Welcome
Walter Huijten, Chair

SSID: RadioWeek
WiFi Code: RadioActive
Agenda

What Happened in 2017

Coffee

Our Plans for 2018

with added Member Presentations

https://radiodns.org/organisation/general-assembly/ga-feb-18/

SSID: RadioWeek
WiFi Code: RadioActive
Achievements 2017

Nick Piggott, Project Director
# Steering Board Members 2017

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Company/Role</th>
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<tbody>
<tr>
<td>Walter Huijten</td>
<td>(Chair)</td>
<td>NPO</td>
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<tr>
<td>Ben Poor</td>
<td>(Secretary)</td>
<td>EBU</td>
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<tr>
<td>Travis Baxter</td>
<td></td>
<td>Bauer Media</td>
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<td>Nacho Seirul-Lo</td>
<td>(from 13/2/18)</td>
<td>NXP</td>
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<td>Nicolas Bresou</td>
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<td>ma.radio</td>
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<td>Kath Brown</td>
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<td>Commercial Radio Australia</td>
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<td>Joe D’Angelo</td>
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<td>Xperi Inc.</td>
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<td>Alexander Erk</td>
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<td>IRT for ARD</td>
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<td>John Farrell</td>
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<td>Frontier Silicon</td>
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<td>David Layer</td>
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<td>NAB</td>
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<td>Sean O’Halpin</td>
<td></td>
<td>BBC</td>
</tr>
<tr>
<td>Christian Winter</td>
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<td>Audi</td>
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</tbody>
</table>
Technology
RadioDNS Technology

Technology Standards
Operating the DNS service
Providing Technical Support
Technical Standards

“Durable”

No changes to standards published in 2017

Wider implementation of standards has not exposed any significant problems

Changes to the SPI (RadioEPG) and Visual Slideshow (RadioVIS) standards are done in consultation with WorldDAB Technical Committee

Changes to the Lookup and SPI standards are awaiting publication
Technical Standards

List of requests to investigate technical standards

Renewed interest in formalising the **RadioTAG** standard

**NPR** (US, National Public Radio) have adopted SPI (TS 102 818) as their in-house metadata exchange standard

**Technology Group now manages standards - Ben will report later**
Operating the DNS service

Multiple cloud instances globally

Typical response time <50ms (same region)

All requests are validated

Change requests (switching DNS records from one service provider to another) are validated with the incoming service provider and broadcaster

>90% of valid change requests processed within 1 working day

Preferring registration requests by submitting URL to SI.xml
Technical Support

One-on-one support for members
Helping with implementation and policy questions
Documentation (including HOWTO documents)
Ideas and hints - e.g. generating FM & DAB test signals
Identifying and fixing problems with implementations
Support Tools

SI Generator / Editor - si.radiodns.org
Test signals - audio streams and live DAB ETI streams for bench testing
Service testing tools - quick debugging
Utilities and library code - open source
Device testing platform - prerequisite for certification
Education
Education

Broadcasters

Manufacturers

Technology and Service Providers
Broadcasters

“Publishing your content using our standards will give you the widest coverage of devices, and give you the freedom to switch between service providers

Require RadioDNS compliance from your service provider”
Manufacturers

“RadioDNS standards are durable, and interoperable, which means they will operate through the lifetime of your vehicles, and have no single point of failure”

Require RadioDNS compliance from your technology provider(s).
Service and Technology Providers

“Supporting RadioDNS standards does not preclude you offering or acquiring content using other methods.

RadioDNS compliance testing only validates your implementation of RadioDNS”
RadioDNS in the chain

- Broadcaster
  - Service Provider
    - Optional
    - RadioDNS Technical Standards
    - Metadata & Content Licence
  - Technology Provider
    - Optional
  - Hardware Provider
- Manufacturer

- Service Compliance Test Point: Only tests compliance of RadioDNS services
- Receiver Compliance Test Point: Only tests compliance of RadioDNS services

Non RadioDNS Services / Content / Broadcasters
Shows and Conferences

Education in Person
RadioDNS In Real Life
Making the vision real and tangible
Showing devices, services
Interactive discussion
addressing business specific questions
Making new contacts
Coverage Growth

United States

Australia (Commercial Radio expanded)

Belgium (Commercial Radio added)

Ireland (Commercial Radio added)

Austria (Commercial Radio added)
DNS Entries

43% increase in FM radio stations

10% increase in DAB/DAB+ radio stations
The New Audi A8

The first production vehicle in the world to feature integrated RadioDNS functionality
New Audi A8 and Audi A7
Premium cars with the next generation infotainment platform
New Audi A7 Sportback
Interior with 2 haptic response touchscreens
Audi A8

MMI Navigation plus with MMI touch response
MMI Navigation plus with MMI touch response
Multimedia capabilities

› DAB/FM/AM hybrid radio

› Online Radio

› Podcasts

› USB

› SD-Card

› DVD/CD

› TV

› Online media

› Carplay

› Android Auto
Radio is besides all the other multimedia options in a modern infotainment system still number one in terms of listening time.*

* http://www.radioplayer.co.uk/great-cars-need-great-radios
“Our main goal for the radio in the new Audi A8 was not just offer new features, but integrate them in a way that the customer receives the best user experience.”
Hybrid Radio in the new A8 and A7

With „service following online“ the system links to the online stream if necessary.

„Project Logo“ Station logos will be downloaded online and cached to the system.
Easy to use Unified Station List
Reduced Now playing screen
Customizable
Controllable

Hinweis

Der Sender ist nicht mehr empfangbar. Möchten Sie diesen Sender über Senderverfolgung online weiter hören?

Ja | Nein
Easy access with shortcuts
Intelligent search for the integrated online radio
Integrated in the cluster instrument
Connected
Hybrid Radio
Platform and standards

The open standards of RadioDNS allowed us to build the first integrated Hybrid Radio in the car.

› Standards reduce development costs for the complex Hybrid Radio Feature.

› Using standards helps that hybrid radio is working independently from a content provider during the lifetime of a car.

› Products can be launched faster worldwide.

› Broadcaster are responsible for their data and no 3rd party.

› Radioplayer supports RadioDNS via offering their data in the RadioDNS-Format.

› Additional access to the Radioplayer-API helps getting Streaming URLs, Now Playing information or Podcasts.

Our Hybrid Radio platform is fast, extendable and easy to integrate in other cars of the Volkswagen group due to the usage of open standards.
## Hybrid Radio

The Todo-list

<table>
<thead>
<tr>
<th>01. Rollout</th>
<th>02. Data coverage and quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>03. Get feedback from the customers and radio industry</td>
<td>04. Integrate new features</td>
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</table>
01. Rollout
Cars and markets

We are here.
Many stations in Europe still don’t offer Hybrid Radio data.
02. Data coverage and quality
Feedback to the radio stations

Many stations in Europe still don’t offer Hybrid Radio data.

› Keep in mind that radio has a lot of competition in the car

› Contact RadioDNS or Radioplayer, they help you to make your station hybrid.

When you offer Hybrid Radio think about the golden rules

› High streaming delays minimize the seamless linking experience.

› Pre-roll advertising are counterproductive for seamless linking.

![Screenshot: too small logo in incorrect format](image1)
![Screenshot: egoFM logo with transparency](image2)
03. Get feedback from the customers and radio industry

“We have a hybrid radio demo outside - tell us your feedback.”

If you don’t get the chance today or tomorrow visit the RadioDNS booth at the Radiodays Europe
04. Integrate new features
An outlook

We will extend our hybrid radio platform

› Based on customer feedback we want to further improve hybrid radio.

› We add fingerprinting based song recognition to our platform to finally solve the problem “What’s that song on the radio?” in 2018.

› Add direct access to radio subservices and podcast library.
Thank you!
Member Presentation

Pluxbox
Hybrid Radio
An opportunity to grab

By Cas Adriani - Pluxbox

Concept Pitch
Radio consuming is changing

Nowadays we consume content throughout the day, from different locations through different channels and in different forms.
Different moments, channels and form

It’s all about the 'YOU' Who’s jumps through one of your €€ hula hoops!
But... listening to (digital) radio in the car is still growing

Estimated Connected Car Shipments

<table>
<thead>
<tr>
<th>Year</th>
<th>Millions</th>
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<tr>
<td>2017</td>
<td></td>
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<tr>
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<tr>
<td>2020</td>
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<td>2021</td>
<td></td>
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Estimated Connected Car Entertainment Markt Potential

<table>
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<th>Year</th>
<th>€ (Billions)</th>
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<tr>
<td>2017</td>
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<tr>
<td>2018</td>
<td>€7.3</td>
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<td>€8.9</td>
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<td>2020</td>
<td>€10.5</td>
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<td>2021</td>
<td>€12.2</td>
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Source: KIWA, KPMG, TNO, Google Consumer Barometer, GSMA Intelligence, BI Intelligence estimates, 2016

Source: Strategy, Intelligence, BI Intelligence estimates, 2015

Concept Pitch
Hybrid Radio
A touch point you shouldn’t miss
JUSTIN TIMBERLAKE

Call 0800 4545 as soon as you Justin Timberlake hears

WIN!
Connect Your Phone

Scan the QR with your MixFM app to use the SMART buttons
KING DEALS

€5.75 MEAL*
OR €2.95 SANDWICH

EXTRA LONG CHEESEBURGER
BLT CHICKEN WRAP
KING CHICKEN

Concept Pitch
Consideration
Rihanna
Featuring SZA
Album ANTI
Produced by Antydote
& Kuk Harrell

The Afternoon Show
Presented by: Dan Doe
BREAKING NEWS

TERRORISTS TARGETED:
Paris attack planners killed in drone strike, Pentagon Reports

Source: PB News
AMBER Alert
Joanna Doe (5)
Reported missing 28-01-2018
From Amsterdam

Have you seen this child?
CALL: 0800-6679
Planeet De Cock
by Tom De Cock
Every workday 16-18
Not another thing to do, it already fits perfectly in your workflow.
Insights and learnings

Voting tool

Time left: 3 days

Gregory Porter geeft derde concert in Carré

Locations

Top 10

1. Bohemian Rhapsody - Queen (20102)
2. Hotel California - Eagles (18273)
3. Stairway to heaven - Led Zeppelin (12391)
4. Piano Man - Billy Joel (10231)
5. Child's in Time - Depe Purre (9132)

Voters at this time: 442
12 current votes per minute
RadioManager is the one stop shop
The hybrid radio touch point in a nutshell

- Engagement
- Insights
- Targeted Content
- Touch Points
- Business model
- Pluxbox Radiomanager

Hybrid Radio

Concept Pitch
We can lend you a hand

Inspired or need some help with finding a ubiquitous and monetizing way to reach your (in car) audience?

Don't hesitate to contact us, we just an email away.

cas@pluxbox.com
pluxbox.com

THANKS FOR YOUR ATTENTION!
Coffee Break
20 Minutes
SSID: RadioWeek
WiFi Code: RadioActive
Member Presentation

TDF Radiobridge
Radiobridge: modern radio experience on hybrid radio

Timeshifting the radio experience!
Radiobridge – Made in France by TDF

TDF: major European broadcast service and telecom infrastructure operator

2016 CONSOLIDATED REVENUES (IFRS)

€673.6m
with
2,300 customers

TV channels, multimedia producers, radio stations, telecoms operators, railways, institutional, local authorities...

Telecom 44%
Television 27%
Radio 18%
Medias services 8%
Other 3%

10 100 towers in Europe
1 944 employees

100 100

Telecom Infrastructures
- Mobile Operators Hosting
- Datacenters
- Business Connectivity Solutions

TV & Radio Broadcast Services
- DTT TV Broadcasting
- FM & DAB Radio Broadcasting
- Broadcast live feeds transport

Media & Telematic Services
- TV Head-ends Arkena
- On-demand video services Arkena
- Infotraffic Mediambile
Our Radio & Automotive Expertise

has more than 40 years of experience and strong expertise in every aspects of radio broadcasting networks and technologies:

- FM & DAB broadcasting
- IP Radios
- Streaming and monitoring
- iOS/Android radio Apps & SDKs
- Satellite Radios
- Uplink/downlink

Active in multiple bodies:

- EBU
- DAB
- Radio SND

a European leader in telematics solutions for the automotive industry

- 20 years of Expertise
  Specialists in Traffic and Mobility since 1996

- High Technology
  Experts in RDS-TMC, DAB-TPEG and Connected services

- Already Trusted
  By major OEMs, navigation solution providers, media …

- Pan European Player
  In France, Germany, Finland, Sweden, Norway, Denmark and Poland

- Multi-Service Provider
  Real time traffic information, Weather forecast, Parking, Fuel…
Radio Usage In-Vehicle

Radio listening dominates ALL other audio channels for drivers

Share of In Car Audio Listening (%)

- On-demand music services: 1.2%
- Podcasts: 1.7%
- Digital tracks: 5.3%
- CDs: 7.6%
- Live radio: 83.9%

Base: all listen in car in week (1605)
Source: RAJAR Midas Audio Survey Autumn 2015
What is Radiobridge?
Innovating & enriching the in-vehicle radio listening experience

**BROADCAST**
- ✅ Reliable audio reception
- ✅ Popular mass-market content
- ✅ Economique for millions of listeners

**STREAMING IP via 3/4G**
- ✅ Timeshift content/ audio on demand
- ✅ Extends coverage
- ✅ Flexible for handling metadata

Hybrid Radio platform for connected vehicles
- Seamless Switch
- Radio Pause
- Radio Replay
- More coming!

Radiobridge – the next step in hybrid radio
Seamless Bearer Switch

- Extends programme coverage with radio as the baseline over IP
- Optimal management of delays between live radio and IP for an inaudible switching process
Timeshifting Services: Pause & Replay

Radio PAUSE
✓ Let’s you pick up your listening from where you left after an interruption
✓ No need to store the audio stream on-board

Radio REPLAY
✓ Listen to your programme from the beginning if you started your journey after the program started
✓ Innovation for radio stations & users to maximise content enjoyment
Radiobridge: Service Platform Overview

Automotive grade, hybrid radio head-end

DAB Programs

FM Programs

Internet IP Stream Programs

Program metadata from various sources

Feeds

HYBRID CLOUD PLATFORM

✓ Aggregating
✓ Monitoring
✓ Securing
✓ Transcoding

API

OEM backend for connected cars

3G/4G

API

Frontend

audio IP streams

CDN for Media
Coverage

Initial EU roll out

- Phase 1: France, Germany, UK
- Phase 2: Italy, BeNeLux, Spain, Austria, Switzerland
- Phase 3: Nordic countries and east EU, Ireland, Portugal
- Worldwide coverage extension depending on the development in Europe and regional conditions
- Station coverage focus on national Public and Private networks to reach at least 50% of FM audience.

Detailed schedule is in preparation
Radiobridge Benefits for OEMs

- Improves UX / UI & Audio Quality
- One Stop Shop for Radio Services
- Scalable, Most Popular Programs Available
- Drastically Reduces 3/4G Data Load
- Long Term Service Commitment
- High-End Service Monitoring & Security
Radiobridge Benefits for Broadcasters

- Extends coverage… without extra cost
- Improves listening comfort through timeshifting… without extra cost
- Reinforces direct access to radio programmes
- Increase audience count as both « live and shifted » are included
- Reliable partnering with TDF for connected vehicle content delivery
Vision

“RadioDNS is the global standard for enhancing the experience of radio with additional functionality delivered using internet connectivity.”
“RadioDNS is adopted as the standard for hybrid radio combining broadcast and IP in the majority of new connected cars in Europe and North America”
2018 Actions

Project Logo
- Making it a radio and automotive industry standard

Launch Standard Licence

Launch Service Compliance Testing and Fault Reporting

Technology group
- Publish changes to Lookup and SPI standards
- Investigate new requirements

Grow Membership
Project Logo

Wider implementation in 2018
Specific requirement for more accurate radio station logos in the dashboard
Easy to explain to broadcasters and manufacturers
Easy to implement
Working in conjunction with WorldDAB
Implementation

Sufficient coverage to be viable

- Using RadioDNS does not prevent “fallback approaches” where RadioDNS / DAB SPI is not available

Logos (metadata) need to be licensed

Implementations (Service Providers and Technology Providers) need to be compliant
Coverage
Proposal to Industry

RadioDNS, EBU, WorldDAB will
provide practical support to allow all broadcasters to participate

Automotive Industry will
work with their technology suppliers to become Project Logo compliant
(RadioDNS and / or DAB SPI)

Meetings with manufacturers and ACEA (European Automotive Manufacturers Association)
Standard Licence
Clarity for broadcasters and manufacturers
Principles

Licence enforces **technical compliance** and **implementation compliance**

Broadcasters provide metadata for free

Manufacturers must use it correctly, as defined in the **Implementation Guidelines**

Licence agreement is **implicit** by use

Broadcasters must include a **link to the licence** in their SI file

Broadcasters can use a **bespoke licence** but manufacturers may not want to incur costs to review / sign if the content isn’t of sufficient value
Standard Licence

RadioDNS will create the a **standard licence** and make it publicly available on a permanent URL on our website.

Similar in style to a **Creative Commons** licence.

RadioDNS will **not be a party** to the licence.

Our drafting of the licence is being informed by real-world discussions with broadcasters and manufacturers.
Creative Commons

“Human Readable” and “Legal Text” versions

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RadioDNS Hybrid Radio
Compliance and Certification

Verifying RadioDNS Implementations
RadioDNS in the chain

- **Broadcaster**
  - Optional: Service Provider
  - Optional: Technology Provider
  - Only tests compliance of RadioDNS services

- **RadioDNS Technical Standards**
  - **Metadata & Content Licence**
  - **Receiver Compliance Test Point** (only tests compliance of RadioDNS services)

- **Hardware Provider**
  - Non RadioDNS Services / Content / Broadcasters

- **Manufacturer**
Compliance Testing

Operational **now:**

- **Technology** testing (Core, Visuals, EPG)

In **2018:**

- **Service** testing
- **Fault** reporting
RadioDNS Core

CORE-1A
DNS CNAME resolution based on received PI code
pass

CORE-1B
DNS CNAME resolution based on received ECC matching a previously calculated value
pass

CORE-1C
DNS CNAME resolution based on received ECC not matching a previously calculated value
pass

CORE-2
Repeating DNS CNAME resolution when PI code changes
pass

CORE-3A
DNS SRV resolution for RadioViS application (HTTP transport)
pass

CORE-3B
untested
Technology Certification

Tests validate the **end-experience**, the intermediate processes are not investigated

Issued to a **specific** (device + firmware) version

Only tests compliance with **RadioDNS** functionality

If a radio station is providing **RadioDNS** services, they must be presented to the end-user in accordance with the specifications, the guidelines and the licence.
Service Certification

Launching in 2018, similar approach to Technology certification
Tests validate the service presentation for compliance with the standards
Issued to a specific platform version
Only tests compliance with RadioDNS functionality
Fault Reporting

Additional functionality to Service testing

Allows a manufacturer/technology provider to investigate why something is wrong

If it’s a service provision failure, report it directly to the service provider

Saving time and money chasing problems
Trademarks

We will issue **Trademark Licenses** to organisations.

**Trademark Licence** will allow use only on products holding a validation certificate.

Currently only **members** can use the Test and Demonstration platform, and therefore use trademarks.

We are telling broadcasters and manufacturers to look for RadioDNS compliance.
Membership
Growing in 2018
Unique Member Benefits

Project Office support will be prioritised to members.
The Technical Group will only be accessible to members.
Testing tools will only be available to members.
The fault checking and reporting service
Certification and trademark licensing
We will charge for non-members to attend our events (except in exceptional circumstances)
Staying Open

Technical standards
The SI construction tool, and a basic “monitoring” tool
HOWTO documents on technical implementation
Presentations materials that we have used publicly
Minutes of Steering Board and General Assembly meetings
Code under recognised open source licences
Market data about the rollout of RadioDNS services
Member Presentation

Radioplayer
Technical Group
RadioDNS General Assembly 2018
Ben Poor, TG Chair
Overview

New group within RadioDNS

Formed from within RadioDNS membership, but can invite external observers/experts

Successor to Application Teams, which have successfully developed and pushed standards work

Responsible for all technical development of standards, and related work.

Not responsible for technical operational matters, e.g. running DNS servers

“Creating an open and transparent process for technical standards”
Project Teams

Created by the Technical Group to undertake specific packages of work

Timebound, defined, deliverables - not ongoing discussion groups

Vehicles for the delivery of technical and standards work within RadioDNS

Reports back to the Technical Group
Relationships

- Steering Board
- Technical Group
  - Project Team
  - Project Team
  - Project Team
Objectives

Transparency, Predictability, Visibility

A view of past, current and proposed work
Timetable of activities for the next 12 months
A public page giving details of the technical activities of the TG
Regular meetings

Clear separation between the Steering Board and the Technical Group
Current Membership
Current Activities

2018
## Workplan Development

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification of Applicable Phase</th>
<th>Processor</th>
<th>Title</th>
<th>Summary</th>
<th>Points</th>
<th>Complexity</th>
<th>Assigned</th>
<th>Proposed Delve</th>
<th>Notes</th>
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<tr>
<td>45-6 TS 70 030 (not used)</td>
<td>Roadmap</td>
<td>German FSP person</td>
<td>Geometric and Functional</td>
<td>Ensure the definition of the geometric and functional aspects of the device, including the mechanical design and the electrical components.</td>
<td>HIGH</td>
<td>HIGH</td>
<td>Andy, Birmingham</td>
<td>October 2022</td>
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</tbody>
</table>

- **16 existing tasks**
- **2 descoped**

Rest classified:
- **PRIORITY**
- **COMPLEXITY**
Priorities

XSD Schema Fixes (SPI)

Client API Key (RadioDNS Lookup)

Phoneme Support (SPI)

Work for these is largely done, but needs to be verified and tested.

Proposals for Project Teams received, Suggested delivery dates April - June 2018
Additional Tasks

Tagging and Bookmarking Specification
Recent updated draft document, needs review and verification

Technical Group Working Platform
A simple platform for TG collaboration (issue management, document management, workspace)
Next Steps

1. Project Team Kickoff
2. Workplan Completed
3. Calendar of activities established
4. Standards work submitted
Get Involved!

We would welcome additional members
Open to suggestions for additional work, projects, ideas

Your chance to shape the technical work that RadioDNS does
Member Presentation

Xperi Connected Radio
RadioDNS Open Meeting

Xperi Automotive Hybrid Radio
13 February 2018

Joe D’Angelo
Senior VP, Broadcast Radio
Dynamic 18 Months

DTS acquires iBiquity
Oct. 5, 2015

DTS acquires All in Media
Sept. 2016

Tessera acquires DTS
Dec. 1, 2016

XPERI, Inc. Launched
March 6, 2017
Global Footprint
Broad Technology Portfolio

**Automotive**
- Intelligent sensor modules
- Driver monitoring systems
- Image Quality
- Automotive smart vision
- Small Machine Learning
  - ZiBond® & DBI® in Image Sensors and MEMS
  - DTS-HD® Audio Codec
  - HD Radio™ Technology
  - DTS Connected Radio
  - DTS Neural:X™
  - DTS Audio Pre-Processing
  - All In Media Broadcast Technology
  - Arctic Palm Studio Systems

**Mobile**
- Face recognition
- Object recognition
- Face beautification
- Biometrics
- Small Machine Learning
- Image Processing Unit
- High Dynamic Range
- Electronic Image Stabilization
- Fast Focus
  - ZiBond® and DBI® in Image Sensors, RF
  - DTS-HD® Audio Codec
  - DTS Headphone:X®
  - DBI in 3D memory
  - DTS Sound™
  - Post-Processing
  - DTS Play-Fi® Wireless
  - Multi-Room Audio
  - All In Media Radio Apps

**IOT**
- Object recognition
- Biometrics
- Small Machine Learning
  - ZiBond® in MEMS
  - DBI: 3D integration of sensors & computing
  - DTS Audio Codecs
  - DTS Play-Fi® Wireless
  - Multi-Room Audio
  - HD Radio™
  - DTS Hybrid Radio
  - DTS Virtual:X™
  - Post-Processing
  - DTS Audio Pre-Processing

**MR/AR/VR**
- Immersive Video
- Object Recognition
- Display (LTM, GD)
- Small machine learning
- Object recognition
- Gaze tracking
- IRIS recognition
- Head tracking
- Depth mapping
  - ZiBond® & DBI® in MEMS, DTS Headphone:X®, DTS Play-Fi Audio Codec

**Consumer Electronics**
- Image Processing
- High Dynamic Range
- Small Machine Learning
- Immersive Video
  - Semiconductor packaging
  - ZiBond® & DBI® in Image Sensors, RF and MEMS
  - DTS-HD® Audio Codec
  - DTS-X™ Audio Codec
  - DTS Headphone:X®
  - DTS Play-Fi® Wireless
  - Multi-Room Audio
  - HD Radio™
  - DTS Virtual:X™
  - Post-Processing
  - DTS Sound™
  - Post-Processing
Broad Technology Portfolio

Xperi Broadcast Technology

Over 6,000 Radio Stations Globally

+45,000,000 Vehicles
Evolution of Broadcast Radio – Digital Connectivity

AM/FM Radio | DAB+ Digital Audio Broadcasting | HD Radio Digital AM & FM

Broadcast

IP

102.5 | WKLB-FM (Country)

LATER ON
THE SWON BROTHERS
Later On

© 2017 Xperi.
Hybrid Radio Has Fantastic Potential, But Must Deliver

**Broadcaster Requirements/Expectations**

✓ Editorial Control
✓ Content Integrity
✓ Enhanced Listener Insights
✓ Limited Impact on Workflow
✓ Limited Impact of Production
Hybrid Radio Has Fantastic Potential, But Must Deliver

Automotive Requirements/Expectations

✓ Modern Digital Experience for Broadcast Radio
✓ Simple/safe Content Discovery
  ✓ Accurate Station List
  ✓ Now Playing “Live Guide”
  ✓ Sortable Station Guide
  ✓ Voice Interface Ready
✓ Rich Content Engagement – Music, Talk, Sports, etc.
✓ Global/Cross Platform Solution - analog, DAB, HD Radio
✓ Simple Integration and Product Development
✓ Consistent User Experience
Evolution Broadcast Radio – The Global Challenge

Addressing 84% of global new car sales

NORTH AMERICA
28.5% Global Car Sales

WESTERN EUROPE
20.8% Global Car Sales

CHINA/JAPAN
32.5% Global Car Sales

AUSTRALIA
2% Global Car Sales
Multiple Standards and Solutions Around the World

NORTH AMERICA

NORTH

WESTERN EUROPE

CHINA/JAPAN

AUSTRALIA
AM/FM Radio

© 2017 Xperi.
DTS Connected Radio: Ensuring Broadcaster Control

Open Standards

RadioDNS®

20+ Data Sources both aggregators and direct station interface

Content Aggregation and Curation

• RadioDNS Content
• Broadcaster Content
• Premium Content

Premium Content
• Artist Images, Bios, Lyrics
• Local Events, Live Sports Scores, etc
Connected Platforms Provide Unique Opportunities

**BROADCAST & IP**
- Discovery
- Enhancement
- Measurement
- Interactivity

**AM/FM Radio**

**DAB+**

**HD Radio**
DTS Connected Radio: Ensuring Broadcaster Visibility

20+ Data Sources both aggregators and direct station interface

- radioplayer
- tagstation
- ARCTIG PALM Technology Inc.
- aim
- Pluxbox
- RADiOAPp
- iHeart Radio

Listener Usage Data & Metrics

- GDPR & OEM Privacy Compliance

Usage & Metrics

Broadcast
- Station/broadcast ID -> uniquely identify
- Tune on/Tune off
- Listening session length (used as double-check to start/stop)
- Is the tuned broadcast a preset
- Audio volume and volume changes during the listening session.
- Beginning & ending location of session

Streaming (Service Following)
- Broadcast metrics
- URL, Bitrate, Encoding

Engagement
- Share events
- Thumbs up/Thumbs down
- Other
Summary
Summary

RadioDNS is growing

World’s first automotive hybrid radio

Broadcasters - make your station look better

Manufacturers - make your radio work better

Membership - has benefits to you