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| ○ | Approval required | ● | Information sharing | ○ | Directions |

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In Android Automotive

# Handling of Input Streams

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# Handling of external streams in AA

CHANGE ME CHALLENGE TOP

## Input Streams

Input streams to Android (external sources need to be brought into the Android head unit, if all mixing is done inside Android).

1. How is this done?
2. Are there limitations on the number of streams?
3. Can we bring the required metadata in (or at least associate "hard coded" metadata with the identity of a particular incoming stream. For example we know this one is a prioritized type of stream)

## 1- How is it done?

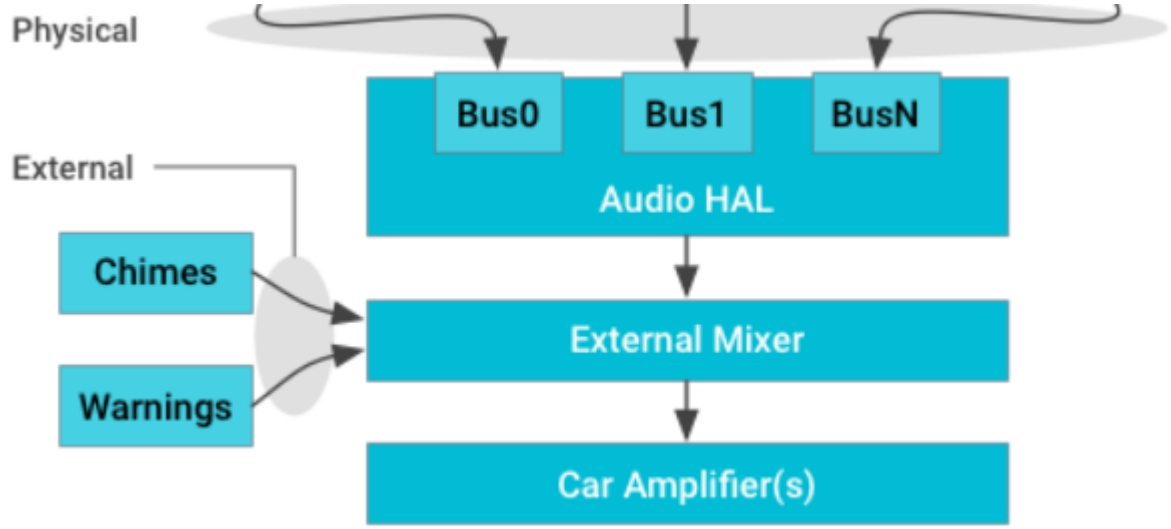
**Outside of Android:**

For reliability, external sounds (coming from independent sources such as seat belt warning chimes) are managed outside Android, below the HAL or even in separate hardware.

System implementers must provide a mixer that accepts one or more streams of sound input from Android and then combines those streams in a suitable way with the external sound sources required by the vehicle.

If a sound needs to be ducked or routed to different speakers, the external mixer can do that invisibly to Android.

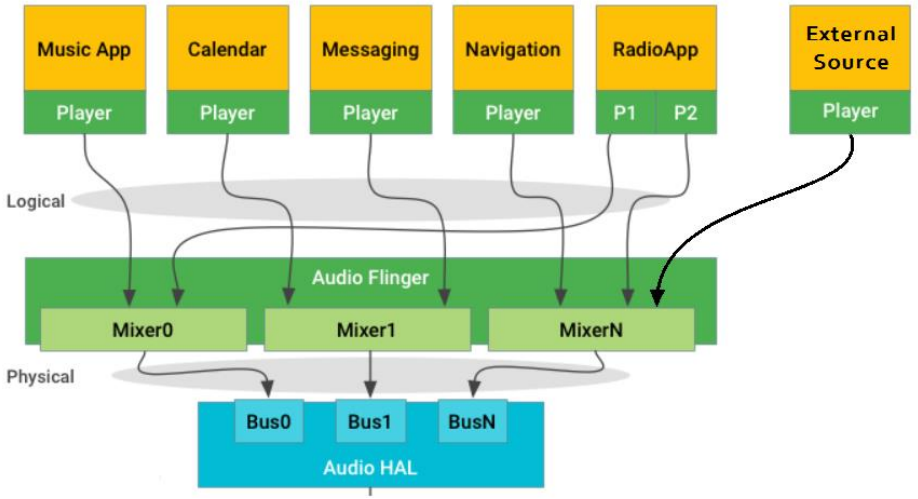
Quote from Android Automotive Audio Here and Here



## 1- How is it done?

**Inside of Android:**

- If external streams are media sources that should interact with the sound environment Android is generating (for example, stop MP3 playback when an external tuner is turned on), those external streams should be represented by an Android app. (source)
    - One suggested mechanism to control such external devices is `AudioManager.createAudioPatch()` (source)
    - Several limitations may arise when using a audio patch with Android. `HwAudioSource` is a new type of player designed as a software patch (source)
    - Most audio sources should be captured using `AudioRecord` or a related Android mechanism. The data can then be played through `AndroidTrack` (source)



## Summary

Input streams to Android (external sources need to be brought into the Android head unit, if all mixing is done inside Android).

1. How is this done?

**Either outside of Android with an external mixer under the HAL or using an App and the corresponding API**

2. Are there limitations on the number of streams?

**There are no limitations on the streams it depends on the mixer if it's outside of Android**

3. Can we bring the required metadata in (or at least associate "hard coded" metadata with the identity of a particular incoming stream. For example we know this one is a prioritized type of stream)

**If we are representing the stream as an App, we can use the API to define its attribute or meta-data such as usage, content-type, flags, context, etc.**

**For example:**

```
mHwAudioSource = new HwAudioSource.Builder()
                .setAudioDeviceInfo(AudioDeviceInfo: info)
                .setAudioAttributes(new AudioAttributes.Builder()
                        .setUsage(AudioAttributes.USAGE_MEDIA)
                        .build())
                .build();
```