NAB | TECHNOLOGY

NATIONAL ASSOCIATION OF BROADCASTERS

Digital DC Update
Broadcast Technology and Policy

Sam Matheny

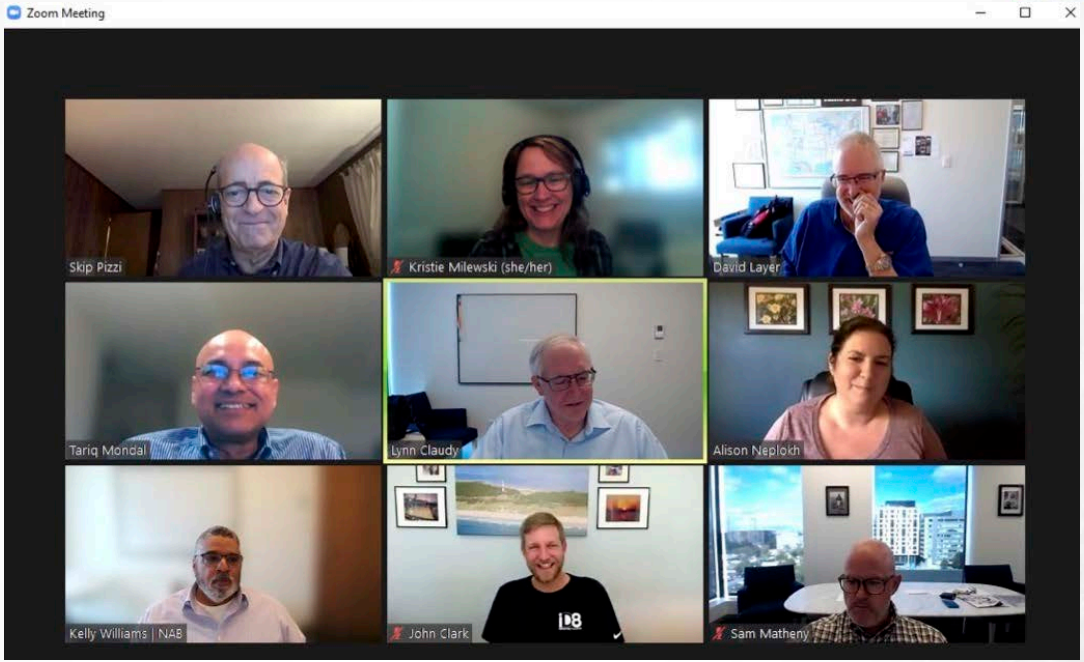
EVP & CTO

October 12, 2022

NAB®
NATIONAL ASSOCIATION OF BROADCASTERS

ADVOCACY. EDUCATION. INNOVATION.

TECHNOLOGY DEPARTMENT



We improve lives through broadcast technology and broadcaster innovation.

PILOT

NAVIGATING BROADCASTING'S FUTURE

Third Party Cookies

How much ad revenue is based on cookies?

a. $100M
b. $1B
c. $90B
d. $1T

PILOT™ NAVIGATING BROADCASTING'S FUTURE

First-Party Data Program

3rd Party Cookies = $90B Problem*

- Foundation for programmatic ads
- Google estimates 50-60% of revenue hinges on 3rd Party Data
- McKinsey estimates publishers could lose $10B
- Chrome Browser = 66% Market Share
  - Apple & Firefox already deprecating

*IAB, eMarketer, Statista

Metadata Digital Dash Best Practices

- Maximize your brand in the vehicle
- Provide superior user experience
- Earn new revenue
  - Services like QUU have advertising solutions

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

Android Automotive

- Android Automotive is the system that manages the automotive experience
- ABI research: 36 million vehicles will be shipped with Android Automotive in 2030
- Will be in vehicles from Ford, Audi, GM, Groupe PSA, Volvo, Renault, Nissan, Mitsubishi and others

Initiative Participants

- Audacy
- Bauer Media
- BBC
- Beasley Media Group
- Commercial Radio Australia
- Cox Media Group
- iHeartMedia
- Ford Motor Company
- NAB
- New York Public Radio
- NPR
- Salem Media Group
- SWR
- TBS Radio
- Volkswagen / Audi
- Xperi
- WorldDAB

The Road to ATSC 3.0

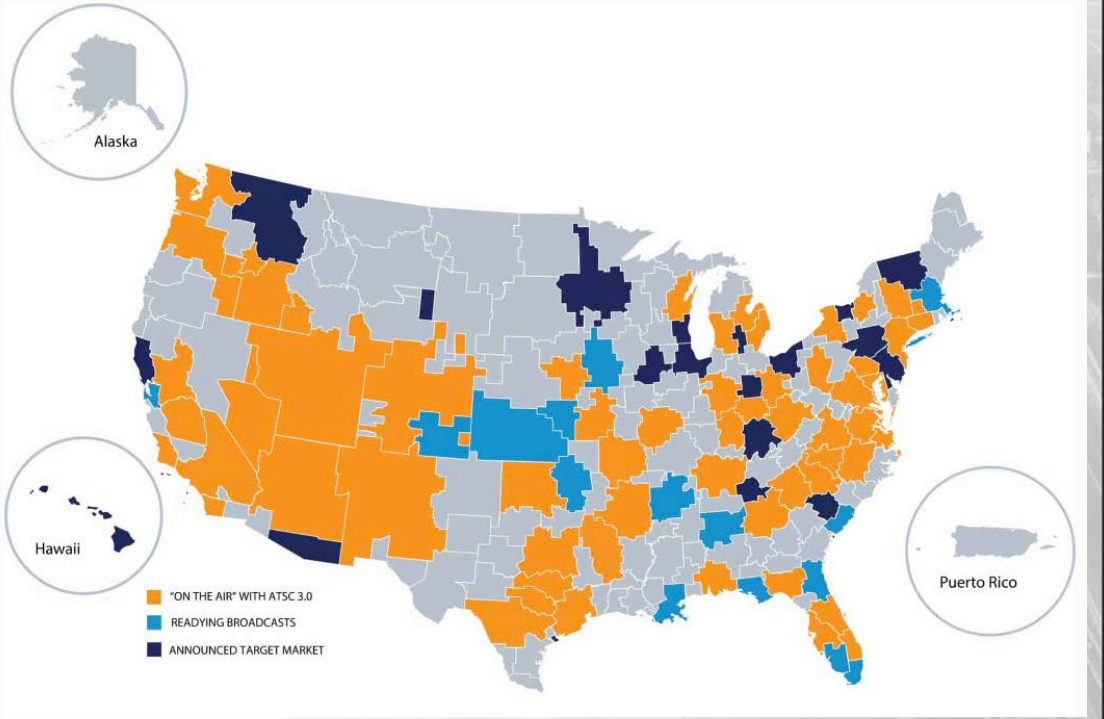
ATSC 3.0 Transition

287 Channels

68 Stations

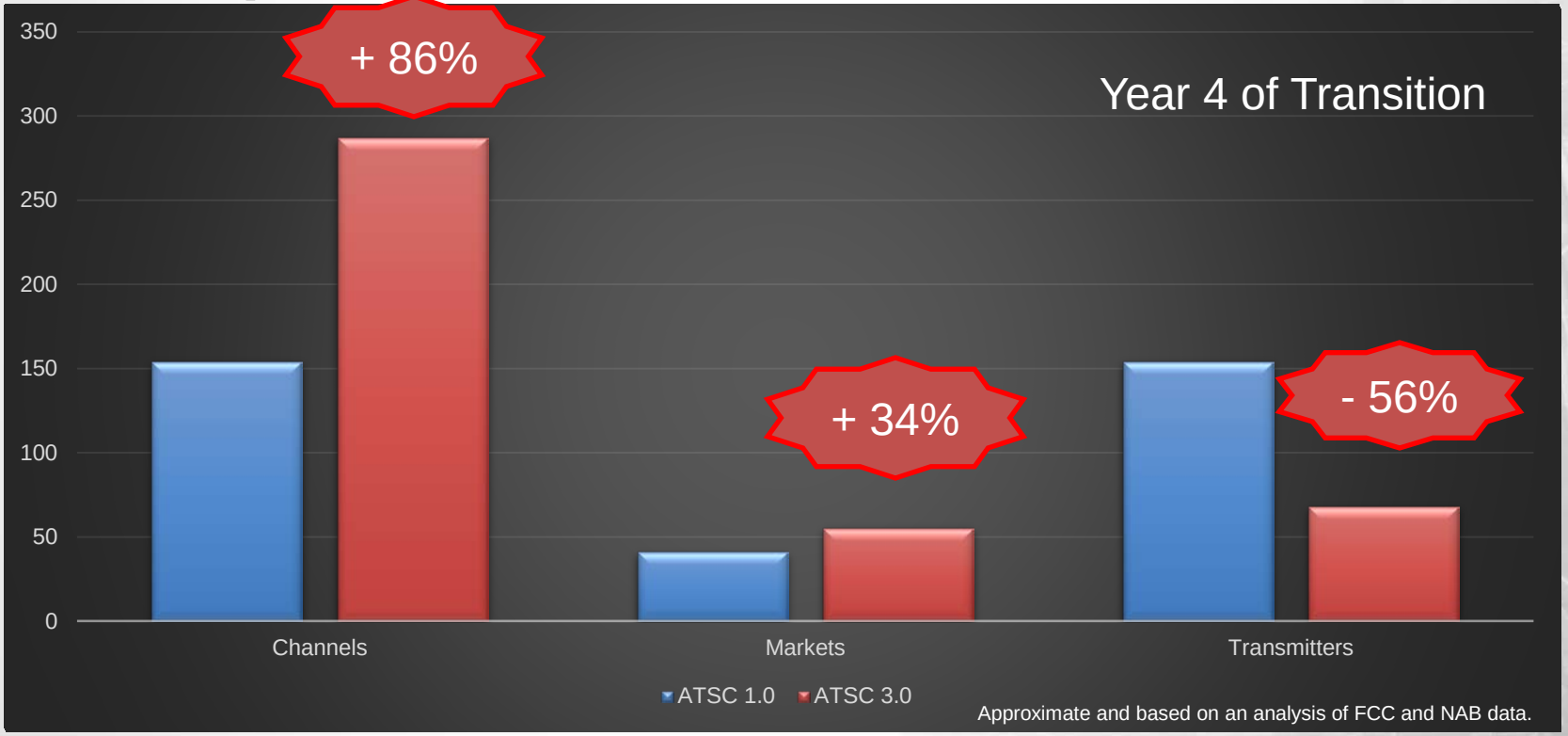
55 Markets

>51% USTVHH



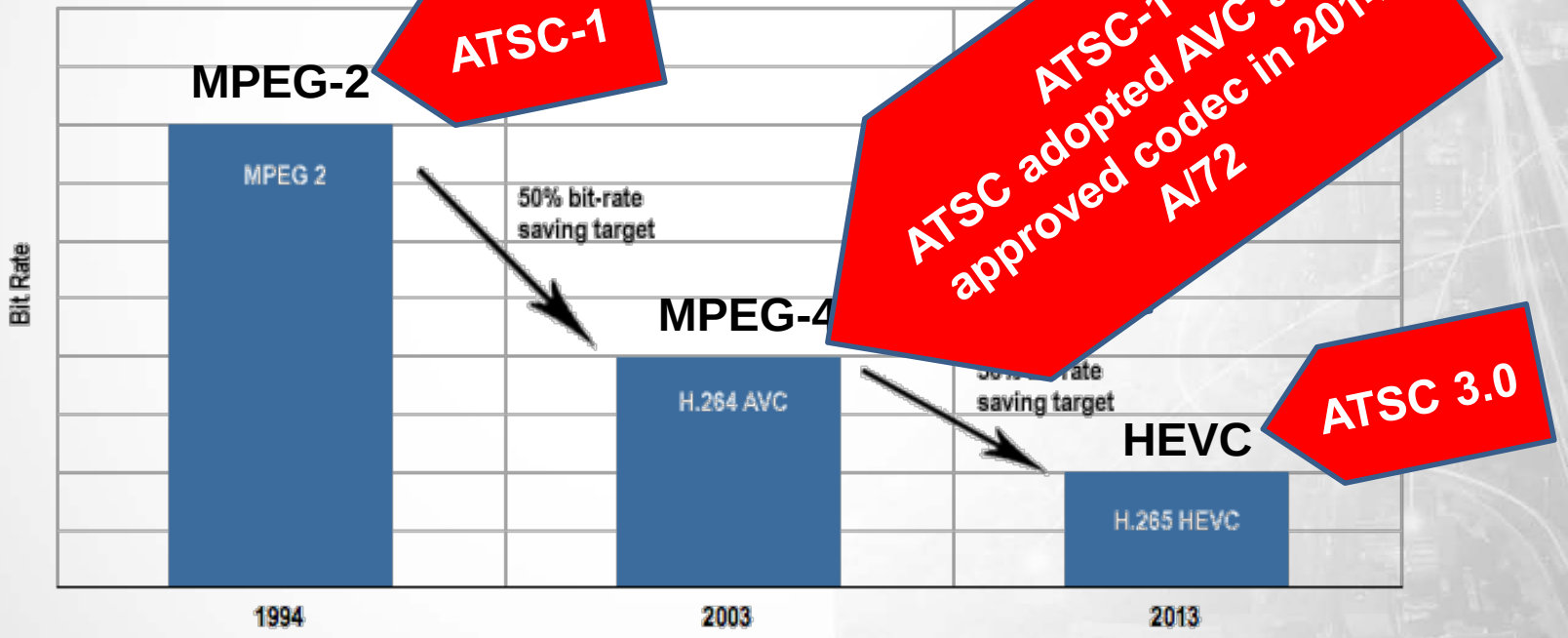
*As of October 7, 2022

Compared to Last Transition

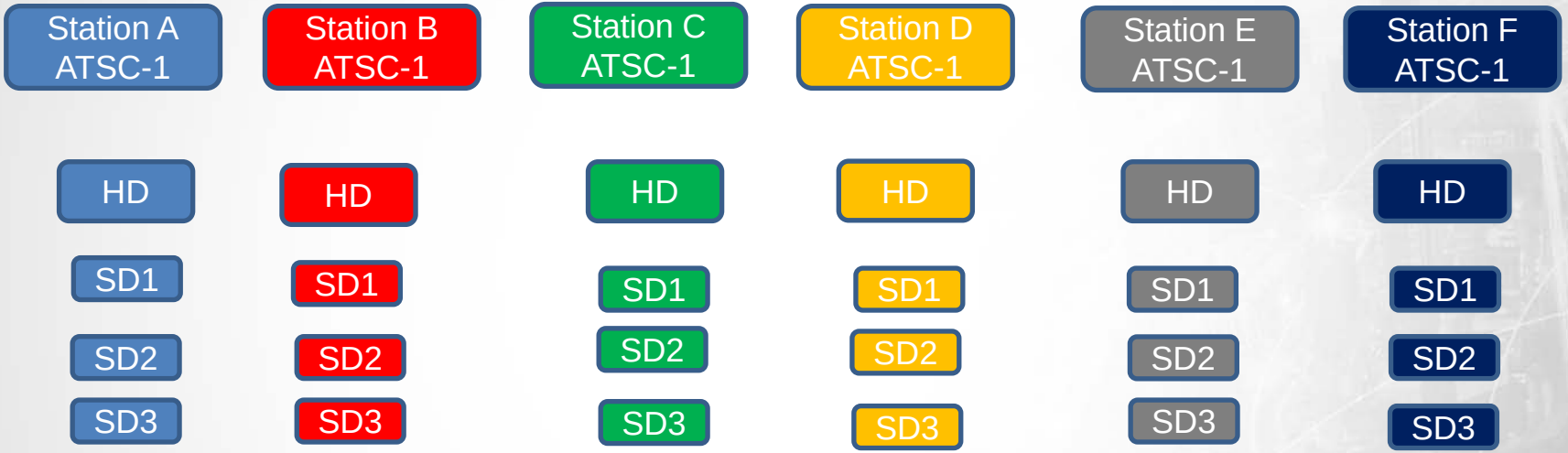


TRANSITION & TOOLS

Video Compression Coding Evolution



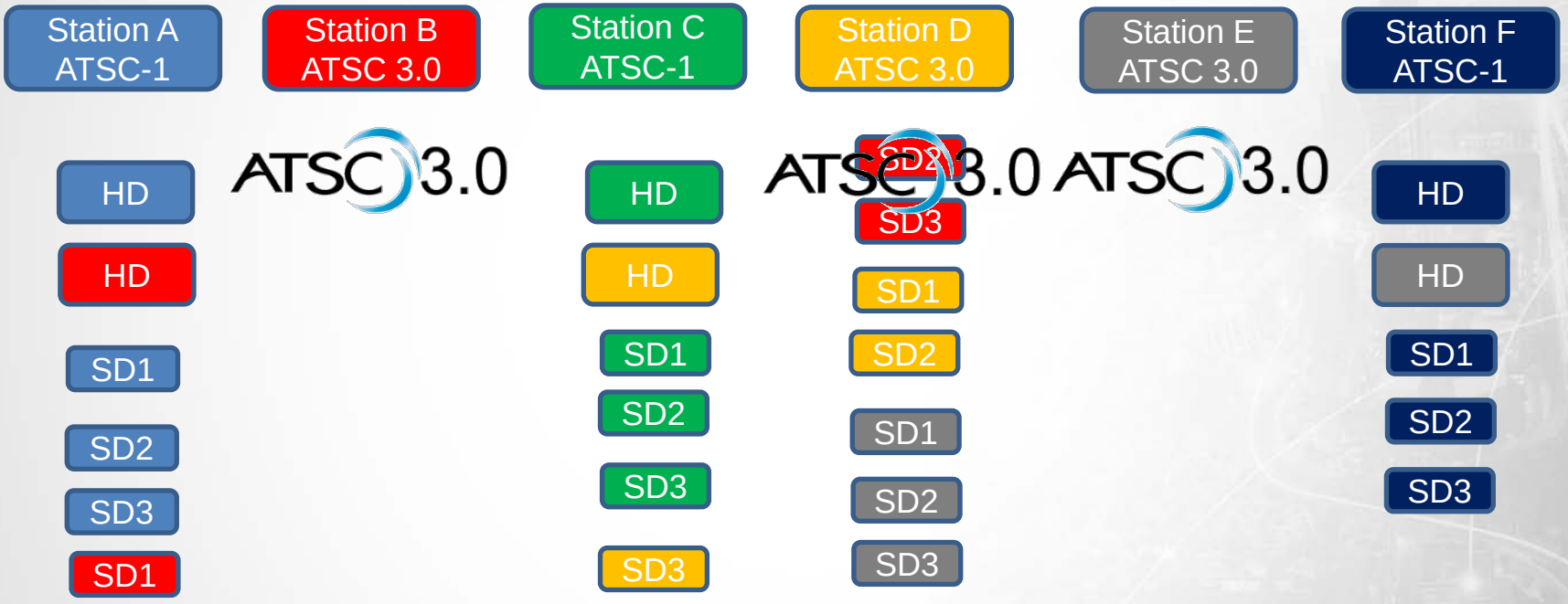
Typical Broadcast Service Lineup



Maximum Channel Sharing Using MPEG-2

Station A ATSC-1	Station B ATSC 3.0	Station C ATSC-1	Station D ATSC-1	Station E ATSC 3.0	Station F ATSC-1
HD	ATSC 3.0	HD	SD2	ATSC 3.0	HD
HD		HD	SD3		HD
SD1		SD1	SD1		SD1
SD2		SD2	SD2		SD2
SD3		SD3	SD1		SD3
SD1		SD3	SD2		
			SD3		

Maximum Channel Sharing Using MPEG-4 for Diginets



Considerations

- Diginets **ONLY**
- OTA Receivability
- Diginet Affiliate Agreements
- Cable Agreements and IRD (if applicable)

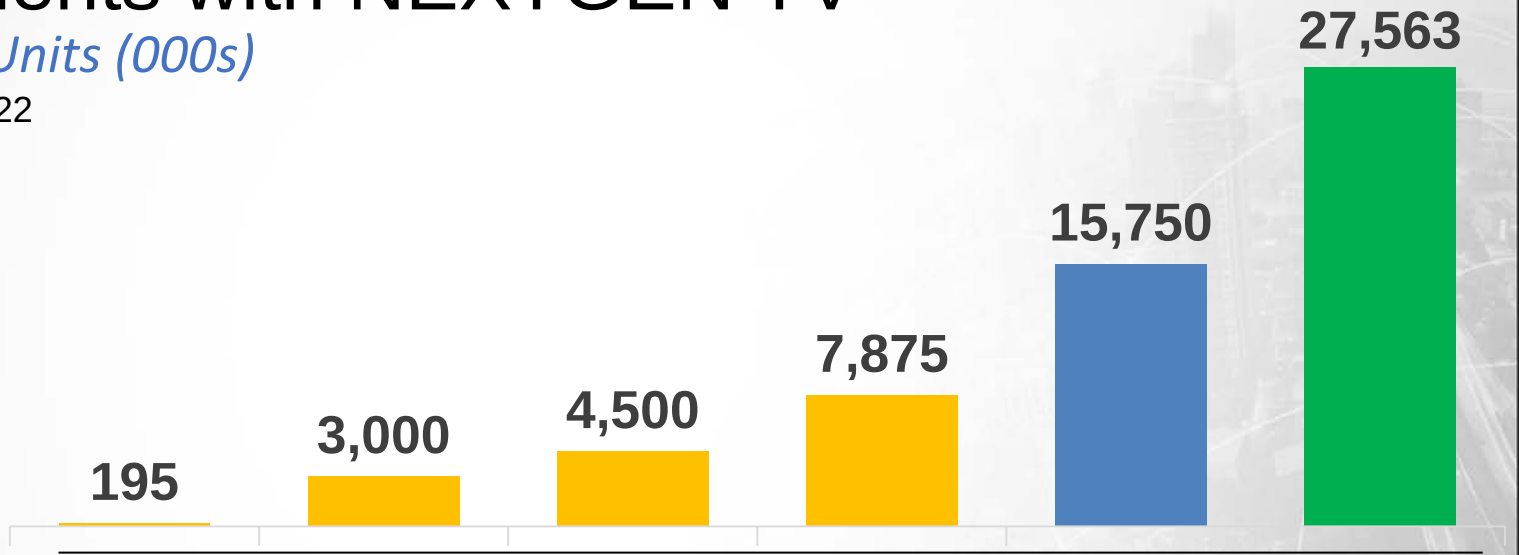
Consumer Facing Logo for ATSC 3.0 Products

Announced in September 2019

TV Shipments with NEXTGEN TV

U.S. Market – Units (000s)

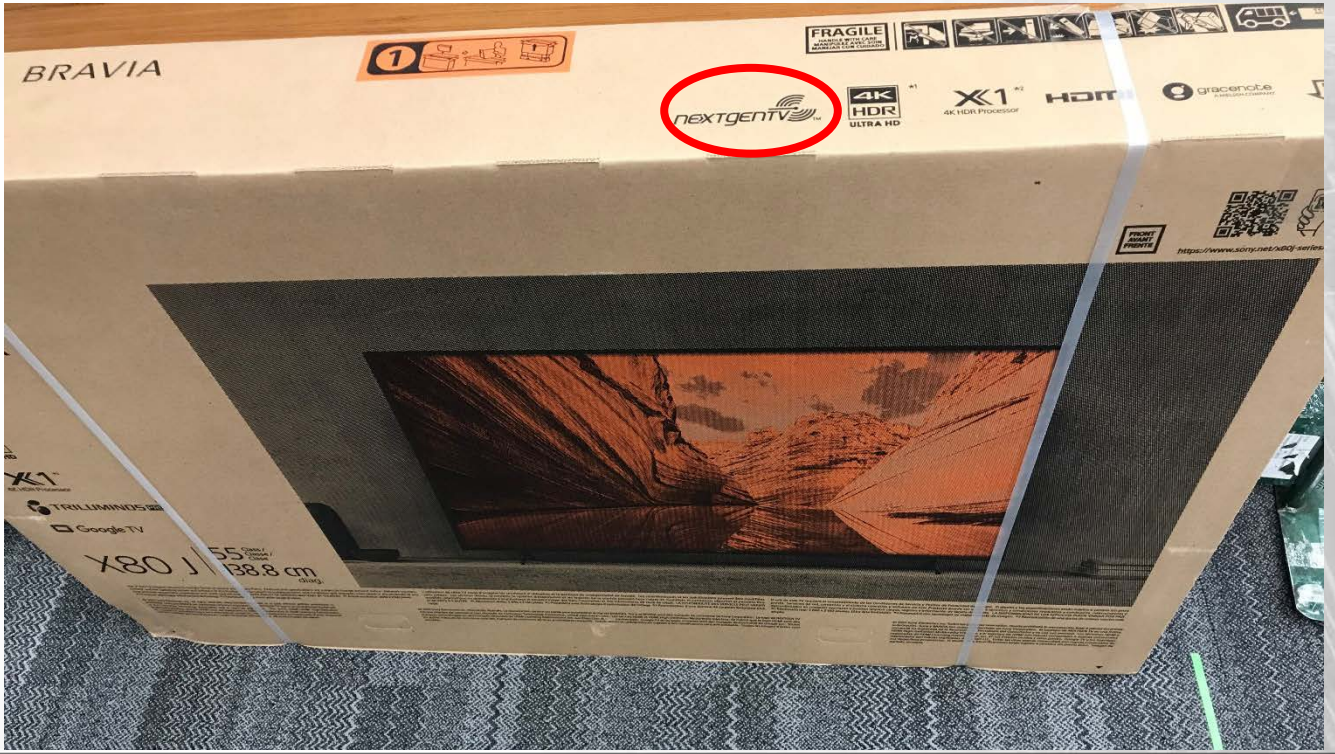
Source: CTA July 2022



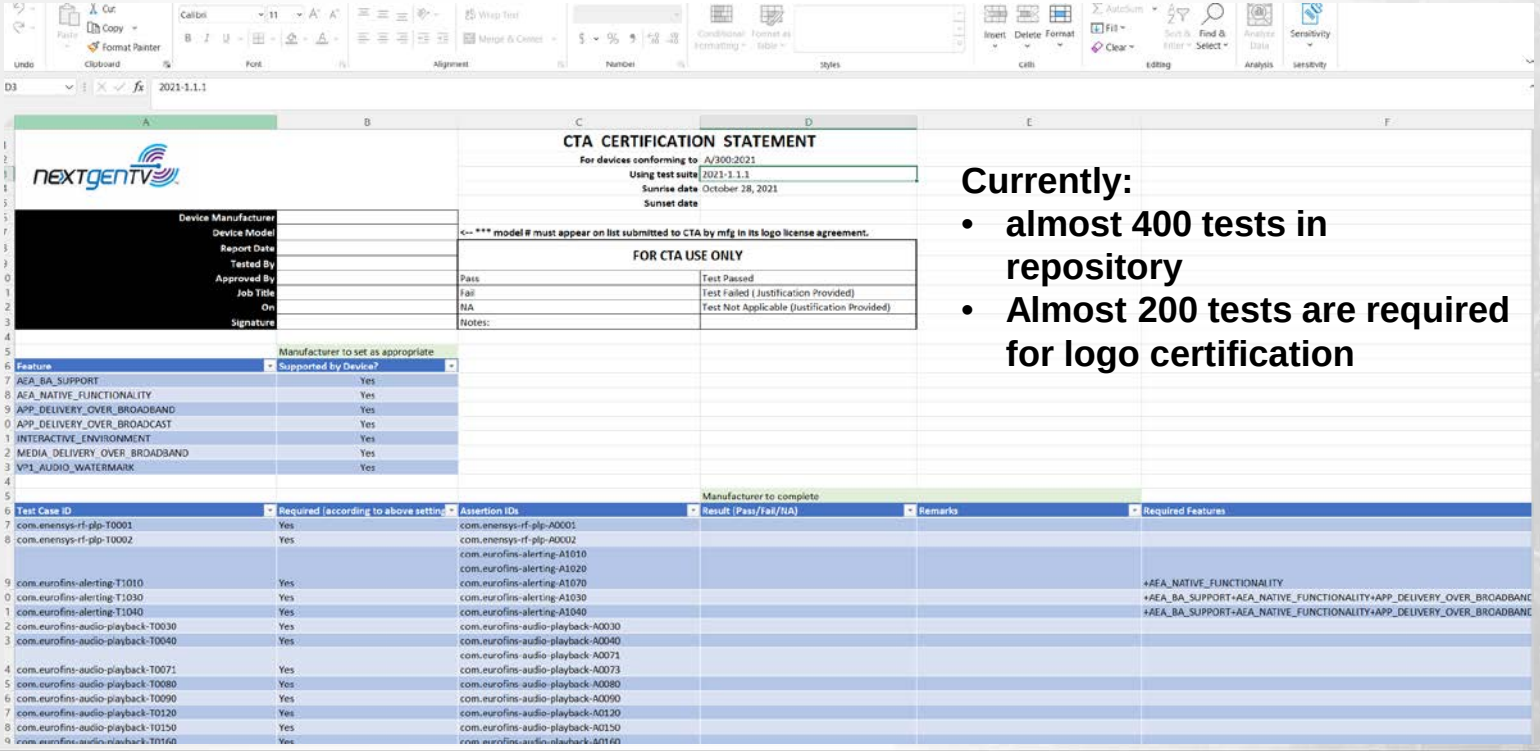
	2021	2022	2023	2024	2025
% Unit Growth (YoY)	1438	50	75	100	75
% of Total TV	6	11	20	41	74

The Logo Is Being Used

- On Packaging
- On Products
- In Promos
- At Point-of-Sale
- Hisense, LG, Samsung, Sony (others coming)



ATSC 3.0 Test Repository



D3 | 2021-1.1.1

CTA CERTIFICATION STATEMENT

For devices conforming to: A/300:2021
Using test suite: 2021-1.1.1
Sunrise date: October 28, 2021
Sunset date:

Device Manufacturer	
Device Model	
Report Date	
Tested By	
Approved By	
Job Title	
On	
Signature	

<-- *** model # must appear on list submitted to CTA by mfg in its logo license agreement.

FOR CTA USE ONLY

Pass	Test Passed
Fail	Test Failed (Justification Provided)
NA	Test Not Applicable (Justification Provided)
Notes:	

Manufacturer to set as appropriate

Feature	Supported by Device?
AEA_BA_SUPPORT	Yes
AEA_NATIVE_FUNCTIONALITY	Yes
APP_DELIVERY_OVER_BROADBAND	Yes
APP_DELIVERY_OVER_BROADCAST	Yes
INTERACTIVE_ENVIRONMENT	Yes
MEDIA_DELIVERY_OVER_BROADBAND	Yes
VP1_AUDIO_WATERMARK	Yes

Manufacturer to complete

Test Case ID	Required (according to above settin	Assertion IDs	Result (Pass/Fail/NA)	Remarks	Required Features
com.enensys-rf-plp-T0001	Yes	com.enensys-rf-plp-A0001			
com.enensys-rf-plp-T0002	Yes	com.enensys-rf-plp-A0002			
com.eurofins-alerting-T1010	Yes	com.eurofins-alerting-A1010 com.eurofins-alerting-A1020 com.eurofins-alerting-A1070			+AEA_NATIVE_FUNCTIONALITY
com.eurofins-alerting-T1030	Yes	com.eurofins-alerting-A1030			+AEA_BA_SUPPORT+AEA_NATIVE_FUNCTIONALITY+APP_DELIVERY_OVER_BROADBAND
com.eurofins-alerting-T1040	Yes	com.eurofins-alerting-A1040			+AEA_BA_SUPPORT+AEA_NATIVE_FUNCTIONALITY+APP_DELIVERY_OVER_BROADBAND
com.eurofins-audio-playback-T0030	Yes	com.eurofins-audio-playback-A0030			
com.eurofins-audio-playback-T0040	Yes	com.eurofins-audio-playback-A0040 com.eurofins-audio-playback-A0071			
com.eurofins-audio-playback-T0071	Yes	com.eurofins-audio-playback-A0073			
com.eurofins-audio-playback-T0080	Yes	com.eurofins-audio-playback-A0080			
com.eurofins-audio-playback-T0090	Yes	com.eurofins-audio-playback-A0090			
com.eurofins-audio-playback-T0120	Yes	com.eurofins-audio-playback-A0120			
com.eurofins-audio-playback-T0150	Yes	com.eurofins-audio-playback-A0150			
com.eurofins-audio-playback-T0160	Yes	com.eurofins-audio-playback-A0160			

Currently:

- **almost 400 tests in repository**
- **Almost 200 tests are required for logo certification**

PILOT
NAVIGATING BROADCASTING'S FUTURE

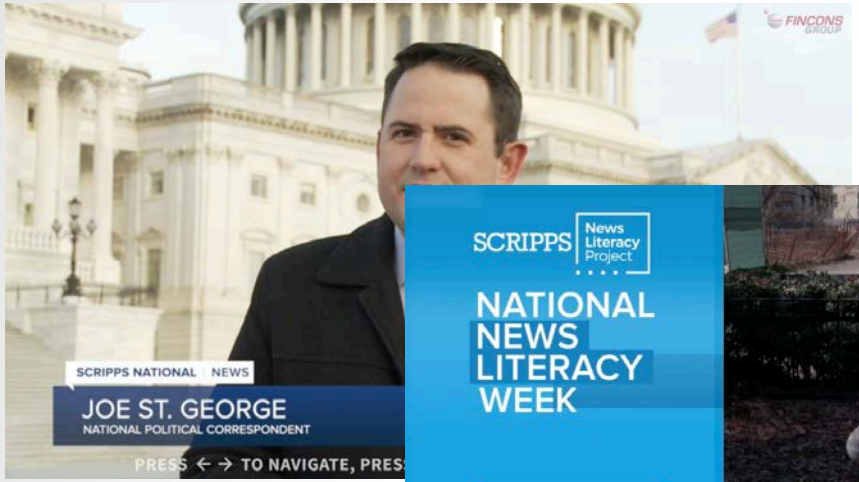
whole in one
CBS THIS MORNING SATURDAY
MORE
BIO
The Dish
CBS THIS MORNING SATURDAY
RECIPES
Videos
EXIT

CBS THIS MORNING
SATURDAY
Recipes

CBS THIS MORNING
SATURDAY
Irish Soda Bread

CBS THIS MORNING
SATURDAY
Irish Soda Bread
with Whipped Stout Butter
INGREDIENTS

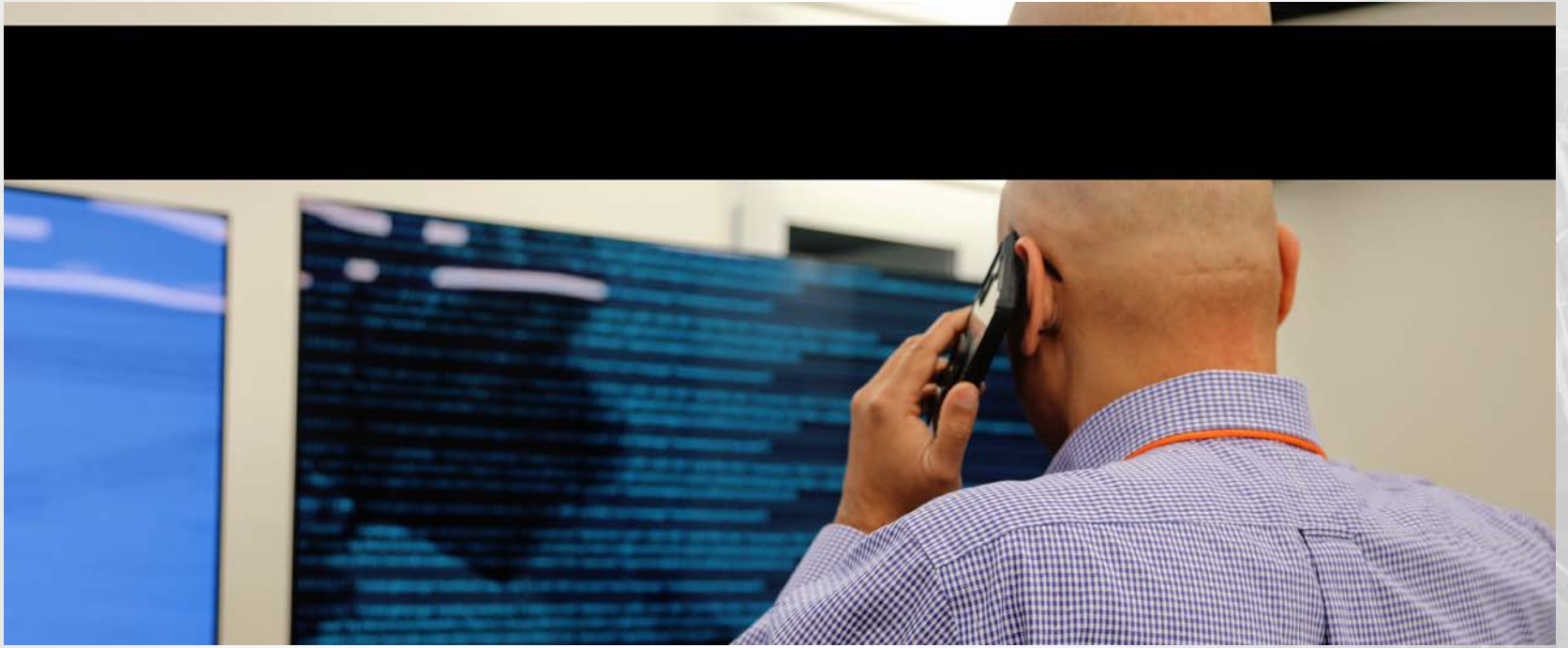
CBS THIS MORNING
SATURDAY
Irish Soda Bread
with Whipped Stout Butter
PURCHASE INGREDIENTS
amazonfresh
Order

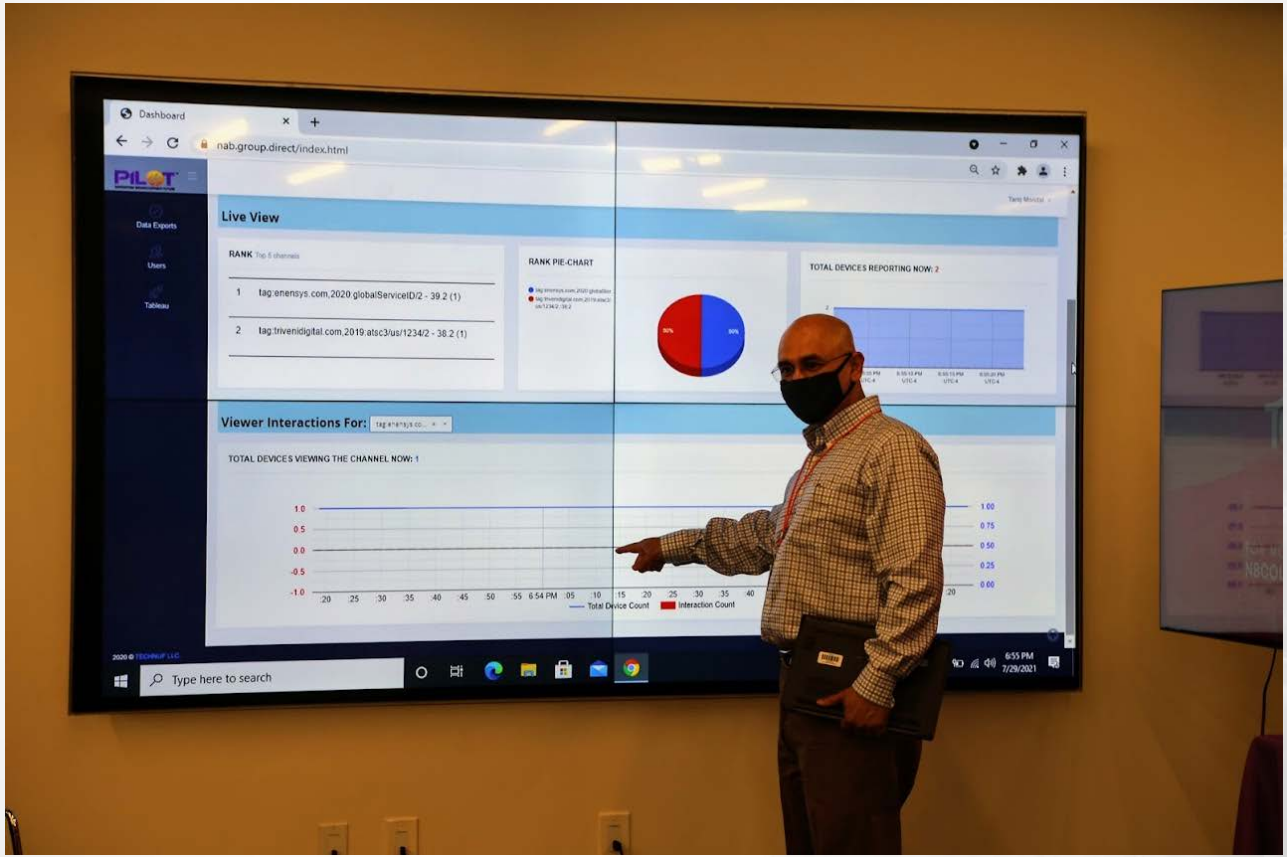

FINCONS GROUP
SCRIPPS NATIONAL NEWS
JOE ST. GEORGE
NATIONAL POLITICAL CORRESPONDENT
PRESS ← → TO NAVIGATE, PRES

SCRIPPS News Literacy Project
NATIONAL NEWS LITERACY WEEK
Easily revea
Downloa
To download, scan
smartphone's ca

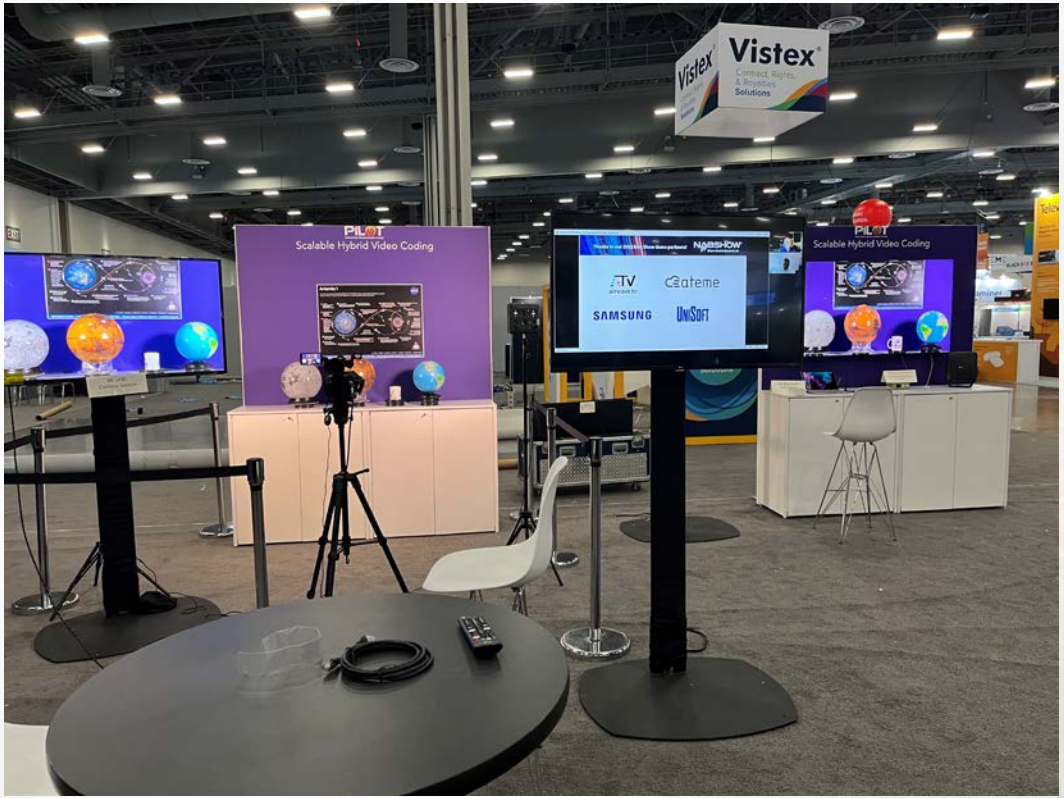
SCRIPPS News Literacy Project
NATIONAL NEWS LITERACY WEEK
News Lit Quiz:
Should you share it?
Gallup
U.S. Readiness to Get COVID-19 Vaccine Steadies at 65%

FINCONS GROUP
PLAY ALONG
WRONG
This is a Facebook post from Gallup, a widely respected analytics company known for its public opinion polls. The post cites two findings in support of its claim and includes a link to a story with more details and context.

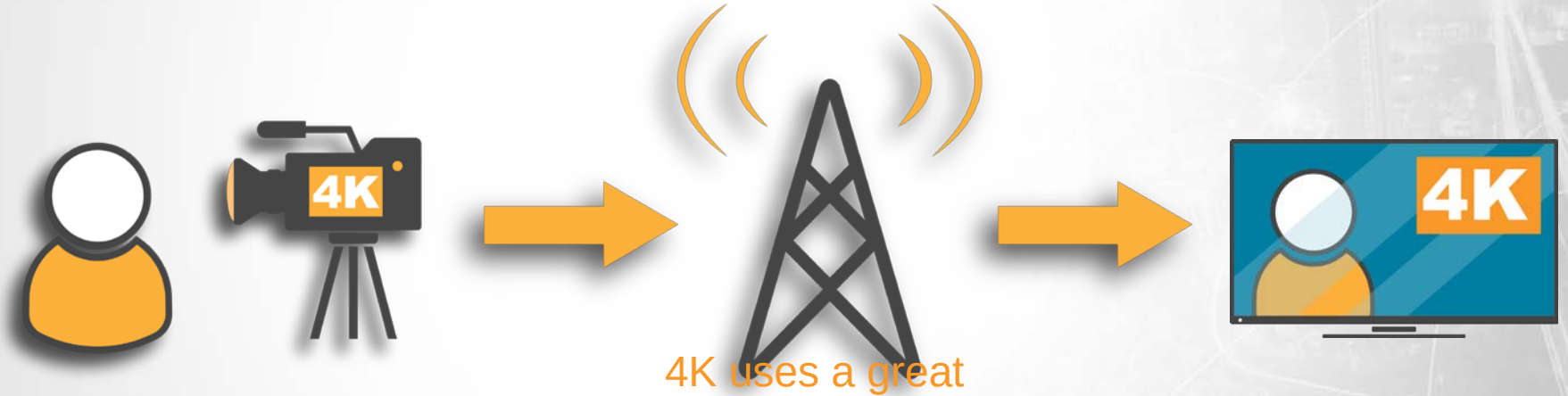



Dashboard
nab.group.direct/index.html
PILOT
Data Exports
Users
Tableau
Live View
RANK
1 tag:enensys.com,2020:globalServiceID/2 - 39.2 (1)
2 tag:trivenidigital.com,2019:atsc3/us/1234/2 - 38.2 (1)
RANK PIE-CHART
TOTAL DEVICES REPORTING NOW: 2
Viewer Interactions For:
TOTAL DEVICES VIEWING THE CHANNEL NOW: 1
Total Device Count
Interaction Count
Type here to search
6:55 PM
7/29/2021

SHVC Demo at NAB Show

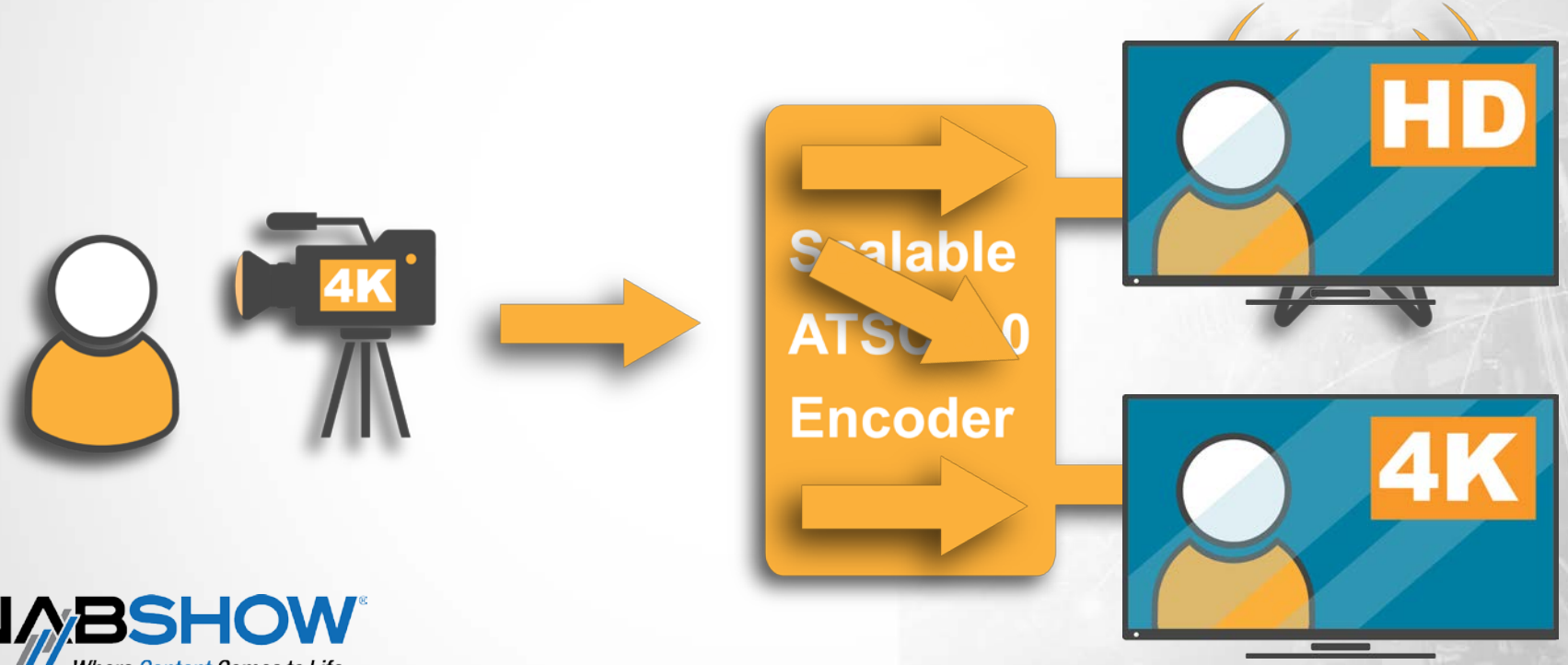


UHD Broadcast



4K uses a great deal of bandwidth

Broadcast & Broadband



RESOURCES

NextGen TV TxID Table

- Tool to uniquely identify transmitters (FP & LP)
- IDs are regionally unique to channel number
- Excellent for SFNs where multiple transmitters will otherwise have the same physical layer attributes
- ATSC Standard has this as an optional field
- Multiple search options or CSV download

https://txid.nabpilot.org/

Search

☑ United States ☑ Canada ☑ Mexico

WI State

Callsign

Facility ID

Channel

TxID

Sort

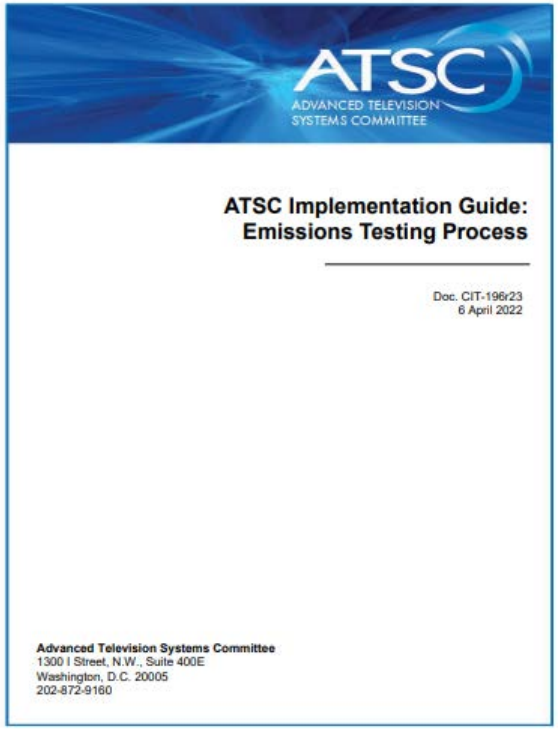
○ State, City
○ Callsign
○ Channel
○ TxID

Refresh

◉ Ascending
○ Descending

Callsign Facility ID	Service Country	City State	Latitude Longitude	Channel TxID Values
WIWN 60571	DTV US	FOND DU LAC WI	43-05-46.2 N 87-54-15.0 W	5 256 - 383
WSAW-TV 6867	DTV US	WAUSAU WI	44-55-14.2 N 89-41-28.7 W	7 0 - 127
WMVS 42663	DTV US	MILWAUKEE WI	43-05-46.2 N 87-54-15.0 W	8 128 - 255
WKBT-DT 74424	DTV US	LA CROSSE WI	44-05-28.0 N 91-20-17.0 W	8 256 - 383
WAOW 64546	DTV US	WAUSAU WI	44-55-14.2 N 89-41-28.7 W	9 0 - 127
WISC-TV 65143	DTV US	MADISON WI	43-03-21.0 N 89-32-06.0 W	11 384 - 511
WLUK-TV 4150	DTV US	GREEN BAY WI	44-24-32.0 N 87-59-31.0 W	12 0 - 127
WMOW	DTV	CRANDON	45-34-23.4 N	13

ATSC 3.0 Emissions Checklist



- Developed by ATSC 3.0 Conformance Implementation Team
- Emission-side complement to the receiver conformance certification program; not an emission certification program
- Released April 6 2022
- Available free on ATSC website

Host Station Manual

- Developed by Pearl TV
- Based on their experience in the Phoenix Model Market
- Version 12 with new updates prior to NAB Show
- Available free on Pearl TV website

  https://pearltv.com/station-resources/

ATSC 3 Security Authority

Signal Signing, App Signing and Content Encryption for ATSC 3.0 Broadcasts

ATSC 3.0 - Brings Internet Security Features to OTA Broadcasts

The ATSC 3.0 standard provides three fundamental cyber-security features to protect broadcasters and viewers in this Internet age:

- **Signal signing** ensures the signal being received is from an FCC licensed broadcaster and that the information received has not been tampered with. Because 3.0 is essentially a broadband system, this authentication technology is derived from the TLS security (HTTPS) we experience on the Internet today.

- **Application signing** has the same purpose and uses the same authentication technology as signal signing, but applied to OTA-delivered applications. Applications must be signed by the author/developer and separately by any broadcaster transmitting the app OTA. Since applications frequently collect consumers' personal information as part of the sign-up process, it is especially important that consumers be able to trust their authenticity before installing them.

- **Content security** utilizes the same encryption technology used by Internet streaming services. Until now, OTA broadcasters have been at a disadvantage compared to cable & satellite operators, who can and do encrypt their signals to prevent signal and content theft.

OTHER DATA OPPORTUNITIES

RTK Datacasting – Enhanced GPS

ATSC 3 – Broadcast Positioning System (BPS)

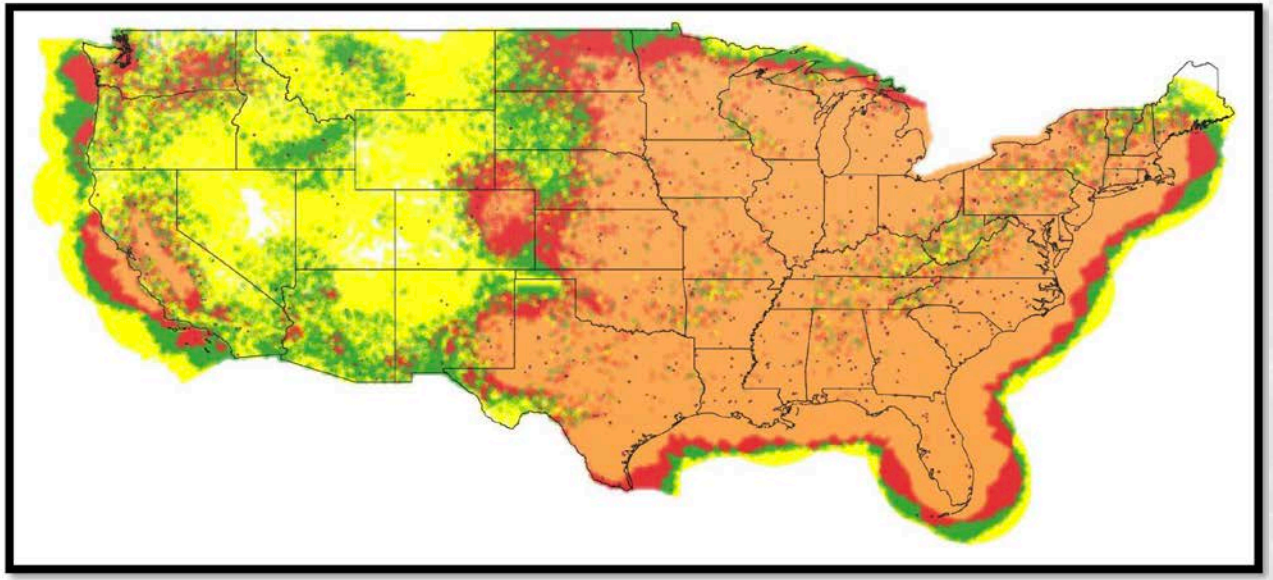


FIGURE 2: CONUS AREAS COVERED BY ONE OR MORE FULL-POWER UHF TV STATION WITH PLANNING FACTOR VALUES GIVEN IN TABLE 1. THE NUMBER OF STATIONS COVERING ARE INDICATED BY SHADING WITH YELLOW (1—3 STATIONS), GREEN (4—6), RED (7—10), AND ORANGE (11 OR GREATER).

First Responder Paging System

1. **2017 PILOT Innovation Challenge Winner**
2. **DHS Small Business Innovation Research Grant**
3. **2022 Best Paper**
   “ATSC 3.0 as a Use Case for Public Safety Communications – Development Milestones”

   - **Fred Engel, PBS North Carolina**
   - **Red Grasso, NC Dept. of Information Technology**
   - **Chris Lamb and Tony Sammarco, Device Solutions Inc.**

ATSC 3 – Multiple Market File Delivery

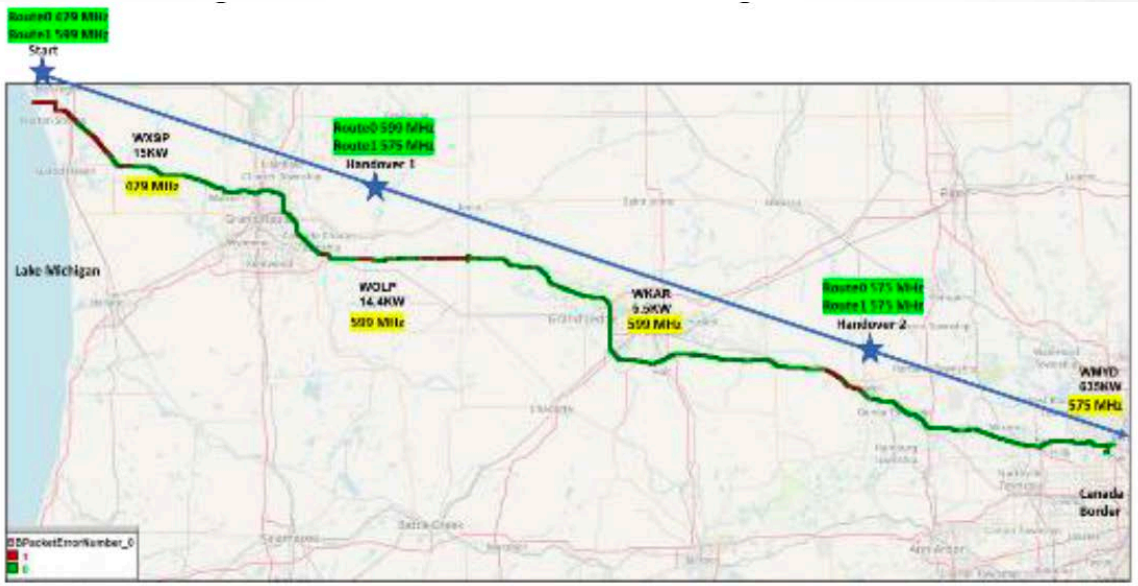


Figure VII.1 Lake Michigan to Canada Core PLP Baseband Packet reception

CONNECTED CARS & RADIO

DTS AUTOSTAGE

DTS AUTOSTAGE & MERCEDES

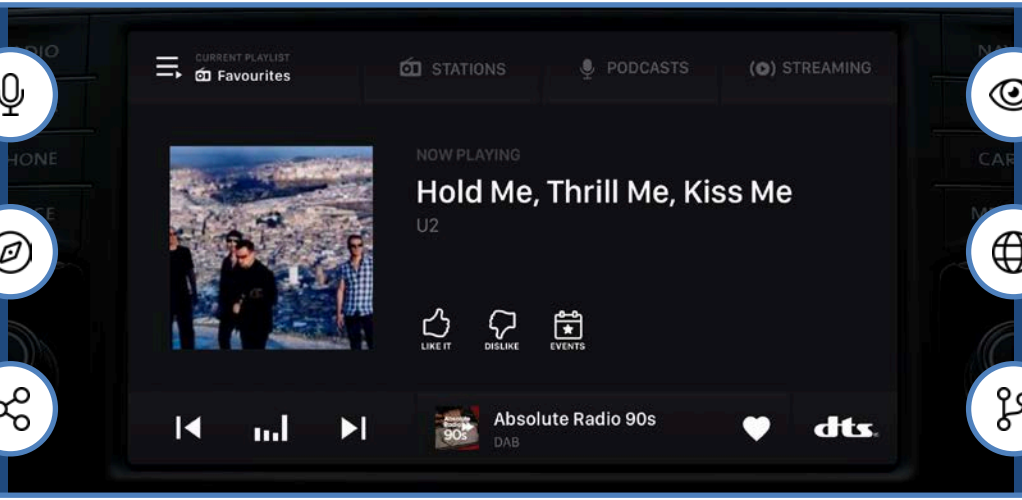
1 VEHICLE, 5 SCREENS!

DTS AUTOSTAGE

BROADCAST

DISCOVERY

ENGAGEMENT



INSIGHTS

GLOBAL

EXTENDABLE

- Open to all broadcasters
- Ensures broadcaster control and prominence – free of charge and capital investment
- Competitive response to BIG TECH's push into the car
- Global and reliable platform for all OEMs

DTS AutoStage
FEATURES

Powering Next-Gen In-Car Experiences

DTS CONNECTED RADIO - STANDARD

STATION DATA

- Station name + slogan
- Alternative frequencies
- Streaming URL
- Genre
- Additional images (slide show)
- Support: speech input / phoneme
- Social Media

LIVE DATA RADIO

- Song recognition
  - fingerprinting - locally
  - fingerprinting – server side
- Non music related metadata
- Push notification – live content
- Live content for non listened station

MEDIA USAGE REPORT

- Usage Report
- Radio reception

STATION LOGO

- EU, NA, Asia
- Div. resolution + formats
- Multiple query options

SONG DATA

- Cover Art + Artist Images
- Metadata
- Tivo ID (Spotify, Apple, Amazon, etc)
- Mood & Tone
- LyricFind support

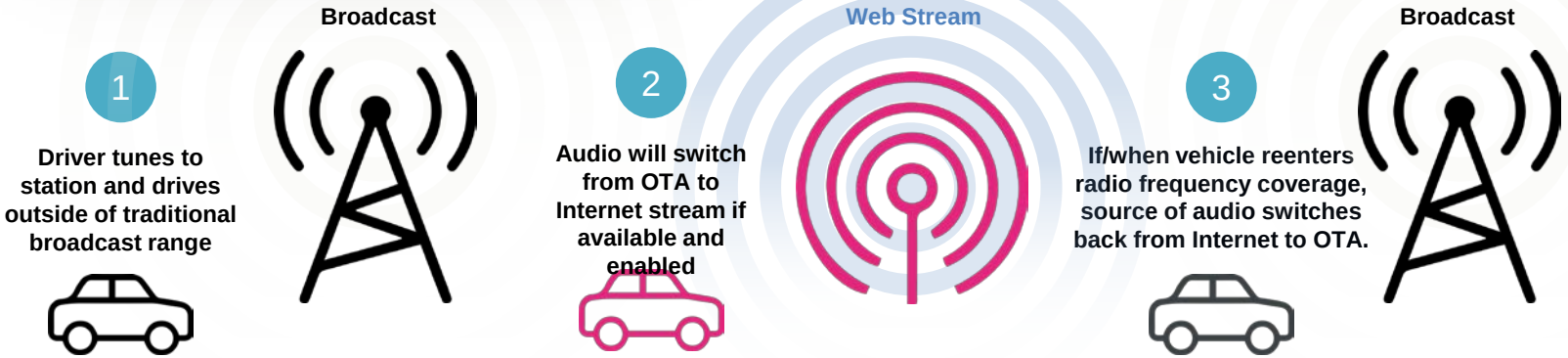
SONG RECOGNITION

- Text search for media
- Fingerprinting
- Song position at time x

STATION FOLLOWING

EXTENDED COVERAGE AREA

Seamless transition between over-the-air broadcast and IP content delivery.



Thank You!

@NABCTO