influence or directly affect the behavior of the selected communications. The IMC process starts with the customer or prospect and works back to determine and define the forms of communication which are the most persuasive and thus should be developed.

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