More About Metadata, What a Facility Needs to Do

***Presented* to:**

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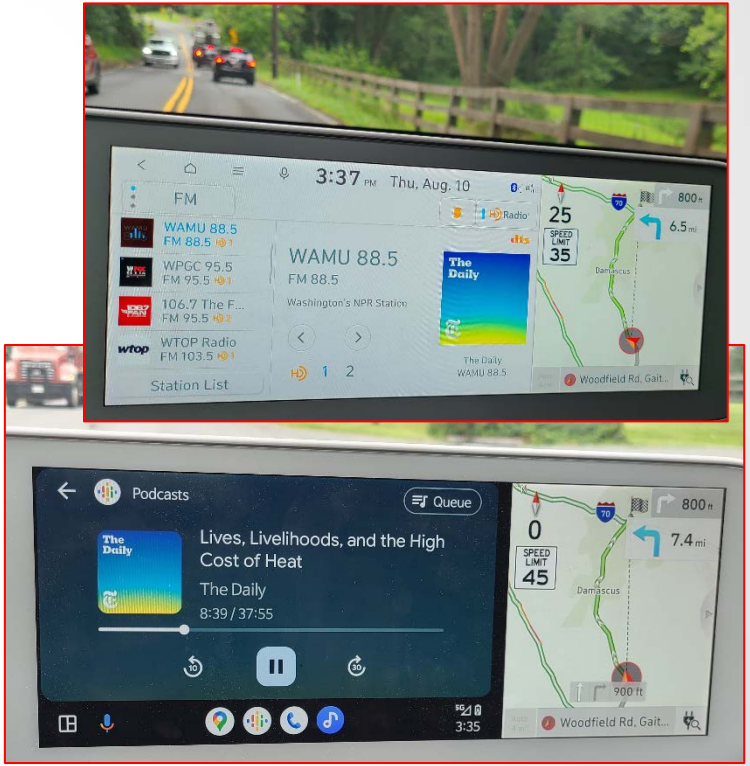
Vice President, Advanced Engineering
National Association of Broadcasters
Washington, DC

October 10, 2023

NAB™
NATIONAL ASSOCIATION OF BROADCASTERS

What's the big deal?

- Metadata is the "face" of radio
  - CONSUMERS EXPECT IT
  - MANUFACTURERS SUPPORT IT
- It's a potential source of revenue
- Everyone else is doing it



What's the big deal?

- NAB first published Digital Dash Best Practices in 2017

2023 Hyundai Ioniq 5 –
Android Auto running Google Podcast app
Podcasts
Queue
The Daily
Lives, Livelihoods, and the High Cost of Heat
The Daily
8:39 / 37:55
3:35
0
SPEED LIMIT 45
Damascus
800 ft
7.4 mi
900 ft
Woodfield Rd, Gait...

2023 Hyundai Ioniq 5 –
WAMU 88.5 MHz FM HD Radio and
DTS AutoStage
3:37 PM Thu, Aug. 10
FM
Radio
WAMU 88.5
FM 88.5 1
WPGC 95.5
FM 95.5 1
106.7 The F...
FM 95.5 2
WTOP Radio
FM 103.5 1
Station List
WAMU 88.5
FM 88.5
Washington's NPR Station
1 2
The Daily
The Daily
WAMU 88.5
800 ft
6.5 mi
25
SPEED LIMIT
35
70
Damascus
Woodfield Rd, Gait...

2024 Jeep Grand Wagoneer
with passenger display
Sources
Playing
Browse
Audio Settings
Rear Seat
ROCK
106.7 MHz
KROQ-HD1
The Black Keys
Tighten Up
Home
Comfort
Media
Nav
Apps
Phone
Vehicle
Audio
Video
HDMI
Bluetooth
USB 1
USB 2
FM
AM
More...
Controls
Driver
Passenger
GRAND WAGON
AUTO SHOW

Audi Q6 e-tron – available in 2025 model year

XPERI AT IBC

SEPTEMBER 15-18, 2023

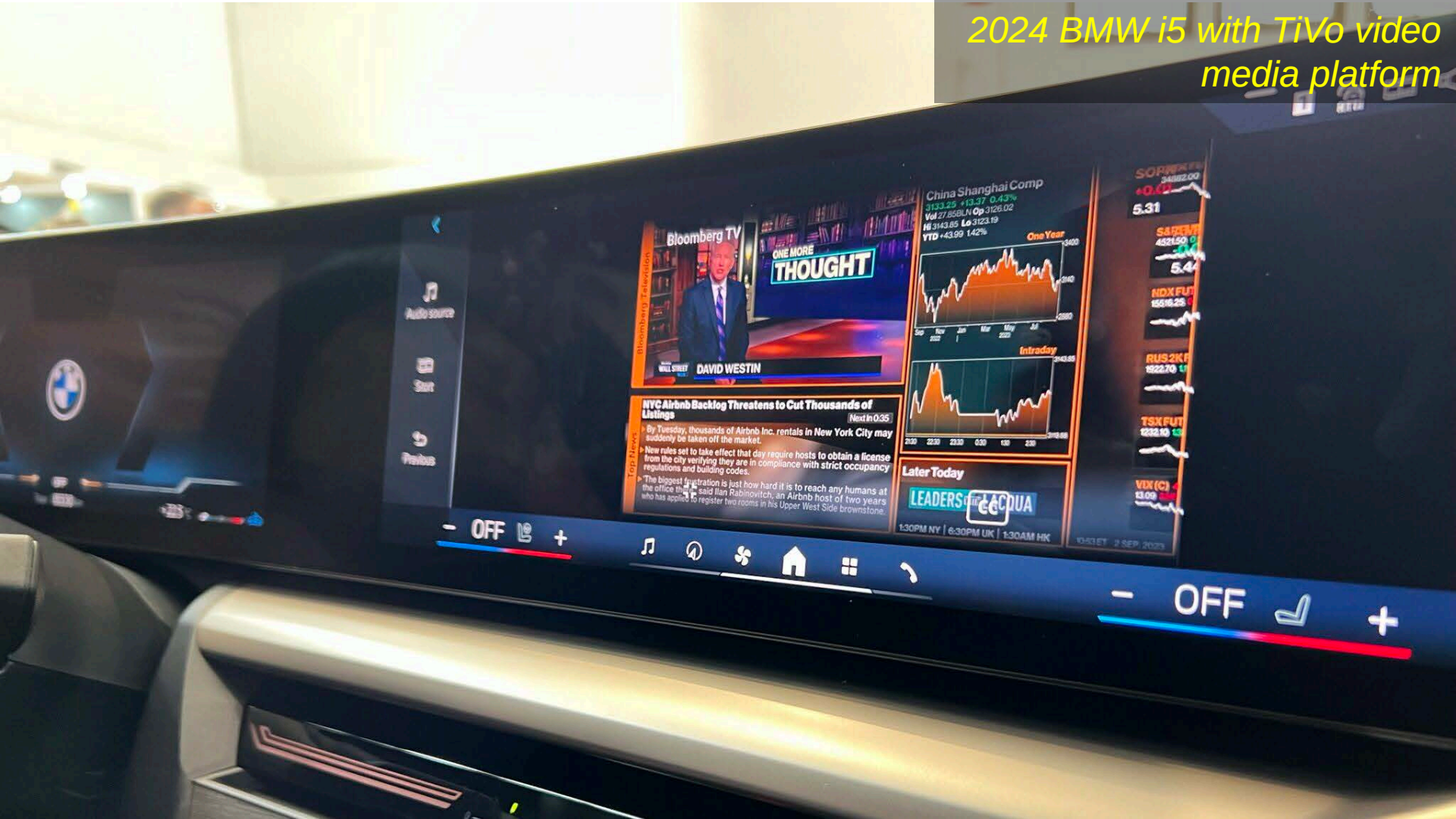
RAI Amsterdam
Hall 5 | Stand 5.F36

DTS AutoStage™ Video Service, Powered by TiVo™

DTS AutoStage is the only global entertainment platform for the connected car that delivers personalized radio, podcast, music, TV, and movies to the car in a unified user-centric experience. DTS AutoStage Video Service Powered by TiVo brings decades of video content ecosystem relationships and development to the connected car via an award-winning discovery experience and is set up to work with all global and regional content providers.

2024 BMW i5 with TiVo video media platform

IFA
CONSUMER ELECTRONICS UNLIMITED
BERLIN, 6-10 SEP 2024

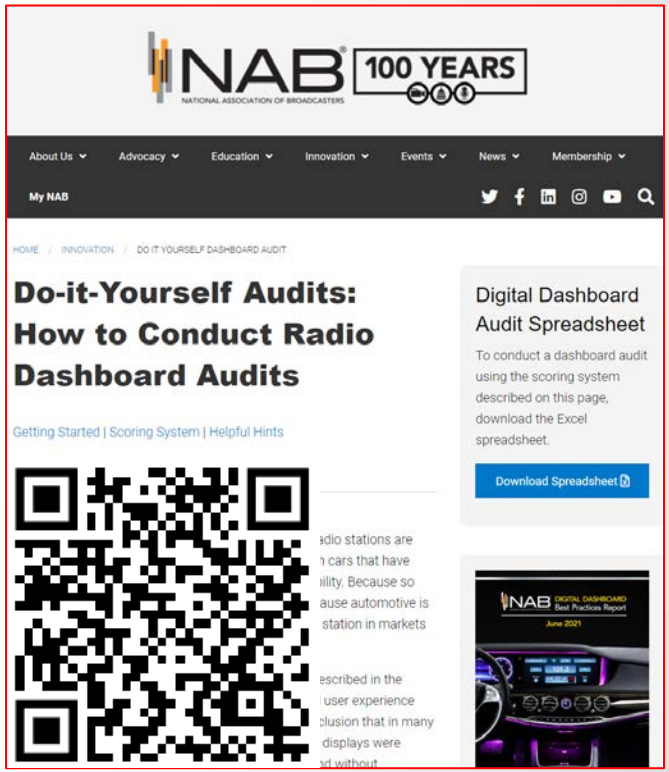

2024 BMW i5 with TiVo video media platform
Audio source
Start
Previous
Bloomberg TV
ONE MORE THOUGHT
DAVID WESTIN
China Shanghai Comp
NYC Airbnb Backlog Threatens to Cut Thousands of Listings
Later Today
OFF
OFF

2024 BMW i5 with TiVo video media platform

2024 BMW i5 with TiVo video media platform
16:59
Next In Sports...
Bloomberg Inv...
AI IRL
NEXT IN SPORTS
24:01
Can the Ancient Indian Sport of Kabaddi Someday Rival...
NEXT IN SPORTS
24:01
The Pro-League With Players
19.0°
19.0°

What about Madison?

- Conducted market survey yesterday
  - Using method from NAB webpage
- Vehicle: 2023 BMW i5



https://www.nab.org/innovation/digitalDashboardAudit.asp

FM
WSJY HD1
1:50 pm
107.3 WSJY
Your Variety Station
105.1 App
105.5 WMMM HD1
106.3 Country
107.3 WSJY HD1
WSJY HD2
107.9 Ideas
Remove preset
Manual search
Recognize title
Sound settings
Sia
Unstoppable
Middleton
HYBRID
P
+55 °F
334 mi
1:50 pm
0 mph
Power %
READY
65°F
AUTO
A/C
CANCEL
LIM
AIRBAG
MODE
BAND

FM
WZEE HD2
4:00 pm
Bobby Vinton
Mr. Lonely
Bobby Vinton
Mr. Lonely
102.5 WNWC HD1
WNWC HD2
103.3
104.1 WZEE HD1
WZEE HD2
WZEE HD3
Add to presets
Manual search
Recognize title
Sound settings

FM
FM 103.5
3:56 pm
You are listening to
103.5 FM
102.5 WNWC HD1
WNWC HD2
103.3
103.5
104.1 WZEE HD1
WZEE HD2
Add to presets
Manual search
Recognize title
Sound settings

2023 BMW X5		0	**NO FUNCTIONALITY**	RED	Nothing
Coordinates:	43.088260°N 89.522310°V	1	**WRONG/BAD EXECUTION**	ORANGE	Bad station list
Station list pre-populated		2	**UNDER UTILIZATION**	YELLOW	S
No station list feature		3	**FULL FUNCTIONALITY**	GREEN	S

31 "News" channels, no apparent hybrid functionality

Turned off HD Radio to experience RDS; appears to grab HD data when HD is turned off

MADISON **3:30PM**

NO.	QUALITY RATING	FREQ (MHz)	CALL SIGN	XLTR SOURCE	MUSIC/NT	PS / RadioText	SLOGAN	F			ATION LIST ENTRY
1		88.7	WERN		News/music	RT	YES				"Network"
2		89.5	WCNP		Music	RT	URL				"org"
3		89.9	WORT		Music	RT	YES				WORT-FM
4		90.3	WJWD		Music	RT	YES				"WJWD"
5		90.5	W213CE	WERN	News	RT	YES				Ideas
6		90.7	WHAD		News	PS	NO				WHAD
7		91.1	W216BL	WVCX	Christian	RT	NO				Nothing
8		91.3	WHHI		News	PS	YES				91.3WHHI
9		91.7	WSUM		News	RT	YES				Radio
10		92.1	WXXM		Music	RT					Madison'
11		92.7	W224EG	WMDX-AM	News	RT					Radio
12		93.1	WJQM		Music	RT					JAMZ
13		93.7	WBGR		Music	RT	YES				Tell Him
14		94.1	WJJO		Music	RT	YES				On 94.1
15		94.5	W233CN	WLMV-AM	Music	RT	YES				La Movida
16		94.9	WOLX		Music	RT					Classic
17		95.5	WWMV-LP		Music	None					Nothing
18		95.9	WBKY		Music	None					Nothing
19		96.3	WMAD		Music	RT+	YES				Star
20		96.7	W244DR	WOZN-AM	Sports	RT	YES				THE ZONE
21		96.9	W245DQ	WAUN-AM	Music	RT	YES				WAUN
22		97.3	W247CI	WHFA-AM	Christian	RT	YES				Relevant
23		97.7	W249DH	WHIT-AM	Music	RT	YES				RAWBERR
24		98.1	WMGN		Music	PS/RT	YES				Of Love
25		98.5			Country						(nothing)
26		98.7	WVMO-LP		Music	PS					- 7 Come
27		99.1	WIDE-LP		Music						(nothing)
28		99.5	W258CM	WHFA-AM	Music	RT	YES				WSJY
29		99.9	WJVL		Music	PS	YES				Lynyrd
30		100.1	WDDC		Country	PS	YES	YES		Scrolling	(Scrolling)

FREQ (MHz)	CALL SIGN	STATION LIST ENTRY
88.7	WERN	"Network"
89.5	WCNP	"org"
89.9	WORT	WORT-FM
90.3	WJWD	"WJWD"
90.5	W213CE	Ideas
90.7	WHAD	WHAD
91.1	W216BL	(nothing)
91.3	WHHI	91.3WHHI
91.7	WSUM	Radio
92.1	WXXM	Madison'
92.7	W224EG	Radio
93.1	WJQM	JAMZ
93.7	WBGR	Tell Him
94.1	WJJO	On 94.1
94.5	W233CN	La Movida
94.9	WOLX	Classic
95.5	WWMV-LP	(nothing)
95.9	WBKY	(nothing)
96.3	WMAD	Star
96.7	W244DR	THE ZONE
96.9	W245DQ	WAUN
97.3	W247CI	Relevant

	2023 BMW x5			0	**NO FUNCTIONALITY**	RED	Nothing
	Coordinates:	43.088260°N 89.522310°W		1	**WRONG/BAD EXECUTION**	OR	
	Station list pre-populated			2	**UNDER UTILIZATION**	YE	
	No station list feature			3	**FULL FUNCTIONALITY**	G	

31 "News" channels, no apparent hybrid functionality

Turned off HD Radio to experience RDS; appears to grab HD data when HD is turned off

MADISON **3:30PM**

NO.	QUALITY RATING	FREQ (MHz)	CALL SIGN	XLTR SOURCE	MUSIC/NT	PS / RadioText	SL			COMMERCIAL BREAK
1		88.7	WERN		NT					
2			HD2		Music					
3			HD3		NT					
4		90.7	WHAD		NT					
5		92.1	WXXM		Music					
6		94.9	WOLX		Music					
7			HD2		Music					
8		96.3	WMAD		Country					
9			HD2		Music					
10		101.5	WIBA		Music					
11			HD2		Music					
12		102.5	WNWC		Christian					
13			HD2		Christian					
14		104.1	WZEE		Music					
15			HD2		Music					
16			HD3		Christian					
17		105.5	WMMM		Music					
18		107.3	WSJY		Music		YES	YES	YES	
19			HD2		Music			NO	YES	

FREQ (MHz)	CALL SIGN	STATION LIST ENTRY
88.7	WERN	"88.7 WERN HD1"
	HD2	88.7 WERN HD2
	HD3	88.7 WERN HD3
90.7	WHAD	WHAD HD1
92.1	WXXM	WXXM HD1
94.9	WOLX	WOLX HD1
	HD2	WOLX HD2
96.3	WMAD	WMAD HD1
	HD2	WMAD HD2
101.5	WIBA	WIBA HD1
	HD2	WIBA HD2
102.5	WNWC	WNWC HD1
	HD2	WNWC HD2
104.1	WZEE	WZEE HD1
	HD2	WZEE-HD2
	HD3	WZEE-HD3
105.5	WMMM	WMMM HD1
107.3	WSJY	WSJY HD1

Madison 2023 Audit: RDS Radio Vehicle, Midday		
Score	Number of stations	Percent of total
Green	6	13%
Yellow	11	23%
Orange	21	44%
Red	10	21%

	Color code definition	Specific interpretation for 2023 Madison audit (Bolt)
Green	Station utilized full display functionality (RDS or HD Radio) and information was displayed properly	Station was displaying a call sign, a station slogan and some program information (song title, artist, etc.)
Yellow	Station did not properly utilize all of the display functionality	Station displayed two out of three (call sign, station slogan, program information)
Orange	Station's display functionality was poor or there were errors	Station did not appear correctly in the receiver's radio station list
Red	There was no display functionality	No RDS functionality at all

Madison 2023 Audit: HD Radio Vehicle, Midday		
Score	Number of stations	Percent of total
Green	13	68%
Yellow	5	26%
Orange	1	5%
Red	0	0%

	Color code definition	Specific interpretation for 2023 Madison audit (Bolt)
Green	Station utilized full display functionality (RDS or HD Radio) and information was displayed properly	Station was displaying a call sign, a station slogan and some program information (song title, artist, etc.)
Yellow	Station did not properly utilize all of the display functionality	Station displayed two out of three (call sign, station slogan, program information)
Orange	Station's display functionality was poor or there were errors	Station did not appear correctly in the receiver's radio station list
Red	There was no display functionality	No RDS functionality at all

Past market surveys

Philadelphia 2017: HD Radio Vehicle, Afternoon Drive		
Score	Number of stations	Percent of total
Green	7	14%
Yellow	25	49%
Orange	8	16%
Red	11	22%

Charlotte 2017: RDS Radio Vehicle, Midday		
Score	Number of stations	Percent of total
Green	9	33%
Yellow	5	18%
Orange	8	30%
Red	5	18%

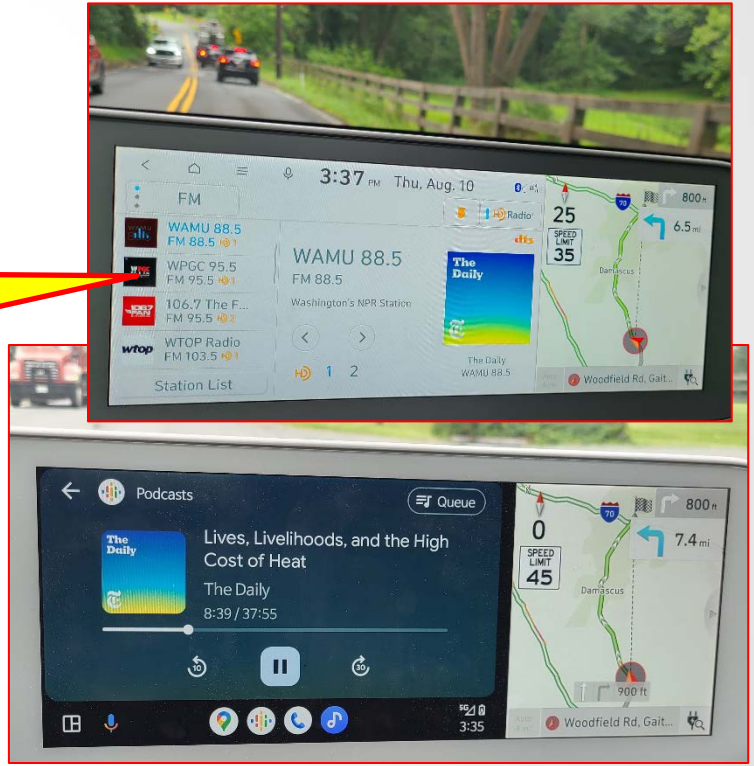
Detroit 2023 Audit: RDS Radio Vehicle, Midday		
Score	Number of stations	Percent of total
Green	3	9%
Yellow	9	26%
Orange	19	56%
Red	3	9%

Little Rock 2023 Audit: RDS Radio Vehicle, Midday		
Score	Number of stations	Percent of total
Green	1	3%
Yellow	14	39%
Orange	1	3%
Red	20	56%

What's the big deal?

- Metadata is the "face" of radio
  - CONSUMERS EXPECT IT
  - MANUFACTURERS SUPPORT IT
- It's [illegible]ue
- Everyone else is doing it

ROOM FOR IMPROVEMENT



Today's presentation

- About NAB *lite*
- Implementing metadata
- NAB Technology update:
  - AM radio
  - PILOT radio test bed
  - FM digital power increase
  - Spectrum and regulatory issues
  - NRSC update

National Association of Broadcasters

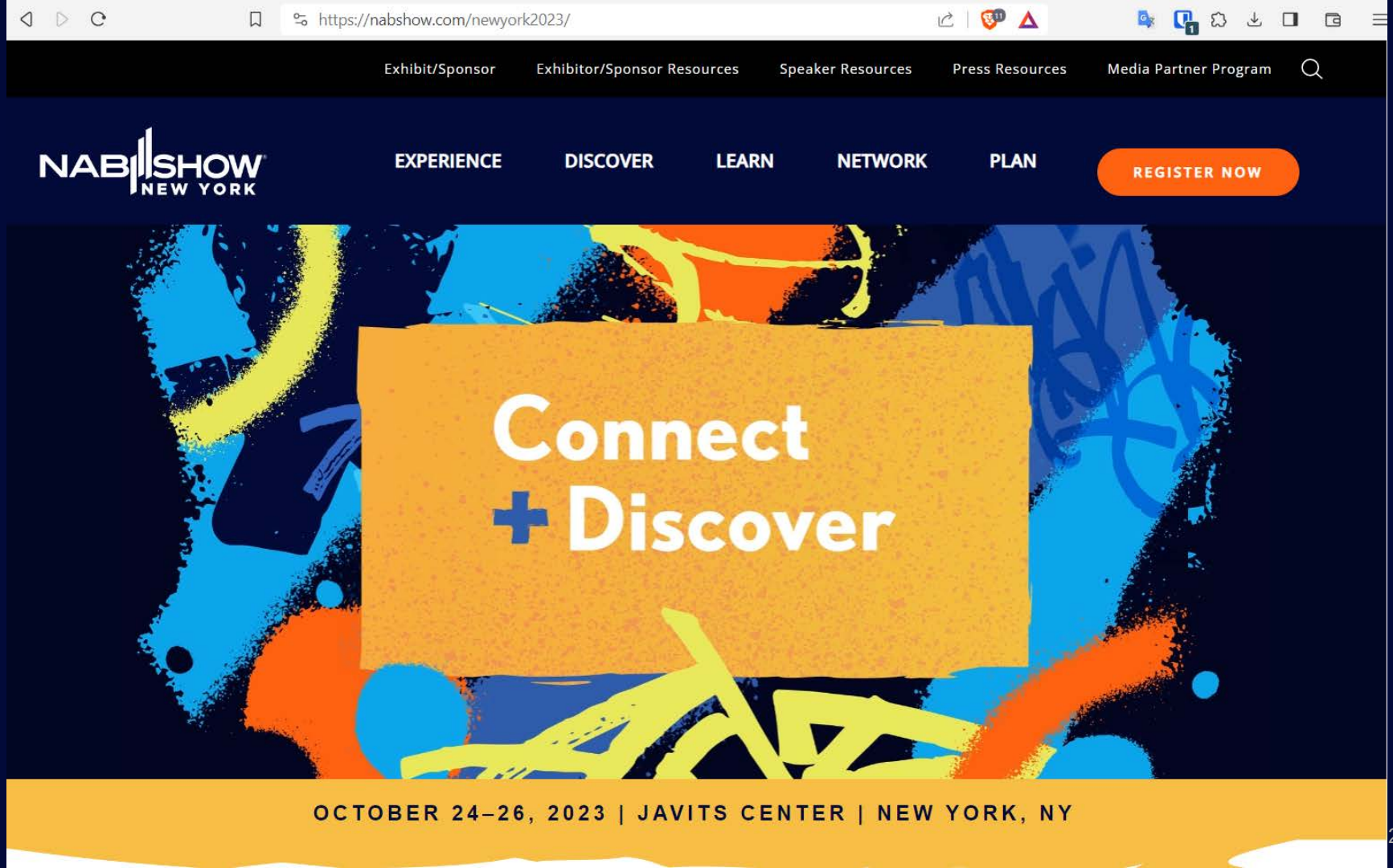
- Largest U.S. trade association for free over-the-air broadcasters
- Departments include:
  - Global connections and events (GCE)
  - Communications
  - Industry affairs
  - Legal
  - Government relations
  - **Technology**

CELEBRATING 100 NABSHOW

April 13-17, 2024

NAB SHOW NEW YORK

October 24-26, 2023


https://nabshow.com/newyork2023/
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Exhibitor/Sponsor Resources
Speaker Resources
Press Resources
Media Partner Program
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LEARN
NETWORK
PLAN
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Connect
+ Discover
OCTOBER 24–26, 2023 | JAVITS CENTER | NEW YORK, NY

Radio at 2023 NAB Show NY

- NRSC meetings on October 25
- Radio-focused conference tracks
  - Radio Insights: Executive Seminar
  - Cybersecurity for Broadcasters Retreat
  - Broadcast Content Summit
  - Tech Chat stage: AM panel, Virtualization
- 2023 Marconi Awards ceremony

Today's presentation

- About NAB *lite*
- **Implementing metadata**
- NAB Technology update:
  - AM radio
  - PILOT radio test bed
  - FM digital power increase
  - Spectrum and regulatory issues
  - NRSC update

Implementing metadata

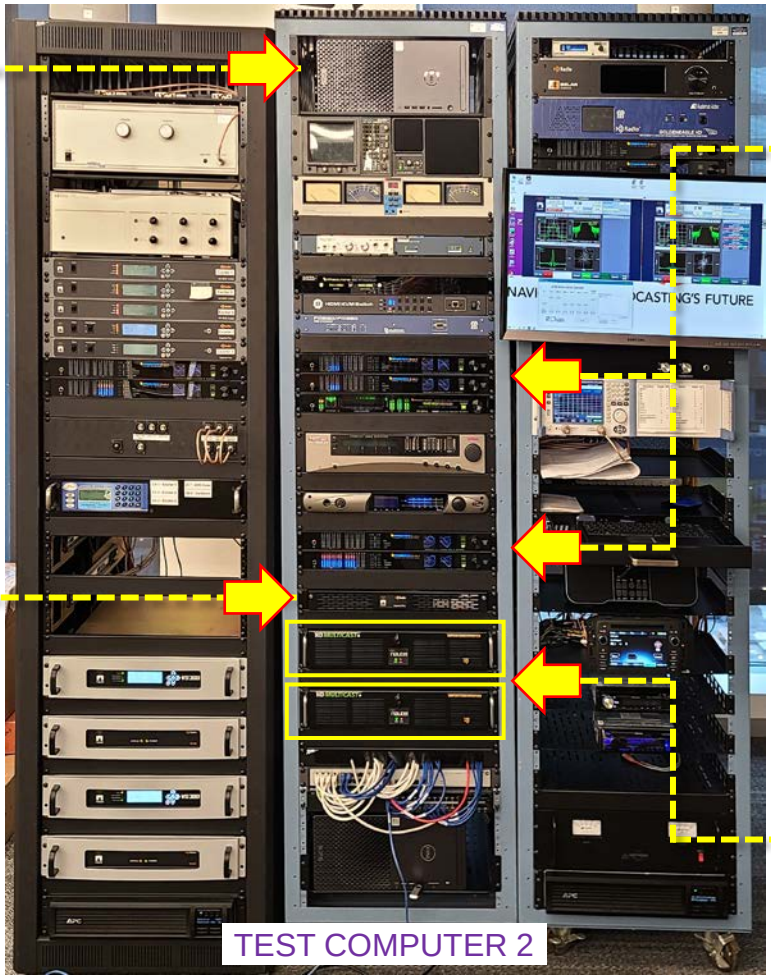
- For **ALL** stations!
  - AM – to support FM translator and HD Radio re-broadcasts (and streaming)
  - FM – should support RDS and HD Radio (if applicable)

- For **ALL** formats!
  - Music – song title, artist, album art, artist images
  - News/talk – identify show, host, guest, news story
  - Also, metadata-based advertising

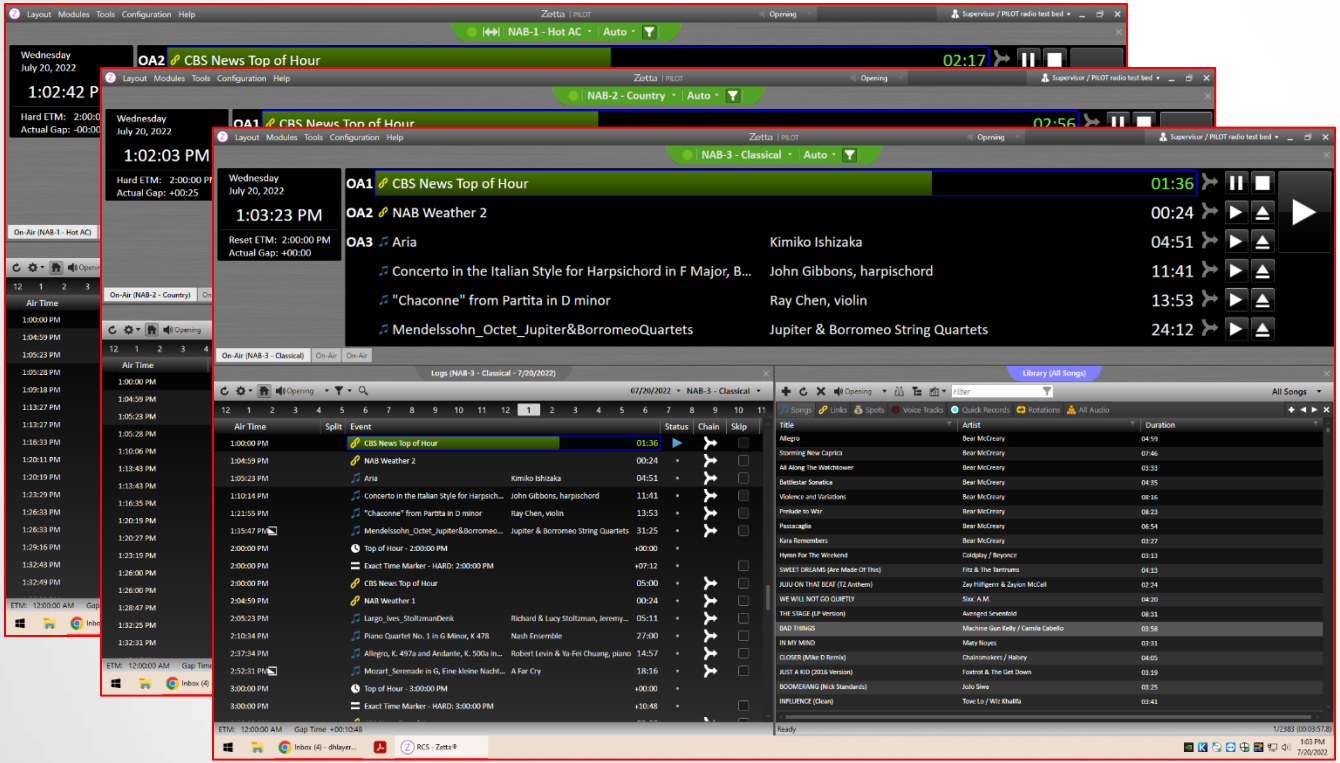
Implementing metadata

- Case study: PILOT radio test bed
  - 3 AM and 3 FM transmitters
  - Facilitates interference testing
- Added metadata capability in 2022
  - New playout system (Zetta)
  - Metadata middleware (RAPID)

PILOT radio test bed (2023)

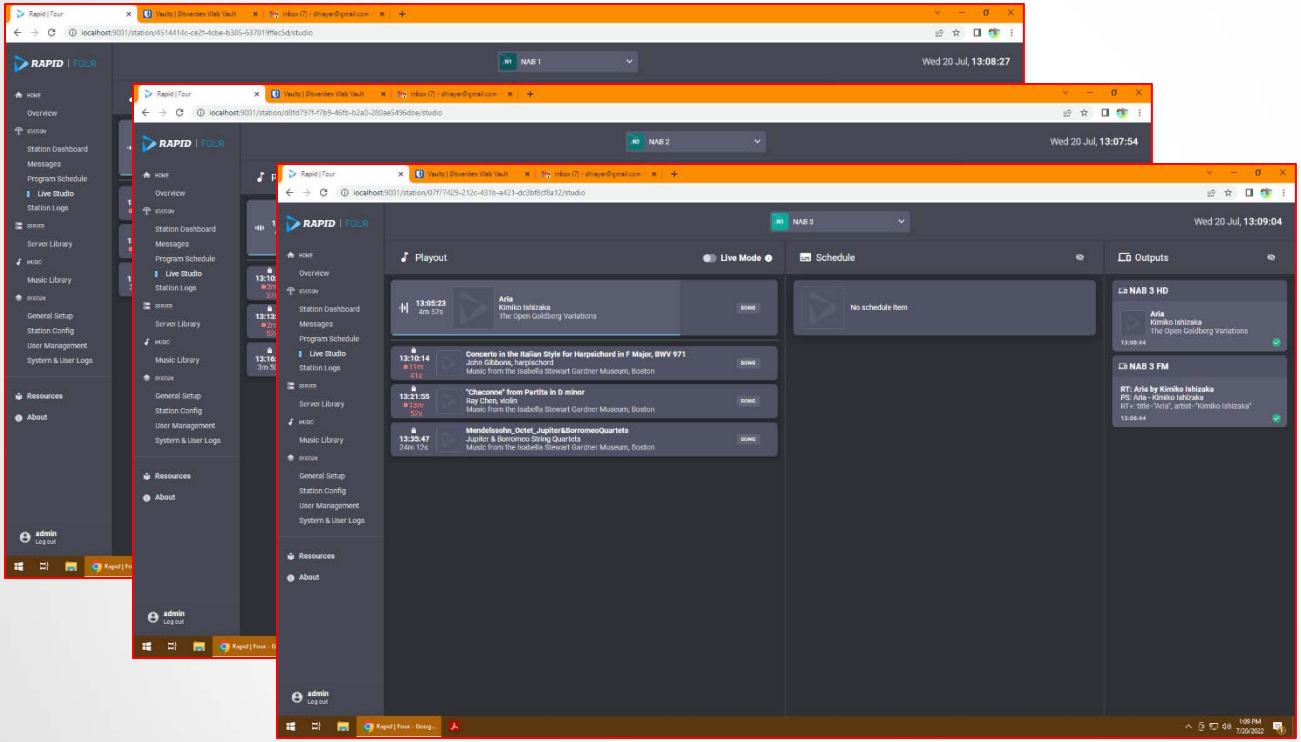


Playout system – supports 3 audio programs



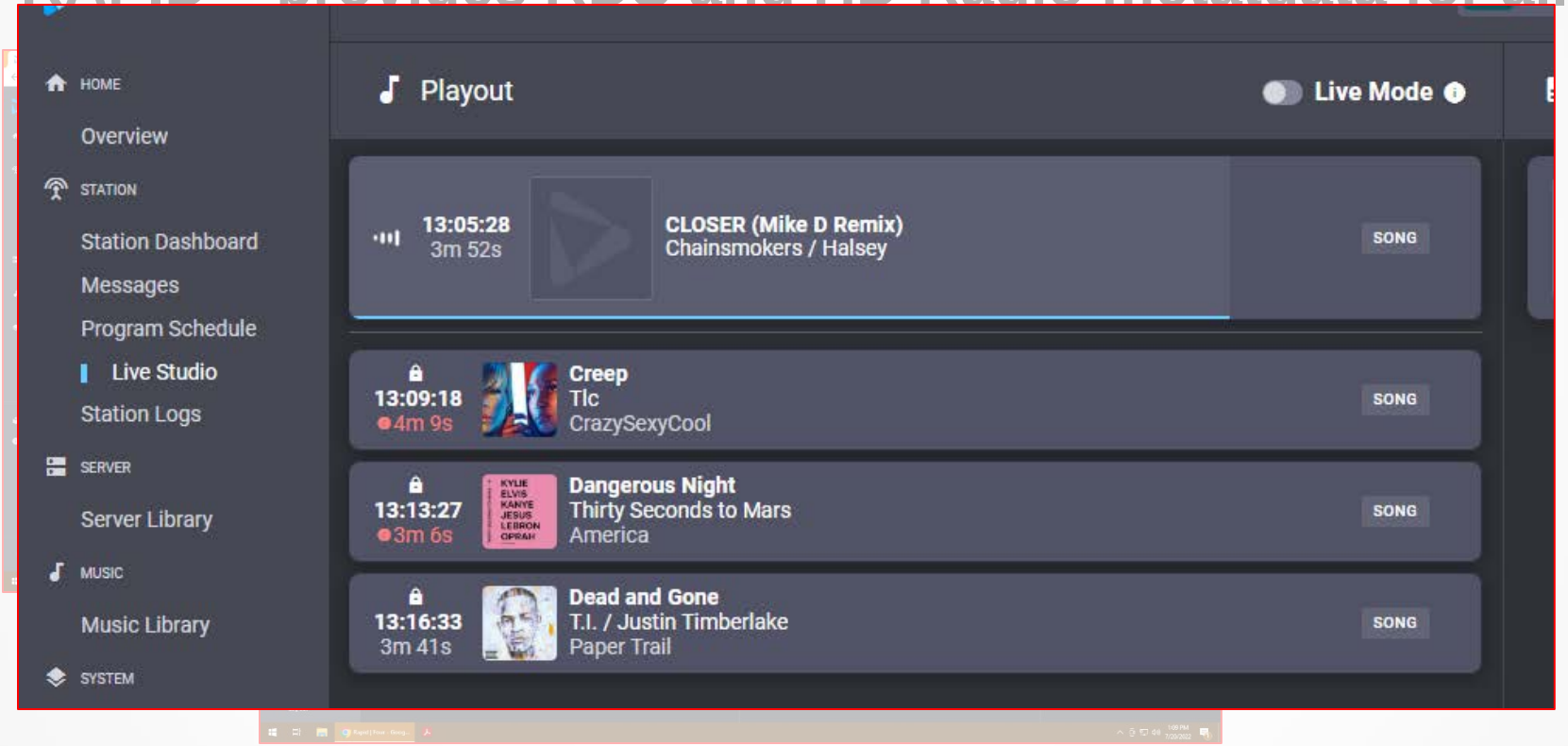
Zetta®

RAPID – provides RDS and HD Radio metatdata for all 3



RAPID

RAPID – provides RDS and HD Radio metatdata for all 3



RX 1
HD Radio
RX3
MENU
SEEK▲
B
CH▲
PS▲
SEL
SEEK▼
DISP
CH▼
PS▼
RX4
INE-W967HD
ALPINE
Radio FM 1
NABB
98.1 MHz -HD1
Bruno Mars
Finesse
24K Magic
DX Seek
Direct Tune
FM 1
Auto Preset
Close
MENU
RX5
ALPINE
Radio
FM1
AM1
98.1MHz
98.1MHz
98.1MHz
98.1MHz
98.1MHz
98.1MHz
98.1 MHz
NABB
Bruno Mars
Finesse
Preset
Auto Preset
Setup

Implementing metadata

- NAB Digital Dash Best Practices document offers insight and guidance

https://www.nab.org/innovation/autoInitiative.asp

Implementing metadata

- NAB Digital Dash Best Practices document offers insight and guidance

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OPTIMIZE BRANDING 24
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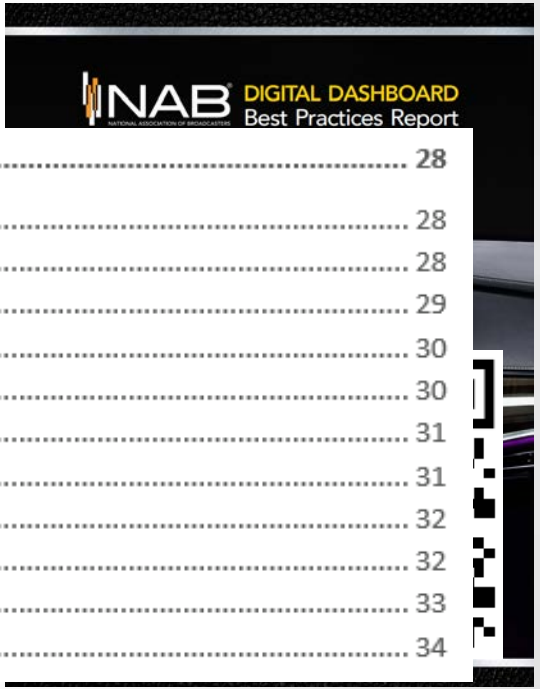
PROVIDE ENHANCED INFORMATION ABOUT ADVERTISERS 26
PROVIDE ENHANCED CONTENT TO INCREASE LISTENING 26
DEVELOP NON-LINEAR CONTENT AND INTERACTIVE STRATEGIES 26

https://www.nab.org/innovation/autoInitiative.asp

Implementing metadata

- NAB Digital Dash Best Practices document offers insight and guidance



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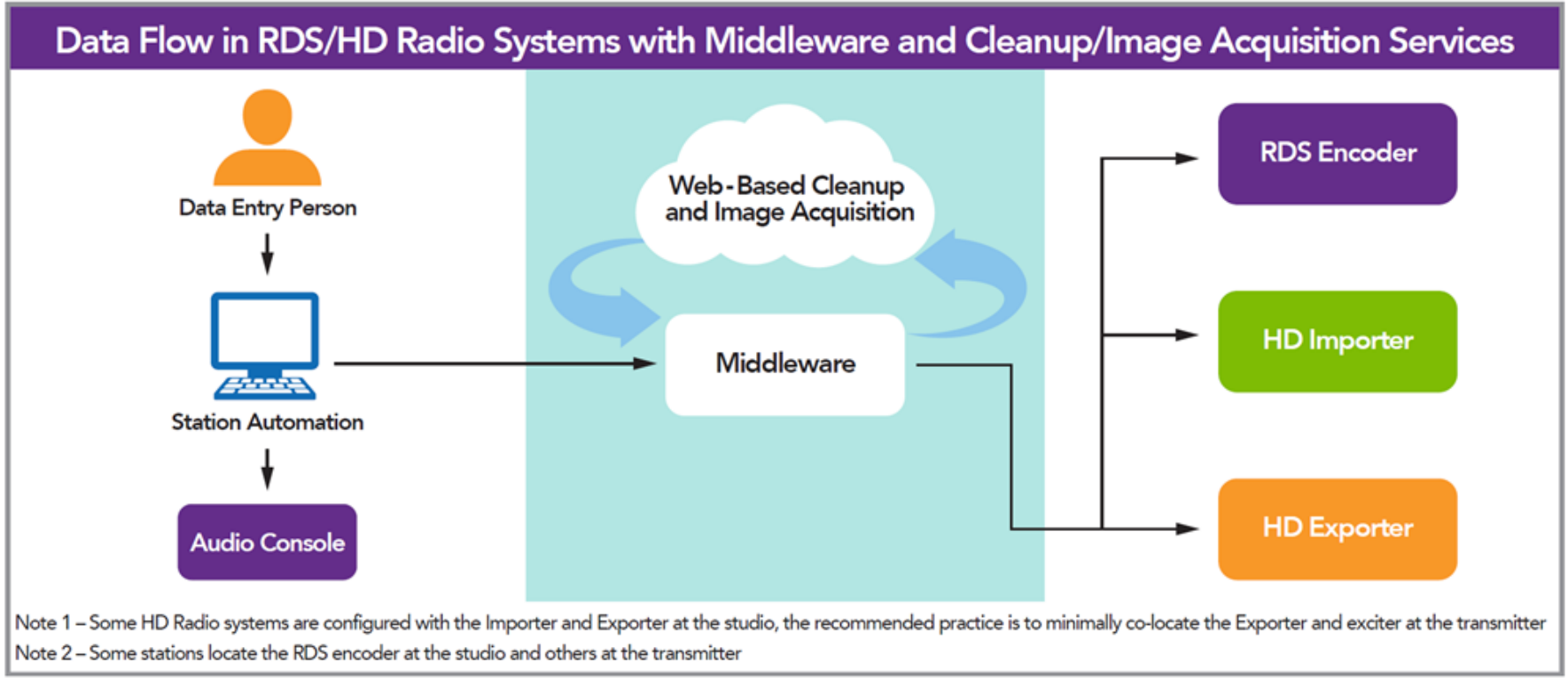
Implementing metadata



Implementing metadata

- Hybrid radio services are also important
  - Combination of internet and over-the-air reception

- Currently hybrid radio services in the US are supported by
  - DTS AutoStage
  - RadioDNS

- Participation in these services is cost-free

DTS AutoStage: The Only Global Hybrid Radio System

DTS AutoStage
Content | Discovery | Experience

- Get in touch: juan.galdamez@xperi.com
- Join us in revolutionizing the future of broadcast radio in the connected car
- Enabling partners:
  - Quu Interactive
  - RCS
  - Plubox
  - Radio.com
  - Broadcast Electronics
  - RAPID/All In Media

- Learn More @ www.dts.com/autostage

radiodns.org/technical/

Documentation and Information

Documentation

RadioDNS Technical Standards and Guidelines

HowTo Guides

Simplified guides to implementing the main RadioDNS functionality

HowTo Guides →

Register your station

How to create DNS entries for your station

Register a Station with RadioDNS

Project Logo

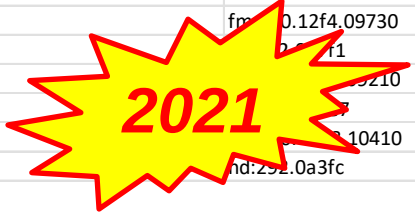
The baseline of RadioDNS functionality

- Station logos
- Station information
- Streaming URLs

radiodns.org/technical/

6% of Wisconsin radio stations are registered with RadioDNS

500 stations in Wisconsin			*6%*						
Call Sign	**HD?**	**Frequency**	**PI Code/Facility ID**	**City**	**State**	**Service**	**Stream?**	**Service Provider**	**Bearer**
WDKV	No	91.7	5dad	FOND DU LAC	WI	K-LOVE - Positive and Encouraging	Yes	Educational Media Foundation	fm:5a0.5dad.09170
WLVE	No	105.3	73da	MUKWONAGO	WI	K-LOVE - Positive and Encouraging	Yes	Educational Media Foundation	fm:7a0.73da.10530
WPFF	No	90.5	7ccb	STURGEON BAY	WI	K-LOVE - Positive and Encouraging	Yes	Educational Media Foundation	fm:7a0.7ccb.09050
WATQ	No	106.7	56a6	CHETEK	WI	Moose Country 106.7	Yes	iHeartMedia	fm:5a0.56a6.10670
WATQ-HD1	Yes	106.7	36357	CHETEK	WI	Moose Country 106.7	Yes	iHeartMedia	hd:292.08e05
WBIZ-FM	No	100.7	5835	EAU CLAIRE	WI	Z100 Eau Claire	Yes	iHeartMedia	fm:5a0.5835.10070
WBIZ-FM-HD1	Yes	100.7	2108	EAU CLAIRE	WI	Z100 Eau Claire	Yes	iHeartMedia	hd:292.0083c
WIBA-FM	No	101.5	1.90E+03	SAUK CITY	WI	101.5 IBA FM	Yes	iHeartMedia	fm:1a0.19e2.10150
WIBA-FM-HD1	Yes	101.5	17385	SAUK CITY	WI	101.5 IBA FM	Yes	iHeartMedia	hd:292.043e9
WKKV-FM	No	100.7	1729	RACINE	WI	V100.7	Yes	iHeartMedia	fm:1a0.1729.10070
WKKV-FM-HD1	Yes	100.7	68758	RACINE	WI	V100.7	Yes	iHeartMedia	hd:292.10c96
WMAD	No	96.3	145b	CROSS PLAINS	WI	96.3 Star Country	Yes	iHeartMedia	fm:1a0.145b.09630
WMAD-HD1	Yes	96.3	50055	CROSS PLAINS	WI	96.3 Star Country	Yes	iHeartMedia	hd:292.0c387
WMEQ-FM	No	92.1	74d0	MENOMONIE	WI	Classic Rock 92.1	Yes	iHeartMedia	fm:7a0.74d0.09210
WMEQ-FM-HD1	Yes	92.1	52473	MENOMONIE	WI	Classic Rock 92.1	Yes	iHeartMedia	hd:292.0ccf9
WMIL-FM	No	106.1	1533	WAUKESHA	WI	FM106.1	Yes	iHeartMedia	fm:1a0.1533.10610
WMIL-FM-HD1	Yes	106.1	63919	WAUKESHA	WI	FM106.1	Yes	iHeartMedia	hd:292.0f9af
WQRB	No	95.1	a8a3	BLOOMER	WI	Hot Country B95	Yes	iHeartMedia	fm:aa0.a8a3.09510
WQRB-HD1	Yes	95.1	5870	BLOOMER	WI	Hot Country B95	Yes	iHeartMedia	hd:292.016ee
WRIT-FM	No	95.7	126f	MILWAUKEE	WI	95.7 BIG FM	Yes	iHeartMedia	fm:1a0.126f.09570
WRIT-FM-HD1	Yes	95.7	60233	MILWAUKEE	WI	95.7 BIG FM	Yes	iHeartMedia	hd:292.0eb49
WRNW	No	97.3	12f4	MILWAUKEE	WI	97.3 The Game	Yes	iHeartMedia	fm:[illegible]0.12f4.09730
WRNW-HD1	Yes	97.3	26609	MILWAUKEE	WI	97.3 The Game	Yes	iHeartMedia	[illegible]f1
WXXM	No	92.1	13c6	SUN PRAIRIE	WI	Rewind 92.1	Yes	iHeartMedia	[illegible]9210
WXXM-HD1	Yes	92.1	17383	SUN PRAIRIE	WI	Rewind 92.1	Yes	iHeartMedia	[illegible]
WZEE	No	104.1	1718	MADISON	WI	Z104 Madison	Yes	iHeartMedia	[illegible].10410
WZEE-HD1	Yes	104.1	41980	MADISON	WI	Z104 Madison	Yes	iHeartMedia	hd:[illegible].0a3fc



Wisconsin radio stations and RadioDNS

- Station totals from FM query (10/2023) - 506:
  - Full-service: 250
  - Translators: 207
  - LPFM: 49
- RadioDNS participation:

Year	2021	2022	2023
# of stations	30	40	54
% of total	6%	8%	11%

Service providers:
- EMF
- iHeartMedia
- Back Porch Radio Broadcasting, Inc.
- Cumulus
- VCY America Christian Information Radio

Implementing metadata

- Consequences of bad or no metadata:
  - Dissatisfied listeners
  - Sad-looking station lists
  - Tarnishes radio brand
  - Lost revenue
  - Automakers take matters into their own hands (ex. on-board Gracenote database)
- Remember, metadata is for **ALL** stations and **ALL** formats!

Today's presentation

- About NAB *lite*
- Implementing metadata
- **NAB Technology update:**
  - **AM radio**
  - **PILOT radio test bed**
  - **FM digital power increase**
  - **Spectrum and regulatory issues**
  - **NRSC update**

AM radio

- Topic of panel tomorrow morning

- Went to 2022 LA Auto Show to look at AM in EVs
  - Looked at Internal Combustion Engine (ICE) vehicles, too

8:45 a.m. – The Future of AM Radio – Panel Discussion

This panel discussion will focus on the recent developments regarding the future of AM radio in automobile dashboards.

Paul McLane, Radio World, Moderator

David Oxenford, Wilkinson, Barker, Knauer

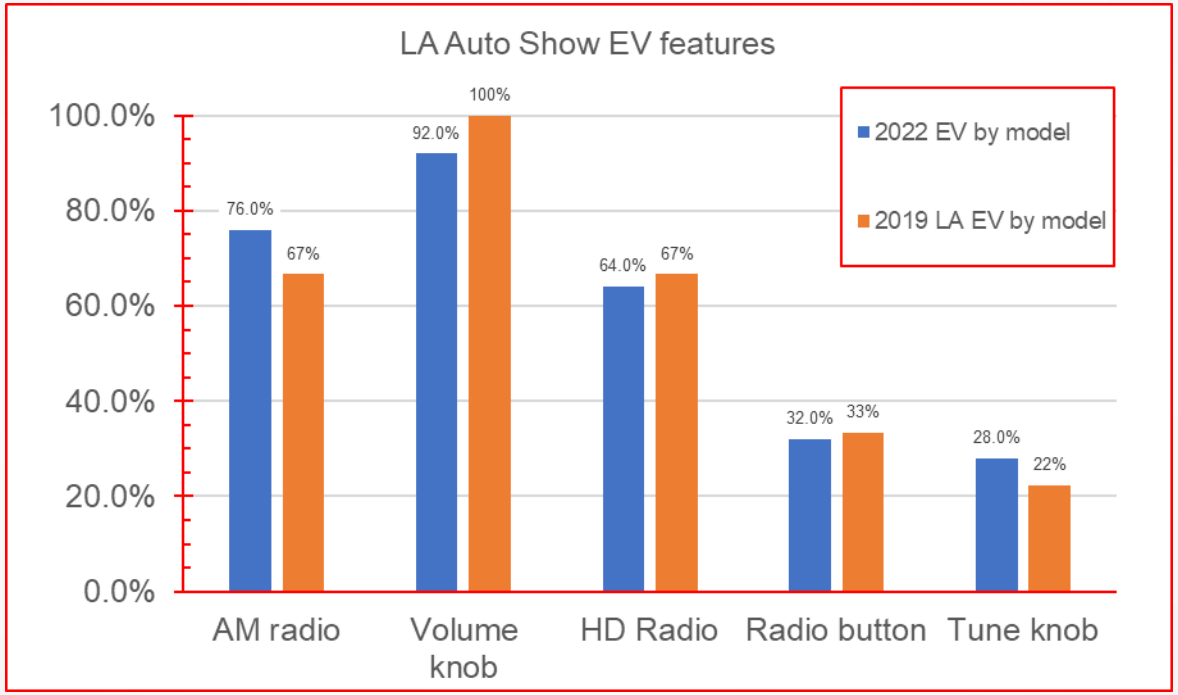
David Layer, NAB

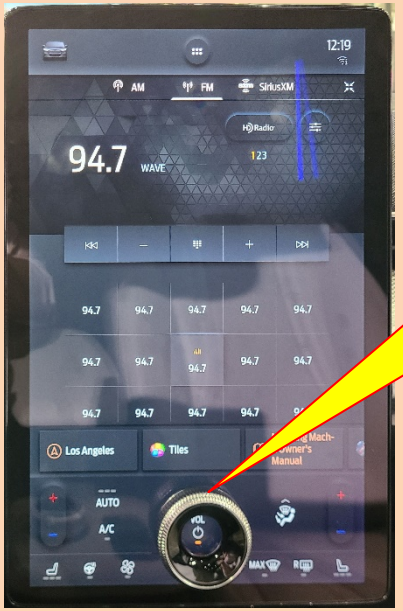
Chris Tarr, Magnum Media, Wisconsin EAS

2022 LA Auto Show car survey

- Notable takeaways:
  - 19 out of 25 EV models have AM radio (76%)
  - 10 out of 13 EV brands have AM radio (77%)
  - Fewer exhibitors, one industry-only day (down from two)
  - Hyundai / Kia / Genesis were standout manufacturers
  - Front passenger display in Jeep Grand Wagoneer
  - Continued absence of HD Radio technology in Chevy ICE vehicles (also true for Chevy EVs)

2022 LA Auto Show car survey





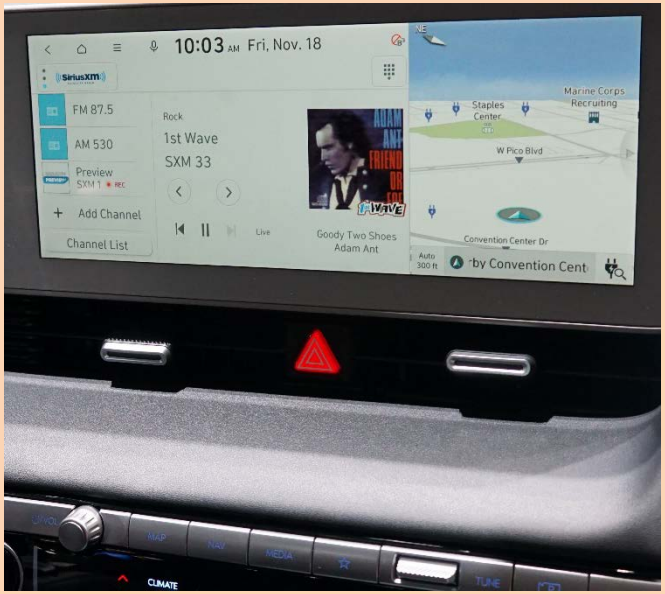
Volume knob integrated into display

Ford Mustang Mach E

VW ID.4

Touch slide control for volume

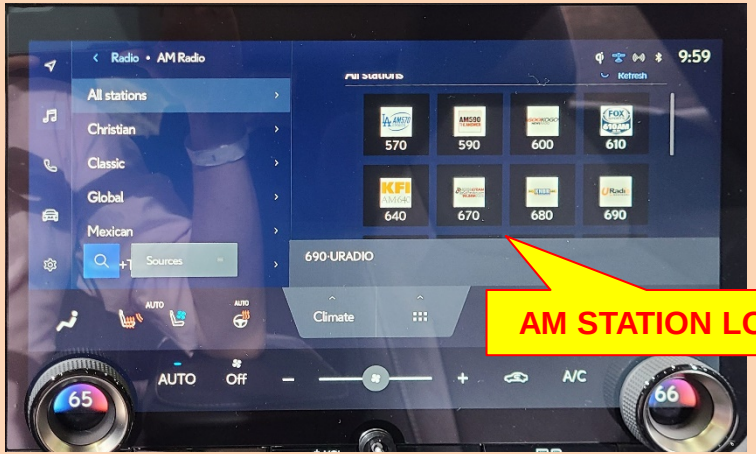
Nissan Ariya



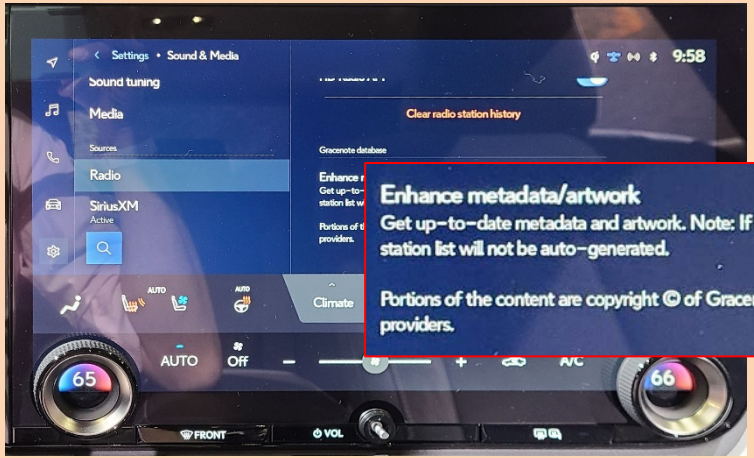
Hyundai Ioniq5

EV RADIO DISPLAYS

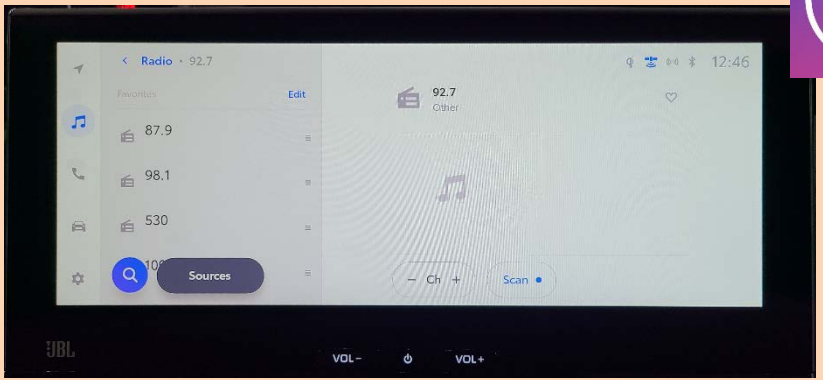
Lexus RZ 450e

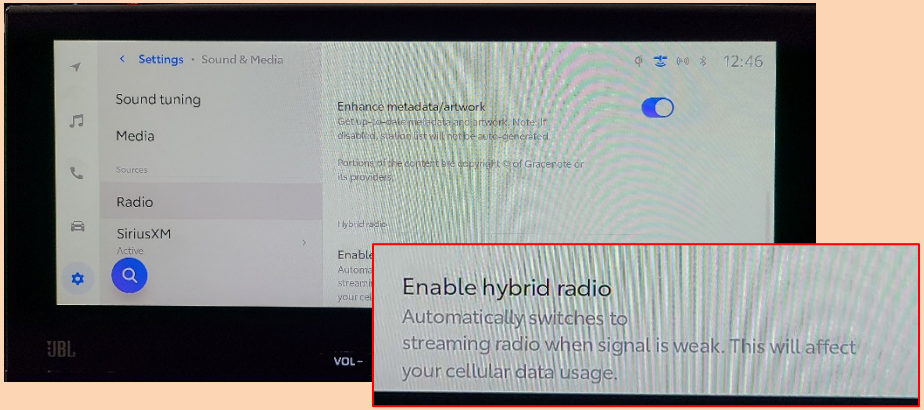


AM STATION LOGOS



Toyota bZ4X

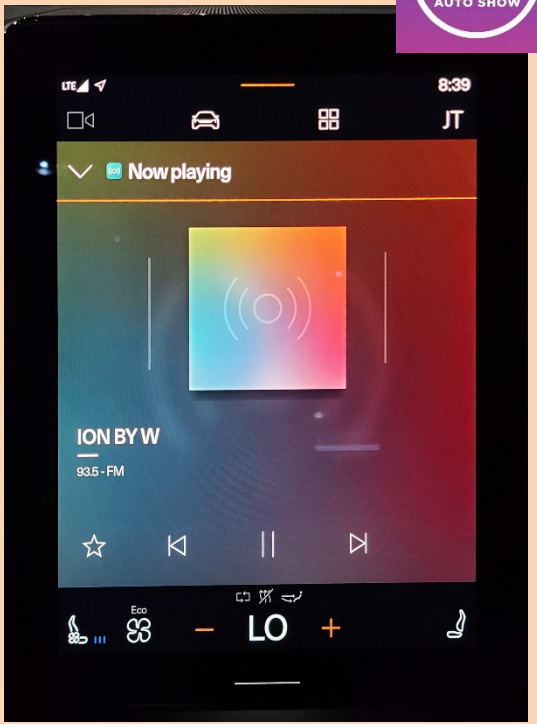




HYBRID RADIO FEATURES

Vinfast VF8

Polestar 2



Indy One

ANDROID AUTOMOTIVE RADIO DISPLAYS

Jeep Grand Wagoneer

Empowering the Co-Pilot

Class-Exclusive Passenger Interactive Display

The available Class-Exclusive 10.25-inch passenger interactive display offers your front passeng above the glove compartment, this screen offers the ability to update GPS coordinates and relay o view vehicle cameras or access dedicated entertainment through a beautifully lit screen.

Chrysler Pacifica

Chevy Suburban

ICE VEHICLE RADIO DISPLAYS

PILOT radio test bed

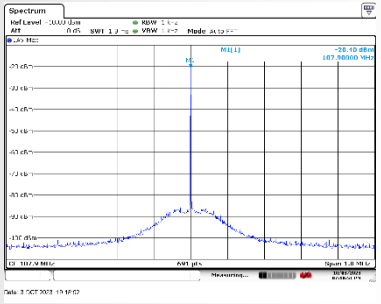
- Located at NAB hq in Washington, DC
  - Part of the NAB Technology Lab

NAB Technology Lab

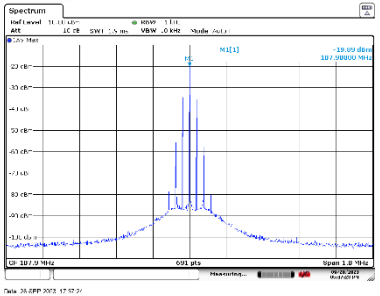
PILOT radio test bed

- Located at NAB hq in Washington, DC
  - Part of the NAB Technology Lab
- Recent activities:
  - Installing RF channel simulator
  - Used to make audio recordings in presence of simulated EV wireless charger interference
  - Work with Xperi to develop hybrid IBOC FM signals for aeronautical band interference testing

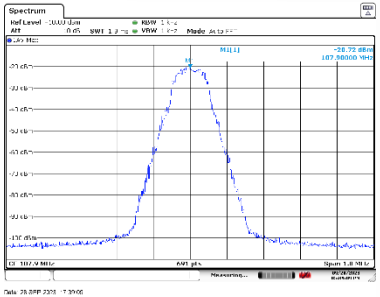
FM spectra captured on test bed



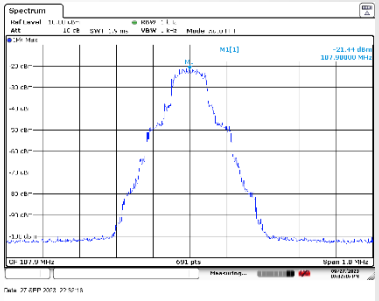
Unmodulated carrier



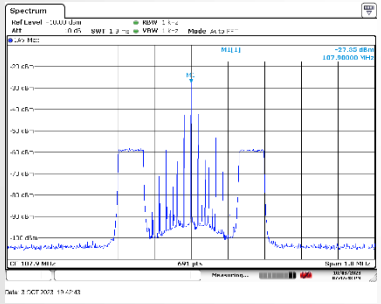
FM stereo showing 19 kHz pilot



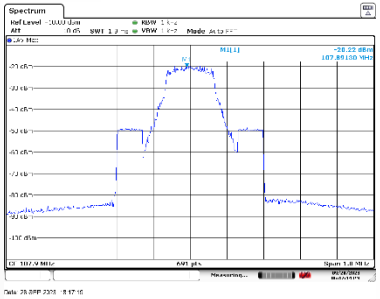
FM stereo with audio



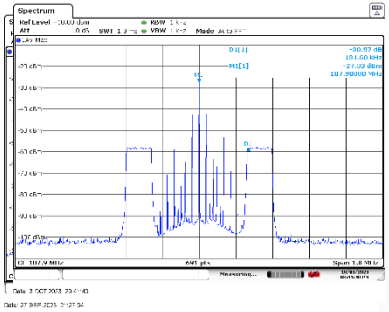
FM stereo with audio plus SCAs



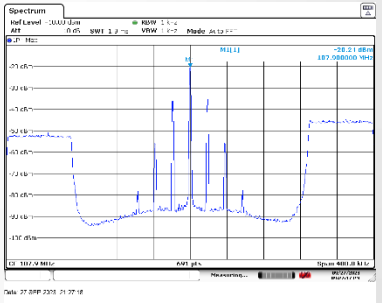
MP1 with stereo and 67 kHz SCAs (no analog audio)



FM stereo with audio and symmetric IBOC sidebands



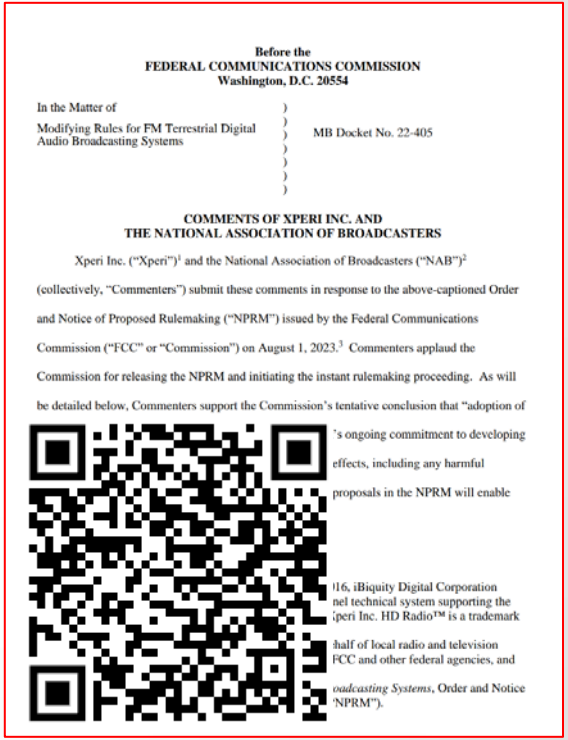
FM stereo with asymmetric IBOC sidebands (USB -13 dBc)



FM stereo with asymmetric IBOC sidebands (USB -13 dBc)

FM digital power increase

- Proposal to allow more FM digital stations to increase to -10 dBc being considered by the FCC
- Comments and replies now submitted
- Issue raised by aeronautical industry regarding adjacent frequency band



Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of
Modifying Rules for FM Terrestrial Digital Audio Broadcasting Systems
MB Docket No. 22-405

COMMENTS OF XPERI INC. AND
THE NATIONAL ASSOCIATION OF BROADCASTERS

Xperi Inc. ("Xperi")[1] and the National Association of Broadcasters ("NAB")[2] (collectively, "Commenters") submit these comments in response to the above-captioned Order and Notice of Proposed Rulemaking ("NPRM") issued by the Federal Communications Commission ("FCC" or "Commission") on August 1, 2023.[3] Commenters applaud the Commission for releasing the NPRM and initiating the instant rulemaking proceeding. As will be detailed below, Commenters support the Commission's tentative conclusion that "adoption of

's ongoing commitment to developing

effects, including any harmful

proposals in the NPRM will enable

)16, iBiquity Digital Corporation
nel technical system supporting the
ïperi Inc. HD Radio™ is a trademark

half of local radio and television
FCC and other federal agencies, and

oadcasting Systems, Order and Notice
'NPRM").

Spectrum and regulatory issues

- NAB is active in national, regional and international spectrum and regulatory issues
  - Federal Communications Commission (FCC)
  - North American Broadcasters Association (NABA)
  - International Telecommunication Union (ITU)

WELLER

- Current issues including:
  - TV rules cleanup
  - 13 GHz ENG
  - Drone remote ID

Quiescent Items

- C-Band Transition/Reimbursement (18-122)
  - All satellite operators report transitions complete
- Recon of DTS Rules (20-74)
- 2 GHz Space Launch Operations (13-115)
- 6 GHz Remand, C2C, VLP (18-295)
  - 155 LPI APs, 1549 LPI clients now authorized
- WMAS (21-115)
- T-Band Sharing (RM-11915)
- National Spectrum Policy (NTIA)
- WRC-23 preparation

Drone Remote ID (FAA)

- FAA adopted new rules for Drone aircraft
  - Effective September 16, all drone pilots must register their UAS in the FAADroneZone and must operate in accordance with the rule on Remote ID
  - Newer UA are intrinsically compliant and broadcast the required information (serial #, lat/long, altitude, control station location, etc.)
  - Older UA may require a firmware update OR installation of an external Remote ID Broadcast Module.
  - DJI and others report delays in both availability of updates and external modules
  - NAB and New Media Coalition filed for 9-month extension
  - FAA indicated Remote ID deadline will slip, but no official announcement yet.

NRSC update

- AM and FM Analog Broadcasting (AFAB) Subcommittee
  - Martin Stabbert (Townsquare Media), chair
- Data Services and Metadata (DSM) Subcommittee
  - Steve Shultis (NYPR), chair
- Digital Radio Broadcasting (DRB) Subcommittee
  - Jackson Wang (eRadio) andGlynn Walden (CBS, retired), co-chairs

www.nrscstandards.org

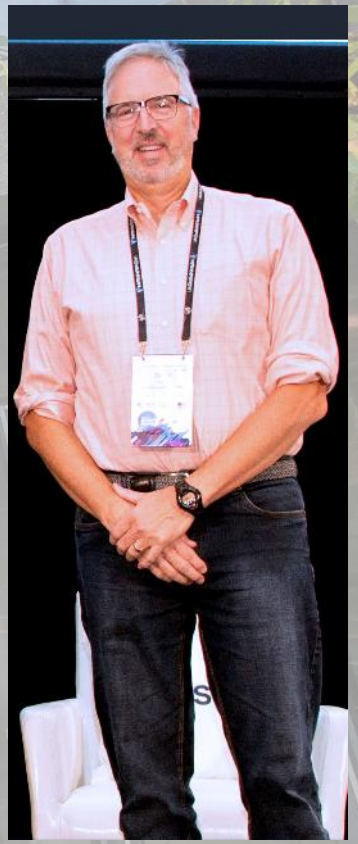
NRSC update

- Three documents up for adoption at 2023 NAB Show NY meetings:
  - NRSC-G102, *AM Carrier Synchronization Guideline*
  - NRSC-G304, *Metadata for Streaming Handbook*
  - NRSC-G202-B, *FM IBOC Total Digital Sideband Power for Various Configurations*
- “Unified transport” standard being discussed in the IBOC Standards Development Working Group (ISDWG)

Today's presentation

- About NAB *lite*
- Implementing m tadat
- NAB Techni
  - AM radio
  - PILOT radio t
  - FM digital power ease
  - Spectrum and regulatory issues
  - NRSC update

Thanks for having me today!



dlayer@nab.org

NAB®
NATIONAL ASSOCIATION OF BROADCASTERS