Metadata for Enhanced Electronic Program Guides

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Leaders in Digital TV: Software, Systems & Solutions

• StreamScope
  DTV stream monitoring products

• GuideBuilder
  DTV PSIP generation products

• SkyScraper
  DTV data broadcasting products
Key Questions

Where is Electronic Program Guide (EPG) technology going?
What metadata support is needed for state-of-the-art EPGs?
What is happening in the DTV standards arena to provide the metadata?
Outline

• Categories of program guides
• Desirable EPG Features
• DTV standards for EPG metadata
• Additional metadata needed
• EPG-related standards activities
• A model for advertising in EPGs
Categories of Program Guides

• Newspaper/magazine guides
• Self-scrolling on-screen guides (cable)
• Interactive, electronic grid guides (satellite, web, cable box, DTV, some analog TV sets)
• Interactive, electronic search guides (satellite, web, some cable box, some analog TV sets)
Desirable EPG Features

- Channel names, numbers, logos
- Program titles, times, ratings
- Multimedia channel/program information
- Channel/time grid display
- Search/filtering facilities
- Integration of TV, web, stored content
- Advertising
### Multimedia Descriptions

#### Old Style

<table>
<thead>
<tr>
<th>Movie Title</th>
<th>Time</th>
<th>Rating</th>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Groundstar Conspiracy</td>
<td>7:00 pm - 9:00 pm</td>
<td>PG ***</td>
<td>1972</td>
<td>Special government agent investigates shadowy scientist who is a target for assassination after his secret laboratory is destroyed in a mysterious explosion. George Peppard, Michael Sarrazin, Christine Belford. Dir: Lamont Johnson.</td>
</tr>
</tbody>
</table>

#### New Style

- **Title:** The Groundstar Conspiracy
- **Time:** 7:00 pm - 9:00 pm
- **Rating:** PG
- **AMG Rating:** ***
- **Year:** 1972
- **Plot Synopsis:** Government special agent tracks shadowy scientist after lab explosion. Maximum suspense. Surprise ending.
- **Cast:** George Peppard, Michael Sarrazin, Christine Belford
- **Credits:** Dir: Lamont Johnson
Current DTV Metadata (PSIP)

• Channel:
  – name, number
  – text description (multiple languages)

• Program:
  – title, start/end times
  – content advisory ratings
  – closed caption indicator
  – sound track indicator (stereo, surround, ...)
  – text description (multiple languages)
Additional Metadata Needed

- Channel logos
- Multimedia program descriptions
- Search attributes
  - program category/subcategory
  - key words
  - cast (actors, artists, guests, etc.)
  - release year
  - etc.
Standards Activities

- ATSC ad hoc group on Advanced EPG Functionality (under T3/S8)
- In related areas:
  - SMPTE metadata dictionary
  - ISAN (Int’l Standard Audiovisual Number)
  - ATSC ad hoc group on Content Identification
  - ATSC Directed Channel Change feature
  - MPEG-7
  - TV-Anytime metadata work
  - W3C/IETF RDF (Resource Descr. Framework)
Advertising in EPGs

• EPGs are portals -- good ad venues
  – Program listings/info
  – General advertising displays
    (TV programming, or products of any type)
• Implementation models for EPGs
  – Built into TV receiver by CE manufacturers
  – Downloaded application (DASE, MHP)
• Why should CE mfrs support EPG ads?
  (I.e., how does CE mfr get paid for it?)
Possible Advertising Model

- Advertising data in broadcast stream, tagged with authorization labels (trademarked).
- Receivers display ads with recognized tag.
- “EPG ad brokers”
  - buy receiver access from receiver mfrs.
  - buy bandwidth for ads from broadcasters.
  - sell advertising spots to ad agencies.
- Works best if formats for ad data and tags are standardized -- perhaps just de facto industry standard.
Distributing Ads for EPGs

Advertisers

Broker A

Broker B

Ads with tags Z, S

Ads with tags P, M

Broadcast A

Broadcast B

TV Receivers

Zenith

Sony

Panasonic

Mitsubishi

Sony

Mitsubishi

Fran's

Reno

Fran's

Reno
Summary

- DTV standards need enhancement to support state-of-the-art EPG features.
- Suitable standards work is in progress.
- Proprietary EPGs often display ads.
- Business/technical model is suggested for supporting advertising even in non-proprietary EPG environments.