ATSC 3.0
Future Roadmap

Madeleine Noland, President, ATSC

JANUARY 16, 2019
NEXTGEN TV SUMMIT
SMPTE – SBE – WETA

POWERED BY
ATSC 3.0
NEXTGEN TV
Produced by SMPTE and SBE with support from the NAB and ATSC

and the support of our host, WETA Television
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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
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>8:00 AM - 9:00 AM</td>
<td>Registration and continental breakfast</td>
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<tr>
<td>8:55 AM - 9:00 AM</td>
<td>Welcome from SMPTE, SBE and AES</td>
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<tr>
<td>9:00 AM - 9:05 AM</td>
<td>Peter Wharton, SMPTE Membership VP</td>
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<tr>
<td>9:00 AM - 9:05 AM</td>
<td>Chris Lane, Chief Engineer, WETA</td>
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<td>9:05 AM - 9:35 AM</td>
<td>Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors</td>
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<tr>
<td>9:35 AM - 10:00 AM</td>
<td>Joonyoung Park, VP and Fellow, DigiCAP</td>
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<tr>
<td>10:00 AM - 10:35 AM</td>
<td>Improved Television Reception for Consumers</td>
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<tr>
<td>10:35 AM - 11:15 AM</td>
<td>Benefits of a Converged Broadcast and IP Platform</td>
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<tr>
<td>11:15 AM - 11:30 AM</td>
<td>Morning Break</td>
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<tr>
<td>11:30 AM - 11:50 AM</td>
<td>Consumer Applications for Combined 5G &amp; NextGen TV Networks</td>
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<tr>
<td>11:50 AM - 12:15 PM</td>
<td>Case Study: Hybrid Services at &quot;Chicago 3.0&quot;</td>
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<tr>
<td>12:15 PM - 01:20 PM</td>
<td>Buffet Lunch</td>
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<tr>
<td>01:25 PM - 01:45 PM</td>
<td>Protecting the NextGen TV Consumer</td>
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<tr>
<td>01:45 PM - 02:15 PM</td>
<td>Monetizing the NextGen TV Consumer</td>
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<tr>
<td>02:20 PM - 03:20 PM</td>
<td>Monetizing the NextGen TV Consumer</td>
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<tr>
<td>03:25 PM - 03:40 PM</td>
<td>Afternoon Break</td>
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<tr>
<td>03:40 PM - 04:10 PM</td>
<td>Mobile &amp; Automotive Applications and FeMBMS (5G Broadcast)</td>
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<tr>
<td>4:10 PM - 4:35 PM</td>
<td>The ATSC 3.0 Roadmap</td>
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<tr>
<td>4:35 PM - 5:00 PM</td>
<td>The Consumer Technology Roadmap</td>
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<td>5:00 PM - 6:00 PM</td>
<td>Station Group and Industry Deployment Plans</td>
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<tr>
<td>6:00 PM - 8:00 PM</td>
<td>Cocktail Reception</td>
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Korean Deployment Roadmap

**Phase 1 / May 2017**
- Seoul & Capital Area

**Phase 2 / December 2017**
- 5 Major Metropolitan Cities & Pyeongchang Winter Olympic

**Phase 3 / 2020~2021**
- Deploying Low-Power Relay Stations to Achieve 95% Service Coverage
- ATSC 1.0 DTV Switch-Off

**2017**
- May 31

**2018**
- Frequency Re-Allocation based on ATSC 1.0 and ATSC 3.0
- Co-Channel Interference
- Adjacent Channel Interference
- Protection Ratio

**2019**
- Nationwide Cities & Province

**2020 & 2021**

**2024 & 2027**
Korean Feature Roadmap – Priority 1a

4K UHD

KBS (2018 UHD global Conference)

CTA Confidential, © 2019
Korean Feature Roadmap – Priority 1b

Interactive Portal

KBS (2018 UHD global Conference)

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Korean Roadmap

1. Phase 1
   1. 4K UHD – world’s first – commercial deployment May 2017
   2. Interactive portal – TIVIVA – commercial deployment November 2017

2. Phase 2
   1. Mobile HD – showcase demonstration 2018 Winter Olympics
   2. Advanced Emergency Messaging – announcement in 2019
   3. Real-world field tests including service scenarios in 5G and ATSC 3.0 convergence environment – facility proposed for Jeju

3. By 2027 all content will be 4K and ATSC 1.0 will be shut off
U.S. Deployment Roadmap – 2020 Goal

- **8** Experimental Stations
- **40** Stations Identified
  - 35,770,460 TV Homes Covered
- **21** Station To Be Decided
  - 42,946,950 TV Homes Covered

71.4% - 2020 US Population Coverage
U.S. Television Feature Roadmap

1. TV Service Features in 2020
   1. Consistent loudness and voice boost for broadcast networks
   2. 4K and HDR video and immersive audio on select programming

2. TV Service Features in 2021 and beyond (MBG* estimate)
   1. Consistent loudness and voice boost on additional networks and other platforms like cable
   2. More content in 4K and HDR video and immersive audio
   3. Enriched content, advanced emergency information, multiple audio tracks

And continued pursuit of mobile, datacasting, 5G convergence, international recognition

* Maddie’s Best Guess
ATSC 3.0 Planning for the Future

PLANNING TEAM 7 ON ATSC 3.0 SERVICE EVOLUTION ROADMAP
◦ “ATSC Planning Team 7 (PT-7) on ATSC 3.0 Service Evolution Roadmap will develop an ATSC 3.0 service evolution roadmap for the deployment of features enabled by A/300:2019/2020....”
◦ https://www.atsc.org/subcommittees/planning-team-7-on-atsc-3-0-service-evolution-roadmap/

PLANNING TEAM 5 – AUTOMOTIVE APPLICATIONS
◦ “The Planning Team on Automotive Applications (PT5) will assess opportunities and challenges related to delivery of ATSC 3.0 services (including video, audio and other data) to vehicles...”
◦ https://www.atsc.org/subcommittees/planning-team-5-automotive-applications/

PLANNING TEAM 4 – FUTURE BROADCAST ECOSYSTEM TECHNOLOGIES
◦ “The Planning Team on Future Broadcast Ecosystem Technologies (PT4) will assess the potential advantages and range of improvements that new ... technologies might provide to the future Broadcast Ecosystem...”
◦ https://www.atsc.org/subcommittees/planning-team-4-future-video-technologies/

Join the discussion!
◦ https://www.atsc.org/membership/join-atsc/
Thank you

ADVANCED TELEVISION SYSTEMS COMMITTEE

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FROM THE SMPTE WASHINGTON DC SECTION

THANK YOU