

world dab

SUMMIT

From Asks to Implementation

INITIATIVE TO ENHANCE BROADCAST RADIO IN
ANDROID AUTOMOTIVE

Broad Global Coalition Assembled in 2020



MEDIA GROUP



Strong WorldDAB Representation



Direct Participation by 4 WorldDAB
Steering Board Members

Project Objectives

- Educate
- Advocate
- Prototype
- Implement
- Accelerate



Focused Working Groups

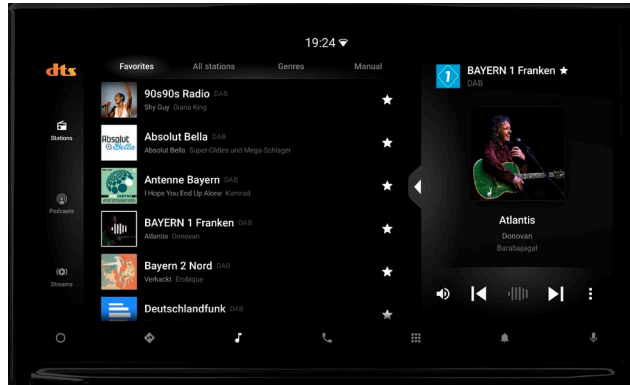
WG1: Communication & Engagement Team

WG2: UX Design Team

WG3: Implementation Software Team/Reference Hardware



Analog



NAB PILOT ANDROID AUTOMOTIVE

Necessary Broadcast Radio Features

Specific features currently not supported or not fully supported for all broadcast standards

- Station logo
- Radio Data System (RDS)
- Radio Text+
- Dynamic Label Segment
- Song titles
- Station Information Services
- Real-time information
- Frequency
- Announcements
- Album art
- Dynamic Text
- Slideshow images
- Multicast channels
- Alternative frequency
- Station List

NAB PILOT ANDROID AUTOMOTIVE

DAB Slideshow

Full Screen Player

Automated Slide show (Now Playing art work) / Visual radio experience

Working with Google

- Complex
- Controlled
- Sequential
- Selective
- Driven by market position and opportunity

Working with Google - Motivation

- Driven by market position and opportunity

Since Android Automotive's Launch in 2017



59.02



30.37



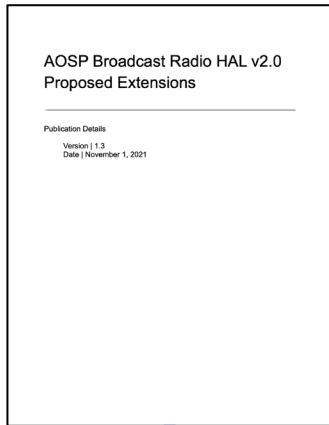
57.78

Millions of Cars Manufactured or Deployed*

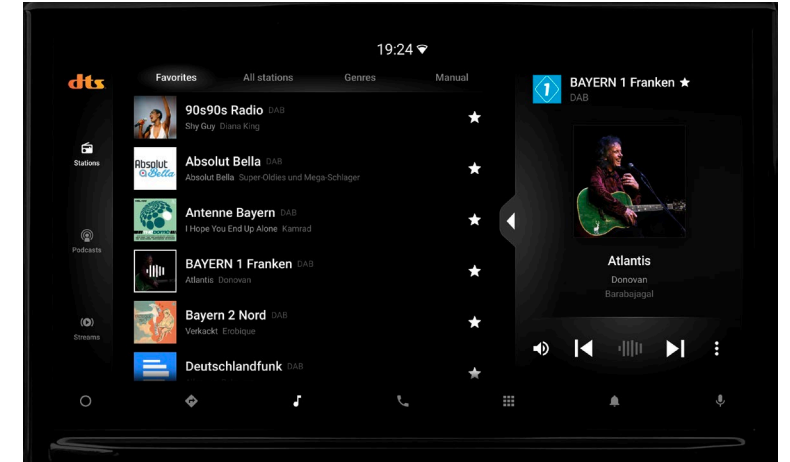
* Public reports through 2022

NAB Pilot: Timeline and Delivery

2020 – Project Formation



2021 – Project Execution & Delivery



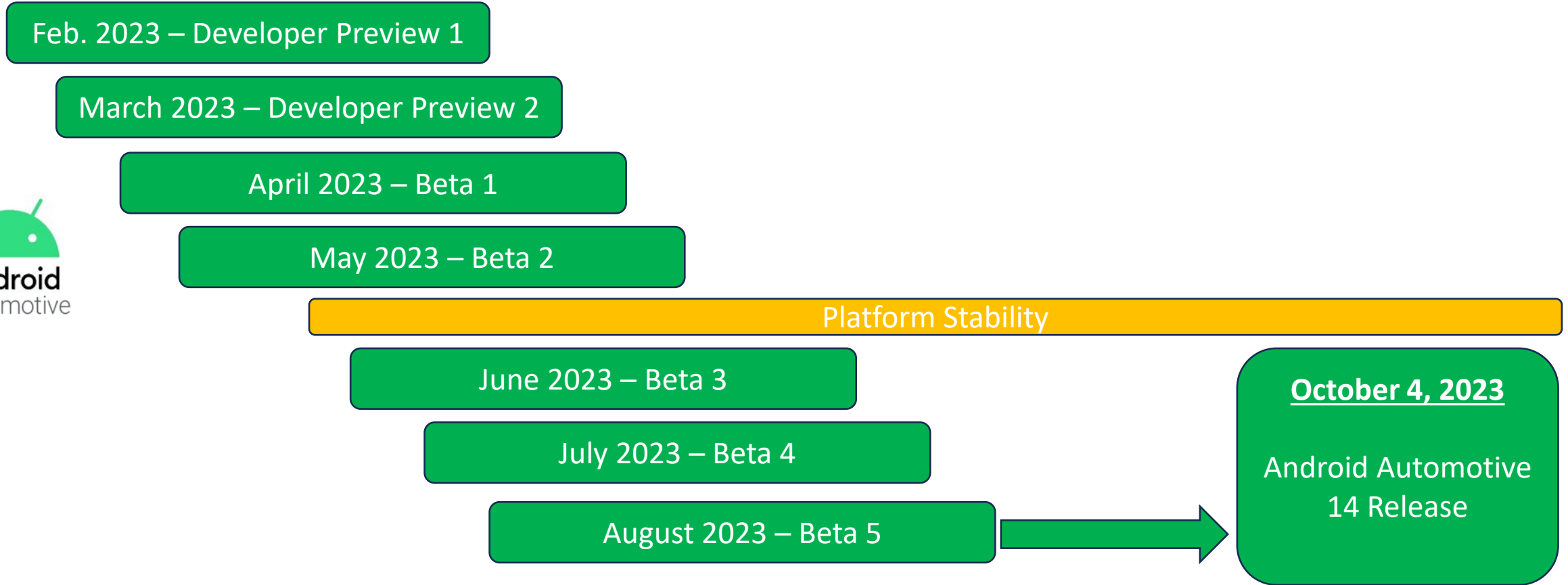
2022 – Engineering Support and Validation

Nov. 2021

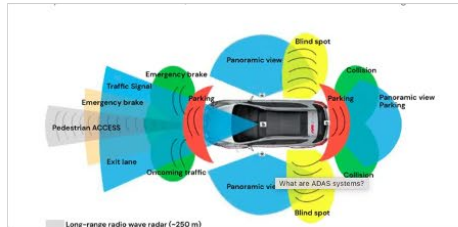


2022/23 – Google Validation, Testing & Release

Google's Development & Release



Android Automotive 14 Complexity



ADAS – Driver Assist Systems

- ✓ AEB: Automatic Emergency Braking
- ✓ FCW: Forward Collision Warning
- ✓ BSW: Blind Spot Warning
- ✓ LDW: Lane Departure Warning
- ✓ ACC: Adaptive Cruise Control
- ✓ HOD: Hand on Detection



Non-ADAS Systems

- ✓ Steering Wheel Status
- ✓ EV: Braking, Acceleration & Battery
- ✓ Engine Idle
- ✓ Transmission Profiles
- ✓ Window, Mirror & Door properties
- ✓ Tire Pressure Status
- ✓ Seat & Headrest Configuration



Cockpit Control – Climate, Media & Navigation





- ✓ System Optimization
- ✓ Multi-display Mirroring
- ✓ Dynamic audio Zones
- ✓ Camera frames and metadata
- ✓ HUN: Heads up notifications
- ✓ Audio sharing
- ✓ Concurrent media sessions
- ✓ HVAC - Seats

The Asks...The Implementation

AOSP Broadcast Radio HAL v2.0
Proposed Extensions

Publication Details
Version | 1.3
Date | November 1, 2021

C A R I A D
A VOLKSWAGEN GROUP COMPANY



DOCUMENT REFERENCE

- 3.0 | HD Radio Extensions – *In Process*
- 4.0 | DAB Receiver Extensions - *Accepted*
- 5.0 | DMB Receiver Extensions - *Accepted*
- 6.0 | Metadata Key Extensions – *In Process*
- 7.0 | Vendor Extensions – *Status Quo*
- 8.0 | API Extensions – *Accepted*

RADIO REMAINS A PROTECTED SYSTEM APP

The Implementation – Supporting Documentation

The screenshot shows a web browser displaying the Android Automotive documentation page for "Implement Radio". The browser's address bar shows "source.android.com". The page has a navigation bar with "Docs" selected and a search bar. Below the navigation bar, the "Automotive" section is highlighted. The main content area features the title "Implement Radio" and a sub-header "AOSP > Docs > Automotive". The text explains that the page covers hardware and software implementation levels. A list of bullet points includes links to "System components", "Broadcast Radio Hardware Abstraction Layer", and "Radio control implementation". A right-hand sidebar titled "On this page" lists various sub-topics like "Radio reference app", "Radio Manager", and "Broadcast Radio Service".

source Docs GO TO CODE Search English Sign in

DOCUMENTATION

Getting Started Security Core Topics Compatibility Android Devices **Automotive** Reference

Filter

▶ Displays and Input

▶ Driver Distraction

Flash Wear Management

▶ Location Bypass

▶ Notifications

▶ Power

Radio

Set Up Remote Access

▶ Rotary Controller

▶ Security

AOSP > Docs > Automotive Was this helpful? 👍 🗨

Implement Radio

This page explains how to implement radio at the hardware and software levels.

- [System components](#) illustrates and describes the radio technology stack.
- [Broadcast Radio Hardware Abstraction Layer](#) provides data structures and interfaces for OEMs to implement broadcast radio such as AM/FM and digital audio broadcasting (DAB) radio at the hardware level.
- [Radio control implementation](#) is based on `MediaSession` and `MediaBrowse`, which enable Media and voice assistant apps to control the radio. In addition to the content provided below, see [Build media apps for cars](#).

On this page

- [System components](#)
- [Radio reference app](#)
- [Radio Manager](#)
- [Broadcast Radio Service](#)
- [Broadcast radio HAL](#)
- [Broadcast Radio Hardware Abstraction Layer](#)
- [Broadcast radio HAL interface](#)
- [Interface clarifications](#)

The Implementation – The Impact

- Ensures interoperability, portability and commonality across platforms, implementations and brands.
- Reduces need for branches and derivative work to support implementations
- Improved station identification, discovery and multiplex management
- Enhanced communication between system and app layers for optimized user experience

Conclusion – Broadcast Remains Relevant, but Requires Effort

- Google's innovation is driven by marketplace, commercial partners and scale
- Together we were able to engage and deliver improvements for radio
- We continue engagement for AOSP 15
- We are assessing releasing the full Phase 1 report



Thank you to those who joined the effort



John Clark

**Senior Vice President, Emerging Technology
and Executive Director, PILOT**

