Protecting the NextGen TV Consumer

Advanced EAS and AWARN Capabilities

John McCoskey
COO, SpectraRep

January 2020
Produced by SMPTE and SBE with support from the NAB and ATSC

and the support of our host, WETA Television

WETA
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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

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

### Afternoon Program

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:25 PM</td>
<td>Protecting the NextGen TV Consumer</td>
<td>John McCoskey, SpectraRep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advanced EAS and AWARN Capabilities</td>
</tr>
<tr>
<td>1:45 PM</td>
<td>Monetizing the NextGen TV Consumer</td>
<td>Rick Ducey &amp; Mark Fratrik, BIA</td>
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<tr>
<td></td>
<td></td>
<td>Addressable Advertising and Analytics</td>
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<tr>
<td>2:20 PM</td>
<td>Personalizing the Consumer Experience</td>
<td>Greg Jarvis, Fincons</td>
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<td></td>
<td>So Vang, NAB</td>
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<td></td>
<td></td>
<td>Pete Van Peenan, Pearl TV</td>
</tr>
<tr>
<td>3:25 PM</td>
<td>Afternoon Break</td>
<td></td>
</tr>
<tr>
<td>3:40 PM</td>
<td>The Consumer Out-of-Home Experience</td>
<td>Thomas Janner, Product Management &amp; R&amp;D Director, Rhode &amp; Schwarz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mobile &amp; Automotive Applications and FeMBMS (5G Broadcast)</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>The ATSC 3.0 Roadmap</td>
<td>Lynn Claudy, SVP Technology, NAB and Chairman, ATSC Board of Directors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Madeleine Noland, President, ATSC</td>
</tr>
<tr>
<td>4:35 PM</td>
<td>The Consumer Technology Roadmap</td>
<td>Brian Markwalter, SVP Research and Standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Consumer Technology Association</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Station Group and Industry Deployment Plans</td>
<td>Stacey Decker, CTO, Public Media Group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sasha Javid, COO, The Spectrum Co</td>
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<tr>
<td></td>
<td></td>
<td>Michael Bouchard, VP Technology Strategy, ONE Media / Sinclair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skipp Pizzi, VP Technology Education &amp; Outreach, NAB (Moderator)</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Cocktail Reception</td>
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<td></td>
<td></td>
<td>Busboys and Poets, 4251 S. Campbell Ave., Shirlington</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heavy Hors d'oeuvres and open bar</td>
</tr>
</tbody>
</table>

### Notes
- The ATSC 3.0 Roadmap session is scheduled from 4:10 PM to 4:35 PM.
- The Consumer Technology Roadmap session runs from 4:35 PM to 5:00 PM.
- The cocktail reception is held from 6:00 PM to 8:00 PM at Busboys and Poets, 4251 S. Campbell Ave., Shirlington.
What is Advanced Emergency informAtion (AEA)?

- Enables broadcasters to deliver emergency-related data and media to viewers
  - Text, images, video, interactive interfaces
  - Viewer management of messages
- Supplements and enhances EAS, but does not replace FCC emergency messaging regulations or practices
- Ability to geo-target alerts (for receivers that are location-aware)
- Ability to wake-up devices in stand-by mode
- Defines video and audio watermarks that are capable of enabling receivers to access AEA rich media via broadband or a subset of AEA information directly in the watermark.
- Ability to send public-facing AEA messages intended for consumers, and non-public-facing messages, intended for first responders or restricted audiences.
What is AWARN?

• The Advanced Warning and Response Network (AWARN) Alliance
• A cross-industry, international coalition formed to create the world’s most advanced emergency messaging system
• Members include:
  • Commercial and public broadcasters who reach over 90 percent of U.S. households
  • Public safety agencies (FEMA, DHS, APCO, NWS, NCMEC)
  • National trade associations
  • Consumer technology manufacturers
  • B2B technology companies
Key ATSC 3.0 standards for AEA

• A/321 - System Discovery and Signaling
  • bootstrap
  • “wakeup” field

• A/331 - Signaling, Delivery, Synchronization and Error Protection
  • service signaling and IP delivery of services and content, including AEA.
  • A specialized emergency messaging approach tailored for broadcast
  • Flexibility to cover a broad range of messaging requirements, including international, multilingual, and multimedia capabilities
AEA wake-up function

The Bootstrap is the initial discovery and entry point in the ATSC 3.0 waveform.

Wake-up Field is comprised of two bits in the Bootstrap.

Two bits = 4 wakeup states...one negative and 3 positive
- Change in state is what matters
- Designed to avoid nuisance factor and extend battery life

Note that there is one Bootstrap per RF band
- Broadcasters that are channel-sharing must coordinate use of the wake-up bits

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>'00'</td>
<td>No emergency to wake up devices is currently signaled</td>
</tr>
<tr>
<td>'01'</td>
<td>Emergency to wake up devices - setting 1</td>
</tr>
<tr>
<td>'10'</td>
<td>Emergency to wake up devices - setting 2</td>
</tr>
<tr>
<td>'11'</td>
<td>Emergency to wake up devices - setting 3</td>
</tr>
</tbody>
</table>
The AEA Table (AEAT)

Defines elements and attributes of alert messages:

- Who gets it?
- When?
- Alert Summary
- Where?
- Alert narrative
- Live media
- File-based media
## Example AEA Message Types

<table>
<thead>
<tr>
<th>Types of Emergency Messages</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Timely Warnings” – the types of messages issued by campuses – extremely short fuse events.</td>
<td>School lockdowns; active shooter, etc.</td>
</tr>
<tr>
<td>Emergency Warnings – EAS, public safety and weather alerts.</td>
<td>Weather alerts, AMBER alerts, etc.</td>
</tr>
<tr>
<td>Emergency Information - EI is a broader category of information and instructions. EI may</td>
<td>Safety messages, follow-on evacuation instructions, post-emergency</td>
</tr>
<tr>
<td>be issued even though there is no “alert.” EI may also enhance an alert with more</td>
<td>information, media communications from authorities, etc.</td>
</tr>
<tr>
<td>information on what is happening, what the response organization is doing, and what</td>
<td></td>
</tr>
<tr>
<td>else the public should do for its safety.</td>
<td></td>
</tr>
<tr>
<td>Bulletins and Advisories – information that may not fit into the category of an “alert” or</td>
<td>School closing lists, major traffic/road information, list of shelters,</td>
</tr>
<tr>
<td>“EI” but still represents information of important interest to the viewer or community.</td>
<td>emergency preparedness info, etc.</td>
</tr>
</tbody>
</table>
Alerting today

- Broadcast/MVPD text/audio EAS
- Mobile Wireless Emergency Alerts (WEA)

- Wireless vulnerability
  - Fragile infrastructure
  - Dependent on commercial power
  - Subject to congestion, throttling, and blocking

- Broadcast resiliency
  - Ruggedized infrastructure
  - High availability
  - True multicast
  - Backup power systems
Resiliency example

The day after Hurricane Irma hit Southwestern Florida, only one full power station (out of 96) was off-the air in Florida, none in the Miami-Dade DMA.

— Source: FCC Hurricane Irma Communications Status Report for Sept. 11, 2017
“And imagine a world in which our emergency alert system was far more advanced, tailoring alerts to particular neighborhoods and waking up sleeping devices to warn consumers of imminent emergencies.”

-FCC Chairman Ajit Pai before unanimous vote to approve Next Gen NPRM, 2/23/17
1st Gen AWARN (c. 2016)
1st Gen AWARN (c. 2016)
2\textsuperscript{nd} Gen AWARN w/ HTML5 (c.2017/18)
2\textsuperscript{nd} Gen AWARN w/ HTML5 (c.2017/18)
Current Gen AWARN

⚠️ ALERT: Debris Flow Risk for Santa Barbara County
EVACUATION ORDER FOR RISK AREAS

MORE INFORMATION  Dismiss
ALERT: Debris Flow Risk for Santa Barbara County

EVACUATION ORDER FOR RISK AREAS

Shelter location:
Goleta Valley Community Center,
5679 Hollister Ave

Road Closures:
Hwy 101 closed from Milpas St. Santa Barbara to Hwy 150 in Carpinteria

Twitter updates follow:
@SBCountyOEM

Text shelter address

Live Coverage  Evacuation Map  Shelters  Dismiss
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5679 Hollister Ave

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Live Coverage  Evacuation Map  Shelters  Dismiss
Post-event AWARN example
Declared Disaster Zones and Power Outages

Declared disaster zones: Areas in DARK RED on map

- No entry for general public. Violators will be subject to arrest.

- Property owners and renters permitted into area with proof of residence.

Twitter updates follow: @SBCountyOEM

- Text shelter address

Disaster Zones | Power Outages | Live Coverage | Dismiss
Declared Disaster Zones and Power Outages

Road Closures:
Hwy 101 closed from Milpas St. Santa Barbara to Hwy 150 in Carpinteria

Twitter updates follow:
@SBCountyOEM
Ongoing:
AEI – Advanced Emergency “Informing”

• Ties alerting to the newsroom
• Re-thinks newsroom workflows and interfaces
• Tools & templates for consistent, rapid content assembly & management
• Integration of real-time and NRT content
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www.LinkedIn.com/in/johnmccoskey
@John_McCoskey
703.802.2980 office
303.619.1823 mobile
FROM THE SMPTE WASHINGTON DC SECTION

THANK YOU