BENTON COUNTY MISSOURI

REQUEST FOR PROPOSALS (RFP)

Radio Dispatch and Call Taking Console System

PROPOSALS MAY BE MAILED TO:

BENTON COUNTY CENTRAL DISPATCH
ATTN: SUSAN CANFIELD
P.O. BOX 999
WARSAW, MO 65355

DUE DATE: August 22nd, 2014

TIME: 12:00 PM

1. GENERAL

Benton County Missouri Central Dispatch is inviting proposals from qualified firms to provide a radio dispatch and call taking console system as described in the included specifications.

2. PROPOSAL SUBMITTAL

Submit two (2) signed copies of proposal in a sealed envelope marked "RFP—Radio & Phone System" to the following address:

BENTON COUNTY CENTRAL DISPATCH
ATTN: SUSAN CANFIELD
P.O. BOX 999
WARSAW, MO 65355

Sealed envelope must include the Respondent's name and address. Proposal must be submitted prior to 12:00 PM, local time on or before Friday, August 22nd 2014. Proposals will not be accepted after the date and time designated above. It is the sole responsibility of the Respondent to see that their proposal is delivered and received in proper time. Any proposal received after designated date and time shall not be considered. Proposals will not be opened publically.

Benton County reserves the right to reject any and all proposals, in part or in whole, and to select the most responsive and responsible firm(s) as deemed in the best interest of the County, regardless of cost. The County also reserves the right to negotiate with the successful Respondent after the bid is awarded concerning possible changes. All submitted proposals will become County property.

In case of default by the successful Respondent, Benton County will procure the articles or services from other sources and hold the Respondent responsible for any excess costs occasioned thereby. Failure to deliver as guaranteed shall disqualify the Respondent from future biddings.

3. PROPOSAL FORMAT & INSTRUCTIONS

Proposals shall be as thorough and detailed as possible so that Benton County may properly evaluate Respondent's capabilities to provide the required goods. County may request Respondent to supplement initial proposals.

Instructions for Proposal Completion:

A. The name, title, address, and phone number of the individual with the authority to discuss all contents of the proposal should be included.
B. Respondent is to break each item into separate articles showing unit price with extended totals.
C. Respondent is to identify items they propose to furnish by brand or manufacturer and furnish specifications and descriptive literature.
D. The delivery date(s) or when work will start shall be stated in definite terms as they will contribute to the selection of the successful Respondent.

The proposal may also include any additional information that the Respondent believes will add to the persuasiveness of the proposal.

County shall not be responsible for Respondent's costs or expenses in responding to this RFP. The County expressly denies responsibility for, or ownership of, any items ordered until the same is delivered to the County and accepted.

The County desires to purchase all equipment from a single vendor for a turnkey situation.

Failure to comply with any of the instructions within this RFP and general conditions of the bid will disqualify the Respondent.

4. QUESTIONS CONCERNING THIS RFP

Any requests for clarification or additional information deemed necessary by any Respondent to present a proposal shall be submitted by email to rfp@bentoncomo.com. **Calls will not be accepted by the County in regards to this RFP.**

County is not responsible for any oral instructions or interpretations given by or to anyone whomsoever.

5. NEEDED EQUIPMENT & PRICING BREAKDOWN REQUIREMENTS

Quotation is to be for all equipment necessary for a fully functioning radio and call taker console system from a single manufacturer with nothing left to purchase. All options must clearly be stated as optional.

Pricing is to be for equipment, installation, and factory training on all supplied equipment.

Quote pricing for extended factory warranties and for selling dealer maintenance agreement.

All equipment must have as 1 year parts and labor warranty. Respondent or selling dealer must be factory authorized with factory trained personnel for installation and service of console system.

Quote for removal of all old wiring and equipment.

A. **IP BASED RADIO CONSOLE AND PSAP POSITIONS EQUIPMENT REQUIREMENTS:**
   a. 4-Console positions with 2-23" touchscreen monitors per position, 2-headset interfaces for radio and telephone UPS, select and unselect speakers, and 20 channels capacity, 4 SIP telephones plus 6 additional SIP phones for administrator purposes. Must have capability to interface to 3 landline trunks, 2 wireless trunks, and 8 admin lines, lobby intercom interface and interface for door switches, interface for indication of tower door being opened, and tower end equipment.
   b. Optional (quote separately):
      i. 4-Stack lights with installation to indicate radio PTT and telephone off hook status.
      ii. Call taking software for customer provided laptop computer for off-site use.

B. **IP BASED CENTRAL CONTROLLER EQUIPMENT REQUIREMENTS**

a. To include all central controller equipment supplied by manufacturer for a totally redundant power and network system. Must include 2 UPS for separate controller power supplies that in the case one would fail the other would continue to operate the system, VPN router with software for remote diagnostics, 7' equipment rack for mounting of equipment.

b. Optional (quote separately):

i. Interface for a Motorola APX 7500 mobile radio used on the statewide MOSWIN Motorola Astro P25 trunking system.

C. **BASE STATION RECEIVER EQUIPMENT REQUIREMENTS**

a. 7 VHF receivers with volume controls and speakers to receive frequencies that are presently not being monitored. 1 preamplified multicoupler for 7 or more receivers. 1 rack mounted power supply to power receivers. 1 rack mounted tray to hold receivers. Miscellaneous cables, connectors, etc. as needed. Installation using existing receive antenna and equipment rack. Reprogramming of Motorola MTR 2000 base stations.

D. **REMOVAL OF EXISTING EQUIPMENT**

a. Quote for removal of all old wiring and existing equipment not to be used.

6. RADIO DISPATCH SYSTEM BID SPECIFICATIONS

GENERAL REQUIREMENTS

A. **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.

B. **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.

C. **WARRANTY:** Bidder shall warrant all equipment to be free from defects in material and workmanship, and to operate in accordance with these specifications for a period of not less than one (1) year from date of shipment.

D. **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.

E. **SYSTEM DOCUMENTATION:** A copy of the system documentation shall be provided in electronic format via applicable storage medium (i.e. CD, DVD, USB memory stick, etc.). The console system shall include user documentation that addresses the following functions or activities:
   a. Hardware Installation
   b. System Configuration
   c. Console Operation
   d. Console Screen Design

SYSTEM REQUIREMENTS

A. **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.

B. **ENVIRONMENTAL:** The system shall operate over the temperature range 0 to 50°C.

C. **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+1configuration, such that the loss of single power feed or the loss of a single power supply component shall not cause a disruption in service.

D. **CONSOLE EQUIPMENT**:
   a. Consoles shall be PC-based and support Windows 7 or 8 64-bit operating system. Console PCs shall support redundant IP networks and support dual display monitors.
   b. A 23"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.
   c. The following items shall be offered as options for dispatch operation:
      i. **MINIMUM 2 SPEAKERS**: Each speaker shall be in an individual enclosure and have separate volume control knob. Speakers shall also be equipped with LEDs indicating power to the device and receive voice activity.
      ii. **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).
      iii. **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.

E. **TELEPHONE RADIO HEADSETINTEGRATION (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.
   a. 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).
   b. 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.
   c. When the external telephone returns to an "on-hook" condition, the Telephone/Radio Headset Interface shall return the select audio to the headset earpiece.

F. **SYSTEM MAINTENANCE:**
   a. 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.
   b. There shall be a centralized method of device discovery and provisioning of device I P network addresses, and all associated parameters for that device, such that it eliminates the need to access each device separately.
   c. All primary settings and adjustments on the backroom equipment shall be accomplished via software control.
   d. 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.

G. **REDUNDANCY:**
   a. All console system hardware devices shall be capable of supporting redundant IP networks. There shall be no dispatch operational impact based on a single network failure when operating in redundant mode.
   b. The architecture of the console system shall allow 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.

INTERFACE AND CONTROL REQUIREMENTS

A. **TONE REMOTE CONTROL**:

a. 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.
b. 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.
c. 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 2350Hz. Guard Tone frequencies shall be field selectable including the following tones: 2100,2175, 2300, 2325, 2600, 2800, and 2970 Hz.
d. 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%.
e. 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.

B. **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 –l5mA in 0.5mA increments.

C. **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-lead".

D. **INTELEGENT RADIO INTERFACE:** The console shall be capable of controlling the following Motorola radios for specific interface needs: TKx180 for analog/conventional systems, TK-5x10 for P25 CAI conventional and trunking systems, Harris MS300/7300 for EDACS, P25 CAI conventional, and trunking systems, Motorola XTL 2500/5000 for P25 CAI conventional and trunking 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.

E. **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-I D.

F. **TONE SIGNALING:** 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. The console shall be capable of supporting the following tone signaling formats:
   a. Motorola Two-Tone,
   b. Motorola Quick-Call 2 (1+1),
   c. GE® Two-Tone,
   d. Reach Two-Tone,
   e. Plectron (Two-Tone w/ non-standard frequencies, durations, and gaps),
   f. DTMF,
   g. Knox DTMF,
   h. 5/6 Tone.

G. **MDC 1200/FLEETSYNC SIGNALING:** The system shall support encode and decode of MDC 1200/Fleetsync. The interface to MDC 1200/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.

H. **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-bitdecode, 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].

I. **TELEPHONE INTERFACE:** The system shall be capable of supporting 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.

J. **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 fallowing 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.

K. **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.

FUNCTIONAL REQUIREMENTS

A. **GENERAL USER INTERFACE**:

a. 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.
b. 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.
c. 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.
d. The dispatcher shall have access to system resources in the system that may not be permanently displayed on their screen including:
    i. adding a radio channel to their workspace for as long as the dispatcher requires,
    ii. allowing for an instant transmit or access to receive notifications for radio channels that they do not add to the workspace,
    iii. adding Aux I/O sensors and controls to their workspace for as long as the dispatcher requires.
e. The user interface shall allow the ability to associate individual, customized images to represent each entity stored in the console system data repository.
f. The console software shall allow for the ability to display the dispatch center's name, logo, or other graphic icon on all screens.

B. **AUX I/O:**
a. The console system shall support connection to auxiliary digital inputs (for receiving status from external equipment) and digital outputs (for external device control).
b. 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.
c. Output controls shall be available in latching and momentary operation. The output control shall be capable of showing at least two indication states.
d. 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.

C. **RADIO CONTROLS**:
a. **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.

b. **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.

c. **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.

d. **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.

e. **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.

f. **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.

g. **TIME STAMP:** The user interface shall display the time that an incoming or outgoing radio transmission occurs.

h. **ALERT TONE:** The system shall be capable of transmitting a predefined alert tone on the selected channel(s).

i. **MULTI-SELECT:** 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.

j. **FREQUENCY/TALKGROUP CHANGE:** The system shall allow the dispatcher to change the frequency or talkgroup on a radio channel if allowed by the base station. 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.

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

l. **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.

m. **DYNAMIC GROUPS:** The console system shall allow for a dispatcher to create a group of radio channels dynamically during their console session.

n. **PRIORITY/CHANNEL MARKER:** The system shall allow for a priority marker to be placed on any and all 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.

D. TELEPHONE CONTROLS:

a. **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.

E. PAGING CONTROLS:

a. **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.

b. **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).

c. **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.

F. GENERAL CONTROLS & SYSTEM FUNCTIONS

a. **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.

b. **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.

c. **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.

d. **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.

e. **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.

f. **CONSOLE TEXT MESSAGING:** The system shall allow a console dispatcher to communicate with one or more dispatchers within the console system via 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.

g. **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.

h. **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.

i. **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.

j. **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.

k. **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.

7. CALL TAKING EQUIPMENT SYSTEM AND WORKSTATION BID SPECIFICATIONS

BASIC SYSTEM REQUIREMENTS

A. The system must be capable of receiving both traditionally delivered 9-1-1 calls as well as calls presented over an IP Network using a NENA i3 standard format.
B. The system shall meet all current applicable NENA standards.
C. The system shall be able to use TCP/IP based call control for the i3 interface.
D. The system shall use commercial off-the-shelf components.
    a. If proprietary components are used please describe the benefits.
E. The system must be compatible with AT&T (or comparable) Tandem 9-1-1 services.
F. The system shall provide native SIP and i3 support with gateways that accommodate telephony protocols including CAMA, ISDN PRI, and FXO.
G. The system shall support Phase 1 and Phase 2 Wireless using either Call Associated Signaling (20-digit) or Non-Call Associated Signaling (N-CAS).
H. The system shall support Automatic Call Distribution (ACD), including queue prioritization; skills based routing, overflow routing and ring-all call delivery. A console position shall support both ACD or ring-all calls.
I. The system shall be capable of both stand alone and hosted operation.
J. The system shall support from 1 to 7 additional remote PSAP locations without added hardware.
K. The system shall scale between 1 position and 5 operator positions without additional hardware.
L. In addition to 5 operator positions, the system shall support between 1-12 administrative phones without additional hardware (excluding phones).
M. The system shall accommodate up to 72 simultaneous calls in the base configuration.
N. The system shall support administrative PBX functionality including SIP telephones, Interactive Voice Response and Voicemail, without the addition of more hardware other than telephone sets.
O. The system shall provide a definable "user status" display. As an example, this display should allow users of the system to determine if a desired call taking position is off hook on a telephone call, not logged in, or taking a lunch break. This information shall be time stamped and available in report format.
P. A management information system (MIS) shall be available and shall provide both canned and ad hoc reporting capability.
Q. The system shall support web based reports.

SYSTEM RELIABILITY REQUIREMENTS

A. The system shall provide for full IP end-to-end connectivity with 99.999% reliability when deployed in a high grade IP infrastructure.
B. The system shall allow for all active calls on a server to be seamlessly recovered and reassigned to another call server with minimal disruption to any individual or conference call in process.
C. Disruption of any single point of failure shall disable no more than 50% of system resources.
D. SIP gateways can be configured to use dual Ethernet ports and to automatically switch all traffic to the active port.

E. Console positions shall use an internal SIP softphone as the primary sip extension for the console. The console shall also support a backup SIP extension.
F. In the event the primary SIP extension is detected as not functioning, the system shall automatically connect in progress calls to the backup SIP extension.
G. The system shall automatically reroute or maintain conventional SIP calls even when network anomalies of up to 30 seconds disrupt communications.
H. The system must be protected by redundant modules eliminating any single point of failure.
I. The main servers will use high performance solid state drives with a MTBF > 1,000,000 hours. The main servers will be low power and low heat generation resulting in high availability.

SYSTEM ADMINISTRATION

A. The system shall allow an administrator, based on permissions, to perform core functions on a multi-PSAP system at these levels:
    a. System
    b. Multi-PSAP
    c. Installer
    d. Supervisor
    e. Admin
B. The functionality for these levels will include:
    a. Web page setup
    b. Policies and permission settings
    c. Privilege levels
    d. Call controller settings
    e. System manager settings
    f. PSAP settings
    g. System reports
    h. System status summary
    i. Trunk setup
    j. Trunk routing rules
    k. Source group setup
    l. DID setup
    m. Queue setup
    n. Call policy setup
    o. Skills setup
    p. Roles setup
    q. User setup
    r. Extension setup
    s. One button transfer definitions
    t. ESN setup
    u. Web directory contacts setup
    v. Console software download access setup
    w. Console not ready reasons setup

x. Import extensions
y. Auto-attendant setup
z. Conference room setup
aa. Ring groups setup
bb. Routing rules
cc. Call taker logout
dd. ACD wall board
ee. Call taker wallboard
ff. Live call taker status
gg. Reports
hh. Initial configuration
ii. Configuration updates
jj. Status
kk. Live reports
ll. Interactive reports
mm. Performance reports

C. An individual PSAP can be selected and configured from a list of the hosted PSAPs using the web admin tools. The PSAP settings will include:
   a. Call Policy
   b. Skills
   c. Users
   d. Roles
   e. Queues
   f. Dial Plans
   g. Source Groups
   h. Trunk Routing Rules
D. The system shall support importing users and extensions.

SYSTEM ALARM MONITORING

A. The system shall monitor overall system health and provide an administrative summary. Alarms can trigger visual and audio outputs, supervisor alerts or emails based on the PSAP security policy.
B. System management software shall constantly monitor the system for faults and/or performance degradations. It shall provide visual and audio alarms as well as supervisor notification and emails based on security policies at the PSAP.
C. System shall allow remote access via standard VPN connections for maintenance and diagnostic purposes.

SYSTEM INTERFACE REQUIREMENTS

A. The system shall support TDD and Text-to-911* (when commercial available) at each position.
B. The system shall support legacy serial ALI requests.

C. The system shall be capable of remote call taker positions. Network bandwidth requirements shall be no more than 175 kbps per position per voice call. Media delivery will require additional bandwidth.
D. NENA standard CAD, GIS and Net Clock interface shall be provided. The system shall have an integrated ESRI map display that supports Lat/Long plotting and tracking for wireless calls.

SYSTEM ENVIRONMENTAL REQUIREMENTS

A. Backroom equipment footprint shall be minimized.
B. Dual AC power delivery shall be required.
C. Redundant power supplies with an efficiency rating of 90%+ shall be required.
D. Cabinets will not require cooling fans.

WORKSTATION HARDWARE

A. Console PC Hardware shall be commercially available using 64-bit Windows 7 Professional or Windows 8 operating system.
B. Workstation must support standard keyboard, mouse and flat panel monitor.
C. The system shall support laptop mode operation using an off the shelf 1920xl080 resolution laptop and USB headset.
D. An audio dock shall be provided at each position and will provide a 2-wire analog position recording connection as well as headset jacks.

WORKSTATION MIS

A. The following reports/capabilities should be accessible by an administrator:
    a. Live report generation and monitoring
        i. ACD Wallboard
        ii. Call Taker Wallboard
        iii. Call Taker Status
        iv. Live Calls Report
        v. Source Group Status
    b. Call Taker Management Reports
        i. Punch Clock Records
        ii. Call Taker Logout
    c. PSAP Reports
        i. CDR Report
        ii. Call Taker Statistics
        iii. Call History
        iv. General Performance Reports
        v. Call Report
    d. ACD Performance
    e. QUEUE Performance
    f. Supervisor Dashboard or Wallboard
    g. Periodic and Historical Reporting

WORKSTATION GRAPHICAL USER INTERFACE (GUI)

A. The user interface shall be designed to reduce screen clutter, dynamically providing feature access when the requirement exists or when an interest is expressed by the user.
B. The GUI shall have one-click operation for access to critical functions whenever possible.
C. Feature access and user privileges shall be permissions based.
D. The GUI shall support screen resolutions of 1920x1080.
E. A global telephone number directory shall be accessible in the GUI. The telephone directory shall be searchable by name or number.
F. A personal telephone directory shall be available and permissions based. Personal directories shall follow a user login.
G. The GUI shall have an area dedicated for Standard Operating Procedures (SOPs) storage and review.

WORKSTATION SYSTEM OPERATION

A. **ABANDONED CALLS**
    a. Abandoned calls shall be recognized within one second and provide full ANI and ALI if available.
    b. The system shall have the ability to deliver the abandoned call with the same priority as a live 9-1-1 call.
    c. Abandoned calls shall be immediately placed into a specified queue for abandoned calls.
B. **QUEUES**
    a. The system shall support up to 1600 definable queues.
    b. The system shall support PSAP defined ACD skills, with assignable proficiency levels from 1 to 5.
    c. The system shall allow the ability to associate DID calls with a trunk and assign a call origination type that is captured in the CDR record.
    d. The system shall allow for the use of an associated call tag with calls that is captured in CDR reporting.
    e. The system shall allow prioritizing of calls based on queue assignments.
    f. The system shall allow the use of the SIP header information for call routing in an i3 hosted environment.
C. **ACD**
    a. Automatic Call Distribution shall be available at any console positions as a licensed feature.
    b. Call takers shall have the ability, based on permission, to "toggle" into unassigned queues as required by call levels or skills required.
    c. Calls shall be classifiable using PSAP defined call tags and "re-queued" to other queues through simple mouse clicks.
    d. Calls that reside in a queue for over a programmed period of time shall have the ability to "overflow" to other queues as specified.
    e. Calls shall have the option of being alternately routed based on multiple triggers including number of rings, operator skill level or loss of network connectivity to original destination.

f. Based on the call type and call taker roles, the system shall provide PSAP defined call policies to control call behaviors for hold, park and transfers.

D. **AGENCY TRANSFER (SELECTIVE)**
   a. One button transfers through the legacy telephone network shall be provided dynamically based on ESN assignment or fixed via programming.
   b. A search feature shall allow a call taker to select a specific transfer-to agency.

E. **BARGE IN:** The call taker shall have the ability, based on permission level, to barge into a call.

F. **MONITOR CALL:** The call taker shall have the ability, based on permission level, to monitor a call.

G. **MONITOR CALL TAKER:** The call taker shall have the ability, based on permission level, to monitor a call taker. Any calls delivered to the call taker can be monitored until the monitoring is removed from the call taker.

H. **BUSY INDICATION:** When off-hook handling a call, or in a not ready state entered into manually by the call taker, a visual indication of that state shall be displayed for other users of the system.

I. **CALL ANSWER**
   a. A single "answer" button shall be provided which will always present the oldest, highest priority call to the appropriate call taker.
   b. Customer address information (ALI) shall be presented to the call taker prior to call answering, allowing for selective answer if allowed based on permission level.

J. **CALL HISTORY**
   a. The system shall provide the call taker with a list of the previous calls to 9-1-1 made by the current caller telephone number.
   b. The system shall allow the call taker to retrieve previous 9-1-1 call information based on the address of the caller.

K. **CONFERENCE:** The system shall allow call takers, based on permission levels, to establish conferences.

L. **HOLD**
   a. There shall be no limit to the number of calls a call taker can place on hold.
   b. A hold timeout shall optionally be provided that can re-queue or highlight calls that are over the configurable hold timeout threshold.
   c. A hold timeout timer based on the configured value shall be visible to the call taker.
   d. Call policies shall control whether a call can be put on hold.
   e. Calls on hold shall be visible to all call takers on the system and shall identify the ANI of the caller, the time the call has been on hold and the name of the call taker who placed the call in that state.
   f. Upon retrieval of call on hold, ALI information (or calling party number on admin call) will display.
   g. The system shall have a configurable on-hold limit and indicator, and the ability to re-queue calls if the time limit is exceeded.

M. **INSTANT RECALL RECORDING**
   a. The system shall provide temporary audio recording and playback for telephone.
   b. Recordings shall be presented to the call taker in a log format.
   c. Call segments shall be distinct when viewed in the log.

N. **MUTE:** A call taker, based on permissions, shall be able to mute their microphone.

O. **PARK**
   a. Call Park shall effectively allow call takers to place a call on hold (parked) at a defined extension, allowing other PBX users or telecommunicators the ability to access that call through a simple keystroke process.
   b. All "parked" calls shall be available in a list for retrieval by the call takers.
   c. The system shall have a configurable park time limit and indicator, and the ability to re-queue calls if the time limit is exceeded.
   d. Call policies shall determine if a specific type of call can be parked.

P. **RELEASE:** The user interface shall give the call taker the ability to release from a call and shall support forced disconnect if available from local carrier.

Q. **SPEED DIAL**
   a. The user shall have access to a speed dial library provided in a hierarchical listing.
   b. The user shall not be required to select a particular outgoing telephone line in order to place a call.

R. **TDD/TTY**
   a. The call taker shall have the ability to answer a TDD/TTY call when delivered, using both a keyboard or pre-defined dialog selectable from a list.
   b. The call taker shall have the ability to toggle between voice and text during the course of a TDD/TTY call. These capabilities are referred to as Hearing carry-over and Voice carry-over

S. **TRANSFERS:** At least three (3) types of PBX transfers must be provided. These shall include:
   a. "blind transfer",
   b. an "announced transfer" where the original caller is placed on a soft hold while the digits are dialed and the announcement is made, and
   c. an "attended transfer'' where the call taker and caller remain connected as the third party is brought into the call.