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**DISPATCH Bid Specifications**

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**Paulding County Is Requesting Bids That Will Meet the Following Console Specifications**

- 1. 2-POSITION WORKSTATIONS WHICH INCLUDES FOUR SPEAKERS, DESKTOP MICROPHONE, FOOT SWITCH, MEDIA DOCK, 22" TOUCH SCREEN, WIRELESS HEADSET PER POSITION (WITH A TOTAL OF TEN HEADSET TOPS), WIRELESS MOUSE, POLE LIGHT PER POSITION TO SHOW WHEN A DISPATCHER IS ON A PHONE CALL, THE RADIO, OR AVAILABLE.**
  
- 2. INTERFACE TO A MOTOROLA MTR3000 BASE STATION WHICH IS LOCATED AT A REMOTE TOWER LOCATION, 1) VHF AND 1) MOTOROLA MARCS RADIO AT THE SCHOOL FOR EMERGENCIES, 2) APX6500 CONTROL STATION, 4) KENWOOD VM5930 CONTROL STATIONS**
  
- 3. A SINGLE REMOTE SITE WORKSTATION TO MEET ALL THE REQUIREMENTS OF THE TWO ONSITE WORKSTATIONS AND HAVE ALL THE REDUNDANCIES AS THE MAIN SYSTEM, JUST A STAND-ALONE DISPATCH POSITION. THIS SITE WILL HAVE 4) KENWOOD VM5930 CONTROL STATIONS THAT NEED INTERFACED TO.**
  
  
- 4. A TOTAL OF FIVE-YEAR WARRANTY/SERVICE CONTRACT MUST BE INCLUDE.**
  
  
- 5. INSTALLATION OF ALL EQUIPMENT AND TRAINING FOR EACH DISPATCHER MUST BE INCLUDED.**

## GENERAL REQUIREMENTS

### 5.1 QUALITY

Proposed equipment shall meet or exceed industry standards for quality and reliability. All materials, parts, assemblies, etc. shall be new, and be free of corrosion, blemishes or other cosmetic defects. Design and construction shall be consistent with current best engineering practices.

### 5.2 CERTIFICATION AND REGULATORY APPROVALS

The equipment provider shall be ISO 9000 certified and shall comply with the applicable US Federal Communications Commission (FCC) rules and regulations for telecommunications equipment.

All equipment proposed in which microprocessors are used shall have undergone comprehensive testing and shall meet 47 CFR, Part 15, Subpart "B" of the Federal Communications Commission rules for Class "A" computing devices.

### 5.3 WARRANTY

Bidder shall warrant all equipment to be free from defects in material and workmanship, and to operate in accordance with these specifications. Software shall have a warranty for a period of not less than one (1) year from date of acceptance, and Hardware will have a warranty for a period of not less than 1 year from the date of acceptance.

Hardware replacement for the first 90 days will be handled by advance shipment of hardware (replacement hardware will be shipped as soon as an agreement is reached that it is faulty).

### 5.4 REPLACEMENT PART AVAILABILITY

The manufacturer of the proposed console equipment shall prepare a comprehensive spares listing for delivery with the system or maintain a stock of critical repair components for the system capable of supporting the system for a period of not less than five (5) years after initial delivery. Stocked critical parts shall be available for shipment on an expedited basis.

### 5.5 SYSTEM DOCUMENTATION

The console system shall include user documentation that addresses the following functions or activities:

1. Hardware Installation
2. System Configuration
3. Console Operation
4. Console Screen Design

A copy of the system documentation shall be provided in electronic format via applicable storage medium.

## 6. SYSTEM REQUIREMENTS

### 6.1 CONSOLE SYSTEM ARCHITECTURE

The console system shall be an IP based system which utilizes an IP network as the backbone to transport system messages and media.

The fundamental architecture of the system shall allow for console system devices (e.g. console positions, interface gateways) to be placed in multiple geographic locations. Dispersed system devices shall be capable of utilizing the same feature set as if they were co-located in the equipment room. The architecture shall also allow for related, independently managed console systems within the radio network to communicate with one another and control radio resources at all locations.

As part of the console system architecture, the system shall provide an option to connect remote console system devices and multiple site locations via a multicast to unicast translation application. This removes the need to transport multicast traffic across the span between the dispersed console system devices and/or locations. Therefore conventional IP networking (including VPN technologies) may be used for such remote connections without concern for multicast routing and transport issues.

A single console system architecture shall support as a minimum:

Consoles: 40

Radio lines: 250

Phone lines: 12 lines per telephone gateway, multiple telephone gateways shall be allowed.

AUX I/O points: 400 per AUX I/O service, multiple AUX I/O services shall be allowed to extend this capacity.

### 6.2 ENVIRONMENTAL

The system shall operate over the temperature range 0 to 50°C.

### 6.3 POWER

Any centralized equipment of the console system shall be equipped with dual power inputs in order to allow for power integrity in the system design.

The console system's power supply shall be configured in a 1+1 configuration, such that the loss of single power feed or the loss of a single power supply component shall not cause a disruption in service.

Radio gateways for the system should not draw more than 480mA in a standby condition (powered up but not receiving or transmitting).

Centralized hardware shall not draw more than 15 watts of power, have an SSD and no fan.

## 6.4 CONSOLE EQUIPMENT

6.4.1.1 Consoles shall be PC-based and the console software application shall support Windows 7 , 8.1 or 10 - 64-bit operating systems. Console PCs shall support network teaming (NIC Bonding) and support dual display monitors.

6.4.1.2 A touchscreen monitor shall be utilized to display the console user interface and shall support a minimum resolution of 1920x1080. The dispatcher shall be able to perform all dispatch operations by using the combination of the display screen and a mouse.

6.4.1.3 The following items shall be offered for dispatch operation:

1. Footswitch

The footswitch shall be used by the dispatcher to key the selected radio channel(s).

2. 4 speakers

Each speaker shall be in an individual enclosure and have separate volume control knob. Speakers shall also have a minimum volume level and be equipped with LEDs indicating power to the device and receive voice activity.

3. Desk microphone

The desk microphone shall have a physical button that when pressed shall cause the microphone to be live on the selected radio channel(s) and a button to monitor select radio channels

4. Headset Jackbox

The jackbox shall be compatible with either 4 or 6 wire headsets. Inserting the headset plug into the jackbox shall automatically route the select audio to the headset and mute the select speaker. If an external telephone system is utilized and connected to the console system such that the dispatcher can use one headset to operate both, separate volume knobs shall be provided on the jackbox to control radio volume and telephone volume.

## 6.5 TELEPHONE RADIO HEADSET INTEGRATION (TRHI)

The console system shall support the integration of telephone and radio dispatch audio such that the dispatcher can use one headset for operating both an external telephone and the dispatch console.

6.5.1.1 When the telephone is “on-hook” (i.e. telephone not in use), the select audio of the console shall be routed to the earpiece of the headset. When PTT is depressed, the headset microphone audio shall be routed to the selected channel(s).

6.5.1.2 An “off-hook” (i.e. placed in use) indication from an external telephone device shall cause the Telephone/Radio Headset Interface to route the select audio into the select speaker, and present the user with telephone audio in the earpiece. The microphone audio is routed to the telephone such that the user can converse with the caller in full duplex without the need to press the transmit button. When the user needs to answer a radio call on the console, activation of PTT shall cause the microphone audio to momentarily be routed to the select channel(s). During PTT muting of transmitted audio to the telephone caller shall be selectable.

6.5.1.3 When the external telephone returns to an “on-hook” condition, the Telephone/Radio Headset Interface shall return the select audio to the headset earpiece.

## 6.6 SYSTEM MAINTENANCE

6.6.1.1 The console system shall provide a general indication on the dispatch console screen of the health of the IP network on which it resides and allow for a technician to access additional log information to assist in troubleshooting IP network performance issues.

6.6.1.2 There shall be a centralized method of device discovery and provisioning of device IP network addresses, and all associated parameters for that device, such that it eliminates the need to access each device separately.

6.6.1.3 All primary settings and adjustments on the backroom equipment shall be accomplished via software control.

6.6.1.4 It shall be possible to configure the console system from anywhere on the network on which it resides. A technician shall not be required to physically connect to a device in order to perform configuration and maintenance tasks.

## **6.7 HIGH AVAILABILTY THROUGH REDUNDANCY**

6.7.1.1 All console system hardware and software shall support NIC Bonding for Redundancy, allowing 2 Ethernet connections with only one active at a given time.

6.7.1.2 The architecture of the console system shall support optional redundancy of critical components and/or application services such that a failure in the component shall not cause disruption of service to the system as a whole.

## **7. INTERFACE AND CONTROL REQUIREMENTS**

### **7.1 TONE REMOTE CONTROL**

7.1.1.1 The console system shall be capable of generating, on a channel by channel basis, Tone Remote Control (TRC) compliant with TIA.102-BAHA Fixed Station Interface Messages & Procedures, Section 7.2.

- In addition to supporting a single function tone sequence, with a capability of selecting up to 15 functions, including up to 8 radio channels, the console system shall also optionally support dual function tones, with a capability of selecting up to 99 radio channels. The dual function tone capability shall also support Motorola's Digital Voice Privacy (DVP) and Positive Mode Control (PMC) to ensure that all transmissions are in the intended encryption mode.
- In addition to the 15 standard function tones ranging from 650 to 2050 Hz, the console system shall also support extended function tones including 350, 450, 550, 2250 and 2350 Hz. Guard Tone frequencies shall be field selectable including the following tones: 2100, 2175, 2300, 2325, 2600, 2800, and 2970 Hz.
- The duration of the High Level Guard Tone shall be adjustable between 60 and 1000 milliseconds in 10 millisecond steps. Function Tone Duration shall be field adjustable between 10 and 250 milliseconds in 10 millisecond steps. The amplitude of each sequential tone shall be independently field configurable between -40 and +10 dBm. The tone frequency accuracy shall be +/- 0.2%, and timing accuracy shall be +/- 1.0%.

7.1.1.2 The transmit path of console system circuits used for TRC shall be capable of monitoring transmissions of other paralleled wireline control equipment, when the console is not transmitting on the circuit. This path shall have a notch filter for Guard Tone to prevent the operator from hearing the Guard Tone generated by paralleled equipment. This path shall also be capable of decoding TRC sequences such that when a parallel device changes the radio fixed station's parameters using TRC, the console system shall update its display to the dispatcher to allow the operator's display to reflect the fixed station's current state. This shall include the ability to see transmit state, and changes to the fixed station's channel. Also in



support of paralleled wireline equipment, the console's wireline interface shall support selectable high/low impedance.

## **7.2 DC CONTROL**

The console system shall also be capable of generating, on a channel by channel basis, EIA standard DC control currents. The currents shall be programmable between +15mA and -15mA in 0.5mA increments.

## **7.3 LOCAL/E&M CONTROL**

The console shall be capable of controlling radios using local and E & M methods compliant with TIA.102-BAHA Fixed Station Interface Messages & Procedures, Section 7.1. To support this, the console system shall provide, on a channel by channel basis, a "normally open" output capable of being wired in support of an E&M "M-lead". In addition console circuits that use E&M control shall also support the use of an optically isolated incoming receive indication signal which can be wired in support of an E&M "E-lead".

## **7.4 JVCKENWOOD MOBILE RADIO INTERFACE**

The console shall be capable of controlling the following JVCKenwood mobile radios for specific interface needs: VM5930 for P25 CAI conventional and trunking systems, and NX-700 NEXEDGE<sup>®</sup> systems. The following functions shall be available through the console interface: channel/talkgroup select, group call, individual call, emergency call, PTT-ID, scan, and receipt of status messages.

## **7.5 JVCKENWOOD NXIP RADIO NETWORK INTERFACE**

The console shall be capable of interfacing to and controlling the following JVCKenwood repeaters using the NXIP IP-based protocol: NXR-700/5700 NEXEDGE<sup>®</sup> Conventional systems. The following functions shall be available through the console interface: channel/talkgroup select, group call, individual call, emergency call, PTT-ID, scan, and receipt of status messages.

## **7.6 DIU 3000**

The console shall be capable of interfacing to the Motorola Quantar with DIU-3000 to support P25 conventional systems. The following functions shall be available through the console interface: channel select, group call, emergency call and PTT-ID.

## **7.7 MOTOROLA MOBILE RADIO INTERFACE**

The console shall be capable of controlling the following Motorola mobile radios for specific interface needs: XTL-5000, XTL-2500, APX-7500 and APX-6000 supporting Analog FM (with MDC or DTMF signaling), Project 25 trunked and conventional, and SmartNet/SmartZone trunking modes. The following functions shall be available through the console interface: channel/talkgroup select, group call, individual call, emergency call, PTT-ID, scan, and coded/clear.

## **7.8 HARRIS RADIO INTERFACE**

The console shall be capable of controlling the Harris M7300, XG75 and XG100 radios via CAN Bus translation for specific interface needs: for analog/conventional systems, for P25 CAI conventional and trunking systems, and for EDACS and EDACS Pro-Voice Systems. The following functions shall be available through the console interface: channel/talkgroup select, group call, individual call, emergency call, PTT-ID, scan, and receipt of status messages.

## **7.9 DMR APPLICATION INTERFACE SPECIFICATION (AIS)**

The console shall be capable of interfacing to and controlling the following Digital Mobile Radio (DMR) systems using the open DMR Association, Application Interface Specification (AIS) interface:

- DMR Tier III (Trunking)
- DMR Tier II (Conventional)

The following functions shall be available through the console interface: all call (conventional), broadcast call (trunking), call alert, channel select, emergency call, group call, individual call, PTT ID, radio check, radio inhibit, radio uninhibit.

## **7.10 PROJECT 25 DIGITAL FIXED STATION INTERFACE (DFSI)**

The console shall be capable of interfacing to and controlling Project 25 base stations and repeaters using the published Fixed Station Interface standard, TIA 102.BAHA. The connection shall be digital (IP-based). The following P25 functions shall be available through the console interface: call alert, channel select, digital/analog air mode, emergency alert, emergency call, encryption, group call, individual call, PTT ID, radio check, radio inhibit, radio uninhibit, remote monitor, scan, and status request.

## **7.11 PROJECT P25 CONSOLE SUBSYSTEM INTERFACE (CSSI PER TIA.102-BACA)**

The Console shall be capable of interfacing to an APCO P25 CSSI. The interface shall be compliant per TIA .102-BACB and shall support, as a minimum, the following features over the CSSI interface:

Unit ID Display

Talkgroup selection

Group calls (incoming/outgoing)

Incoming emergency group call

Individual calls (incoming/outgoing)

Incoming emergency individual call

Incoming emergency alert

incoming call alert

Emergency Acknowledgement

AES and DES Encryption

Manual encryption key load

KVL encryption key load support

Long term voice logging support for voice and associated metadata

Patching of talkgroups by operator

Consistent visual UI indications for transmit, receive, audio routing, call state

IRR playback for all voice transmissions with current implementation will not change

## **7.12 TONE SIGNALING**

The console shall be capable of supporting the following tone signaling formats:

- Motorola Two-Tone
- Motorola Quick-Call 2 (1+1)
- GE® Two-Tone
- Reach Two-Tone
- Plectron (Two-Tone w/ non-standard frequencies, durations, and gaps)
- DTMF
- Knox DTMF
- 5/6 Tone

To avoid tone distortion due to IP related issues, selective calling/paging tones used for signaling devices shall be generated and/or decoded at the radio interface device and not transported through the system as VoIP audio.

## **7.13 MDC 1200/FLEETSYNC SIGNALING**

The system shall support encode and decode of MDC 1200 and Fleetsync. The interface to MDC 1200 or Fleetsync radios shall use a 4W analog interface and tone remote signaling. The following features shall be supported: PTT ID for individual radios and groups, Emergency alert, call alert, selective call, status request/report, radio availability check, radio enable/disable, and remote radio monitor.

## **7.14 GE-STAR SIGNALING**

The following GE-Star formats shall be supported: Multi-System 0 12-bit decode, Multi-System 1 12-bit decode, Multi-System 2 12-bit decode, Multi-System 3 12-bit decode, Standard 11-bit decode, Mobile/Portable 12-bit decode, Mobile/Portable 13-bit decode, GE-Star #4 14-bit decode, GE-Star #3 14-bit decode, ID Star #1 14-bit decode. The following features shall be supported: PTT ID for individual radios and groups [Rx&Tx], Emergency alert [Rx], status report [Rx]

## **7.15 TELEPHONE INTERFACE**

The system shall support an interface to one or more analog (POTS) telephone lines. The interface shall be compatible with lines terminated at a central office or at a local PBX fitted with an analog port.

## **7.16 LOGGING RECORDER OUTPUT**

The system shall provide both 2-wire analog logging recorder outputs and an interface to an IP voice logger system.

The analog logging recorder output shall record on a per channel basis.

In addition to all voice transmissions, the following data items, if available in the system, shall be made available to the external IP logging system: PTT ID/Caller ID, Radio Channel ID, Privacy code ID, encryption key, encrypted status, telephone line ID.

## **7.17 TIME SYNC INPUT**

The console system shall have the capability to accept a master clock data input which utilizes NTP protocol. The master clock source shall be used to keep all displayed time/date fields synchronized.

## 8. FUNCTIONAL REQUIREMENTS

### 8.1 GENERAL USER INTERFACE

8.1.1.1 The user interface shall support the configuration of multiple workspaces for a dispatch screen. Workspaces shall allow for “on the fly” configuration by dispatch personnel such that they may add and delete resources to and from the workspace, move resources around within the workspace and resize certain resources.

8.1.1.2 There shall be an option provided to a technician or system administrator level to lock each individual workspace such that nothing may be moved, added or deleted from the workspace. There shall also be an option to lock each visual control and system resource displayed on the screen such that a workspace that is unlocked may have locked items on it to prevent a dispatcher from changing them while the console is running.

8.1.1.3 The user interface shall have the ability to support multiple roles each with a different screen layout and radio resource list. The role-based configuration shall be made available at every console workstation such that a user may log in at any workstation and begin using the layout appropriate for their role.

8.1.1.4 In order to minimize visual distractions to the dispatcher, the user interface shall be capable of being configured such that information and indications appear only when applicable to an event. It shall not be necessary to have every indication constantly visible on the screen regardless of its state in order for the dispatcher to access it.

8.1.1.5 The dispatcher shall have access to system resources in the system that may not be permanently displayed on their screen including:

- Adding a radio channel to their workspace for as long as the dispatcher requires.
- Allowing for an instant transmit or access to receive notifications for radio channels that they do not add to the workspace.
- Adding Aux I/O sensors and controls to their workspace for as long as the dispatcher requires.

8.1.1.6 The user interface shall allow the ability to associate individual, customized images to represent each entity stored in the console system data repository.

8.1.1.7 The console software shall allow for the ability to display the dispatch center’s name, logo, or other graphic icon on all screens.

8.1.1.8 The console software shall allow the selection of at least 100 different colors for channel modules, allowing quick identification of the function by the dispatcher.

### 8.2 AUX I/O

8.2.1.1 The console system shall support connection to auxiliary digital inputs (for receiving status from external equipment) and digital outputs (for external device control).

8.2.1.2 Input shall be capable of showing at least two indication states within the same indicator on the console screen in order to reflect different status levels.

8.2.1.3 Output controls shall be available in latching and momentary operation. The output control shall be capable of showing at least two indication states.

8.2.1.4 A combined input and output control shall be available such that the dispatcher views the input status and controls the output from a single visual control. Activation of the output would send activation but only change the indication based on state of input.

## **8.3 RADIO CONTROL**

### **8.3.1 Select**

The dispatcher shall have the ability to place a channel into the selected state via a single operation. When a radio channel is placed into the selected state, that audio is routed to the appropriate device, either the select speaker or the headset or both. Microphone audio is routed to either the headset microphone or a desk microphone depending on the console configuration. There shall be a visual indication that the dispatcher has placed a channel into the selected state.

### **8.3.2 Transmit**

The system shall support the ability to transmit on a selected channel or channels. The user interface shall provide visual feedback to the dispatcher that the transmission is either successful or blocked. When transmitting on multiple selected channels, if any channel is busy or unavailable, this shall not prevent transmission on non-busy channels.

### **8.3.3 Instant Transmit**

The system shall allow the dispatcher to perform an instant transmit on a radio channel without the need to place the channel into a selected state. An instant transmit on a channel shall not result in a transmission on currently selected radio channels.

### **8.3.4 Receive**

The user interface shall provide a visual indication that there is incoming audio traffic on a radio channel. If the channel is selected, the audio is routed to the applicable device (headset or select speaker).

The user interface shall provide a method for dispatchers to see that there is an incoming call on a channel(s) that is not visible in their primary workspace. This method shall allow the dispatcher to interact (select and/or transmit) with that radio channel if necessary. Which channels appear to the dispatcher via this method shall be configurable by a technician or system administrator.

### **8.3.5 Monitor, Idle States**

The user interface shall allow the dispatcher to place audio from a specified radio in a monitor speaker. The user interface shall be capable of allowing the dispatcher to change which monitor speaker the audio is routed to at any time.

The user interface shall allow the dispatcher to view activity and visual indications on a radio channel on their screen without requiring the audio to be present in the select or monitor speakers.

### **8.3.6 Radio ID & Alias**

When available, the PTT ID shall be displayed on the user interface for an incoming radio transmission. When available, the contact entry name shall be displayed for the matching PTT ID from the console system's data repository

### **8.3.7 Time Stamp**

The user interface shall display the time that an incoming or outgoing radio transmission occurs.

### **8.3.8 Alert tone**

The system shall be capable of transmitting a predefined alert tone on the selected channel(s).

### **8.3.9 Multi-select (Simulselect)**

The user interface shall support multi-channel selection where selecting a channel does not change the state of a previously selected channel. The user interface shall support this without requiring the dispatcher to change modes or screens. Multi select shall be activated by a single mouse click or touch. While multi-selected a dispatcher shall be able to instant transmit to a group or individual in the multi-select with a single mouse click or touch.

The user interface shall allow the dispatcher to see who is in the Multi-Select and add or remove entities with a single mouse click or touch.

### **8.3.10 Frequency/Talkgroup Change**

The system shall allow the dispatcher to change the frequency or talkgroup on a radio channel if allowed by the basestation. The system shall support the ability for a technician or administrator to label the radio frequencies/talkgroups to a desired name. When the dispatcher changes the frequency on a radio channel, the change shall be reflected on all consoles.

### **8.3.11 Patch**

The system shall support the ability to connect two or more channels together such that the receive audio of one channel is repeated on all other channels who are members of the patch. Each radio channel that is a member of a patch shall clearly display that they are in a patch and of which patch they are a member. This indication shall be shown on all consoles displaying that channel.

Dispatchers shall have the ability to add and delete individual radio channels to and from an active patch. They shall also have the ability to tear down the entire patch all at once.

Dispatchers shall have the ability to become active members of the patch or remove themselves from the member list.

Dispatchers shall have the ability to instant transmit on a group or individual within the patch by a single mouse click or touch.

The user interface shall provide a list of the patch members. The dispatcher shall be able to view the members in all system patches.

### **8.3.12 Permanent groups**

The console system shall allow for a pre-defined group of radio channels to be established and saved permanently in the system. This group shall be represented on the user interface via a single visual element. Selecting and transmitting on the visual control operates the same as if the dispatcher had individually selected each channel.

### **8.3.13 Dynamic groups**

The console system shall allow for a dispatcher to create a group of radio channels dynamically during their console session.

### **8.3.14 Priority/Channel Marker**

The system shall allow for a priority marker to be placed on any and all analog channels in the system as desired on a channel by channel basis. The frequency, duration, interval, and amplitude of the priority marker shall be adjustable in software.

## **8.4 TELEPHONE CONTROLS**

### **8.4.1 Answer/Release**

The user interface shall allow the dispatcher to answer an incoming telephone call. It shall not be necessary to have a telephone line resource present on screen in order to receive and answer an incoming call. The dispatcher shall have the ability to terminate the call via a user interface control.

### **8.4.2 Outgoing Call**

The user interface shall allow the dispatcher to place an outgoing call via a dialer from their console screen. It shall not be required to have the dialer permanently displayed on the screen in order for the dispatcher to place the call. The system shall support the ability to also dial from a keypad at the console position.

The system shall support the ability for the dispatcher to place an outgoing call from a predefined contact entry.

### **8.4.3 Redial**

The user interface shall allow the dispatcher to redial the last number used for an outbound call without the need to re-enter the digits. The user interface shall display the call information before placing the call.

### **8.4.4 Caller ID**

When available the caller identification information shall be displayed on the user interface for an incoming call.

The contact entry shall be displayed on the user interface if the calling number matches an entry in the console system's data repository.

### **8.4.5 Mute**

The user interface shall allow the dispatcher to mute their microphone source to the telephone caller. There shall be a visual indication that the microphone is muted.

### **8.4.6 Hold**

The dispatcher shall have the ability to place a telephone call on hold. There shall be a visual indication that the call has been placed on hold. A technician configurable hold timer shall be available such that when the timer expires, the telephone call will re-ring at the position.

### **8.4.7 Call Monitor**

The system shall allow for another position to monitor a telephone call. While monitoring a call the user can listen to the parties on the call but not have their microphone live as part of the telephone call.

### **8.4.8 Join Call**

The system shall allow for another dispatcher to join an active telephone call.

### **8.4.9 Patch Telephone to Radio**

The system shall provide the ability for a telephone call to be patched to one or more radio channels.

## **8.5 PAGING CONTROL**

### **8.5.1 Instant Call Page**

The system shall provide the ability to initiate a paging alert through activation of a single action. Instant calls may be pre-programmed with one or more pages with differing formats.

### **8.5.2 Page Steering**

Instant call pages may be programmed to go out on pre-defined channels or programmed to go out on the selected channel(s).

### **8.5.3 Page Transmission**

The console shall provide both audible and visual cues of the progress of the paging process. The dispatcher shall have the ability to stop the page transmission after initiation. There shall be an indication to the dispatcher if a page was transmitted successfully or not.

The system shall support the ability to simultaneously send different pages on multiple channels.

## **8.6 GENERAL CONTROLS & SYSTEM FUNCTIONS**

### **8.6.1 Volume – individual, master**

The user interface shall have increase/decrease volume controls that are adjustable by the dispatcher. There shall be controls to change the volume level on each individual channel independently from one another and controls to change volume level on all channels routed to a particular speaker.

### **8.6.2 Volume Boost**

The user interface shall allow the dispatcher to boost the volume to a pre-defined level for each channel independently and for any speaker. A visual indication shall appear when that item is placed into the boosted state.

### **8.6.3 Mute**

The user interface shall allow the dispatcher to mute the volume to a pre-defined level for each channel independently and for any speaker. However, muting of the selected channel(s) shall not be allowed. A visual indication shall appear when that item is placed into the muted state.

### **8.6.4 All Mute**

The user interface shall allow the dispatcher to mute all monitored channels (anything not selected) simultaneously to a pre-defined level. There shall be an indication on the screen that channels are in a muted state. The all mute function may be removed by either the dispatcher invoking the action or via a timer. The timer length shall be adjustable by a technician or administrator.

### **8.6.5 Console Voice Intercom**

The system shall allow a console dispatcher to talk directly to one or more dispatchers within the console system. The user interface shall allow the dispatcher to select the destination console(s) from a list of logged in users.

### **8.6.6 Console Text Messaging**

The system shall allow a console dispatcher to communicate with one or more dispatchers within the console system via freeform text messaging.

The user interface shall provide an indication that the dispatcher has an incoming and/or unread text message. In order to not disrupt the dispatcher from their current tasks, the dispatcher shall have the ability to read that message when desired versus immediately upon receipt.

For outgoing text messages, the user interface shall allow the dispatcher to select the destination console(s) from a list of logged in users or modify the destination console(s) when replying.



### **8.6.7 Call History**

The system shall provide a history of all radio transmissions, incoming and outgoing, for each channel displayed on the screen regardless of its selected state. The dispatcher shall be able to perform an instant transmit to a caller from the activity entry. The following information shall be displayed for each transmission: time, Mobile ID or contact alias (when available), and status. The dispatcher shall have access to the transmission recording from the activity history. The dispatcher shall be able to sort by various type of calls and channels of the call. History shall allow saving for up to 24 hours.

### **8.6.8 Event Replay**

The system shall provide short term recording/instant playback functionality for transmissions. The dispatcher shall have access to the individual transmission playback via the history window. The system shall also support the ability to playback recordings on a particular channel in succession without needing the dispatcher to individually initiate the playback of each recording. Event replay shall allow saving for up to 24 hours.

### **8.6.9 Parallel Status**

The status of any system resource (e.g. Radio, Phone, Aux I/O) shall be indicated at all consoles where the resource is displayed.

The user interface shall display visual indication on a radio channel of transmissions from other dispatchers on the console system.

### **8.6.10 Console Cross Mute**

The system shall provide a means of muting the transmit audio from one or more other consoles within the system on a console that is monitoring the channel on which the transmission occurred.

### **8.6.11 Channel Cross Mute**

The system shall provide a means of muting incoming audio (both transmit monitor and receive) on one or more channels when the system is transmitting on a given channel and frequency.

## **8.7 CONTACT-BASED DISPATCHING**

In addition to supporting traditional resource-based dispatching (where the dispatcher focus is on the gateway radios), the console shall also support contact-based dispatching that allows a dispatcher to instead focus on whom they wish to speak to, rather than the radio network, channel or media needed to contact the person or group. In support of this the console shall be capable of presenting icons for field units (both individual field users, as well as groups of field users) and those icons shall indicate the presence of traffic associated with the field unit (including talker ID and alias) and those icons shall allow the dispatcher to initiate transmissions to the field unit. This is desired in order to avoid the necessity of training dispatchers on the details of each radio network interfaced to their console.

## **8.8 MAP-BASED DISPATCHING**

In addition to displaying field units on in a fixed matrix, those consoles interfaced to and equipped with Location Services (a.k.a. Automatic Vehicle Location – AVL), shall be capable of showing a map of the jurisdiction for which they dispatch. On the map shall appear an icon for any field user or group of users they are interested in seeing (if those user's radios are equipped with location determining technology such as GPS receivers). The icons shall be placed on the map such that the dispatcher can see the location of the user. The icon shall also indicate the field user's voice traffic status, emergency state, and the dispatcher shall be capable of clicking on the icon to initiate a voice transmission to the desired user. This is desired in order to help dispatchers see which responders are closest to an incident. It is also desired in order to locate a specific user in the event they declare an emergency.

**8.9 SHARING INFORMATION WITH 3<sup>RD</sup> PARTY DEVICES (CAD, MAPPING...)**

The console shall have a set of Application program interfaces (APIs). This is a set of routines, protocols, and tools for building software applications. An API specifies how software components should interact. Additionally, APIs are used when programming graphical user interface (GUI) components.

The APIs shall include call status, caller ids, Location information, ability to select pages and send them to selected groups, Paging status, PTT ability for any group programmed on the console, emergency acknowledge and clear capability, and console and system health.