



Your Single Source For Broadcast Solutions

Electronics Research, Inc.

NEXTGEN TV Benefits to Consumers - The RF Side

January 2020



Produced by SMPTE and SBE with support from the NAB and ATSC



and the support of our host, WETA Television



JANUARY 16, 2020



Event Recording courtesy of the following sponsors:



Panasonic

JANUARY 16, 2020



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JANUARY 16, 2020



THANK YOU TO THE SMPTE DC, SBE AND NAB TEAM
MEMBERS WHO PRODUCED THIS EVENT

Fred Willard Univision

Rick Singer Singer Media Engineering

Skip Pizzi NAB

Tom Hackett Diversified Systems

Melissa Davis Evertz

Louise Shidler Chesapeake Systems

Maciej Ochman CPB

James Snyder US Library of Congress

Nephi Griffith BMG

Greg Smalfelt Ch 16 Fairfax

Alex Snell BCI Digital

Peter Wharton Happy Robotz

WITHOUT THEIR VOLUNTEER EFFORTS THIS SUMMIT WOULD NOT BE POSSIBLE

Morning Program



Afternoon Program

8:00 AM - 9:00 AM	Registration and continental breakfast
8:55 AM - 9:00 AM	Welcome from SMPTE, SBE and AES Fred Willard, SBE Washington Kishore Persaud, SBE Baltimore
9:00 AM - 9:05 AM	Introduction Peter Wharton, SMPTE Membership VP Chris Lane, Chief Engineer, WETA
9:05 AM - 9:35 AM	NextGen TV: Transforming the Consumer Experience Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors Madeleine Noland, President, ATSC
9:35 AM - 10:00 AM	Creating New Opportunities with NextGen TV Joonyoung Park, VP and Fellow, DigiCAP
10:00 AM - 10:35 AM	Improved Television Reception for Consumers <i>Implementing NextGen TV Distribution Systems</i> John Lynch, ERI Jeff Andrew, Osborn Engineering
10:35 AM - 11:15 AM	Benefits of a Converged Broadcast and IP Platform Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors Content Reception Enhancements Richard Lhermitte, VP Solutions and Market Dev, ENENSYS TeamCast
11:15 AM - 11:30 AM	Morning Break
11:30 AM - 11:50 AM	Consumer Applications for Combined 5G & NextGen TV Networks Josh Arensberg, M&E Business Development, Verizon Media
11:50 AM - 12:15 PM	Case Study: Hybrid Services at "Chicago 3.0" Jean Macher, Harmonic
12:15 PM - 01:20 PM	Buffet Lunch

01:25 PM - 01:45 PM	Protecting the NextGen TV Consumer <i>Advanced EAS and AWARN Capabilities</i> John McCoskey, SpectraRep
01:45 PM - 02:15 PM	Monetizing the NextGen TV Consumer <i>Addressable Advertising and Analytics</i> Rick Ducey & Mark Fratrik, BIA
02:20 PM - 03:20 PM	Personalizing the Consumer Experience <i>Interactive and Personalized Features</i> Mark Corl, Triveni Digital Greg Jarvis, Fincons So Vang, NAB Pete Van Peenan, Pearl TV
03:25 PM - 03:40 PM	Afternoon Break
03:40 PM - 04:10 PM	The Consumer Out-of-Home Experience <i>Mobile & Automotive Applications and FeMBMS (5G Broadcast)</i> Thomas Janner, Product Management & R&D Director, Rhode & Schwarz
4:10 PM - 4:35 PM	The ATSC 3.0 Roadmap Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors Madeleine Noland, President, ATSC
4:35 PM - 5:00 PM	The Consumer Technology Roadmap Brian Markwalter, SVP Research and Standards The Consumer Technology Association
5:00 PM - 6:00 PM	Station Group and Industry Deployment Plans <i>Advanced Capability Implementation Strategies</i> Skip Pizzi, VP Technology Education & Outreach, NAB (Moderator) Michael Bouchard, VP Technology Strategy, ONE Media / Sinclair Stacey Decker, CTO, Public Media Group Sasha Javid, COO, The Spectrum Co
6:00 PM - 8:00 PM	Cocktail Reception Busboys and Poets 4251 S. Campbell Ave., Shirlington <i>Heavy Hors d'oeuvres and open bar</i>

NEXTGEN TV

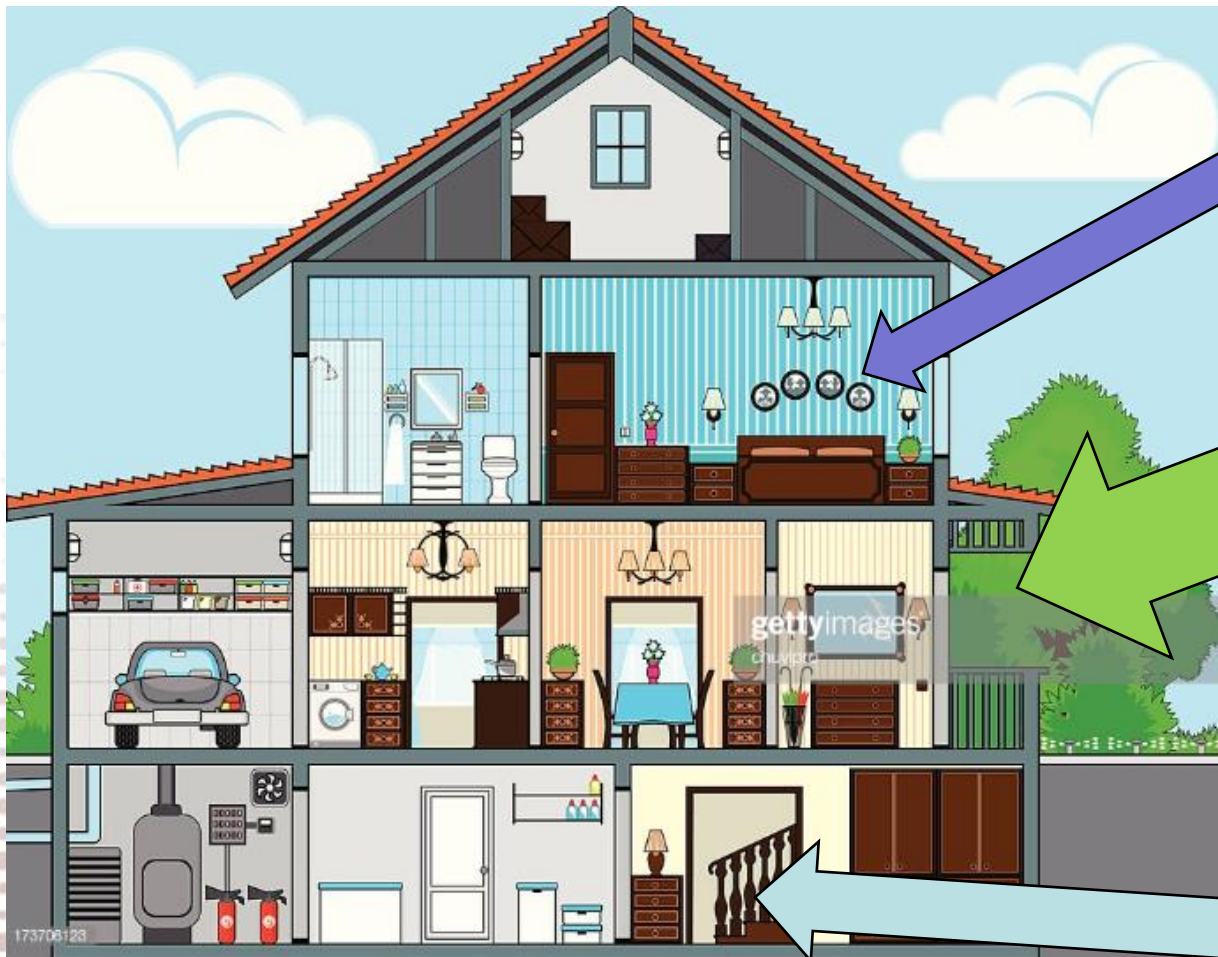


- NEXTGEN TV offers significant benefits for consumers including:
 - More robust signal – less breakup, dropouts
 - In-building reception, even through concrete walls and below grade
 - Improved Urban canyon reception & metropolitan areas
 - Larger reception coverage area with better close in coverage

Target Customer ATSC 1.0



NEXTGEN TV Targets



NEXTGEN TV Target

Including the ground floors





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NEXTGEN TV Target



NEXTGEN TV



- To take advantage of NEXTGEN TV features we will need to ensure reception throughout service area!



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NEXTGEN TV Delivers

More robust delivery!

More flexibility,

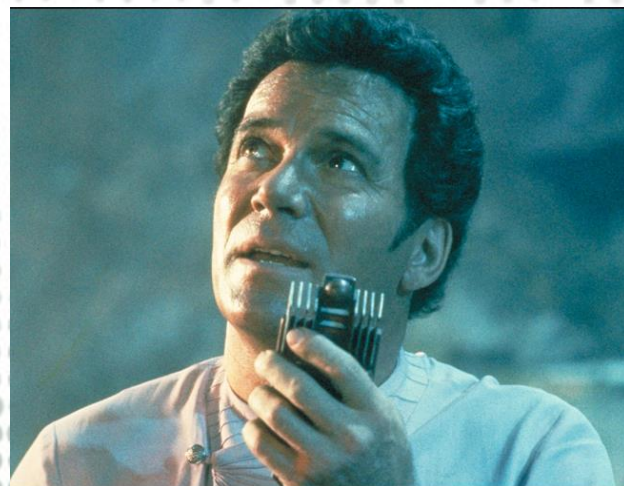
More services,

More platforms,

Provides more content, more places

We need more signal !!!

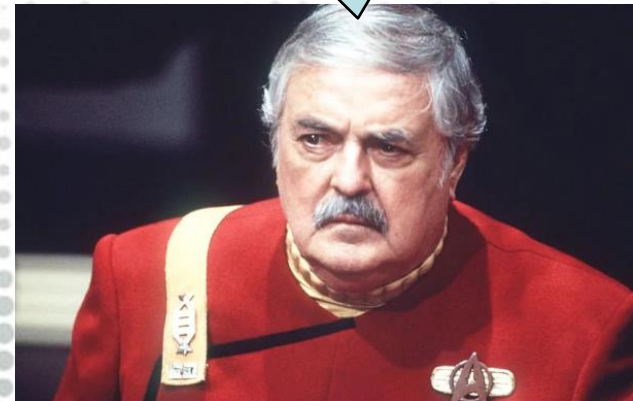
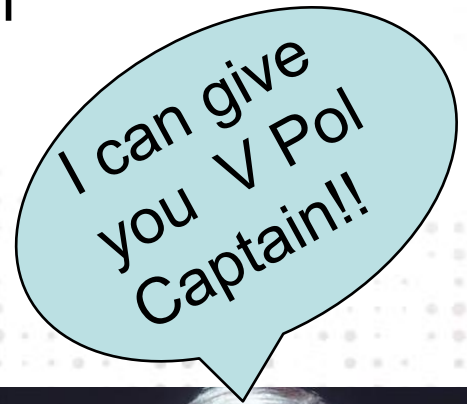
Scottie, we
need more
signal !!



How do we get more signal?

- OFDM superior receive characteristics
- Lower gain antennas
- Increased vertical polarization
- Higher transmitter power
- Secondary Emitter Sites

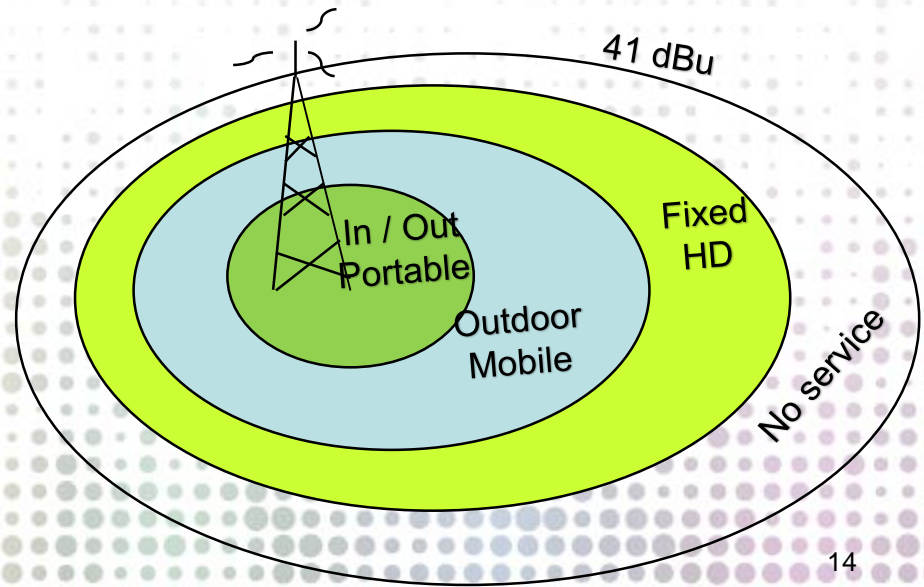
All will improve the signal in the entire coverage area



Design for the Usage

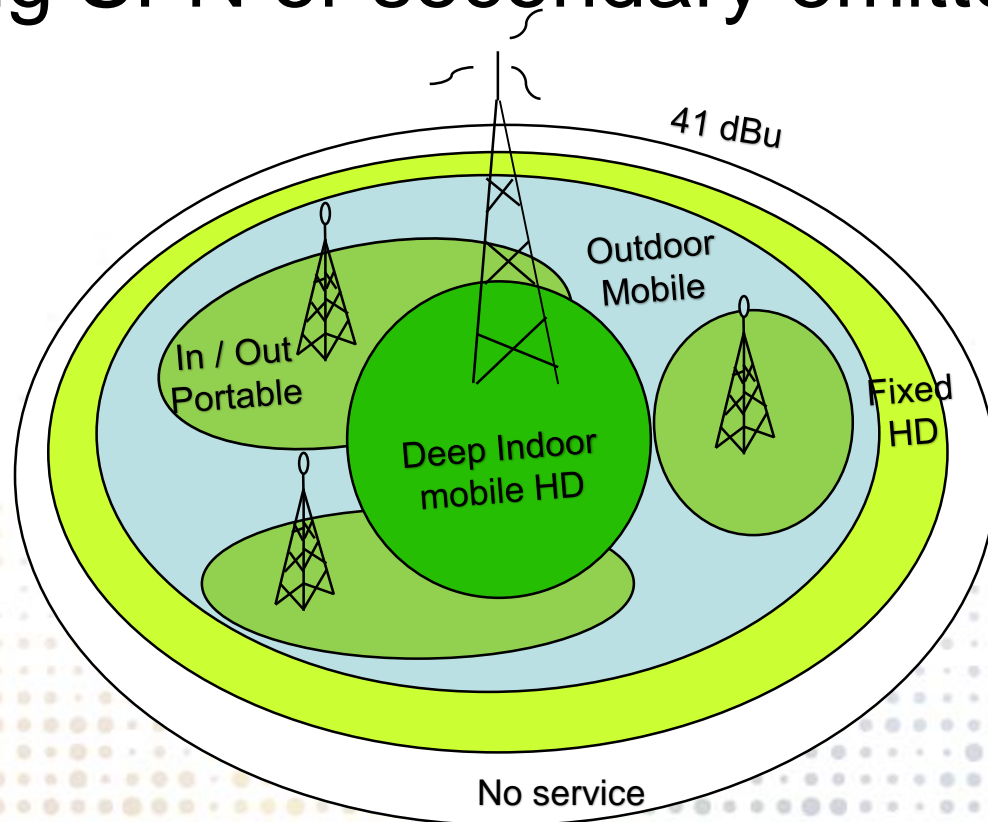
- Designing for the usage cases will likely require High null fill + Secondary Emitters

- Use main antenna to provide best service to surrounding area
- Add Broadband Secondary Emitters sites around coverage perimeter to boost signal and protect the coverage contour



NEXTGENTV

Adding SFN or secondary emitters



NEXTGENTV

The Benefits to the Consumer



Fixed UHD



UHD



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ATSC 3.0

Mobile



Home
Gateway



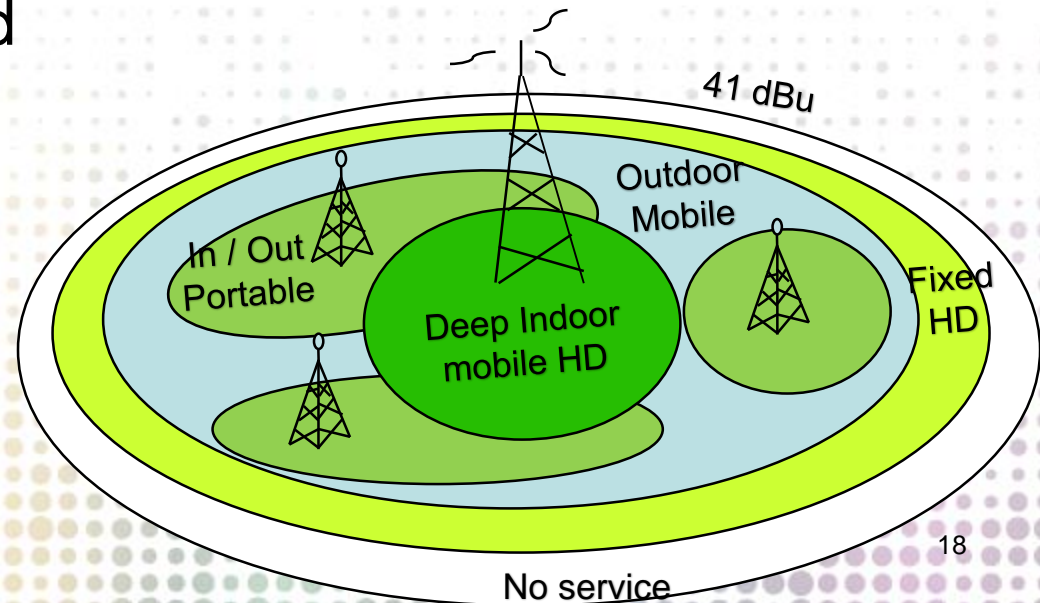
Automotive



Build out of NEXTGEN TV

The build out of NextGen TV will require filling in areas where there is not enough signal.

- Turn On Main **NextGen** TV service
- Add SFN sites to the network
- Varying Antenna Heights
some will need to be lower



Build out continued

- SFN Sites will need to be engineered for the higher power of Multiple RF channels, specifically looking at:
 - Filters and Combiners
 - Transmission Line
 - And Antennas





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SUPERPANEL™





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ERI NEXTGEN TV

WRAL First ATSC 3.0 On Air June '16

Pearl Phoenix 2nd Site

Michigan State ATSC 3.0 Test site





THANK YOU

John Lynch

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A nighttime photograph of the Washington Monument and the Jefferson Memorial in Washington, D.C. The Washington Monument is a tall, white, obelisk-like structure on the left, illuminated and reflected in the water. The Jefferson Memorial is a large, white, circular building with a dome on the right, also illuminated and reflected in the water. The sky is a deep blue, and the water is calm, showing clear reflections of the buildings and lights.

FROM THE SMPTE WASHINGTON DC SECTION

THANK YOU