Course ID	Course Title
VOICE-911	**Voice Communications and Technologies for 911 Call Takers, Supervisors, and Trainers**
Course Duration	
2-3 days	

Related Courses

- VoIP for 911 Administrators, Managers, Directors and Regulators (VOIP-911, 2-3 days)
- 911 for IP Professionals (911-IP, 2-3 days)
- IP, Location and Geo-Location Technologies for Law Enforcement, Intelligence and Public Safety (IPGEOLOC, 2-3 days)
- Unified Communications in Public Safety, Law enforcement, and Homeland Security (UNIFIED, 2-3 days)

Aimed At

Professionals who take emergency calls or those who supervise or train the 911 call takers

Group Size

5-25

Prerequisites

You should have knowledge of the US or Canadian 911 systems or another emergency calling system, standard operating procedures for call takers, and a basic understanding of the process of accessing 911 and dispatching police, fire, EMS, and other emergency services.

Course in a Nutshell

The rapid rise of cellular and then VoIP as means of accessing 911 and other emergency calling systems globally require call takers to better understand the underlying technologies and their impact on the quality and content of the emergency calls they handle. One side effect of cellular and VoIP is that it has revealed great misunderstandings and lack of knowledge of how emergency calls should be interpreted when received from conventional telephone systems.

This course, based upon training delivered to several thousand emergency services professionals in the US, Canada, and Australia over the past five years will equip call takers, supervisors, and trainers to better handle conventional, cellular, and wireless calls. Many emergency number professionals review the outline and course materials and ask, "Do I really need to know all this to answer emergency calls?" Upon closer examination, the conclusion reached by many of them is "Yes, I do".

Customize It!

We can adapt this course to your group's background and work requirements at little to no added cost. Let us know how we can tailor this course to your specific needs.

Course Outline

- Introduction: Why Should a PSAP Care?

- Overview

- Family Tree of Telephony
    - Conventional Calls
    - Cellular/Wireless
    - VoIP
        - Fixed
        - Nomadic
        - Mobile/802.x
        - Hybrid Cellular/802.x

- Technical Background
    - Analog Transmission
    - Digital Transmission
        - Binary Number System
        - Binary Encoding: Hand Codes, ASCII
    - Circuits
        - Bit Path
        - Timing
        - Synchronization
    - Time Division Multiplexing
        - T1/DS1
        - Framing/Frame Format
        - Time Slots
        - PSAP Capacity
    - Packet Switching
        - Packet Format: Header, Payload, Trailer
        - IP
        - Packet QoS/QoE
        - Best Effort

- Transmission of Human Speech
    - Human/Musical Instrument Model
    - Analog
    - Digital
        - PCM
        - LPC
    - Loss
        - Packet Loss
        - Sample Loss
        - Coding Loss

- 911 End-to-End
  - ° Conventional
  - ° Cellular/Wireless
  - ° VoIP: NENA I1, NENA I2, NENA I3
  - ° VoIP Protocol
  - ° PSAP Procedures

- MSAG and Location Issues

- VoIP Issues
  - ° Lack of Hand-offs
  - ° VoIP Is Not Traditional Telephony, Just Cheaper.
  - ° Inconsistent Call Routing
  - ° Missing or Inaccurate ANI/ALI
  - ° Voice Quality Ranges Substantially.
  - ° Misinterpretation of Whispers, Soft Sounds, and Background Noise
  - ° Non-transmission of Whispers, Soft Sounds, and Background Noise
  - ° Misinterpretation of Non-Human Sounds
  - ° Quality Degradation during Heavy Call Volumes
  - ° Evidentiary Issues Related to Recordings of VoIP Calls
  - ° Power Failure and Battery-Backup Option, Does Not Work During Power Outages
  - ° Use of Mobile Wireless VoIP and Location Issues
  - ° Fraudulent and Misleading Use of VoIP - Bombing and SWATing
  - ° Lack of Clarity in VoIP Standards
  - ° Training on IP, VoIP and Related Technologies
  - ° PSAP Best Practices

How You Will Learn

- You will be taught by someone who is an expert on the application of communications technologies to public safety and also a great instructor.
- If you already know something about the subject matter, we will build on that knowledge. If your background is less technical, we will employ examples and analogies to make the technical content easier to understand.
- We will provide you with a Participant Handbook that will help you recall and reference what you learned in class.

Revised   *May 6, 2008f*