Convergent Technology, It's Real, It Works, Now Show Me the Money!

Kevin C. Hanson
Friday, October 18th, 2002
Carlson School Of Management
3M Auditorium
What is convergence

- **Technology Definition**
  - Two or more technology merged together to create complementary singular technology platform.

- **Consumer Definition**
  - Using different electronic devices to access desired service, products and entertainment.

- **Business Definition**
  - Usage of one or more technologies to facilitate communication to businesses and consumers in the most cost effective manner.
Technology Mainstream

- Industry Standards i.e. DVD
- Consumer adaptation
  - Internet – Streaming Media
  - ITV/PVR
  - Mobile, PDA, Cell Phone, Wireless
Industry overview by the numbers

Convergent Technology, It's Real, It Works, Now Show Me the Money!
### Global Online Populations

**Worldwide Internet Population:**
- 445.9 million (eMarketer)
- 533 million (Computer Industry Almanac)

**Projection for 2004:**
- 709.1 million (eMarketer)
- 945 million (Computer Industry Almanac)

<table>
<thead>
<tr>
<th>Nation</th>
<th>Population</th>
<th>Internet Users</th>
<th>Active Users</th>
<th>ISPs</th>
<th>More Info.</th>
<th>World Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>278.0 million</td>
<td>149 million (Computer Industry Almanac)</td>
<td>102.0 million</td>
<td>7800</td>
<td>Read more</td>
<td>1</td>
</tr>
<tr>
<td>China</td>
<td>1.3 billion</td>
<td>33.7 million (CNNIC)</td>
<td>NA</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>59.6 million</td>
<td>33.0 million (Jupiter MMXI)</td>
<td>13.0 million</td>
<td>245</td>
<td>Read more</td>
<td>3</td>
</tr>
<tr>
<td>Germany</td>
<td>83 million</td>
<td>26 million (Forsa)</td>
<td>15.1 million</td>
<td>123</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Japan</td>
<td>126.8 million</td>
<td>22 million (eMarketer)</td>
<td>20 million</td>
<td>73</td>
<td>Read more</td>
<td>5</td>
</tr>
<tr>
<td>Canada</td>
<td>31.6 million</td>
<td>14.2 million (Media Metrix Canada)</td>
<td>8.8 million</td>
<td>760</td>
<td>Read more</td>
<td>6</td>
</tr>
<tr>
<td>South Korea</td>
<td>47.9 million</td>
<td>16.7 million (Gartner Dataquest)</td>
<td>13.1 million</td>
<td>11</td>
<td>Read more</td>
<td>7</td>
</tr>
<tr>
<td>France</td>
<td>60 million</td>
<td>11 million (Nielsen/NetRatings)</td>
<td>5.5 million</td>
<td>62</td>
<td>Read more</td>
<td>8</td>
</tr>
<tr>
<td>Italy</td>
<td>57.7 million</td>
<td>11.0 million (Nielsen/NetRatings)</td>
<td>8.3 million</td>
<td>93</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Spain</td>
<td>40.0 million</td>
<td>7 million (Telefonica)</td>
<td>4 million</td>
<td>56</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
Streaming on the net by Sector

## Consumer Use of ITV

<table>
<thead>
<tr>
<th>Year</th>
<th>US iTV Households (in millions)</th>
<th>% of total households</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3.2</td>
<td>3.0%</td>
</tr>
<tr>
<td>2001</td>
<td>12.7</td>
<td>11.8%</td>
</tr>
<tr>
<td>2002</td>
<td>22.1</td>
<td>20.3%</td>
</tr>
<tr>
<td>2003</td>
<td>33.4</td>
<td>30.4%</td>
</tr>
<tr>
<td>2004</td>
<td>45.7</td>
<td>41.1%</td>
</tr>
<tr>
<td>2005</td>
<td>58.2</td>
<td>51.9%</td>
</tr>
</tbody>
</table>

Source: eMarketer, 2002

036903 ©2002 eMarketer, Inc.
## Consumer Use of PVR

### Comparative Estimates: US Personal Video Recorder (PVR) Subscribers, by Type of Delivery Platform, 2000-2005 (in millions)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PVRs deployed by cable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adams Media Research, June 2001</td>
<td>0.0</td>
<td>0.4</td>
<td>1.2</td>
<td>2.9</td>
<td>4.4</td>
<td>7.1</td>
</tr>
<tr>
<td>Forrester Research, 2001</td>
<td>0.0</td>
<td>0.1</td>
<td>0.9</td>
<td>2.7</td>
<td>7.0</td>
<td>13.7</td>
</tr>
<tr>
<td><strong>PVRs deployed by satellite</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adams Media Research, June 2001</td>
<td>0.2</td>
<td>0.6</td>
<td>1.6</td>
<td>3.1</td>
<td>4.7</td>
<td>6.6</td>
</tr>
<tr>
<td>Forrester Research, 2001</td>
<td>0.1</td>
<td>0.3</td>
<td>0.8</td>
<td>2.1</td>
<td>5.3</td>
<td>7.7</td>
</tr>
<tr>
<td><strong>Stand-alone PVRs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adams Media Research, June 2001</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Forrester Research, 2001</td>
<td>0.1</td>
<td>0.5</td>
<td>1.8</td>
<td>4.2</td>
<td>7.1</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>All types of PVRs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adams Media Research, June 2001</td>
<td>0.3</td>
<td>1.1</td>
<td>2.9</td>
<td>6.3</td>
<td>9.4</td>
<td>14.0</td>
</tr>
<tr>
<td>Forrester Research, 2001</td>
<td>0.3</td>
<td>0.8</td>
<td>3.5</td>
<td>9.0</td>
<td>19.4</td>
<td>30.7</td>
</tr>
<tr>
<td>Yankee Group, 2001</td>
<td>–</td>
<td>0.9</td>
<td>2.4</td>
<td>5.6</td>
<td>11.5</td>
<td>–</td>
</tr>
</tbody>
</table>

*Source: eMarketer, 2002; various, as noted, 2001*
PDA Marketplace

Top Market Leaders - U.S.

- Palm - 47.5%
- Handspring - 14.6%
- Sony - 10.8%
- Compaq - 8.6%
- RIM - 5.0%
- Other - 13.5%

Source: IDC, April 2002
## SMS Usage

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated SMS Volume per Month</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>December 2001</td>
<td>December 2002</td>
<td></td>
</tr>
<tr>
<td>European Union</td>
<td>20,000,000,000</td>
<td>27,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>4,000,000,000</td>
<td>7,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Other Europe</td>
<td>1,500,000,000</td>
<td>2,000,000,000</td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>3,500,000,000</td>
<td>7,000,000,000</td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>4,000,000,000</td>
<td>7,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Middle East &amp; India</td>
<td>1,000,000,000</td>
<td>2,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Asia</td>
<td>5,650,000,000</td>
<td>10,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>350,000,000</td>
<td>450,000,000</td>
<td></td>
</tr>
<tr>
<td><strong>Global</strong></td>
<td><strong>40.00 billion</strong></td>
<td><strong>62.45 billion</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: GSM Association
It’s Real – Live Demo’s

Convergent Technology, It's Real, It Works, Now Show Me the Money!
Internet Streaming Demos

- Market Leaders
  - QVC Live from QVC
  - MSNBC Live from MSNBC
  - Feedroom Live from NBC
  - Major League Baseball MLB on the NET
  - Windows Media Windows Media Portal
  - Movies Online Short Film
Mobile - PDA Interactive
PDA Interactive

Kinko's

To locate a Kinko's, please select your travel destination below.

Minneapolis, MN
Seattle, WA

Below are the four closest Kinko's locations based on your current itinerary.

1. Kinko's - Tukwila WA
112 Andover Park East Ste 6
Tukwila, WA 98188-2901
Phone: (206) 244-3884
Fax: (206) 244-2233
Email: uzr@173@kinkos.com
Distance 6.7 miles Directions

2. Kinko's - Seattle WA 3rd

Kinko's

Directions to Kinko's (Tukwila, WA).
1: Start out going North on 32nd Ave S towards S 176th St by turning right. 0.01 miles
2: Turn LEFT onto S 175th St. 0.21 miles
3: Turn RIGHT onto INTERNATIONAL

iDine

To locate an iDine restaurant partner, please select your travel destination below.

Minneapolis, MN
Seattle, WA

Select iDine restaurants in your area:

1. Ristorante Italiano
15901 W Valley Hwy.
Seattle, WA 98188
(D) 226-1812
Dining Rewards: 20% Savings
Mediterranean Directions

2. Khan's Mongolian Grill
15858 1st Avenue S.
Burien, WA 98148

iDine

Thank you for selecting Ristorante Italiano.

Directions:
1: Start out going North on 32nd Ave S towards S 176th St by turning right. 0.01 miles
2: Turn LEFT onto S 176th St. 0.21 miles
3: Turn RIGHT onto INTERNATIONAL BLVD/IA-99. 0.36 miles
4: Turn LEFT onto S 170th St. 0.16 miles
T-Commerce: ShopNBC

- Launched June 22nd
- Airs 24/7, 365 days a year
- Synchronized with on-air broadcast
- Content features:
  - On-Air Items
  - Sneak Peek
  - Shopping Cart
  - Customer Service
T-Commerce: ShopNBC ATVEF

- Will be integrated into AOLTV and Microsoft Ultimate TV, with other platforms expected in the near future.

- Directly integrates with ShopNBC’s existing Website back-end infrastructure.

- Designed to be cross-platform, fully automated, modular and easily extendible.
Entertainment

The Tonight Show
Broadcast 5 nights a week on NBC
T-commerce offer: Musical guests’ CD

Saturday Night Live
Broadcast weekly on NBC
T-Commerce Offer: Musical Guests’ CD
Sports

PGA, LPGA, and USGA Golf
Broadcasts on NBC, March - December

Updated leader board and player bios
36 Broadcasts – 117 hours

The French Open
Broadcast on NBC June 2, 3, 8, 9, 10
Sports

Adelphia’s Buffalo Sabres ITV on Wink

“Empire Enhanced” Hockey

- First NHL ITV application
- Live Team and Player stats
- Shopping section and cart
- First Wink application to use 3 data pipes

Notre Dame
Broadcast on NBC Sept. 22 – Nov. 17
Live Statistics from the game

T-commerce with ShopNBC branding
CNBC
Broadcast 24/7, 365 days

Data: News, Markets, NYSE, NASDAQ, INT’L. Updated within 20 seconds.

T-commerce: Electronics and Computers

Advertising enabled
Special Programming

NBC 75th Anniversary Special

• Live broadcast synchronous content for each time zone

• Presenter biographies

• Trivia for each decade

• Milestones for each decade

• Shopping section and cart

• Full sponsorship by American Express
Virtual Channel

**NBC Virtual Channel**
Ch. 488 on DirecTV
Broadcast 24/7, 365 days

**MSNBC**: Top Stories, US News, Technology, Business, Health

**CNBC**: News, Markets, NYSE, NASDAQ, INT’L

Updates within 20 seconds

T-commerce: Electronics and Computers Advertising enabled
SMS Interactive

FoxSports.Net:
Should the Twins pull Joe Mays now?
How it work with out the mystery

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Interactive TV - Two way
With streaming media, or Webcasting, specially encoded digital content, usually audio or video, is delivered and played in real-time over the Web. A streamed file begins playback immediately as the file is downloaded—users do not have to completely download and save a file before playing it. The streamed file is discarded after playback, eliminating the need for users to store big video or audio files on their hard disks.
Wireless Diagram

Wireless PDA/Smart Phone

Radio Network

Internet

Content Providers

AT&T PocketNet
Sprint
Palm.net
AvantGo
Microsoft
WeSync
Iceberg

Corporate Network Services:
Outlook, Lotus Notes, Groupwise

Personal Contact and Calendar Information (Palm Desktop)
The Market leaders

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Market Leaders – Streaming Media

- **Real Networks**
  - 30% of content accessed Real players
    - Nielsen/NetRatings June 2002

- **Microsoft**
  - 34% of content accessed with MS Windows Media Player player
    - emarketer Dec 2002

- **QuickTime**
  - 8% of content accessed QuickTime players
    - Nielsen/NetRatings June 2002
June 25, 2002 Internet.com
Liberty to Acquire Wink With a Smile
By Michael Singer
Liberty Media Corporation (NYSE:L) said Monday that it would acquire all of the outstanding stock of Wink Communications, Inc. (NASDAQ:WINK) in a deal estimated at $100 million.

Alameda, Calif.-based Wink is a mass-market interactive television (iTV) player offers viewers an interactive way to access program-related information (such as weather, sports updates, trivia and play-along games) request product samples, coupons and other free offers from advertisers by using a button on their remote control.

Liberty, has been on a buying spree as of late. In May, the company said it was acquiring control of OpenTV Corp. for $185 million in cash and stock and a deal to acquire interactive television company ACTV for $2 a share. Microsoft TV
Leaders SMS & Wireless Services

- US Wireless Messaging
  - Sprint
  - AT&T Wireless
  - T-Mobile (formerly VoiceStream)
  - Nextel
  - Verizon
  - Cingular
Convergence Technologies

- Television
  - Xbox, Playstation 2, Cube
  - HP Home entertainment System
  - Wink, OpenTV, Liberate, Microsoft TV
- Internet
  - Streaming Audio and Video
  - Email and instant messaging
- Mobil
  - Cell Phones
  - PDA
Why are PDA’s Successful

- Provide the users with rapid access to small amounts of very personal information.
  - Calendar - Primary application
  - Address Book – Secondary application

- Standards
  - OS – Palm and Microsoft
  - Application – Outlook – Palm for Calendar, Address book
    *85% of users do not go beyond the Calendar or Address Book applications.

*Source: Palm
Why is Streaming Successful

- Internet protocols as a standard of communication.
- Major Industry support
- By Joe Wilcox
  Staff Writer, CNET News.com
  August 6, 2002, 3:15 PM PT

The Windows Media Player 9, which goes into public beta, or test, on Sept. 4, adds a new "Services" tab that initially allows consumers to sign up for a trial subscription to Pressplay, an online music service backed by Sony and Vivendi Universal. The move is part of Microsoft's increased emphasis on Web services and also an attempt to compete against similar offerings from rivals AOL Time Warner and RealNetworks, which are partners in a competing music service known as MusicNet.
What's wrong with ITV

- No Standard communication protocols for consumer usage
- Lack of industry support from Advertiser, Media Content Companies, and Media Broadcast Companies.
- Adding layers to a business process, instead of reducing creating cost efficient’s.
- Possible killer Apps for ITV, IM, Video on Demand, and Commerce.
What's wrong with SMS and Wireless

- Europe has one standard, SMS is widely accepted.
- USA has no standard, AT&T can not message Sprint, etc.
- Confusion between Internet IM on phones and SMS for the average user.
Show me the MONEY!

Convergent Technology, It's Real, It Works, Now Show Me the Money!
Streaming Media - Ad-supported and Subscription-based

- Streaming sites, destinations and aggregators continue to support monetization strategies that contain streaming advertising over subscription by a 60% to 13% margin, based on an analysis of 38 selected and diverse content providers tracked in AccuStream iMedia Research’s Monetization Trac database (see summary table below).
- Subscription services in the group of selected sites include AOL+, which does host banner ads surrounding the media player box, but it is primarily subscription based (users have to either subscribe to AOL, or pay AOL a content fee of $14.95/month for access to programming).
- Real Networks’ content is both ad-supported and subscription-based, and not included in the summary analysis.
- The predominate form of in-stream advertising on sites and networks with significant streaming activity is the pre-roll ad unit, which also includes gateway ads that are not necessarily inside the stream, but run prior to the requested content stream.

<table>
<thead>
<tr>
<th>Monetization Strategy Summary Table</th>
<th>Totals</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total selected sites, networks and aggregators</td>
<td>38</td>
<td>n/a</td>
</tr>
<tr>
<td>Subscription-based services</td>
<td>5</td>
<td>13.20%</td>
</tr>
<tr>
<td>Advertising-based services*</td>
<td>25</td>
<td>65.80%</td>
</tr>
<tr>
<td>None (or banner-only advertising)</td>
<td>8</td>
<td>21.10%</td>
</tr>
<tr>
<td>In-stream advertising**</td>
<td>23</td>
<td>60.50%</td>
</tr>
<tr>
<td>Flash Animation</td>
<td>6</td>
<td>15.80%</td>
</tr>
</tbody>
</table>

Source: AccuStream iMedia Research
TV and Internet

- The HP Media Center is a $1,400 computer built around a new digital entertainment-focused version of Microsoft Corp.'s Windows XP operating system called Windows XP Media Center.

- HP executives have said they are considering giving their two consumer PC brands different images, gearing the HP brand toward entertainment and making home office computing the strong point of the Compaq brand, which it inherited in its $18.7 billion acquisition of Compaq Computer Corp.

- Japan's Sony Corp. has seen some success with its multimedia VAIO PCs in Japan and other makers are expected to support Microsoft's new operating system, although the prospects are still uncertain since a number of companies have tried to marry the PC and the television in the past without producing a runaway hit.
Interactive TV - Advertising

Media buyers are increasingly gravitating toward models other than CPM. Cost-per-click, cost-per-action and other hybrid models have become more common as buyers and their clients seek advertising types that are less expensive and oriented toward greater ROI. However, this growing trend is becoming a sore spot in the relationship between buyers and sellers, as most sellers view CPM alternatives as money-losing strategies.
Interactive, Web-enabled TV could mean big opportunities for e-tailers over the next several years. In fact, interactive TV-based shopping will represent 44 percent of total US TV-based shopping by 2005. During that time, US$5.5 billion (3.8 billion from QVC alone) in revenues from shopping channels and infomercials will shift from the phone-based ordering to interactive TV. The transition for advertising, however, will be much slower, making up only 7 percent of total television advertising for that year.

These statistics come from a new digital television report from Jupiter Media Metrix. According to analysts, annual revenues from interactive TV shopping will reach US$4.3 billion by 2005. For the most part, this buying will occur on shopping programs that let viewers use a remote control instead of a phone to buy items. Other forms of shopping will include interactive TV malls, where viewers can purchase from Web-like catalogs or stores provided by carriers and their merchant partners, and integrated shopping, by which viewers can respond to offers embedded in programs or commercials.

However, Jupiter senior analyst David Card says that before anyone can take advantage of these opportunities, programmers, advertisers, carriers, and merchants will have to develop models that justify interactive TV deployment. In addition, this method of shopping will face the same barriers Internet shopping is facing -- e.g., the inability to see and touch a product firsthand, lack of instant gratification, and additional shipping costs.
The future .....2010

- Home Entertainment System
  - Multi – Users System
  - Media Player - DVD – VOD
  - Wireless PC Tablet – PDA\Cell Phone
  - Home Computer Center
  - Game Center – Stand alone and online