**Electronic Program
Guide (EPG) Data**

**Definition of EPG Schedule, Channel, Program, and Policy Data**

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**Revision History**

|  |  |  |
| --- | --- | --- |
| **Version** | **Date** | **Description** |
| 1.0 | TBD | Initial Release |

# Introduction

Electronic Program Guides (EPGs) have long existed in broadcast television. The concept of EPGs also applies to streaming television, referred to Free Ad Supported Television (FAST). Some concepts carry over from broadcast, and some are unique to FAST.

This document defines a means to communicate EPG data. Primary components are schedules, programs, channels, and policies.

Data is defined in XML. EPG builds on MovieLabs Common Metadata and Media Entertainment Core (MEC) for many of its data types.

A Program is content to be streamed. A Channel is a single stream of Programs that are aired at specific times. No more than one Program can be aired on a Channel at a given time in a given location. Channels may have dead time when nothing is streamed. A Schedule defines the specific airings on a Channel.

## Document Organization

This document is organized as follows:

1. Introduction—Background, scope and conventions
2. How to use this specification
3. Electronic Program Guide (EPG)
4. Schedule
5. Channel List
6. Policy List

## Document Notation and Conventions

The document uses the conventions of Common Metadata [CM].

## Normative References

[CM] TR-META-CM MovieLabs Common Metadata, v2.5, <https://www.movielabs.com/md>/md

[MEC] TR-META-CM Media Entertainment Core (MEC), <https://www.movielabs.com/md/mec>

[SCTE224] ANSI/SCTE 224 2021, Event Scheduling and Notification Interface (ESNI). <https://www.scte.org/standards/library/catalog/scte-224-event-scheduling-and-notification-interface/> Schemas at this location are needed to validate with the epg schema.

## Informative References

[EIDR-TO] *EIDR Technical Documentation*. <http://eidr.org/technology>

## XML Namespaces

This document defines:

* epg: includes EPG data data

‘epg builds on

* md: Common Metadata corresponding with Common Metadata [CM]
* mdmec: Media Entertainment Core [MEC]

## Identifiers

Identifiers must be universally unique. Recommended identifier schemes may be found in Common Metadata [CM].

The use of Entertainment Identifier Registry identifiers ([www.eidr.org](http://www.eidr.org)) is strongly encouraged. Please see <https://eidr.org>

## Status

This specification is NOT completed and ready for implementation. Although tested, we anticipate that additional implementation experience will yield recommendation for changes. Implementers should anticipate one or more revisions. Reasonable measures will be taken to ensure changes are backwards compatible. See Backwards Compatibility Best Practices in [CM]

# How to Use This Specification

A full EPG requires information about channels, schedules, programs, and policies. This specification provides the capability to exchange these data, while being flexible to allow parties to include only the parts that they need while ignoring the rest. Which of these data are included in any given interface is up to the parties at either end of that interfaces. That is, work with your partners to decide what works for you.

For example, this specification will allow parties to exchange schedule data while sending program, channel, and policy data via other mechanisms.

That said, this specification provides specific rules about how it is used. Which elements and attributes are always required is defined in the schema. Additional elements and attributes may be required for specific use cases.

Best Practices will be developed to accompany this specification. These Best Practices might include rules for specific use cases, controlled vocabulary, encoding guidelines, and other useful information.

## Required and Optional Elements

Program information

* ProgramID is needed
* If you want, use MEC, otherwise do your own thing…

Policies

* Use what’s in the spec, or reference externally – both are compliant with spec

…

## Use Cases

TBS

### Channel Type Use Cases

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case** | **Category** | **Attribute** | **EPG Update Latency** | **Notes** |
| Single-series (e.g., Star Trek) | Pre-recorded |  |  |  |
| Genre Channels | Pre-recorded |  |  |  |
| Rebroadcast (OTA channels) | Pre-recorded |  |  |  |
| Daily mix  | Pre-recorded |  |  | Traditional programming like local channels |
| Genre-based | Pre-recorded |  |  | For example, "movies", "classic TV" |
| Sport | Pre-recorded |  |  | Traditional, e-sport (Twitch), Cards/etc. |
| Sport | Primarily Live | Open Ended | Low for open end | Traditional, e-sport (Twitch), Cards/etc. |
| Viewer Participation | Primarily Live | Open Ended | Low for open end | Voting, Shopping, etc. (could include synchronized app) |
| Award Show? | Primarily Live | Open Ended | Low for open end |  |
| Concert | Primarily Live | Open Ended | Low for open end |  |
| News | Primarily Live | Closed-ended | Low for update on breaking news |  |
| Audio-primary station |  |  |  | Music with slate (audio is primary) |
| Pay-Per-View (PPV) Event |  | Open or closed ended |  | Promoted before schedule established. Initially unscheduled |
| Pay-Per-View (PPV) Subscription |  | Open or closed ended |  | Promoted before schedule established. Initially unscheduled |
|  |  |  |  |  |

### Programming Use Case

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case** | **Category** | **Attribute** | **EPG Update Latency** | **Notes** |
| Standard programming |  |  |  |  |
| Repeating (1 show repeats forever) |  |  |  |  |
| Repeating blocks |  |  |  |  |

### Change Use Cases

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case** | **Category** | **Attribute** | **EPG Update Latency** | **Notes** |
| Schedule Change in advance | Schedule Changes |  |  | >1 program impacted |
| Program Change in advance | Program Changes |  |  | Entire program change |
| Program Metadata Change in advance | Program Changes |  |  | Metadata modified for existing program (e.g., waiting on naming players based on earlier round) |
| Schedule Change close to air time | Schedule Changes |  |  | >1 program impacted (e.g., rain delay) |
| Program Change close to air time | Program Changes | Pre-emption |  | Show replaced, possibly with different timing |
| Channel Not Available | Policy |  |  | Time-based (territory or other rules) |
| Emergency Broadcast | Special |  | Not on schedule |  |
| Program Blackouts | Special |  |  | Individual program With or without replacement |
| Programming Gaps  | Special |  |  | Station does not have 24x7 stream |
| Muti-track audio | Tracks |  |  |  |
| Multi-caption | Tracks |  |  |  |
| Mutli-subtitle | Tracks |  |  |  |
| Mutli-video (multi-angle) | Tracks |  |  |  |

### Notes and Questions

If a show is open ended and runs short, it might be filled by 'shoulder content' like a commentator wrap-up or slate. If it runs long (overlaps following shows), one show or the other will be cut short/start late.

Latency refers to the time delay between sending an EPG update and the time information can be presented to a user/

Any station that can be preempted should support low latency

Unless specified, < 24 hours should be the target

Should we support realtime EPG updates (e.g., when a sporting event runs long). Analogous to SCTE224 inband signaling?

# Electronic Program Guide (EPG)

The section defines the EPG element and all its associated types.

## EPG

The EPG element is defined by the EPG-type complex type.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **EPG-type** |  |  |  |  |
|  | updateNum, workflow, updateDeliveryType, versionDescription, timestamp | Common Metadata workflow attributes | md:Workflow-attr |  |
|  | epgID | ID of EPG | md:id-type |  |
| Schedule |  | Defines a schedule for a channel at a given start date and time. | epg:Schedule-type | 1..n |
| Program |  | Metadata for Programs associated with Schedule. It is based on Media Entertainment Core [MEC] | mdmec:CoreMetadata-type | 0..n |
| Channel |  | Channels associated with Schedule | epg:Channel-type | 0..n |
| Policy |  | Policies associated with Schedule | epg:Policy-type | 0..n |

# Schedule

## Schedule Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **Schedule-type** |  |  |  |  |
|  | scheduleID | ID of Schedule | md:id-type |  |
| ChannelID |  | ID of channel. Can reference Channel-type/@channelID | md:id-type |  |
| StartDateTime |  | Start time of schedule | xs:dateTime | 0..n |
| ScheduleTotalDuration |  | Duration of schedule | xs:duration | 0..n |
| RepeatCount |  | Number of times schedule repeats. Default is 0. | xs:nonNegativeInteger | 0..n |
| Airing |  | A program airing | epg:Airing-type | 0..n |
| Deadtime |  | A period of deadtime. | epg:Deadtime-type | 0..n |

Schedule repeats start immediately following the end of the last airing or deadtime period. A value of 0 means no repeats. 1 means one repeat (i.e., play schedule twice), and so forth.

Airing and Deadtime periods shall not overlap.

Airing and Deadtime periods shall collectively cover all time from StartDateTime for a period of ScheduleTotalDuration. [CHS: Is this true?]

### Airing Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **Airing-type** |  |  |  |  |
|  | airingID | Unique ID for airing | md:id-type | 0..1 |
| StartTime |  | Start time of airing | xs:dateTime |  |
| EndTime |  | End time of airing | xs:dateTime |  |
| ContentRuntime |  | Duration of content (may be less than StartTime+EndTime. | xs:duration | 0..1 |
| ProgramID |  | ID referencing program. Assumed to reference Program/@programID. | md:id-type |  |
| Language |  | Primary language of Program | xs:language |  |
| OtherLanguage |  | Other languages in content [CHS: Audio, video, signed, text???] | xs:language | 0..n |
| Override |  | Localized Description, Title, Genre, Keyword, and Image overrides | xs:string | 0..n |
| RatingOverride |  | Rating that supersedes title in Program definition | md:ContentRatings-type | 0..n |
| PolicyID |  | Identifier for policy within a given namespace. | xs:string | 0..n |
|  | namespace | Policy namespace. If absent, assumed to reference epg:Policy-type/@PolicyID | xs:string | 0..1 |
|  | priority | Allows policies to be ranked .[Is low number or high number higher?] | xs:integer | 0..1 |
| SingnalOverride |  | If there are multiple simultaneous airings (e.g., two sporting events in different territories), This would reference the source feed for this airing. | xs:string | 0..1 |
| AiringSpecificTag |  | [???] | xs:string | 0..n |
|  | name | [???] | xs:string | 0..1 |

### Deadtime

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **Deadtime-type** |  |  |  |  |
| StartTime |  | Start time of dead time | xs:dateTime |  |
| EndTime |  | Duration of dead time | xs:duration |  |
| ProgramID |  | ID of Program that shows during dead time.  | md:id-type | 0..n |
| AiringSpecificTag |  | [???] | xs:string | 0..n |

# Channel List

A Channel List is a list of channels. It is defined as its own element so it can be sent as its own document (i.e., distinct from an EPG document).

## ChannelList

ChannelList element is a list of channels, defined by ChannelList-type complex type.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **ChannelList-type** |  |  |  |  |
|  | updateNum, workflow, updateDeliveryType, versionDescription, timestamp | Common Metadata workflow attributes | md:Workflow-attr |  |
|  | chanelListID | ID for Chanel List | md:id-type | 0..1 |
| Channel |  | Data describing a channel | epg:Channel-type | 1..n |

### Channel-type

Channel-type is a complex type describing a channel.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **Channel-type** |  |  |  |  |
|  | channelID | Identifier for channel | md:id-type |  |
| ChanLocalizedInfo |  | Information about channel. Can be localized. | epg:ChannelLocalizedInfo-type | 1..n |
| EffectiveDate |  | Date channel information becomes appliable. | xs:dateTime | 0..1 |
| ExpireDate |  | [???] | xs:dateTime | 0..1 |
| Region |  | Regions where policies apply | md:RegionUntion-type | 1..n | 0..n choice |
| ExcludedRegion |  | Regions where policies do not apply | md:RegionUntion-type | 1..n |
| RatingDefault |  | Default rating for channel, generally highest rating of content aired. | md:ContentRating | 0...n |
| GroupID |  | Used to group channels | xs:nonNegativeInteger | 0..1 |
| PolicyID |  | Identifier for policy within a given namespace. | xs:string | 0..n |
|  | namespace | Policy namespace. If absent, assumed to reference epg:Policy-type/@PolicyID | xs:string | 0..1 |
|  | priority | Allows policies to be ranked .[Is low number or high number higher?] | xs:integer | 0..1 |
| CallLetters |  | Station call letters | xs:string | 0..1 |
|  | broadcastChannel | Channel number for broadcast channel (can be virtual channel) | xs:integer | 0..1 |
| BroadcastTriplet |  | A broadcast triplet (see below) | xs:string | 0..1 |
| SignalDistributor |  | Entity delivering broadcast feed | xs:string | 0..1 |
| SignalDefault |  | If there are multiple simultaneous airings (e.g., two sporting events in different territories), This would reference the source feed for this airing. | xs:string | 0..1 |
| ChannelRightsHolder |  | Entity that has rights to content | xs:string | 0..1 |
| Terms |  | Any additional items (name/value pairs) | md:Terms-type | 0..n |

PolicyID references a policy. If @namespace is not stated, it is assumed to reference a PolicyID in a Policy element. If it is a direct reference to SCTE 224, @namespace = ‘SCTE224’. Other policy namespaces may be defined in best practices.

A DVB Broadcast Triplet consists of three parts: A unique identifier for a service that consists of three parts: Original Network ID (ONID), Transport Stream ID (TSID), and Service ID (SID). [CHS: Is this the right reference? How do we encode? Normative reference???]

[CHS: orgs like Signal Distributor. Should they be md:org-type?]

### ChannelLocalizedInfo-type

This complex type supports localization of channel names and descriptions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **ChannelLocalizedInfo-type** |  |  |  |  |
|  | language | Language of localized information | xs:language | 0..1 |
| Name |  | Name of channel | xs:string |  |
| Description |  | Description of channel | xs:string | 0..1 |
| Keywords |  | Keywords associated with channel | xs:string | 0..n |
| Genre |  | Genre associated with channel | xs:string | 0..n |
| ImageURL |  | URL link to image | xs:anyURI | 0..n |
|  | purpose | Purpose of image, when multiple images are provided. | xs:string | 0..1 |
|  | resolution | Resolution of image (e.g., 1600x1200) | xs:string | 0..1 |

# Policy List

Policies are rules that govern where when and how content can be streamed. Given that FAST mirrors broadcast, the policies mechanisms from broadcast apply here. These are based on SCCE 224 [SCTE 224].

A Policy List is a list of policies. It is defined as its own element so it can be sent as its own document (i.e., distinct from an EPG document).

The EPG schema references the SCTE 224 schemas. Those schemas can be found at [SCTE224].

## PolicyList

A PolicyList element is defined by epg:PolicyList-type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **PolicyList-type** |  |  |  |  |
|  | updateNum, workflow, updateDeliveryType, versionDescription, timestamp | Common Metadata workflow attributes | md:Workflow-attr |  |
|  | policyListID | ID for policy list | md:id-type | 0..1 |
| Policy |  | Policy associated with channel or program airing | epg:Policy-type | 1..n |

### Policy-type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Attribute** | **Definition** | **Value** | **Card.** |
| **Policy-type** |  |  |  |  |
|  | policyID | ID for list of policies  | md:id-type | 0..1 |
| Region |  | Regions where policies apply | md:RegionUntion-type | 1..n | 0..1 choice |
| ExcludedRegion |  | Regions where policies do not apply | md:RegionUntion-type | 1..n |
| Entitlement |  |  |  | 0..n |
| SCTE224Policy |  | Policy as defined by [SCTE224] | scte:PolicyType | 0..n |