

# EXECUTIVE SUMMARY

## General Overview

- CONSIDERING THE CURRENT ECONOMIC SLOWDOWN and declining consumer confidence, companies continue to keep an eye on opportunities in streaming to emerging devices, but have been very hesitant to spend any significant amount of money or effort to build or support the required infrastructure. Until a proven business model can be created, along with the appropriate kinds of content, companies will focus more on building their existing core services, rather than taking a leap of faith to support this emerging technology with new devices.
- While the consumer subscription market for streaming is at least four years away from reaching significant numbers, streaming media is thriving in the enterprise market. Many companies, large and small, are making deals today in preparation for what is likely to be a booming industry.
- For the streaming market to accelerate, at least four critical elements must be nurtured – content, networks, devices and consumers. A stumbling or failure in any one of the four elements will likely cripple streaming.
- Streaming to non-PC devices will be a novelty service for the next 24 to 36 months, not reaching a sizable consumer market until the 2005 time frame.
- Adult entertainment and sports content will be the two most significant drivers to non-PC streaming devices in the first three years. Financial news, music, weather information, gambling and live events will play a greater role in the long term.
- Consumers will mostly be attracted to streaming providers that can personalize and localize content fitted to their interests and needs, at a rate no greater than \$5 per month.
- Each codec (e.g., Windows Media Player, RealPlayer, Sorenson, MPEG-4) will have its own success in different markets, on different platforms, and with different business models. Microsoft will have its own advantages, as will Real, Apple and MPEG-4. The competitive transitional phase over the next 10 years may pressure companies in certain industries, like the set-top box field, to embrace and support multiple codecs at once, if not all of them on one system.

## Survey

- As part of our research, we sent out surveys with 15 questions to more than 3,000 companies that are focusing on the streaming media market. We received nearly 500 responses from global managers, directors and executives in four different industries: 1) content, 2) hardware, 3) wireless and 4) software. The results were tallied, calculated and aggregated. The following is a summary of some of the resulting key points.

- Set-top boxes are considered the non-PC streaming device with the greatest potential, followed by cellular phones, Internet Appliances and handheld PCs.
- Consumers will pay an average of \$8 per month on a subscription basis for streaming media.
- Consumers will pay for personalization, localization and niche content.

## Projections

The following set of numbers shows our projections for shipments of streaming-capable hardware, and the amount of streaming users expected in 2007:

- In 2007, total non-PC streaming *shipments* will reach an estimated 48.7 million units (see chart, below).
  - Cellular devices will account for 17 percent
  - Set-tops will account for 18 percent
  - Videogames will account for 45 percent
  - Handheld PCs will account for 16 percent
  - Internet Appliances will account for 4 percent

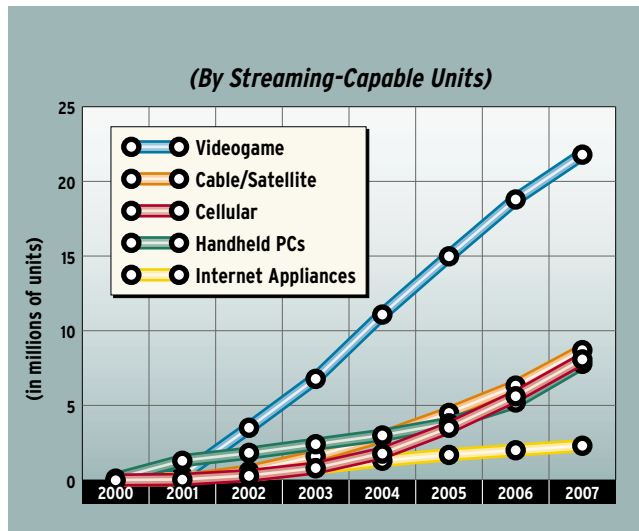


Figure 1. Worldwide Streaming Market Forecast

- In 2007, the number of total non-PC streaming *users* will reach an estimated 7 million (see chart, following page).
  - Cellular will account for 26 percent
  - Set-tops will account for 21 percent
  - Videogames will account for 14 percent
  - Handheld PCs will account for 28 percent
  - Internet Appliances will account for 11 percent

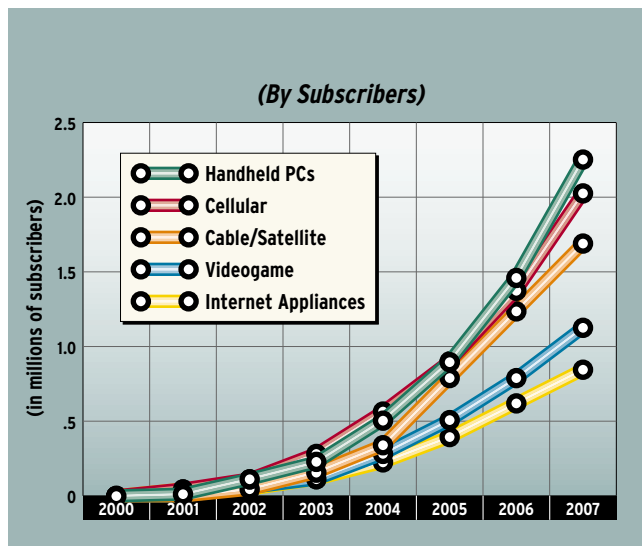


Figure 2. Worldwide Streaming Market Forecast

- Biggest challenges to streaming to non-PC devices:
  - Cost
  - Standards
  - Appropriate content for appropriate devices

### Set-Top Box Overview

- The capability to stream over a cable or satellite network exists today but, as is the case with other unproven technologies, it will take time and patience before streaming to set-top boxes reaches the masses.
- Streaming-capable set-top boxes for cable and satellite are not in the marketplace today, and will not likely be until sometime in 2002.
- With the economic slowdown and declining consumer confidence, set-top box makers seem to be in a holding pattern, waiting for more optimistic news from cable and satellite operators.

### Wireless Overview

- Wireless carriers, mostly in Asia, are already testing and rolling out some form of video over cell phones, but the market is far from “off the ground.” In Asia, streaming video is available today on 3G phones, and will be followed 12 months later by Europe, and 18 to 24 months later by the United States. As for consumer demand, starting with Asia, it will be another two years before we see any major traction from users.
- Gaming, shopping and entertainment applications will be the important drivers for wireless streaming during the first four years of availability (i.e., 2002 to 2005), similar to the growth trends seen today with Japan’s DoCoMo. As a second priority, security and surveillance cameras will be additional drivers for the market.

- Downloading, rather than streaming, is the first form of data transmission we expect to see in the wireless arena.
- It will be critically important to have a standard-compliant solution for streaming to cell phones, due to limited memory and central processing unit (CPU) resources in those devices.

### **Videogame Overview**

- By year-end 2007, we estimate 1 million users will be streaming to videogame devices, paying a nominal monthly service fee to access the latest news, games and new movie clips, to name a few.
- Both technologically and economically, streaming over videogame consoles makes a lot of sense. Similar to how DVD has standardized today around MPEG-2 technology, we'll likely see interactive and game-based DVD and CD-ROMs adopt and embrace MPEG-4 and other technologies.
- Downloads will push the online videogame business during the next four years, and streaming will slowly enter the fray a few years later (e.g., in 2005), before attracting a sizable audience.

### **Internet Appliance Overview**

- Internet Appliances face an uncertain future, due to costs similar to low-end PCs and because they have yet to show any market traction whatsoever.

### **Network Operator Overview**

- Network operators remain in an unstable position.
  - Telcos are in the best cash position, and continue to remain aggressive even with the temporary broadband slowdown and spending cutbacks. Telcos have slightly decreased their capital expenditure for the build-out of broadband by approximately 10 percent.
  - Satellite operators understand new technology. Satellite companies are more concerned today with two-way and interactive TV, but are very open to streaming's potential. The satellite market is at least six to 12 months away from any serious consideration, however.
  - Cable is looking to capitalize on new digital infrastructure with VOD, iTV, broadband and possibly streaming. Streaming is a long-term option.
  - Wireless providers are going through some growing pains. They are building expensive digital services, while trying to build up subscriber base.

## Handheld PC Overview

- In terms of unit shipments, handheld PCs will have the second largest majority share for non-PC devices in 2002 – second only to videogames.
- With thousands of application developers around the world, both the Palm OS and the Pocket PC devices seem well-positioned to deliver numerous flavors of streaming media. Perhaps most important to these devices is a wireless standard that enables, at the very least, nationwide compatibility, and even better, worldwide compatibility.
- In the streaming market, the Pocket PC currently is the only real handheld PC choice for consumers and corporate users. With faster processors, more memory and a Windows-based operating system (OS), these devices are streaming-ready today.
- The advantages of handheld PCs for streaming include:
  - High penetration rates
  - All companies involved in the handheld PC market see the value of a wireless connection.
  - Great for audio today
  - Video capabilities improving quickly
  - Technically, handheld PCs are capable of streaming.
  - Consumers who own handheld PCs are very tech savvy; the streaming learning curve is low.