The Ending of An ERA, The Beginning Of a New ERA.
...Entering Into The Next-Generation, The New Generation.

An Overview- Next-Generation PCs, Communication Pipelines, Storage, Compact Digital Systems, Multimedia Systems In 2008, and into the Next Decade…

Future of The Newer Technologies 2008 and Beyond

October 2007

Just Ten years ago, around 1998-2000, the fastest affordable Multimedia PCs and Servers built had right around 450 MHZ to 650MHZ processors, 256MB / 512MB RAM and 100/133MHZ Addressable Memory Bus bandwidths with 8GB to 20 GB Storage Hard Drive.

Today's Pocket PCs, SmartPhones and Mobile Audio/Video Players exceed above mentioned speeds and capacities. Many portable A/V players now come with up to 60GB to 160GB of storage space, **which would be doubling, sooner or later to hold more and more Video**. One of the current limitations of portable systems such as the Audio/Video players, Pocket PCs or a Smartphone being the small displays which makes it a little hard to view higher quality video, write really good notes or edit pictures, which are about to change with the *1st Century "scroll-type", scroll-like* displays that you can roll inside and out.

Each and every decade makes a big difference, then, **in 1997 an overhead projector that could carry High Definition resolutions at 1280x720 pixels would cost up to $10,000.00.** In 2007, better ones in slim and sleek 6.5 lbs designs are nearly or **below $995.00.**

In those days, pretty much around that 1997 / 1998, as stated earlier, most of these newer Technological advances once, only seemed like dreams, as seen in the Science Fictions, James Bond Movies, or in the **Research Labs**. Some of the really desirable things that consumers would want to do with the technology were only done with **very expensive** and exceedingly fast chips. Today, we have displays that can be rolled out like the "**Scrolls of the Ancient Egyptian Civilizations"**, there's efficient miniature cooling systems, gigabytes of storage capacity in extremely tiny devices, and much more sophisticated things about to change the surface of the technology and computing permanently.

Great Technologies are beginning to come out from R&D to consumers very quickly, **at much lower prices**, the technological promises of Digital Convergence and the Next-Generation are coming together fast; they would be affordable by most individuals, set to make their way into every home, and business.

Let's Take a Quick Look At Some These Newer Technological Advances-

Get Ready to Roll and Fold Your PDA Screens like They Did Ancient Scrolls-

The promise of new the Flexible Polymer Technology; which are built into PDAs, Pocket PCs, Smartphones, Music and Video Players. The screens are rolled out, where we can work and play without the current limitations of portability, for otherwise, extremely powerful devices.

Would this really work or just a fantasy? It simply works same way as the good old technologies used in LCD screens. This time, the liquid crystals that make LCDs work in a layer of glass are instead deposited between a layer of **shatter-proof flexible plastic**. This technology was originally by developed by E Ink and Philips. It used Organic Light-Emitting Diode (OLED) sandwiched between a layers of very thin Flexible Polymer.

The Flexible Polymer displays are cheaper to manufacture than current Flat Panel displays. They fit neatly into your pocket, and can be used WhenEver, AnyTime, AnyWhere and EveryWhere. They are available already on Motorola Motofone F3 and Sony Reader. The *Motorola Motofone F3 has been available in other markets in the UK since 4Q 2006*, ***they've not been offered in the US and Canada at this time in 2007, since it was first announced in July 2006***.

Pocket Micro-Projector Systems for Presentation-

Side by Side with Flexible Polymer Technology, we have the **Pocket Projector equipped cell phone**. The new Microvision Pico projectors uses a light scanning technology which generates full color, and complete image from a tiny light beam. The basic color combinations are present within the device to emit **a single blue**, **green** or **red** laser that bounces off from tiny mirror. It is scanning as it oscillates in the horizontal and vertical directions, rendering the images in true pixel by pixel depth and breath, while producing fairly large picture projected onto a wall or other nice flat surface. **The size can be up to 120 inches, from a project throw range of 12 feet.**

Internally, there is a PicoP engine coordinating various components such as the intensity of the beams including the optics, scanner, and the light source. These in turn produce several thousands of colors needed to create a full picture image. The key miniaturizing technology being the ability to use **a combined single beam of light rather than three beams**, making it small enough to fit into cell phones without any significant increase in size. Surprisingly, **this device can play a full movie in just one charge**. It's expected to add just about $150 to the price of the Motorola cell phones; they will be out in 2009.

Electromagnetic Induced Charging-

Also known as **Inductive Charging**; a way of charging mobile devices such as phones, laptops, music players and cameras by simply **placing them on top of a pad without the need for power cords or power outlets**, unlike the Conductive Charging.

Inductive Electromagnetic Electrical Technology **has been used for several decades**, they were mostly found in both small and big step-up or step-down **transformers/coils** used in Electrical Engineering designs. The newer efficient form of charging pads are expected for indoors (laptops... etc) and Outdoor use (cars, field, bikes...etc) in 2008, and 2009 respectively. As more and more electronic device manufacturers continue to join in, it will become much common by 2010 and afterwards. **Mobile Fuel cells** are expected to follow suit around 2013. It uses hydrogen fuel cells that can power a laptop for up to **a week**. The system would use fuel cartridges instead that you can buy from local stores.

Similarly, another new technology called **Nano lightning systems** is expected in 2015. Basically, it's used for *cooling your hardware using electrical charge that would generate tiny wind currents*. The tiny wind currents are spread on the surface of your chips to keep them really cool. These are accomplished **without the use of system fans**.

Printing- Print AnyThing & EveryThing, AnyWhere, AnyTime, on Any Device-
Physical home, office and online order printing would soon become outdated! **Built-in printers are coming soon to all mobile devices such laptops, A/V players, and Cameras**. Enabled by a new technology breakthrough called Zink meaning "Zero Ink". A new paper technology by Polaroid, popularly referred to as the **"the only printing technology that will fit into your pocket"**. The *underlying printing effect* is accomplished by the **colorimetrical colorization of crystalline substance within the paper itself** when it passes through the slim printer, than the use of ink cartridges for printers which are common place today. Currently, Zink is coming out in 2008 as a separate tiny hand-held, they will be built directly into devices starting around 2010.

The Wonderment of Powerful Graphic Effects -
Why are graphics slow or inefficient, and great ones so expensive?

Different Complicated Integrated Interfaces! Basically, in today's graphics technology, in PCs, and the newer Mac Hardware, **for example**, the graphic information would be exchanged between an **AMD/Intel CPU>** to maybe a **Nvidia Chipset**, via **Internal Systems Bus>** to an **ATI Graphics Processing Unit (GPU)>** on a **VisionTek Graphics Card**.

Many times, we've experienced situations where extremely complicated cross-manufacturer, cross-engineering, cross-multiple interconnections caused not only confusion for consumers, but also software/driver, chipset/hardware, timing conflicts or incompatibilities during troubleshooting for system engineers. Not only that, they also *consume lots of space, power, cause lots of internal systems timing delay, making the systems run hotter, slower, unstable and expensive, all at same time.*

With the new **AMD** and **ATI** merger, the next generation CPUs and GPUs would be built in together in harmony on the CPU, *at least as close as it can get to that for extremely* **Scalable Powerful Super Video Capabilities**, **Smooth Graphics Experiences** from the Internal Hardware Systems wiring **built-in** on the CPU itself, *eliminating this delay caused by the Internal System Buses*. Then shall we enjoy **much more** of the bests that Blu-ray and HD-DVD has to offer. Intel is doing it with its integrated Nehalem processors. Both are going into production in 2008, into 2010 or earlier though at different times for AMD and Intel on the Servers, Laptops, and Desktops.
How about this confusing HD-DVD, Blu-ray, HD TV 720p, 720i, 1080p, 1080i, ATSC, NTSC Compatibility, Up-Scaling, Interlacing, ...Up-Conversion, etc ..Situation?

There have been plenty of questions raised, as well as consumer confusion created, due to the Blu-ray and HD-DVD **format** battle situation for a very long time, similar to the Betamax-VHS Format war in the 80's. It has been **purely digital** and seemly more *physical disc media-based* than on the internet download or streaming front which has almost taken off in 2008.

Here's a Quick Breakdown:
"Digital Versatile Disc" and "Digital Video Disc" (the DVD), "High-Definition Digital Versatile Disc" (the HD-DVD) and Blu-ray Disc (also known as BD) **may all sound really good**. There's no limit to creativity so let's call the HD or its upgrade "**Ultra-Clarity Precision Digital Versatile Disc" (UC-PDVD).** The questions being asked could be- what does it do, how does it work, *are they affordable*, and is there a way to see it and what are the benefits...? No matter what different electronics manufacturers, vendors, brands or competitors call it, they are simply an expression representing **same basic thing**, ***the digital resolution***, i.e. also the color depth, the level of *concentration of pixels*, the ***quality* of the motion**

picture displayed on the screen. It's just about "clarity", and that level of details on what the eye sees, likes and enjoys better.

The Brief Technical Summary:

HD-DVD Blu-Ray Aspect Ratio DVD
HD Video Resolution: 1920 x 1080 1920 x 1080 16:9 720 x 480
1280 x 720 1280 x 720 16:9 720 x 480
Storage Capacity (per side)**: 15.0GB 25GB** 4.4 GB
Video Codecs: MS VC-9, MPEG-2, MPEG-4 AVC (H.264) I MPEG-2 / or MPEG-1

SDTV Video Resolution: 704 x 480 NA 16:9 NA
" " " 704 x 480 NA 4:3 NA
" " " 640 x 480 NA 4:3 NA

(Where: **SDTV = Standard Digital Television**, **HDTV** = **High Definition** Television, **HD Video= 720p/ 1080p**, **HDTV= 720p/1080i, SDTV is not a High Definition Signal**) **Note as stated that**: A Digital signal like the DSTV obviously are better quality than analog signals. **DSTV** became really very popular or more common around 1997/98. However, every Digital signal may not be a high definition type. HDTV and HD Video (HD-DVD/ Video and Blu-Ray) are the best of the bests of all kinds of Digital Video Display signals currently available. The high-definition display along with Dolby Digital® 5.1/6.1/7.1 surround signals depends the station to broadcast in high-definition audio/video, and in having the right equipment setup right to enjoy them.

Start Getting The Facts- For HD Broadcasts, 1080p **takes up much of the current available transmission bandwidth**. 1080p may not be available on Broadcast/ Cable stations any time in this near future neither in this or the next decade. Congress passed a law requiring that all Analog Transmissions be turned off by February 2009, so, every TV set would need a compatible HD Digital TV Tuner to be able to receive Over-the-Air Transmissions or TV Broadcasts starting at that time. There would be much MORE HD bandwidth available for every station on the internet fiber optic pipelines than on the current transmission system. The Fiber Optic, **so far**, has continued to have unlimited **bandwidth potentials.**

The ATSC Group (Advanced Television Systems Committee) was formed far back **in 1982, (approximately 25 years ago)**; then they developed the current ATSC Standard. While stations are still upgrading to 1080i, they'd be broadcasting at 1080i for **several** years to come. **ATSC** is now the new digital television **HD 16:9 Wide-Screen, 5.1-surround channel standard format**. It has more than **six times the resolution of an NTSC, thus, a much better quality replacing NTSC**.

ATSC 5.1-surround channel signals (in the 6 speaker configuration) may be set or configured to **up-mix** to 7.1-surround channel w/ 7.1-surround speakers in 8 speaker configuration connected the right way, with the right things, optimized and fine-tuned the correct multimedia ways. The latest **TrueHD** supports over **14 Channels** at **24 bit, 96 kHz audio channels at up to 18 Mbit/s.** HD DVD and Blu-ray currently, will support both **Dolby** and **THX** with up to a maximum of **8 discrete channels, when optimized, they will be fed to 8 discrete speakers going the TrueHD 7.1-surround path**. 1080i signals are compressed to 720p wide-screen for 720p displays, while the 1080i signals are up-converted to 1080p for 1080p displays, which many times has looked just same. When two large screen, same size 1080p and 720p are placed **side by side**, while playing an 1080**p** movie or an **1080i HD-TV**, a slight difference might be noticed with the **movie**, **not the HD-TV**, depending on how much detail **the eye really care about**. It may vary, depending on your **distance from** the screen and the **size of the screens used**.

***Note**- An Up-conversion or an Up-Scaling from 1080i is simply the process of filling or patching up millions of those tiny pixilated display dots areas on the screen that otherwise would've been filled up with the real natural pixels **by a 1080p**.

Blu-ray may be considered heavier from **just the file size alone**, it took much longer to start playing when started. It has a few additional contents that one can select, navigate and see. It would be about one's personal preferences or tastes, if one would actually get to notice them, and buy a movie to see the additional contents. One of the biggest market drivers for Blu-ray really has been the **integration of Blu-**

ray disc drives in Sony's play station and the long *existing popularity of Sony's PlayStation 3 game consoles itself.*

HD-DVD is of same exact quality as Blu-ray. Those interested in additional contents may not find them in HD-DVD at this time on the **earlier** HD-DVD releases. The new HD-DVD titles **since October 2007** have new advanced Web-enabled additional feature contents such as the Transformers. Microsoft **Xbox** playback HD-DVDs, as Sony's playstation for Blu-ray.

The Full 1080p displays sets **technically, do an internal combination of up-conversion,** and **an up-scaling to get the Full 1080p** being talked about. So, for that reason they are TRUE Full 1080p. If you are a movie fan with the budget go for it. If you are a music fan, or seek to meet both **quality entertainment** needs without breaking your budget, 720p is just very fine as it's also the standard at this time, it may just be **fine-tuned**, matched or **optimized** to meet certain quality requirements. **720p is fairly common and affordable on Overhead Projectors with plenty of flexibility and adjustable largest screens available.**

As with all Electronics- tolerance levels, reliability, mean time between failures (MTBF) of the electrical / electronic components, and the quality of the productions are as a direct result of the internal engineering designs. Different brands or manufacturers would focus, or are usually better in one area than another (as in black levels, color depth..), so, the display quality from whatever source input used would be dependent on how well the pixel by pixel and color conversions are reproduced by each set. Ultimately, WUSIWUG (What You See Is What You Get).

When the time comes to renting and ***downloading the Sony"Blu-ray" Home Video*** over the internet, we'd find out just how the file size or the **FORMAT** would make a difference, **if any**. The HD Video Format on a Physical **Disc** is permanently tied to a Blu-ray and/or HD-DVD Hardware Player for playback, while any downloaded HD Video (Blu-ray or HD-DVD) may require the Compact Internal **HDCP** Decoders on the input and output sides of BOTH the VGA and the LCD TVs/Plasma/Projector Displays to transmit via HDMI, to be able to get a FULL HD quality image/video resolutions to the screen, and to the HD 5.1/6.1/7.1 audio system. Downloaded High-Definition Video could be much *smaller than as stated above, usually between 4-5GB in the VC-1* ***WMVHD*** *Format, the 720p, and 6.8Mps 5.1 Surround Audio, unlike the file sizes which are on the physical Blu-ray or HD-DVD Discs.* WMVHD is the Microsoft "downloadable" Digital High-Definition Audio/Video **File** Format which may not require additional hardware than a pc with windows media player / windows media center **software** for playback.

Users would compare and contrast as prices continue to drop. At the end of the day, Voice, Fax, Video, Data, Multimedia, **HD Video** and every kind of **Communication** and Media Contents are going to be delivered via the **technically unlimited capacity**, currently possible using the fiber optic internet pipeline.....

.....Wonders of Powerful Graphics Effect Coupled with Expansion On Data Pipelines..
As CPUs/GPUs coupling for PCs is continuing in it's very early stages going toward the next 5 years to 2 decades so far, significant bottleneck being on the system bus, **the pixel pipelines**, any data that has to travel through the PCs system Bus Architecture could be transmitted faster, more efficiently with the next-generation **PCIe 3.0** which offers data throughput rate up to **8Gb/s**. PCI-SIG is releasing the final specification for PCIe 3.0 in 2008 / 2009, while the graphic card would be expected in **2010**.

Welcome The Octa-Core V8 Power CPUs -
Technically, there isn't any *significant* benefit maximizing processor speeds at this time, neither with increasing the bus bit Paths/Bandwidths/Traffic Lanes, if there would **still be a severe "Bit-Traffic"** congestion at the Bridge; **an Internal System Bus** Architecture, Cache and Timing side of the traffic, with CPU **efficiency** dropping as **current leakages** rises with those Speed Increases, which could cause an **Accident** or **Data Corruption.**

Moore's Law has temporary run into a sort of brick wall, it's not been doubling as it had in the past,

waiting, due to the current need to get the processors to a point where they are doing more of what they are really, indeed, **capable of doing**. **How?** It's like having a Four Lane x 2-Way Highway Traffic that merges into a Two Lane x 2-Way Traffic at the bridge on an extremely busy highway. **Why and how would this make any sense or be beneficial to an end-user?** Well, there'd be much slower traffic at the bridge merging point; **a severe congestion**, which typically gets worse during peak periods. The car would normally run faster than all others at 100 Miles Per hour or more in an **awful hurry**, still would slow down, stop and **wait at the bridge**.

Let's go back to the simple early **Introduction to Physics; the Newton's Law of Motion** to look at Velocity , then Acceleration, *the rate of change of Velocity.* The car would get to a destination only just a few minutes earlier than others during say a 100 / 1000+ mile trip @ at steady 65 / 70 m/h. When it first gets on the highway and the gas pedal is pressed all the way down, it's easy to rev. up to **4500 - 7500+ RPM** in the red at lower speeds of 0-60mph. It would take off faster / **fastest** with the engine screaming, the gas, gaskets and oil will burn faster; still the car would slow down and stop at the lights, then at the gas stations for a refill. The design of the car **gears**, cylinders, injectors, air/oxygen gas mixes, aerodynamics and the shafts are core for the **engine's** mechanical efficiency, as the **internal system buses**, **cache** and **timing** are to the **CPU.**

Back to CPUs- The *clock speed* is built **right on the chip**, while *the core* is the one that does the **real calculations** that actually runs the software we are using. A higher clock speed would tend to take off much fastest, then slow down to run the applications. The idea of continuing to increase the Frequency Speed on the chip is similar to running a car at 100 Miles Per hour while still on lower gear 1 and 2, than on 4, 5 or more. The engine would run very high, make lots of noise, get extremely hot, waste gas and burn out quickly. The real reason CPUs tend to get really hot, and **consume a lot of power**.

AMD had started the journey earlier, down the path of increasing **efficiency** than the CPU frequency speeds, consumers didn't get that at that time, since Intel continued *Marketing* with Frequency Speed increments. Both Intel and AMD are now focusing on ***increasing both the number of cores, and the number of "traffic lanes" on a chip with the frequency speed increments****, than just increasing the clock speeds.* This would make the processor perform better and go faster, meaning faster more efficient cars on more lanes on wider bridges with wider lanes passing more cars per second and more. Then throw in the **fastest correctly *matched*** Memory Latency and ***Timing*** **Chips,** the lowest in Nanoseconds with precise voltage and current requirements to the Motherboard, add all the available processor ***Cache for a Server****, to begin scratching the surface of the real super power, smoother performance and the more efficient extreme power of the CPU*.

We look forward to the improved versions of these **4x4 Octa-Core V8 CPU Platforms** starting with servers in late 2007/2008, then in desktops and notebooks in 2010 or earlier, depending on what technically changes, how affordable they are or what happens on or before that time. **Custom system builders usually would customize quickly for multimedia PCs, servers, game machines or extremely powerful desktops.**

A Meeting With The New-Generation Internet Transmission System and Phones -

Users has been very happy making wireless phone calls with cell phones prior 2G Technology coming with the Internet capabilities and SMS/Text Messaging, then 2.5 G arrived, allowing users to send and receive Video and Photos. 3G followed to make 2.5G smoother and faster.

The 4G is being closely followed with **Gigabit Internet for Home Broadband Service with the Gigabit over a fiber-optic backbone pipeline**. It lets you download any latest movie in less than a minute @ up to 1 Gbps. The 4G Internet friendliness of an **IP Switched network coupled with IPv6** *changes the engineering switching side of how cell phone networks transmitted information using a* ***circuit-switched*** *network at this time.*

What would this mean for an End-User? Unlimited internet, network speed and capacity to transfer and to exchange tons of volumes of information than has ever been done between any kind of system, or systems of a system in past.

Unlimited **flexibility**, for End-Users to connect and **communicate** AnyHow they want. The ability to do more, like Talking with Friends and Family, Texting and IMing Them, Sharing Photos and Video with Them, Sending and receiving Business and Personal Emails, **Seamlessly Initiating Internet Video Conferencing and Collaborating**, Downloading Songs/Music and Movies, Streaming Learning Contents and Data, Connecting to Home Multimedia and Business Systems, Reading an e-Book or an Electronic Magazine/ Newspaper all at once, WhenEver, AnyHow, from EveryWhere, at AnyTime on AnyDevice.

While half the power of 3G is yet unleashed, 4G is slowly being deployed in a few large enterprises, it might be expected on hand-helds starting around 2011 or earlier.

Smart Homes and Content Streaming AnyWhere @ AnyTime-

Smart Homes has been expected in 2014 for automatic control of appliances and **fulfilling grocery** shopping needs for the home refrigerator, so the home refrigerator would be internet enabled, and would know when you are running out of milk, cheese, butter, and things of that nature. However, the Software, Control Systems, Multimedia Contents and the Hardware Solutions are here already, right now for all of other Home Automation needs.

It's about that time we watched our favorite HD shows, and movies, WhenEver, AnyWhere, AnyTime, on AnyDevice from EveryWhere without any sort of undesirable limitations from fully enjoying EveryThing it has to offer. The present Home Automation Systems has control for Thermostats, Lightning, Multimedia, Environmental Moods, Cameras, Security Systems, and much more, remotely or physically- Just about AnyHow you've dreamed of or ever wanted them.

Sure, it would be great to put the TV at any location without sacrificing quality, running too many cables, it's already here. HDMI uses cable, the one called Wireless High-Definition Interface (WHDI) is its wireless equivalent allowing over the air / wireless streaming at 5-GHz for 1080p, 60/30-FPs. HDMI and WHDI are compatible. Microsoft Media Extender would do all that, **connect all large TVs to the internet**, and do much more things with really good WOW effect. If you are using a Vista Home Premium and above, look for the **Internet TV icon for just a start.**

Some of the additional peripheral supporting equipments like the adapters etc... Specifically for WHDI would be out early in 2008. On the software infrastructure side, presently, it is possible to connect to your TV Shows- Live or Recorded, to all your Personal Media Contents, and Photos 24/ 7 using any Internet Multimedia Enabled Device from Any Location in the world.

In November 2006, the **Microsoft Xbox Live Pipeline**, now the **Microsoft Xbox LIVE** started offering **High-Definition (HD) Video rentals for download**, including the trailers, TV shows, TV episodes for purchase and to own, music videos and games. They'd be adding **IPTV enabled streaming of HD channels** from Warner Bros., MTV, VH1, Disney, CBS, Comedy Central, Paramount, Turner Broadcasting and many others... the Xbox Marketplace also has both the High-Definition and Standard-Definition TV shows and movies through the Xbox LIVE for viewing.

In 2007, Netflix started offering movie download that anyone can rent and watch instantly on their pcs. **In January 2008**, as soon as **Apple** announced its own **High-Definition Movie download availability with crystal pure 5.1-Surround HD Audio,** along-side Standard Definition movie download rentals within its own Apple TV and **through iTunes for all of Apple devices**, Netflix immediately started offering **unlimited** Movie downloads and TV shows streaming. **Vongo** has been doing same, which could be accessed on its site on Vongo.com and within **Windows Media Center Online Media** and **TV + Movies**.

Vongo, **Netflix, Microsoft** and most others, as of January 2008, are yet to offer **High-Definition Movies**

with True 5.1- surround HD Audio rental *download directly into Windows Media Center and Windows Media Player*, as Apple has just done with iTunes and Apple TV. Market research and findings show that consumers, at this point are wanting and talking about the PC, particularly **Vista Premium** and above arriving in the whole High-Definition download offering mix than being tied to an **Xbox** or a Sony Playstation with the Discs, Hardware and Software **lockup, lockdown and tie-down**. The Xbox has been outselling Sony's playstation on one front while the current HD-DVD and Blu-ray **Physical Disc** war seem to be tilting to the side of Blu-ray as of January 2008, *since it has been outselling HD-DVD, followed by the latest announcement by Warner (the world's largest **media** company) to go Blu-ray exclusively*. **The HD Movie Format war will continue on the internet download front where Apple and Microsoft have put their bets on. The High-Definition Movie download availability, extremely inexpensive reliable large storage capacities, the Media Server and Software Powered Multimedia content access will make the *whole HD-DVD and Blu-ray Home Movie Disc format battle totally irrelevant.***

Update October 16, 2008 - The recent announcement by Apple that it has become the most popular TV store, having already sold over 200 million episodes of stunning high-definition contents from the four major networks—NBC, FOX, ABC and CBS, indicate that consumers prefer to download films and TV shows instead of buying expensive separate hardware and Blu-ray or HD-DVD physical media. **7 million units of Blu-ray have been sold in 18 months, while 7 million films have been sold on iTunes in 15 months. Blu-ray may not compete with its pathetic 8 percent market share, when Apple the largest music retailer has now become the leading store for TV Shows.**

The Single 5 Terabyte (TB) Hard Drives -

Expected to hit the market by 2010/ 2011, is the **Five Terabytes Hard Drive which uses a new technology known as Heat-Assisted Magnetic Recording (HAMR).**

HAMR work by using laser beams to first heat areas to be written **per Terabyte per square inch** by the drive heads into a different magnetic arrangement in few nanoseconds. More data is written to a surface by an increment of more than 100 without being affected by super paramagnetic draw backs which limits current hard disk storage technology. The 5TB Hard Drives are expected in 2011 from Seagate. **It has been reported that Seagate is already capable of launching its single 300 Terabyte (TB) Hard Drives by 2010.**

Wonderment in the storage area is the Probe Storage, expected to appear in the market by 2015. Presently Code-named Millipede, the system uses a probe storage system currently in development by IBM. It will use microform of atomic force to store **more than a Terabyte of data per square inch on a polymer surface**. It will incorporate array of a few thousands of tiny little probes which would write and read back large amounts of data much more quickly than today's hard drives could ever match.

Unlimited Internet Communications Connectivity -

IPv6 has been around for very long. No one just uses it yet, at this time. It appears the industry has been waiting for the Government to actually get started first. While IPv4 has been around for more than 25 years, IPv6 solves many of the limitations of the current IPv4 as computers and devices will be running out of addresses sooner or later.

IPv4 uses 32-bit addresses, while IPv6 uses 128-bit addresses. With IPv6, EveryOne and Every device in the world would get a unique number ID which may never run out in our own time. **IPv6 also adds a lower network level type of encryption and authentication for private communications.**

A few of the draw backs for IPv6 being the relatively **expensive hardware** compared to IPv4, very few network administrators has been trained for IPv6 systems and devices, in addition, **a major drawback is seamless backward compatibility with IPv4**. In the mean time, the US government announced moving to IPv6 by summer of 2008. The current pool of IPv4 addresses are obviously running out quickly on or before March 2011, with such situation, ISPs will be forced to migrate quickly, as soon as IPv4

compatibility issues are fixed.

*Many of the current telecommunications technology supporting most vertical industries are also near their useful lives, IPv6 will become a critical part of that foundation for the *next generation* "**all-IP based communications infrastructure**", as the industry will continue to migrate from the current telecommunications public carrier infrastructure to the next-generation efficient, more independently implemented and managed systems.

Natural Surface Computing Using PCs-
As already experienced on Smart Phones, iPhones, and Pocket PCs where we can point, click, highlight, drag and drop item or icons using our fingers, they are possible on larger surfaces today.

As PCs become more and more **natural**, basically, the use of mouse pointing devices would be minimized for ergonomics, then also depending on how you'd want to work and play. Also known as **Tabletop Computing** means friends can gather to play games or manipulate pictures or objects on much more large surfaces, like the tabletops interactively from images projected on the Table Top. Mitsubishi Electronics Research Labs is an RF-Driven Diamond Touch type, while Microsoft's is Camera/Projector Powered. Since this is already possible on any surface with **"Touch"** technology built-in means that one may not be restricted to Any specific device, location or how they wish to connect, communicate and interact.

The **Xbox 360 video game systems** - now allow Xbox users and gamers to connect with PC gamers and users **around the world** through the new **Games for Windows - Live,** where they can engage, share experiences, communicate and compete on Xbox and/or Windows Live games without the limitations of devices used or their location.

Microsoft has come out with conference-room surface computing system, which would hit the market in 2010 for businesses; they expect them to become available for flat surfaces in homes, such as mirrors, tables, counter tops and walls.
