

Creating New Opportunities and Revenues with NextGen TV

Challenges and my own insights

Joonyoung Park
DigiCAP



Smart & Reliable Partner
DigiCAP Co.,Ltd.

nextgentv **SUMMIT**

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



and the support of our host, WETA Television



JANUARY 16, 2020



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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> ▶

Challenges – More consumers are watching television or video in mobile devices.

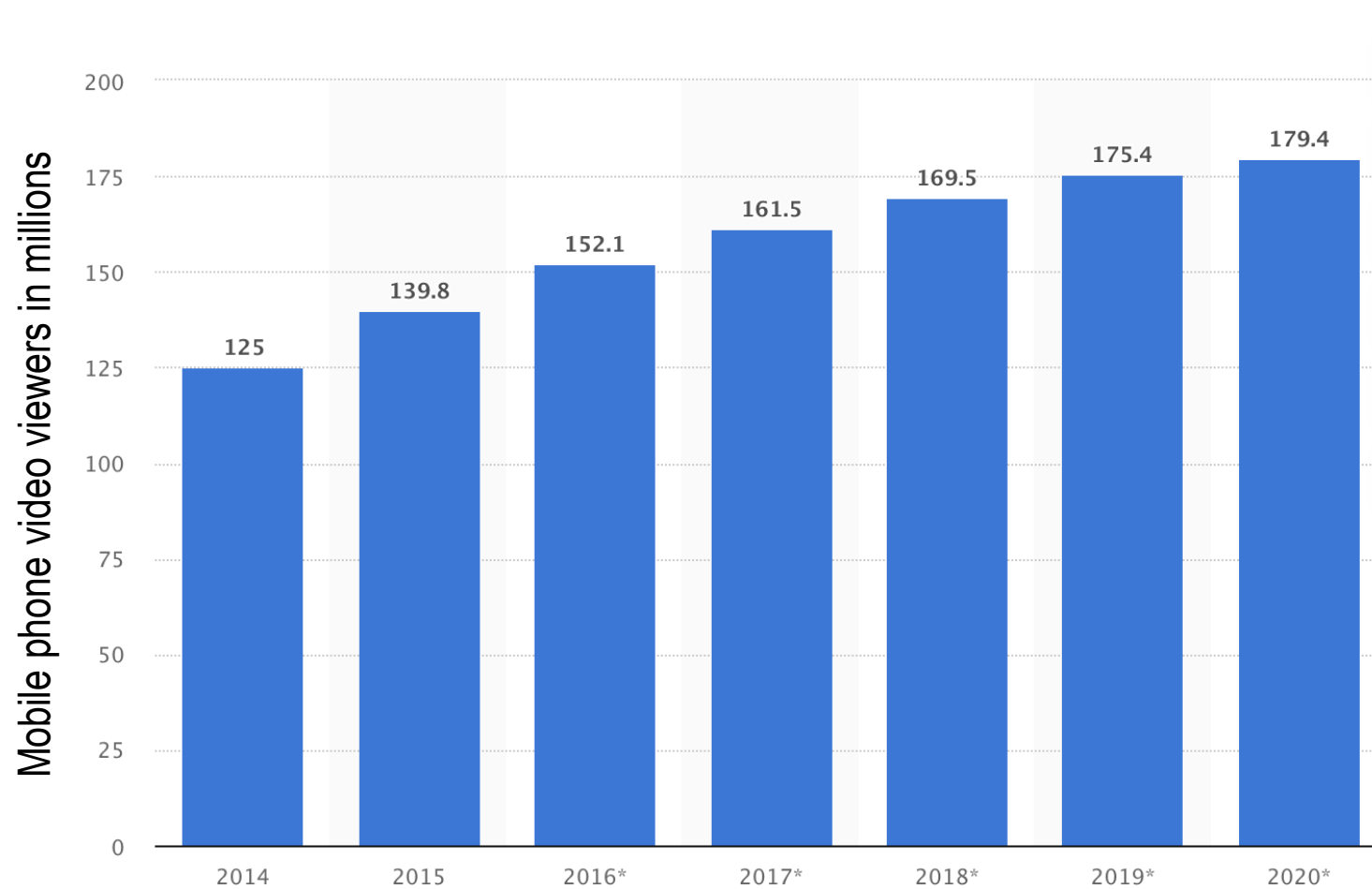


Challenges – More consumers are watching television or video in mobile devices.



Challenges – Numbers are showing that.

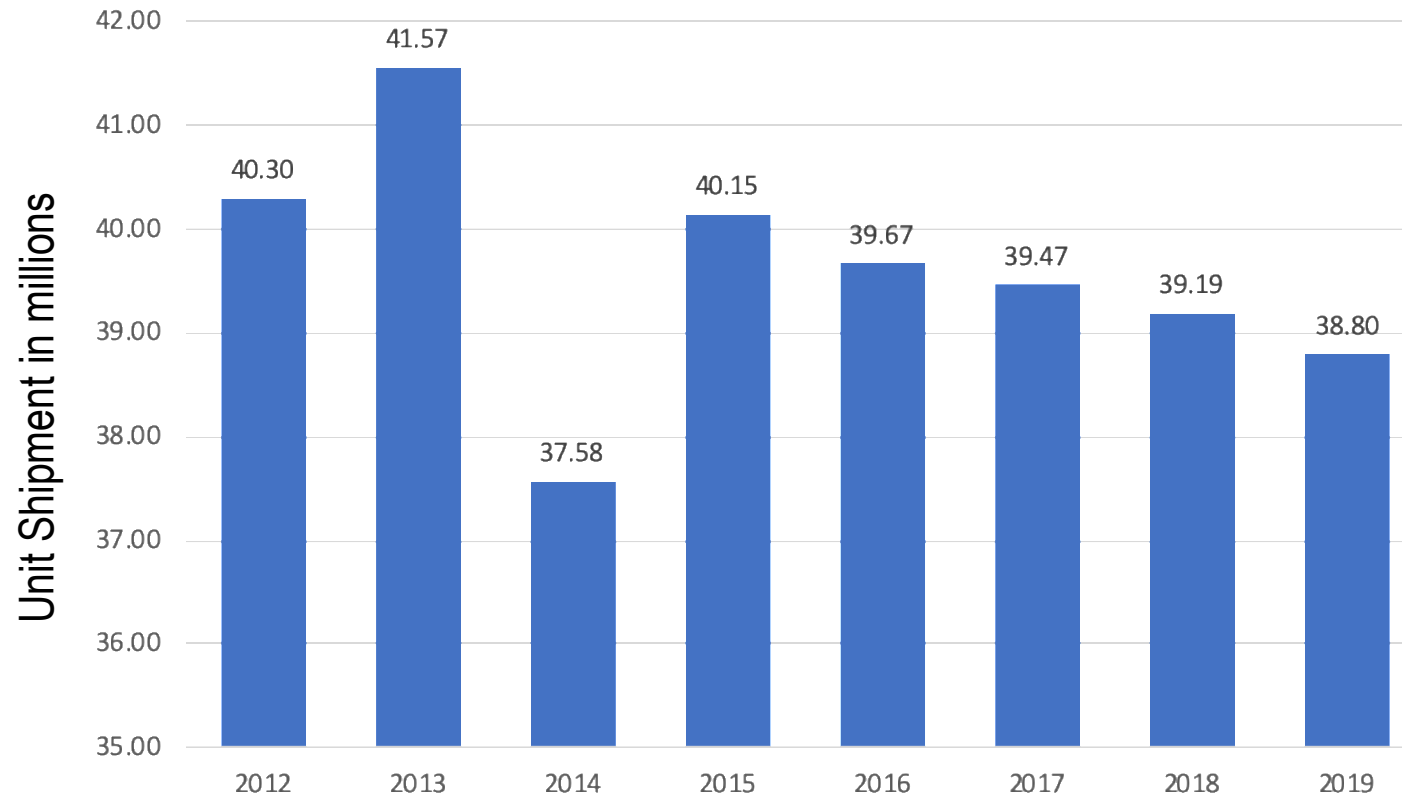
Mobile phone video viewers in the United States 2014-2020: Expected to grow to more than 175.4M in 2019.



Source: Statista 2020

Challenges – Digital television unit shipments in the US from 2012 until 2019

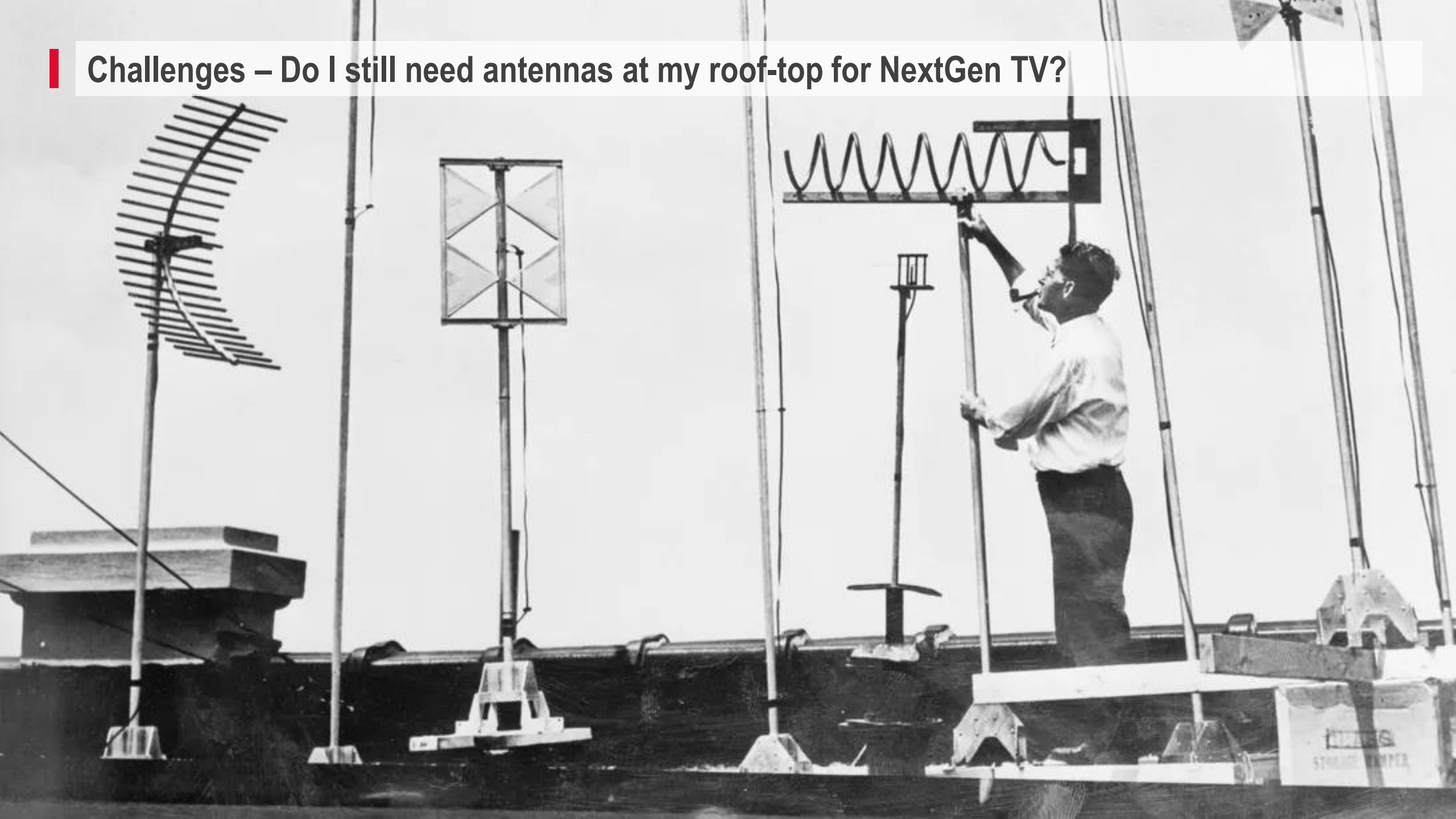
More device manufacturers are moving to mobile device business, less focusing on television business.



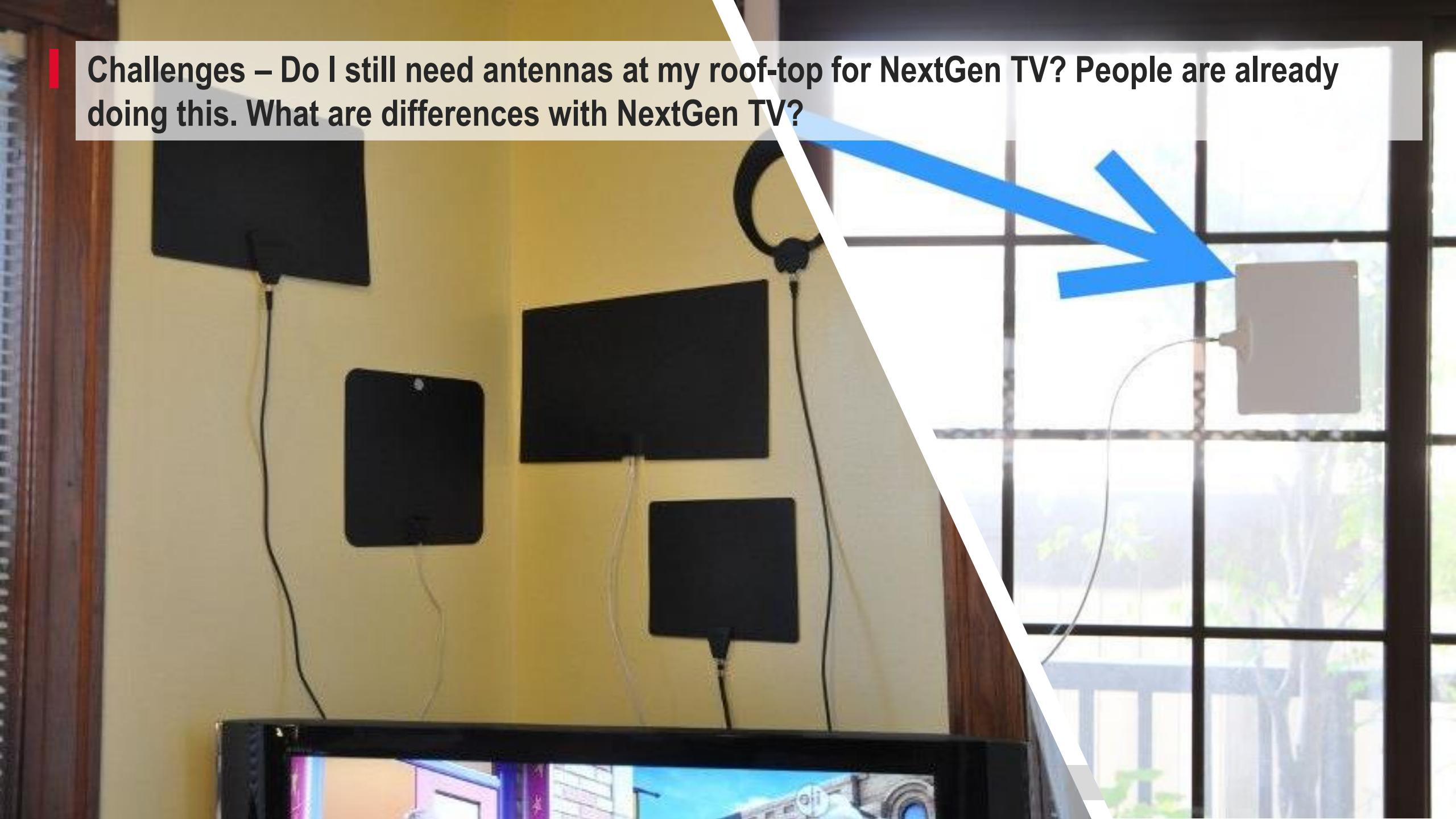
Source: Statista 2020

Numbers for 2018 and 2019 are my own estimates

Challenges – Do I still need antennas at my roof-top for NextGen TV?



Challenges – Do I still need antennas at my roof-top for NextGen TV? People are already doing this. What are differences with NextGen TV?



Challenges – More cars are getting smarter now. Will NextGen TV deliver software updates CHEAPER and FASTER?

Updating in
Progress

You must keep the vehicle in Park and the engine running during the update. Do not turn vehicle off and do not remove USB drive until update has been completed.

Update Package (Remaining Time 12:44)

ON

AUTO

HEAT & A/C

83

TEMP
74°

Challenges – Will NextGen TV deliver software updates CHEAPER and FASTER? Some cars already doing this but rather in expensive ways.

There is a new version of your Tesla Model S software. Schedule installation, install now or close window to postpone.

9	20	
10	25	am
11	30	pm
12	35	
1	40	

5 hr 49 min from now

SET FOR THIS TIME

INSTALL NOW



This update will take approximately 45 min

During the update process you will not be able to drive the vehicle or use the touchscreen, and your car alarm may be disarmed for a short duration. The car must be in PARK.

Challenges – More people are using their phones as navigation while driving. LTE and 5G will not cover everywhere, especially remote areas. Can NextGen TV transmit map data or traffic information CHEAPER and FASTER?

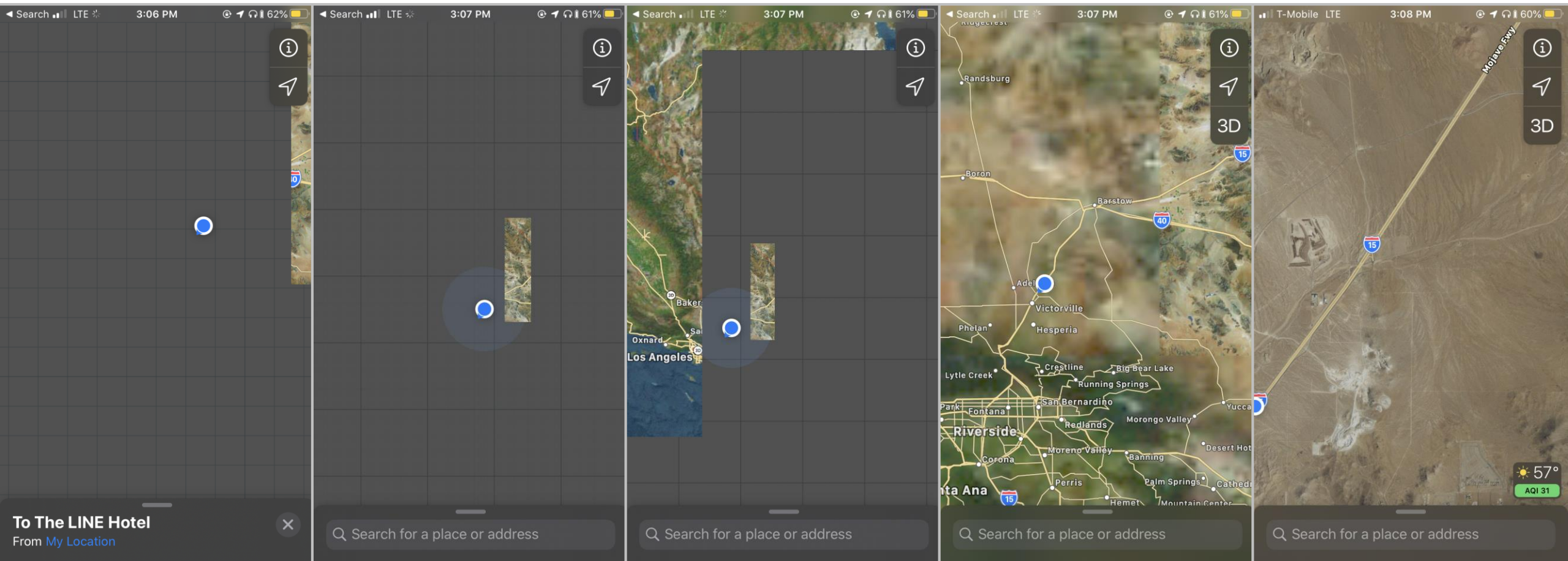


No Network

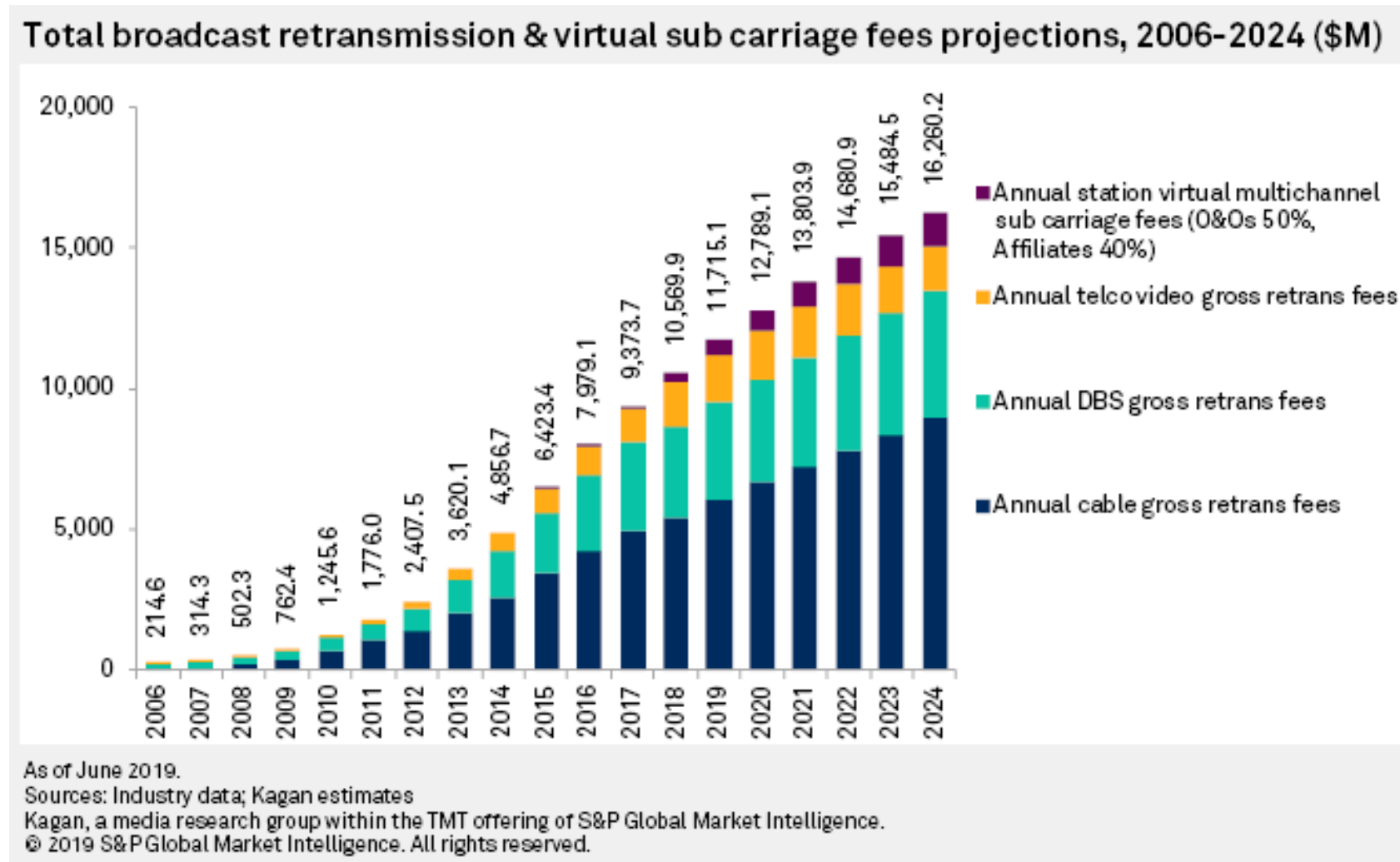
Screen captures while driving from Las Vegas to LA, in the middle of desert

Of course, there are very good economical reasons that telcos are not covering well in the middle of desert. Still, it is a bad user experience as people are using mobile devices as navigation.

It took about 2 mins to load complete satellite map, starting from 3:06 PM.



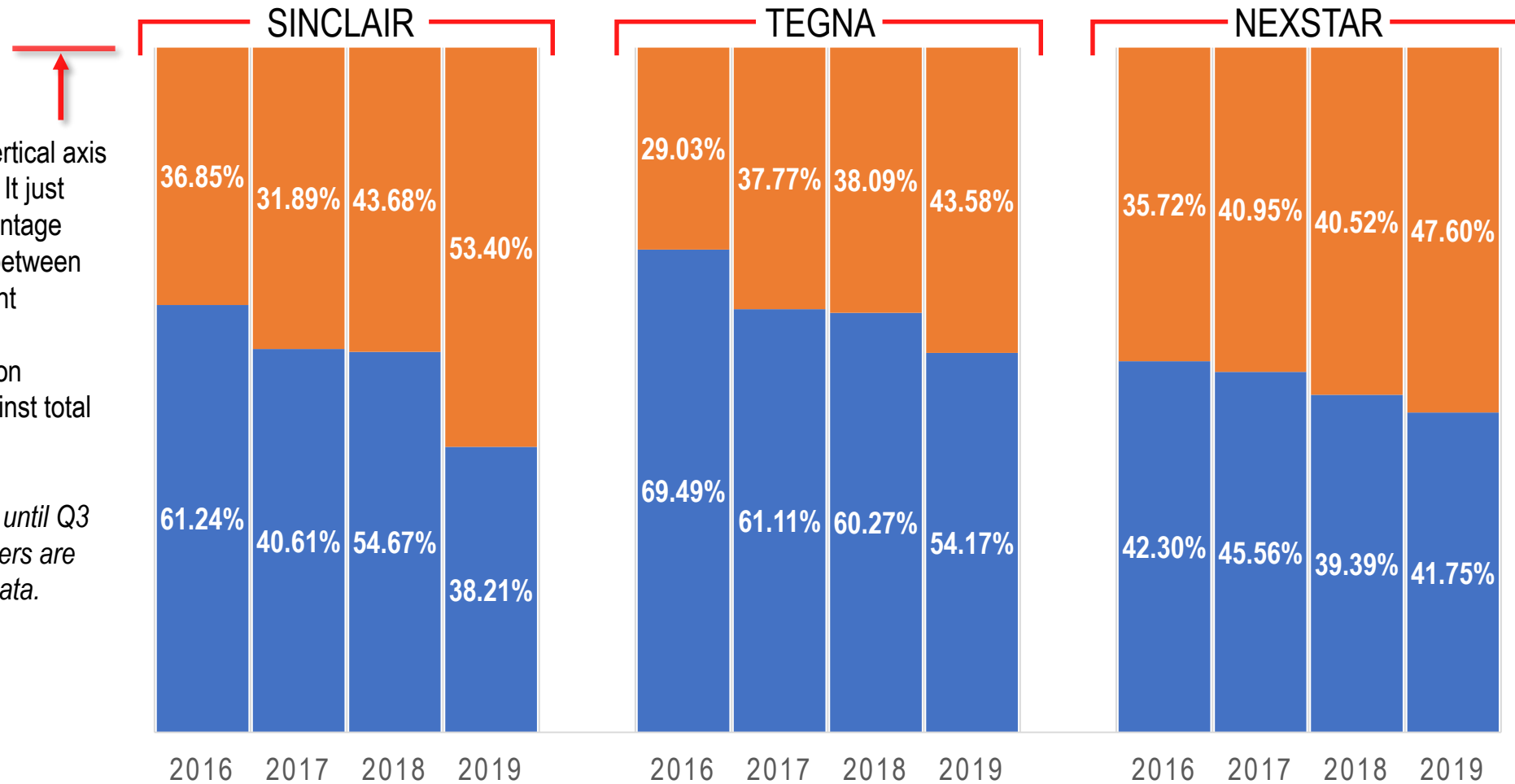
Challenges – To broadcasters, who are my customers or who pay my bills? Will NextGen TV improve my retrans commissions? The graph shows retrans revenue getting more important.



Challenges – for broadcasters, retrans revenue is getting more important than advertisement revenue. How does NextGen TV help broadcasters bottom-line?

Top of the vertical axis is not 100%. It just shows percentage distribution between advertisement revenue and retransmission revenue against total revenue.

2019 data is until Q3 of 2019. Others are entire year data.



■ Advertising (%) ■ Retransmission (%)

Source: Financial reports from the three companies

This is what we showed at CES



Mountain Tower Rd, Henderson, NV 890

209 Roland Wiley Rd, Las Vegas, NV 89

Add destination

Leave now

OPTIONS

Send directions to your phone

via I-515 N

Fastest route, the usual traffic

This route has restricted usage or private roads.

DETAILS

35 min

25.5 miles

via I-215 W

40 min

28.5 miles

Explore 209 Roland Wiley Rd

Restaurants

Hotels

Gas stations

P

Parking Lots

More

This is where we rented a house via Airbnb.

Transmitter Site of KSNV

209 Roland Wiley Road

Mountain Tower Road

Las Vegas

Spring Valley

Paradise

Enterprise

Sloan

Green Valley South

Macdonald Ranch

Seven Hills

Silverado Ranch

Rhodes Ranch

Summerlin South

Summerlin

Sun City Summerlin

North Las Vegas

Winchester

Clark County Wetlands Park

Boulder City

Sloan Canyon National Conservation

Map showing routes from 209 Roland Wiley Road to Mountain Tower Road. The map includes major highways (I-15, I-215, SR-95, SR-159, SR-515, SR-582, SR-593, SR-596, SR-599, SR-604, SR-610, SR-612, SR-615, SR-616, SR-617, SR-618, SR-619, SR-620, SR-621, SR-622, SR-623, SR-624, SR-625, SR-626, SR-627, SR-628, SR-629, SR-630, SR-631, SR-632, SR-633, SR-634, SR-635, SR-636, SR-637, SR-638, SR-639, SR-640, SR-641, SR-642, SR-643, SR-644, SR-645, SR-646, SR-647, SR-648, SR-649, SR-650, SR-651, SR-652, SR-653, SR-654, SR-655, SR-656, SR-657, SR-658, SR-659, SR-660, SR-661, SR-662, SR-663, SR-664, SR-665, SR-666, SR-667, SR-668, SR-669, SR-670, SR-671, SR-672, SR-673, SR-674, SR-675, SR-676, SR-677, SR-678, SR-679, SR-680, SR-681, SR-682, SR-683, SR-684, SR-685, SR-686, SR-687, SR-688, SR-689, SR-690, SR-691, SR-692, SR-693, SR-694, SR-695, SR-696, SR-697, SR-698, SR-699, SR-700, SR-701, SR-702, SR-703, SR-704, SR-705, SR-706, SR-707, SR-708, SR-709, SR-710, SR-711, SR-712, SR-713, SR-714, SR-715, SR-716, SR-717, SR-718, SR-719, SR-720, SR-721, SR-722, SR-723, SR-724, SR-725, SR-726, SR-727, SR-728, SR-729, SR-730, SR-731, SR-732, SR-733, SR-734, SR-735, SR-736, SR-737, SR-738, SR-739, SR-740, SR-741, SR-742, SR-743, SR-744, SR-745, SR-746, SR-747, SR-748, SR-749, SR-750, SR-751, SR-752, SR-753, SR-754, SR-755, SR-756, SR-757, SR-758, SR-759, SR-760, SR-761, SR-762, SR-763, SR-764, SR-765, SR-766, SR-767, SR-768, SR-769, SR-770, SR-771, SR-772, SR-773, SR-774, SR-775, SR-776, SR-777, SR-778, SR-779, SR-780, SR-781, SR-782, SR-783, SR-784, SR-785, SR-786, SR-787, SR-788, SR-789, SR-790, SR-791, SR-792, SR-793, SR-794, SR-795, SR-796, SR-797, SR-798, SR-799, SR-800, SR-801, SR-802, SR-803, SR-804, SR-805, SR-806, SR-807, SR-808, SR-809, SR-810, SR-811, SR-812, SR-813, SR-814, SR-815, SR-816, SR-817, SR-818, SR-819, SR-820, SR-821, SR-822, SR-823, SR-824, SR-825, SR-826, SR-827, SR-828, SR-829, SR-830, SR-831, SR-832, SR-833, SR-834, SR-835, SR-836, SR-837, SR-838, SR-839, SR-840, SR-841, SR-842, SR-843, SR-844, SR-845, SR-846, SR-847, SR-848, SR-849, SR-850, SR-851, SR-852, SR-853, SR-854, SR-855, SR-856, SR-857, SR-858, SR-859, SR-860, SR-861, SR-862, SR-863, SR-864, SR-865, SR-866, SR-867, SR-868, SR-869, SR-870, SR-871, SR-872, SR-873, SR-874, SR-875, SR-876, SR-877, SR-878, SR-879, SR-880, SR-881, SR-882, SR-883, SR-884, SR-885, SR-886, SR-887, SR-888, SR-889, SR-890, SR-891, SR-892, SR-893, SR-894, SR-895, SR-896, SR-897, SR-898, SR-899, SR-900, SR-901, SR-902, SR-903, SR-904, SR-905, SR-906, SR-907, SR-908, SR-909, SR-910, SR-911, SR-912, SR-913, SR-914, SR-915, SR-916, SR-917, SR-918, SR-919, SR-920, SR-921, SR-922, SR-923, SR-924, SR-925, SR-926, SR-927, SR-928, SR-929, SR-930, SR-931, SR-932, SR-933, SR-934, SR-935, SR-936, SR-937, SR-938, SR-939, SR-940, SR-941, SR-942, SR-943, SR-944, SR-945, SR-946, SR-947, SR-948, SR-949, SR-950, SR-951, SR-952, SR-953, SR-954, SR-955, SR-956, SR-957, SR-958, SR-959, SR-960, SR-961, SR-962, SR-963, SR-964, SR-965, SR-966, SR-967, SR-968, SR-969, SR-970, SR-971, SR-972, SR-973, SR-974, SR-975, SR-976, SR-977, SR-978, SR-979, SR-980, SR-981, SR-982, SR-983, SR-984, SR-985, SR-986, SR-987, SR-988, SR-989, SR-990, SR-991, SR-992, SR-993, SR-994, SR-995, SR-996, SR-997, SR-998, SR-999, SR-1000).

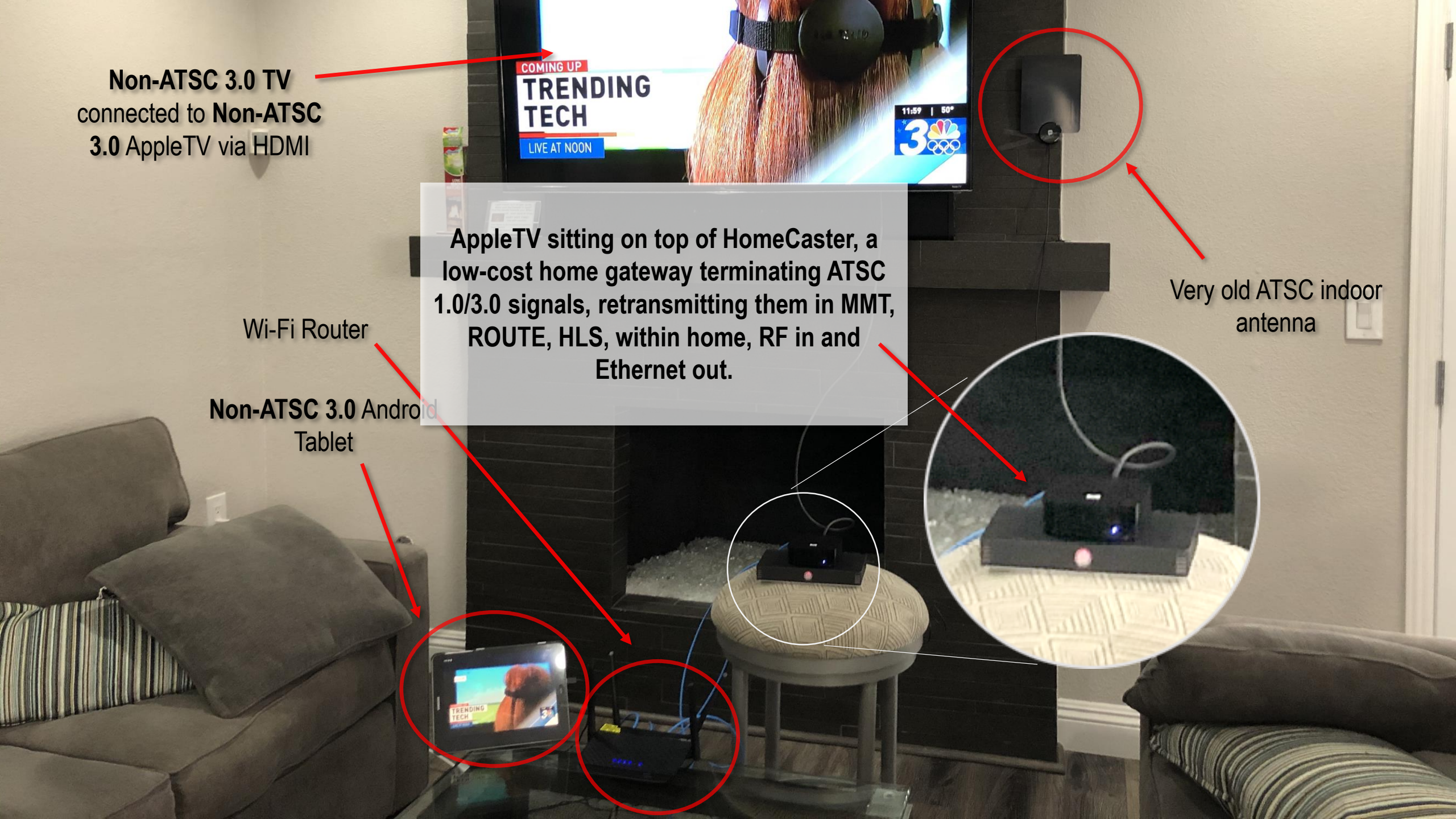
Non-ATSC 3.0 TV
connected to **Non-ATSC**
3.0 AppleTV via HDMI

AppleTV sitting on top of HomeCaster, a
low-cost home gateway terminating ATSC
1.0/3.0 signals, retransmitting them in MMT,
ROUTE, HLS, within home, RF in and
Ethernet out.

Wi-Fi Router

Non-ATSC 3.0 Android
Tablet

Very old ATSC indoor
antenna





Information

ATSC 3.0

Tuner#1

CH

33-0

SNR

Signal Strength

587

18

-57dBm

ATSC 1.0

Tuner#2

CH

69

803

0

-57dBm

■ Bitrate

■ Client List

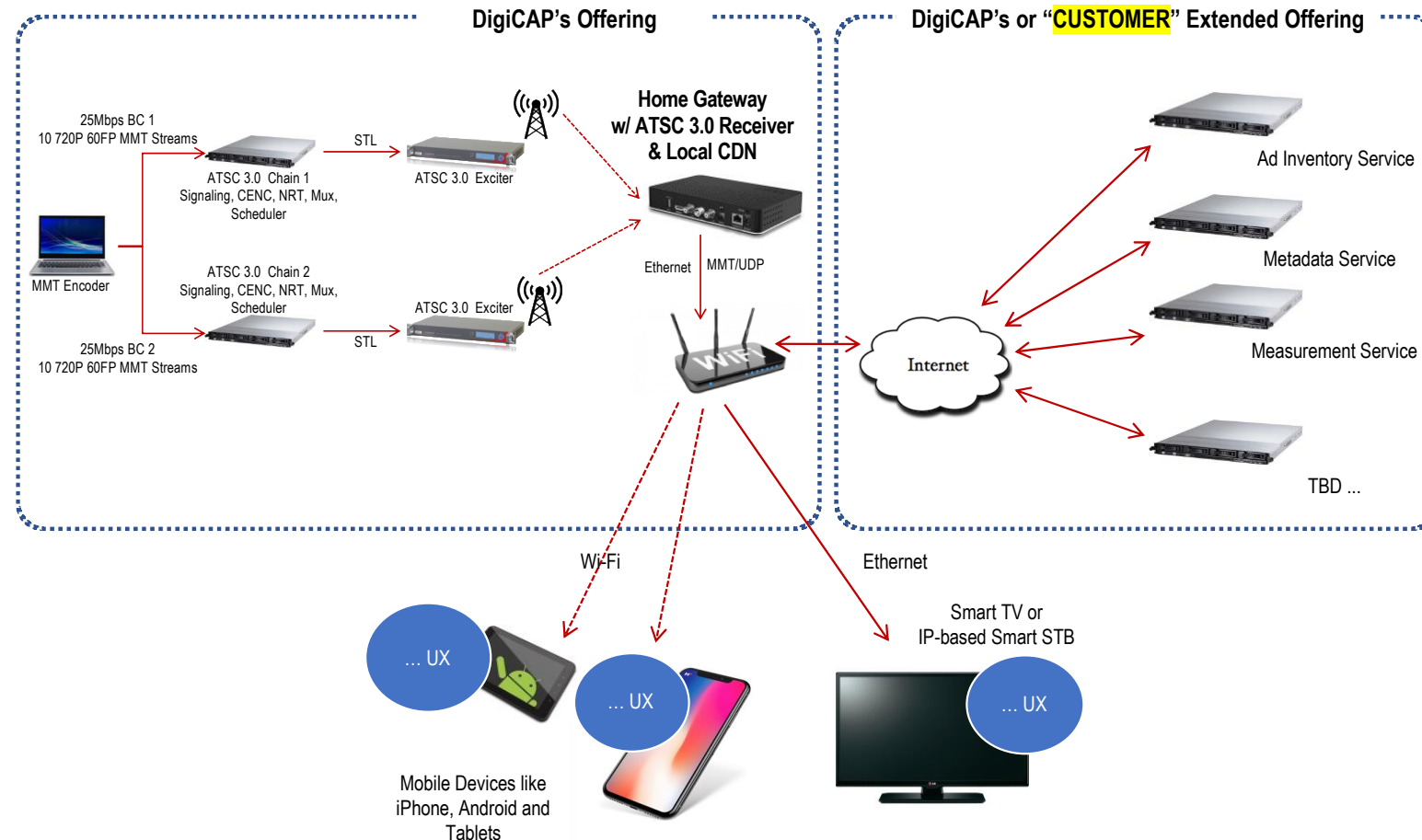
Tuner#1 Bitrate		9.82 Mb/s
Tuner#2 Bitrate		0.00 Mb/s
Input		9.82

CHANNEL
LIST VIEW

1 1080 HD video, 2 720p (?) videos

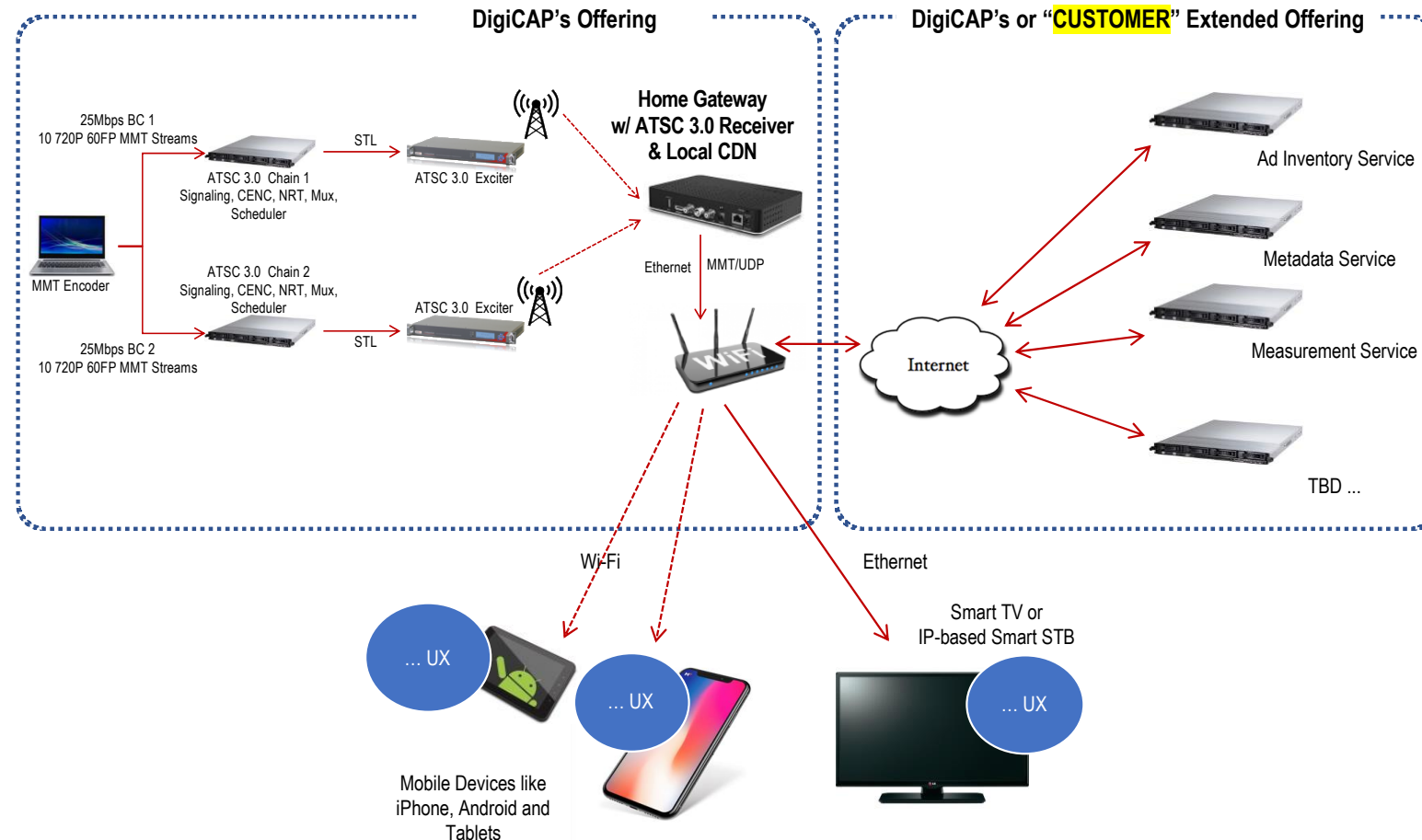
HomeCaster is one way to solve the challenges, like letting consumers to watch television shows using mobile devices within home, multiple people different channels.

It has two (2) tuners. DigiCAP headend demonstrated to pack ten (10) 720p HD signals within one 6 MHz channel. As combining two channels, broadcasters can provide skinny bundle services.

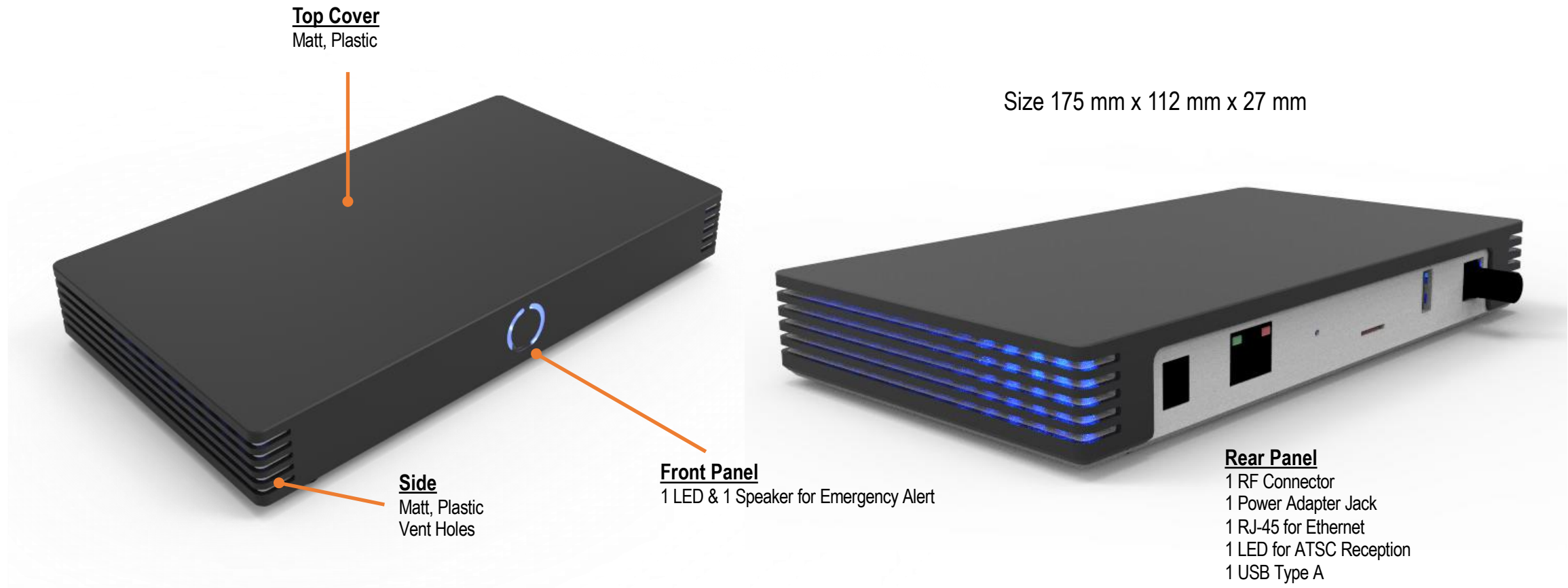


HomeCaster is one way to solve the challenges, like combining OTT streaming user experience with over-the-air user experience into one single app.

In just my view, NextGen TV can provide local broadcasters with opportunities to address their local consumers directly.



HomeCaster was designed to be ultra low-cost, sub \$100 in retail. With that, it is possible for broadcasters to provide OTT and OTA combined experience.

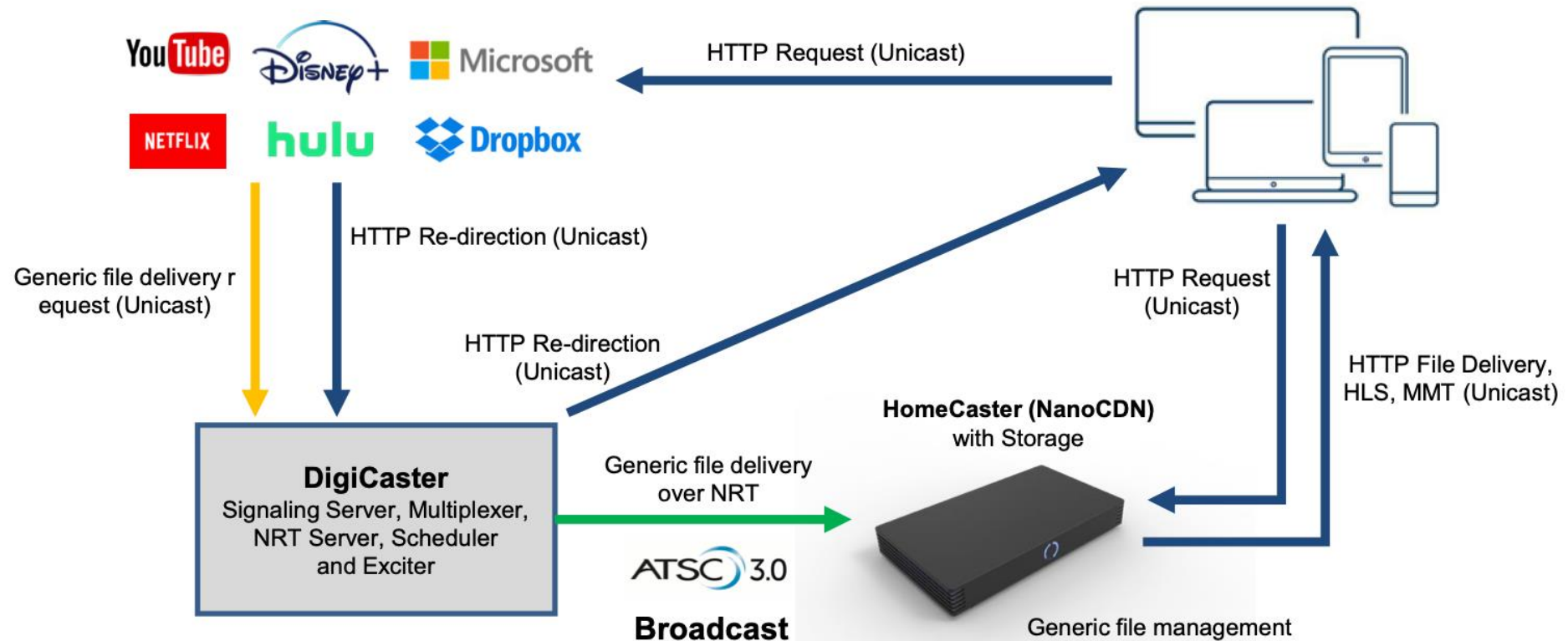


Sinclair demonstrated mash-up of OTT and OTA experiences at CES by using HomeCaster.
The first tape shows OTA services, and the second tape shows OTT services.



HomeCaster is one way to solve the challenges, like off-loading broadband data via NextGen TV network.

This **broadband and broadcast hybrid architecture** can provide local broadcasters with opportunities to interwork with broadband operators.



NexGen TV is real. It is IP-based new platform where broadcasters can develop differentiations & new businesses.

In our ATSC 3.0 experience so far,

1. NextGen TV as an IP-based new platform is very flexible to create new services.
2. In-home reception is good. OFDM and LDM are working in real.
3. New encoding format, HEVC, is efficient to carry as many as 10 HD signals within one 6 MHz channel.
4. ... Q&A

FROM THE SMPTE WASHINGTON DC SECTION

THANK YOU