Adaptive Background Attenuation for file-based and live AD

Experiences of Audio Description

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Adaptive Background Attenuation for file-based and live AD

… and how it works with legacy and object-based audio

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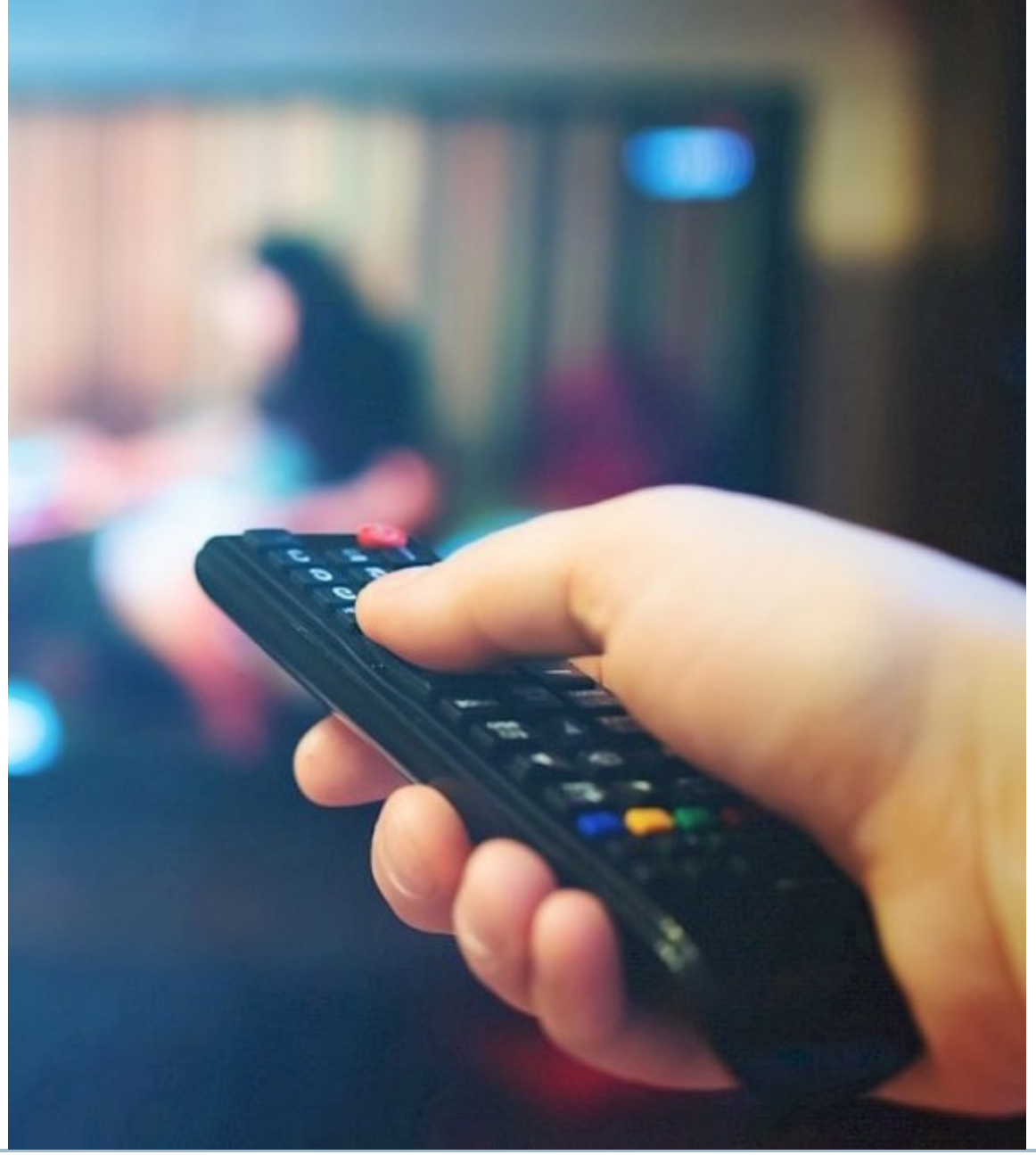
Agenda

Adaptive Background Attenuation

1. **Adaptive Background Attenuation (ABA)**
2. **MPEG-H Production Software**
3. **Use cases**
4. **Benefits with object-based audio**



#1 Adaptive Background Attenuation

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How does it work?

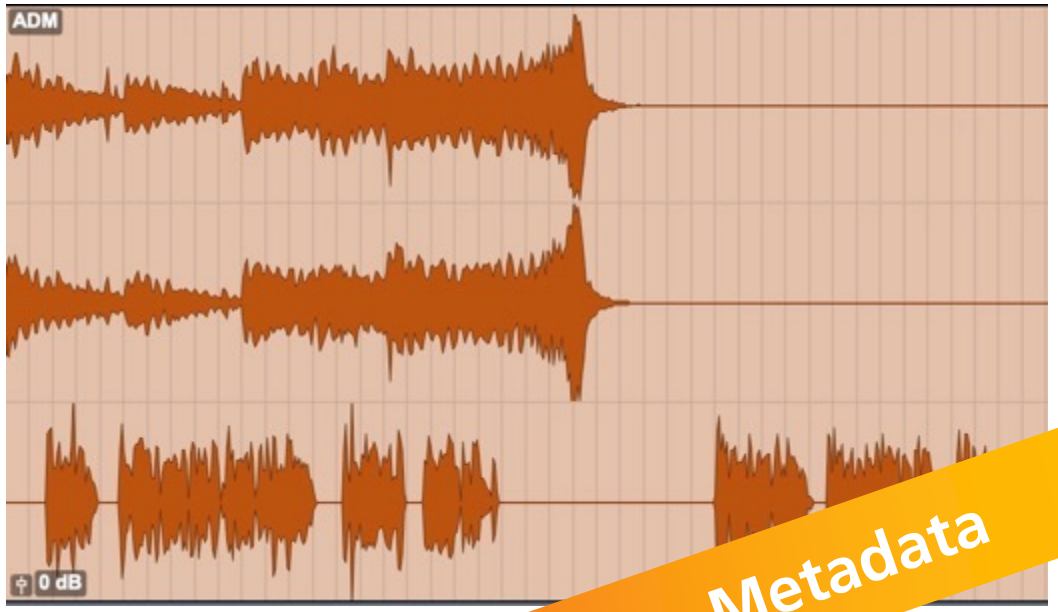
Adaptive Background Attenuation

- Computes minimum margin between AD and mix
- Tuning parameters for different content
- Automatic adaption to target loudness
- Resulting volume automation is metadata
- Robust and tested

Outputs

Adaptive Background Attenuation

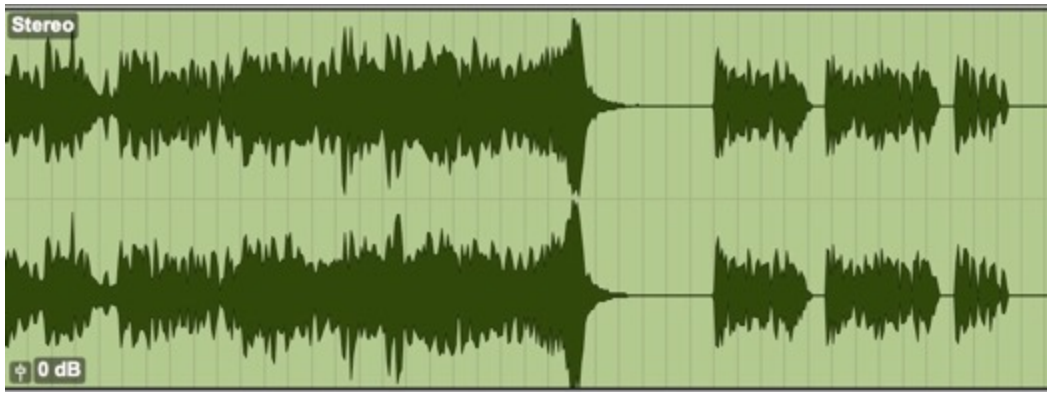
Object-based: ADM (Audio Definition Model)



+ Metadata

Rendering

Channel-based: Stereo Mix

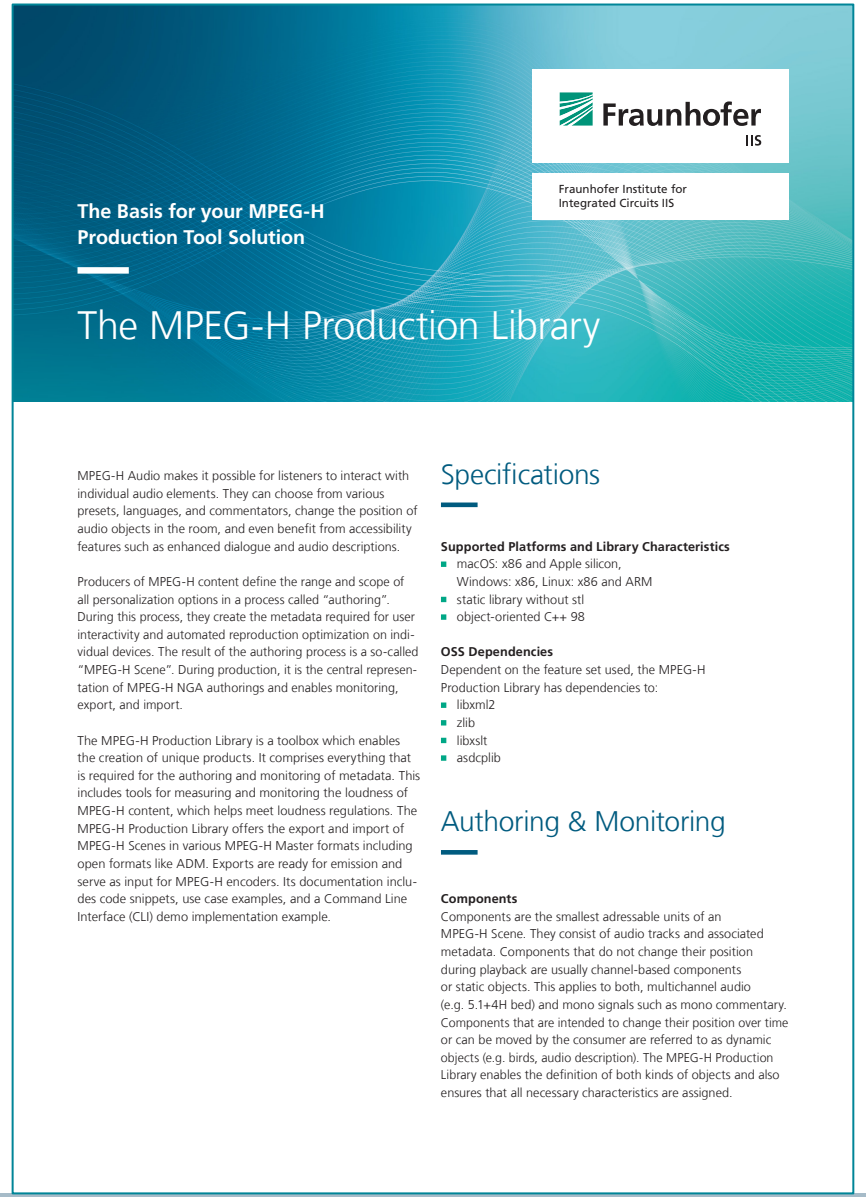


#2 MPEG-H Production Software

MPEG-H Production Software

Adaptive Background Attenuation

- **ABA is part of the MPEG-H Production Library**
- **Two algorithms for offline and linear**
- **Support of legacy workflows via rendering**
- **Easy to implement**



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The Basis for your MPEG-H Production Tool Solution

The MPEG-H Production Library

MPEG-H Audio makes it possible for listeners to interact with individual audio elements. They can choose from various presets, languages, and commentators, change the position of audio objects in the room, and even benefit from accessibility features such as enhanced dialogue and audio descriptions.

Producers of MPEG-H content define the range and scope of all personalization options in a process called "authoring". During this process, they create the metadata required for user interactivity and automated reproduction optimization on individual devices. The result of the authoring process is a so-called "MPEG-H Scene". During production, it is the central representation of MPEG-H NGA authorings and enables monitoring, export, and import.

The MPEG-H Production Library is a toolbox which enables the creation of unique products. It comprises everything that is required for the authoring and monitoring of metadata. This includes tools for measuring and monitoring the loudness of MPEG-H content, which helps meet loudness regulations. The MPEG-H Production Library offers the export and import of MPEG-H Scenes in various MPEG-H Master formats including open formats like ADM. Exports are ready for emission and serve as input for MPEG-H encoders. Its documentation includes code snippets, use case examples, and a Command Line Interface (CLI) demo implementation example.

Specifications

Supported Platforms and Library Characteristics

- macOS: x86 and Apple silicon, Windows: x86, Linux: x86 and ARM
- static library without stl
- object-oriented C++ 98

OSS Dependencies

Dependent on the feature set used, the MPEG-H Production Library has dependencies to:

- libxml2
- zlib
- libxslt
- asdcplib

Authoring & Monitoring

Components

Components are the smallest adressable units of an MPEG-H Scene. They consist of audio tracks and associated metadata. Components that do not change their position during playback are usually channel-based components or static objects. This applies to both, multichannel audio (e.g. 5.1+4H bed) and mono signals such as mono commentary. Components that are intended to change their position over time or can be moved by the consumer are referred to as dynamic objects (e.g. birds, audio description). The MPEG-H Production Library enables the definition of both kinds of objects and also ensures that all necessary characteristics are assigned.

Various implementations possible

Adaptive Background Attenuation

- MPEG-H Production Library
- Command line tool
- Docker container
- MPEG-H Production SDK

Product Sheet | The MPEG-H Production Library

Authoring Features

Loudness Measurement
The MPEG-H Production Library includes loudness measurement for file-based offline workflows. The loudness measurement according to ITU-R BS.1770-4 for presets and components is performed automatically during export or can be triggered manually.
The MPEG-H Production Library provides programm-based as well as anchor-based loudness measurement functionalities.

Loudness Metering
The MPEG-H Production Library includes methods for live loudness metering tailored to real-time workflows. The loudness metering provides short-term loudness, momentary loudness, and integrated loudness according to ITU-R BS.1770-4.

Dynamic Gain Sequences
Dynamic gain sequences allow content creators to create and transmit volume automation to control component levels in the renderer of the consumer's playback device. It can be used to provide different dynamic mixes of components, depending on the playback scenario selected by the consumer or CE device. The MPEG-H Production Library writes the gain sequence into the dynamic metadata of all export formats.

Adaptive Background Attenuation (ABA)
ABA is a method which ensures that background sounds are lowered where they would interfere with speech intelligibility. The reduction works adaptively and only when dialog is present. In passages with no active speech, the background sounds remain unchanged. The MPEG-H Production Library provides offline and real-time ABA functionality.

Downmix
The MPEG-H Production Library supports generic downmixing to all supported target layouts. It also includes customizable downmix options enabling content-specific downmixing that is configurable for each layout. Through this, the producer has full control over the mix.

Video Frame Alignment
The MPEG-H Production Library makes possible the alignment of the dynamic metadata to video frame rates, for instance 50 fps and 59.94 fps. This enables video-frame accurate editing.

Contact

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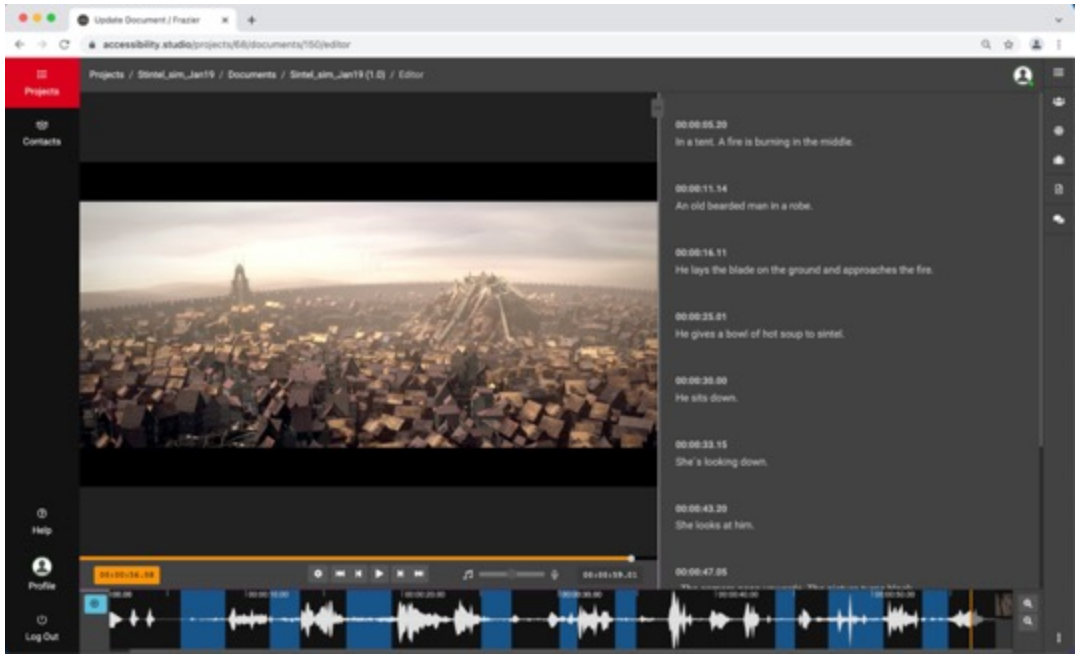
#3 Use cases

Offline processing with FRAZIER

Use cases

FRAZIER by Video to Voice



- **Automatic TTS mixing with ABA**
- **Automatic dialogue enhancement with MPEG-H Dialog+**
- **ADM and stereo output**
- **Automatic MPEG-H Audio authoring and encoding**

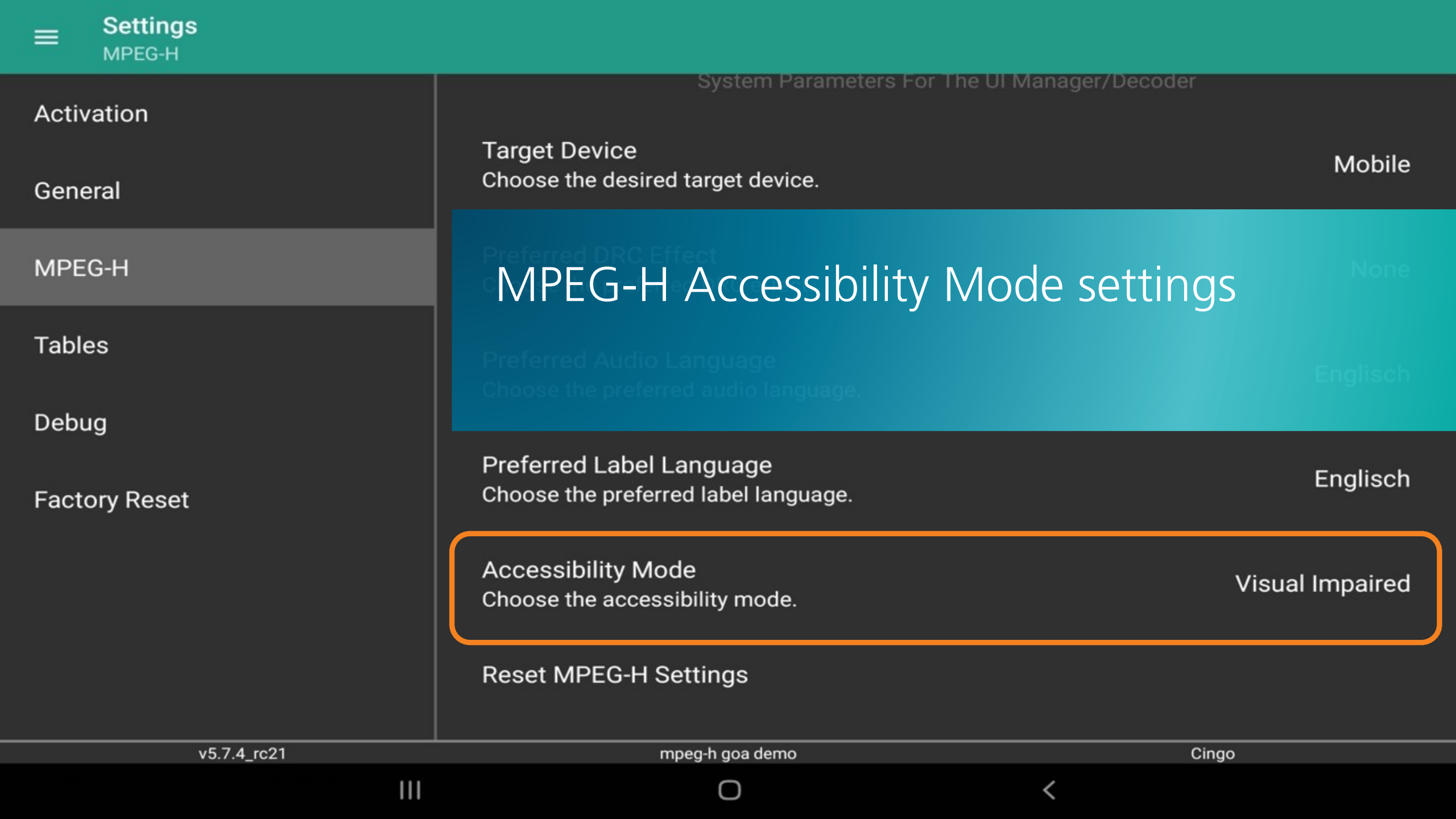
Live processing

Use cases

- **Low latency**
- **Channel layouts from mono to immersive**
- **Object-based and legacy output**
- **Automatic authoring**
- **Direct encoding possible**

Live ABA with an MPEG-H AMAU

#4 Benefits with object-based audio


Settings
MPEG-H
Activation
General
MPEG-H
Tables
Debug
Factory Reset
System Parameters For The UI Manager/Decoder
Target Device
Choose the desired target device.
Mobile
MPEG-H Accessibility Mode settings
Preferred Label Language
Choose the preferred label language.
Englisch
Accessibility Mode
Choose the accessibility mode.
Visual Impaired
Reset MPEG-H Settings
v5.7.4_rc21
mpeg-h goa demo
Cingo

AD selectable via menu

MPEG-H Audio advanced interactivity

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Questions? - Contact us!

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www.mpeg-h.com/