IED

Transit Systems

Agenda

- IED Experience

- Integrated Transit Systems

- Audio Quality and Intelligibility

- NFPA 72 2010 Changes and Mass Notification
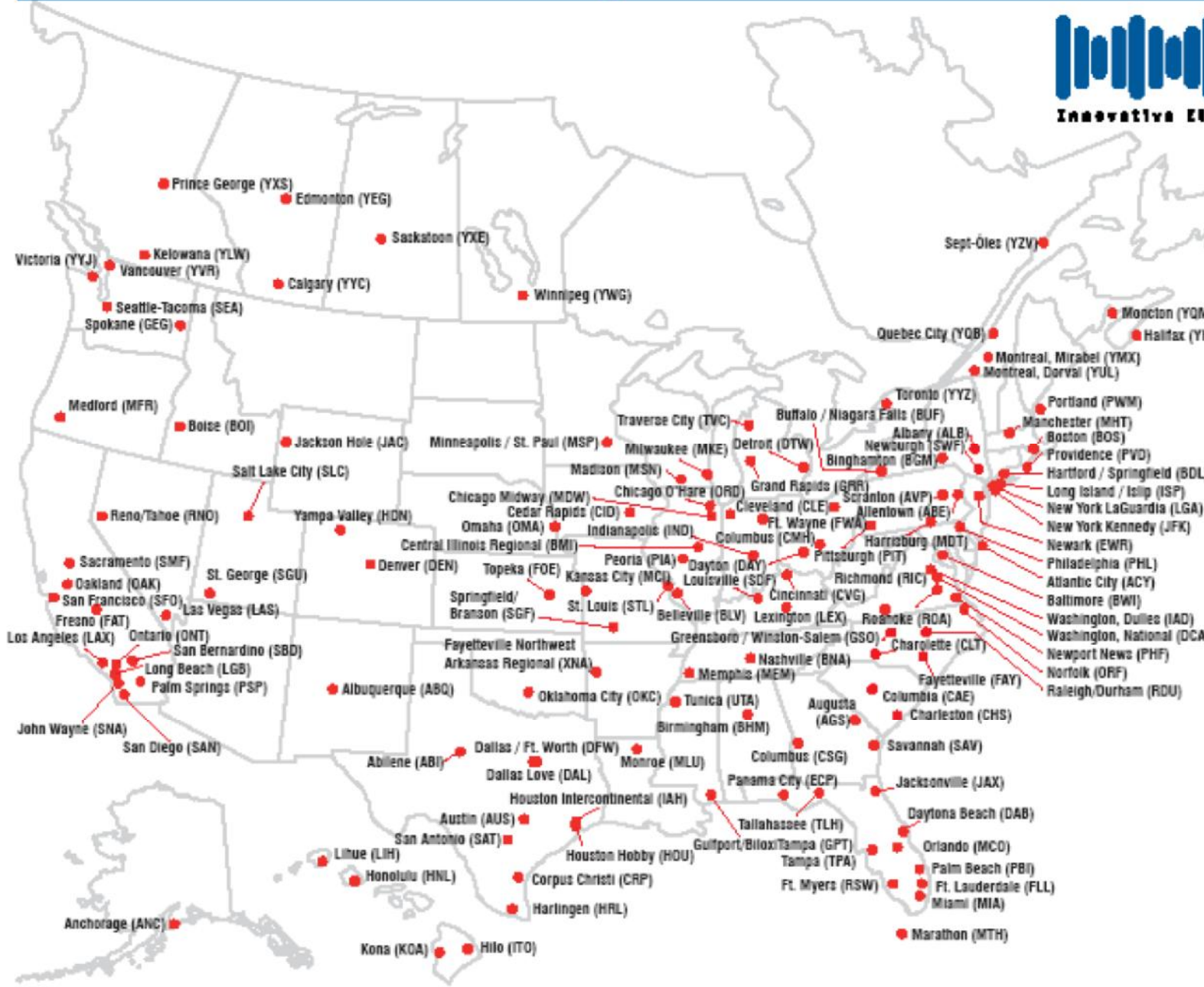
- IED Technology

IED Experience

- Founded in 1978

- IED is a recognized leader in Transportation Paging Systems with over 140 Airports and 320 Transit Stations in 13 Transit Systems

- Audio Industry Firsts
  - 1982 First Computer Controlled Paging System
  - 1990 First DSP Based Sound System
  - 1996 First Ethernet Networked Paging System
  - 1996 First Integrated Audio/Visual Paging System
  - 2007 First 100% Digital & Networked Paging System

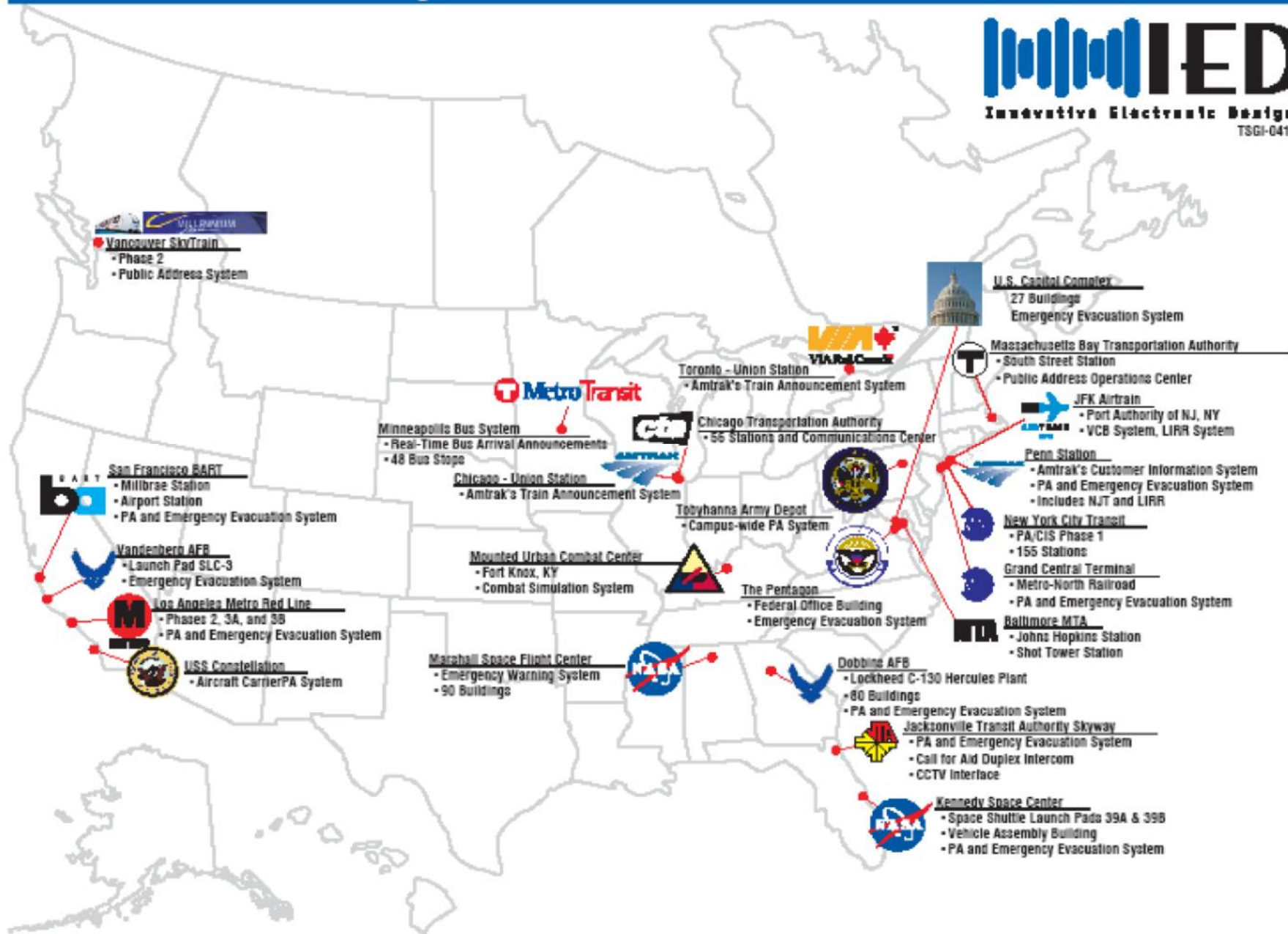- Strong Experience in Implementing Large Networked systems

IED Airport Installations

AIM0810

Other International Installations

- Antalya, Turkey (AYT)
- Agana, Guam (GUM)
- Astana, Kazakhstan (TSE)
- Beirut, Lebanon (BEY)
- Begawan, Brunei (BWN)
- Chongqing, China (CKG)
- Cologne, Germany (CGN)
- Copenhagen, Denmark (CPH)
- Cancun, Mexico (CUN)
- Frankfurt, Germany (FRA)
- Gimpo, Korea (XMN)
- Hangzhou, China (HGH)
- Incheon, Korea (ICN)
- Istanbul, Turkey (IST)
- Jeju, South Korea (CJU)
- Keflavik, Iceland (KEF)
- Kingston, Jamaica (KIN)
- Kurtkoy, Turkey (SAW)
- Melbourne, Australia (MEL)
- Mexico City, Mexico (MEX)
- Oslo, Norway (OSL)
- Paris, France (CDG)
- Pusan, South Korea (PUS)
- Samsun, Turkey (SZF)
- Salzburg, Austria (SZG)
- Shanghai, China (SHA)
- Shanghai, China (PVG)
- Tel Aviv, Israel (TLV)
- Tianjin Binhai (TSN)
- Toluca, Mexico (TLC)
- Tunis, Tunisia (TUN)
- Xiamen, China (XMN)

Map Labels

Prince George (YXS)
Edmonton (YEG)
St. Johns (YYT)
Saskatoon (YXE)
Kelowana (YLW)
Victoria (YYJ)
Vancouver (YVR)
Calgary (YYC)
Winnipeg (YWG)
Sept-Òles (YZV)
Seattle-Tacoma (SEA)
Spokane (GEG)
Moncton (YQM)
Halifax (YHZ)
Quebec City (YQB)
Montreal, Mirabel (YMX)
Montreal, Dorval (YUL)
Medford (MFR)
Boise (BOI)
Jackson Hole (JAC)
Traverse City (TVC)
Buffalo / Niagara Falls (BUF)
Toronto (YYZ)
Portland (PWM)
Minneapolis / St. Paul (MSP)
Milwaukee (MKE)
Detroit (DTW)
Albany (ALB)
Newburgh (SWF)
Manchester (MHT)
Boston (BOS)
Providence (PVD)
Binghamton (BGM)
Salt Lake City (SLC)
Madison (MSN)
Grand Rapids (GRR)
Hartford / Springfield (BDL)
Chicago Midway (MDW)
Chicago O'Hare (ORD)
Scranton (AVP)
Long Island / Islip (ISP)
Reno/Tahoe (RNO)
Yampa Valley (HDN)
Cedar Rapids (CID)
Cleveland (CLE)
Allentown (ABE)
New York LaGuardia (LGA)
Omaha (OMA)
Ft. Wayne (FWA)
New York Kennedy (JFK)
Indianapolis (IND)
Columbus (CMH)
Newark (EWR)
Central Illinois Regional (BMI)
Harrisburg (MDT)
Philadelphia (PHL)
Sacramento (SMF)
St. George (SGU)
Peoria (PIA)
Dayton (DAY)
Pittsburgh (PIT)
Atlantic City (ACY)
Denver (DEN)
Topeka (FOE)
Kansas City (MCI)
Louisville (SDF)
Richmond (RIC)
Baltimore (BWI)
Oakland (OAK)
San Francisco (SFO)
Las Vegas (LAS)
Springfield/ Branson (SGF)
St. Louis (STL)
Cincinnati (CVG)
Washington, Dulles (IAD)
Washington, National (DCA)
Fresno (FAT)
Ontario (ONT)
Belleville (BLV)
Lexington (LEX)
Roanoke (ROA)
Newport News (PHF)
Los Angeles (LAX)
San Bernardino (SBD)
Greensboro / Winston-Salem (GSO)
Charlotte (CLT)
Norfolk (ORF)
Long Beach (LGB)
Fayetteville Northwest Arkansas Regional (XNA)
Nashville (BNA)
Raleigh/Durham (RDU)
Palm Springs (PSP)
Memphis (MEM)
Fayetteville (FAY)
John Wayne (SNA)
Albuquerque (ABQ)
Oklahoma City (OKC)
Tunica (UTA)
Columbia (CAE)
San Diego (SAN)
Augusta (AGS)
Charleston (CHS)
Birmingham (BHM)
Dallas / Ft. Worth (DFW)
Monroe (MLU)
Columbus (CSG)
Savannah (SAV)
Abilene (ABI)
Dallas Love (DAL)
Panama City (ECP)
Jacksonville (JAX)
Houston Intercontinental (IAH)
Austin (AUS)
Tallahassee (TLH)
Daytona Beach (DAB)
San Antonio (SAT)
Gulfport/Biloxi (GPT)
Tampa (TPA)
Orlando (MCO)
Lihue (LIH)
Houston Hobby (HOU)
Palm Beach (PBI)
Honolulu (HNL)
Corpus Christi (CRP)
Ft. Myers (RSW)
Ft. Lauderdale (FLL)
Miami (MIA)
Anchorage (ANC)
Harlingen (HRL)
Marathon (MTH)
Kona (KOA)
Hilo (ITO)

IED Transit Systems and Government Installations

IED Experience

New York City
Transit System

Multiple
Phases 1995
through the
Present

Metro New York IED Transportation Systems

NYCTA PA/CIS Phase #1 Approximately 155 PassengerStations

LaGuardia Airport USAirways Main & Shuttle Terminals, Delta

Penn Station Amtrak, LIRR, NJT New High Speed Rail

Grand Central Terminal Building PA System

JFK International Airport Terminals 1, 4, 6, 7,& 8

Newark International Airport Terminals B, B1, C, and Port Authority

IED System Features

- Designed from the outset for integrated audio and visual communications

- Adapts to a variety of network architectures

- Interface and Control for any type of Visual Display

- Patented, Synchronized Visual Announcements

The south parking lot will be closed until Sunday.

IED System Features

- Provides fixed, assembled and Text-To-Speech messaging in multiple languages

- Messages are stored and can originate from both the Command Center and local Stations

- Comprehensive monitoring and self-testing supervision of the entire system

- Full DSP signal processing for Equalization, Ambient Analysis

IED System Features

- Complete reporting and logging of all system activity

- Customized Management & Control Applications with Graphical User Interfaces for System Users

- Interfaces to any type of information source

- Software Architecture is built on IT industry standards

Integrated Transit Systems

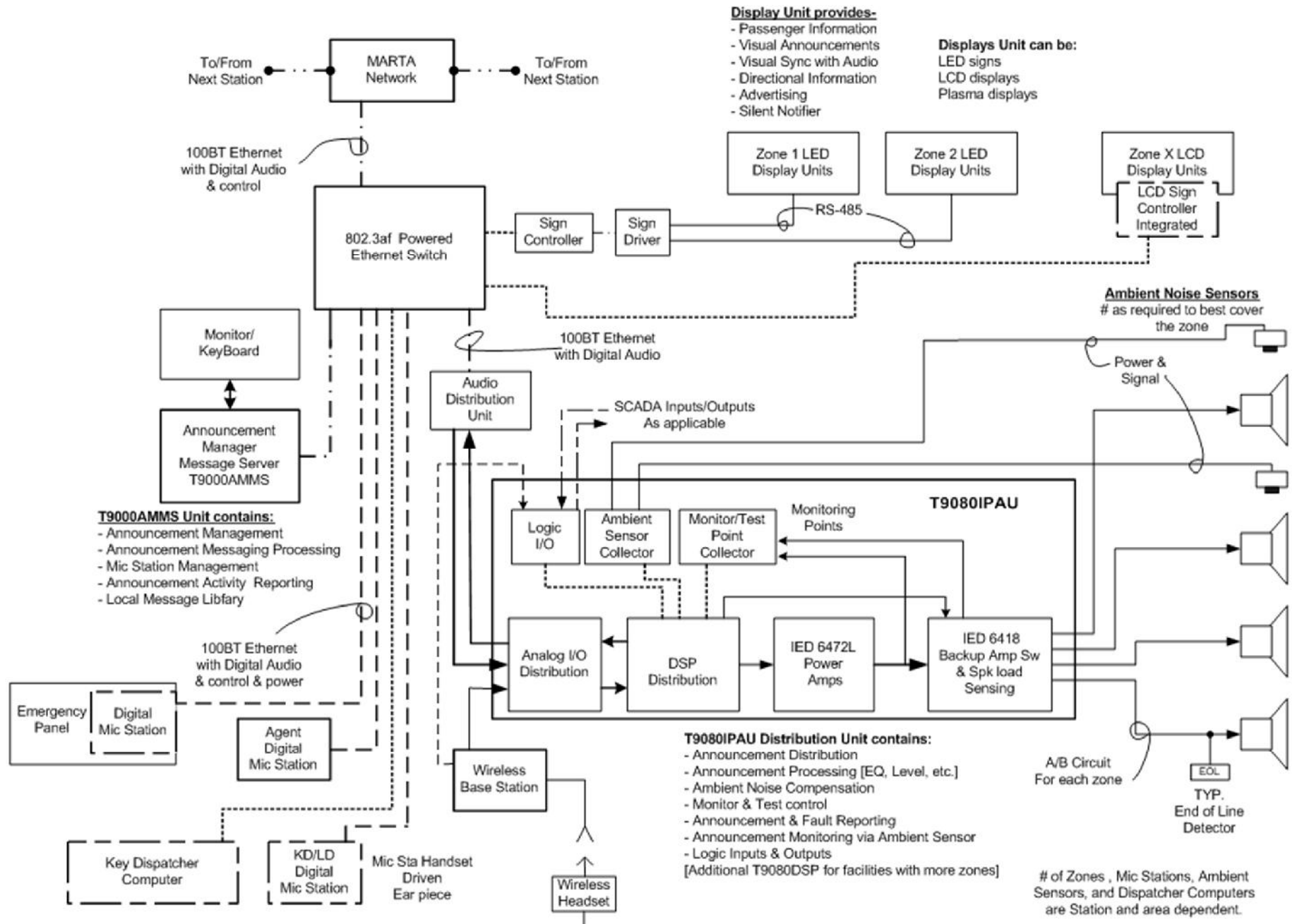## Consist of four Primary Elements:

- Command Center System (Primary & Backup)

- Integrated Station Systems (controllers)

  - Audio System for Announcements and Messaging

  - Visual System for Announcements, Messaging and Information (ADA Compliance)

- Monitoring and Supervision

- Interfaces with Operational Database, Train Tracking, SCADA, etc.

Please Step away from the platform Edge as the train

Display Unit provides-
- Passenger Information
- Visual Announcements
- Visual Sync with Audio
- Directional Information
- Advertising
- Silent Notifier

Displays Unit can be:
LED signs
LCD displays
Plasma displays

To/From Next Station — MARTA Network — To/From Next Station

100BT Ethernet with Digital Audio & control

802.3af Powered Ethernet Switch

Sign Controller

Sign Driver

RS-485

Zone 1 LED Display Units

Zone 2 LED Display Units

Zone X LCD Display Units
LCD Sign Controller Integrated

Monitor/KeyBoard

Announcement Manager Message Server T9000AMMS

T9000AMMS Unit contains:
- Announcement Management
- Announcement Messaging Processing
- Mic Station Management
- Announcement Activity Reporting
- Local Message Libfary

100BT Ethernet with Digital Audio

Audio Distribution Unit

SCADA Inputs/Outputs As applicable

Ambient Noise Sensors
as required to best cover the zone

Power & Signal

T9080IPAU

Logic I/O

Ambient Sensor Collector

Monitor/Test Point Collector

Monitoring Points

100BT Ethernet with Digital Audio & control & power

Emergency Panel | Digital Mic Station

Agent Digital Mic Station

Wireless Base Station

Analog I/O Distribution

DSP Distribution

IED 6472L Power Amps

IED 6418 Backup Amp Sw & Spk load Sensing

T9080IPAU Distribution Unit contains:
- Announcement Distribution
- Announcement Processing [EQ, Level, etc.]
- Ambient Noise Compensation
- Monitor & Test control
- Announcement & Fault Reporting
- Announcement Monitoring via Ambient Sensor
- Logic Inputs & Outputs
[Additional T9080DSP for facilities with more zones]

A/B Circuit For each zone

EOL

TYP. End of Line Detector

Key Dispatcher Computer

KD/LD Digital Mic Station

Mic Sta Handset Driven Ear piece

Wireless Headset

# of Zones , Mic Stations, Ambient Sensors, and Dispatcher Computers are Station and area dependent.

marta

Sample MARTA Station System

IED
Innovative Electronic Designs

Audio Quality & Intelligibility

- **Paging and Messaging Sources**
    - Microphones
    - Telephones
    - Messaging
    - Fire Alarm System
- **Network Transmission Quality**
    - CobraNet (20Hz to 20Khz audio bandwidth)
    - Audio over IP (30Hz to 8Khz +)
    - Telephone or Voice over IP (200 Hz to 3.2Khz)

Mass Notification

- ## Performance Based Design
  - AHJ Approvals of IED Systems
  - ORD, DFW, MIA, etc
- ## NFPA 72-2010 Chapter 24
  - UL 2572 - Mass Notification System Communications and Control Units (Includes Communication Links)
  - UL 1711 Power Amplifiers – Amplifiers for Fire Protection and ECS Systems
  - UL 864 – Control Units and Accessories for Fire Alarm Systems (Not directly applicable to Chapter 24 Emergency Communications Systems)