

RadioDNS Hybrid Radio

Introduction

Hybrid Radio



Deliver audio using broadcast
Reliable, ubiquitous, free to air, economic

Enhance radio by using IP in parallel
Add content, metadata & interactivity



Our Ethos

Hybrid Radio that is as **open** as broadcast radio

Open Standards and **Interoperability** protect
broadcasters and manufacturers from proprietary
lock-ins and enabling gatekeepers

Durable and **Global** - works with FM, HD, DAB etc.

We are a **not-for-profit membership** organisation

Open Standards

ETSI TS 103 270 v1.1.1 (2015-01)



RadioDNS Hybrid Radio;
Hybrid lookup for radio services



ETSI TS 102 818 v3.1.1 (2015-01)



Hybrid Digital Radio (DAB, DRM, RadioDNS)
XML Specification for Service and
Programme Information (SPI)



ETSI TS 101 499 v3.1.1 (2015-01)



Hybrid Digital Radio (DAB, DRM, RadioDNS);
SlideShow;
User Application Specification



Lookup

Locating IP presence of broadcast radio

[\(TS 103 270 v1.1.1\)](#)

RadioDNS Lookup Standard

Uses **DNS** to locate IP location of a radio station

Standard specifies how to turn broadcast parameters (e.g PI code, frequency) into a **pseudo-domain**

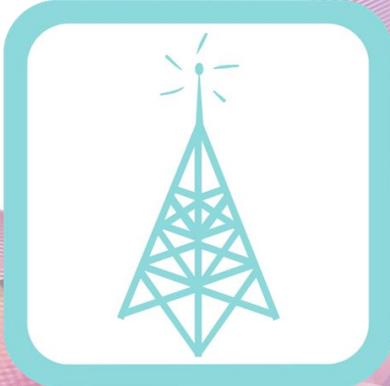
DNS resolution turns this into the **real address**

RadioDNS **manages** the DNS server, acting on broadcaster requests to point DNS records

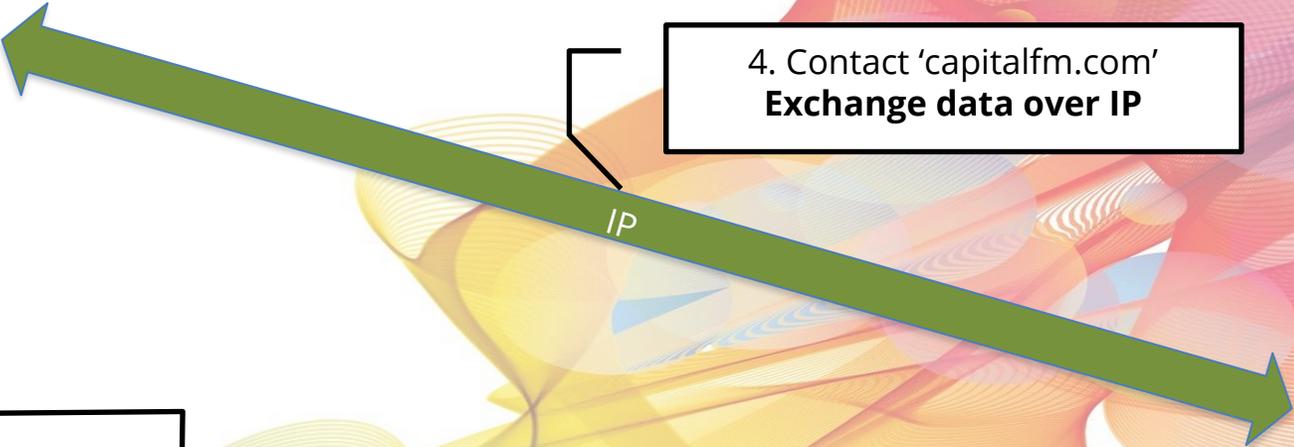
DNS entries are **free**



1. Existing Identifiers
(e.g. f=95.8MHz, PI=c479)

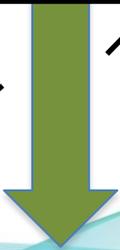


4. Contact 'capitalfm.com'
Exchange data over IP



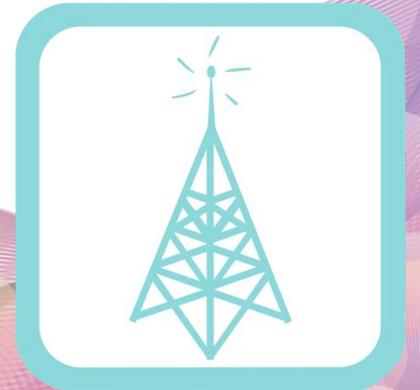
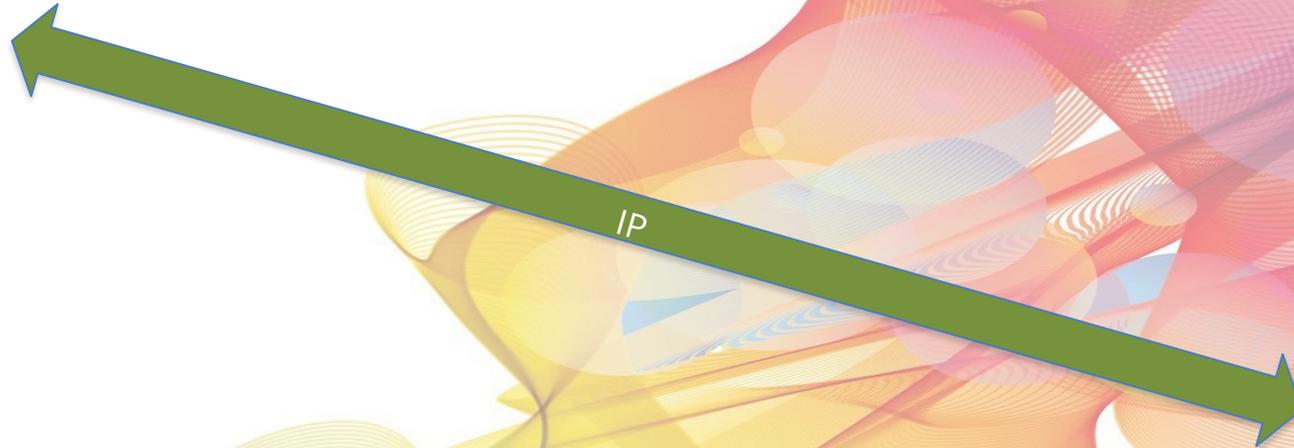
Capital FM
95.8MHz
DAB+
capitalfm.com

2. DNS lookup
'09580.c479.ce1.fm.radiodns.org'



3. DNS Response
'capitalfm.com'





Listener finds station by tuning **normally**

We do not publish a “station directory”

The radio connects **directly** to radio station

NO connections come via RadioDNS

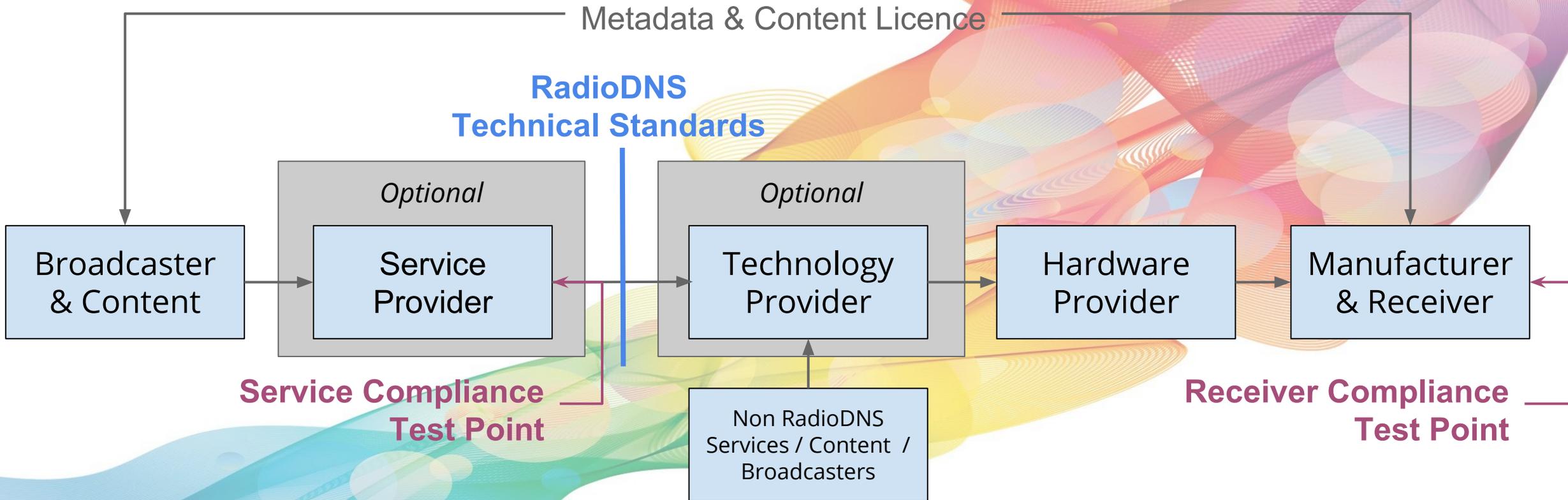
Interoperability

Radio stations and manufacturers can choose to implement RadioDNS directly, or commission a third party provider to do so

Control of the DNS records, and flow of traffic, is **always** with the broadcaster [\(Our domain Trust Model\)](#)

Receivers do the same lookup and use the same standards for data transfer **globally**

Content Flow



RadioDNS does not hold, aggregate, transfer or have visibility of content, metadata or flow



Metadata

Service and Programme Information

[\(TS 102 818 v3.1.1\)](#)

Metadata

Describing your **station** accurately

Name, description, logos, frequencies

Describing your **programmes** accurately

Names, times, presenters, synopsis, keywords

Live and **On-Demand / Podcast**

Improving User Interfaces

Long station names and logos for FM radio broadcasts

Makes broadcast radio **searchable**

Supports high quality **voice control** without relying on GAMA-provided services

Station Logos

RadioDNS allows manufacturers to get the **correct** station logos directly from the radio station

Standard licence terms require checking for updates every **30 days**

Works with **intermittently connected** cars (e.g. Bluetooth tether)



Switch Broadcast / Streaming

Provide **streaming URLs** for each station

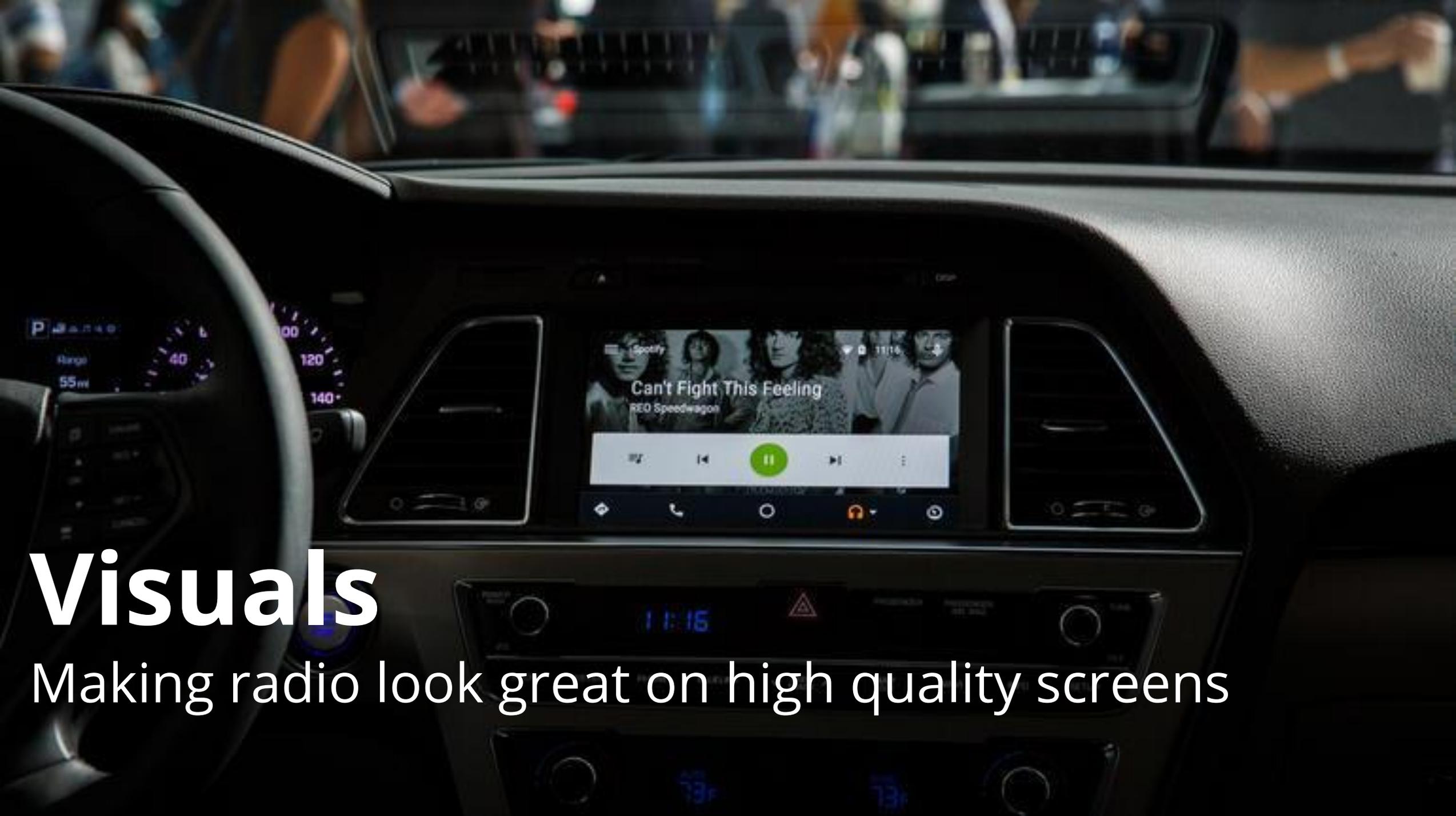
Radio can switch **automatically** to streaming when broadcast is unavailable

Seamless switching is possible if stream audio closely matches broadcast in time (<15" difference).

Licensing and Security

Broadcasters can adopt the **RadioDNS Standard Licence** or apply their own licence terms to metadata
Security is controlled through broadcaster-issued API keys for trusted users / manufacturers who have signed agreements.

Baseline “**anonymous**” access is defined



Visuals

Making radio look great on high quality screens

Screens - Getting Better

'Standard' Resolution (200px x 200px) is far too small

Screen resolutions vary considerably across cars

Manufacturers want visuals that fit their UX design

IP transferred visuals can be dynamically scaled to exact sizes for each radio device

Visuals Standard

Utilises [STOMP](#) or [COMET](#) as signalling protocols

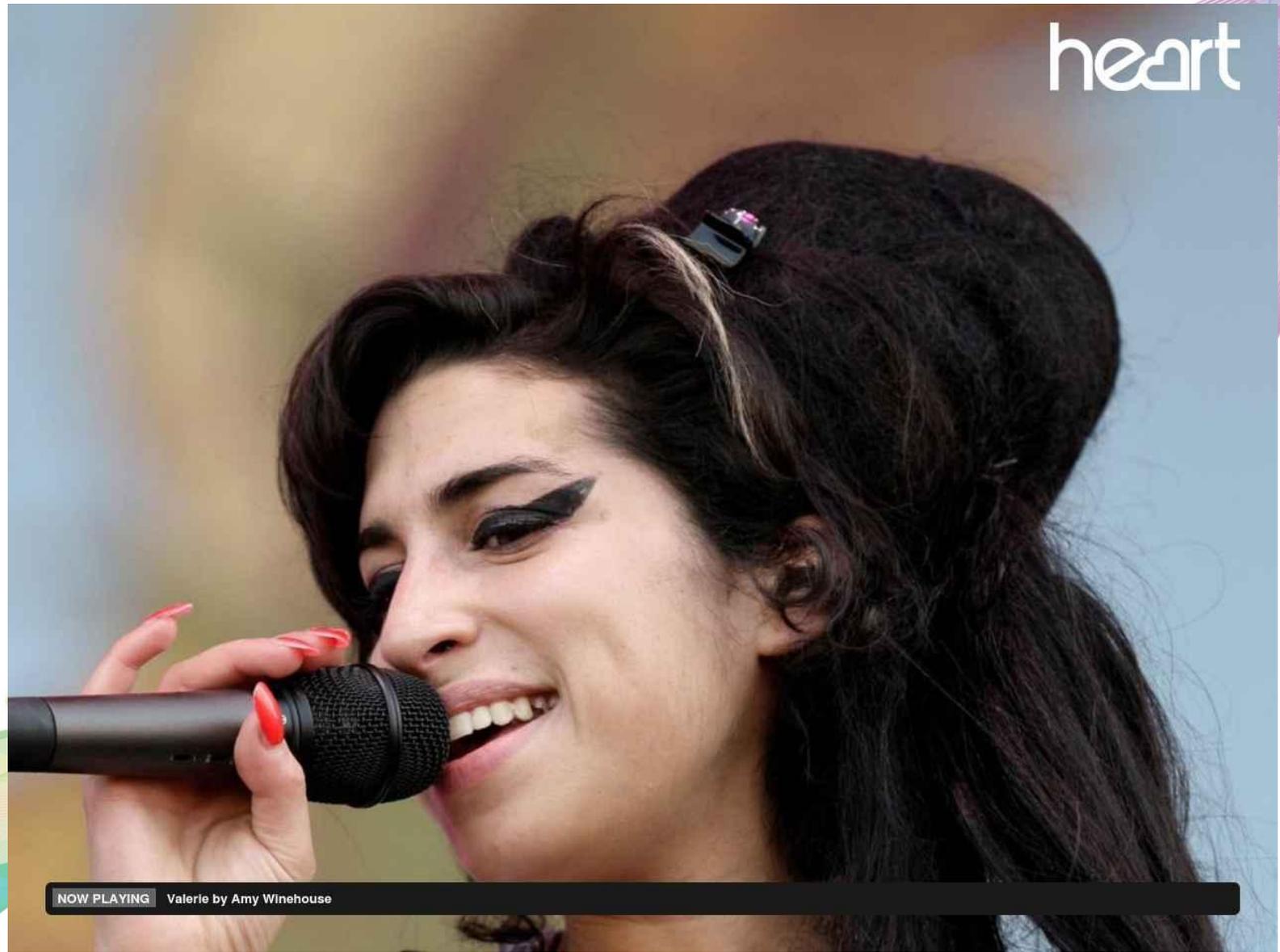
Broadcaster instructs clients to retrieve images over HTTP

Client requests image at a **preferred resolution** and displays it at the specified time / or "NOW"

Simple protocol for head-units - does not require a browser.



320px x 240px



1280px x 960px

Example of dynamically produced images from Heart London. Note improvement in resolution but also quality / reduction in artefacts. The client device gives it's preferred image resolution when requesting an image



Interactivity

Capturing interest in radio

Interactivity

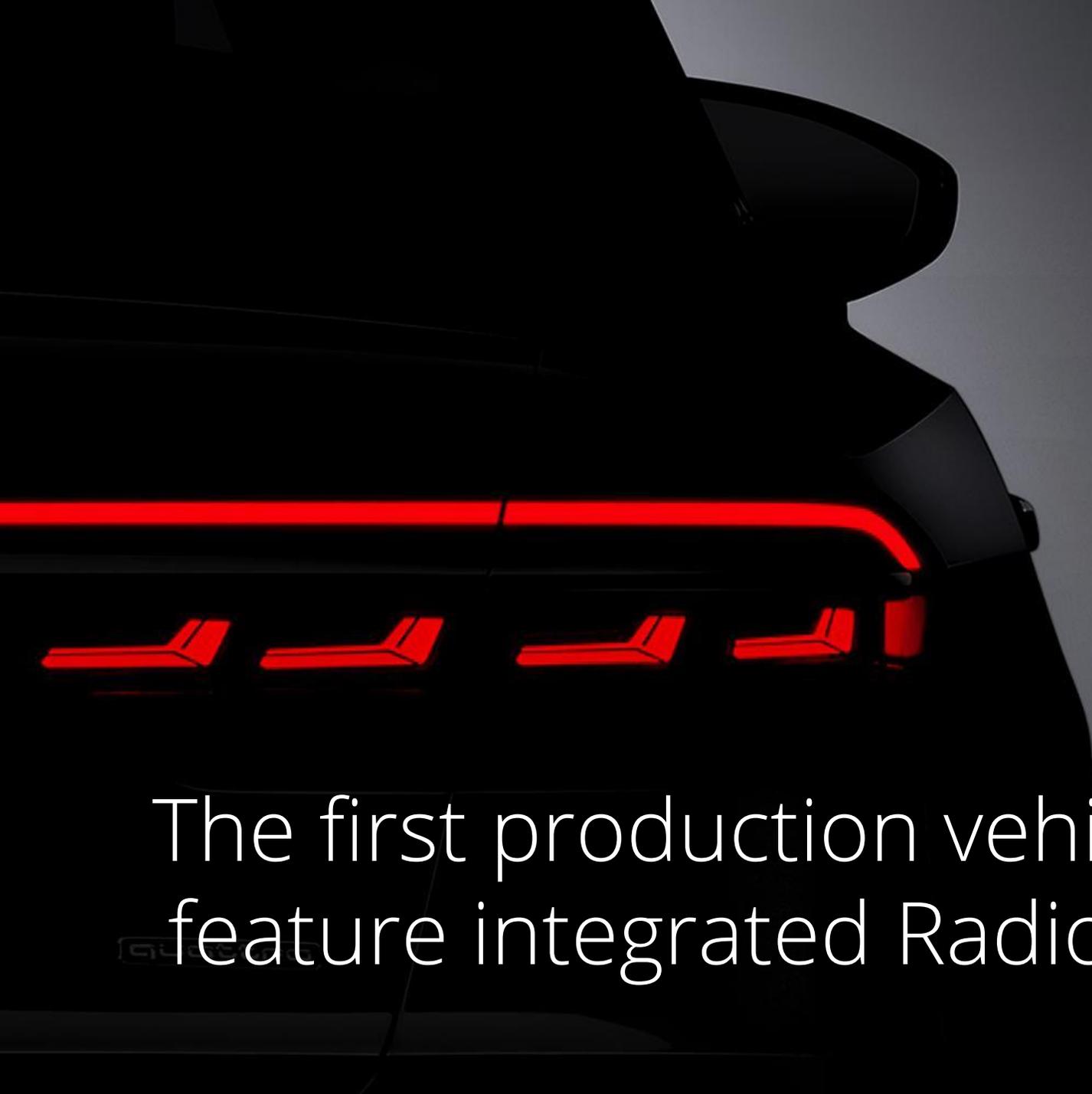
Radio generates **peaks** of interest

Capture, measure and **respond** to listeners' interests

Physical button – push when you hear something

Speech command - “OK Car, this is interesting”

Insight to share with programmers and advertisers.

A close-up, low-angle shot of the rear of a dark-colored Audi A8. The car's rear light signatures are illuminated in a vibrant red, including a horizontal line across the trunk and four rectangular light elements below it. The background is a dark, gradient grey.

The New Audi A8

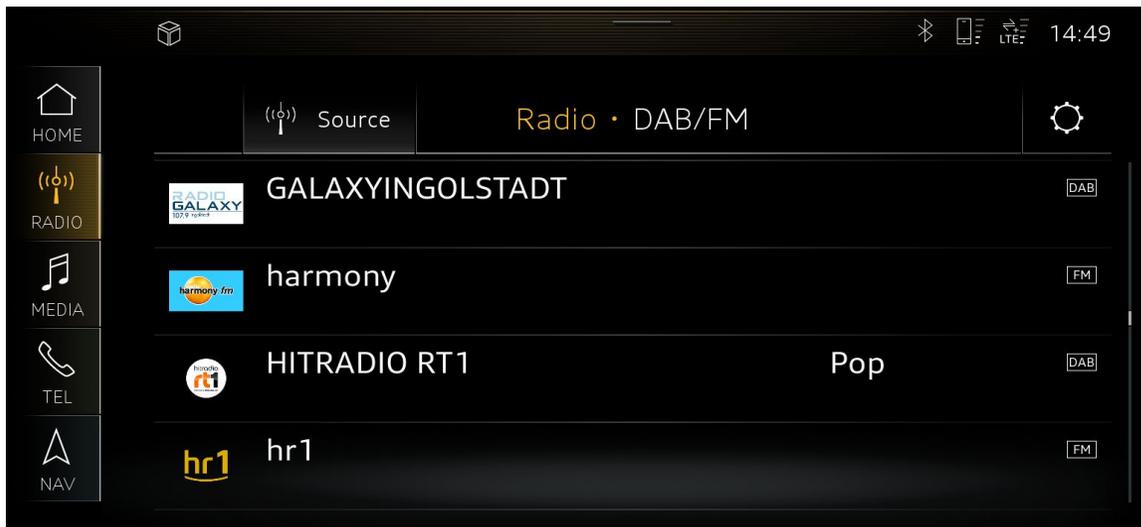
The first production vehicle in the world to
feature integrated RadioDNS functionality

Audi A8

RadioDNS[®]
HYBRID RADIO

The Future of Radio in
Connected Cars





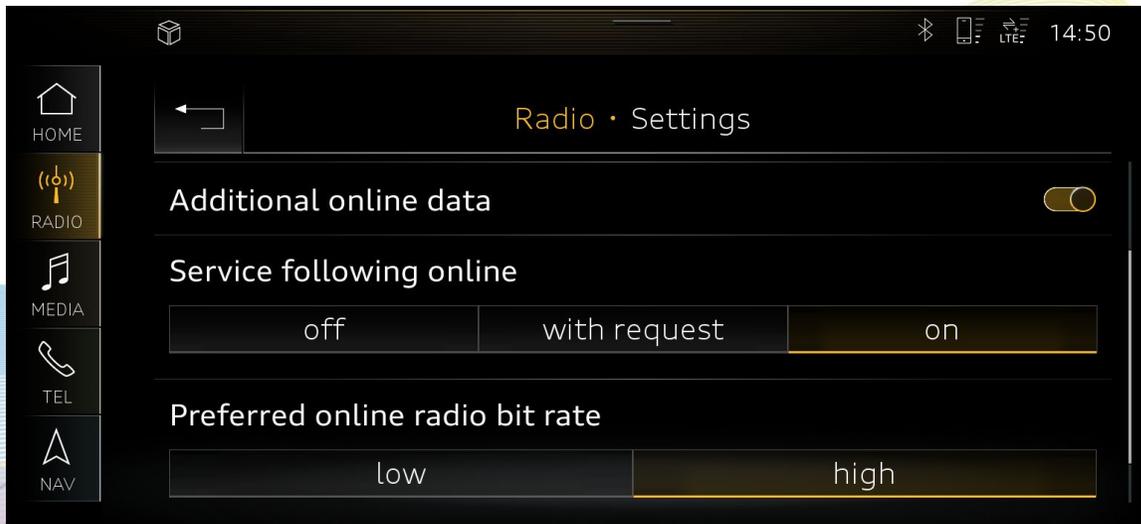
Single station list navigation with accurate station logos

Automatically chooses the best way to listen



Single push presets

Always finds the station you want



Automatic switching between broadcast radio and IP streaming

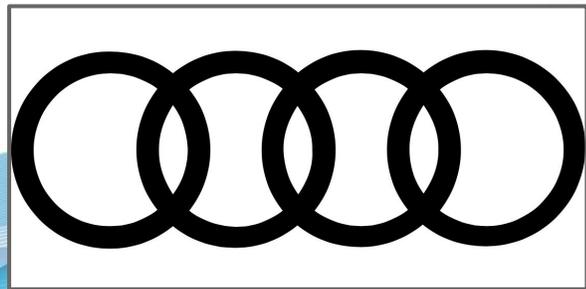
Continuous listening

A close-up, low-angle shot of a car's rear light assembly. The car is dark, and the lights are illuminated with a bright red glow. The light signature consists of a horizontal bar at the top and four distinct, angular light elements below it. The background is a dark, gradient grey.

Rolling out across Audi / VW

radiodns.org/audi

Automotive Manufacturers



Coverage



Countries where a significant share of radio listening is accompanied with RadioDNS Hybrid Radio services. See [coverage information](#).

Summary

RadioDNS is the **only** open standard for hybrid radio

Protects broadcasters and manufacturers

No single company controls / handles content

Global coverage - works with FM, DAB, HD etc.

Working alongside **WorldDAB** to create a great user experience in **connected cars**.

RadioDNS Hybrid Radio

Nick Piggott, Project Director

nick.piggott@radiodns.org

radiodns.org