



## **Digital Friends and Family: Entertainment Solutions in the Connected Home**

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The PC is earning its place as the central nervous system of the digital home. It uses its storage and networking capabilities to centralize data, and interacts with any number and variety of devices that are important in people's lives and homes today. What once belonged to the realm of science fiction - alarm clocks talking to toasters, cell phones interacting with the refrigerator, digital cameras synchronizing with the security system - are now entrenched in reality. There's no shortage of smart media devices you can plug into your home network when you have a PC at the helm.

As technology continues to advance, what remains to be seen is how consumers will choose to use digital storage technology, interact with their home entertainment systems and, ultimately, steer the entertainment industry. The industry is paying close attention while consumers make their first choices about how they want to incorporate digital entertainment systems in their homes.

Market research firm, The Diffusion Group, estimates that the typical consumer now stores more than *ten times* the amount of music, five times the amount of digital photographs, and nearly three times the number of digital video files they did in 2005. This rapid increase in the amount of digital content in the home is driving more consumers to purchase additional storage, and is raising consumer expectations for the security and integrity of that storage.

An even larger, related trend – content sharing - has resulted from the uptake in Web 2.0 applications, such as social networking, blogging and user-generated content. A testament to that trend is the rise in the development of products that hinge on the concept of media-sharing. For instance, TiVo now allows users to upload personal videos and share with their friends over the Internet. As consumers grow more comfortable with the idea of using the Internet for interactive media purposes, technology development must go beyond simple storage and backup to enable more interactive experiences over the Web.

These trends are at the heart of what influences the ever-evolving Digital Family and are, as a result, affecting the structure of their digital homes.

Often at the helm of these Digital Families is the “Digital Dad” or “Manager Mom.” Focused on connecting the family computer, the kids’ game consoles and a personal handheld device to the living room television set, Digital Homeowners are striving to find the mythical “value of synergy” often promised by the technology industry.

Interestingly enough, the Digital Dad is not a super early adopter. Nor is he necessarily from the highest income brackets. Typically, he is just a dad with a digital camera, a high-definition camcorder and a passion for his family, the center of his world. At times, the Digital Dad might be a gamer like his “Connected Kids.” Using the PC and a house chock-full of smart devices, Digital Parents and their Connected Kids are striving to create a safe, connected “Digital Home.”

To understand the new digital home, it is necessary to better understand the Digital Family. What is the Digital Dad looking for when he wants to ensure safety and connectivity for his family? How mobile is the Manager Mom and what are her requirements for connectivity on the go? And what is the Connected Kid’s chosen device for entertainment? How does the content that is delivered to their home get filtered to the device of choice - the cell phone, the gaming console, the Ipad or the TV? To answer these questions, we must first recognize and elaborate on the competing forces in play within the entertainment and computer industries. These forces explain the choices of the Digital Family and the subsequent effects of those choices on the IT industry. They can be viewed as four power issues:

- (i) The Glass Evolution
- (ii) Islands of Entertainment
- (iii) Marketing the Digital Home
- (iv) The Three C's : Connect, Consolidate, Control

### **(i): The Glass Evolution**

We are in the era of "glass" sales. Historically speaking, the beginnings of the first glass sales evolution can be traced back to the mid-1940s, when people started buying TV sets and rearranging their living room furniture, placing the couch in front of the television set. In the early 1980s, the increased manufacturing capability of cathode ray tube (CRT) technology drastically reduced prices and every home went from owning one TV to multiple TV sets, ushering in another glass evolution. During that time, consumers also started buying more electronic peripherals for their television sets. The amount of glass sold expanded dramatically. When multiple cable set-top boxes made their way into single-family homes, consumers all of a sudden started viewing their home entertainment system as a group of isolated "islands," driven by content instead of technology.

Yet another glass evolution is underway. Consumers today are now looking to purchase transparent glass dotted with thousands of tiny gas-filled bubbles on Plasma TV panels, liquid crystals sandwiched between two sheets of polarized glass on LCD screens, and the 2x2 glass display screen on video iPods.

As a direct result of the glass evolutions, consumers have placed themselves in control of content, thereby personalizing it. For instance, a typical consumer today may attend an event and take several digital pictures, dock the camera shortly after returning home and then upload the pictures onto the family computer. Later that week, he might want to go into the living room and view those pictures on his 50-inch plasma TV screen. The content now has to be transferred from one island of entertainment to another, an important requirement that needs to be addressed by the digital entertainment industry.

### **(ii): Islands of Entertainment**

As consumers' demands from the islands of entertainment started growing, it became necessary for the content industry to recognize that a shift was already in progress from the single piece of glass to the multiple pieces of glass in multiple rooms of multiple houses. It fell upon the content industry to figure out how to allow this to happen on a profitable scale, making it possible for the digital rights management of the content to transfer as easily as the content itself. In other words, it became clear that individual components in the islands of entertainment must be able to communicate with each other within the principles of digital rights management. The focus shifted so that television sets could talk to set-top boxes and digital home theaters could sync with computers.

The industry must now determine how to allow content to move around among all islands – TVs, PCs, handhelds, etc. - seamlessly, effortlessly, quickly and legally.

Most of these questions are rooted in considerations about how content owners choose to interact with content rather than how they choose to wire their house. These choices will force programmers to change how they create, compose and construct content as well as how they confront the challenge of delivering multiple feeds of content seamlessly. Content marketers are one of the most challenged groups in the digital home ecosystem. How do you sell content in a world where content is available from many different sources, can be delivered to many different types of screens, and so little of it is simple to transfer, transcode or translate? Apart from the questions around digital rights management, there is also the logistical consideration of how to create, shoot, edit, organize, and transcode content for multiple screens.

Just as it was impossible to sell a television set in the 1970s without a marketable television show, we are unlikely to solve the challenges around connecting the digital home and mobilizing the islands of entertainment until we can better understand how to create and deliver the content for the digital home.

### **(iii): Marketing the Digital Home**

"The Marketing of the Digital Home" may be the least discussed of the power issues addressed in this paper. While the digital home may have a strong technological foundation, it will not find widespread acceptance unless consumers find both ease of use and

immersive content. New content must be affordable, easy to access, well packaged and characteristically interactive. Thus emerges the question: How do marketers deliver this content and make money doing it?

A common misconception within the industry is that content marketing is not an industry concern, unlike figuring out how to get the bits to move from the computer to the television set or trying to figure out how to transcode from high-definition to mpeg4. Historically speaking however, affordable content has been the catalyst for the movement of the television and entertainment industry from one generation cycle to the next. It was only when Walter Cronkite's newscast delivery to home TVs became available, that consumers went out and bought television sets. Similarly, it was only when MTV was offered as a free service that kids wanted a television in their room. In the same vein on a different platform, it was only when Web sites, like Yahoo!, became available free of charge that the user proliferation of these sites grew exponentially.

Within the ecosystem of the content provider and the marketer of that content, it falls upon the marketer to find the compelling consumer values that ultimately drive successful content delivery and compelling profit margins. To that point, massive adoption of the digital home will be limited until we resolve content, digital rights management and marketing challenges.

#### **(iv): The Three C's - Connect, Consolidate, Control**

A lot of people might not remember what TV was like before the remote control came along, but the ability to control TV sets, or even entire digital entertainment networks, without leaving the comfort of the couch is now a way of life. Today, as consumers want their content delivered and accessible wherever they are, some are reaching for the power buttons on their computers to control entertainment and information systems - not just from the couch, but from multiple rooms in the house and even remotely. Connection, consolidation and control of content have become basic necessities, making it necessary for every device on the market to be network compatible, self-assured and self-controlled.

Effective control and consolidation can only occur with the support of transcoding and adequate processor power. When we view the computer as the center of the digital home,

what we are really referring to is the processor, the hub that stores, transcodes and delivers content.

Consumers want to enjoy greater personal control of the ever-growing world of digital media content. An AMD LIVE!™ PC is a good example of a digital entertainment solution that puts virtually everything consumers need in one place. It is suited for the infrastructure of a digital home, combining the capabilities of a powerful processor plant with intuitive ease of use demanded by the press-and-play digital home owner.

AMD LIVE! systems are feature-rich, dual-core, multimedia PCs that make it possible for consumers to consolidate and access all of their photos, videos, music and movies through their PC or a range of digital devices including mobile phones, MP3 players, game consoles and TVs. Dual-core technology is like having two processors – each one taking care of different applications at the same time, making it the perfect choice for the new digital home. For example, with a powerful PC based on a dual-core processor, Digital Dad can surf the Web for sports scores on the TV in the living room (with a special wireless keyboard), while mom watches streaming video files on the TV in the kitchen and their daughter downloads and plays MP3 audio files in her bedroom (because her stereo is wired to the TV).

When we can use the processor power sitting in the computer to execute the heavy transcoding, and let the screen be the point of interaction for the consumer, we can increase the affordability of digital entertainment solutions. For instance, by assigning all the demanding processing and storage tasks to the PC, it becomes unnecessary to replicate the same functions in a set-top box, thus making it possible to lower the price on the set-top box and leverage the economies of the PC industry.

As mentioned previously, mobile devices are inevitably crucial elements of the digital home, simply because the Digital Family isn't always at home. When they leave, they should be able to easily transport and gain access to their content from anywhere, at anytime.

The mobile phone industry already provides people with this type of access. You can take your mobile phone anywhere and your provider can track you and get your calls to you. In essence, the infrastructure necessary for mobile content already exists.

Digital content on the go must integrate with our daily lives; it has to be easy for consumer adoption. Since we already had experience with the telephone, we were able to adopt the mobile phone into our daily, on-the-go lives. Mobile content needs to be as easy as the phone -- it needs to be a few clicks away, it needs to have great graphics capabilities, and it has to be small enough to fit in a pocket. The ideal device would make phone calls, store your movies, give you your news, take pictures, and maybe even serve as a TV remote control.

### **Looking Ahead: The Future of the Computer in the Digital Home**

As digital homes contend with growing demands of moving digital media to establish themselves as the hotbed of networking technologies, it seems likely that various hardware and software will be converging and fighting for real estate inside consumers' living rooms. Consumers are recognizing that computers with powerful processors are best suited to navigate the networking, communication and security issues that come with tying various electronic devices together into a seamless user experience. Digital families are best served by leveraging the power and flexibility of the PC to enhance their entertainment experiences.

By working in conjunction with industry leaders in the digital networking market, technology providers are already responding to the need of the hour. They are designing initiatives that provide consumers with greater choice and simplicity for the enjoyment of their personal media as well as media from the Internet. One such innovative venture is AMD's Active TV solution. AMD recognized the need for a product designed for consumers who watch thousands of video streams on their PCs on a regular basis. Leveraging the power of the AMD LIVE! PC, AMD has collaborated with industry suppliers to help consumers display and share those same video streams on TV with a portfolio of Active TV solutions that extend the PC to the TV.

Active TV solutions allow consumers to stream broadcast and broadband entertainment content from the PC to the TV, offering an immersive living room viewing experience with the ease of a remote control. Toward making this capability available, AMD has established partnerships in an open ecosystem of set-top box and game console manufacturers, middleware providers and content aggregators to deliver Active TV-enabled hardware and software solutions as part of the AMD LIVE! Ready program.

Technology leaders across the board are strengthening the foundation of the digital home. By creating an open ecosystem of state-of-the-art solutions that help enable the true Digital Life, their customers can benefit from an entire industry's cumulative efforts in developing products that respond to escalating technology requirements. As a result, customers are rewarded with the peace of mind that they have the best digital products for today's needs and are prepared for the entertainment innovations of the future.

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