

# RadioDNS 18th General Assembly

20th February 2024 @ 14:00 UTC

# Welcome

**Nick Piggott**

Project Director, RadioDNS

# Agenda

Members' Business

RadioDNS in 2023

Member Presentation – Radioplayer

RadioDNS in 2024

Member Presentation

# Voting

No elections, so it's simple voting

As long as more members **agree** than **disagree**, the vote is carried

We'll ask you **say** or **chat** your vote



# Members' Business

**Ben Poor**

Digital Radio Project Manager, EBU  
Secretary, RadioDNS

# Voting

Approve the 17th GA minutes

Approve the 2023 Financial Statement

Approve the 2023 Steering Board decisions

Approve the 2024 Plan

Simple majority to pass

# Minutes of the 17th General Assembly

Online at

<https://radiodns.org/organisation/general-assembly/ga-feb-23/>

Do you approve the 17th General  
Assembly Minutes?

**VOTE**

# 2023 Financial Statement



Prepared by an independent accountant

We are exempt from a full audit

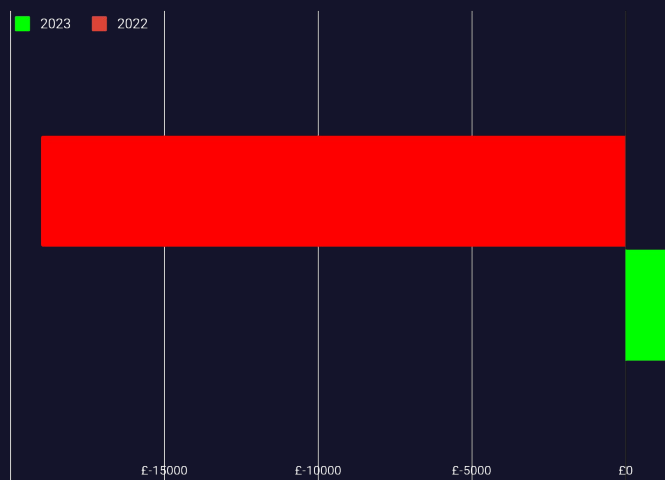
# 2023 Financial Strategy

Maintain our surplus at around £70k

- Continue development of FQDN list
- Update our prototype / demo device(s)
- Renew our trademarks
- Maintain "In Person" events and education

# 2023 Financials

	2023	2022
Income	<b>136 319</b>	103 000
Costs	<b>134 708</b>	122 002
Surplus / (Deficit)	<b>1 611</b>	(19 002)



All Figures are in GBP

EUR 1.17

USD 1.26

AUD 1.93

NOK 13.25

CHF 1.11

KRW 1,679

(17th February 2024)

# 2023 v 2022 – Year on Year Changes

Membership Income change	↑36 161	<b>Income Increase</b>	↑36 161
Legal (Trademarks)	↑18,936	Project Office Costs	↑2,459
Marketing & Education	↑16,942	Technical Projects	↓30,427
Other	↑2,387	<b>Expenditure Increase</b>	↑15 548
<b>Change in Deficit/Surplus 2022 v 2023</b>			↑20,613

We had to renew our trademarks in the USA

We gained £20,613 more in 2023 than we did in 2022

# Balance Sheet

Opening Balance 2022	<b>70 527</b>
Surplus 2023	<b>1 611</b>
Closing Balance 2023	<b>72 138</b>



RadioDNS Limited is registered as a not-for-profit organisation, so does not pay tax on its normal activities, but cannot distribute its surplus to members.

In the event of RadioDNS being wound up, its assets must be transferred to an organisation pursuing the same aims as RadioDNS.



# 2023 Financial Statement

Do you approve the 2023 Financial Statement?

**VOTE**

# The Steering Board

Representing the Members

# Steering Board

Securing the members' interests

Legally responsible for RadioDNS

Oversight of the Project Director / Office

They represent you

# Steering Board Meetings

Review progress and proposals from the Project Office and Technical Group

Approve strategy and check that activities are delivering to that strategy

4-5 meetings a year (virtual & in-person)

# 2023/4 Steering Board Members

	<b>Ben Poor</b> (Secretary) EBU	<b>Neil Bingham</b> Frontier Smart Techn.
<b>Laurence Harrison</b> Radioplayer	<b>David Layer</b> NAB	<b>Maximilian Knop</b> Konsole Labs
<b>Badri Munipalla</b> NPR	<b>Michael Reichert</b> ARD	<b>Jamie Sampson</b> iHeartRadio
<b>Nacho Seirul-Lo Salas</b> NXP Semiconductor	<b>Dave Walters</b> BBC	<b>Christian Winter</b> CARIAD

# 2023 Steering Board Resignations

**Bob Heads**

Frontier Smart Techn.

**John Vermeer**

iHeartRadio

# 2023 Steering Board

The Steering Board met 5 times in 2023

<b>SB55</b>	7th February
<b>SB56</b>	18th April
<b>SB57</b>	11th July
<b>SB58</b>	2nd November
<b>SB59</b>	12th December

<https://radiodns.org/organisation/steering-board/steering-board-2023/steering-board-meetings-2023>

# Reviewing 2023

**Nick Piggott**

Project Director, RadioDNS



**RadioDNS exists to  
accelerate the growth and  
decrease the cost and complexity  
of implementing hybrid radio  
for everyone**



**standardise the structure and flow  
of metadata for the radio industry  
globally**



# RadioDNS – Secondary Effects

## Standardisation

We have to standardise metadata structure and flow to achieve our **primary** goal

But a **secondary effect** is that we assist the structure and flow of radio (and audio) metadata for everyone using it

Broadcasters – produce once to reach **all** devices

Manufacturers – not just hybrid radio, but **any** radio enabled device

# "FQDN List"

Supporting **all** kinds of radio devices – broadcast & IP

# "FQDN List"

A **strategic** development for RadioDNS

Recap of what it is

Update on where we are

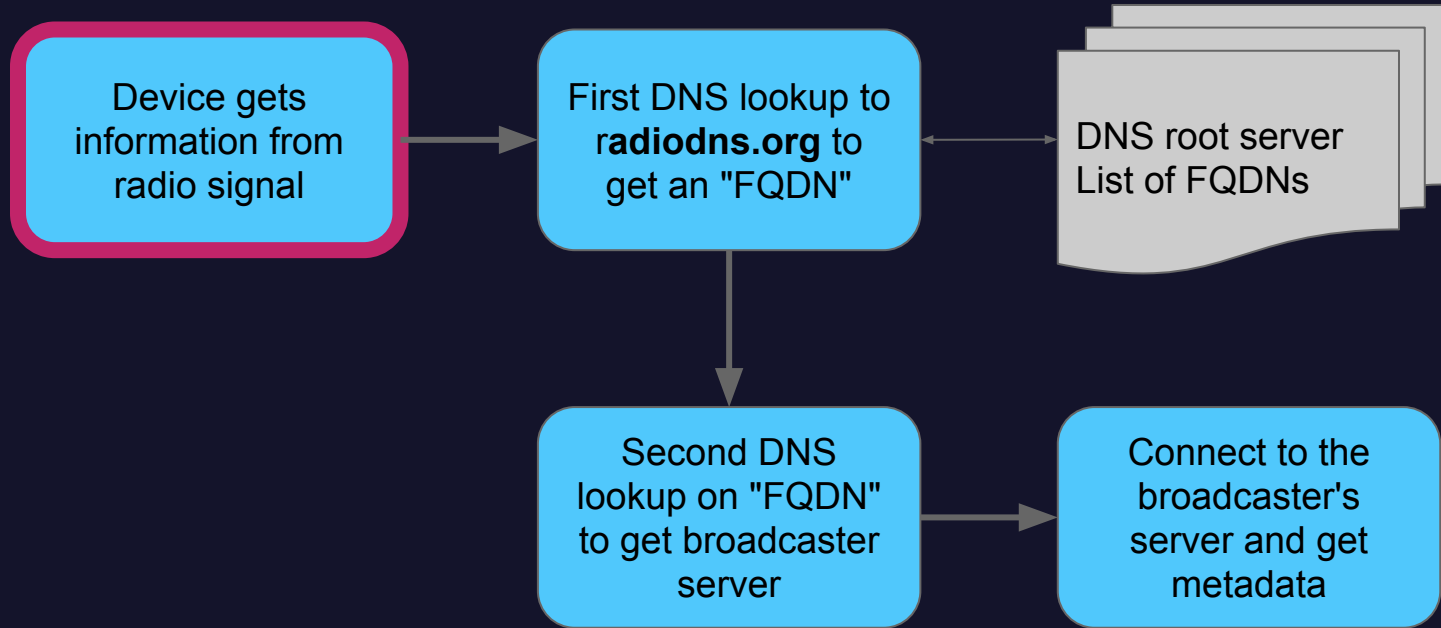
## What is the "FQDN List"?

A list of all the servers that are providing metadata / content using our standards

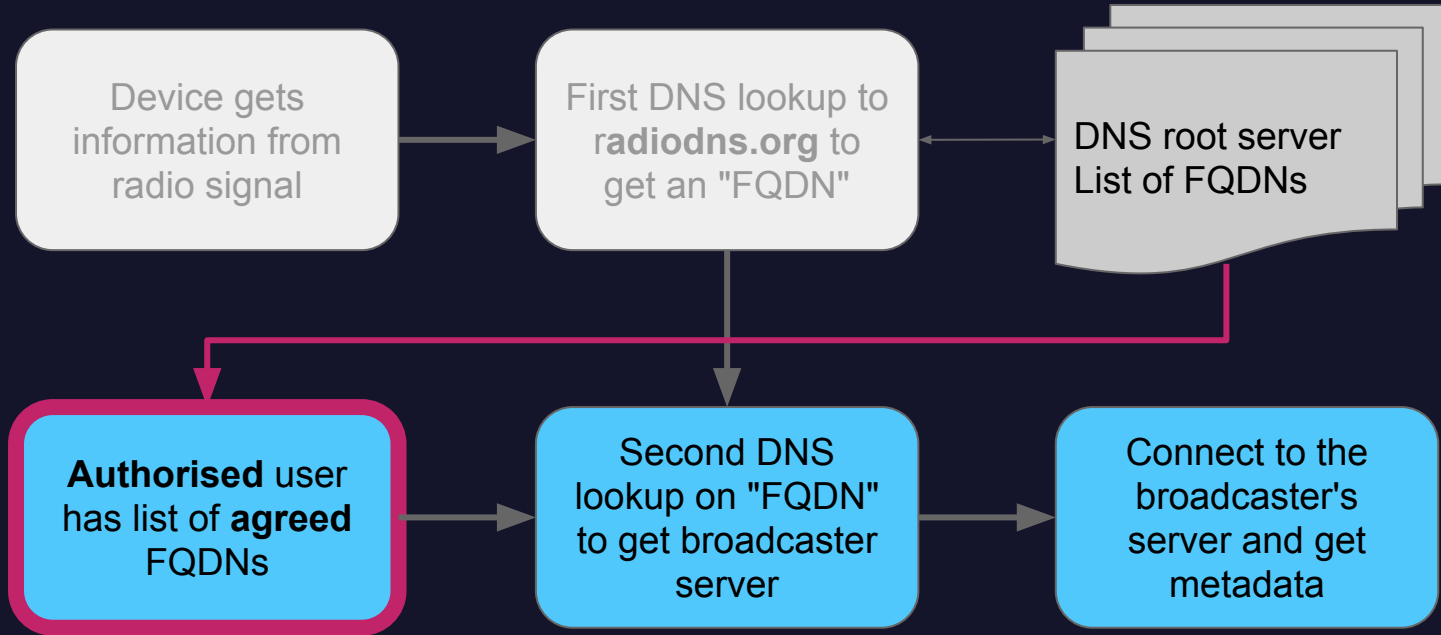
No need to receive a broadcast signal

Enables IP-only devices to access metadata / content consistently

# Original Process



# Additional Process – with "FQDN List"





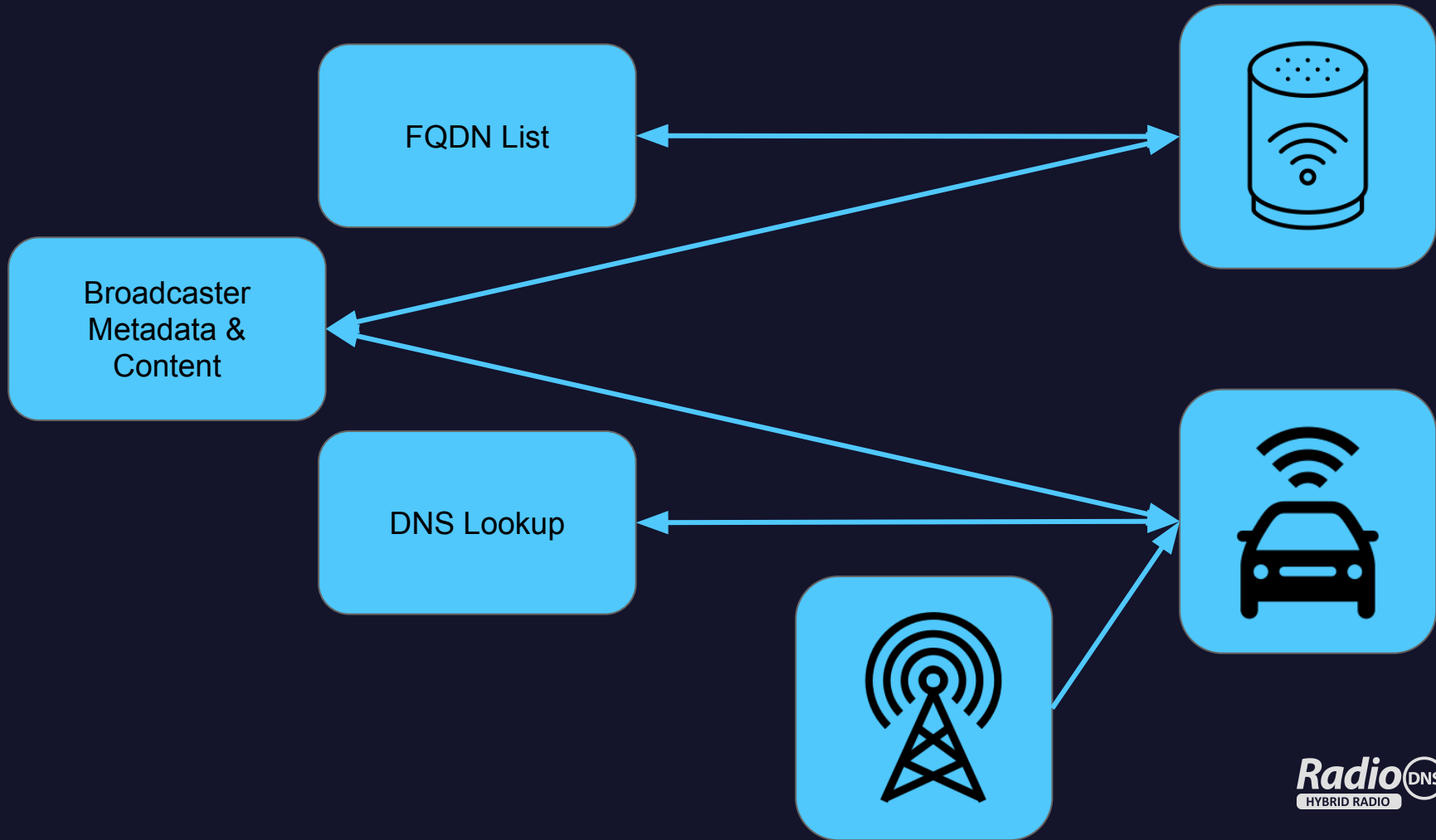
## Potential "FQDN List" users

Smart speakers

Smart TVs

Voice assistants

Streaming apps



# Controls

## Broadcasters retain control

A broadcaster can elect to be excluded from the FQDN list  
RadioDNS Members can choose to be selectively excluded from  
specific users

Access to the list is restricted to potential users approved by the  
Members

## Update on Progress

The image shows the interior of a room during renovation. The ceiling and walls are exposed wooden studs. There is silver insulation on the ceiling and pink insulation on the walls. Several yellow cables are visible, running across the wooden beams. A text box is overlaid on the image, containing the text: "It's not a big job, should only take a day or so, it's just a bit of paint and some filler".

"It's not a big job, should only take a day or so, it's just a bit of paint and some filler"

# Building up to FQDN

## Two significant changes for us

Technology to manage FQDN list generation

Legal agreement for access to FQDN

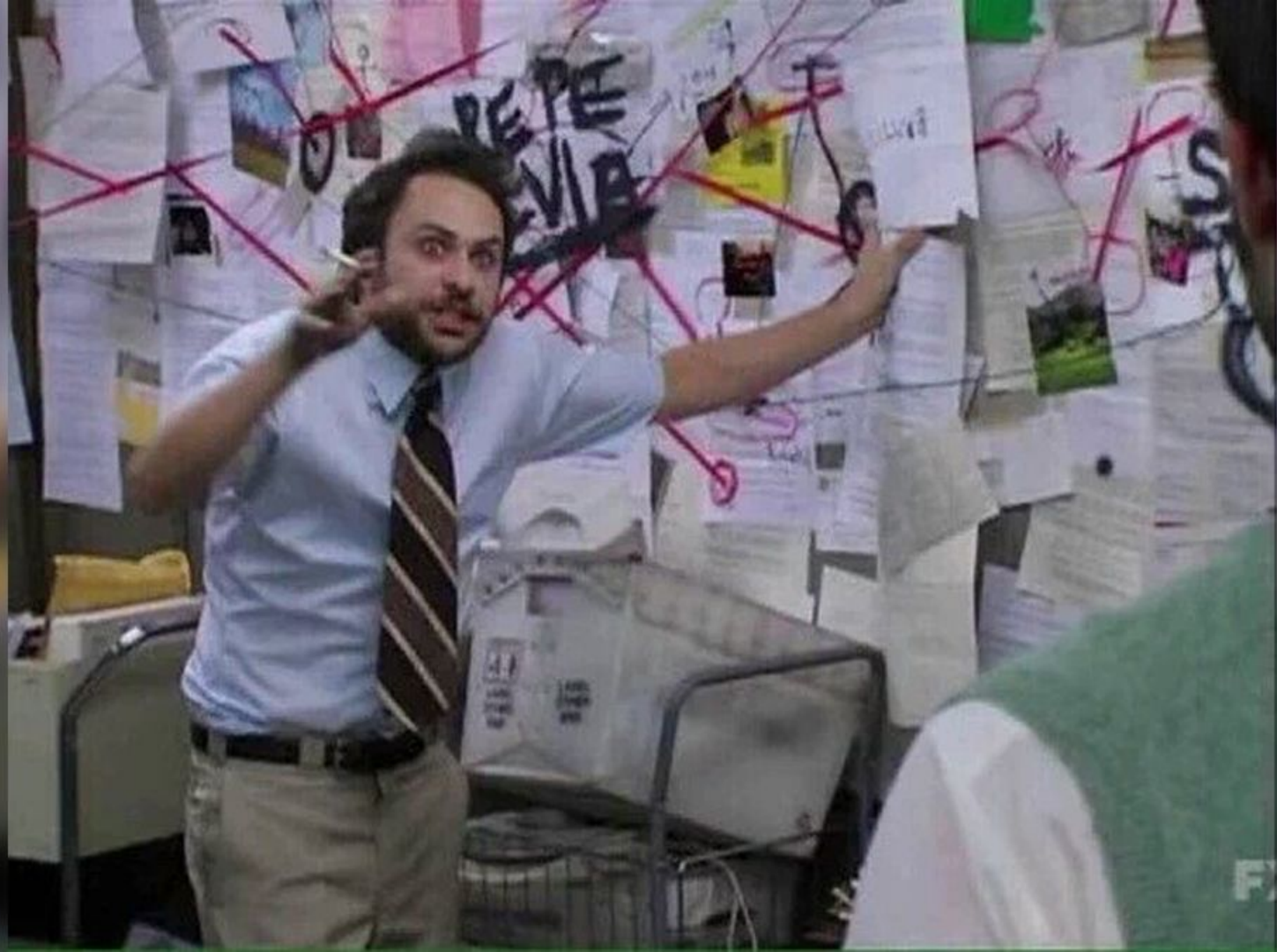
# Relationships – It's Complicated

## Broadcasters & Service Providers

We've had to assign every single DNS entry a "broadcaster" and a "service provider" (sometimes, they're the same thing).

Now we can more accurately manage which broadcasters appear in FQDN lists for different users





# FQDN – Next Steps

Tech is nearly ready

Legal agreements are in draft

We'll circulate these for people's views before we offer them to users



**Education**

**Innovation**

**Operations**

# Education in 2023

**Nick Piggott**

Project Director, RadioDNS

**Rosie Kendrick**

Project Coordinator, RadioDNS

# Events 2023

## RadioDays Europe

Prague

March

Europe's largest radio show.

*Positive engagement with senior people from organisations like NRK, SR (Swedish Radio) and the BBC*



# Events 2023

**NAB Show**  
Las Vegas  
April

Nick spoke at a panel session organised by NABA at the BEIT conference on Metadata and Hybrid Radio: "Broadcasters and Hybrid Radio – It's All About the Metadata"



*Thanks to our member NAB  
for the free booth space.*

# Events 2023

## Autotech: Detroit

Detroit

June

We had a position in the "Startup Zone", and Nick moderated two panels (the videos are our YouTube and Socials)



# Events 2023

## WorldDAB Automotive

Paris

June

Nick spoke alongside Gregor Pötzsch (CARIAD) regarding radio in cars user experience and driver distraction



# Events 2023

## **Radiodays Asia**

Kuala Lumpur

September

*Nick spoke with Yann Legerson  
(Radioplayer) as part of the  
Automotive session*



# Events 2023

## Autotech: Europe

Berlin

November

Exhibits presence and Nick hosted two sessions on User Experience design for vehicles





# Other Events 2023

## **CES**

January  
Meetings

## **ABU DBS**

March  
Presentation & Workshop

## **IBC Amsterdam**

September  
Meetings

## **ARD x EBU x CARIAD**

### **Automotive Workshop**

November  
Developing On-Demand  
Prototype concept

## **NAB Show New York**

October  
Presentation of FQDN list project

# Automotive Workshops

## What are today's issues?

A workshop looking at solutions to problems affecting the experience of radio in cars today?

What solutions can we provide now?

No new technical standards or requirements, just getting things to work properly for listeners/drivers.



# Automotive Workshops

May 2023

Online

November 2023

In person in Berlin, adjacent to Autotech:Berlin conference



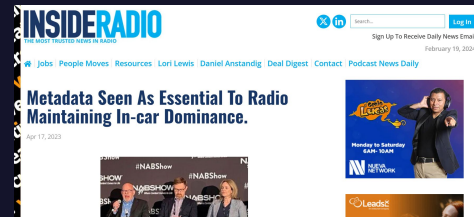
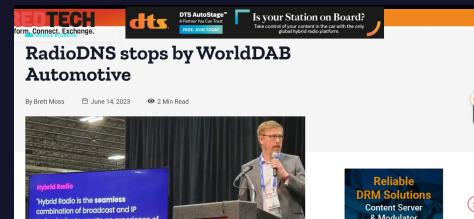
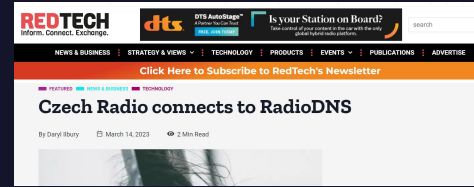
# Press Coverage

Czech Radio connects to RadioDNS

NAB posts engineering conference agenda

RadioDNS stops by WorldDAB Automotive

Metadata seen as essential to radio maintaining in-car dominance



# Marketing

## Physical and digital marketing assets

The collage features a website layout with four columns: **Moving Car**, **Wheels**, **Front of car**, and **Car illustration**. Each column contains the RadioDNS logo and the text: "The perfect blend of broadcast radio and internet connectivity for connected vehicles." Below the website is a business card for **Nick Piggot, Project Director** at RadioDNS, with contact information: nick.piggot@radiodns.org, US: +1 850 886, UK: +44 1600 81, and radiodns.org. The card also features the slogan "Our standards connect radio and the internet" and the RadioDNS logo.

**RadioDNS**  
HYBRID RADIO

### Our standards connect broadcast radio and the internet

- Global Coverage**  
100% of the world's broadcast radio stations are supported by our standards.
- Open Source Technology**  
We promote the use of open source technology to ensure interoperability.
- Enhanced Radio Experience**  
Our standards improve the listening quality of broadcast radio.
- Consistent Listening**  
Our standards ensure consistent listening quality across all devices.

Our suite of open technical standards, combined with our partners' support, makes implementing hybrid radio easy.

### What is RadioDNS Hybrid Radio?

Hybrid Radio is the seamless combination of broadcast radio and internet technologies.

**Key Features:**

- Seamless integration of broadcast and internet technologies.
- Improved listening quality and consistency across all devices.
- Support for a wide range of broadcast radio stations.
- Open source technology for interoperability.

**Members by activity:**

- Members by activity: 100%
- Members by device: 100%

**Our standards connect broadcast radio and the internet**

**RadioDNS**  
HYBRID RADIO

**RadioDNS**  
HYBRID RADIO

Our standards connect broadcast radio and the internet

# Member Communications

## Topical Emails to Members

We use email to send you **important** information

Please check your Spam folders and add [feedback@radiodns.org](mailto:feedback@radiodns.org) to your allowed senders list

# Social Media

## LinkedIn

<https://www.linkedin.com/company/radiodns>

## YouTube

<https://www.youtube.com/@RadioDNS>

## X

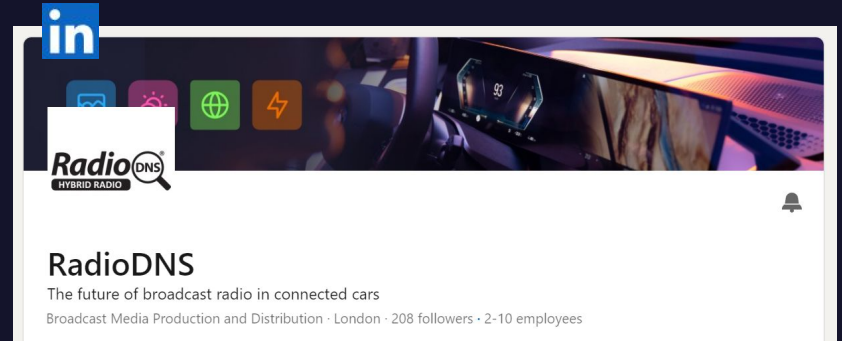
[@RadioDNS](https://twitter.com/RadioDNS)

## Mastodon

[@radiodns@mastodon.social](https://mastodon.social/@radiodns)

## Instagram

[radiodnshybridradio](https://www.instagram.com/radiodnshybridradio)



# Innovation

**Ben Poor**

Technical Group Chair, RadioDNS



# Technical Group

Open to Members only

Oversees our Technical Standards

Maintenance

Enhancement

Innovation

Members must commit to our IPR Policy

# RadioDNS IPR Policy

IPR contributed to our standards must be available on Free, Reasonable, Non-Discriminatory, Zero Cost basis (FRNDZ)

IPR Policy is at

<https://radiodns.org/organisation/statutory-and-historical-documents/>

# Technical Group

The Technical Group met 6 times in 2023

<b>TG22</b>	17th January
<b>TG23</b>	21st March
<b>TG24</b>	2nd May
<b>TG25</b>	28th June
<b>TG26</b>	18th September
<b>TG27</b>	18th December

## Teams in 2023

On-Demand Audio

Targeted Audio into Broadcast

Tagging and Analytics

Listener Login

Hybrid Radio Lookup

# OnDemand Audio

## Recommendations for OnDemand Audio

If you like this (linear) radio show, you might like this audio too

Utilises the existing PI / GI files system

Is it possible to launch a broadcaster app  
to listen to on-demand audio?

# Targeted Audio into Broadcast

How to **seamlessly** replace broadcast audio with audio delivered over IP

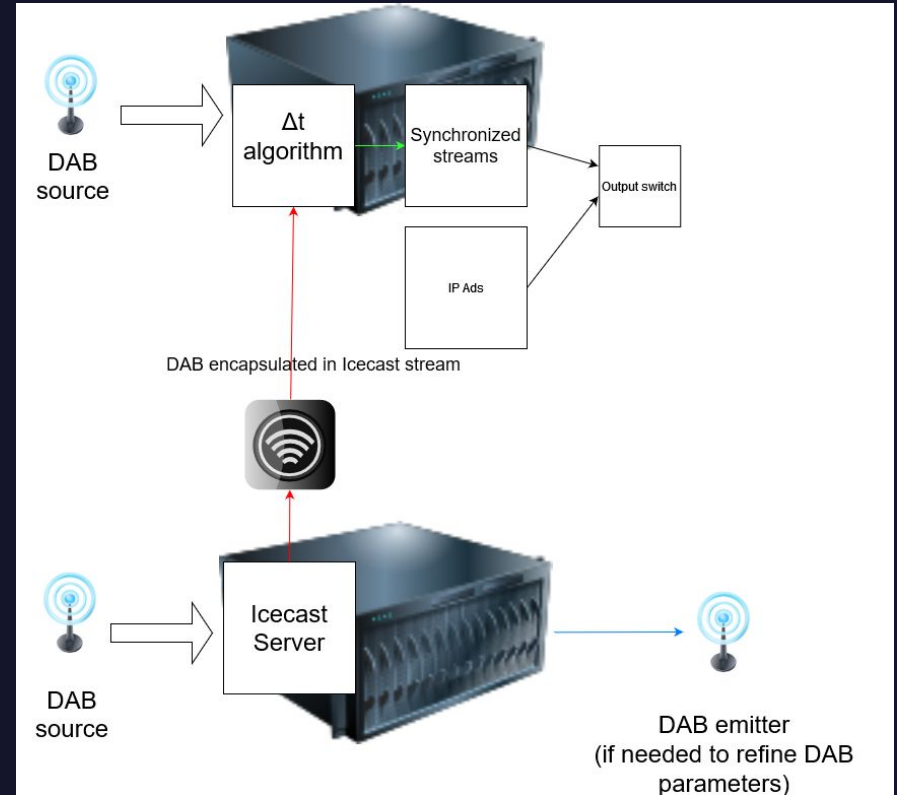
Targeting based on location (or listener)?

Paper prototype devised, needs a real prototype to be built



# Targeted Audio into Broadcast

Aligning audio from broadcast with audio over IP



# Targeted Audio into Broadcast

RTBF Belgium allocated development resource, and completed a POC

Development ongoing



# Tagging and Analytics

A combined standard is ready for prototyping during 2024

Need to understand incentives to implement in vehicles

## Listener Login

An updated standard is ready for prototyping during 2024

Need to understand incentives to implement in vehicles

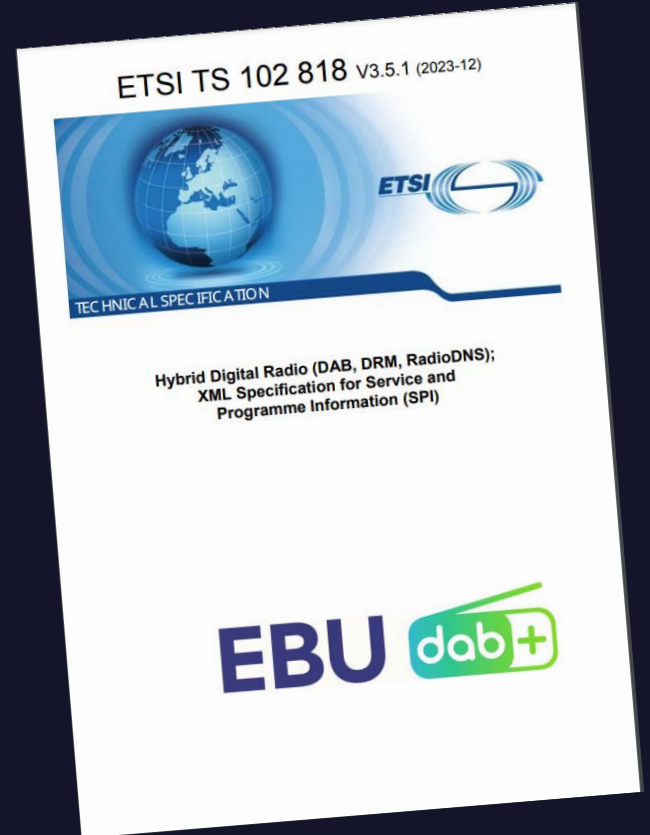
## Hybrid Radio Lookup

Some changes to handle "edge cases"  
we're beginning to see

# Standards Updates in 2023

Update to TS 102 818 "Service and Programme Information" to v.3.5.1

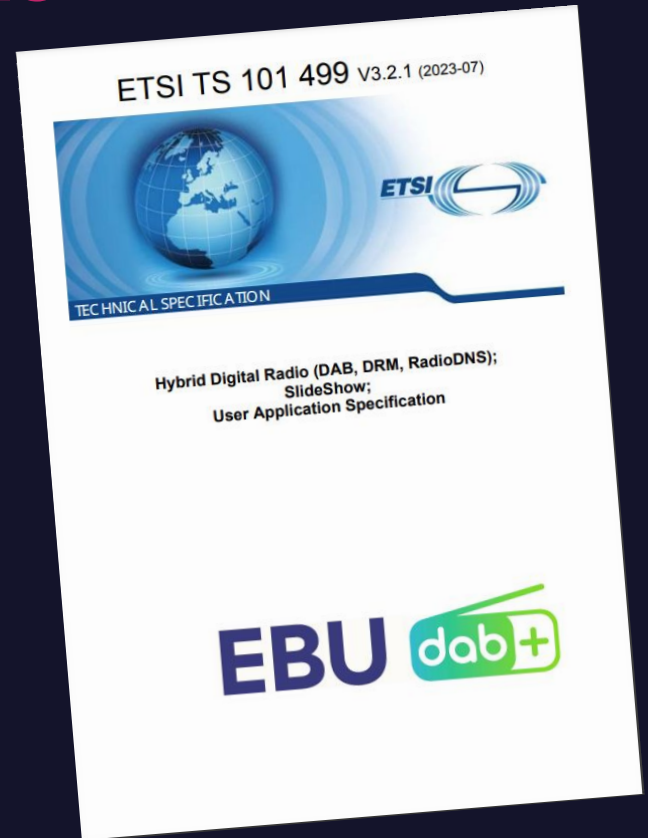
Explains how to describe the **languages** of a radio service



# Standards Updates in 2023

Update to TS 101 499 "Hybrid  
Radio Slideshow" to v.3.2.1

Explains how to push text, images  
and **metadata** in real-time



# Operations

**Andy Buckingham**

Systems Administrator, RadioDNS

# Operations

DNS Servers

Testing Tools

Internal Management Systems

Open Source Software Releases

## DNS Servers

Multiple locations globally

Any failure of one location has insignificant disruption

Easy to scale according to growing demand



## DNS Servers

We operate the **radiodns.org** TLD

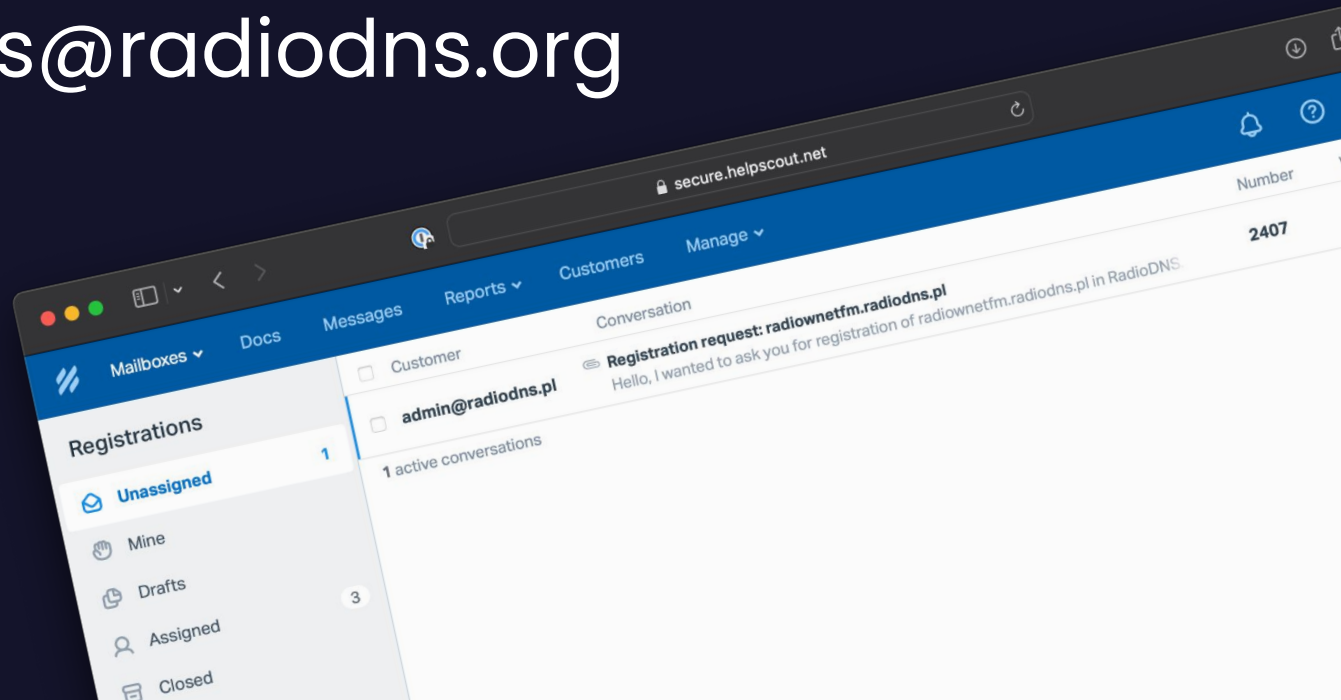
Lookups are handled by local DNS servers

**Target:** 100% uptime for end devices

**Target:** 1 working day turnaround for confirmed DNS record additions/changes

# How We Manage DNS Requests

From **request** to **zone entry**  
registrations@radiodns.org

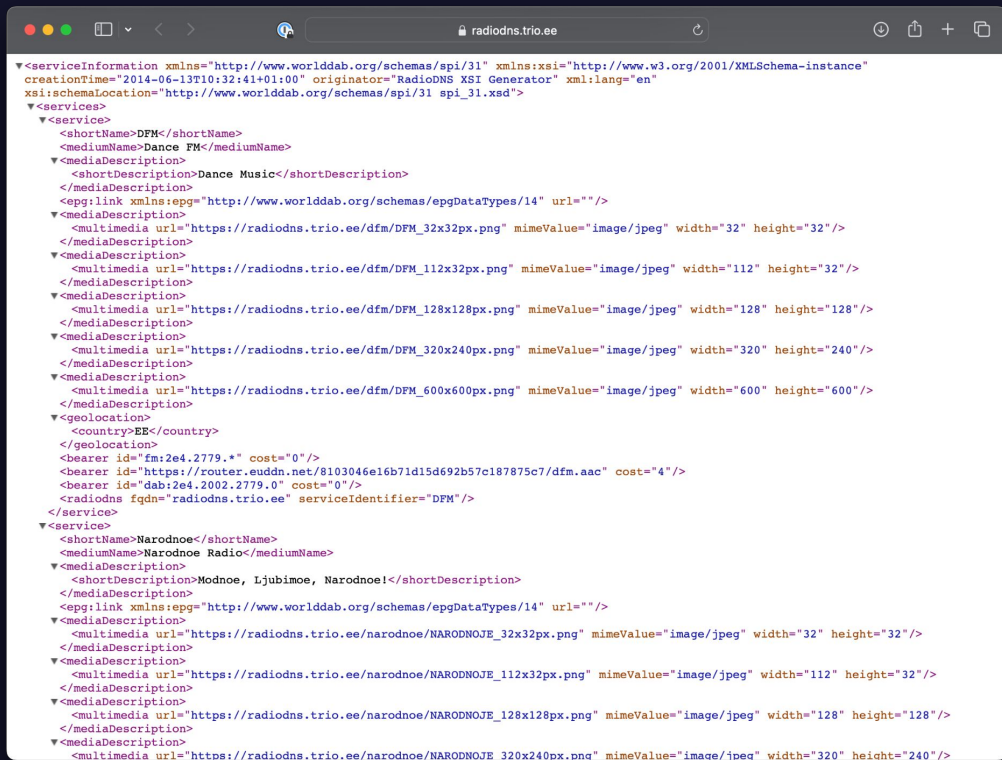


# Registration Request Types

```
*.2323.e4.fm IN CNAME radiodns.trio.ee.  
*.2321.e4.fm IN CNAME radiodns.trio.ee.  
*.2478.e4.fm IN CNAME radiodns.trio.ee.  
*.2779.e4.fm IN CNAME radiodns.trio.ee.  
*.2322.e4.fm IN CNAME radiodns.trio.ee.  
*.2228.e4.fm IN CNAME radiodns.trio.ee.
```

```
*.2323.2002.e4.dab IN CNAME radiodns.trio.ee.  
*.2321.2002.e4.dab IN CNAME radiodns.trio.ee.  
*.2478.2002.e4.dab IN CNAME radiodns.trio.ee.  
*.2779.2002.e4.dab IN CNAME radiodns.trio.ee.  
*.2322.2002.e4.dab IN CNAME radiodns.trio.ee.  
*.2228.2002.e4.dab IN CNAME radiodns.trio.ee.  
*.2D42.2002.e4.dab IN CNAME radiodns.trio.ee.  
*.2F3C.2002.e4.dab IN CNAME radiodns.trio.ee.
```

```
*.2321.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2322.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2323.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2228.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2E88.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2C83.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2724.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2F3C.2010.e4.dab IN CNAME radiodns.trio.ee.  
*.2394.2010.e4.dab IN CNAME radiodns.trio.ee.
```



```
<?xml version="1.0" encoding="UTF-8" ?>  
<serviceInformation xmlns="http://www.worlddb.org/schemas/spi/31" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" creationTime="2014-06-13T10:32:41+01:00" originator="RadioDNS XSI Generator" xml:lang="en" xsi:schemaLocation="http://www.worlddb.org/schemas/spi/31 spi_31.xsd">  
  <service>  
    <shortName>DFM</shortName>  
    <mediumName>Dance FM</mediumName>  
    <mediaDescription>  
      <shortDescription>Dance Music</shortDescription>  
      </mediaDescription>  
      <epg:link xmlns:epg="http://www.worlddb.org/schemas/epgDataTypes/14" url="" />  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/dfm/DFM_32x32px.png" mimeType="image/jpeg" width="32" height="32"/>  
      </mediaDescription>  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/dfm/DFM_112x128px.png" mimeType="image/jpeg" width="112" height="128"/>  
      </mediaDescription>  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/dfm/DFM_128x128px.png" mimeType="image/jpeg" width="128" height="128"/>  
      </mediaDescription>  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/dfm/DFM_320x240px.png" mimeType="image/jpeg" width="320" height="240"/>  
      </mediaDescription>  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/dfm/DFM_600x600px.png" mimeType="image/jpeg" width="600" height="600"/>  
      </mediaDescription>  
      <geolocation>  
        <country>EE</country>  
      </geolocation>  
      <bearer id="fm:2e4.2779.*" cost="0"/>  
      <bearer id="https://router.euddn.net/8103046e16b71d15d692b57c187875c7/dfm.aac" cost="4"/>  
      <bearer id="dab:2e4.2002.2779.0" cost="0"/>  
      <radiodns fqdn="radiodns.trio.ee" serviceIdentifier="DFM"/>  
    </service>  
  </serviceInformation>  
  <service>  
    <shortName>Narodnoe</shortName>  
    <mediumName>Narodnoe Radio</mediumName>  
    <mediaDescription>  
      <shortDescription>Modnoe, Ljubimoe, Narodnoe I</shortDescription>  
      </mediaDescription>  
      <epg:link xmlns:epg="http://www.worlddb.org/schemas/epgDataTypes/14" url="" />  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/narodnoe/NARODNOJE_32x32px.png" mimeType="image/jpeg" width="32" height="32"/>  
      </mediaDescription>  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/narodnoe/NARODNOJE_112x128px.png" mimeType="image/jpeg" width="112" height="128"/>  
      </mediaDescription>  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/narodnoe/NARODNOJE_128x128px.png" mimeType="image/jpeg" width="128" height="128"/>  
      </mediaDescription>  
      <mediaDescription>  
        <multimedia url="https://radiodns.trio.ee/narodnoe/NARODNOJE_320x240px.png" mimeType="image/jpeg" width="320" height="240"/>  
      </mediaDescription>
```

# SI.xml "Diff"ing

```
</geolocation>  
<bearer id="fm:2e4.2779.*" cost="0" />  
<bearer id="https://router.euddn.net/8103046e16b71d15d692b57c187875c7/dfm.aac" cost="4" />  
<bearer id="dab:2e4.2002.2779.0" cost="0" />  
<radiodns fqdn="radiodns.trio.ee" serviceIdentifier="DFM" />
```

```
abuckingham@ns1:/var/lib/bind$ zone-si-diff epg.aiir.net > /dev/null  
conflict 0.ccc3.c19f.ce1.dab The Voice FM North Devon [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
removing 0.c1d7.c1c5.ce1.dab Regency Radio BRIGHTON [Aiir] - orphaned entry  
conflict 10010.ce3f.ca1.fm BayFM - Corner Brook, Newfoundland [Radioplayer Canada] c124.radioplayer.org rdns.aiir.net  
conflict 10420.c482.ce1.fm 3FM Isle Of Man [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10500.c482.ce1.fm 3FM Isle Of Man [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10620.c482.ce1.fm 3FM Isle Of Man [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10660.c482.ce1.fm 3FM Isle Of Man [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 09680.cc84.ce1.fm Erewash Sound [Erewash Sound CIC][Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10350.cc84.ce1.fm Erewash Sound [Erewash Sound CIC][Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10610.cd9c.ce1.fm The Voice FM North Devon [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10780.cd9c.ce1.fm The Voice FM North Devon [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 09560.cf83.ce1.fm seahaven fm [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 09630.cf83.ce1.fm seahaven fm [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10760.cf96.ce1.fm Vibe 107.6 - Radio Made in Watford [Radioplayer UK] c826.radioplayer.org rdns.aiir.net  
conflict 10270.3851.3a0.fm KPGZ 102.7 KEARNEY [REC Networks] rdns.mylpfm.com rdns.aiir.net  
conflict 0.c48c.c1b5.ce1.dab Greatest Hits Radio (Oxfordshire) planetradio.co.uk rdns.aiir.net
```

## Registration “Gotchas”

Invalid SI.xml

No SI.xml created, not hosted online, or not at the correct path on the server

Missing or invalid SRV records on an authoritative domain

Not a streaming directory

# Automated Notifications

Don't forget to tell us if **bearers** change

Some Service Providers automate checks on their SI files and notify us automatically if <bearer> elements change.

This is a great approach

– **we recommend it**

# Server Implementation Testing Platform

## Member only resource

Check and validate  
your RadioDNS  
setup

The screenshot shows the RadioDNS Server Implementation Testing Platform interface. The browser address bar displays `test.radiodns.org`. The page header includes the RadioDNS logo and the title "Server Implementation Testing Platform". A navigation bar shows the status: "Pass 47", "Fail 0", "Warn 0", "Skip 22", and "Pending 0". A "Test ID" field contains "42bc86a", with "Copy Link" and "Copy Input" buttons. A "Filter tests by result:" dropdown is set to "Any".

The left sidebar lists test categories:

- FQDN RESOLUTION**
  - Bearer is valid
  - Bearer resolves
- APPLICATION DISCOVERY**
  - Resolve "\_radioepg" SRV record
    - Ensure all \_radioepg SRV targets are A/AAAA records
    - Ensure all \_radioepg SRV targets are unique
  - Resolve "\_radiospf" SRV record
    - Ensure all \_radiospf SRV targets are A/AAAA records
    - Ensure all \_radiospf SRV targets are unique
  - Resolve "\_radiovis" SRV record
    - Ensure all \_radiovis SRV targets are A/AAAA records
    - Ensure all \_radiovis SRV targets are unique
  - Resolve "\_radiovis-http" SRV record
    - Ensure all \_radiovis-http SRV targets are A/AAAA records
    - Ensure all \_radiovis-http SRV targets are unique

The main content area displays a JSON response for a test:

```
{  "spi": {    "days": 7  },  "slideshow": {    "width": 640,    "height": 480,    "dotsPerInch": 72  },  "bearer": "fm:ce1.c201.09890"}
```

Below the JSON, the test results are shown:

- 1 FQDN Resolution**
  - 1.1 Bearer is valid**
    - Bearer fm:ce1.c201.09890 is valid (0.00s) **Pass**
  - 1.2 Bearer resolves**
    - Bearer fm:ce1.c201.09890 resolved to Authoritative FQDN radiodns.api.bbci.co.uk (0.00s) **Pass**
- 2 Application Discovery**
  - 2.1 Resolve "\_radioepg" SRV record**
    - \_radioepg.\_tcp.radiodns.api.bbci.co.uk resolves to radio-service-information.api.bbci.co.uk:80 (0.14s) **Pass**
    - Ensure all \_radioepg SRV targets are A/AAAA (0.00s) **Pass**

# Open Source Software Resources

We create and maintain a library of open source software for RadioDNS

<https://github.com/radiodns>

Lots of useful libraries and utilities

The screenshot shows the GitHub repository page for "RadioDNS Hybrid Radio". The repository is public and contains projects related to RadioDNS and its applications. The page includes a navigation bar with "Overview", "Repositories" (12), "Packages", "People" (6), and "Projects". The "Pinned" section features three repositories: "pyradiodns" (Python, 8 stars, 4 forks), "java-radiodns" (Java, 6 stars, 2 forks), and "radiodns-cli" (Python). The "Repositories" section lists several repositories with their descriptions, languages, and statistics:

- pyradiodns** (Public): A Python port of phpradiodns. Python, 8 stars, 4 forks, 0 issues, 0 pull requests. Updated 3 days ago.
- spi-schema** (Public): Shell, 0 stars, 0 forks, 0 issues, 0 pull requests. Updated 11 days ago.
- nodejs-push-demo** (Public): Proof of concept for RadioDNS push transport based on Server-sent Events. JavaScript, 0 stars, 0 forks, 0 issues, 0 pull requests. Updated on 25 Nov 2021.
- radiodns-cli** (Public): Unified command line interface for using applications of RadioDNS Hybrid Radio. Python, 0 stars, 0 forks, 0 issues, 0 pull requests. Updated on 15 Sep 2021.
- nab-radiodns-setup-tutorial** (Public): Final code from a coding tutorial included in the NAB RadioDNS Setup Tutorial session held in July 2020. PHP, 0 stars, 0 forks, 0 issues, 0 pull requests. Updated on 4 Aug 2020.

The right sidebar shows "People" (6 avatars) and "Top languages" (Python, Java, Shell, JavaScript, PHP).



# Trademarks & Certification

Safeguarding our reputation

# Trademarks

**RadioDNS™** is a registered trademark

Both the logo and "RadioDNS Hybrid Radio" are trademarked

Prevents anyone claiming to implement our standards when they aren't

Protects businesses and consumers

Creates an asset for RadioDNS' members

We had to renew our trademarks in the USA this year

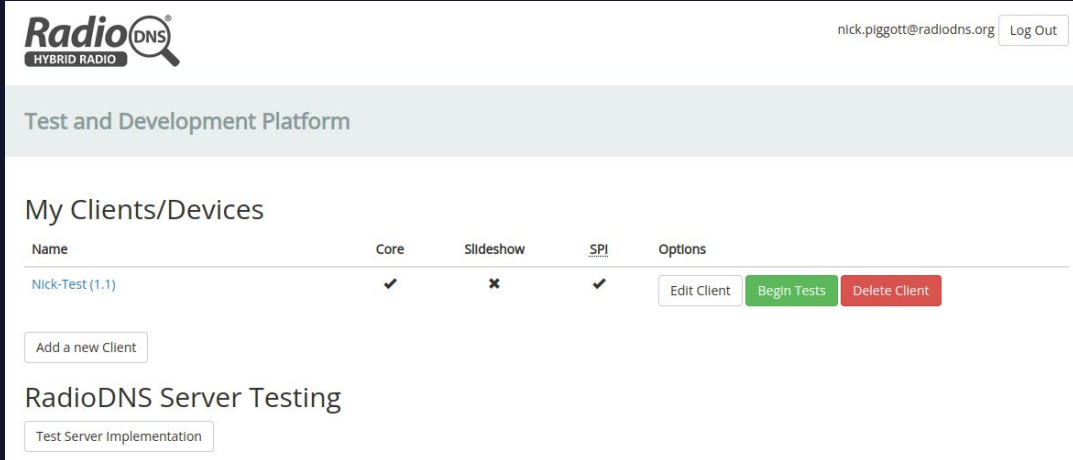
It's expensive, but worthwhile (£30k every 5 years)

Quite time consuming

# Certification

## Allowing use of the trademarks

We have a certification process to allow people to claim RadioDNS compliance and request to use the trademark



The screenshot shows the RadioDNS Hybrid Radio Test and Development Platform interface. At the top left is the RadioDNS logo with the tagline "HYBRID RADIO". At the top right, the user "nick.piggott@radiodns.org" is logged in, with a "Log Out" button. Below the header is a light green bar with the text "Test and Development Platform". The main content area is titled "My Clients/Devices" and contains a table with the following data:

Name	Core	Slideshow	SPI	Options
Nick-Test (1.1)	✓	✗	✓	<a href="#">Edit Client</a> <a href="#">Begin Tests</a> <a href="#">Delete Client</a>

Below the table is a button labeled "Add a new Client". At the bottom of the interface, there is a section titled "RadioDNS Server Testing" with a button labeled "Test Server Implementation".

# 2023 in Numbers

**Nick Piggott**

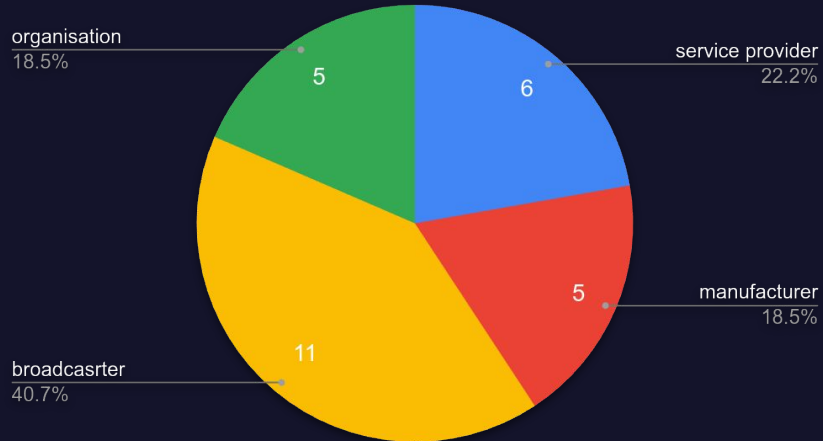
Project Director

# Membership

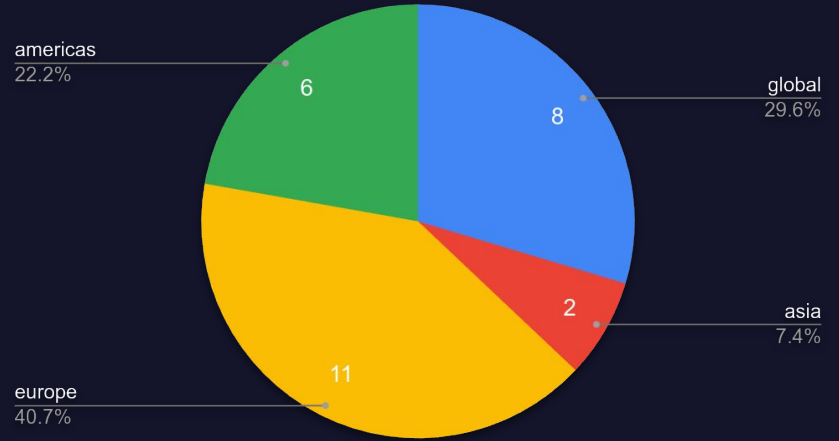
<b>Members at start 2022</b>	<b>30</b>
Members resigned	3
Members removed	0
Members joined	0
<b>Members at start 2023</b>	<b>27</b>

# Membership Analysis

## Members by Activity



## Members by Continent



# DNS Performance

## TARGET

100% uptime for end devices



## TARGET

Verified DNS changes completed within 1 working day



# Countries

**NEW** Portugal



**NEW** Estonia



**NEW** Greece





# Daily Root DNS Queries

➤ 2.6m

Individual devices do not query the root server. This number represents traffic from the global network of DNS servers which themselves handle DNS queries directly.

# Daily Root DNS Queries

➤ **3.1m**

Individual devices do not query the root server. This number represents traffic from the global network of DNS servers which themselves handle DNS queries directly.

# 2023 Steering Board Decisions

Appointed Neil Bingham (Frontier Smart Tech)

Appointed Jamie Sampson (iHeartMedia)

Sent TS 102 818 to update at ETSI

Removed Audacy as a member

Renewed Project Director Contract

Approved the 2024 Plan

# 2023 Steering Board Decisions

Do you approve the decisions of the  
Steering Board in 2023?

**VOTE**

# RadioDNS in 2023

Questions and Discussion

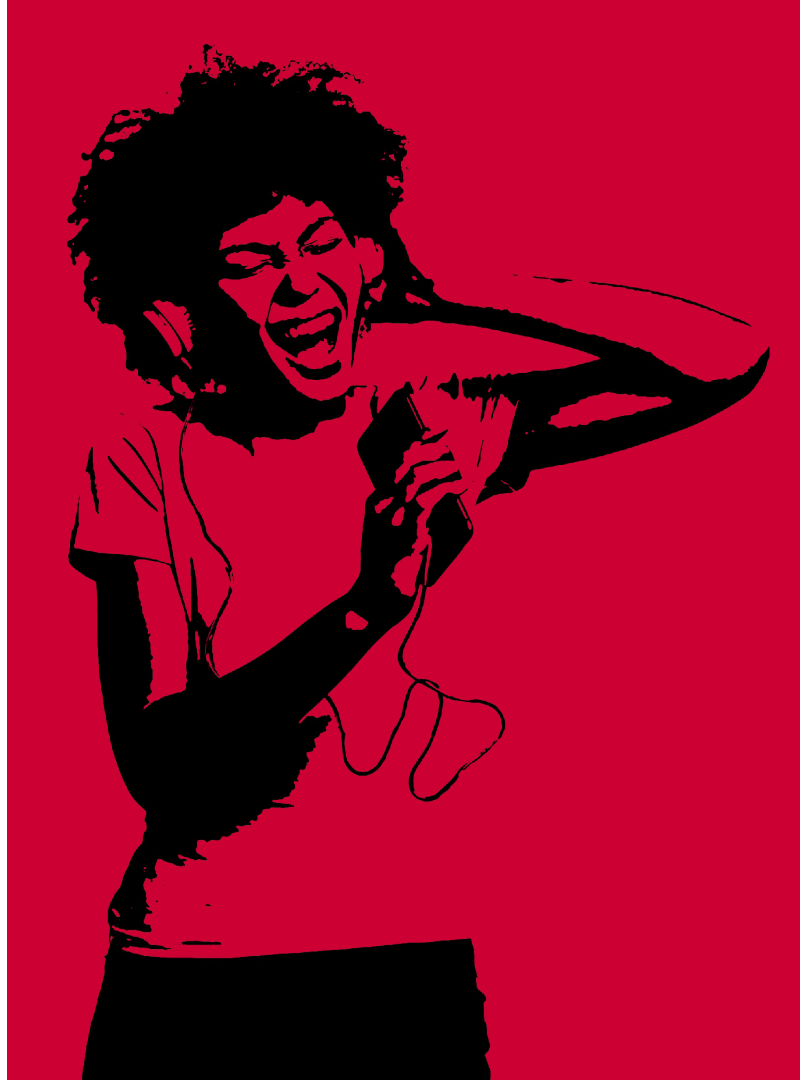
# Member Presentation

**Radioplayer – Implementing Client ID**

## Client ID



RadioDNS GA  
February 2024





- Radioplayer is a long-standing member and supporter of RadioDNS
- We have been a Board member for 3 years and a Tech group member for 6 years
- When broadcasters join Radioplayer we offer to publish their data on RadioDNS as a service provider
- We were the first organisation to test and have available ClientID capability when it was introduced
- We implemented Client ID for all our stations who use us as a service provider in October 2023



Radioplayer is a long-term supporter of RadioDNS standards

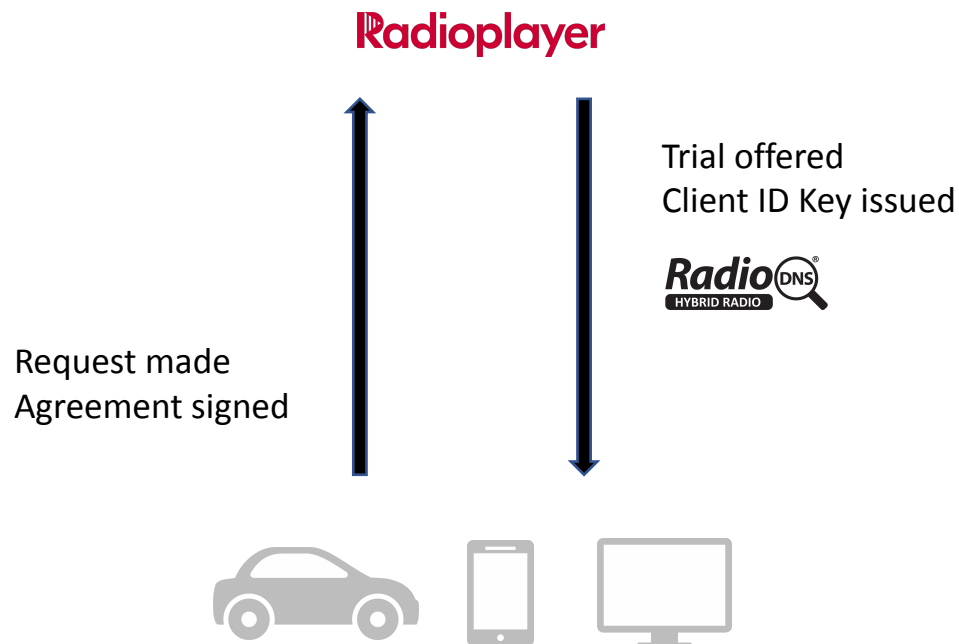




- Stations have for many years been asking us how their data is being used and by whom. With one exception we did not know
- Recently many stations have been tightening the security around their data to ensure greater control
- The recent RadioDNS consultation on streams for IP-only devices prompted wider discussion among our countries/broadcasters about data availability in the open
- This led to a decision to implement ClientID to ensure greater control and knowledge of how/where broadcaster data is being used



Broadcasters want to know who is using their data and how



- Following initial discussion and consultation, we communicated with all countries/broadcasters to ensure they knew the timings and process
- We let partners know – those who had already told us they were using RDNS
- We let RadioDNS know – in case they were contacted
- We put up information on our support website

▶ The process is now the same as with all partners

**Radioplayer**



- Some partners are implementing ClientID
- We have had 3 organisations contact us and we are in the process of managing next steps
- We could have done more to provide feedback and communicate to the wider industry, maybe with RadioDNS help
- It is good to know who is using broadcasters data
- RadioDNS is a very important standard. We will continue to offer RadioDNS support for broadcasters and supply data over RadioDNS

 Communication is key

# Short Break

Take Ten Minutes



# RadioDNS in 2024

**Nick Piggott**

Project Director, RadioDNS

**Education**

**Innovation**

**Operations**

# Education in 2024

**Nick Piggott**

Project Director, RadioDNS

**Rosie Kendrick**

Project Coordinator, RadioDNS

# "What Is RadioDNS?"

## Improving People's Understanding

Too many people think that RadioDNS is a company offering a service  
We need to emphasise that we create **standards**, not services



# "Why Hybrid Radio?"

## Righting the imbalance of interest

There is more **push** from broadcasters to implement hybrid than there is **pull** from manufacturers

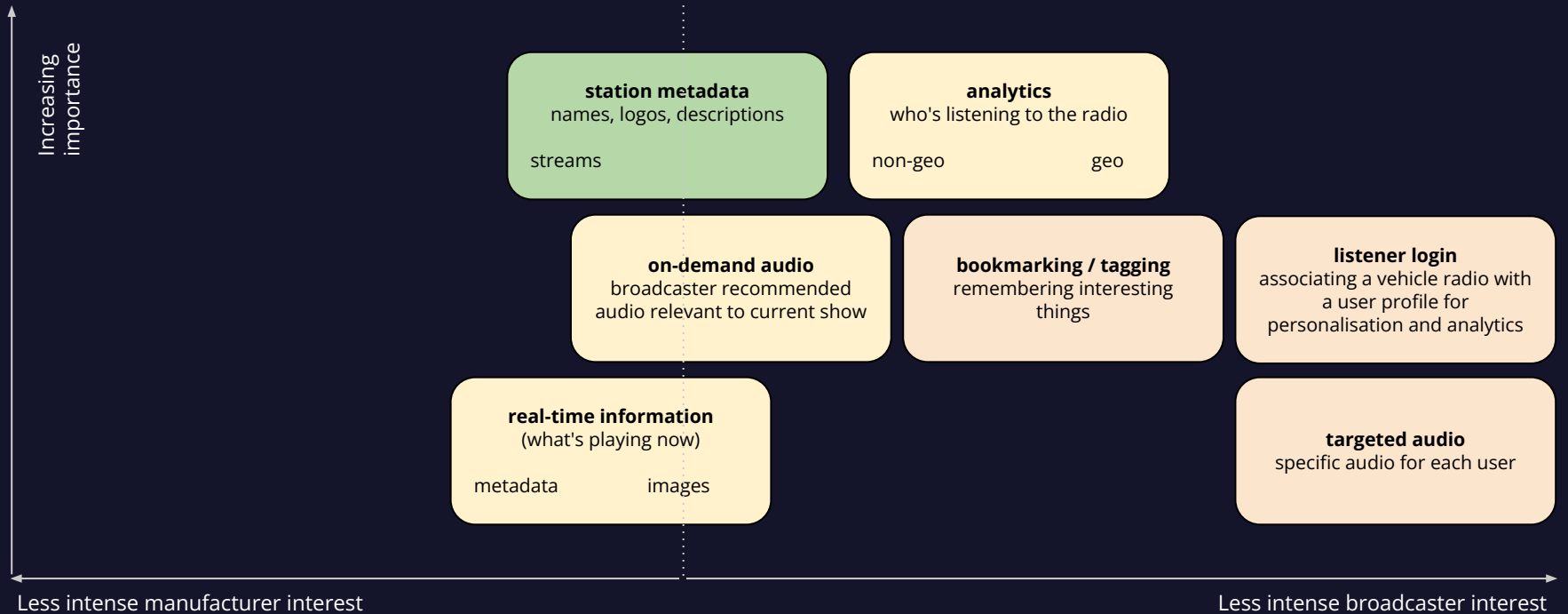
The incentives aren't correctly aligned

We need to find the common ground and grow it

Everyone\* wanted to fix **logos** – but what comes next isn't as clear

*\* Most sensible people*

# Map of Interests



# Education

## Events

Conferences, Seminars and Workshops

## Online

Website, LinkedIn, YouTube

## Press

# Country Coverage

A key resource for stakeholders

Looking at a better representation of our coverage in 2024



How It Works

Coverage

Guides & Support

News and Events

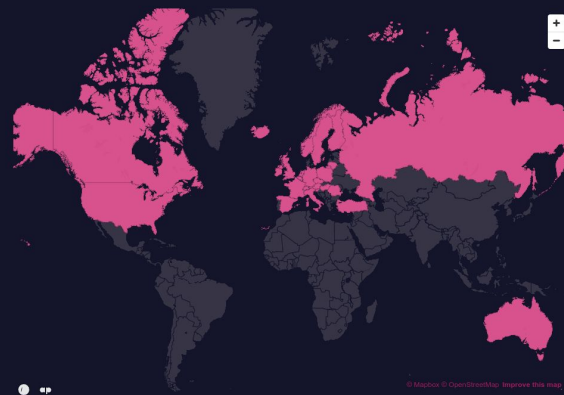
Search

## Coverage

You can explore the countries where broadcasters are providing services using our standards.

This isn't a definitive list, as we don't publish specific details of which radio stations are using our standards. If you want more detailed information, [contact us](#).

Most stations are participating in [Project Logo](#), which defines the minimum metadata provided using our standards.



Australia: >90%

Austria: >90%

Belgium: >98%

Canada: >73%

Czech Republic: >42%

Denmark: >94%

Finland: >88%

# Automotive Workshops

## "Consistency"

Our strategic direction for the workshops is to achieve better consistency of experience / implementation by manufacturers and broadcasters

Reduce "ad hoc workarounds" and misunderstandings

In person meetings in **March & November**

Online follow ups in **May & January**



# Automotive Workshops

## Next Workshop – 20th March

In person event in Munich, Germany

Register to attend at

<https://radiodns.org/campaigns/automotive-workshops/>

Attendee numbers are limited



# Events in 2024

## **CES**

Las Vegas  
Meetings

## **RadioDays Europe**

Munich  
March 2024

## **NAB Show**

Las Vegas  
April 2024

## **Autotech Detroit**

Detroit  
June 2024

# **NAB Show Steering Board Meeting**

16th April – In-person Steering Board

Members welcome to join from 9am (PDT)



# Other Events in 2024

## **ABU – Digital Broadcast Symposium**

March 2024

## **WorldDAB General Assembly**

November 2024

## **CES**

January 2025

# Communications in 2024

LinkedIn

Website

Press

# Communications in 2024

Automotive Workshops & Events

FDQN List

New and updates to standards

Promoting member activities

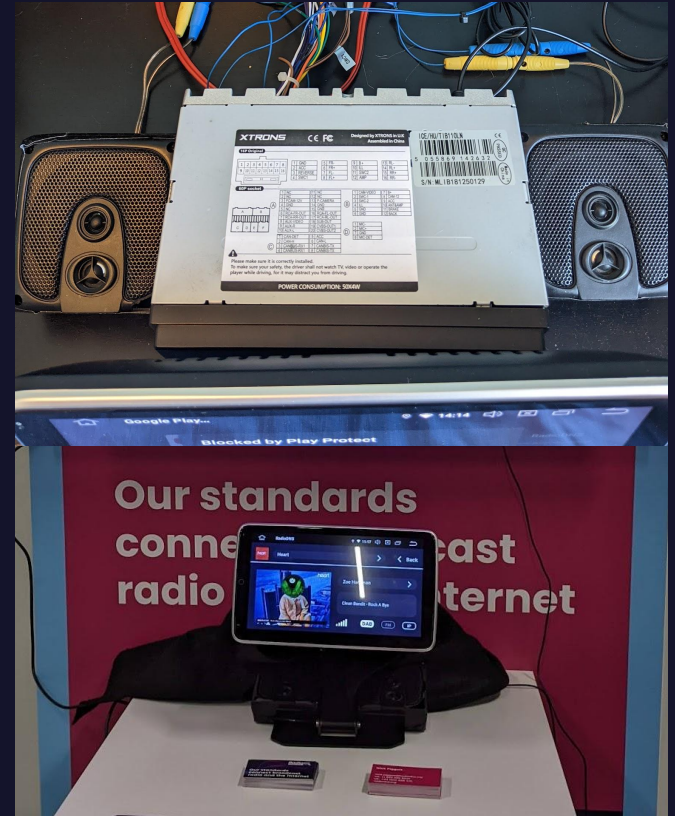
# Demonstrating RadioDNS

Updating our demonstration capabilities

# Car Radio Demonstrator

Working with Konsole Labs, we developed a demonstrator on generic "android head unit" hardware

Works on FM and/or DAB

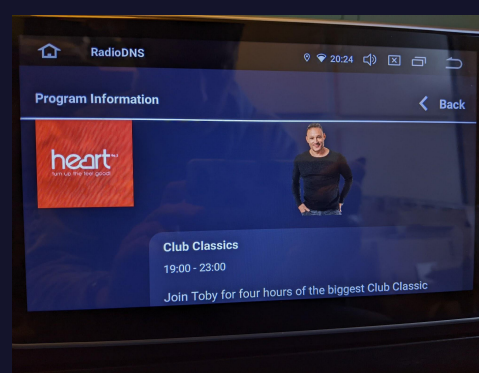


# Car Radio Demonstrator

Touch Screen interface

Supports

- Station Names & Logos
- FM/DAB/IP Switching
- Visuals and Text
- Service Information
- Programme Information



# Updating the Demo

## New head unit

All the existing functionality

Can be mirrored via HDMI to a large screen

Integrated 4G connectivity

Prototype linking to broadcaster apps

We're building a unit for **IEEE-BTS** to use at the NAB Show



# Innovation in 2024

**Ben Poor**

Technical Group Chair, RadioDNS



# Working Teams 2024

On-Demand Audio

Geo/Lookup Method Review

Analytics and Tagging

Listener Login

Targeted Audio into Broadcast

# On-Demand Audio

## Standards and Prototypes

Discussed at the ARD x EBU x CARIAD workshops in Köln in November

We have quite well defined use cases

Prototypes will expose corner cases to define

We're going to prototype with some broadcasters and demo on our head unit

Can we move seamlessly between built-in radio and broadcaster provided IP applications?

# OnDemand Audio



## RadioDNS Radio



Now Playing:  
Olivia Rodrigo,  
Bad Idea Right?  
(RadioDNS club  
edit)

**The RadioDNS Hybrid Breakfast Show**  
Everything hybrid to start your day

⏮️ ⭐

Suggestions for you ➔

### Rewind

This icon is shown if `on-demand` is present and `presentationTime = startTime`

### Listen Again

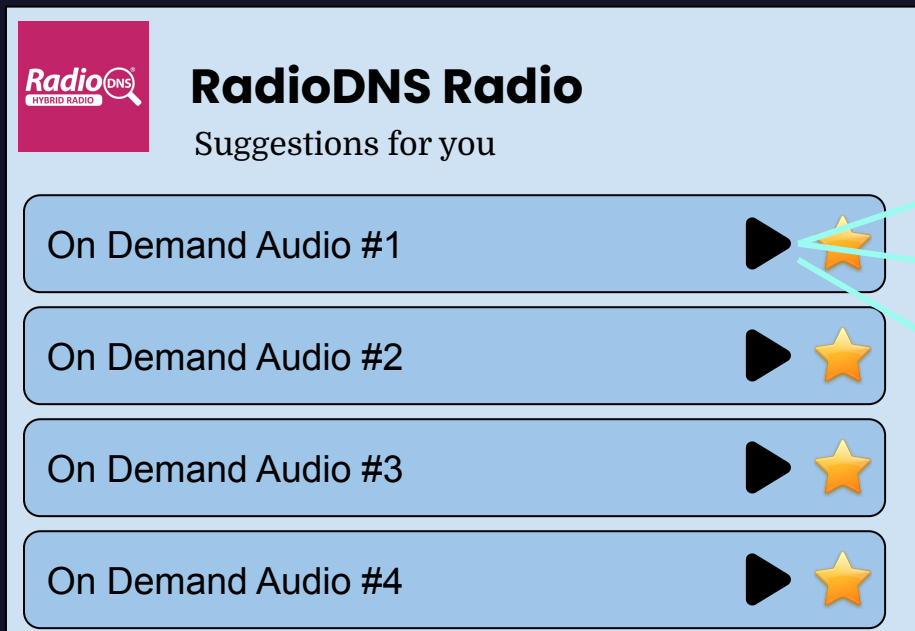
This icon is shown if `on-demand` is present

### Recomendations

This icon is shown if `link` are present

These are wireframes, not the real designs

# OnDemand Audio

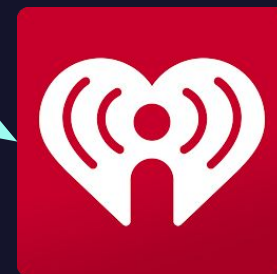
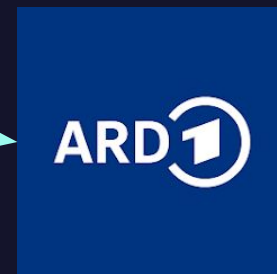


**RadioDNS Radio**  
HYBRID RADIO

Suggestions for you

- On Demand Audio #1
- On Demand Audio #2
- On Demand Audio #3
- On Demand Audio #4

The interface shows a list of four 'On Demand Audio' items. Each item has a play button icon and a star icon. The star icon for 'On Demand Audio #1' is highlighted with a yellow glow.



These are wireframes, not the real designs

# Geo/Lookup Update

## Updating for the real world

We've identified some situations where RDS is inconsistent

We need to update our standard and guidance on what to do in those situations

- Countries: Austria, Mexico
- Stations: Foreign broadcasters using "home" identifiers

Update to TS 103 270 is likely to include some sort of "geo"

# Analytics and Tagging

## Incentive Alignment

How do we make it appealing to implement analytics and tagging for both broadcasters and manufacturers?

The tech is largely solved.

# Listener Login

## Use Cases

Do the use cases still make sense?

Do broadcasters want native "login" or just shell out to their own apps?

# Organising the Tech Group

## More admin support

The tech group is our most active group

We need to provide more admin support to accelerate work

We're looking for a tech-aware administrator / support role for the TG

They'll also handle simple tech support issues



# Changelogs

## Tracking changes to standards

We're going to start providing changelogs for our standards documents, so you can see what has changed between versions  
Rearrange the website so each standard has a page with changelog and document versions

# Diversity

## Bring more people to the TG

Encourage all members to invite more colleagues to TG meetings

It's a good place to introduce people to RadioDNS and radio

A diversity of skills, work-experiences and life-experiences would be great

**Not everyone uses radio like we use radio**

# Tech Group Chair

Could you chair the tech group?

Ben has indicated that he's happy to hand over the Tech Group to another member

Talk to Ben and I if you're interested; deep technology is not essential

# Operations in 2024

**Nick Piggott**

Project Director, RadioDNS

**Andy Buckingham**

Systems Administrator, RadioDNS

# Operations

DNS Servers

FQDN List

Testing Tools

Open Source Software Resources

## DNS Servers

Maintain 100% uptime to end devices

Maintain 1 working day registration  
turnaround

Encourage Service Providers to automate  
notifications to us

# Implementing FQDN List

Legal  
&  
Technical

# FQDN List – Legal

## Standard Agreement

Based on and extending from our Standard Terms

Signed between RadioDNS and each user, to control

- What they can use the FQDN list for
- How they can access it

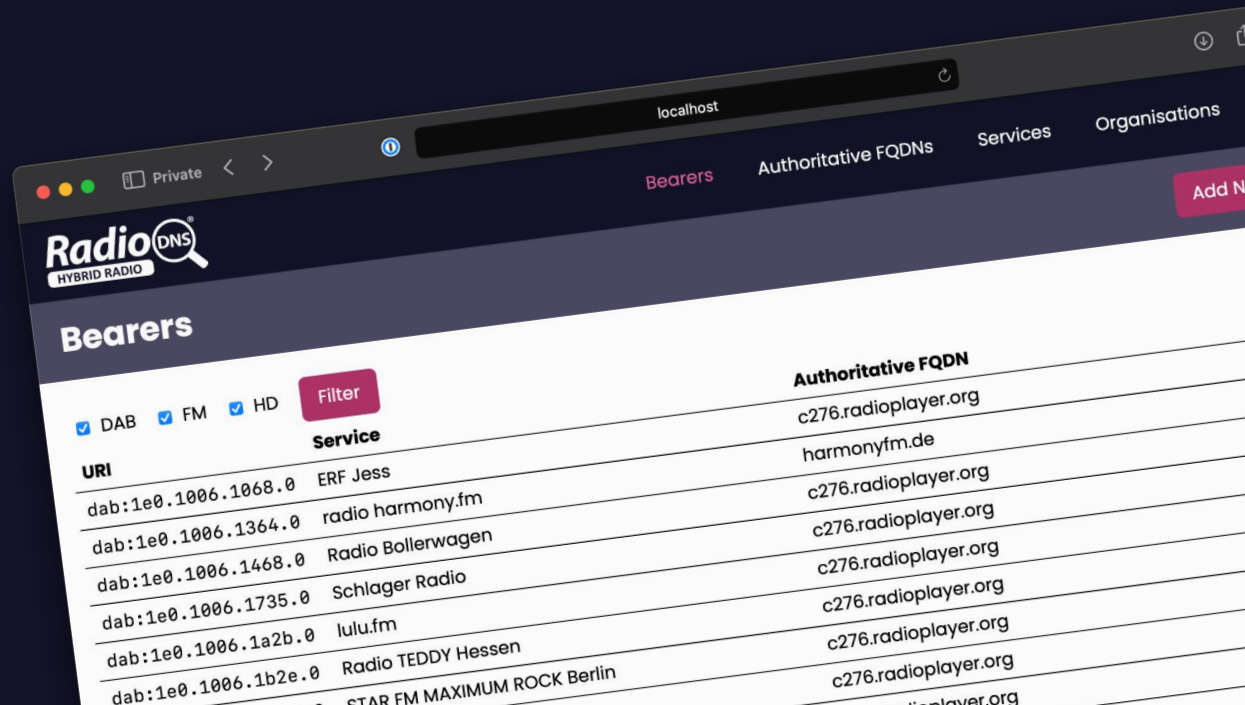
Members will be notified when a user asks to get access to the FQDN list and can choose to opt-out

We need to check all existing registrants



# FQDN List – Technical

We built a new system...





7

6

# RadioDNS CRM

Organisations

Broadcasters, Service Providers, Consumers

Contacts

Services

Beareres

Legal Agreements, Rules and Restrictions

Outputting to the RadioDNS zone

Securing and outputting an FQDN list per relationship

# FQDN List – Timescale

## First list publish – this summer

We have to contact all existing registrants / SPs before then

We have to set up agreements with prospective users

We have to migrate the DNS zone into the new system

# Development

## We're looking for developer(s)

Andy is returning to the sysadmin role, so we need some dev effort

We develop demos, tools, prototypes, systems

The key skills

- node.js
- Amazon AWS inc Lambda
- RadioDNS standards understanding

# 2024 Budget

What we're investing in

# 2024 Budget

<b>Income</b>			
Membership	£130 000	HbbTV Income	£1 000
		<b>Total</b>	<b>£131 000</b>
<b>Expenditure</b>			
Project Office	£65 040	DNS Servers	£4 800
Tech Development	£39 800	Legal	£14 000
Education	£36 800		
		<b>Total</b>	<b>£164 950</b>
		<b>Deficit</b>	<b>(£33 950)</b>
		<b>Retained Funds</b>	<b>£41 502</b>

# RadioDNS in 2024

Questions and Discussion



## 2024 Plan

Do you approve the 2024 Plan?

Do you approve the 2024 Budget?

**VOTE**

# Diversity and Sustainability

Improving how we work and develop

# Sustainability

## Working efficiently

We carried out a sustainability report in 2021

We're looking at how to balance sustainable working practices with efficient operation and growth of RadioDNS

Travel is a big challenge; effective for education, but carbon intensive

We use energy efficient / renewable energy for cloud computing

We bank with a B Corporation (ethical) bank

# Diversity

## Reflecting the diversity of radio listeners

The Steering Board has discussed how we can make RadioDNS more diverse and representative

A wider set of skills, work- and life-experiences would help us understand challenges, opportunities and expectations better

New perspectives create innovation

# Diversity

## You can help us

The **Members** decide the composition of the Steering Board and the Technical Group

We'll be communicating during 2024 how we think you could help us improve diversity

**The next Steering Board elections are in February 2025**

**Education**

**Innovation**

**Operations**

**Any Other Business**

## Summary

2024 is the year that our standards become more valuable

We have momentum and interest to provide standards for a connected world



**RadioDNS exists to  
accelerate the growth and  
decrease the cost and complexity  
of implementing hybrid radio  
for everyone**

# RadioDNS 18th General Assembly

Thank You For Attending