

Station Recommendations - Summary

Rich Content

Broadcasters, equipment and service providers and receiver manufacturers should consult the information above and in Appendix A on rich content. NAB has considered connected car technologies and compiled this list of rich content features that is important for meeting consumer expectations for audio services in a connected car and should be supported.

Programming

1. Making sure the song title and artist fields of an automation system are correct is the first step. To do so, every song in the station's automation system must be reviewed to ensure the accuracy of the data.
2. As new songs are entered, be sure that the data is in the same format as the existing tunes in the database.
3. When entering data in the song title and artist fields, adding any more information other than the actual artist name and song title will make someone else's job more complicated down the line.
4. Program-associated data is not just for music, it is also important for spoken word stations. These stations can increase audience engagement by sending the name of the program, the host name and picture for FM-band HD Radio stations or hybrid (over the air plus internet) radio services, topic of discussion, guest and call-in telephone number.
5. AM-band HD Radio stations should not forget that program-associated data is available and can transmit, as discussed above, show information, sports scores, weather, traffic bulletins, stock prices and synced advertiser's slogans, phone numbers and web addresses. In the future, all-digital AM HD Radio receivers will support Artist Experience, as well.
6. The station's programming management and engineering staff should all own or rent a car with an HD Radio that can display Artist Experience so they can see what listeners are experiencing.
7. Be sure that the station PI code is correct, this is vital for stations that are supporting RadioDNS for delivery of static metadata to hybrid radio receivers.
8. Be sure that the station slogan or ID is correct.
9. If a station is merely sending text from an automation system to an RDS encoder, a middleware system such as Quu2Go, TRE or Artic Palm should be added.
10. Every station should be using a software service like Quu2Go or Arctic Palm/DTS Connected Radio to clean up the data for an accurate and consistent user experience. You can get information on Quu2Go at myquu.net and for Arctic Palm/DTS Connected Radio at arcticpalmapps.com.
11. Make use of the RT field in RDS systems.
12. Provide station logos and station information using a RadioDNS SI file to support hybrid radio receivers.

Engineering

1. Correctly enter the RDS PI code by going to picodes.nrsstandards.org/fs_pi_codes_allocated.html and finding the PI code for your station. It is very important to not leave the default PI code in an RDS encoder. When the same PI code ends up on multiple, unrelated stations, advanced receivers can then execute seemingly random jumping from station to station.
2. Consult with the station programming department to identify the RDS PTY code that the station wishes to use to identify its format on the radio display. Refer to Table F.2 in the NRSC's [NRSC-4-B Standard](#) and enter the appropriate PTY code into the RDS and HD Radio equipment.
3. Set the RDS injection level. While there is no specified level, four to five percent injection levels are common and provide reliable RDS encoding throughout the station's service level.

4. The RDS PS data can be displayed either as static or dynamic, and in the case of dynamic as scrolling text or chunking PS scroll (dynamic PS or DPS). This function is controlled by the RDS encoder and requires a configuration setting or DPS command to use this feature.²¹
5. Set up middleware to display desired information in the RT field in RDS systems.
6. Set up middleware for displaying the PSD information in HD Radio systems.
7. For stations employing HD Radio systems, consult with the station’s programming department to set up the Station Information Services (SIS): station call, PTY, station slogan and station message.
8. In HD Radio systems, be sure the exporter and importer software versions are up to date. The current fielded version number (exporter and importer, August 2023) is v5.3.2. This is what manufacturers are shipping and this will support all current features.
9. The station’s engineering team should have full-time access to an HD Radio receiver in order to observe the metadata, album art and commercial art.
10. Work with the station or group IT department to ensure the correct information is included in the RadioDNS SI file, to allow for proper reception of static metadata over the internet for hybrid radios.
11. Verify that the station’s dynamic metadata is properly received by the DTS AutoStage system to support hybrid radio receivers in vehicles that use DTS AutoStage.

Metadata Service Providers

This information is provided for informational purposes only. Please contact NAB’s David Layer at dlayer@nab.org if you want your company’s services to be included.

Service Provider	List of services	Comments
Aiir aiir.com	<ul style="list-style-type: none"> • Free RadioDNS registration, SI file creation 	
Arctic Palm arcticpalmapps.com	<ul style="list-style-type: none"> • Radio station production software for metadata management 	Legacy system, has devolved into the Rapid Xperi platform (see below)
Pluxbox pluxbox.com	<ul style="list-style-type: none"> • Free RadioDNS registration, SI file creation (metadata.radio) • Full-service dynamic metadata including song title and artist, artist images and synchronized ad display messages 	Supports RadioDNS, DAB+, DTS AutoStage
Quu Interactive myquu.net	<ul style="list-style-type: none"> • Full-service dynamic metadata including song title and artist, artist images and synchronized ad display messages 	Acquired Jump2Go in 2019
Radioline business.radioline.co	<ul style="list-style-type: none"> • Full-service dynamic metadata including song title and artist, album art 	Have developed a hybrid radio platform for Android Automotive OS
Radioplayer radioplayer.org	<ul style="list-style-type: none"> • RadioDNS registration, SI file creation • Full-service dynamic metadata including song title and artist, album art • Exclusive dynamic metadata service provider for Audi and BMW hybrid radio solutions 	Not currently available in the U.S.

Service Provider	List of services	Comments
<p>Rapid aimrapid.com</p>	<ul style="list-style-type: none"> Radio station production software for metadata management 	<p>Predecessor system is Arctic Palm</p>
<p>TRE bdcast.com/products/studio-products/tre-the-radio-experience/</p>	<ul style="list-style-type: none"> Radio station production software for metadata management Full-service dynamic metadata including song title and artist, artist images 	
<p>Xperi (DTS AutoStage) dts.com/autostage</p>	<ul style="list-style-type: none"> Acquire SI using RadioDNS standards (some stations only) Full-service dynamic metadata including song title and artist, artist images and synchronized ad display messages Analytical information on listener behavior shared with the broadcaster Exclusive service provider of broadcast metadata for Mercedes, Hyundai/Kia/Genesis, Tesla hybrid radio solutions 	<p>AutoStage is an amalgam of TiVo metadata services and the DTS Connected Radio platform</p>
	<ul style="list-style-type: none"> 	

APPENDIX A

Connected Car Radio Technology - Rich Content Features Table

No.	Item	Description	Important connected radio-related features
1	Textual metadata – station information	Static metadata such as station geographic coordinates, slogan, call sign	<ul style="list-style-type: none"> • Prioritize broadcaster-supplied metadata (OTA- or IP-delivered) over metadata from other sources by default • Stored in the receiver for rapid display when tuning, etc. • Updated regularly and subject to an automatic expiration date • Some data (e.g., geographic coordinates) only used internally in the receiver and not visible to users
2	Textual metadata – program-related information	Dynamic metadata such as song title and artist (music formats), host/program name (news and talk formats), advertiser or sponsor information	<ul style="list-style-type: none"> • Prioritize broadcaster-supplied metadata (OTA- or IP-delivered) over metadata from other sources by default • Typically displayed to the user only for the duration of the corresponding audio content, may be stored for future retrieval (e.g., “tagging”)
3	Textual metadata – display	Textual metadata shown on receiver display should be uniform in appearance according to particular text field being displayed	<ul style="list-style-type: none"> • Support core field set (song title, artist, host/program name, station name/slogan, advertising-related information) • Appearance of text should be normalized according to text field being displayed (e.g., all caps versus upper lower case, etc.) • Appearance of text should be consistent from platform to platform (FM RDS, HD Radio, internet streaming)
4	Image metadata	Station logos, artist or album art images (music formats), talk show/news program logos (news and talk formats), advertiser or sponsor images	<ul style="list-style-type: none"> • Prioritize broadcaster-supplied metadata (OTA- or IP-delivered) over metadata from other sources by default • Prioritize highest-quality broadcaster-supplied images (IP-delivered images will typically have higher quality than those OTA-delivered) • Display to the user only for the duration of the corresponding audio content, may be stored for future retrieval (e.g., “coupon radio”) • Station logos should be updated regularly and subject to an automatic expiration date • Avoid using stale, pre-stored station logos that are pre-loaded or stored on disk and not updated

No.	Item	Description	Important connected radio-related features
5	Metadata synchronization	Textual and image metadata must be properly synchronized with audio program; also, OTA- and IP-delivered content, both metadata and audio, must be properly synchronized with one another	<ul style="list-style-type: none"> • Compensate for system-specific processing delays so as to provide properly synchronized metadata at the receiver • May involve coordination between cloud services and OTA transmission/reception equipment
6	Metadata checking	Review of dynamic metadata contents for accuracy and prior to broadcasting	<ul style="list-style-type: none"> • For example, correct misspelled words
7	Support for multiple platforms	Broadcasters should have the ability to deliver rich content to multiple destinations (e.g., different service providers) using a common format	<ul style="list-style-type: none"> • Accept metadata in industry-standard formats (e.g., RadioDNS)
8	Advertising support	Text and image metadata to be displayed when audio program consists of advertising or sponsorship information	<ul style="list-style-type: none"> • Properly recognize advertiser-related metadata which may undergo different review processes than program-related metadata • Support for advertiser action (e.g., coupon radio, “take me there” using location-aware receiver)
9	Geofencing	Define geographical boundaries for authorized and/or restricted use of streaming metadata (e.g., RadioDNS)	<ul style="list-style-type: none"> • Support use of geofencing using industry-standard methods for controlling usage of streaming audio in receivers • Geofencing data only used internally and not visible to users • Ensure that the streaming audio is not buffered for long periods of time in the background when it is not in use • Use geofencing guidelines as per 3.10 above and the geofencing specifications of the hybrid platform (e.g., RadioDNS)

No.	Item	Description	Important connected radio-related features
10	Audio source	Order of preference for audio source selection should be under broadcaster control	<ul style="list-style-type: none"> • Default audio source order of preference should be OTA digital, OTA analog, IP-delivered streaming audio • Receiver should utilize IP-delivered streaming audio source specified by the broadcaster • Minimize use of streaming audio in order to minimize audio streaming delivery costs incurred both by consumers and broadcasters • Utilize “blend” algorithms that are not too aggressive, that is, do not blend too quickly (should favor OTA audio for as long as possible)