SV 2010, CES, Showstoppers and ICCE Storage Recap

Thomas Coughlin
Coughlin Associates
www.tomcoughlin.com
Storage Highlights

• Life-logs, e-Diaries
• Long term storage preservation
• Consumer metadata
• Network storage and plug computing
• New high speed/capacity SD card formats
• USB products and USB 3.0 first products
• SSDs and external SSDs
• 3D on Blu-ray
• Professional video products
Total Recall!

VIEVU PVR-PRO 2
- Enhanced low light
- Improved resolution
- 4 hours of recording
- 4 GB memory
- Waterproof
- $399.95

PEN VIDEO CAMERA FOR FUN, TO SPY, TO WRITE!
A pen with all the works. Why stop at writing, when you can record, replay and reuse? Leave the load at home. The MPS is the latest in pen camera technology that offers all the benefits of a pen without carrying a camcorder around. Fully functional, portable, and well priced, the pen camera does not weigh down your pocket or your wallet.

1GB $24.99
2GB $29.99
4GB $34.99
8GB $39.99
Add to cart

Commercial Content Capacity
Personal Content Capacity

Publish Date
September 2009

How the E-Memory Revolution Will Change Everything
Gordon Bell and Jim Gemmell
Foreword by Bill Gates

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Gbell MyLifeBits January 2008
219 Gbytes (460,000 items)
Everything a Recording Device

Portable Internet Broadcasting
Threats to long-term assets

- Large-scale disaster
- Human error
- Media faults

- Component faults
- Economic faults
- Attack
- Organizational faults

Long-term content suffers from more threats than short-term content

- Media/hardware obsolescence
- Software/format obsolescence
- Lost context/metadata

Sam Fineberg, HP, Digital Forgetfulness, SV 2010
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SIRF: logical container format

• Being developed by SNIA
  – For long-term storage of digital information

• Logical data format of a mountable unit

• Facilitate transparent logical/physical migration for long-term preservation

• Several implementations envisioned
  – Preservation models, storage interfaces, storage devices, etc.
Metadata Layer Model

<table>
<thead>
<tr>
<th>Meaning Levels</th>
<th>Contextual Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semantic Layer</td>
</tr>
<tr>
<td></td>
<td>Textural Layer</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Basic Data Levels</th>
<th>Operational Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dimensional Extent</td>
</tr>
<tr>
<td></td>
<td>Physiological Filter</td>
</tr>
<tr>
<td></td>
<td>Physical Layer</td>
</tr>
</tbody>
</table>

- We need a consumer metadata standard that obeys 4 criteria:
  - Flexible
  - Scalable
  - Upgradable
  - Simple

- Plus something that can also integrate the professional standards
Network Storage
Plug Computers

• Build networked computers into everything...
Higher Capacity, Higher Speed SD Cards

- Last year the SD card association announced the SDHC format
- This year Toshiba was showing product
- CE Devices using this available by 2011
USB Storage Devices
USB 3.0

Typical File Size

<table>
<thead>
<tr>
<th>Size</th>
<th>1 GB</th>
<th>6 GB</th>
<th>16 GB</th>
<th>27 GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB Full-speed</td>
<td>22 min</td>
<td>2.2 hr</td>
<td>5.9 hr</td>
<td>9.3 hr</td>
</tr>
<tr>
<td>USB High-speed</td>
<td>33 sec</td>
<td>3.3 min</td>
<td>8.9 min</td>
<td>13.9 min</td>
</tr>
<tr>
<td>SuperSpeed USB</td>
<td>3 sec</td>
<td>20 sec</td>
<td>53 sec</td>
<td>70 sec</td>
</tr>
</tbody>
</table>

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Symbiotic Relationship Flash and HDDS

- Almost all consumer flash applications require HDDs
  - Music and video players
  - Cameras
- Consumer flash applications have created greater demand for HDDs
  - Downloads
  - Uploading photos and videos
  - Backup of Consumer Content

White Paper: Flash and HDD: Symbiosis or Survival of the Fittest? (Coughlin Associates & Objective Analysis)
External SSD Torture Test

IoSafe Demo-Lition
January 8, 2010

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Optical Disc Technology

Sony brings 3D home in 2010

with 3D capability
In the next decade

- A terabyte in your pocket
- A petabyte in your home
- Exabytes in datacenters
- Zetabytes in the world
Thanks
MyLifeBits Software Suite
Preservation storage formats

• We can’t predict the future
  – Systems will change, formats will change, systems will fail

• Preservation objects need to be
  – **Self contained** – to ensure objects are complete
  – **Self describing** – so software can interpret it
  – **Extensible** – so it can meet future needs

• A preservation storage format must
  – Facilitate storage of preservation objects
  – Map to a wide variety of storage devices and technologies
  – Be resilient to failures and change
Professional Video

Sony Stereoscopic Projector (what every home needs!)

iVDR for Content Capture and Editing
Odds and Ends