

Audio for ATSC 3.0

SKIP PIZZI, NAB

ATSC TG3 VICE-CHAIR

Next-gen TV Audio

Next-gen Audio (NGA) uses state of the art coding

- ~4x more efficient than 1st-gen DTV (AC-3)

More than codecs

- Flexible rendering adapts to listener's environment
- Channel-, Object- or Scene-based (HOA)

Immersive and personalizable audio systems



Toggy ale Savor the moment as the raging hop character engages the Imperial

LAGUNITAS



say... "lah-goo-KNEE-tuss"

IPA

INDIA PALE ALE

THE LAGUNITAS BREWING COMPANY
PETALUMA, CALIFORNIA

ATSC 3.0 NGA

A/342 3.0 Audio Standard at Proposed Standard status

Includes an extensible Common Framework (A342-1) that supports two separate audio systems

- Dolby AC-4 (A/342-2)
- MPEG-H Audio Alliance (subset of MPEG-H Part 3) (A/342-3)

A/342 requires use of one system per region

- N. America will use AC-4
- S. Korea will use MPEG-HAA

Key Audio Features

An enhanced, immersive experience

- At least 7.1+4 channels, plus audio object support required
- Legacy 5.1 and 2.0-channel audio supported
- Low latency and excellent lip-sync

Personalization (e.g., choice of dialog tracks)

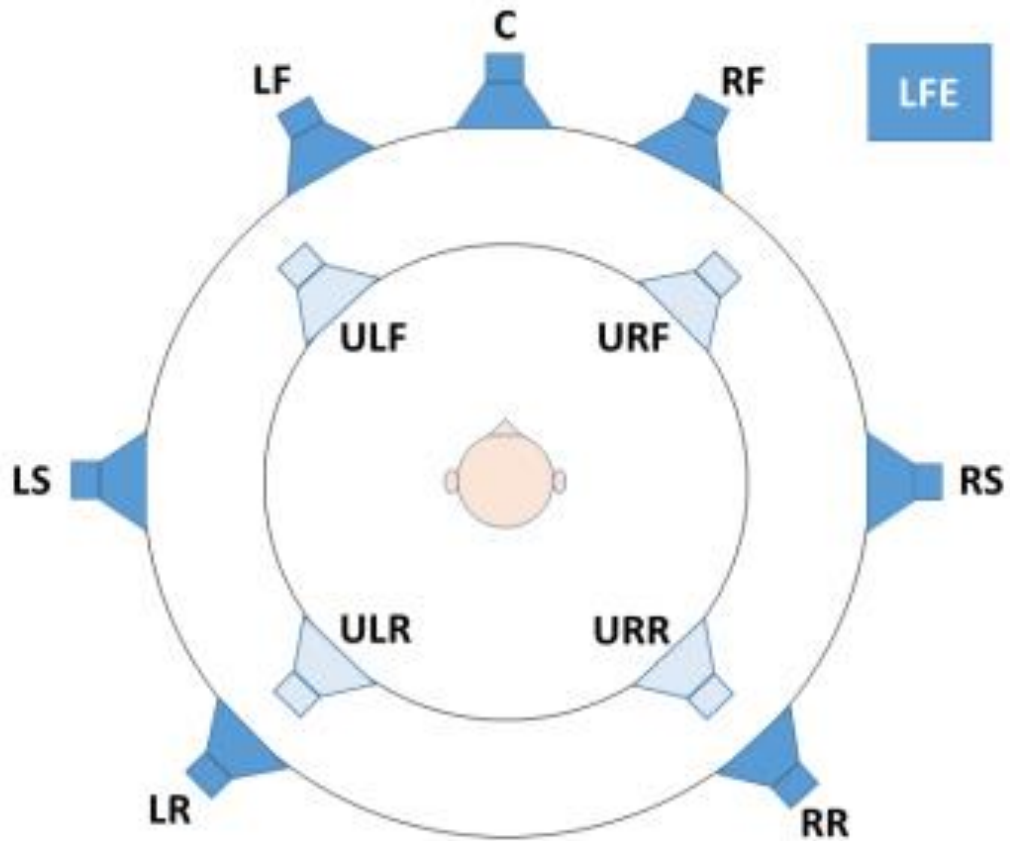
Support for audio-only content

Hybrid broadcast / broadband delivery support

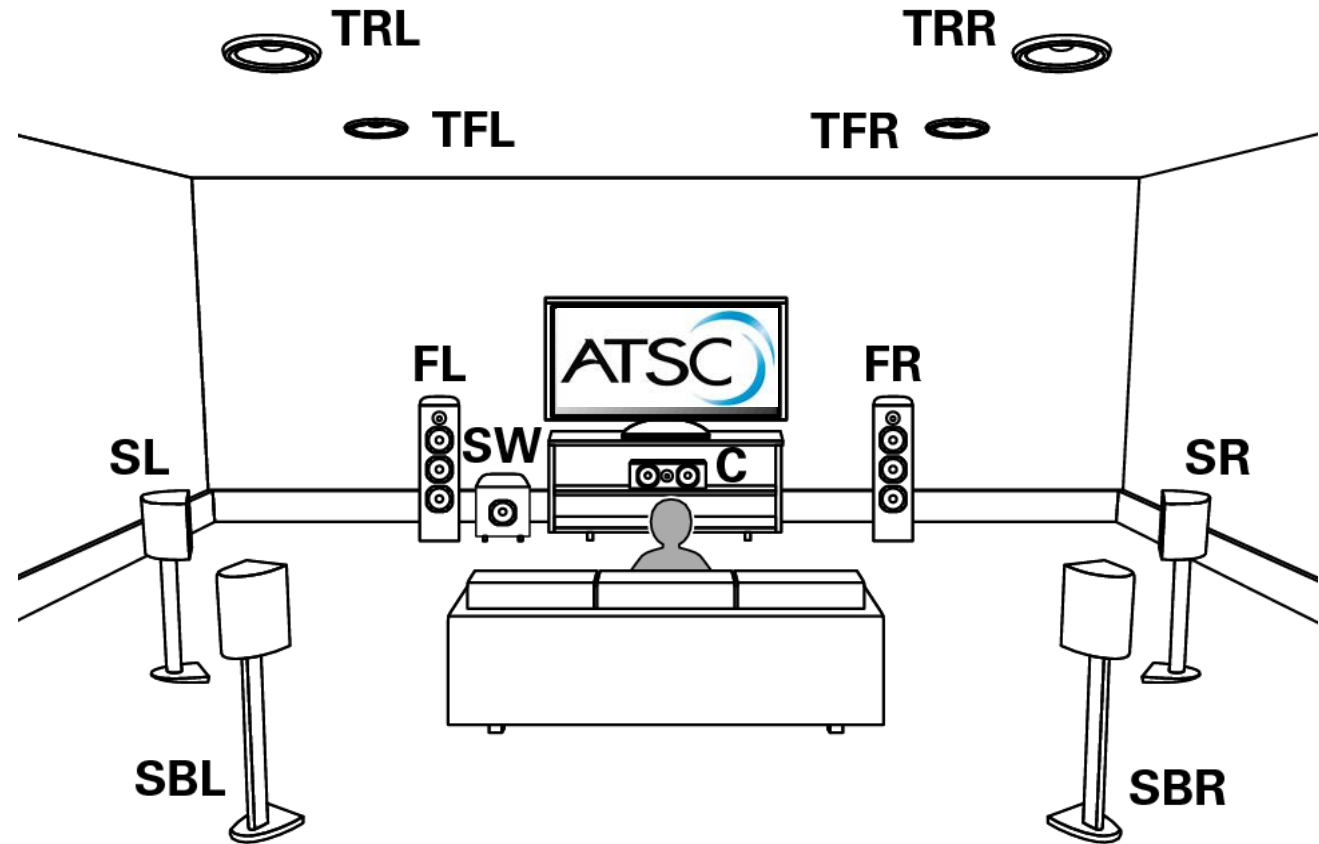
Normalization of content loudness and contouring of dynamic range

Improved accessibility features (e.g., dialog enhancement)

7.1+4 Immersive Audio

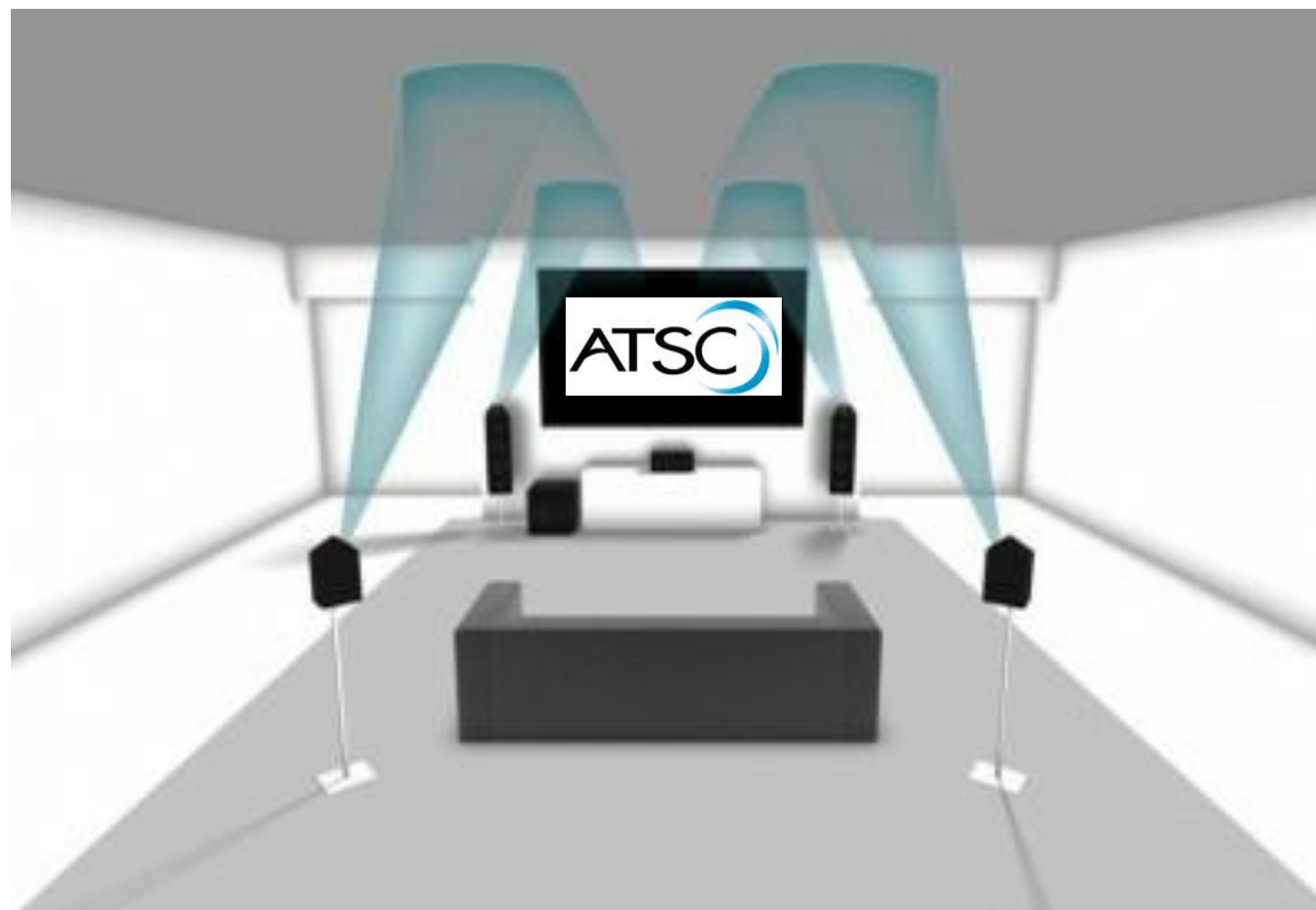


Courtesy ATSC



Courtesy Dolby Labs

“Virtual Height” Audio



Courtesy Dolby Labs

Producing in Immersive Audio

3D panpots

- Hardware (some require 2 hands)
- Software (with programmable moves)

Single-point microphones

- Eigenmike (HOA or conv.)



Courtesy Qualcomm

Key Production Differences

Producing in immersive format (12+ channel or N objects)

Checking downmix from immersive to surround to stereo

Delivery of content with separate Dialog and M+E tracks

What's next?

Minimum receiver requirements

Optimal user interfaces for personalization

Recommended Practice(s) for ATSC 3.0 Audio?

Developing the “grammar” of immersive soundtracks