# AWARN
## Advanced Warning and Response Network

**Next-Gen Emergency Alerting: A New Paradigm for First Responders, Emergency Managers and the Public.**

**APCO Emerging Technology Forum**

**March 1, 2017**

**Raleigh, NC**

# AWARN Alliance Membership 1/25/17

- Capitol Broadcasting Company (WRAL)
- Kentucky Educational Television
- KPBS/California State University-San Diego
- WKAR/Michigan State University
- Pearl TV
- Sinclair Broadcast Group
- Vegas PBS
- UNC-TV

- Interactive Television Alliance
- LG Electronics
- Monroe Electronics
- National Association of Broadcasters
- Triveni Digital
- Wiley Rein LLP

# What is OTA Broadcasting (AKA TV)

**Broadcasting** is the distribution of audio and/or video content or other messages to a dispersed audience via any electronic mass communications medium, but typically one using the electromagnetic spectrum (radio waves), in a one-to-many model

# Broadcast Television is a One to Many

- WRAL's tower, covers more than 3.6 Million people across 40+ counties, simultaneously, using only 1 transmitter.

# High Tower - High Power!

Raleigh-Durham-Fayetteville
The Nation's 24th Largest Television Market

5 WRAL
wral.com

Raleigh-Durham-Fayetteville, North Carolina
919.821.8663
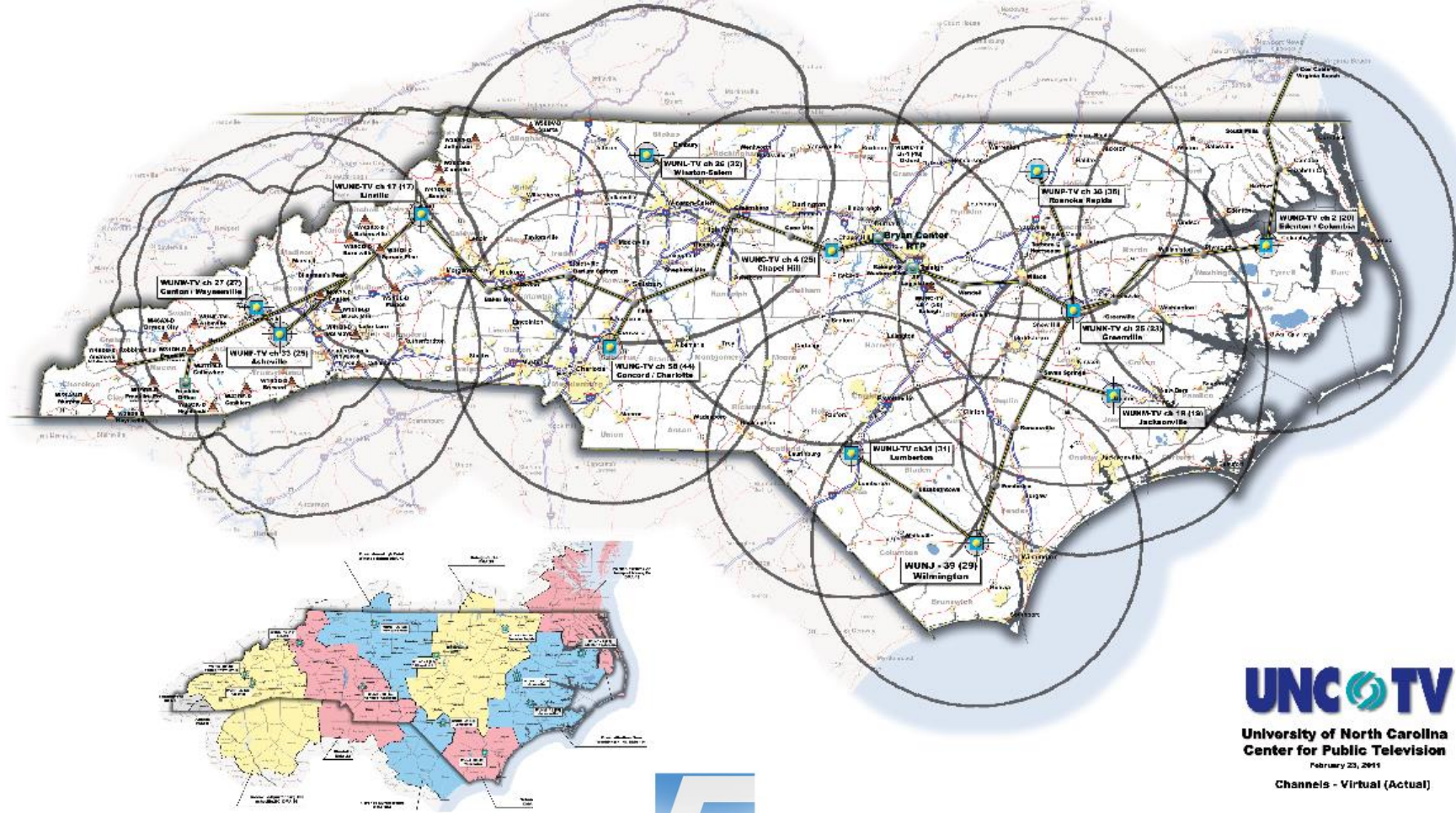
Represented by TeleRep

Metro
DMA

# Broadcast Television is a One to Many

- UNC-TV's Network covers more than 9 million people and 100 of NC's counties with only 12 Transmitters

# UNC-TV Coverage Map

# ATSC 3.0 – The Next Generation Of Broadcasting

## ATSC 3.0

- IP Based
- Configurable
- Scalable
- Efficient
- Interoperable
- Adaptable

- Significantly higher data capacity
- Flexible spectrum use
- Higher physical layer robustness
- Handheld and Smartphone device support
- Hybrid broadcast + broadband delivery
- Advanced A/V compression
- UHD Video - Immersive audio
- Targeted ad and programming
- Applications can be written to utilize this bandwidth

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5 WRAL

UNC TV
PUBLIC MEDIA NORTH CAROLINA

# ATSC and AWARN and Emergency Alerting

**No bottlenecks:** AWARN helps reduce Unintentional Denial of Service (DoS) by bypassing bandwidth bottlenecks that overload current cellular-based systems.

**Hardened and Resilient :** Broadcast stations, with back-up generators and fuel reserves, stay on the air even when electricity to whole regions is cut.

**Verbose information**: text and other information is not limited to a fixed number of characters.

**Geo-targeting:** Utilizing geographic location information embedded in the Common Alerting Protocol (CAP) message, combined with the location awareness of receiving devices , AWARN alerts can be displayed on only the devices targeted to receive the alerts.
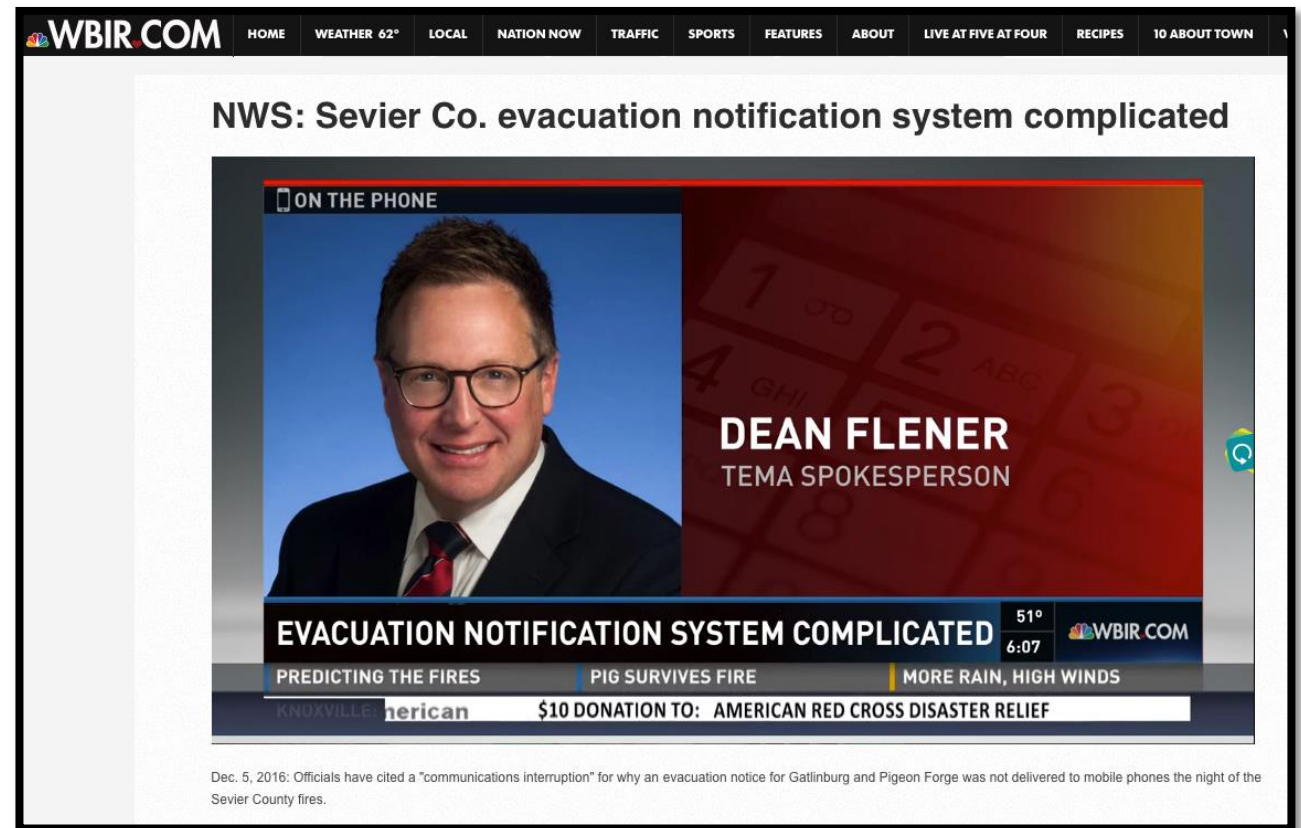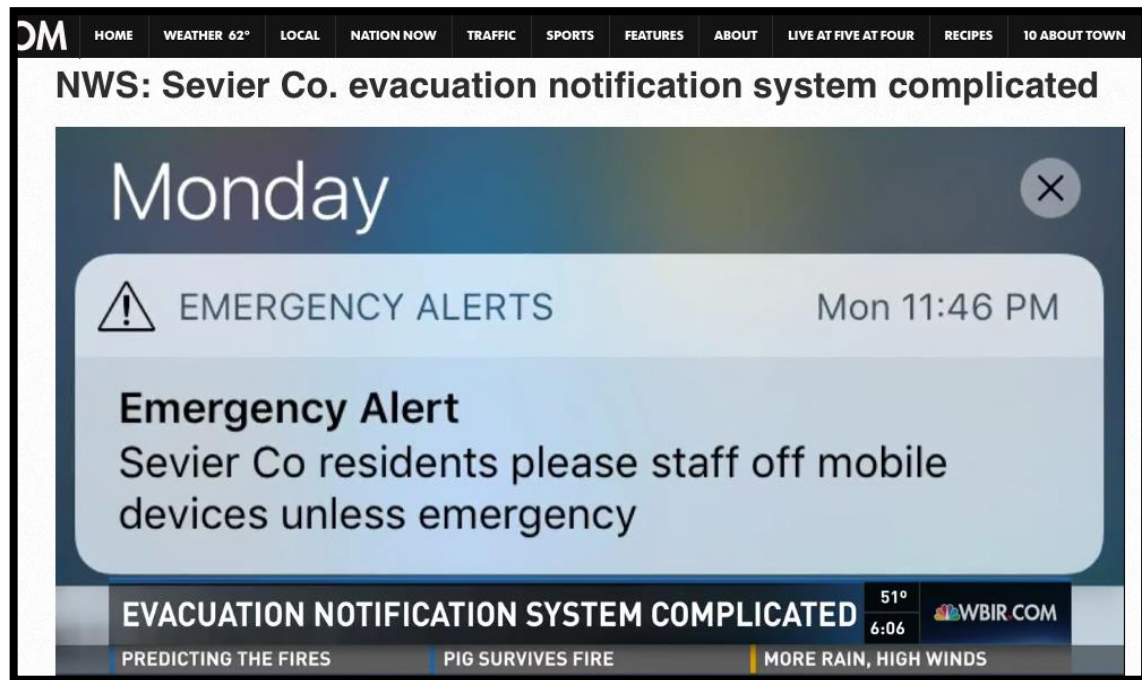
**Capable of waking up devices:** 4 levels of priority to prevent "nuisance alerts" to avoid the "Cry Wolf" problems.

**Non-Grid Dependent reception:** Battery-powered mobile devices are rechargeable in-cars, portable batteries etc.

**Encryption enabled:** Digital TV signals can simultaneously send public alerts while sending specially encrypted video and other data feeds to first responders and emergency managers.

# Gatlinburg Alerting Failure: A Problem We Can Solve



"If you tell people to evacuate in 90 characters without giving them instructions, all you're going to do is make the situation worse."

# AWARN and ATSC 3.0 and First Responders

- Information can be encrypted and shared only with First Responders
- Information can be targeted from large groups to individuals – One to many!
- Information examples:
  Pics
  Maps
  Blueprints
  Video files
  Security cam video
  Hyperlinks
  Any digital file

# ATSC 3.0 is REAL!

February 23 2017

The Federal Communications Commission voted unanimously to allow broadcasters to voluntarily deploy the emerging "next-generation" television transmission standard known as ATSC 3.0.

# ATSC 3.0 is REAL!

"Imagine a world in which every consumer smartphone could serve as an over-the-air programming device,"

-FCC Chairman Ajit Pai – Feb 23 2017

# ATSC 3.0 is REAL!

## Robust – Verbose - Resilient

# ATSC 3.0 is ON the Air!

ON Air Testing has begun!

WRAL – Raleigh NC

Sinclair Broadcasting Group – Baltimore MD

Tribune Media Group – Cleveland OH

Korea will broadcast the 2018 Winter Olympics in 4k in ATSC 3.0!

More just around the corner!

# This is not a "Cold Start" - Products in use today

**Datacasting is available today!**

**Core Architecture for:**

- **Data management services**

- **Content management**

- **Emergency alerting services (CAP IPAWS, multi Lingual)**


**TV Stations already have the basic aggregator in the form of the DASDEC & Triveni Equipment – 75%**

# First Generation of Products in Development
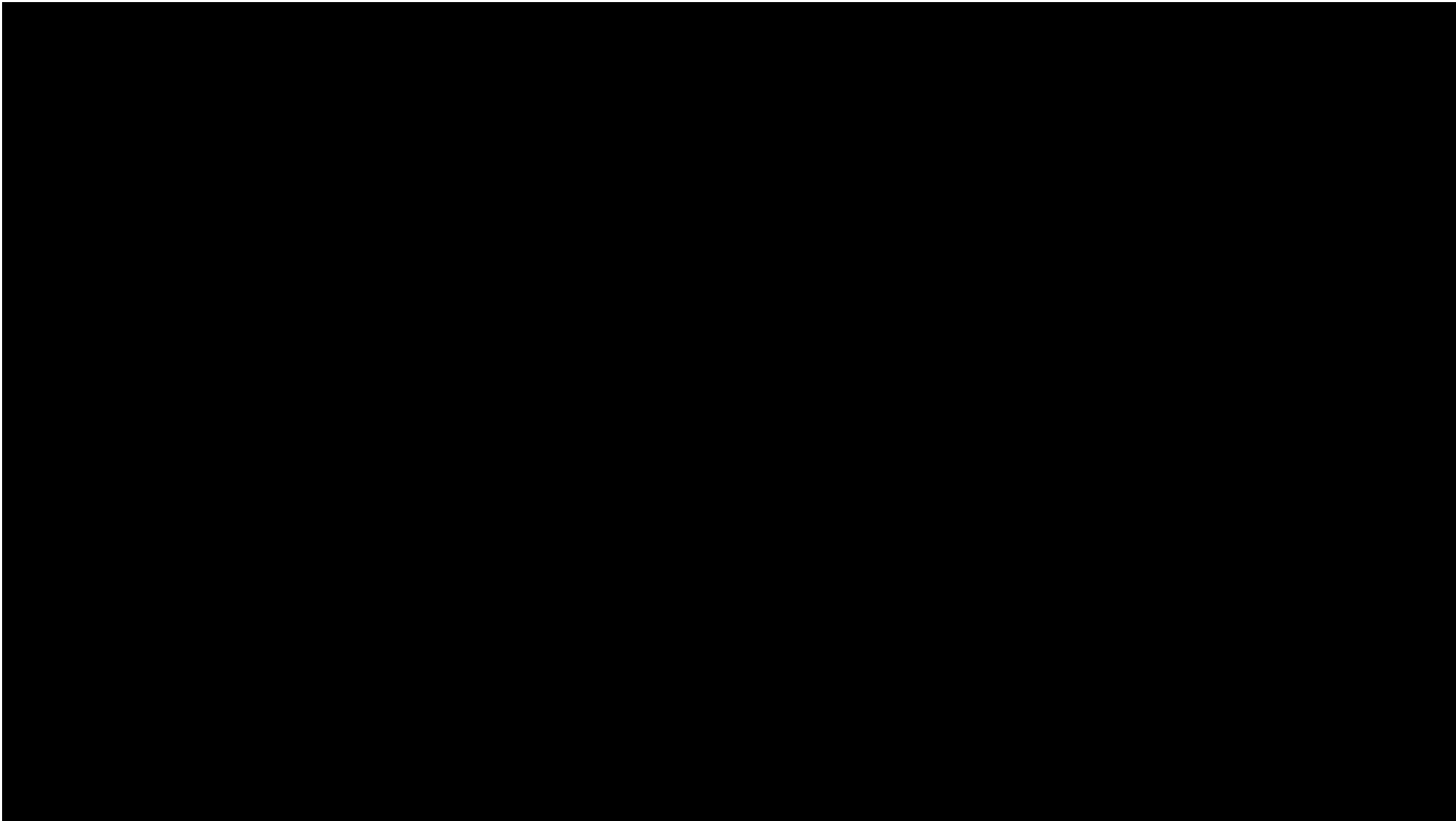
# UNC TV – and Public Broadcasting

**ADAM Woodlief**

**Director of Engineering Services UNC-TV Network**

# Public Safety  Partners

# Public TV and Public Safety initiatives

- Public Facing Messaging
- Encrypted Targeted Messaging
- EAS backup initiatives
- Trunk radio monitoring
- Paging improvements for 911

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# Coming soon – Active Shooter Demonstration

## Public Alert

- Message
  - Run, Hide, Fight
  - Silence cell phones
- Multilingual
- Icons/pictures
- Photo of suspect (if available)
- Assemble point/location information

## Encrypted First Responder Communications

- Building blue print
- Surveillance camera images
- Description of weapons
  - From witness reports
  - From CCTV footage
- Drone Video from TV Station/First Responder field units
- Details of injured

# AWARN Alliance 2017

**Work Plan**

**Stand up user groups with public safety, Alliance members, AEA I-team**

**Support AWARN development at early ATSC 3.0 adopter stations**

**Distribute RFI to identify potential business/service models**

**Continue outreach to industry and public safety to build Alliance**

**Support FCC approval of ATSC 3.0 voluntary transmission during NPRM**

# AWARN Alliance 2017

**Needed research areas**

Social science of rich-media, interactive alerting

Inventory rich-media assets of alert originators

Align alert originator assets with ATSC 3.0 capabilities

Drive latency out of the alerting chain and purpose AWARN for EEW

# Thank You!

AWARN

John Lawson, Executive Director

AWARN Alliance

www.AWARN.org

JLAWSON@AWARN.ORG

(703) 347-7070

WRAL

Pete Sockett

Dir of Eng and Opn's

PSOCKETT@WRAL.COM

(919) 821-8573

UNC - TV

Adam Woodlief

Dir of Eng Services

AWOODLIEF@UNCTV.ORG

(919) 549-7251