The Trend Of Digital TV

SY Chen
VP, Technical Marketing

ADB
Advanced Digital Broadcast
DTV Era Is Coming

- Government’s influences: regulation, subsidy, ..., etc
  - USA: to switch off analog by 2007
  - Taiwan: to switch off analog by 2006
  - Berlin: analog switch off during last IFA show (August 2003)
  - Italy: e-Government program, subsidizes EURO$150M for DVB-T/MHP boxes

- High Definition TV creates different viewing experience from Analog TV
  - American HDTV, Japan BS satellite, Europe is starting, ...

- Open Middleware Standards for IDTV – creating economical scale for development of interactive digital contents
  - MHP, OCAP, MHEG5
    - Korea: MHP for Sat.,
    - USA: Korea:OCAP for Cable
    - Finland, Italy, Spain, German: MHP
    - UK: MHEG5

- Big Screen TV demands high video quality:
  - PDP, LCDTV and LCOS – DTV (SD and HD)

- Evolving over Broadband Technology and Advanced Video Compressing
  - Telcos get into video services

- Convergence of STB, consumer electronics (PVR, .., etc) and PC
  - Home Gateway, Media Center
MHP adoption

ITV Standards Adoption with TV Operators

MHP
Likely to adopt MHP
MHP & ISDB BN
MHP & ATSC DASEN
Unrolled

Advanced Digital Broadcast Engineering Digital TV
Global LCD TV Market Growth

WW CAGR: 74.1%

2001 2002 2003 2004 2005 2006

Thousands

2002-2005

800 1,700 3,500 7,600 12,600 20,100
Global PDP Market Growth

2002-2005

WW CAGR: 70.2%
US Annual PDP Market Growth

2002-2005

WW CAGR: 101%

% Growth
125.0% 106.0% 98.0% 124.0% 93.0% 81.0%

TFCinfo - Worldwide Leader in Display Market Research
• **50% of TV’s 36” and larger** must include tuners by July 1, 2004, and 100% of them by July 1, 2005.

• **50% of TV’s 25” to 35”** must have tuners by July 1, 2005, 100% of them by July 1, 2006.

• **100% of TV’s 13” – 24”** must include tuners by July 1, 2007.

• **100% of TV interface devices** such as VCR’s and DVD players / recorders must include DTV tuners by July 1, 2007.
<table>
<thead>
<tr>
<th>Thousands STBs</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite</td>
<td>12,236</td>
<td>14,187</td>
<td>16,201</td>
<td>18,235</td>
<td>21,232</td>
<td>23,268</td>
<td>27,289</td>
</tr>
<tr>
<td>Cable + MMDS</td>
<td>6,196</td>
<td>9,575</td>
<td>13,246</td>
<td>15,331</td>
<td>20,030</td>
<td>22,339</td>
<td>28,657</td>
</tr>
<tr>
<td>Terrestrial</td>
<td>593</td>
<td>931</td>
<td>1,099</td>
<td>4,174</td>
<td>8,276</td>
<td>11,163</td>
<td>19,454</td>
</tr>
<tr>
<td>Total</td>
<td>19,025</td>
<td>24,692</td>
<td>30,946</td>
<td>37,740</td>
<td>49,539</td>
<td>56,771</td>
<td>75,400</td>
</tr>
</tbody>
</table>
Media Center Usage Model

Media Center 2002
Integrated Digital Entertainment

Media Center 2005
Networked Home Entertainment and Services
Market Segmentation I

• Low end STB
  – Video and basic interactive
  – Massive volume and low price, but technology capability is still required
  – Ratio of IP cost keeps increasing – MPEG-LA, CA, Middleware, MV,…,etc.

• High end STB
  – Market and technology driven
  – Convergence of STB, Consumer Electronics and PC
  – Multimedia processor (STB) vs. PC???
  – Keys: Technologies and time to market
• B2B (Operator) vs. Retail
• Customization vs. Standardization
• No Win-Intel standard
• Partnership with key players: chipset, CA, middleware…
• Retail market is coming but still small percentage of the whole market.
• PC vs. Home appliance
  – Retail is a domain which may be very different from PC.
Conclusions

- Market is growing and becomes massive because of open standards, government’s influences, new viewing & service experience, However, not yet mature
So...

- STB is Software Business
- Loyalties: MPEG, CA, Middleware
- New media:
  - Operators are facing uncertain environment
  - Operators are seeking for partners.
  - Software is the key to fast response to their changing requirements.
  - Not only STB but also applications, system know-how and integrations.
- Software is the key for Differentiation
Thank You!