ISO SOC Video Wall Requirements
Scored Technical Specifications
Note to Vendors: The numbering within this document bears no relationship to the numbering within the main RFP document.

The following are the requirements for the ISO SOC video wall.

4.2 General Requirements

Contractor shall confirm its understanding and compliance with the specifications and requirements. (After Contractor award and upon approval of final design and materials list, OCIO-ISO shall issue a purchase order to the Contractor. Throughout the project, the OCIO reserves the right to make any needed changes in the project scope and design.)

The submittal package will include but not be limited to the following:

- Product data sheets
- Architectural coordination drawings
- Technical drawings
- Warranty for each item

Product cut sheets shall accompany all requests for product substitutions for any reason.

Contractor's drawings shall conform to the following:

- Fonts must be legible (suggested minimum 1/16" on 11x17 prints)
- CAD files must be exportable to AutoDesk Drawing (.dwg) format.
- Contractor plans for AV equipment layouts shall be scaled to be not less 1/8" = 1'-0". Details for equipment mounting shall be scaled to be not less than 1/4" = 1'-0".

All of the following sections should be addressed within the above listed directions for the submittal package:

4.2.1.1 Control System Programming.

4.2.1.1.1 Contractor shall program 1 (one) touch panel to provide intuitive control of all basic AV functions including: program\speech volume levels, video source\destination routing, AV system power, and external media player transport functions.

4.2.1.1.2 Contractor shall utilize InfoComm International's "Dashboard for Controls' concept for touch panel layout unless directed by OCIO-ISO.

4.2.1.1.3 Contractor shall provide layout of touch panel and hard-button panel pages for approval by OCIO-ISO.

4.2.1.1.4 Contractor's staff member shall be certified by control system manufacturer prior to programing the control system.

4.2.1.1.5 All control system code and programming, including touch panel code and graphics, perpetual rights shall be assigned to the OCIO-ISO.

4.2.1.1.6 Contractor shall provide lockable enclosure for the touch panel. Location of the enclosure is to be coordinated with the OCIO-ISO.

4.2.1.2 AV Displays. The following height of the base of the visual displays is recommended.

4.2.1.2.1 Video Wall (SOC) – 48" AFF or higher if front row of control room operators will protrude unobstructed viewing of the bottom of the display. The display mounting shall be in compliance with ADA specifications.

4.2.1.3 Video Wall Layouts: Contractor shall provide a minimum of eight (8) proposed video wall layouts and coordinate with OCIO-ISO on the desired layouts and obtain approval by OCIO-ISO before programming.

4.2.1.4 AV Racks.

4.2.1.4.1 Contractor shall follow accepted standards on rack mounted equipment including allowance for proper cooling of equipment within the racks.

4.2.1.4.2 Contractor shall provide blank faceplates in any area in which another component or shelf is not installed.

4.2.1.4.3 Contractor shall provide shelf for mounting of any device for which a rack mount kit is not available.

4.2.1.4.4 Contractor shall provide drawer within the AV rack to house Operations\ Maintenance Manuals and any other small accessories and/or cables.

4.2.1.5 AV Design Bid and Specifications.

4.2.1.5.1 System design is around products listed within this Chapter. Intent of product specification is to provide standard of quality and function for installed materials to meet OCIO-ISO design requirements.

4.2.1.5.2 Any Contractor request for equipment substitutions shall meet or exceed performance of devices listed in this Chapter. Contractor shall provide manufacturer's published specifications to verify performance.

4.2.2 Base Integrated Audiovisual System Description. Contractor shall confirm its understanding and compliance with the following specifications.

4.2.2.1.1 The Contractor shall design, procure, install hardware, software and provide OCIO-ISO training on an integrated audiovisual system within the Security Operations Center (SOC) located in the OCIO location at 1305 East Walnut Street, Hoover State Office Building, B Level, Des Moines, Iowa which should be rated for 24/7 operation.

4.2.2.1.2 The integrated system will include the following primary system components:

4.2.2.1.2.1 Display System: One (1) video wall display providing the ability to view multiple sources simultaneously arranged in a logical layout.

4.2.2.1.2.1.1 Professional grade, high-definition, 55" ultra-narrow bezel LCD, LED or OLED flat panel arranged in a five (5) wide by two (2) high video wall array with a bezel size of no more than 3.5 mm.

4.2.2.1.2.1.2 Supported on pedestals and frame kits to remove the primary load from the wall and transpose it to the floor base.

4.2.2.1.2.1.3 Contractor may quote an optional mount system that attaches to the existing wall structure.

4.2.2.1.2.2 Video Wall Management System.

4.2.2.1.2.2.1 System Overview:

4.2.2.1.2.2.1.1 The system will consist of scalable 'Nodes' that encode, decode and transcode H.264 video and audio streams. The system should also support USB inputs for soft KVM control over the network. Each node should have two digital video inputs and two digital video outputs to support dual link DVI resolutions of up to 2560x1600. Total number of inputs is 18. The system should also have integrated direct support for a minimum of 4 IP cameras with the ability to add additional cameras. The system should be able to accept and distribute direct H.264 streams from such devices.

4.2.2.1.2.2.1.2 The system should be capable of driving multiple video wall spaces connected by the OCIO-ISO's own IP network. The total system will be configurable and expandable from a single output to a 64 X 64 matrix available for a single video wall array. The system should allow the user to easily configure these outputs to create multiple single and multi-display video wall spaces. The system must be able to frame synchronize its outputs to ensure synchronization between display devices.

4.2.2.1.2.2.1.3 The system should also be able to create and manage sources from Windows remote desktop and VNC connections from any compatible device on the network.

4.2.2.1.2.2.1.4 All sources should be independent of location and be distributed across the entire network, allowing sources to be displayed on any of the configured video walls.

4.2.2.1.2.2.1.5 The system must be managed\configured via an intuitive web based user interface (webUI). The webUI must not be stored on a separate device. Unit must function if webUI is not responsive.

4.2.2.1.2.2.1.6 The system must have a client application that is not individually licensed allowing it to be installed on multiple user computers. This client application must be capable of

positioning, editing and scaling sources on any of the available video walls. This application must also be able to create source templates or scenarios that can be saved and recalled externally.

4.2.2.1.2.2.1.7 The system must be fully High Definition Content Protocol (HDCP) compliant and support HDCP sources and display devices. Real Time Streaming Protocol (RTSP) should be used to establish and control streaming connections between nodes.

4.2.2.1.2.2.1.8 H.264 encoding should be used to encode audio and video sources. H.264 should also be used for its compression quality and efficiency to keep network bandwidth to a minimum. Each 1920x1080@30Hz signal should use an average of 4mb/s bandwidth however; the system should be capable of reducing and increasing the available bandwidth to any given source.

4.2.2.1.2.2.1.9 Ability to integrate with the ICN Network Operation Center located in the Grimes Bldg. as well as any additional approved Operation Centers not operated by the OCIO. Capability to securely share information from screens with ICN and any approved Operation center.

4.2.2.1.2.3 System Requirements.

4.2.2.1.2.3.1 Hardware platform capabilities.

4.2.2.1.2.3.1.1 The system should be comprised of one or more individual hardware 'nodes' that connect together over an IP network to form the overall system. Nodes may be as small as 1 X 1 to no more than 4 X 4 and need to be expandable over an IP network to at least 64 inputs by 64 outputs. Each hardware node should meet the following requirements:

4.2.2.1.2.3.1.2 Inputs:

- Support for 2560x1600 (overlay mode using output connectors)
- From 640x480 to 1920x1080 encoded to H.264
- 3.5mm analog stereo audio encoded to H.264
- mini-USB – HID device emulation for (soft) KVM control of inputs.

4.2.2.1.2.3.1.3 Outputs:

- Up to 2560x1600 resolution per output
- Support for bezel compensation
- Support for display overlap
- Support for custom resolutions

4.2.2.1.2.3.1.4 Networking:

- Dual Gigabit Ethernet
- 100/1000 Mbps Ethernet, RJ45 connector

- Support for: IGMPv2,IPv4, IPv6, RTSP, SRTP, HTTP, TCI/IP

4.2.2.1.2.3.1.5 Encoding:

- One (1) high definition DVI inputs to L5 H.264 video streams at 30 Hz
- One (1) stereo audio streams

4.2.2.1.2.3.1.6 Decoding:

- Minimum 10 high definition network video streams at 30 Hz.
- Includes borders and labeling
- Up to 20 Mbps per video stream
- Direct support for network cameras.

4.2.2.1.2.3.1.7 Transcoding. VNC and RDP streams encoded to H.264

4.2.2.1.2.3.2 Software platform capabilities.

4.2.2.1.2.3.2.1 System Management Software, General:

- Only a single license shall be required, regardless of number of client seats.
- Intuitive graphic user interface (GUI) to provide ease in control and wall management.

4.2.2.1.2.3.2.2 System Management Software, WebUI:

- Network base software used to configure the system and manage users.
- Easy to use display wall setup interface.
- Source setup and management.
- Node management and diagnostics.
- Status information on encoding, decoding and transcoding percentages.
- The ability to setup and manage user parameters and access levels with optional support for 3rd party user authentication (Radius, TACACS+, Active Directory).
- User notes function enabling user to leave notes about nodes, display walls, and sources.
- The ability to increase\decrease the amount of bandwidth given to any one source.

4.2.2.1.2.3.2.3 System Management Software, Client Application:

- Network based software used for the daily operation of the system and video walls.
- Must contain an IP source viewer with functionality to decode and view any source.

- Positioning of source layers on any available video wall in any position.
- Source resizing and cropping.
- Source titling.
- Changing the aspect ratio of any source.
- The ability to save and recall an unlimited number of window layouts.
- Control of multiple display walls available across the network.
- Must be able to save a thumbnail image to represent a source.
- Must have free moving and dock able windows for sources, layouts, treatments and users on the desktop or mobile device.
- Should include a quick reference window positioning buttons to allow for easy layout configuration.
- Must include a 'soft KVM' feature to allow keyboard and mouse control of connected PC sources.
- Should be capable of loading a test pattern to the entire pixel space or to a single source.
- Must be able to load a high resolution still image as the pixel space background.

4.2.2.1.2.4 Sources:

4.2.2.1.2.4.1 Contractor to provide up to 16 Control Room Operator workstations with DVI-D outputs supplied by Contractor. OCIO-ISO to determine exact quantity when equipment is ordered.

4.2.2.1.2.4.1.1 Utilize DVI twisted pair extension kits with EDID management to extend signals from computers to the video wall management system head end.

4.2.2.1.2.4.1.1.1 Transmitters should have local monitor out. (Note – Use shielded CAT6 cable for extension kits) OCIO-ISO has Cat6 Shielded currently run between Purposed Rack area and desktops.

4.2.2.1.2.4.1.2 Computers and video cards to be provided and installed by OCIO-ISO.

4.2.2.1.2.4.2 One (1) ATSC TV Tuners supplied by Contractor.

4.2.2.1.2.4.3 One (1) Blu-ray Player for video supplied by Contractor.

4.2.2.1.2.4.4 One (1) AppleTv v3 for AirPlay supplied by Contractor.

4.2.2.1.2.4.5 One (1) Cable box for Cable TV supplied by OCIO-ISO.

4.2.2.1.2.4.6 One (1) Polycom HDX 8000 Codec and Camera.

4.2.2.1.2.4.7 Wired Conference Table. OCIO-ISO will install an appropriate conference table connector, to which vendor will connect system.

4.2.2.1.2.4.7.1 For wired connections, a DVI in-table should be provided.

4.2.2.1.2.4.7.1.1 Provide one (1) 12-foot DVI cable.

4.2.2.1.2.4.7.1.2 Provide “DVI to HDMI” and “DVI to Display Port” adapters tethered to the DVI cable.

4.2.2.1.2.5 Audio System:

4.2.2.1.2.5.1 One (1) zone of in ceiling speakers to allow for playback of audio signals from connected sources as selected by control room operators. Video wall will be able to have a unique audio signal playback as needed by the users. Vendor shall provide and install a minimum of (8) mono, 6-Inch in ceiling enclosed speakers. Vendor shall provide a speaker system design that will meet the needs of the room space.

4.2.2.1.2.5.2 Ability to mix audio from 2 unique sources into 1 mono output.

4.2.2.1.2.6 Control System:

4.2.2.1.2.6.1 Control system for control of the following at a minimum:

4.2.2.1.2.6.1.1 Recall of video wall layouts.

4.2.2.1.2.6.1.2 Power control for the video wall.

4.2.2.1.2.6.1.3 Control of the audio sources and levels.

4.2.2.1.2.6.1.4 Control of the TV tuners.

4.2.2.1.2.6.1.5 Ability to download control App to a touchpad device.

4.2.2.1.2.6.1.6 Control Application should have ability to be installed on multiple devices at the same time.

4.2.2.1.2.6.2 Location of touch panel is to be coordinated with the OCIO-ISO.

4.2.2.1.2.7 AV Rack System:

4.2.2.1.2.7.1 Optional 43RU Rack System with locking casters to house both AV and Network components including power distribution.

4.2.2.1.2.7.2 Rack should have front and side panels at a minimum. Front door should be lockable and allow for viewing of system component diagnostic LEDs without having to open the door.

4.2.2.1.2.7.3 Rack should be equipped w/cooling fans to maintain normal temperature operating range of installed equipment. Location of the rack is to be coordinated with the OCIO-ISO.

4.2.2.1.2.8 The Contractor will be responsible for final design and installation of all audiovisual materials and cabling, in addition to all system programming requirements as coordinated with the OCIO-ISO.

4.2.3 Rack Mounted Panels. Contractor shall confirm its understanding and compliance with the specifications and requirements within previous sections.

4.2.3.1 Rack panels with connectors, switches, controls, etc., shall be 16-gauge, flanged construction.

4.2.3.2 All text and graphics shall be engraved.

4.2.3.3 Finish shall match rack unless noted otherwise.

4.2.4 Rack & Rack Accessories. Contractor shall confirm its understanding and compliance with the specifications and requirements.

4.2.4.1 All accessories shall be from the same manufacturer as the rack enclosure.

4.2.4.2 Provide the following accessories for each rack shown on the Drawings.

4.2.4.2.1 Side panels for each individual rack or for end racks of each group of racks.

4.2.4.2.2 Solid or fan top as shown on the Drawings and solid rear door.

4.2.4.2.3 Grounding stud in top rear of rack.

4.2.4.2.4 Full height rear mounting rails.

4.2.4.2.5 Full height solid copper bus bar bonded to rack.

4.2.4.2.6 Rack work light.

4.2.4.2.7 Horizontal lacing bars (as required).

4.2.4.2.8 Blank Panels as necessary to close front of rack.

4.2.4.2.9 Vents, blowers, fans and fan packs as necessary to properly dissipate heat.

4.2.4.2.10 Power distribution as required.

4.2.4.2.11 Caster base or “slide out” rack as needed for specific location.

4.2.5 Site Conditions. Contractor shall confirm its compliance with the site requirements.

4.2.5.1 Contractor shall coordinate all access to the site at all times with the OCIO-ISO.

4.2.5.2 Contractor shall adhere to the OCIO-ISO safety standards\security policies.

4.2.5.3 All employees of the Contractor shall wear identification clearly indicating the Contractor’s company while on site.

4.2.5.4 Contractor shall store equipment in a manner that will not interfere with others and shall coordinate secured storage at the site with the OCIO-ISO.

4.2.5.5 Contractor shall protect all work and equipment from damage by others.

4.2.5.6 Contractor shall protect all existing work in place by others from damage by the Contractor. Contractor will be solely responsible for any/all damage to work in place by others.

4.2.5.7 Contractor shall keep areas around and inside of each piece of equipment and each rack free from dust, dirt and debris throughout the project. Equipment that is not properly maintained during installation shall be replaced at no cost to the OCIO-ISO before final payment is made to the Contractor.

4.2.5.8 All equipment and materials stored at Contractors facility(s) or stored and/or installed at the project site will remain the property of the Contractor unless OCIO-ISO ownership is specifically assumed in writing by the OCIO-ISO. Contractor shall be solely responsible for the protection of all equipment from damage, theft or vandalism regardless of cause, until OCIO-ISO ownership is specifically assumed in writing by the OCIO-ISO or the work described herein is accepted by the OCIO-ISO at the time of official turnover.

4.2.5.9 Contractor shall coordinate all debris removal with OCIO-ISO.

4.2.5.10 Contractor employees working in the SOC shall receive a passing background check.

4.2.6 Installation. Contractor shall confirm its compliance with the specifications and requirements.

4.2.6.1 General.

4.2.6.1.1 Quality of Work – Perform labor to accepted industry standards and state and local codes to accomplish complete and working system.

4.2.6.1.2 Materials & Labor – Provide specified products and other incidental materials, appliances, tolls, and transportation required for complete and functioning systems. Provide personnel to perform labor who are skilled in techniques and can demonstrate technical knowledge in AV infrastructure system installations.

4.2.6.1.3 Documents at Job Site – Keep following documents at job site during the entire installation process:

4.2.6.1.3.1 Complete specifications and drawings

4.2.6.1.3.2 Approved shop drawings

4.2.6.1.3.3 Approved product data

4.2.6.1.3.4 Progress set of project record documents

4.2.6.1.4 Mounting – Mount equipment\enclosures plumb and square. Ensure that permanently installed equipment is safely held in place. Design equipment supports to support loads imposed with safety factor of five (5) or greater.

4.2.6.1.4.1 All equipment, except that designated as movable, portable or loose equipment, shall be secured and permanently attached to racks or structure in a manner which will require the use of a tool (e.g., screw driver, nut driver, etc.) for removal.

4.2.6.1.4.2 All equipment mounted overhead that has a composite weight, including mounting hardware and brackets, of forty pounds or more shall be mounted using plans and specifications approved by a licensed structural engineer. All fees and expenses related to structural approval shall be paid by the Contractor.

4.2.6.1.5 Dimension Verification – Verify dimensions\space requirements to assure that proper mounting, clearance, and maintenance access space is available.

4.2.6.1.6 Contractor shall coordinate project work so as not to cause significant disruption of the OCIO-ISO's daily workflow in the project area.

4.2.6.1.7 Clean-Up – Leave project clean each day. Place debris (ex. solder splatter, cable ends, stripped insulation, spent crimp connectors, gypsum board and ceiling tile dust, and product wrappings and cartons) in designated area. After completion of installation, thoroughly clean areas worked, including non-visible areas such as equipment rack interiors, rack top panels, and inside lockable floor and wall boxes.

4.2.7 Firmware.

4.2.7.1 Contractor shall install the firmware versions selected for all programmable or configurable devices.

4.2.7.2 Contractor shall be responsible for up to two additional firmware plus manufacturer updates until project closeout.

4.2.7.3 Contractor shall notify the OCIO-ISO prior to any change of firmware in any programmable or configurable device until the Contractor is released from all installation and warranty responsibilities.

4.2.8 Equipment Racks, Conduit, and Raceways.

4.2.8.1 Racks – Looking into the rack from the rear, locate AC power, control, data and speaker wiring on the left; line level audio, control, video, and RF wiring on the right. Keep several inches of space between power cables and other signals.

4.2.8.2 Provide labels on receptacles within AV racks indicating branch panel\circuit number.

4.2.8.3 Provide a full height, technical ground bus bar in each equipment rack, mount adjacent to the power raceway and electrically bond to rack.

4.2.8.4 Install rack mounted equipment as indicated on the approved AV shop drawings, and make connections within the racks before delivery to job site.

4.2.8.5 Provide insulated connections between the building electrical raceway and the equipment racks.

4.2.8.6 Provide insulated connections between the AV raceway and the equipment racks.

4.2.8.7 Provide EMT stubs, with insulated bushings to protect cable, into the above ceiling area for routing cable into the equipment racks.

4.2.8.8 Do not exceed 40% conduit fill.

4.2.9 Labeling.

4.2.9.1 Contractor shall provide engraved lamicoid labels on front and rear of rack-mounted equipment. Mount labels plumb and square.

4.2.9.2 Indicate IP address for all components connected to a local area network.

4.2.9.3 Provide permanent label on plug end of power cords of all rack mounted equipment identifying the power cord with the equipment.

4.2.9.4 Provide labels for front panel input\output buttons of AV routers, switches, mixers, etc.

4.2.9.5 Provide text/graphics engraved directly on receptacle plates, panels, and rack panels.

4.2.9.5.1 Use eighth inch letters with contrasting fill color.

4.2.9.5.2 Label all plate mounted connectors and receptacles as shown on approved shop drawings.

4.2.9.5.3 Label plates with plate designation shown on approved shop drawings.

4.2.9.6 For all installed wiring provide permanent labels using wire numbers or designation as shown on approved shop drawings.

4.2.9.6.1 Wire labels shall be self-adhesive label under clear heat shrink, or Direct printed heat shrink or Direct printed, self-adhesive, self-laminating.

4.2.9.6.2 Position labels as shown in wiring standard details on the Drawings.

4.2.9.6.3 Provide wire labels on both ends of cable.

4.2.10 Wiring.

4.2.10.1 Wiring Standards – Execute wiring in strict adherence to best AV engineering practices.

4.2.10.2 Field Connection Devices – Connect cable to active components through screw terminal connections and space lugs when appropriate. For BNC connections use three-piece, dual crimp BNC properly sized for cable with insulating bushings. Wire net or “Scotchlok” connectors are not acceptable. Do not wrap audio cable splices or connections with adhesive backed tape. Punch connectors or telephone-style punch blocks are not acceptable unless authorized by OCIO-ISO.

4.2.10.3 Run cable in ceiling plenums neatly parallel to building walls, supported every three feet to structure with plenum rated ties.

4.2.10.4 Provide cable anchors for any cable or cable bundle larger than 1 inch diameter, permanently installed and not in conduit. Do not use sticky back cable anchors.

4.2.10.5 Do not make any in line cable splices unless specifically noted.

4.2.10.6 Use only cable pulling lubricants approved by the cable manufacturer.

4.2.10.7 Provide grommets or chase nipples at cable entry where conduit is not installed.

4.2.10.8 Provide a service loop for each cable that connects to equipment in racks or AV furniture. Service loop length shall be sufficient to allow one re-termination without removing cable ties.

4.2.10.9 Accessibility – Ensure that wiring and connections are completely visible and labeled in racks and enclosures. Mount termination resistors, if required, on terminal strips, fully visible and not concealed within equipment or connectors.

4.2.10.10 Hum Prevention – Ensure that electromagnetic and electrostatic hum is at inaudible levels. For line level signals, float cable shields at the output of the source device. Do not cut or remove shield conductors; fold back unconnected shields over cable jacket and cover with clean heat-shrink tubing. Do not obstruct cable labels.

4.2.10.11 Make connections using rosin core solder or approved mechanical connectors. Where space lugs are used, crimp properly with ratchet type crimping tool. Solder space lugs mounted on #22 AWG or smaller cable after crimping.

4.2.10.12 All cables connecting to a movable lectern, cart, or desk or lectern shall be highly flexible cable, specifically designed by the manufacturer to be flexed repeatedly. Permanent install type cable is not acceptable for this application.

4.2.10.13 All cable bundles of more than one cable connecting to a movable lectern, cart, or desk or lectern shall be enclosed in a flexible braided sleeve and be of the minimum length extending from the furniture edge as noted on the Drawings.

4.2.10.14 The Contractor shall take precautions to ensure that cabling is not kinked, compressed or otherwise damaged such that performance is compromised.

4.2.10.15 Bend radius shall not be less than recommended by the cable manufacturer.

4.2.10.16 Do not exceed the maximum permissible pulling tension. Consult the cable manufacturer for exact data.

4.2.10.17 Use soft Velcro based cable ties located at random distances apart for installation of specialty cable such as HD-SDI, Category cable, fiber, etc.