IDTV Services

Pablo Cesar
Distributed Multimedia Languages & Infrastructures

CWI: Centrum voor Wiskunde en Informatica
Amsterdam, NL
Outline

- EPG
- Advanced Teletext
- Interactive Content
- Personalized Television
- T-Learning
- Future
EPG (Electronic Program Guide)

- Most important service for TV
- To help consumers choose a television program
- Information is gathered from the MPEG-2 transport stream
- Information can be included as metadata (TV-Anytime)
- Services:
  - Navigator: displays current program information
  - EPG: displays forthcoming information
  - Current program: banner with extra information
  - Recording facilities
- Currently, there are many layout patents
- Current research:
  - Recommendations
  - User interface evaluation
  - Content management (example of a paper; later)
**Law & Order**

"Kid Pro Quo"

Wed Apr 30, 10:00 pm - 11:00 pm

Several people are suspects when the head of admissions for a private school is killed.

**Not Recording**

<table>
<thead>
<tr>
<th>Wed</th>
<th>10:00 pm</th>
<th>10:30 pm</th>
<th>11:00 pm</th>
<th>11:30 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 FX</td>
<td>The World's Worst Driver...</td>
<td></td>
<td>The Practice (Crime)</td>
<td></td>
</tr>
<tr>
<td>73 TRAV</td>
<td>World Poker Tour (Travel)</td>
<td></td>
<td>Top Ten Predators Up Clo...</td>
<td></td>
</tr>
<tr>
<td>3 WKYC</td>
<td>Law &amp; Order (Crime)</td>
<td></td>
<td>Channel 3 Ne...</td>
<td>The T...</td>
</tr>
<tr>
<td>4 WUAB</td>
<td>Action News at Te... Sp...</td>
<td></td>
<td>Seinfeld ()</td>
<td>Seinfeld ()</td>
</tr>
<tr>
<td>5 WEWS</td>
<td>... Extreme Makeover (M...</td>
<td></td>
<td>Newschannel...</td>
<td>Nightlin...</td>
</tr>
</tbody>
</table>
**EPG: Example**

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>Putti-mobilipeli</td>
</tr>
<tr>
<td>11:00</td>
<td>UrheiluChat</td>
</tr>
<tr>
<td>17:00</td>
<td>Pelistudio (suora)</td>
</tr>
<tr>
<td>13:00</td>
<td>ALS -Aleksi Litovaara Snowboarding (u)</td>
</tr>
<tr>
<td>18:30</td>
<td>NBA Action - makaislini</td>
</tr>
<tr>
<td>19:00</td>
<td>NBA: 1. play off -kierras, Houston-L.A. Lakers, koripallo</td>
</tr>
<tr>
<td>20:55</td>
<td>Velkkaoksen Kenon ja Mitalipelön numerot</td>
</tr>
</tbody>
</table>
Cold Case
“Greed” Drama series about a police detective who specialises in long-unsolved crimes. Rush reopens...
12:00 - 13:00 Drama/Crime
EPG: Example

Search by Title

Desperate Housewives
“Next” (2005) Teri Hatcher, Felicity Huffman, Marcia Cross, Eva Longoria. Mike finds Zach holding Susan hostage; Lynette interviews for a position at a top ad agency; Gabrielle visits Carlos. (CC, Stereo)

Record this episode
Get a Season Pass
View upcoming episodes
Don’t do anything

WishList Search

Create new WishList
View all upcoming WishList Programs
CONCERT & Arts/Music
FORD, HARRISON
STAR WARS & Movies
TECHNOLOGY & Educational
TiVo
Sports/Football
### EPG: Example

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:00</td>
<td>EastEnders</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>20:15</td>
<td>American Idol</td>
<td>BBC THREE</td>
</tr>
<tr>
<td>20:30</td>
<td>My Hero</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>20:45</td>
<td>The Simpsons</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>21:00</td>
<td>Comic Relief Does Fame A...</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>21:15</td>
<td>Timewatch - Murder 1...</td>
<td>BBC TWO</td>
</tr>
<tr>
<td>21:30</td>
<td>The World Is Not Enough</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>22:00</td>
<td>Friends - The...</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>22:15</td>
<td>The Simpsons</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>22:30</td>
<td>A Dream Home Abroad</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>22:45</td>
<td>Colin and Justin's - How N...</td>
<td>BBC ONE</td>
</tr>
<tr>
<td>23:00</td>
<td>American Idol</td>
<td>BBC THREE</td>
</tr>
<tr>
<td>23:15</td>
<td>American Idol</td>
<td>BBC THREE</td>
</tr>
<tr>
<td>23:30</td>
<td>Not Under My Roof</td>
<td>BBC ONE</td>
</tr>
</tbody>
</table>

**Note:** The above schedule is an example and may not reflect actual programming.
Advanced Teletext

- Based on the old teletext system
  - It does not use the vertical blank interval
  - It uses the MPG-2 transport stream
- Mass media information delivery (news, sports results...)
- Information structured in pages
- Internet portal?
- It may contain multimedia objects (audio, images, animations...)

CWI
Advanced Teletext: Example
Advanced Teletext: Example
Jarkko Nieminen in French Open.

Jarkko Nieminen, the top-ranked tennis player from the Nordic region, started his French Open campaign with a 3-1 victory over Frenchman Nicolas Escude on Tuesday. The crowd was behind its local favourite, but Nieminen stayed calm and handed Escude another defeat on clay this year. The Frenchman, who is stronger on faster surfaces, has not won a single match on clay this season.
Advanced Teletext: Example

Super Teletext

MAIN INDEX

News
Weather
TV Guide
Finance
Shopping
Documentaries
Travel
Film

YLE: 18:00 - 21:30
European Cities, Helsinki
Interactive Content

- Interactive applications
- Linked to the television content:
  - Commercials
  - Sports
  - …
- Independent of television content:
  - Banking
  - Games
  - Betting
  - …
Interactive Content: Enhanced TV

4 Sami Hyypiä

Defender
7.10.1973

Height: 193 cm
Weight: 88 kg

alkuun

piilota

TV sulje
Interactive Content: Enhanced TV

Main Menu
Roster
Real Madrid

Position: Goalkeeper
Name: Iker Casillas
Born: 20/05/1981
Country: Spain

OK  EXIT

Back  Next  Home
Interactive Content: Games
Interactive Content: Banking

Osuuspankin

Digi-tv pankkipalvelut

Tällä hetkellä valittu tili: 500001-12345678

Valitse palvelu:

1. Laskun maksu
2. Tilitapahtumat
3. Tilin vaihto

1 - 3 numeropainikkeilla valitset palvelun
Interactive Content: Commercials
Interactive Content: Red Cross
Responsive Television

- Dynamic TV content affected by viewers
  - Mobile messages
  - User profile

  - Accidental lovers: viewers can affect the unfolding drama (e.g., script)
  - Accidental lovers will be broadcasted by YLE (Finnish National Broadcasting Company)

  - VIPER system for intra-program selection and sub-setting
Personalized Television

- **Recommender systems**
  - Based on profiles
  - Based on group recommendations
  - Based on direct recommendations

- **Much work in the web can be reused for iTV**

- **Recommendations at the program level:**
  - Difficult to handle contextual information (e.g., mood)
  - Difficult to handle unexpected situations
  - How you recommend for a group of people (family)

- **Services involved:**
  - EPG: program selection
  - Advertisement: personal commercials
  - Viewing angle of the football match
T-Learning

- Television is not only entertainment
  - News, documentaries
- Interactive lectures at home
Future: Ambient Intelligence (ambilight)
Future: P2P

http://wiki.ebu.ch/p2p/Main_Page  http://tribler.org/
Future: P2P / Social TV

http://www.joost.com
Future: Social Television

Telbuddies: direct communication like instant messaging and indirect communication like cooperating in a team to win a quiz [U. of Hasselt]
Future: Other Devices
Papers:

- **Author:** J.F. Jensen (2006)
- **Title:** Interactive Television: New Genres, New Format, New Content
- **Three forms of interactive TV:**
  - Enhanced Information: overlaying information
  - Personalized Content: selection at the program level
  - Interactive Television: return channel capabilities – currently based on mobile phone (SMS, MMS)
- **A number of formats:**
  - EPG/ Enhanced TV/ Video on Demand
  - Personalized TV/ Internet@TV/ Advertising
  - T-Commerce/Home Banking/ Games
Summary

- **Synchronization:**
  - Linked to the content (Interactive content)
  - Related to the content (EPG)
  - Independent (Banking)

- **Technology:**
  - Non-interactive services: without return path
  - Interactive services: return path

- **Kill application?**
  - I hope you can find it!!!