AUDIO DISTRIBUTION

AND IT'S IMPACT ON SAFETY

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Lencore

INTRODUCTION

AUDIO DISTRIBUTION AND IT'S IMPACT ON SAFETY

AGENDA

Why Are We Here?	Evolution of Sound Masking Why It Matters	Underwriters Laboratories
How Did We Get Here?	Evolution of Paging	What is Mass Notification for Audio?
What is Audio Distribution for Commercial Space?	Audio Distribution and NFPA	Code Adoption

WHY ARE WE HERE?

How Did We Get Here?

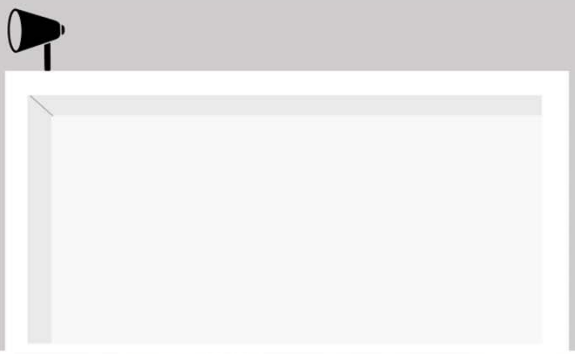
History of Lencore

Early Days of Paging & Sound Masking

AUDIO DISTRIBUTION

What Is It Used For?	How Does It Get Installed	Components Pieces
Controls and Maintenance	Paging – Audio (Muzak) – Sound Masking	

AUDIO DISTRIBUTION



SOUND MASKING

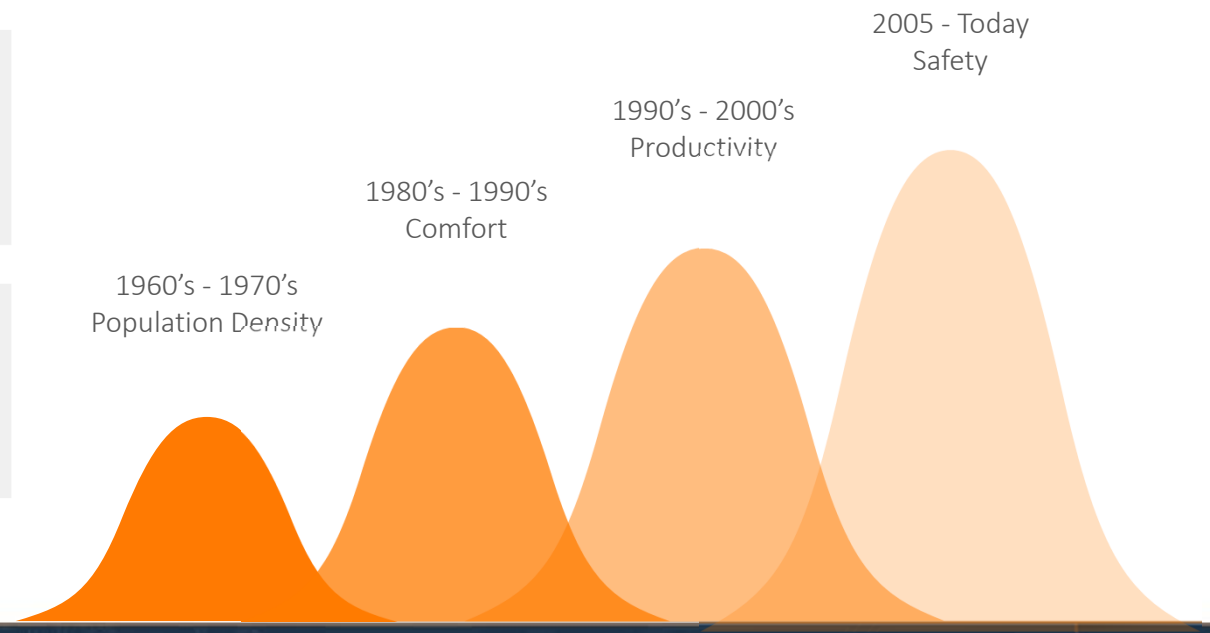
AUDIO DISTRIBUTION AND IT'S IMPACT ON SAFETY

EVOLUTION OF SOUND MASKING

Why It Matters?

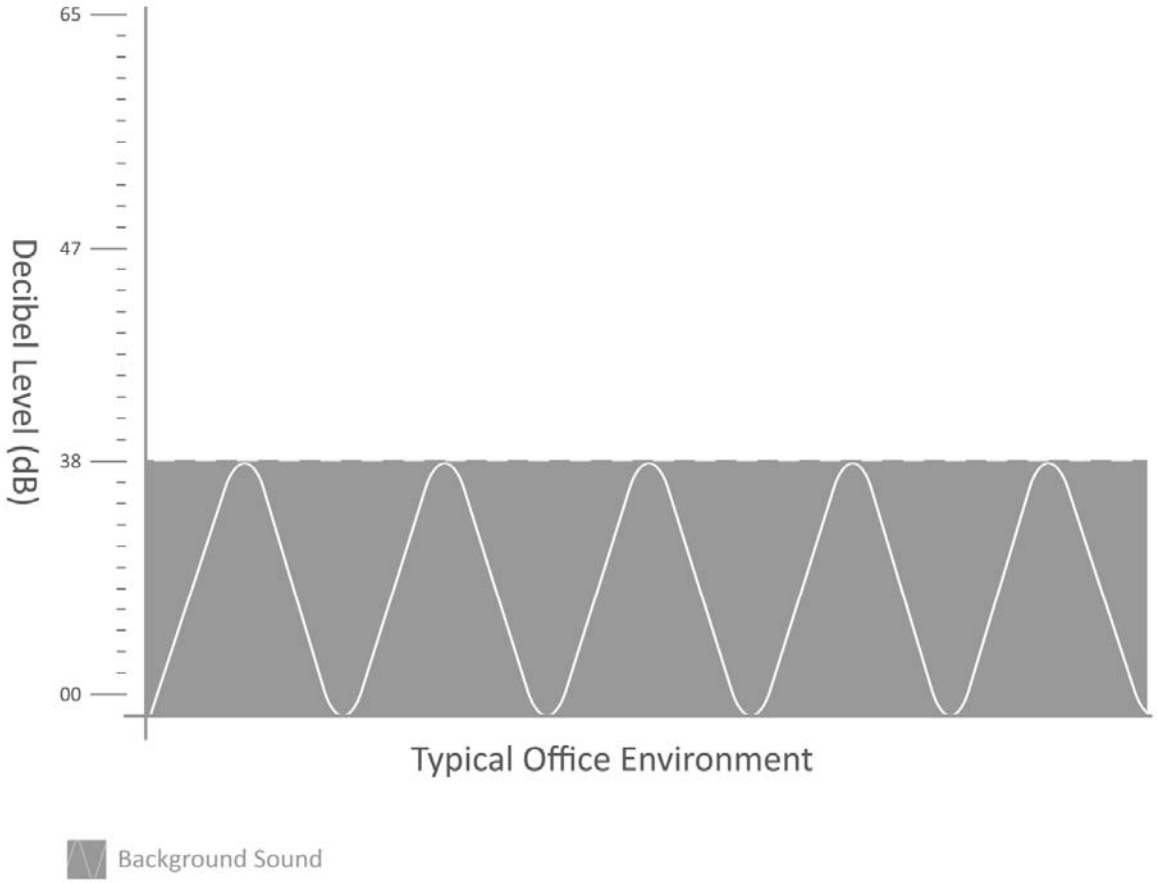
Acoustics in the Office

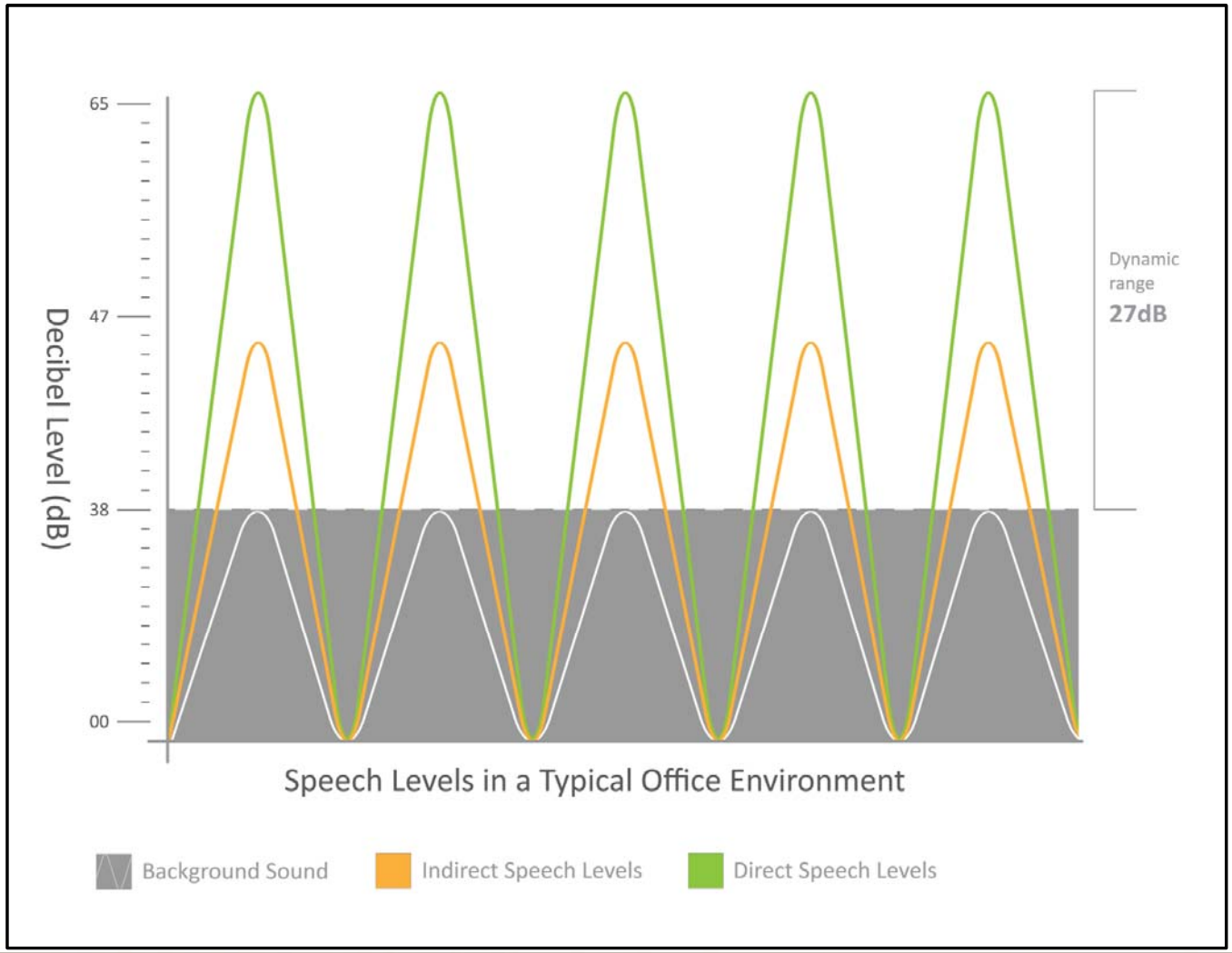
Why Do People Buy Sound Masking?



HOW DOES SOUND MASKING WORK?

AUDIO DISTRIBUTION AND IT'S IMPACT ON SAFETY


65
47
38
00
Decibel Level (dB)
Typical Office Environment
Background Sound


65
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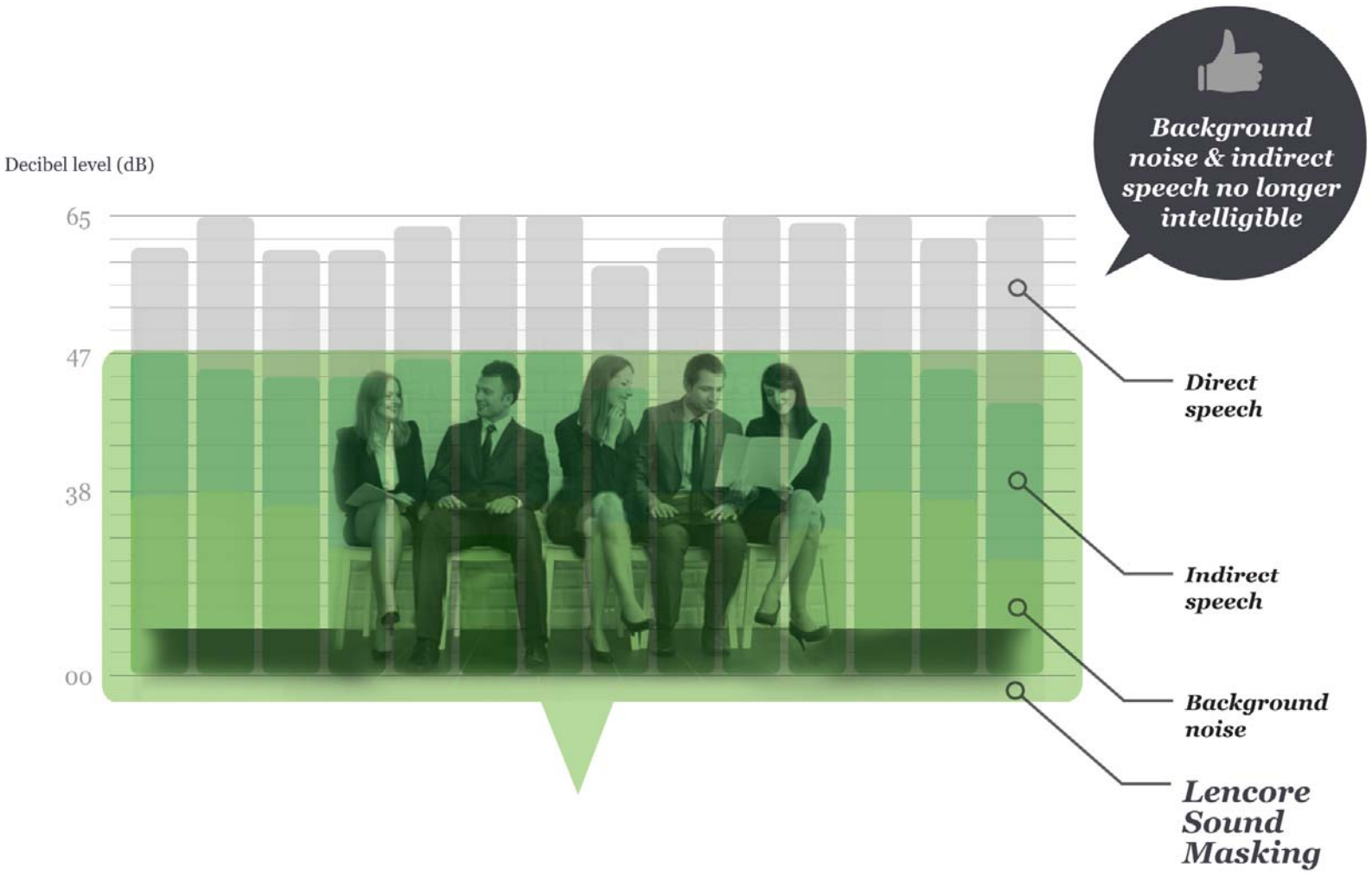
Decibel Level (dB)
Dynamic range
27dB
Speech Levels in a Typical Office Environment
Background Sound
Indirect Speech Levels
Direct Speech Levels


Decibel level (dB)
65
47
38
00
Background noise & indirect speech no longer intelligible
Direct speech
Indirect speech
Background noise
Lencore Sound Masking

How Do We Make Speech Privacy Comfortable in the Real World?

UNDERSTANDING COMFORT

Audio Distribution and It's Impact on Safety

Origin of Sound
Good Wrap Around
Multiple Noise Sources
Uniformity of Sound
Tuning Flexibility

INDUSTRY STANDARD-ASTM E-1130

Measured by a Sound Meter

ACHIEVING PRIVACY

No Speech Privacy

Al of .05 or less

Normal Speech Privacy

Al of .2 or less

Confidential Speech Privacy

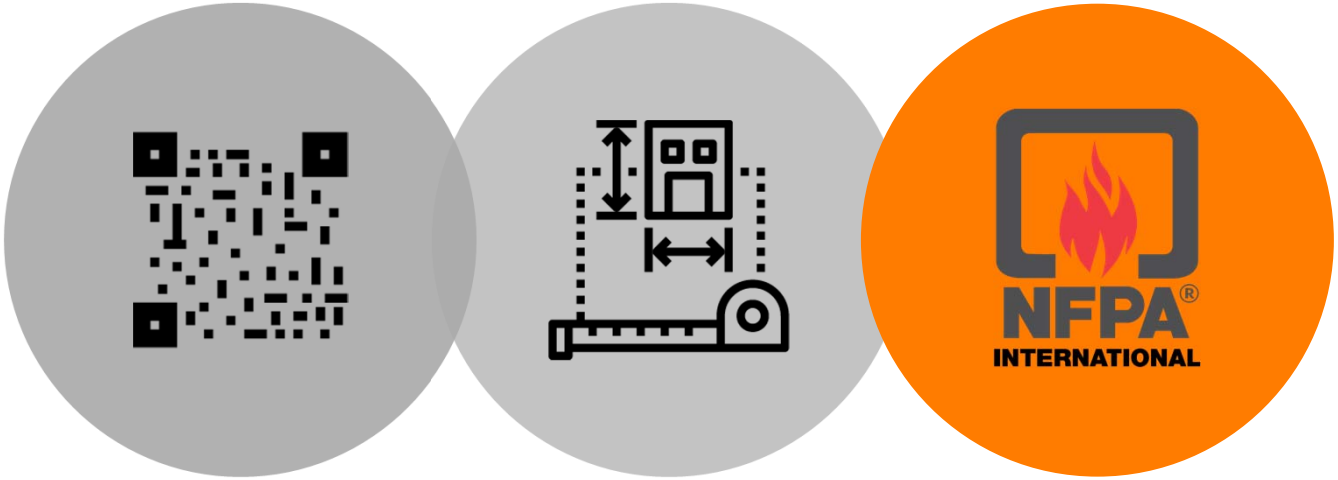
Al greater than .2

EVOLUTION OF PAGING

What Did Those Systems Look Like?	How Lencore Got Into the Paging Business
Networks	Control

SAFETY
AUDIO DISTRIBUTION AND IT'S IMPACT ON SAFETY

HOW WE MET NFPA

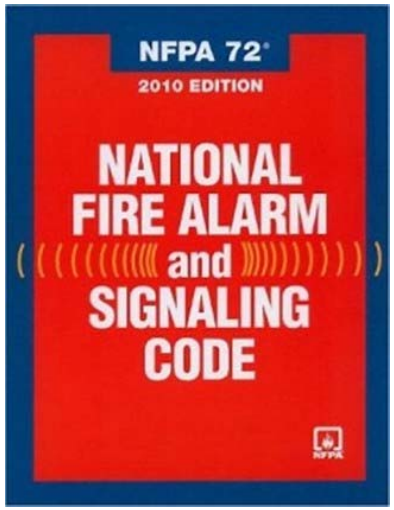


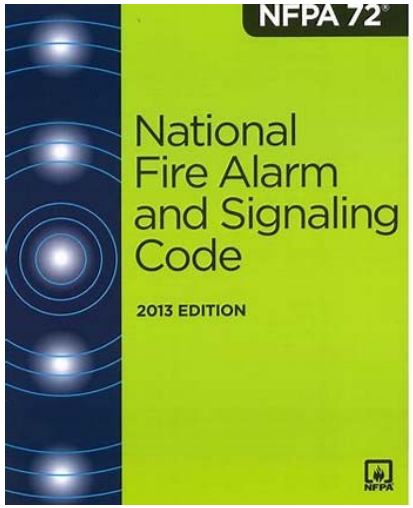
Before the Code…
Requirement to Mute the Sound Masking

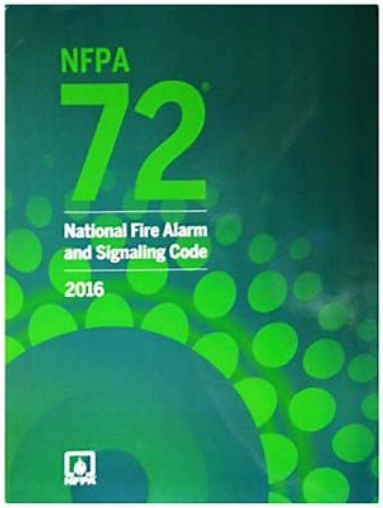
Look at the Audio Design

Align with NFPA

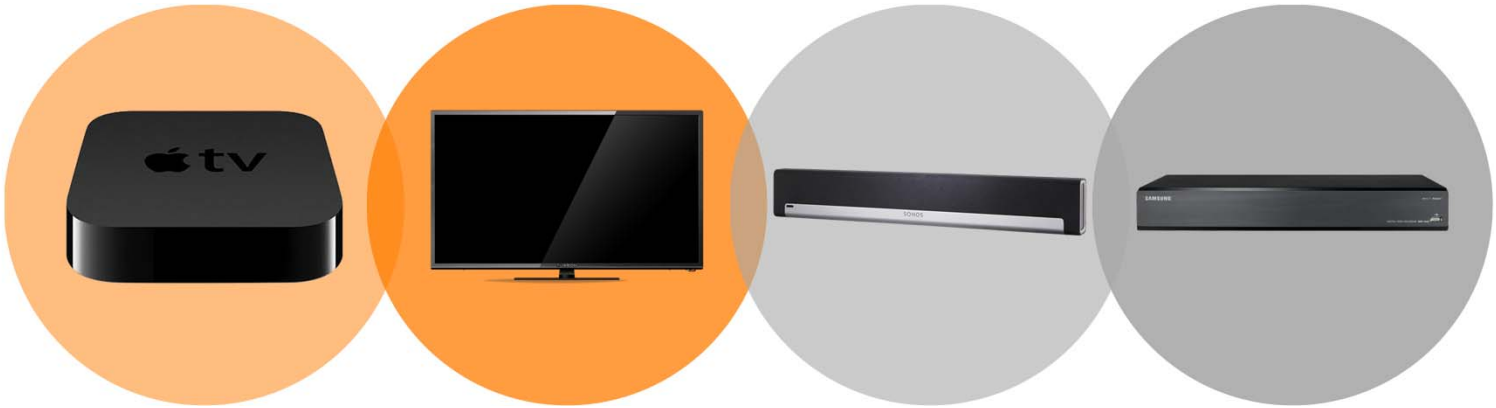
HOW WE MET NFPA







MEETING CODE AND STANDARD



APPLE TV HD TV SOUND BAR DVR

UL 2572

WHAT IS UL2572

UL 2572 is an equipment standard that sets the standards and criteria for how the control units for mass notification systems will be designed and tested. Not only will the control units be tested, but all of the peripheral supporting equipment that will be connected to the control units will be tested as a complete system.

SOME EXAMPLES OF TESTING CRITERIA FOR MEETING UL2572

- Mechanical construction
- Branch circuit protection
- Field wiring terminations
- Internal wiring
- Switches, relays
- Power supplies/UPS
- Leakage testing
- Jarring
- Dielectric breakdown
- RF interference
- Monitoring for integrity and Trouble signals
- Communication links
- Prerecorded messages
- Audio Harmonic distortion
- Variable Temperature/ Humidity
- Endurance testing
- Electrical transients
- Production line testing

WHAT IS UL2572

TYPICAL OPERATIONAL FEATURES
BETWEEN A MASS NOTIFICATION SYSTEM AND A FIRE ALARM SYSTEM

Use Case 1- Mute masking

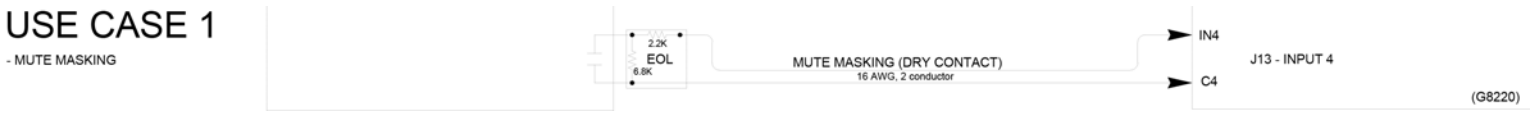
Use Case 2- Audio reinforcement

Use Case 3- Full FACP override control

WHAT IS UL2572

Use Case 1- Mute masking

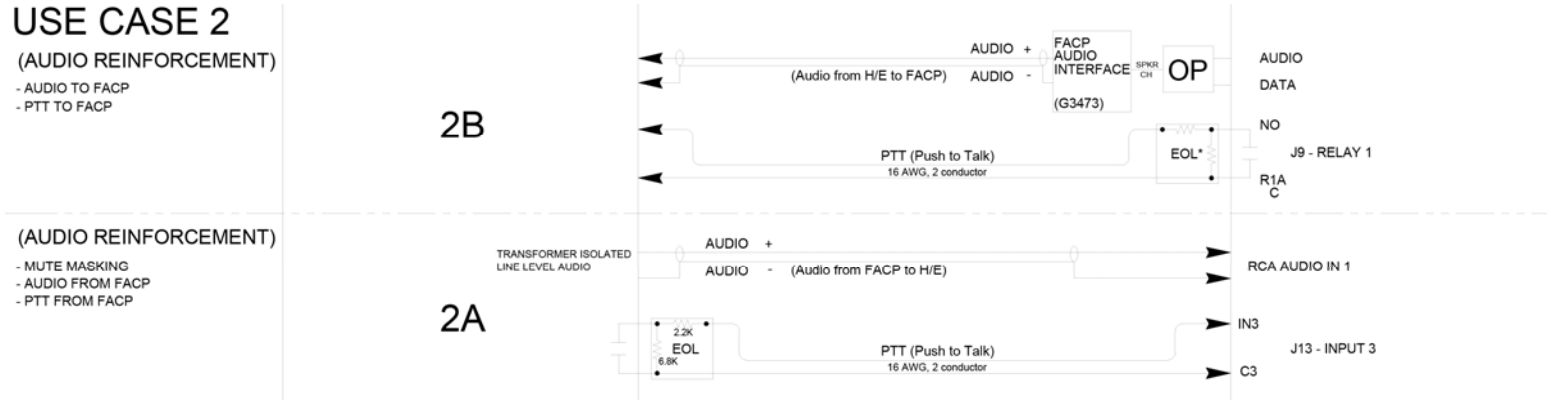
- Signal from the FACP will instruct the MNS to mute all masking to allow for better intelligibility of the FACP audio



WHAT IS UL2572

Use Case 2- Audio reinforcement

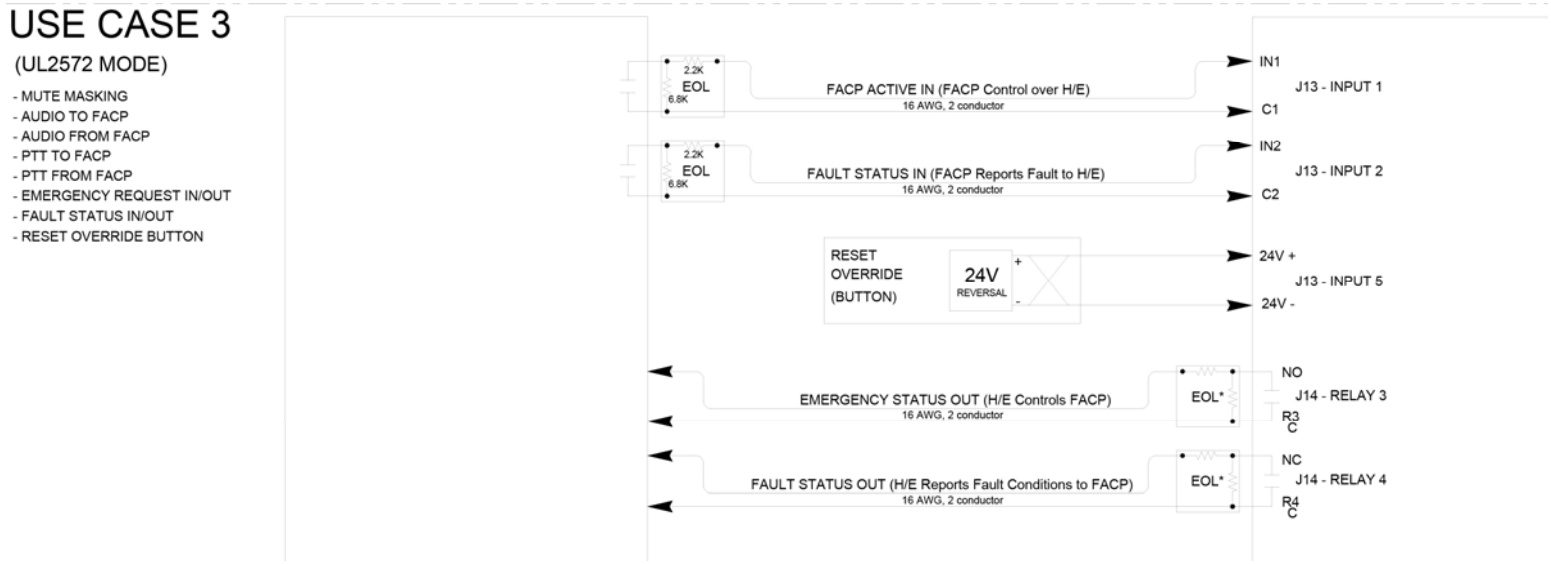
- Audio from FACP is reinforced by the MNS system
- Audio from the MNS is reinforced by the FACP. Typically in FACP override scenarios(Active Shooter).



WHAT IS UL2572

Use Case 3- Full FACP override control

- MNS emergency signals sent to FACP to shut down FACP actions
- FACP can still override the MNS
- Fault Sharing in both directions



ELIMINATION OF RISK AND CONFUSION
BY USING AND IMPROVING CODES AND STANDARDS

MEETING CODE AND STANDARD

MEETING CODE AND STANDARD

Round

Lever

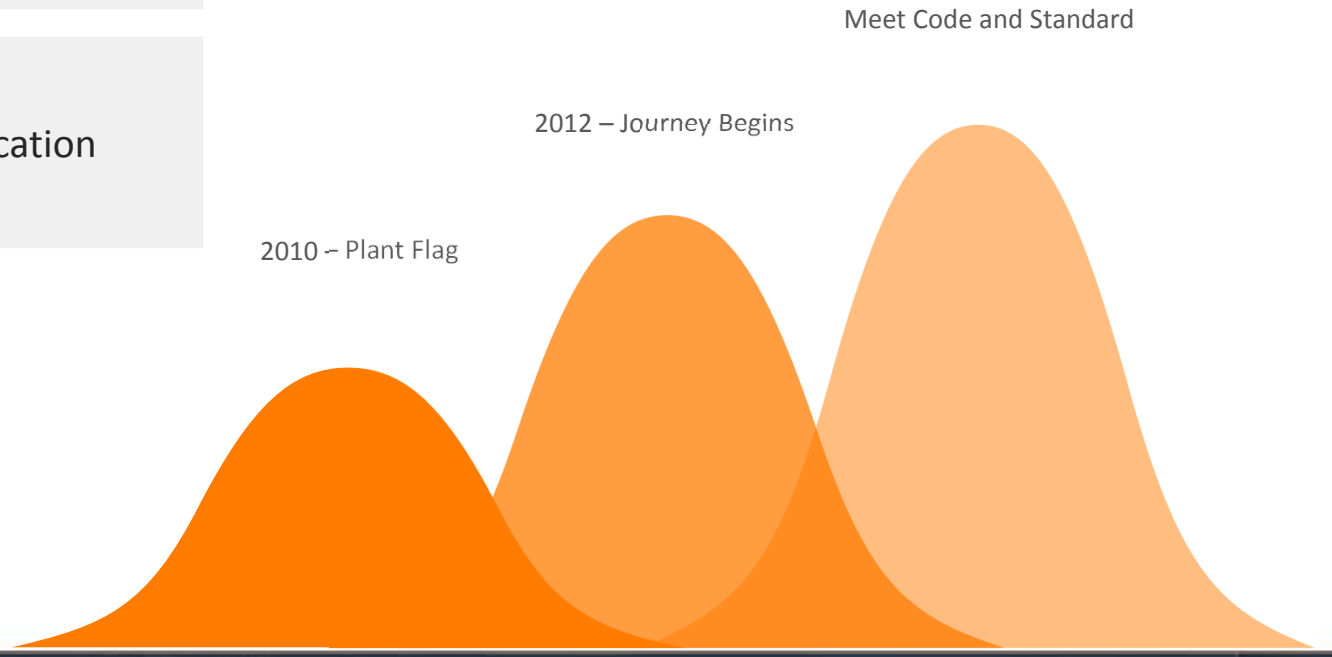
VALUE

AUDIO DISTRIBUTION AND IT'S IMPACT ON SAFETY

CREATING VALUE FOR
AUDIO DISTRIBUTION

Sound Masking

Mass Notification



NFPA 72

Audio Distribution and It's Impact on Safety

2018 BICSI Fall Conference & Exhibition

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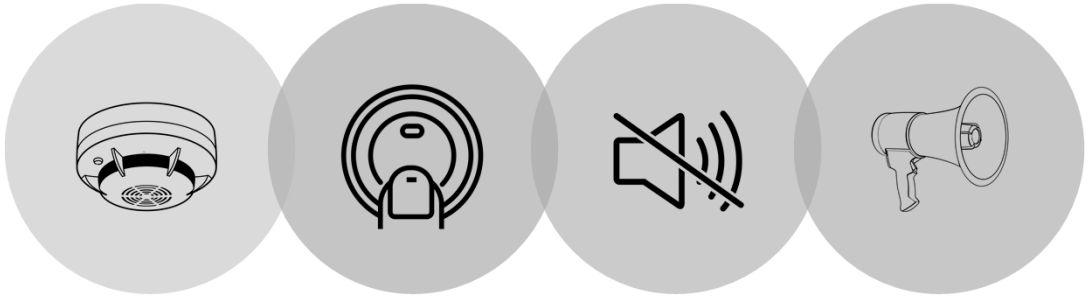
SEQUENCE FOR CODE



ALARM TURN OFF SILENCE ANNOUNCMENT

ONE AUTOMATIC
STEP TO MEET CODE

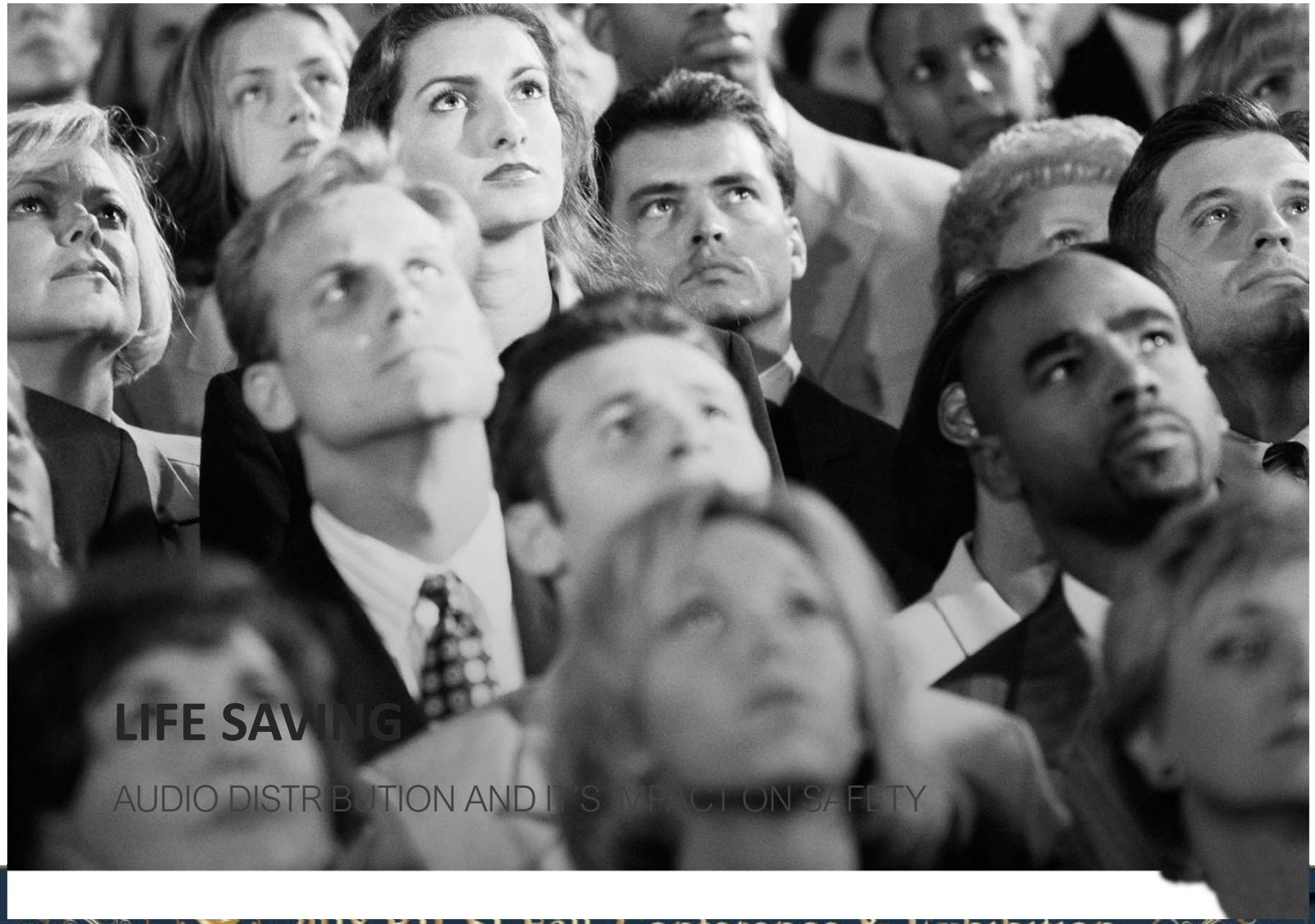
SYSTEM BUILD

AUDIO DISTRIBUTION AND IT'S IMPACT ON SAFETY

CODE ADAPTION

Risk Mitigation	Best Practice	Sustainable Ideas	Furthering NFPA's Role

Importance and Future of Safe Buildings

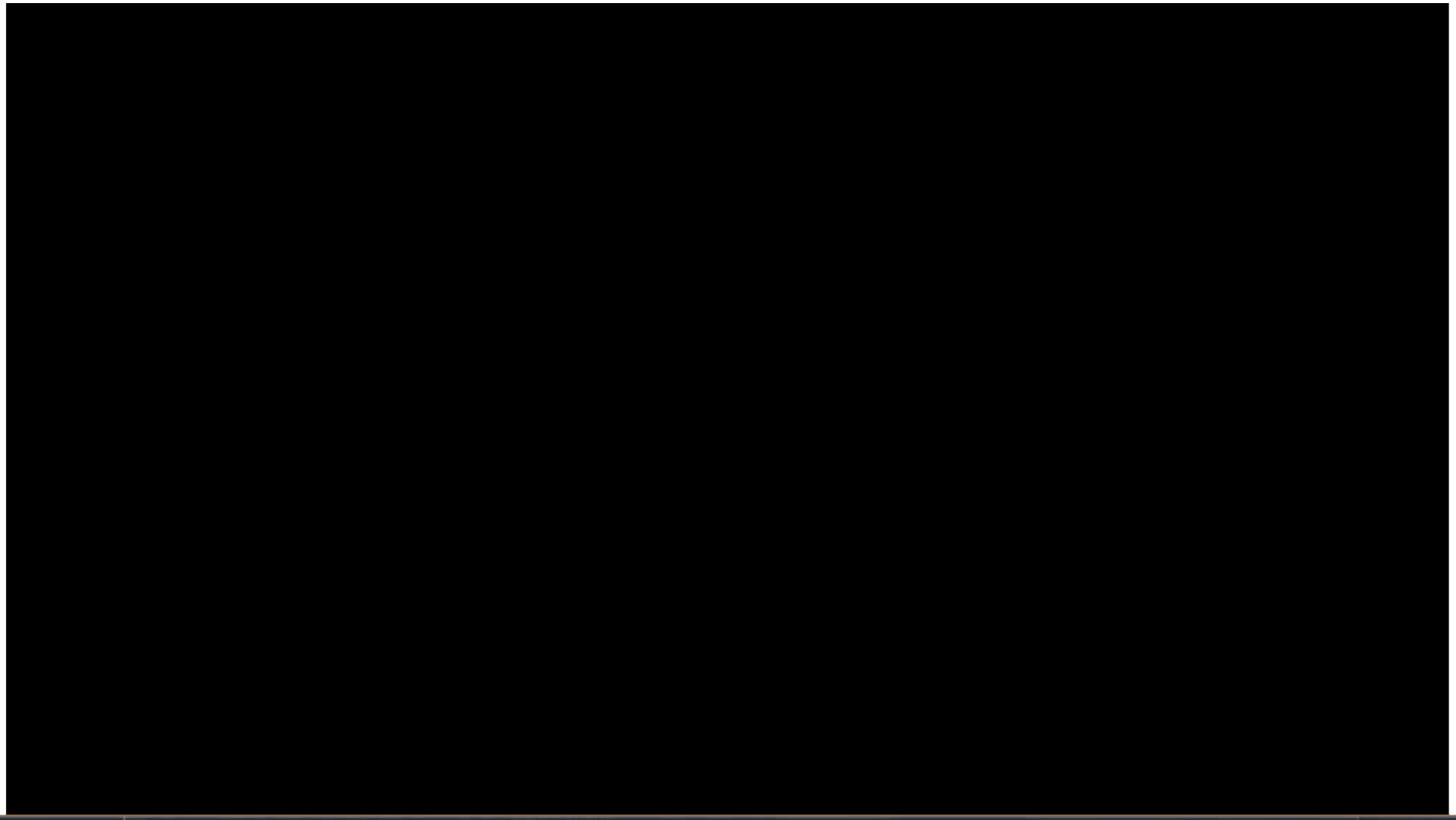

LIFE SAVING
AUDIO DISTRIBUTION AND ITS IMPACT ON SAFETY

CODE BODY

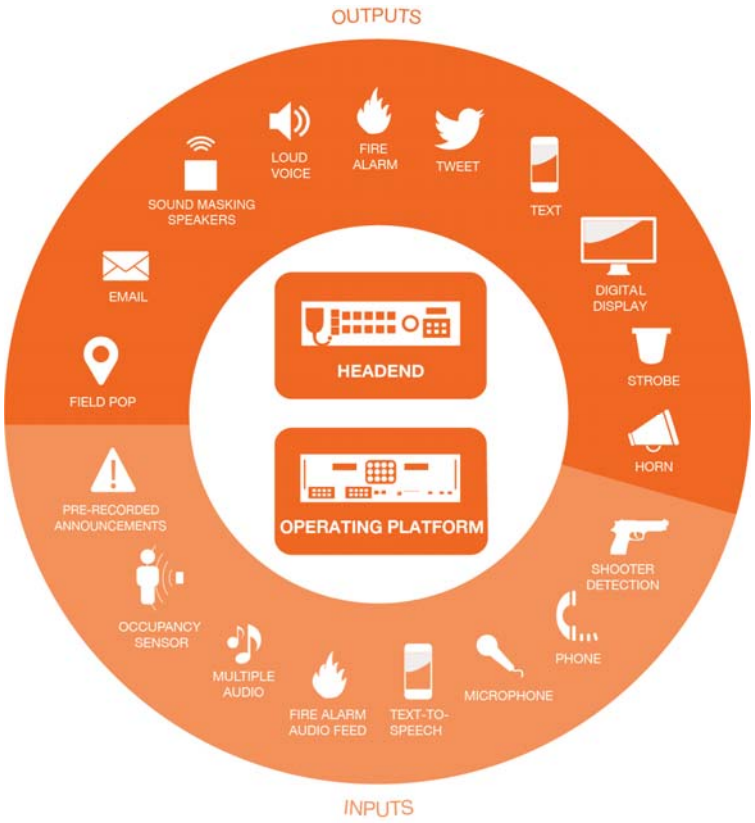
Audio Distribution	Mute Masking	Mass Notification
Codes and Standards	(Can’t Be a Code Body if Standards Don’t Matter)	

SYSTEM COMPONENTS

Headend | OP | Audio Interface | Field PoP



SYSTEM FEATURES



Q&A

PLEASE RAISE YOUR HANDS
FOR ANY QUESTIONS!