GASHE

Mass Notification Emergency Communications (MNEC)

For

Healthcare Facilities

Thomas E. O'Connor, SET

MNEC in Healthcare

Is it mandated yet? No
Will it be mandated? Maybe
Is it a good idea? You make the call

Healthcare MNEC

EDWARDS
A UTC Fire & Security Company

Healthcare facilities incorporate many types of communications to facilitate response to emergencies external to the facility. These communications establish the coordination of supplying medical assistance to incoming patients in the surrounding areas due to mass injuries from disasters natural and man made.

When the threat is immediate to the facility Internal communications, to administration, staff, patient and visitors is critical.

EST™
Life Safety & Communications

Introduction

- What is Mass Notification Emergency Communication
- When Is Mass Notification Emergency Communication Used
- Primary Function of a Mass Notification Emergency Communication System
- The Event that Produced the Need for a Mass Notification Emergency Communication System
- UL Standards for Mass Notification Emergency Communications
- NFPA 72-2010 Related to Mass Notification Emergency Communication
- Intelligibility VS. Audibility
- Sound Modeling Perspective
- EST's Mass Notification Emergency Communication Solutions
- Implementation Process Related to Mass Notification Emergency Communication

EST™
Life Safety & Communications

What is MNEC?

It is both a communications AND emergency management tool to provide **real-time instructions and information** to building occupants and visitors during an emergency

Understand the Current Situation, Communicate and Manage the Crisis

EST™
Life Safety & Communications

When is MNEC Used?

When there is a need to **communicate**
with all of the people in a building, campus or area.

EST™
Life Safety & Communications

What is not a MNEC?

EST™
Life Safety & Communications

Primary MNEC Function …

To ***notify*** people in a building, on a campus or a geographic area about an event …

- What is **happening**
- What to **do**
- Where to **go**
- When it is **safe**

Different than Fire Alarm System

EST™ Life Safety & Communications

The Beginning

MNEC Progression

- June 25, 1996 Terrorism
- Post Incident Report -97
- Military Response –99
- Code compliance Issues
- NFPA 2003
- Unified Facility Criteria
- UL 2572

Edwards has first UL 2572 listed MNEC system (listing granted 6/2/09)

Khobar Towers
Dhahran, Saudi Arabia

EST™
Life Safety & Communications

MNEC Progression

UFC 4-021-01
DRAFT 20 September 2006

UNIFIED FACILITIES CRITERIA (UFC)

DESIGN AND O&M:
MASS NOTIFICATION SYSTEMS

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

EST™
Life Safety & Communications

Jeanne Clery Act

The Clery Act, originally enacted by the Congress and signed into law by President George Bush in 1990 as the **Crime Awareness and Campus Security Act of 1990**

Higher Education is required under the Act to provide "timely warnings" to students

UL Standards

UL 2572 (January 2010) “Control and Communication Units for Mass Notification/Emergency Communication (MNEC) Systems”

- Defined system interfaces; different systems with this listing must operate together on a similar protocol
- Equipment standards similar to UL 864 9th Edition
- New circuit type – “Communication Link” (Ethernet) defined in NFPA 72-2010 24.4.3.4.11
- Communication (Ethernet) standards
  - Virtualization
  - Encryption
  - Overall performance
  - Includes Internet connections
- Distributed Recipient Mass Notification System (DRMNS) – used to communicate to target individuals or groups

UL standards council issuance – July 31, 2009

EST™ Life Safety & Communications

Underwriters Laboratories

NFPA 72-2010

Title of NFPA 72 has changed to encompass MNEC

“National Fire Alarm and Signaling Code”

- Massive reorganization
  - 11 Chapters in 2002/7 to 29 Chapters in 2010
- Many new definitions
  - 3.3.143 **Mass Notification Priority Mode**. The mode of operation whereby fire alarm occupant notification is superseded by emergency notification action
  - 3.3.2 **Acoustically Distinguishable Space** - ADS
    - ✓ Not all ADS will require intelligibility
    - ✓ Intelligible voice within ADS determined by designer and AHJ (DoD required)
- Chapter 12 – Circuits and Pathways
  - Classes A, B, C, D, E and X
  - Levels 0-3 (survivability)
- Chapter 24 – Emergency Communications Systems (ECS)
- Annex D – Speech Intelligibility

EST™ Life Safety & Communications

NFPA®

NFPA 72 2010 Basic Changes

- Permits a mass notification control unit to take control of fire alarm notification appliances including amplifiers, speakers, and strobes
- Strobes used for dual purposes shall not be marked 'FIRE', strobes to be blank or 'ALERT'
- System has to latch in MNEC mode once activated
- MNEC does NOT interfere with any other life safety functions other than Public Mode notification
- Support CCS, ACU & LOC with operational priorities
  - **CCS** – Central Control System (Main "Head End" for campus/base)
  - **ACU** – Autonomous Control Unit (Individual Building "Main" panel – usually combined with FACP)
  - **LOC** – Local Operations Center – Alternate/Redundant Audio control
- Operation of MNS system is based on the emergency response plan
- Visual notification to be completed through strobes, textual, graphic or video displays

NFPA 72 2010 becomes effective October 2010 adoption by state soon

EST™ Life Safety & Communications

Intelligibility

EST™
Life Safety & Communications

Intelligibility vs. Audibility

- **Audibility** – how loud is the sound
  - Simple to test
  - Design goal for fire alarm audio systems for a long time
- **Intelligibility** – understanding what is said
  - Not so simple to test
  - Design goal for the future

Speech Measurement

Common Intelligibility Scale (CIS)

- 0.7 or higher usually passing

Speech Transmission Index Public Address (STIPA)

- 0.5 or higher usually passing

EST™ Life Safety & Communications

Intelligibility Findings

- Although intelligibility testing is recommended for all applications, the following conditions lend themselves to minimal testing:
  - Distance listener to speaker less than 30 feet in the room (assuming proper audibility and low reverberation)
  - Ambient sound level is less than 50 dBA and the average level of the voice message is 10 – 15 dBA “fast” greater.
  - No appreciable hard surfaces (e.g. glass, marble, tile, metal, etc)
  - No appreciable high ceilings

- Methods to correlate unoccupied STIPA readings and occupied ambient readings proved to be problematic.

- Space should be acoustically designed by individuals having skills sufficient to properly design a voice/alarm system for the occupancy to be protected. There is commercially available computer modeling software available and reports generated are acceptable to AHJ.

EST™
Life Safety & Communications

Measuring Intelligibility

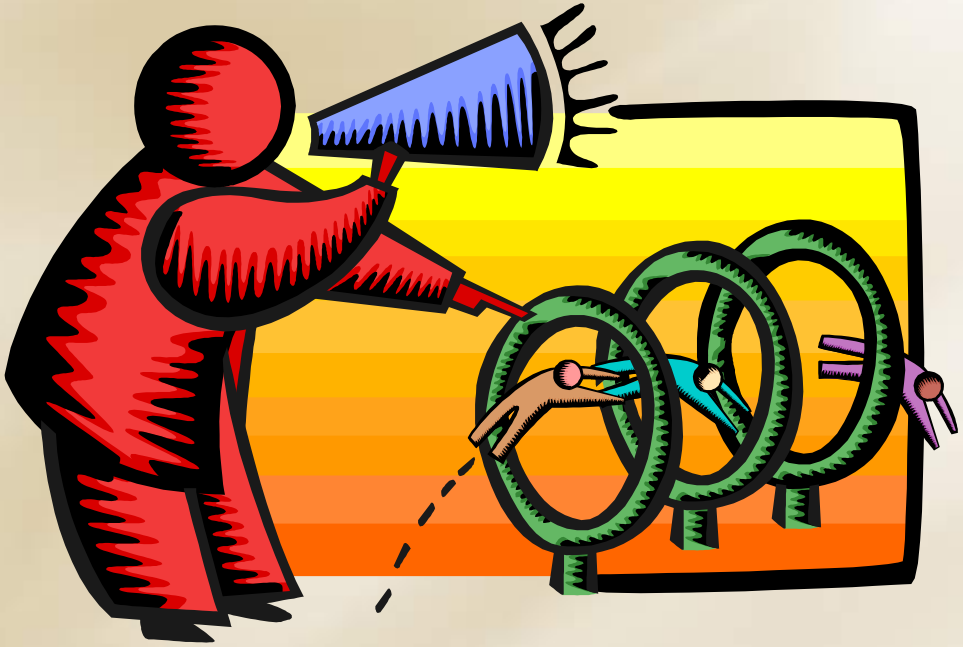
DSP30B Meter

TalkBox (Source)

EST™ Life Safety & Communications

GOLD LINE MANUFACTURED IN U.S.A. SINCE 1961 TEF

EST Event Management Solution

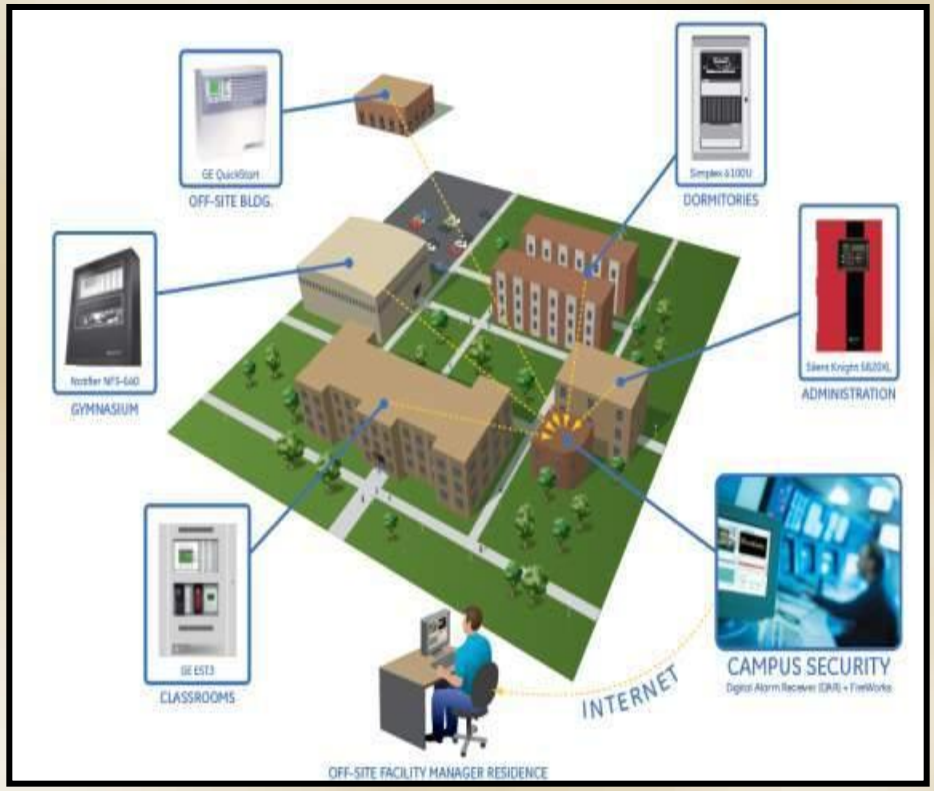


EST™
Life Safety & Communications

Mass Notification Emergency Communications

EST™
Life Safety & Communications

EST Event Management Solution



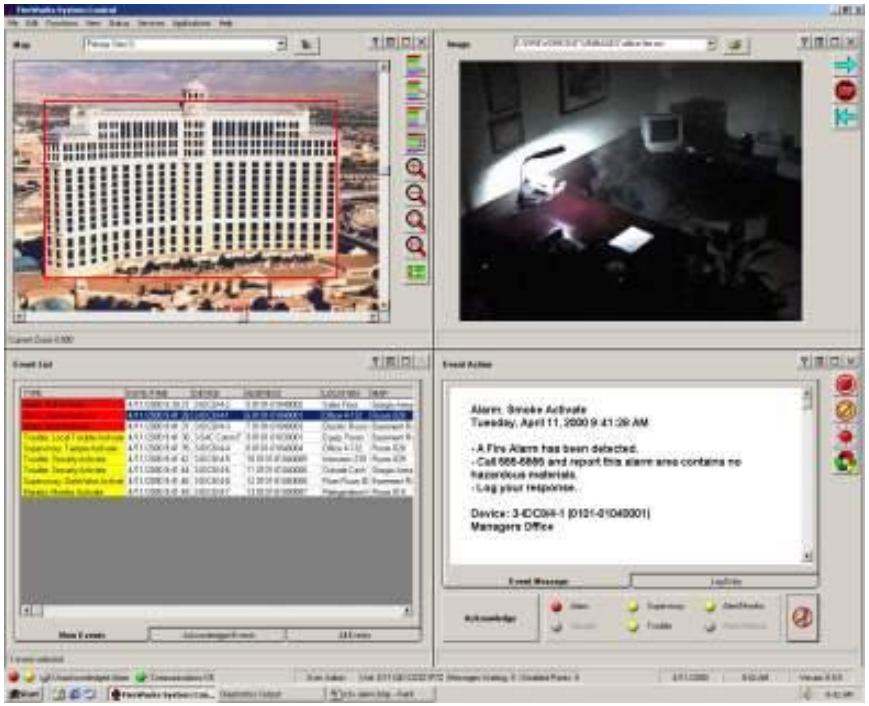
- Monitor 3rd Party Systems
- Non-proprietary protocols
- Digital Receiver
  (Contact ID & 4/2)
- Auto generated e-mail events text messages to phones
- Remote client monitoring
- Global event Station

Multiple System Monitoring (Edwards or Non-Edwards

EST™ Life Safety & Communications

Global Event Workstation

- Event monitoring workstation.
  - Mass Notification
    - Fire
  - Security/Intrusion
  - 3rd Party Systems
- Graphical User Interface (GUI) with Multi-Window Display
- Single or Multiple Workstations
- UL 2572 listed
- Video Control Interface
- Monitors all system events, stand alone and network

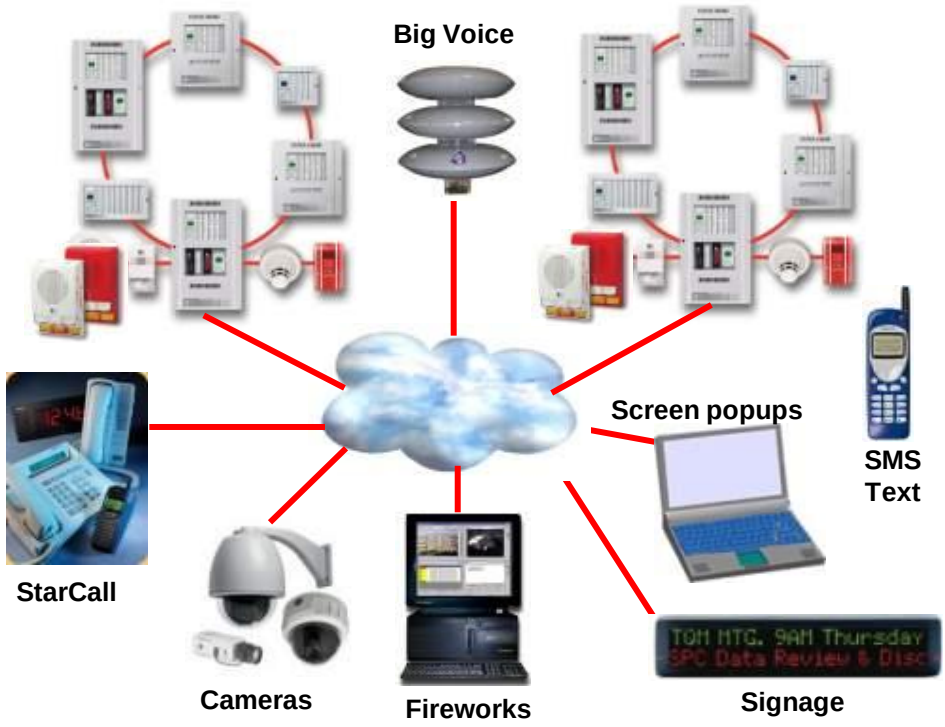


EST™
Life Safety & Communications

EST MNEC Interfaces

EST3-Sixty Mass Notification provided ***intelligible*** voice communications via loudspeakers and may be interfaced to:

- Third party fire voice **evacuation** systems
- Visible **signal** systems
- Intercom and paging
- Video/graphic **signage** systems
- Wired **telephone** systems
- Wireless **cell phones & pagers**
- Two-way **radios** systems
- Computer **pop-up** messaging
- Text **messaging**
- Other **communication** methods
- Live Video



EST™
Life Safety & Communications

MNEC Implementation

EST™
Life Safety & Communications

Approach

An effective MNEC program
must **balance** three design elements

EST™
Life Safety & Communications

Plan

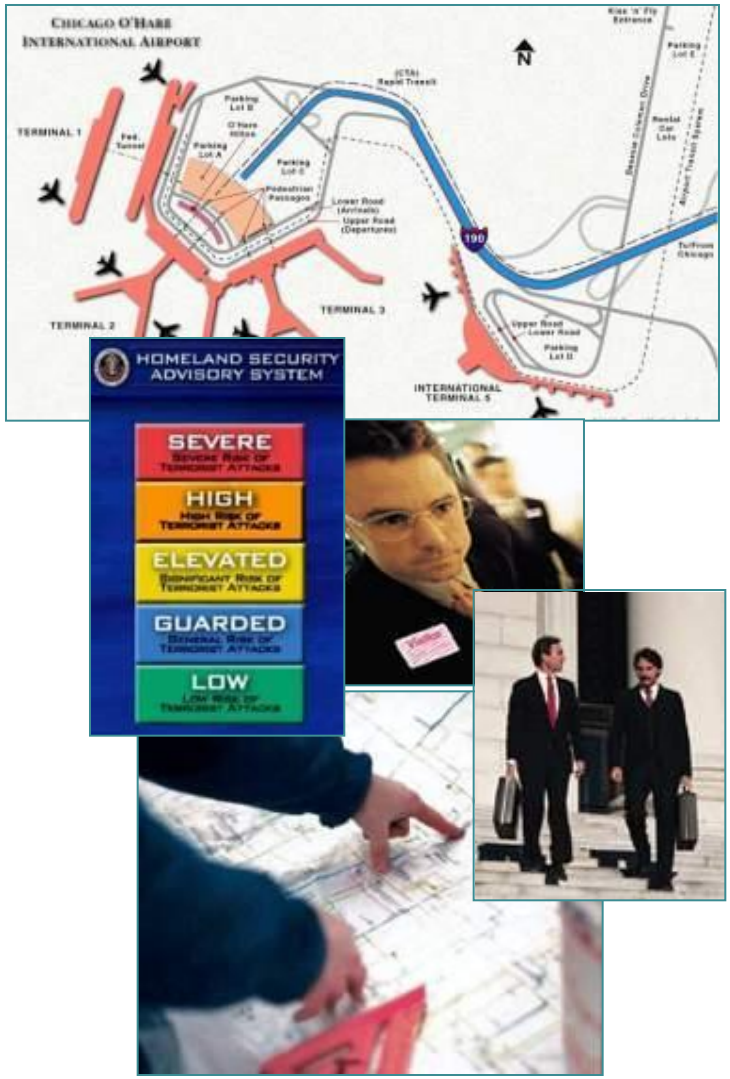
1) Begin with a **vulnerability and risk assessment**

2) Work with a professional provider to develop a **Master Plan** that integrates:
   - Protection systems
   - Alerting systems
   - Emergency action plans

3) Implement on a **phased** basis

4) Leverage all existing technology first, systems and equipment

5) Facilities will continue to **change**, so should your MNEC strategies … "**a work in progress plan**"



EST™ Life Safety & Communications

Four Tiered Approach

Tier 1

- **Immediate & intrusive**
- Sirens, indoor/outdoor loudspeakers
- Fire voice evacuation
- Electronic signage
- Code compliant

Tier 2

- **Personal alerting**
- SMS Text (cell phones)
- Computer pop-ups
- Tone alert radios
- Email Broadcast (Internet)
- Automated voice dialing & text messaging

Tier 3

- **Public alerting**
- Sat/AM/FM radio broadcasts
- Sat/off-air TV broadcasts
- Location-specific
- text messages

Tier 4

- **Locally relevant alerting**
- Handheld bullhorns
- Radio cell phones
- Two-way radios

EST™ Life Safety & Communications

Immediate & intrusive

Start with an effective real time Tier – 1 System

EST™
Life Safety & Communications

EST Indoor Appliances

Indoor Speakers and Strobes

- Wall G4 Series
  - ¼, ½, 1 & 2 watt
  - 80, 83, 86 & 89 dBA
- Ceiling GC Series
  - ¼, ½ 1 & 2 watt
  - 80,84,87 & 91 dBA
- Amber Lens Strobe G1 Series
  - UL 1638 Listed
  - 15, 30, 75 & 110 (clear)
  - 12,26,65 &95 (amber)

Adapter frame with colored strobe that mounts behind a Genesis G4 Speaker Strobe

EST™ Life Safety & Communications

EST High Powered Speaker Array (HPSA)

OMNI Directional MN-GCD Series

800 watt – 3200 watt

Directional MNGVD Series

400 watt – 3200 watt

Caution: Outdoor use only. Can be 120+ dBA at 100’
must be mounted high (tops of buildings, on poles, etc.)

EST™
Life Safety & Communications

Textual LED Signage

Used in Conjunction with Strobe Appliances
Standard message set
Custom messages … more detail
Located at key points…. Rally stations

EST™
Life Safety & Communications

Personal alerting

Layer additional Tier –2 systems

EST™
Life Safety & Communications

Personal Alerting

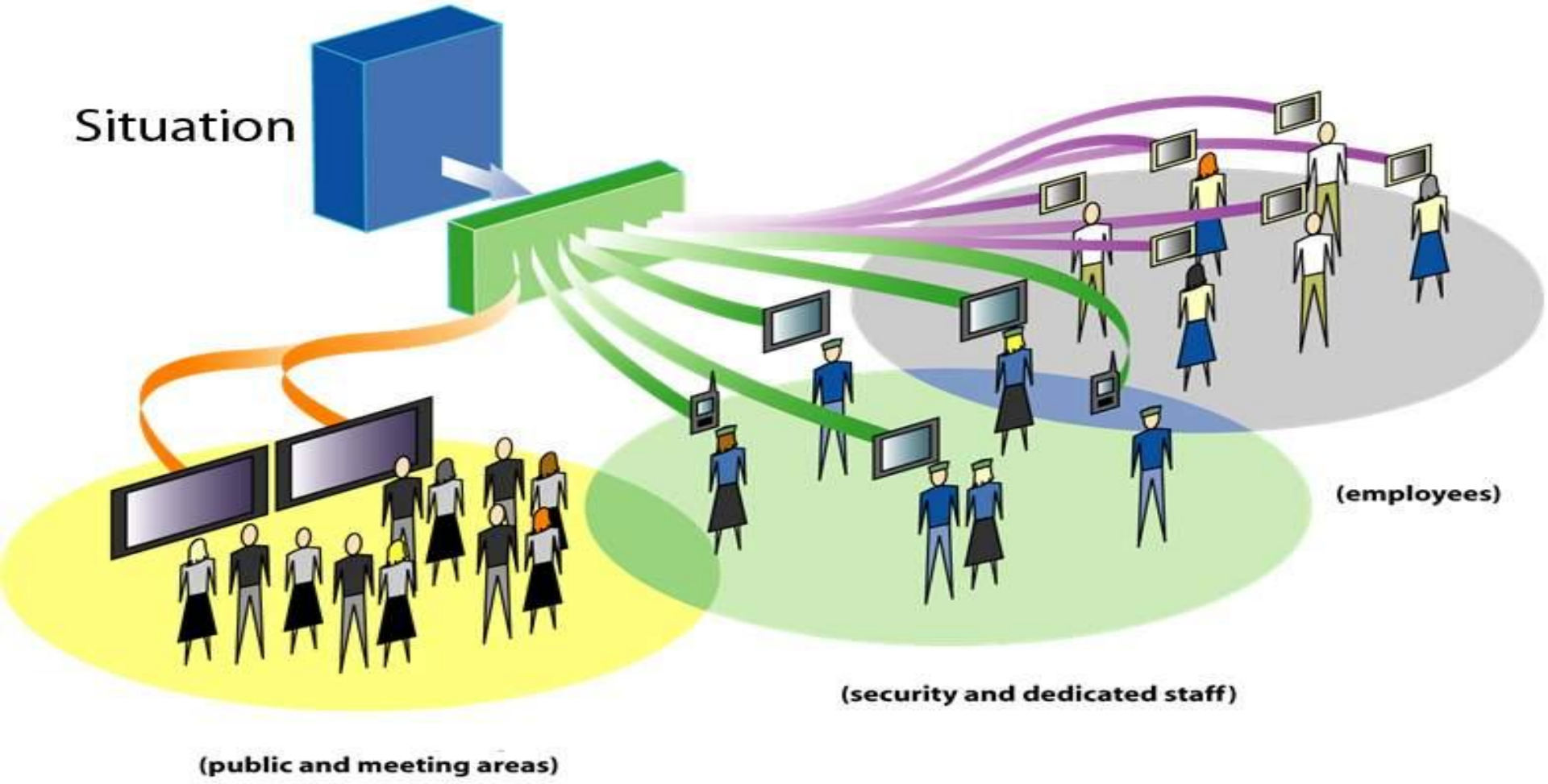
Tier 2

- SMS Text (cell phones)
- Computer pop-ups
- Tone alert radios
- Email Broadcast (Internet)
- Automated voice dialing & text messaging

EST™ Life Safety & Communications

Getting the word out with EST / React

Make sure the correct people get the correct messages – can be different per audience



Public Alerting

Leverage additional Tier- 3 systems

Public Alerting

Tier 3

- Satellite/AM/FM radio broadcasts
- Satellite/off-air TV broadcasts
- Location-specific
- Text messages

EST™ Life Safety & Communications

Locally Relevant Alerting

Leverage additional Tier- 4 systems

EST™
Life Safety & Communications

Locally Relevant Alerting

Tier 4

- Handheld bullhorns
- Radio cell phones
- Two-way radios

EST™ Life Safety & Communications

Preparing for the Future

EST™
Life Safety & Communications

Preparing for the Future

Mass Notification Systems are not mandated yet for the general public – what is needed to prepare for the future?

- Install “voice alarm” fire alarm systems. Speakers provide the most versatility for emergency and non-emergency notification.
- Install strobe light circuits to support MNS (amber) strobes in addition to FA strobe lights.
- Evaluate interfaces into other building systems.
- Develop and continually up-date emergency plan

EST™ Life Safety & Communications

EDWARDS
A UTC Fire & Security Company

EST3 Control Panel REQUIRED (Audio Source)

To ACU/FACPs

FireWorks

CCS LOC

EST™ Life Safety & Communications

ACU/FACP

- ACU – Autonomous Control Unit
- FACP – Fire Alarm Control Panel
- ACU/FACP – Combined system

LOC

- LOC – Local Operator Controls.
- System controls switches, LCD, microphone.
- Located where needed
- Same controls as ACU/FACP if in Integrates MNEC/FA system
- Same controls as CCS if at Command

FireWorks™

EDWARDS
A UTC Fire & Security Company

- Monitor 3rd Party Systems
- Non-proprietary protocols
- Digital Receiver (Contact ID & 4/2)
- Ability to e-mail events & send text messages to phones
- Remote monitoring
- Proprietary Station

Multiple System Monitoring (Edwards or Non-Edwards)

EST™
Life Safety & Communications

EDWARDS
A UTC Fire & Security Company

Amber Visual Strobes

- Amber Lens Strobe
- UL1638 Listed

  15, 30, 75 & 110 Candela (Clear)

  12, 26, 65, 95 Candela (Amber)

Adapter frame with colored strobe that mounts behind a Genesis G4 Speaker Strobe

EST™
Life Safety & Communications

Protecting lives from internal and external threats within a building extends beyond fire.

Fire loss and fire casualties have continued to decrease over the past 20 years by 35% with NFPA fire and building codes created by committees of all stake holders.

Unfortunately our world is changing and as we assemble more people within buildings, campuses and smaller defined areas, the risk of multiple or mass casualties continues to increase.

Thank you

SWC Richardson Technologies Systems
And
Edwards – A UTC Fire and Security Company