Advanced Emergency Alerting: What, Why & How

A New Approach to Public Emergency Alerting Using ATSC 3.0

April 16, 2016

NAB Show 2016

Featuring GatesAir's

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Advanced Emergency Alerting
What, Why & How

A New Approach to Public Emergency Alerting Using ATSC 3.0

WHAT IS ADVANCED EMERGENCY ALERTING?

Advanced Emergency Alerting

- Next step in robust delivery of emergency information to the public

- Developing as core part of ATSC 3.0 using experience from work by the Mobile-EAS coalition and the ATSC M-EAS Implementation Team as demonstrated in numerous public venues

- An application using the robust capabilities that are part of ATSC 3.0....next generation DTV now in development

Opportunity for Broadcasters

- Provide a more robust and reliable public warning and safety information communications system….
….independent of cellular network congestion

- Leverage broadcaster's major role as public information provider with disaster-resistant facilities

- Offload data and video traffic during times of emergency to preserve LTE for what is does best… point-to-point voice communications

Opportunity for Broadcasters

- Enhance the stations brand for weather, essential information and public service in times of emergency
- Provide a pipeline for extensive information beyond simple text, for disaster preparation and aftermath in addition to acute warnings
- Create public policy support for transitioning to ATSC 3.0 and unlocking mobile devices for broadcast TV reception

AEA Features

- ATSC 3.0 and AEA designed to reach many types of receivers
    - Fixed, portable, mobile, handheld
- AEA provides robust-level wake-up signal for all types of receivers in "sleep" mode
- Alerting message delivered from stations EAS receiver/processor
    - Primary text alert message displayed as banner/crawl overlay on receiving device
    - Audio version of primary alert message plays on receiving device

AEA Features

- Alert messages are capable of targeting receivers in specific geographic locations
    - Receiver requires geo-location capability
- AEA supports delivery of multiple types of rich media content in support of enhanced alerting
    - File and stream based rich media including:
        - Weather radar, evacuation routes, live news and weather reporting, instructions for what to do
    - Content from stations news and weather services or from official agencies

AEA Features

- User guide provides alerted consumer with quick self directed access to all information

- All alert messaging and supplemental rich media content is versioned and sent with expiration timing to insure that the latest and most relevant content is accessed by the consumer

WHY DO WE NEED ADVANCED EMERGENCY ALERTING?

What Problem(s) Does It Solve?

We rely on cell phones to run our lives, but they tend to be useless—or at least far from useful—when we need them most.

- Bloomberg BusinessWeek

Aftermath of Boston bombing

Sandy's Toll on Telecom

Sandy Takes Out 25% of Cell Towers – LongIslandPress.com

Outages Expose Wireless Carriers' Backup Plans – The Wall Street Journal

Authorities said cell phone traffic was so heavy that it hampered their ability to respond to emergencies – *ABC News*

NYC TV broadcasters stay on-air during Sandy
— TV Technology

WEA's May Contribute to the Problem

"WEA's Are Too Short"

- 90-character WEA messages do not by themselves motivate people to take protective action.

- Instead, people rely on information provided by others, which can fatally delay response.

- The study showed a marked increase in the number of people who were checking broadcast media about a developing event once they received a WEA message.

    – Report prepared for the U.S. Department of Homeland Security by the National Consortium for the Study of Terrorism and Responses to Terrorism, January 2015

HOW IS ADVANCED EMERGENCY ALERTING IMPLEMENTED IN ATSC 3.0?
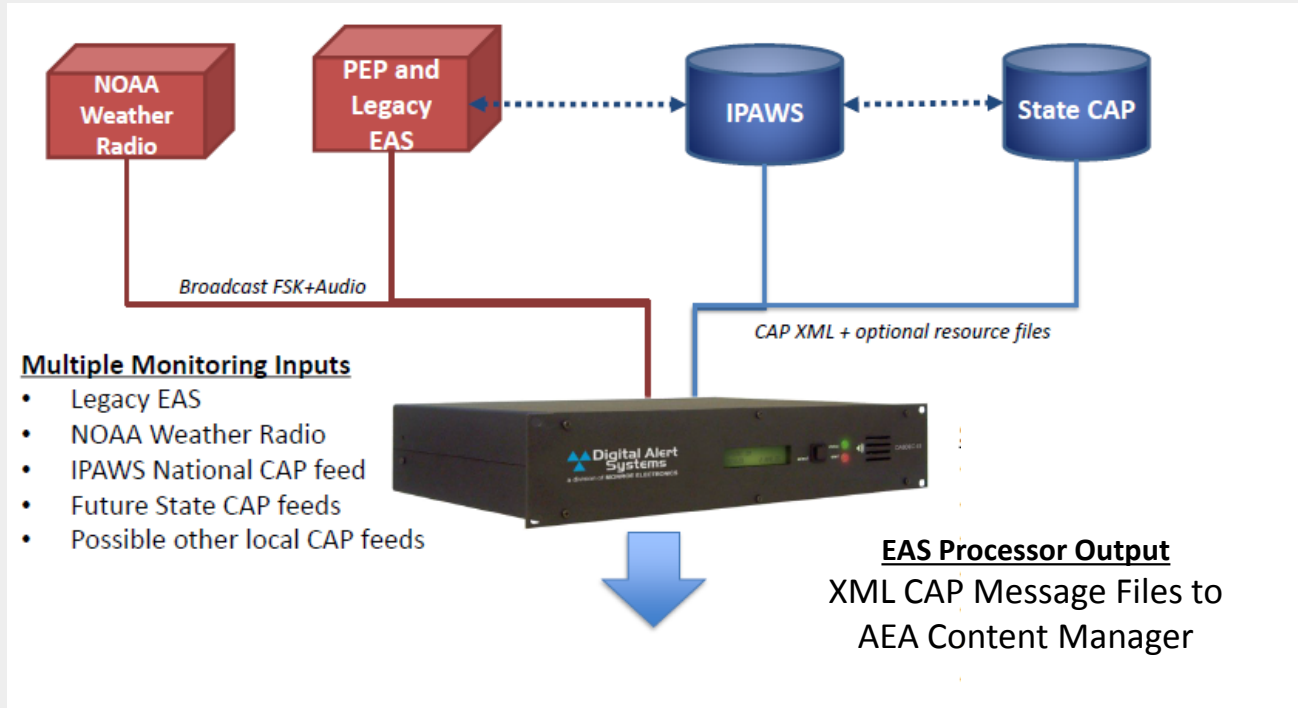
AEA Development Within ATSC

- Complete AEA ecosystem includes all ATSC 3.0 system layers

- Development Involves:

  - Specialist groups S32, S33, S34 and ad-hocs

  - TG3 Advanced Emergency Alert Focus Group

  - AEA I-Team

Wake-up Bits and Emergencies

- Emergency content can be delivered without a wake-up call (the broadcaster can determine whether the emergency merits a wake-up)
- Wake-ups can be dismissed by the viewer
  - Cycling through the wake-up bit settings enables the receiver to distinguish an old wake-up call from a new/updated wake-up
- When a wake-up call is present, there should be some emergency info that the device can present to viewer when it wakes up
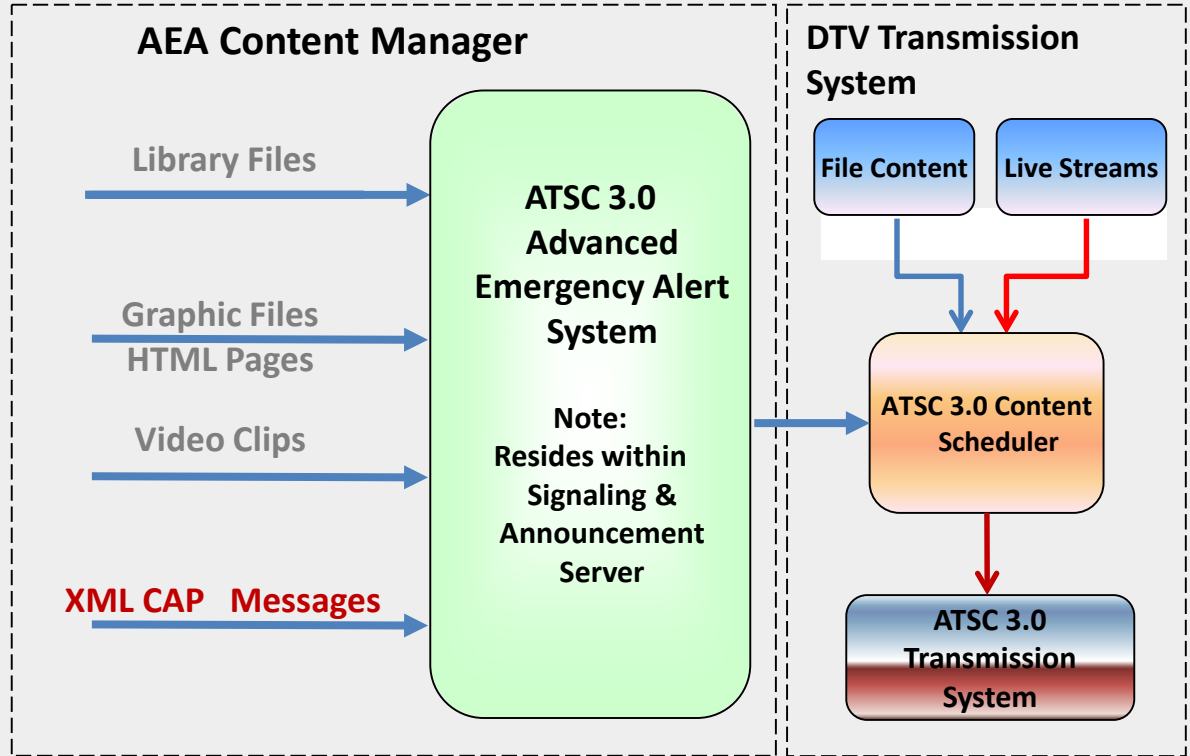
AEA SYSTEM OVERVIEW

AEA Alert Message Origination

NOAA Weather Radio

PEP and Legacy EAS

IPAWS

State CAP

Broadcast FSK+Audio

CAP XML + optional resource files

Multiple Monitoring Inputs
- Legacy EAS
- NOAA Weather Radio
- IPAWS National CAP feed
- Future State CAP feeds
- Possible other local CAP feeds

Digital Alert Systems
a division of MONROE ELECTRONICS

EAS Processor Output
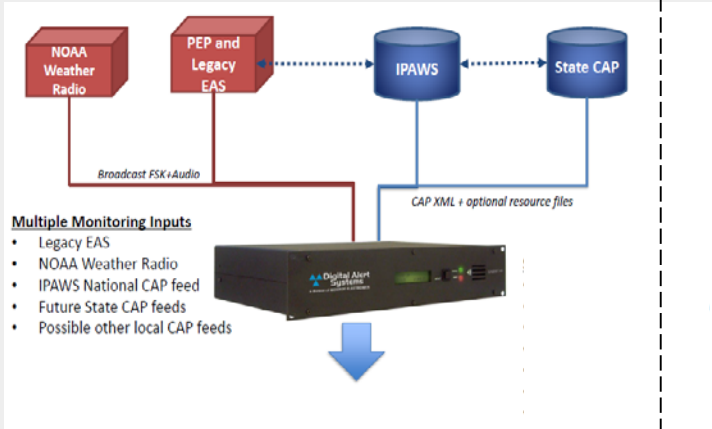XML CAP Message Files to
AEA Content Manager

AEA Content Manager

- Content Manager receives filtered and processed alert files from the EAS receiving device, facilitates the association of rich media content with various alert types and publishes content for transmission

AEA Content Manager

Library Files →

Graphic Files
HTML Pages →

Video Clips →

XML CAP Messages →

ATSC 3.0 Advanced Emergency Alert System

Note:
Resides within Signaling & Announcement Server

DTV Transmission System

File Content | Live Streams

ATSC 3.0 Content Scheduler

ATSC 3.0 Transmission System

AEA Content Sources

Alert Messages from Various Public Agency Sources

XML CAP Messages

AEA Content Manager

Library Files

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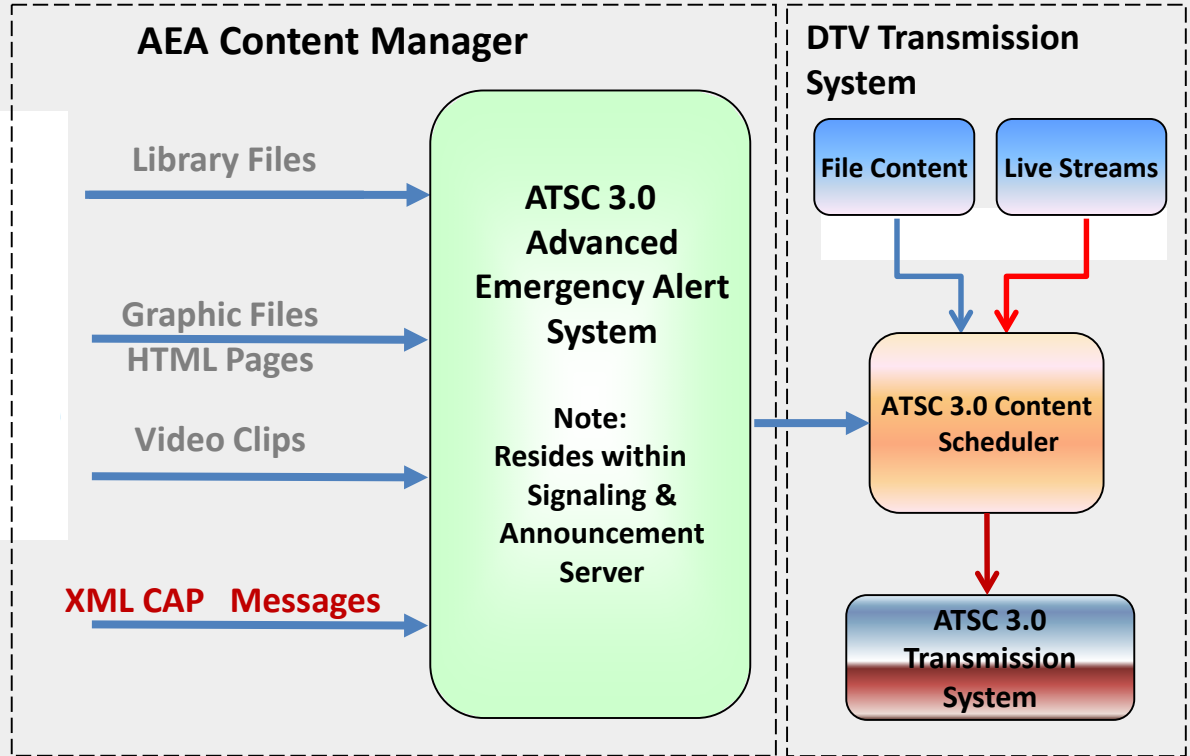
Alert Banner
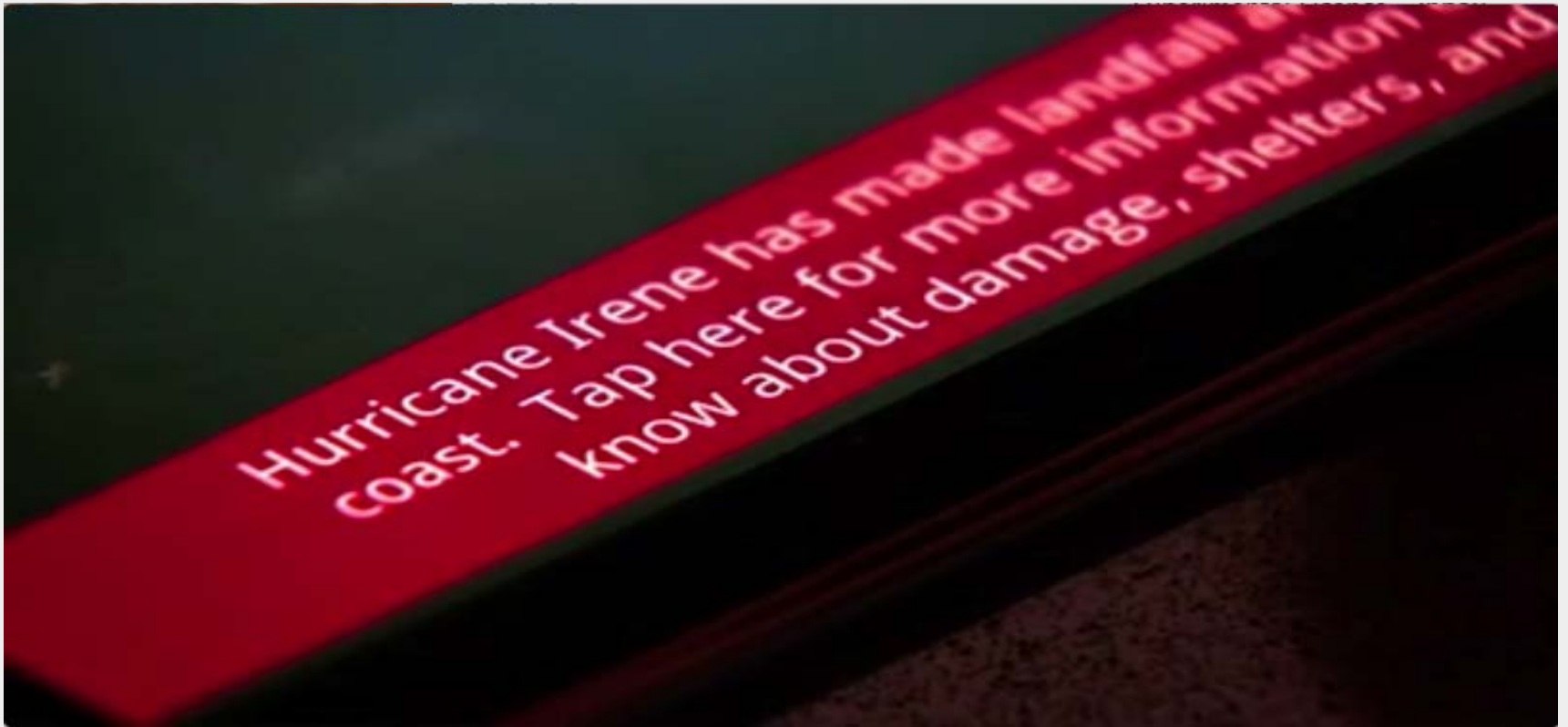
Rich Media Content Guide

AEA Content Sources

Video Clips from Various Sources

SNG

News Copter

Tower Camera

ENG

Traffic Cameras

Live Studio

AEA Content Manager

Library Files →

Graphic Files
HTML Pages →

Video Clips →

XML CAP   Messages →

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ATSC 3.0 Content Scheduler

ATSC 3.0 Transmission System
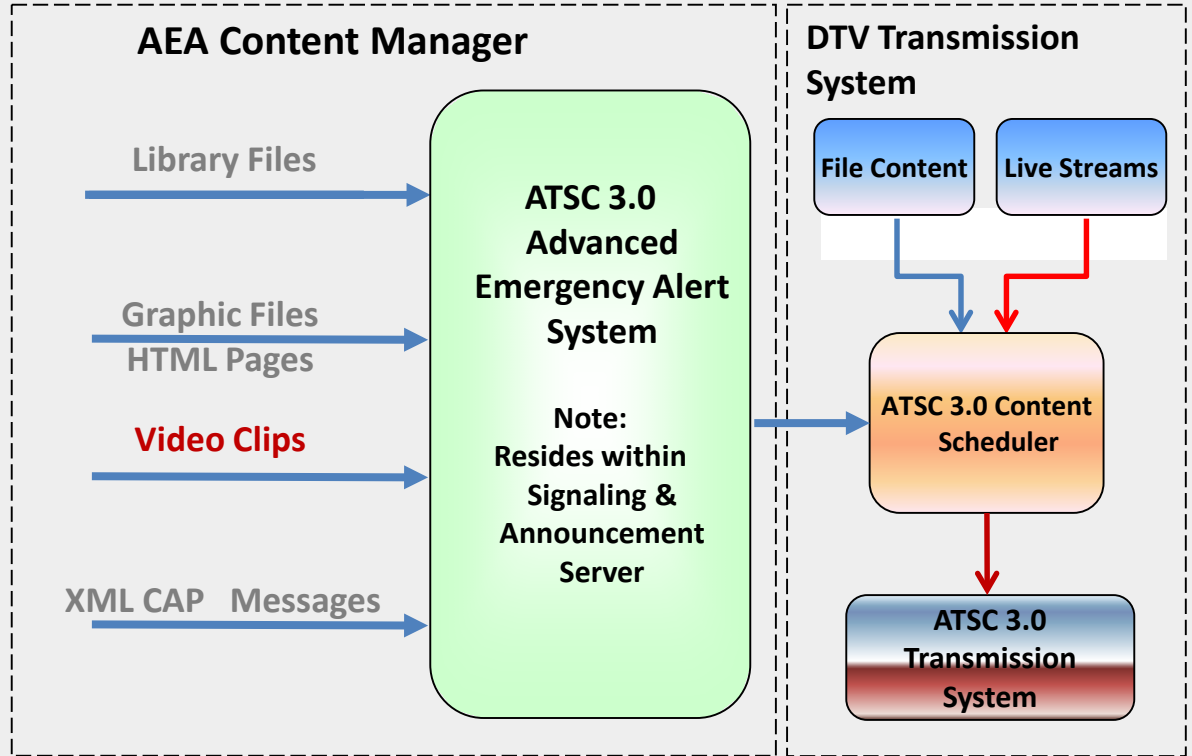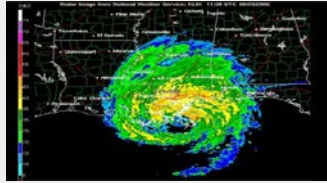
AEA Content Sources

Graphic Content Files from Local or External Sources

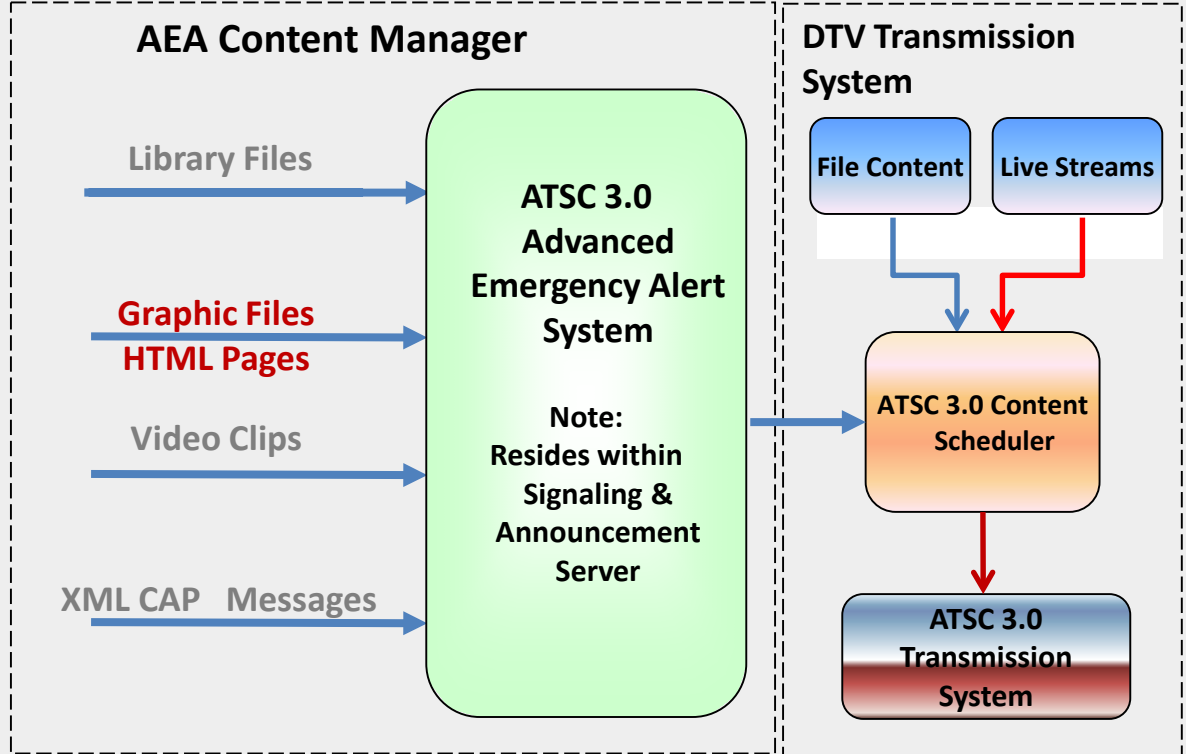

Weather Radar Systems

TV Station Graphic Systems

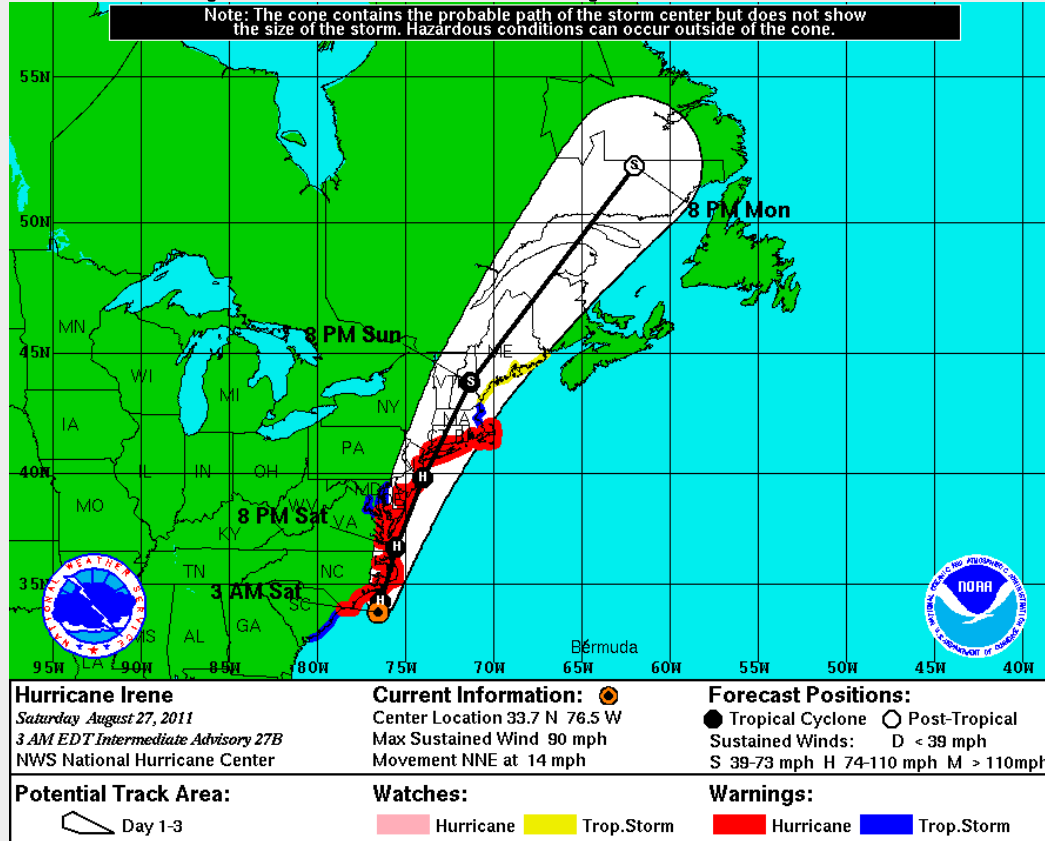Hyperlinks to Internet Content

Electronic Still Camera

AEA Content Manager

Library Files →

Graphic Files HTML Pages →

Video Clips →

XML CAP   Messages →

ATSC 3.0 Advanced Emergency Alert System

Note: Resides within Signaling & Announcement Server

DTV Transmission System

File Content   Live Streams

ATSC 3.0 Content Scheduler
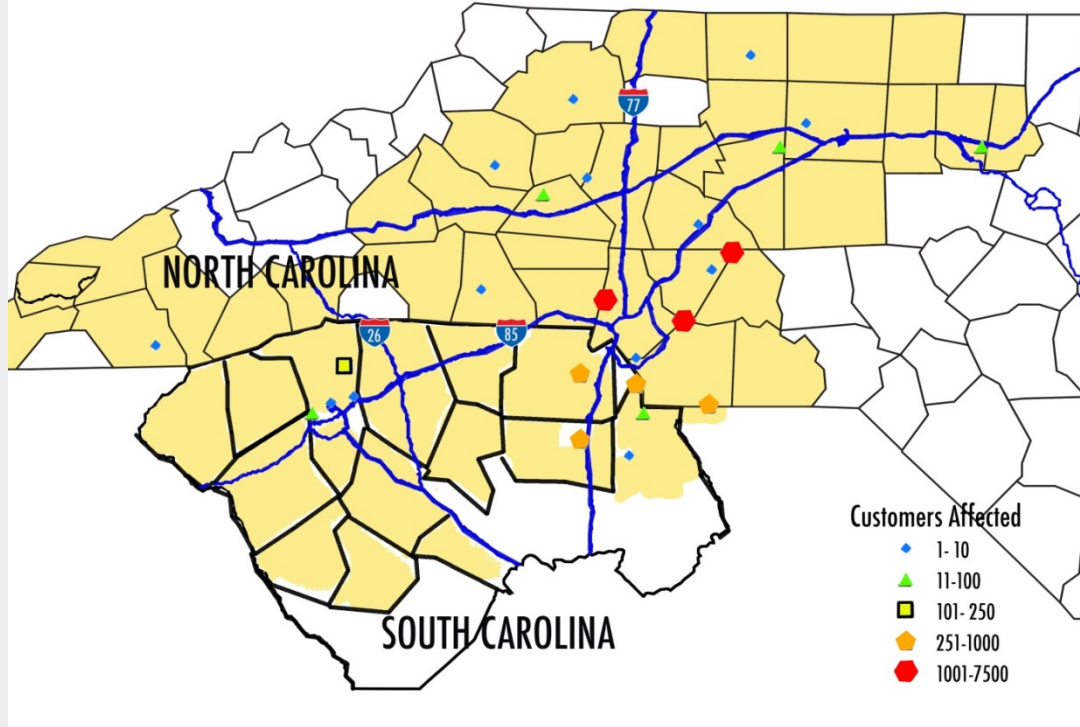
ATSC 3.0 Transmission System

Example of Graphic Content

Example of Graphic Content

Duke Progress Energy North Carolina Service Outage Information
Click on the map for a detailed view.

NORTH CAROLINA
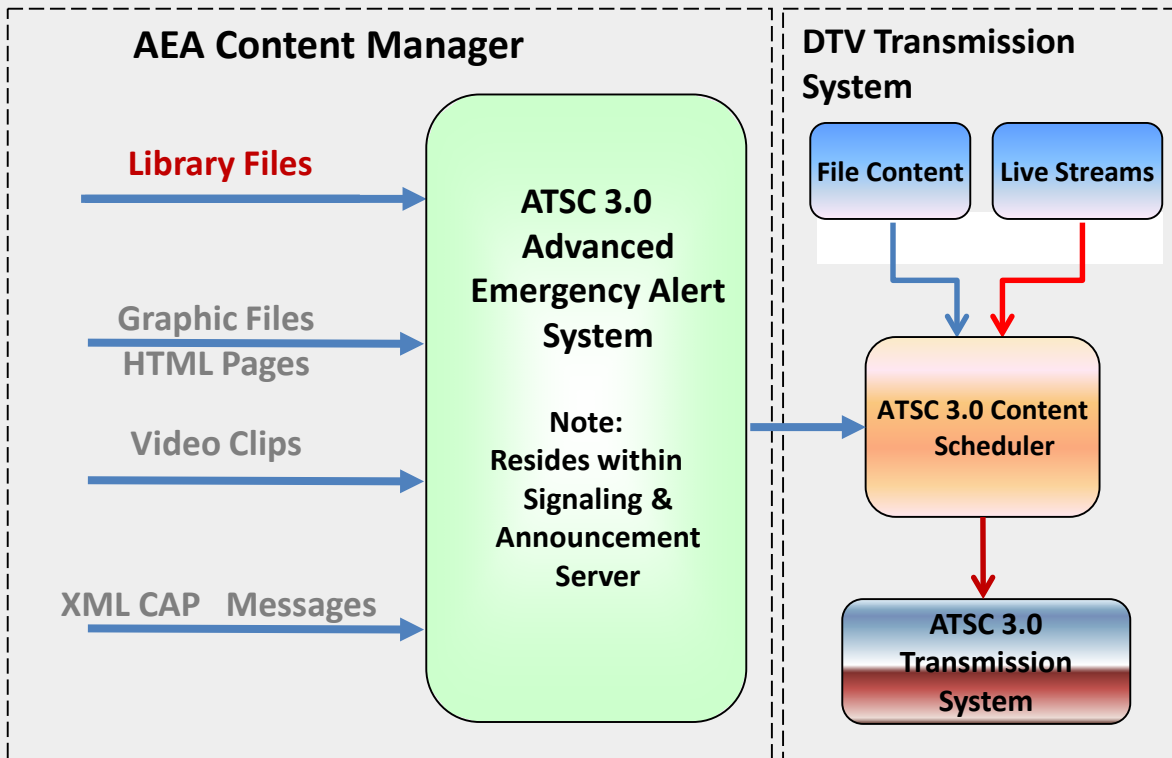
SOUTH CAROLINA

Customers Affected
- ◆ 1- 10
- ▲ 11-100
- ▢ 101- 250
- ⬠ 251-1000
- ⬡ 1001-7500

AEA Content Sources

Prepared and Archived Rich Media Alert Supporting Content

EXAMPLES

What To Do In Preparation For A Specific Type of Emergency

Evacuation Route Maps

How To Recover After An Event

AEA Content Manager

Library Files

Graphic Files
HTML Pages

Video Clips

XML CAP   Messages

ATSC 3.0 Advanced Emergency Alert System

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DTV Transmission System

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ATSC 3.0 Content Scheduler

ATSC 3.0 Transmission System

Example of Archived Content

North Carolina Hurricane Evacuation Routes

Road To Implementation

- Complete standardization of all elements within ATSC 3.0

- Develop expected receiver response criteria… CEA Receiver working group with input from ATSC

- Engage public alerting constituents including FCC, FEMA, NOAA….I-Team, NAB, APTS, Broadcasters

AEA – Learn More

- AWARN website: www.awarn.org
- Join the ATSC AEA I-Team [Jay.Adrick@gatesair.com]
- At NAB Show – Demonstration at Futures Park South Hall

QUESTIONS?