The 1st Cadenza Challenge:
Baseline and Internal Submissions.

Michael A. Akeroyd, Scott Bannister, Jon Barker, Trevor J. Cox, Bruno Fazenda, Jennifer Firth, Simone Graetzer, Alinka E. Greasley, **Gerardo Roa Dabike**, Rebecca R. Vos, William M. Whitmer

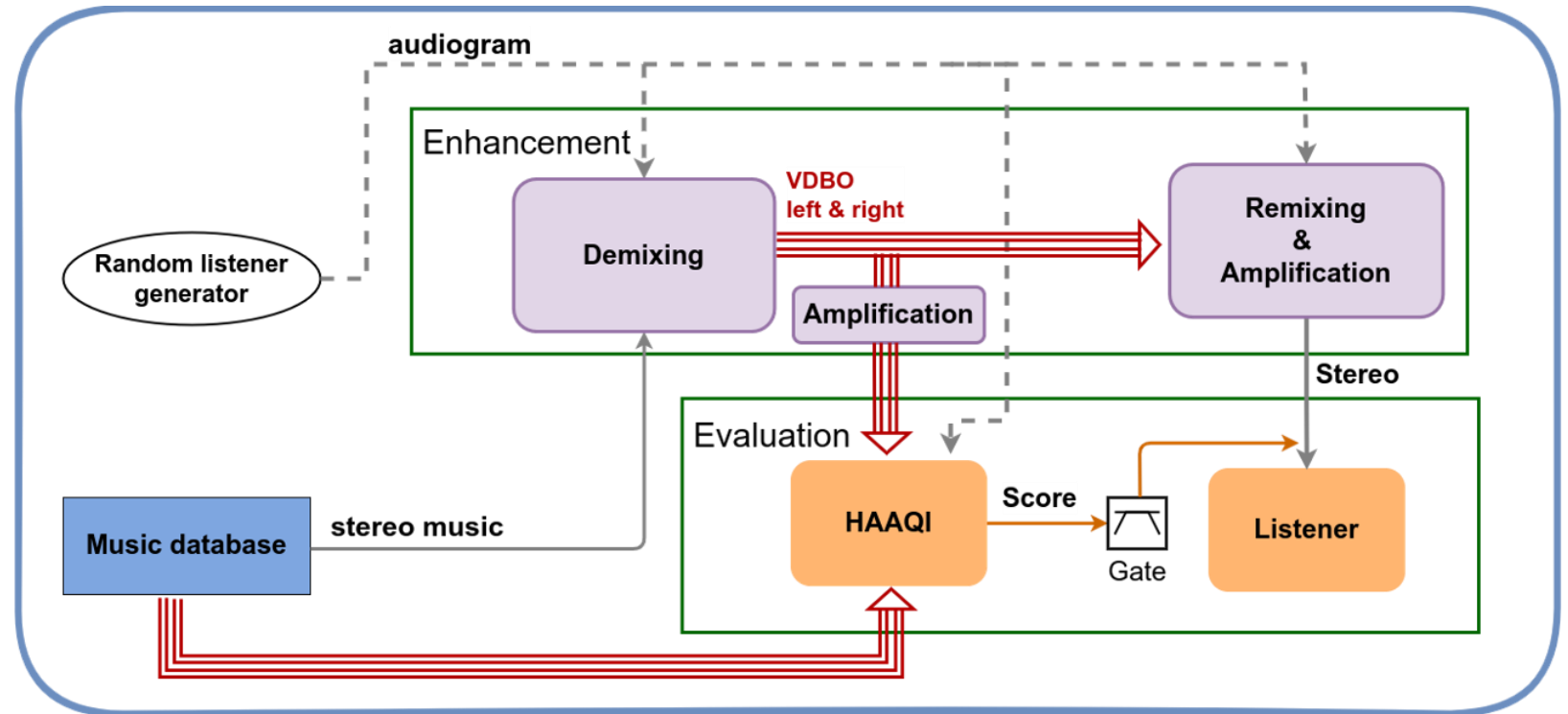http://cadenzachallenge.org/

Overview
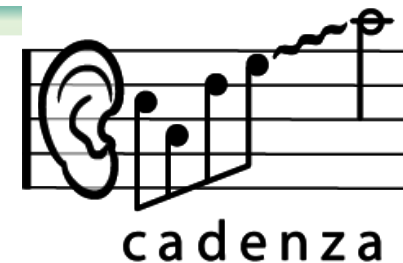
- Structure of Baseline Task 1
  - Evaluation
  - Enhancement

- Cadenza Submissions

- Results

Baseline: Task 1

Overall architecture:

- Enhancement
  - Demixing stage
  - Remixing stage
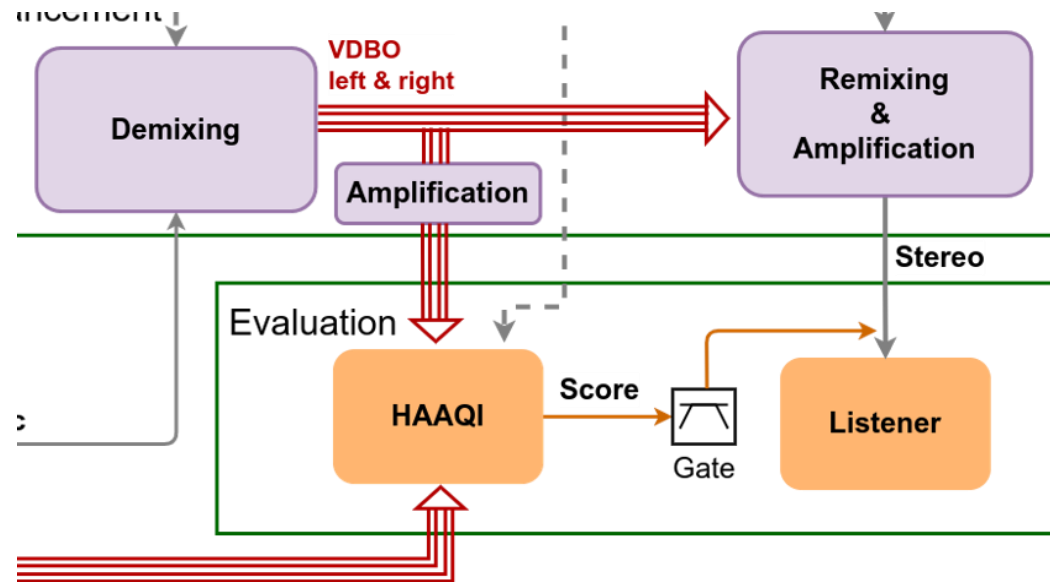
- Evaluation
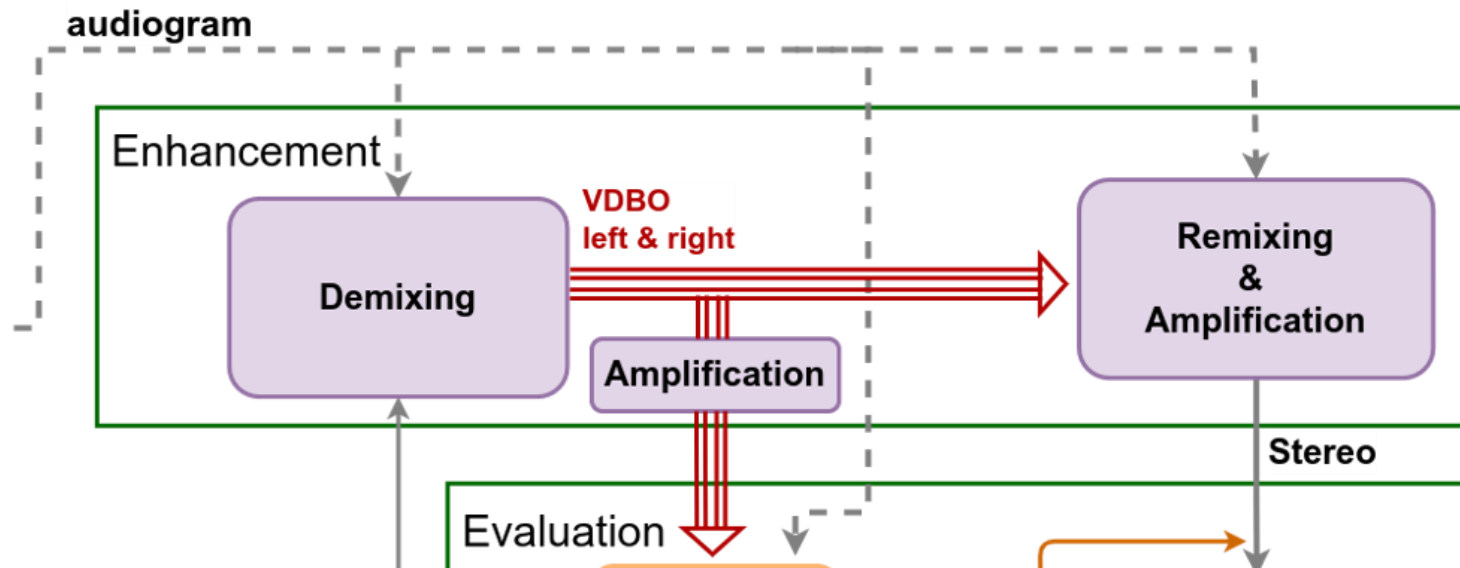 - Fixed stage

Task 1: Baseline

- Evaluation
  - Left/Right sides Vocals-Bass-Drums-Other: HAAQI score.
  - Remixed signal: HAAQI and Listener Panel.

Task 1: Baseline

- Enhancement
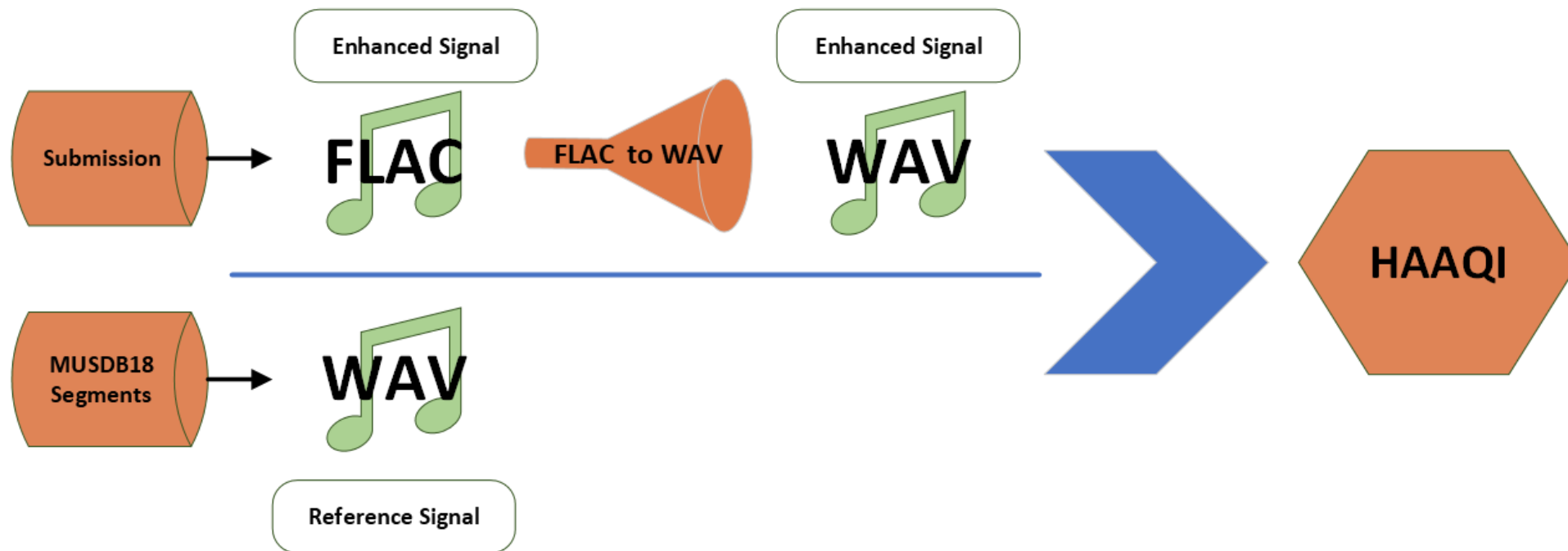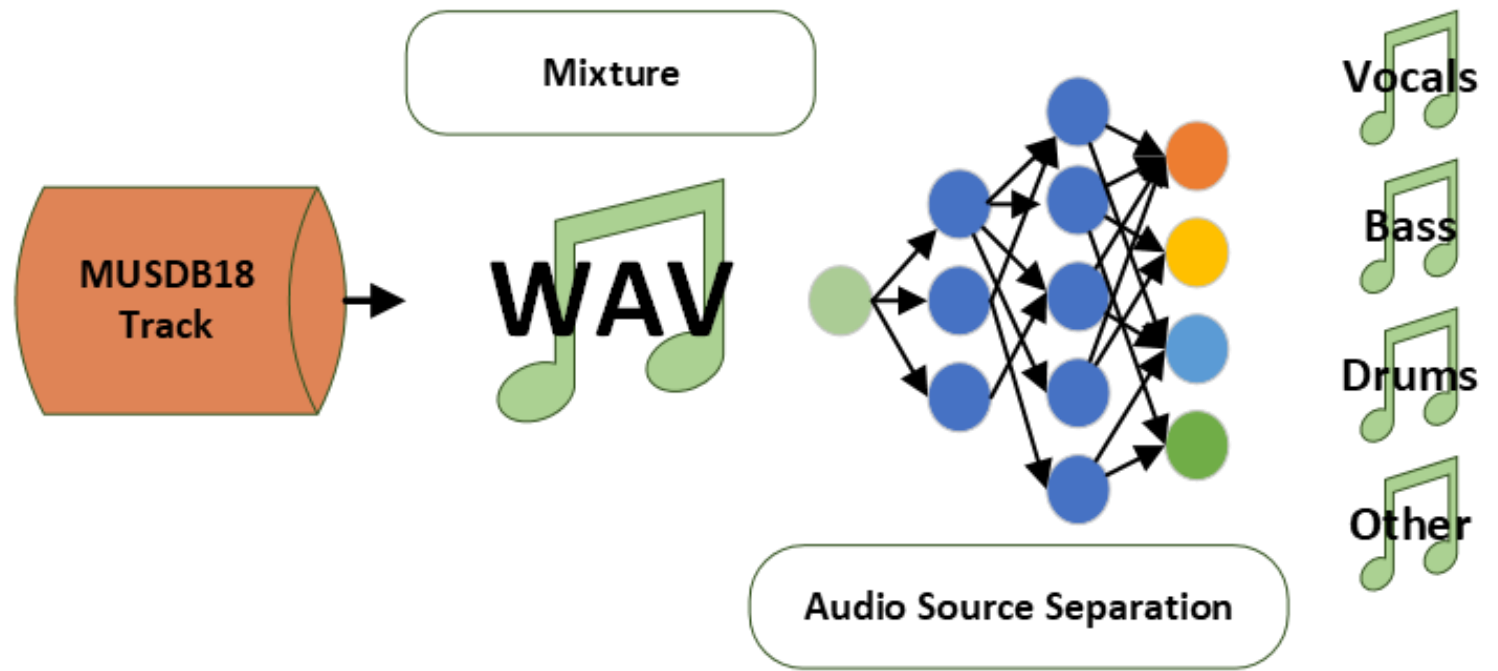 - o Demixing/Remixing

Task 1: Baseline

- Evaluation
  - Left/Right sides Vocals-Bass-Drums-Other: HAAQI score.
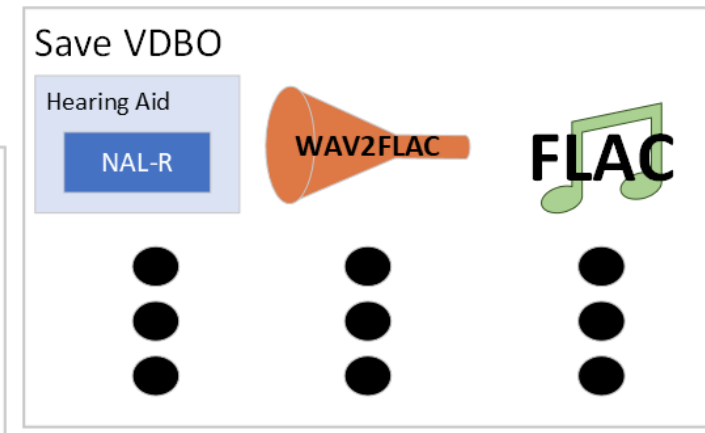 - Remixed signal: HAAQI and Listener Panel.

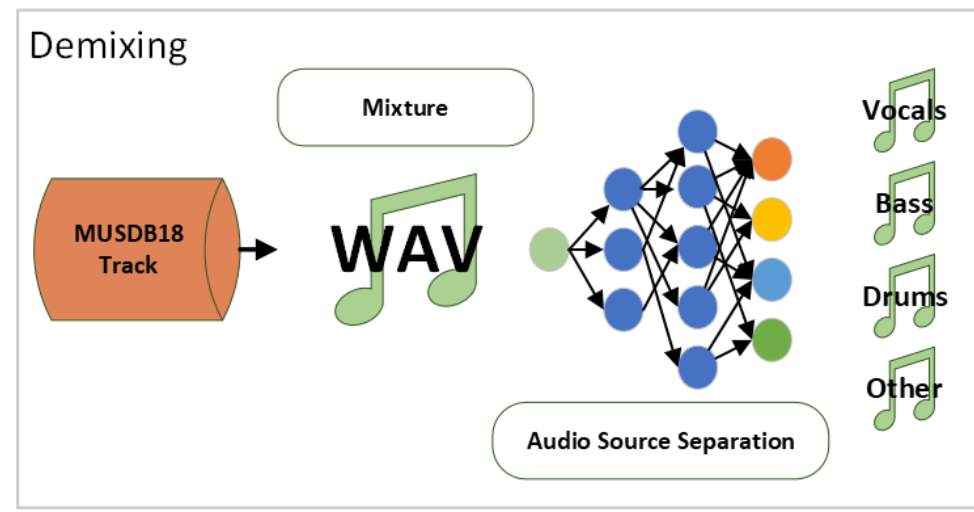# Task 1: Baseline

- Enhancement
  - Demixing

- ASS Models
  - Hybrid-Demucs
  - Open-Unmix

Task 1: Baseline

- Enhancement
  - Save VDBO
  - Save Remix

Cadenza Submissions
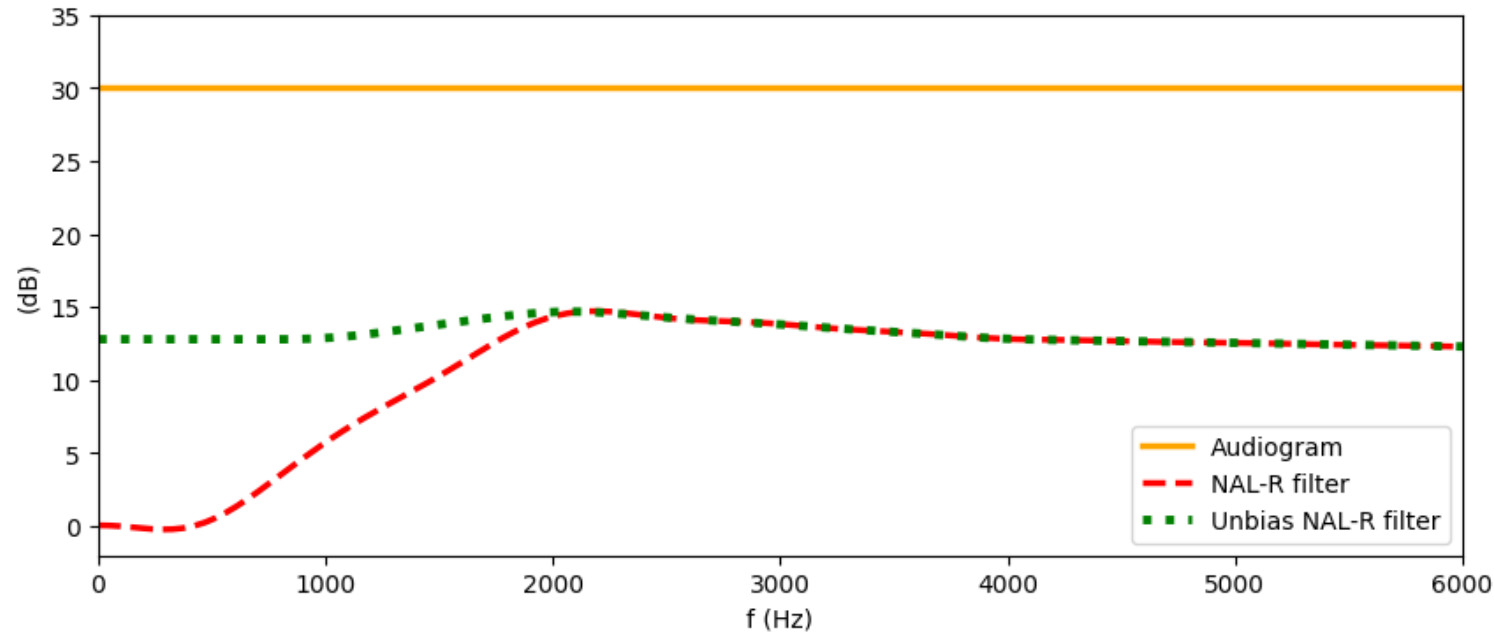
- Explore different post-processing for remixed signal.

- Use Hybrid-Demucs baseline demixing

- Focused on the remix stage.

- 2 systems:
  - Un-Bias NAL-R low frequencies.
  - MID-SIDE EQ

Music NAL-R

- NAL-R has low frequency roll-off: Bias = [-17, -8, 1, -1, -2, -2]
- We retained the low frequencies: Bias = [-1, -1, 1, -1, -2, -2]

Music NAL-R

- Changes when saving remix

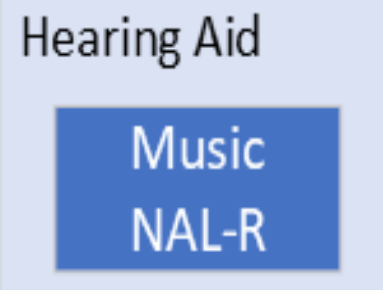# Music NAL-R

- Results

	HAAQI (Remix)	BAQ
Baseline Demucs	0.741	41.67
Music NAL-R	0.530	33.16

	Distortion	Frequency balance
Baseline Demucs	53.20	59.01
Music NAL-R	63.09	39.25

MID-SIDE EQ

- Alternative 2 channel signal representation:
  - Mid: Left + Right (Keep all components that are panned centrally)
  - Side: Left – Right (removed all components that are not panned centrally)

- Work in the SIDE channel:
  - Band filter between 2.5 kHz and 5 kHz.
  - Increase level in 3 dB
  - Made vocals more central and prominent.

MID-SIDE EQ

Save Remix

WAV → Mid-Side EQ → Hearing Aid: NAL-R → WAV2FLAC → FLAC
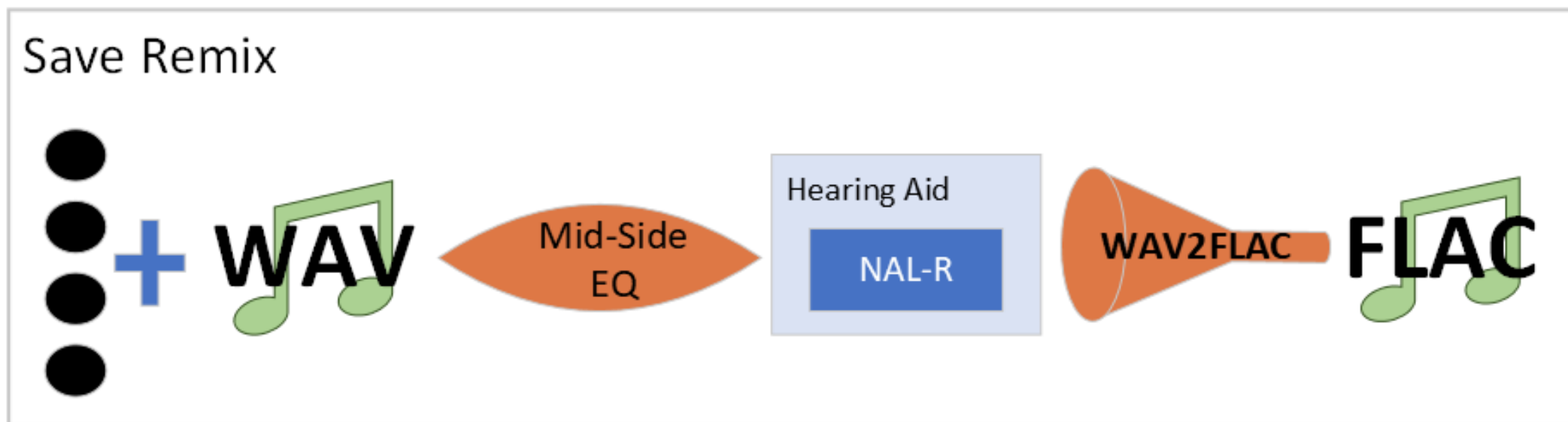
Baseline: 🔊   Mid-Side: 🔊

Results

- Baseline : Higher HAAQI - High BAQ

- Mid-Side : Lower HAAQI - Higher BAQ

- Music NAL-R : Mid HAAQI - Mid BAQ

System	HAAQI (VDBO)	HAAQI (Remix)	BAQ (Remix)
Baseline Demucs	0.255	0.711	41.23
Baseline Open-Unmix	0.225	0.638	-
Music NAL-R	0.203	0.524	32.92
Mid-Side	0.236	0.274	41.70

Thank you!!!