In-Stat

White Paper

In-Stat Predictions—2007

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How In-Stat Looked Out at 2007

At In-Stat, we take our annual predictions pretty seriously. Each year everyone, including our VP of Research, Research Directors, Custom Director and analysts get together to focus on the upcoming year. Our predictions are based upon our vendor research, results from the more than 50 primary projects we conduct each year, our subject matter expertise and our instincts, born of our combined experience. We each come armed with what we see happening in the New Year. But most importantly, we discuss thoroughly and interactively what impacts these predictions are likely to have on the markets that we examine.

HIGHLIGHTS

- Featured prediction from Gerry Kaufhold—high-definition TV programming will become available via the broadband Internet.
- 2007 predictions for Enabling Technologies (including Semis), Devices, Service Provision, Security, Networking, and the Asia/Pacific with a focus on China give a lay of the land for the upcoming year!
- Revisiting 2006—were In-Stat's predictions on target?

Featured 2007 Prediction!

High Definition TV Programming will Become Available Via the Broadband Internet

In-Stat is predicting that more than 60 million households will have at least one wide screen, high-definition TV display in their home by the end of 2007. People who shelled out US$ 2,000 for a great looking HDTV during 2006 will be willing to pay a few hundred extra for a high-end entertainment PC that connects directly to their HDMI-equipped HDTV display.

This leads to Gerry Kaufhold's prediction:

High Definition TV Programming Will Become Available Via the Broadband Internet

Intel is delivering quad-core CPUs that cry out to decode high-definition TV. Plus, Apple's new Intel-based machines will bring iTunes into play, and it's likely that iTunes will provide some high-definition versions of Disney movies for "download-to-own" services, and that, in itself, will generate a lot of "buzz."

AMD, with ATI, can build portable PCs that include HDTV tuners and HDTV graphic accelerators. Again, this calls out for something with intense graphics to drive sales.

Outside the US, countries that provide very high speed broadband services, such as South Korea, Japan and Taiwan, can deliver 10GB HDTV files quickly, and Intel's Viiv architecture has connections to content owners and Internet Service Providers (ISPs) that are ready, willing, and able to begin delivering HDTV files over their ultra-high-speed Internet services.

During 2007, it's likely that only the higher end of the market will be interested in HDTV via broadband, but the ability of the high speed connections and quad-core PCs to deliver great looking video and surround sound audio will send a shiver through the Pay-TV industry and the Hollywood studios. Up till now, the Pay-TV services and Hollywood studios have assumed that the sheer size of HDTV files would be a natural impediment to delivering them via the Internet. By the end of 2007, we'll see some people asking their ISP to give them a 30Mbps connection, and then canceling their Pay-TV service because they can download their favorite shows and movies and not pay for the extraneous networks that come "bundled" by the Pay-TV service.

Plus, some of the HDTV content being delivered will look BETTER than the HDTV being provided by digital cable TV services. Some people will decide that the quality of their viewing experience is worth the extra hassle for waiting for large files to download.

Finally, there will be some wireless HDMI solutions by late 2007 that permit an entertainment PC to "connect" to a wide-screen HDTV display with "no new wires." That will really drive the market forward!

In-Stat Company-Wide Predictions

Enabling Technologies, Devices and Semiconductors

- 2007 will be the turn-around year for Intel vs. AMD. With its new cores and processors, Intel will stop losing market share to AMD and will begin regaining some lost ground.
- Watch for major changes at Nvidia. If Nvidia isn't acquired outright by a larger company, it will begin changing directions in a major fashion to diversify away from GPUs. Nvidia's recent acquisition of Portal Player is an important clue. AMD's acquisition of ATI is radically altering the GPU market. PC processors with integrated graphics (coming within two years from AMD) will squeeze the market for discrete GPUs and graphics cards, limiting it to only the most performance-minded users. Nvidia must change to survive.
- Annoying DRM features in Microsoft Vista will prompt some users to hoard older versions of operating systems that lack DRM. Windows XP, Windows 2000, maybe even Windows 98SE will make a comeback. Virtualization will make it easier to maintain multiple OS installations on one PC and switch between them. People will revert to an older OS to copy or download DRM-protected content.
- 2007 will see the first heterogeneous multi-architectural processors – X86 + ARM cores.
- 1 in 5 US households will have a PVR by the end of 2007—-mostly coming from the service provider.
- At least one successful WiMAX "d" vendor will go out of business as the transition to "e" comes to a head in 2007.
- WiMAX will be more widely deployed in Europe and Asia than in North America.

- iPhone hysteria will continue unabated throughout 2007. There will be even more numerous rumors of an iTunes phone from Apple, whipping the faithful into near apoplexy. If, by chance, such a device is released, adoring fans will stampede to buy them but the sales spurt will be short-lived, held back by device costs and availability.

PCs

- Wireless USB becomes a reality on PCs—even on the motherboard—by the end of 2007. UWB is the underlying technology.
- Macintosh will gain market share as people realize that Intel-based Macs can make better Windows PCs than many Windows PCs.

Networks, Service Provision and Security

- Acquisition of professional services and managed services providers: Infrastructure and equipment vendors, network service providers, and professional services firms sense (appropriately in our view) accelerated adoption of business managed services due to ever-more mobile, IP based networks.
- Look for Verizon to make acquisitions in the professional services space to keep pace with AT&T's acquisition of Calisma (a deal previously closed by SBC, but has been influential and several high-profile, mega deals).
- We expect AT&T to continue to seek deals in the content delivery and managed applications space.
- And we anticipate one or two deals from Alcatel to help it penetrate this fast-growing market space.
- Advances in Ethernet-over-Copper (EoC) and Pseudo-Wire technology will allow the Tier 2 carriers the opportunity to more aggressively pursue Ethernet services, especially in SMB markets. This will cause Tier 1 carriers to adopt these technologies at a more aggressive rate in order to protect their installed base. The net effect of this will be that Ethernet services will see significant growth in 2007-2008. There is potential upside for Lucent, which has a pseudo-wire solution, and Hatteras, which has a contract with Bell South for its recently announced mid-band Ethernet solution.
- Given the growing emphasis around security, In-Stat expects acquisitions from AT&T and Verizon in this pure-play space to continue. Similar to IBM's 2006 acquisition of ISS (Internet Security Systems), EMC's purchase of RSA Security, and BT's acquisition of Counterpane, firms whose core business does not revolve around security will need to enhance their portfolio through organic growth or, more likely, similar strategic acquisitions in order to ensure legitimacy in the market.
- Longer term than 2007, there will be a backlash against so-called "network neutrality" as the rising amount of rich media content on the Internet slows down other traffic. Today's proponents of net neutrality will begin to plead for tiered service—the option of paying more money for priority on the backbone.
- In 2007, the focus of service providers will shift toward IMS service bundles for the enterprise and SMB.

- In 2007, at least one major distribution center (Federal Express, Target, UPS, as examples) will deploy a 5000+ ZigBee node network. The large scale deployment will validate the technology as an asset management system. The ability to integrate sensors with the ZigBee chipsets will also prove to be an important maintenance tool that anticipates mechanical breakdowns in drive motors or pumps.
- By the end of 2007, there will be only four global suppliers of IMS control layer software.
- Cable MSOs like Time Warner Communications, Comcast, and COX become more focused on the business market and demonstrate effective ability to take share in emerging markets like layer 3 VPNs and Ethernet.
- The Venice Project's P2P video project will be the big viral media sensation of 2007, creating a new model for cost-effective distribution of video and a new platform and business model for content producers—both big and small—to monetize their creations. Why do we think so? P2P enables the lowest cost, most scaleable distribution platform imaginable. The founders, Riis and Zennstrom, have an amazing track record with building disruptive P2P platforms (Kazaa, Skype). They also understand that they have to integrate a business model that is acceptable to content creators into the platform and they have developed a targeting advertising model may enable them to provide this. Finally, the infrastructure and market are ripe for a new video distribution model, as demonstrated by the success of YouTube.
- Google and AOL will surpass Vonage.
- Mobile carriers will make several attempts at providing advertising due largely to eagerness by large national advertisers. Revenues will remain very small as carriers, advertisers, and users try to determine the best format as well as pricing schemes that aren't based on traditional "cost per thousand" formulas.
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Asia/Pacific

- Major Telecom operators are going to be re-organized: possibly China Unicom will be split into two parts and merge with China Telecom and China Netcom, respectively.
- The advanced mobile markets like Japan and South Korea will see a lot more dual-mode handsets as wireless broadband offerings increase, from both incumbent and emerging operators. Carriers will launch faster yet cheaper Internet access on the go.
- The first few WiMAX business cases will emerge in Asia beside Wibro in Korea. By 2007, we should be able to identify how operators price their services and how customers react to wireless broadband.
- HDTV services will receive wide interest in 2007 in regions like Hong Kong, Taiwan, Australia, New Zealand, Singapore, and China. These services will be mainly initiated and driven by regulatory pushes.

- IPTV will continue to gain momentum in South East Asian emerging markets, such as Thailand, Malaysia, Indonesia, and even India in South Asia.
- iTunes and Real Networks may expand their online music shop services into one or two more countries in the Asia/Pacific region, aside from their current operations in Japan and Korea respectively.
- India and Vietnam continue to be the hot investment target counties in the electronics and semiconductor industries.

China

- 3G Licenses will finally be released as the Minister of the MII, Mr. Wang Xudong, has claimed that 3G service will be used at the 2008 Olympics in Beijing. It is estimated that it will take from six months to one year to ready the 3G infrastructure so it will be able to provide services at that time. Additionally, the final commercial trial of TD-SCDMA is currently ongoing. China Mobile, China Telecom and China Netcom will be issued 3G licenses: for TD-SCDMA, WCDMA, and CDMA2000. This is the most likely scenario to date, but there are still possible surprises ahead. Estimated total capital expenditure may hit US$15–20 billion in the next three years.
- Reorganization among the China Telcos will take place. Only three 3G licenses, instead of the originally announced four, will be issued to avoid resource waste in the 3G infrastructure. Additionally, as China Unicom currently owns two 2G networks, it is felt that infrastructure should be instead assigned to two separate carriers to realize cost benefits.
- The TD-SCDMA industry value chain will finally start to take off during 2007. Since mid November, Chinese carriers have commenced the pre-commercial run of TD-SCDMA services in five cities (Baoding, Qingdao, Xiamen, and partial coverage in Beijing, Shanghai). Additionally, chipset providers consist of T3G, Datang/ADI, Spreadtrum, Commit; equipment suppliers are Datang, TD-Tech, ZTE, Huawei and Putian; End device providers are Motorola, LG, Samsung, ZTE, OK Wap, Holly, Haier, Lenovo and Bird. Lastly, the commercial usage of TD in 2007 will produce revenue for the value chain, leading the industry to take off.
- 2007 will see the ongoing globalization of China's telecom industry. China Unicom received its CDMA license in Macao in 2005 and was able to start providing CDMA services in 2006. At mid-2006, China Mobile bid for Millicom but failed. Recently, China Unicom entered into a strategic cooperation with Vietnam Telecom International (VTI) on international voice and data. China Netcom regards “Internationalization” as one of its three core strategies.
- China's GSM Network will upgrade to "edge." China Mobile's GPRS network is lower than CDMA 1X on the data transmission. Edge will provide a stopgap alternative before 3G infrastructure achieves national coverage. China Mobile will undertake the establishment of TD-SCDMA; enhancing the data capability of GSM is an effective way to decrease the demand on TD.
- Cable Carriers' 2-way DTV network reconstruction will impact the IPTV market. The 2-way DTV can provide VoIP, data, VoD and other interactive services. There are 600,000 IPTV subscribers in China at present; however 2-way DTV subscribers number more than 300,000. The reconstruction

of 2-way DTV is only controlled by cable carriers; however IPTV is regulated by both the MII and SARFT.

- P2P streaming and Internet video sharing remain in their infancy. No proper business model has been found to produce sustainable revenue for the industry players. Video transmission on the Internet is substantially resource-consuming (bandwidth, server), leading to lower ROI. For P2P, the streaming content is mainly illegal; while for video sharing, the making and uploading of video is too complex for ordinary Internet users, raising the usage threshold.
- Handheld GPS devices boom in 2007. GPS is a new application on smartphones and PDAs in China and the industry is ready. Map information suppliers include Lingtu, NavInfo, and Go2map; service providers include OKmap, CCTK, Airversal, and Aircom; and equipment vendors include Hisense, NEC, Kyocera, Samsung, and LG. Participating carriers include China Mobile and China Unicom. Additionally, there is a large subscriber base of 300 million mobile users and more than 50 million cars. Rapid urbanization and more and more complex traffic situations are also adding to the adoption of GPS devices.
- LCD TV surpasses PDP TV. The competition from local manufacturers has driven wholesale price declines of LCD TVs. LCD has the added advantages of technology maturity and good resolution.
- Enterprise IP communications kick-off in 2007. China's overall IP PBX market has just entered into the initial ascending phase in 2006, and there were 474,966 line shipments in the China market in 2005. In 2006, it has been crucial for IP PBX vendors in China to choose proper sales channel partners and establish their IP PBX ecosystem. The sever-based IP PBX line shipment market will grow at a CAGR of 37% from 2005 to 2010.

What We Were Saying at the Same Time Last Year

Many research firms go forth with exciting predictions at the beginning of a given year. Not so many follow up at the end of the year to let the reader understand how those predictions turned out.

Were In-Stat's 2006 Predictions on Target?

At this time last year, In-Stat compiled its predictions from around the company. Below we've revisited those predictions to see how they've panned out, now that we're approaching the end of 2006—-the good and the bad.

2006 Results from Wireless

1. The wireless industry will see a GSM phone this year selling (to carriers) for $25 and a CDMA phone for $45.

Results YTD: GSM is $25, CDMA is actually lower at about $35.

2. At least one US carrier will announce that it is making available VoWLAN/Cellular handsets to its business customers.

Results YTD: That would be T-Mobile, trialing in Seattle now.

3. Seven MegaPixel camera phones will be introduced into the US market.

Results YTD: Ok, so this one was a bit optimistic, but you can get 10M in Korea now—the Samsung B600 (SCH-B600)—5M is about the highest we could find in the US.

4. The first cellular handset with built-in satellite radio will be introduced.

Results YTD: Well, we'll call this a "maybe." We don't think any hardware satellite radio phones were introduced in the US yet (they have been in Japan), there are some software solutions for MS Smartphones.

http://www.pocketmedialive.com/contents/software/pocketxmradiopro_p.htm

2006 Results from Enabling Technologies, Devices and Semiconductors

1. 65nm production begins at the leading vendors and details of the 45nm process get solidified. At this point, it is not clear that 45nm will include any significant enhancements because high-k, tri-gate, and EUV all seem to be at 32nm or beyond.

Results YTD: On track.

2. Semiconductor equipment purchases will take a breather toward the latter part of the year.

Results YTD: On track.

3. Dual-core processors will be available for all computing segments, but only the server segment will see rapid adoption. The majority of desktop and mobile PCs will continue to migrate to low-cost single-core processors.

Results YTD: Not this time. Dual-core is quickly becoming a check-off item and is reaching mobile PCs as low as $600 and desktops down to $400.

4. With the focus on power management and reducing chip counts, many discrete and integrated power management solutions will begin to replace analog solutions, but it will be several years before they overtake analog circuitry.

Results YTD: On track.

5. Price wars for Flash will continue and intensify, possibly driving a few vendors or new entrants from the market.

Results YTD: On track. While we haven't seen much change in the number of vendors, the market is still highly competitive and price sensitive

6. More emphasis will be placed on alternative ways of integrating memory, especially non-volatile into chips, but I don't anticipate any significant changes in 2006.

Results YTD: Still correct. There is a considerable amount of effort being put into some new alternative memory designs, but they are still years away, at best, from integration.

2006 Results from Video, Consumers and Services

1. Interoperability issues, DRM, and the lack of software will be the biggest inhibitors to growth for the electronics and semiconductor markets.

Results YTD: This applies more to video because you can get audio in just about any standard. But the battle between DVD standards and DRM still pose significant risks. This may even impact Vista once people realize that DRM functions are built in. But video distribution is still in its infancy and the true impact of DRM is still yet to be determined.

2. With more and more compelling video content becoming available, we'll finally see more portable media players in the hands of CE consumers.

Results YTD: The shipment numbers are still small (shipment growth doubled this year, but on a small 2005 base), but 2006 was a big year for portable video in the sense that big CE heavy hitters, like Toshiba, Philips and Microsoft, entered the PMP market. Also, that $1.65B deal between Google and YouTube is driving my portable video. Also, just today, it was announced that YouTube and Verizon are about to make a deal that will bring user-generated video content to mobile phones. So, yes, portable (and mobile) video was on the rise in 2006, and will continue to be in 2007.

3. Worldwide home networks will surpass 60 million.

Results YTD: On track to surpass this number.

4. 2006 will be the year that personal computer companies FINALLY begin convincing consumers to hook up to their TV sets. Intel's Viiv architecture, Microsoft's Windows MediaCenter Edition (MCE) and AMD Live are using dual-core processors and advanced graphics accelerators to put beautiful images on wide-screen high-definition TV sets, and surround sound audio is a basic feature on all these new entertainment machines.

Results YTD: Consumers have not been educated enough and mass availability of product has not gotten there quite yet, but the movement is indeed growing. Intel's Viiv, AMD's Live! platforms do help enable this emerging, but it also takes the client devices and thus far it is still in the hands of the early adopters and tech savvy. Of course, we are speaking in terms of "hooking up TV sets VIA A HOME NETWORK" as opposed to hooking up a TV monitor directly to a PC, which one can do. There will be two versions of Vista that will incorporate the media center functionality, with the official consumer Vista launch to take place in January.

5. By the end of 2006, Comcast will provide telephone service to 2 million households, making it the sixth largest residential telephone service provider in the US.

Results YTD: As of October 1st, 2006 Comcast had 2.09 million residential cable telephony subscribers. Our prediction was spot on.

2006 Results from the Asia/Pacific

1. NTT DoCoMo will refocus on its expansion plans in Asia.

Results YTD: Although DoCoMo bought 20% in Korean Telecom Freetel (KTF) in early 2006, no more deals were announced in 2006—-looks like we missed the target on this one.

2. IPTV will be the hottest topic in East Asia, although mass market status will not be achieved before 2008, due to infrastructure barriers.

Results YTD: Taiwan/China launched IPTV in 2006, and although target subscriber numbers cannot be reached by the end of 2006, business models are gaining momentum in the industry. Korea Telecom, for instance, is only waiting for license from the government.

3. International semiconductor players will make major investments in India.

Results YTD: AMD, ST Micro, and Intel continue to invest in India (design centers, chip plant, etc.), and IBM announced its $6 billion investment in India

4. WiMAX and Wi-Fi wireless mesh networks will gain significant momentum in Asia, driven primarily by government initiatives.

Results YTD: Korea Telecom officially launched Mobile WiMAX (WiBro) by end of June 2006. Big Pakistan WiMAX deal signed with Motorola, and the Singapore government announced an island-wide Wi-Fi mesh network to be ready by 2007.

5. Singapore Telecom will continue its acquisitions in South East Asian or South Asian countries.

Results YTD: No major acquisitions occurred in 2006, due to corporate restructuring.

6. A major Chinese telecom equipment vendor will be listed on the NASDAQ, allowing it to expand further in the international market after being more visible to investors and the industry.

Results YTD: They postponed the plan to 2007 or 2008, so this one didn't happen

Overall, Not a Bad Showing . . .

Well, another year down, another set of predictions evaluated. Overall, we didn't fare too badly – only a few found us off of the mark. Many more times we were spot on with our outlook.

Only time will tell what 2007 will bring, but one thing is clear – the industries that we cover are always exciting and dynamic – until next year . . . .

About In-Stat

Technology vendors, service providers, technology professionals and market specialists, worldwide, rely on In-Stat's experienced staff and in-depth research to support critical business, product and technology decisions. In-Stat's insights are derived from both a deep technology understanding and comprehensive research, which examines each segment of the value chain for each market. Regular and ongoing end-user demand and primary research surveys underpin much of the analysis, enabling In-Stat to provide incisive market knowledge and guidance on future market opportunities.

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