Personal TV-Anytime

Personal Digital Recorders

The Benefits For Users And Content Providers

Gary Hayes
Senior Producer, BBC Interactive Television
Chair of TV-Anytime Business Models
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What’s he gonna talk about?

• Statistics for thought
• The BBC. Opportunities
• Business Models Working Group - who we are
• TVA environment - “local storage to home server”
• Opportunities for all stakeholders & user scenarios
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Some PDR stats

- 95% of content in US will be viewed from off-line devices by 2005.
- More than 57% of UK population prefer pay per use (choice) rather than subscription model.
- By end 2001, 900,000 people will be using PDR's.
- By 2004 there will be 4 million.
- By 2009 80% of the world's media consuming population will be using Personal Storage systems - whether PC or set top based.

Price Waterhouse & Forester

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What kinds of services could the BBC offer via PDRs?

- News bulletins - personalised ‘regionalised’ capture
- **Personalised** capture from magazine programmes
- Packages of **theme’d** or popular programming eg: comedy
- **Highlight** ‘capture’ of key sports or live event programmes
- Educational packages with **targeted** levels of learning
- Packages of **interactive** TV or web linked enhancements
- **Niche** content trickled in off peak to specialised audiences
- Targeted **promotion** ‘off the PDR’ to individuals

*Concept link*
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The UK platform diversity ‘headache’ for providers

- Internet
- Broadband Net & TV
- ISDN
- Digital Terrestrial TV
- ADSL
- Digital Satellite
- Digital Radio
- DTT portals
- VDSL
- FTA portals
- ADSL TV
- Dsat portals
- Integrated TV/web
- FTA MDTV DTT
- Digital Cable
- Satellite
- Digital TV/web portals
- TV Internet
- Stream a/v
- DTT
- TV
- VHS
- Stream a/v
- VCRs
- Digital
- DVD
- Plug Ins
- DVRs
- Internet
- PDAs
- Digital Radio
- Games Console
- CD ROM
- Dreamcast
- Mobiles
- Beamer
- Communicators
- GPRS
- 3G
- WAP
- Console
- Sony PlayStation 2
- DVD
- Net Top Boxes
- IP to STB
- DVD
- Internet
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The UK screen ‘headache’ for providers

Internet
ISDN
Stream a/a
Plug ins
Integrated TV/web boxes
PCs
VCRs

MOBILES

PC

TV

Digital Cable
Dcable portals

Digital Satellite
Satellite TV
Integrated TV/web

FTA
IDTV

DTT

Integrated TV/web portals

TV/Internet

GPRS
3G
PC
TV
MOBILES

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### UK Digital ‘Interactive’ - diverse environment

<table>
<thead>
<tr>
<th>Platform</th>
<th>Audience ‘99</th>
<th>Audience Q1 ‘01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet on PC</td>
<td>2.5 mill</td>
<td>3.8 mill</td>
</tr>
<tr>
<td>Digital Terrestrial TV 550 000</td>
<td>1.2 mill</td>
<td></td>
</tr>
<tr>
<td>Digital Satellite TV</td>
<td>3.2 mill</td>
<td>4.8 mill</td>
</tr>
<tr>
<td>Digital Cable</td>
<td>100 000</td>
<td>2.1 mill</td>
</tr>
<tr>
<td>DSL services (e.g.:ADSL)</td>
<td>100 000</td>
<td>0.6 mill</td>
</tr>
<tr>
<td>Games Consoles</td>
<td>(6 mill)</td>
<td>4 mill (net access)</td>
</tr>
<tr>
<td>Mobile ‘Assistants’ wap etc</td>
<td>25 mill</td>
<td>10 mill (data access)</td>
</tr>
</tbody>
</table>

Estimates aggregated over several UK research companies
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At the end of the day...

- Internet
- ISDN
- ADSL
- Stream a/v
- Integrated TV/web
- Plug Ins
- Digital TV
- Digital Radio
- Digital Terrestrial TV
- Digital Satellite
- FTA DTT portals
- DSat portals
- IP to STB
- GPRS
- 3G
- WAP
- Mobiles
- Communicators
- DVD
- CD ROM
- Digital Cable
- TV Internet
- Dcable portals
- TV net & web
- Broadband
- ADSL web
- VDSL
- Net Top Boxes
- NetFtheFendFofFtheFday
- Digital Radio
- Games
- Console
- VCRs
- DVRs
- PlayStation 2
- Sony
- Personal TV
- Personal TV Snappy
- Senior Producer
- Interactive
- Entertainment
- CONTENT IS WHAT MATTERS
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Key benefits for content providers such as BBC

- The diversity of delivery begins to be \textit{equalised}.
- PDR’s automatically ‘fish’ for content in regular schedule - making diverse output appear personally \textit{relevant}.
- End of scheduled programming turned to advantage.
- Down-loading (Web, TV and eTV) in \textit{off-peak} hours.
  - BBC has 19 TV streams ‘mostly’ dormant 1-6 am (95 hrs!!)
- Cross promoting of other viewer relevant content.
- Managing rights by \textit{usage tracking}.
- Providing \textit{segmented}, more compact programming if the viewer requires.
Finally... TVAF - Business Models Group

Irvine (Sep 99) - Mission “That no system can be developed without first imagining & documenting every conceivable present and future way that it could be used”. Informative - to be used as reference by technical working groups.

- **Geneva (Nov 99)** - Devised benefits, simple system for CFC
- Business scenarios based on feature sets 1 and 2
- **Sunnyvale (Jan 00)** - User centric scenario classifications
- **Osaka (Mar 00)** - Converged above into TVAF ‘Environment’ document including functionality road map
- **New York (May 00)** - Created ‘value chain’ scenario additions
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TVA Environment Document (R1) - Key Sections

- Consumer privacy & provider rights
- **Brave New World. Overview and Mission**
- Persistent storage simple network
- The ‘Return Path’
- Functionality models & road map
- **User centric usage scenarios**
- Opportunities and benefits
- **Value Chain Scenarios**
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Value chain scenarios. Stakeholders

- 1 Content creators
- 2 Content owners
- 3 Content providers
- 4 Advertisers
- 5 Software developers
- 6 Service providers
- 7 Portal owners
- 8 Network operators
- 9 Equipment manufacturers
- 10 Retail
- 11 Consumers
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Persistent storage simple network

INTEGRATED TV OR COMPONENTS

Screen

PDR (Local storage device)

Portable playback/record device

Home 'Hub'

Headend (remote storage)

Online 'mobile' device

Multiple Networks 'push & pull' content

Removable media eg: DVDr

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The Environment “the three evolving models”

• Model 1a and 1b - Basic ‘push’ model. Free via Unidirectional “no return path”

• Model 2 – User Response model Free + PPC via Bi-directional “limited communications channel”

• Model 3 - Full interactive model Free + PPC via Bi-directional “integration between multiple content providers, services providers, resource locators and the Internet”
# Personal TV-Anytime

<table>
<thead>
<tr>
<th>Priority</th>
<th>PDR Functionality</th>
<th>Scenario</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Instant Record</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Record and playback an AV stream</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Simultaneous record and playback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Live pause</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Content Search and Access</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Playback of content in indexed/highlight mode</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Book marking (personalisation/agents)</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Portability of user profile (personalisation/agents)</td>
<td>IV</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Updating of content</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Storage management – basic &amp; advanced (e.g: quality)</td>
<td>I - III</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Profile management (personalisation/agents)</td>
<td>III</td>
<td></td>
</tr>
</tbody>
</table>
### Personal TV-Anytime

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<tr>
<th>Priority</th>
<th>PDR Functionality</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Multi-user profile support (personalisation/agents)</td>
<td>III</td>
</tr>
<tr>
<td>13</td>
<td>Multi-modal operation</td>
<td>IV</td>
</tr>
<tr>
<td>14</td>
<td>Targeted services using local profiles (personalisation/agents)</td>
<td>III</td>
</tr>
<tr>
<td>15</td>
<td>Compliance to all content delivery mechanisms</td>
<td>IV</td>
</tr>
<tr>
<td>16</td>
<td>Synchronisation of stored &amp; ‘live’ content</td>
<td>IV</td>
</tr>
<tr>
<td>17</td>
<td>Supports a variety of content types regardless of source, delivery channel or medium</td>
<td>IV</td>
</tr>
<tr>
<td>18</td>
<td>Transferring/archiving content to &amp; from other local devices</td>
<td>IV</td>
</tr>
<tr>
<td>19</td>
<td>Using other devices to control PDR remotely</td>
<td>IV</td>
</tr>
</tbody>
</table>

*Rights Management & Protection*

*Return Path*

---

**Models**

- 1a
- 1b
- 2
- 3
<table>
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<th>Priority</th>
<th>PDR Functionality</th>
<th>Scenario</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td><strong>Limited eCommerce</strong></td>
<td>VI</td>
<td>1a</td>
</tr>
<tr>
<td>21</td>
<td>Ability to pull content</td>
<td>II-IV</td>
<td>1b</td>
</tr>
<tr>
<td>22</td>
<td>Synchronisation of cross media with pull elements</td>
<td>IV</td>
<td>2</td>
</tr>
<tr>
<td>23</td>
<td>Usage data can be exploited (e.g: rights)</td>
<td>III+VI</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>Consumer profile data can exploited by all</td>
<td>III+VI</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>3rd party management of PDR</td>
<td>III+VI</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Updating of content with verification</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Content usage verification</td>
<td>III-VI</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Networking using the PDR (e.g: email, remote control by mobile, etc)</td>
<td>IV-V</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td><strong>Full Pay Per Choice eCommerce capable</strong></td>
<td>I-VI</td>
<td></td>
</tr>
</tbody>
</table>
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Towards a definitive set of scenarios (30 pages in R1)

• Basic PDR functionality – general DVR features
• Navigation & Selection – the capabilities of integrating ECG with sophisticated digital recorders
• Personalisation – ways that a viewer can manage the PDR system and make it more relevant to them
• PDR and TV enhancements – beyond audio and video - web, interactive TV applications & PDR advanced features
• Communication – two way interaction between viewers around their PDR ‘network’
• Transactional opportunities – eCommerce relationships between viewers and providers
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Basic PDR functionality

- Dynamic record
- Pause modes, time shift

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TV-Anytime
Combining the immediacy of television with the flexibility of the internet

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Navigation & Selection
- Selecting content
- Selection enhancements
- Segmentation, skipping, highlight viewing & track changing
- Non-ECG capture options
- Scheduled TV or online browsing

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Personalisation
- Multi user log in, PDR operation, PDR management
- Personalised filtering and search
- The intelligent agent
- Personalised capture modes & ‘targeting’
- Preferred providers
- Playback & updating preferences
- Preferred quality
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PDR and TV enhancements
- Non ECG or TV content capture
- TV to web/data services links
- URL & link collection, favourites
- Remote content selection & transfer
- Archiving
- Portability of personal profiles
- Personal content

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Communication
• Mail and the PDR
• Sending trails/ads & receiving trails or ads attaching metadata to allow easy capture
• Sending indexes of their own ‘highlight edit’
• Attaching low/high bandwidth content to mails
• Integration with existing mail devices, mobile, PC etc.
• Forward content to a friend, send as a gift
• Popular choice involvement

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**Targeted ads**

"Viewer receives targeted ads when viewing time shifted or live content"

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Key benefits in the value chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>Benefits from appropriate ads and/or prod placement.</td>
</tr>
<tr>
<td>1-3</td>
<td>Additional revenues - faster turn-around</td>
</tr>
<tr>
<td>1-4</td>
<td>Reach target audience – enhance loyalty</td>
</tr>
<tr>
<td>1-4</td>
<td>New market segments – shift e.g. – from printed to TV (banners)</td>
</tr>
<tr>
<td>5</td>
<td>Reducing waste. Advertisers pay for fewer viewers at a higher CPM</td>
</tr>
<tr>
<td>5</td>
<td>Right ads get to right consumers</td>
</tr>
<tr>
<td>5</td>
<td>Multiple replay of ads for one download</td>
</tr>
<tr>
<td>5</td>
<td>Identify demographics within individual households</td>
</tr>
<tr>
<td>5</td>
<td>Appropriate dynamic insertion</td>
</tr>
<tr>
<td>5</td>
<td>Localisation for national ads (connected to 3.)</td>
</tr>
<tr>
<td>5</td>
<td>Off-peak cheap delivery to PDR</td>
</tr>
<tr>
<td>5</td>
<td>Integration of different media types (TV, Web, links)</td>
</tr>
<tr>
<td>5</td>
<td>Offline categories of ads</td>
</tr>
<tr>
<td>5</td>
<td>Live ‘broadcast’ – capture the ad or links</td>
</tr>
<tr>
<td>5</td>
<td>Adjust optimal presentation intervals / number of impressions ('make good')</td>
</tr>
<tr>
<td>5</td>
<td>‘Prime time all the time’ –</td>
</tr>
<tr>
<td>5</td>
<td>Skipping – as long as it is measurable</td>
</tr>
<tr>
<td>5</td>
<td>Flexible pricing</td>
</tr>
<tr>
<td>5</td>
<td>Favourite ads capture ('bunches of ads')</td>
</tr>
<tr>
<td>5</td>
<td>creating new software- e.g.-data mining, filtering, measurement, matching, agents, navigation, ad authoring tools, micro-billing</td>
</tr>
<tr>
<td>6-7</td>
<td>market differentiation, tailored services, more revenues</td>
</tr>
<tr>
<td>8</td>
<td>Subsidised box via ad industry</td>
</tr>
<tr>
<td>11</td>
<td>Seeing relevant ads, saving time</td>
</tr>
</tbody>
</table>
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