



METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

May 8, 2019

Mr. Troy Montgomery
WatchGuard Video
3001 Summitt Ave
Plano, TX 75074

Re: **RFQ # 1023661, Body Worn and In-Car Camera Systems**

Dear Mr. Montgomery:

The Metropolitan Government of Nashville and Davidson County (Metro) has completed the evaluation of submitted solicitation offer(s) to the above RFQ # 1023661 for Body Worn and In-Car Camera Systems. This letter hereby notifies you of Metro's intent to award to WatchGuard Video, contingent upon successful contract negotiations.

Additionally the awardee will be required to submit evidence of participation of and contractor's payment to all Small, Minority, and Women Owned Businesses participation in any resultant contract. This evidence shall be submitted monthly and include copies of subcontracts or purchase orders, the Prime Contractor's Application for Payment, or invoices, and cancelled checks or other supporting payment documents. Should you have any questions concerning this requirement, please contact Tina Burt, BAO Representative, at 615-880-2783 or at tina.burt@nashville.gov.

The responses to the procurement solicitation and supporting award documentation can be made available either by SharePoint Link, CD for pickup, or in person for inspection. If you desire to receive or review the documentation or have any questions, please contact Terri Troup by email at terri.troup@nashville.gov Monday through Friday between 8:30am and 3:30pm.

Thank you for participating in Metro's competitive procurement process.

Sincerely,

A handwritten signature in blue ink that reads "Michelle A. Hernandez Lane".

Michelle A. Hernandez Lane
Purchasing Agent

Cc: Solicitation File
Other Offerors

Pursuant to M.C.L. 4.36.010 Authority to resolve protested solicitations and awards.

A. Right to Protest. Any actual or prospective bidder, offeror or contractor who is aggrieved in connection with the solicitation or award of a contract may protest to the Purchasing Agent. The protest shall be submitted in writing within ten (10) days after such aggrieved person knows or should have known of the facts giving rise thereto.

RFQ 1023661 - Body Worn and In-Car Camera Systems Scoring and Justification

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Axon Enterprise – Proposal demonstrated experience using cloud based only, Microsoft Axure. Proposal provided ongoing litigation for patent violation. Proposal demonstrated that all contracts were completed. Proposal demonstrated limited In-car Camera experience. Proposal demonstrated strong body worn camera experience and less than a year experience for in-car camera. Proposal included a 2016 TBI Agreement. Proposal demonstrated a nine (9) months implementation plan. Proposed 2.5-3 year equipment swap out. Proposal included 100 hours free expert testimonial. Proposal demonstrated plenty of mounting options. Product information submitted would not require a different uniform for officers. Proposal showed 30 frames per second which demonstrated resolution and pixels within acceptable range. Proposed product has an analog optic lens that records digitally. Proposed product information demonstrates compliance with h264. Product utilizes a USB Custom Cable. Proposed product has a nine (9) hours battery charging time. Proposed product has 64GB of storage which should be plenty for scope. Proposed product requires pre-buffering that is written to memory. Cannot categorize straight from the Body Worn Camera (BWC) and must use a smartphone or Mobile Data Computer (MDC) device. Play back in the field through smart phone device or MDC software. Proposed product must be paired with phone or vehicle for GPS. No removal of storage and requires one storage device per camera. Proposal demonstrated the need for a separate link to Mobile Data Computers to categorize, view, and transfer video. Audio and video synced together. Proposed on-premise does not support a true HTTPS web interface. Axon 5 (Amped) forensic video proposed. Body Worn Camera field trials demonstrated that the proposed mounting options were good. Body Worn Camera demonstrated an ease to use with big buttons. Body Worn Camera Field Trials showed that the camera turned off during two separate grappling training exercises. Body Worn Camera demonstrated a nighttime low light condition was noticeably worse throughout the field trials than the other field trial solutions; Field Trials of Body Worn Camera supported the information that there is no on board GPS. Field trials demonstrated that the BWC device does not have an LCD display, therefore there is no way to verify who it is assigned to, without docking and cross referencing the serial number in the system. There is no dock solution available for on-premise solution except for ad-hoc re-engineering in the field which was complex, involved accessing hidden web pages, and if a programmatic mistake was made, the dock would register to the cloud instead of the on-premise server. Field Trial dock and in-car equipment demonstrated limitations on what features can be turned on, off, or changed. As part of the field trials the DHCP service cannot be turned off in the docks, which is against Metro Network policy. Proposed solution is hard coded to point to evidence.com and as part of the field trials wanted Metro to spoof a non-authoritive domain on the Metro Network, which Metro did not do. As a result Metro had to go to

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through numerous technical hoops to accommodate the Axon on-premise solution on the Metro enterprise network. Field Trials of Body Worn Cameras demonstrated that proposed solution does not allow for the ability to categorize from device; therefore, the categorizing must be done from MDC in the vehicle, smartphone, or after the video is uploaded. Installation of the In-Car Camera field trials in the vehicle took less time since the Axon solution only communicates via WiFi. So only power cables have to be run to the front of the vehicle. In-Car Camera Field Trials demonstrated that there is no on board GPS so MNPD is required to provide GPS function to the Axon solution. In-Car Camera solely relies on Wi-Fi in the car to transfer information. In-car system technical design required MNPD to create unique WIFI SSID's in each vehicle adding to the complexity and setup time of the solution. The Wi-Fi connection would randomly come and go during field trails on the device. Since triggering relied on Bluetooth technology, the signal device has to wait at least 15 seconds until the current Bluetooth burst is complete before it can send another command to the in-car/BWC cameras, in which case the Officers have to be mindful and wait up to 15 seconds before they can restart recording, if needed. Solution requires an Axon application installed on Mobile Data Computers in order to allow categorization and uploading of data. Axon App periodically resulted in error a generic message then reboots automatically which does not allow MNPD IT to know what is going on to resolve the issue. During in-car camera field testing, the switch that turns on and off front facing camera would fail for no justified reason but appeared to be manufacturer error (all seven front facing cameras failed throughout field trials). During in-car camera field testing demonstrated that there was not an existing solution to turn off blue light trigger option in the on-premise solution; Axon provided a new out of cycle software install and adhoc configuration to resolve. In-car/BWC camera field testing was actually a form of beta testing for Axon local storage solution. Axon's on-premise design provides no way to control whether video uploads is allowed via 4G cellular verses WIFI. Axon worked during most of the 90-day field trial to try to find any solution for this issue. The only solution provided required an evidence.com cloud component that had to be available via internet connectivity before any video can be transferred to the on-premise server. Upload of video from vehicles takes more time due to the fact that the video being uploaded is copied twice, first from the Axon camera to the MDC, and then from the MDC to the Commander server. VMS Field Trial testing demonstrated a robust video search function that allows searching on all available fields. During the field trial there were ten (10) server software upgrades to the VMS during 90 day field trial to address issues in the on-premise solution provided. VMS Field Trial demonstrates that on-premise solution currently does not support multi camera play back at the same time without multiple windows and clicking play at a the same time. At start of field trials, it was

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discovered that some videos were failing to be ingested at the server upon upload due to a miss match in field names between the devices and the VMS. The watermark/overlay on AXON video is not configurable. The on-premises system proposed by Axon only supports active directory for a single domain which is problematic when courts/DA have another domain within the same forest. The field trial demonstrated that the MDC software gave really good status update on uploading of information. During the interfacing field trial portion it was discovered that CAD and audit trials were not currently available but offered a timeframe once contract is signed. Store and forward functionality did not work as part of the field trial. During field trials the Axon cloud service experienced an outage due to a 2-hour 12-minute power failure at the Microsoft Azure data center in VA, therefore it appears there is no application redundancy in the Axon Cloud solution. Proposed the lowest overall cost per spreadsheet. Originally agreed to escrow requirement in Round 2 but stated in Round 4 that unable to adhere to escrow requirement. Per license cost offered rather than a perpetual license option which could be costly to Metro. The RMS interface is proposed to take 3-6 months and the court interface would take 6-12 months which would have a dramatic impact on the departments' implementation schedule.

GovDirect – Proposal demonstrated experience with on-premise. Proposal demonstrated heavy in car camera experience and similar body worn camera experience. References provided were Panasonic and none from GovDirect. Proposal demonstrated a five (5) months implementation plan. Proposed a five (5) year refresh on equipment; Proposal included a per diem for travel cost as part of proposal. Proposal demonstrated plenty of mounting options. Product information submitted would not require a different uniform for officers. Proposal showed 30 frames per second which demonstrated resolution and pixels within acceptable range. Proposed product appears to be like having a digital camera. Proposed product information demonstrates compliance with h264 and h265. Proposed product information demonstrates the use of a standard USB cable. Proposed product has a three (3) hours battery charging time. Proposed product has 64Gb storage which should be plenty for scope. Proposed product requires pre-buffering that is written memory. Proposal demonstrated the ability to categorize on the Body Worn Camera device. Proposal demonstrated the ability to play back in the field. Proposal demonstrated that GPS is on Proposed Body Worn Camera device. Proposal demonstrated that ability to remove storage devices and/or have multiple storage devices. Proposal granted an option for a second hard drive that records regardless for In-car with admin rights. Product information demonstrated that audio and video synced together. Proposed solution supports a HTTPS web client, but video viewing

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requires an application installed. The proposed magnet mounting options used during the field trials were very strong.

During the field trials the Officers reported the body worn camera proposed was large and stuck out too far. It was noted during the field trial that the proposed device has too many lights and icons on at a time, which is confusing even after cheat sheet was provided. Proposed tested solution included docks which have a USB/LAN switch on the front, which proved to be too easy for users, on two occasions, to mistakenly change the switch, which caused the dock to not upload. Body worn camera Wi-Fi would not connect with mobile router and ended up hard wiring docks during the field trials. The in-car camera proposed demonstrated the best optical zoom capabilities. The proposed solution required an application to be installed on Mobile Data Computers. The application runs slow and causes other applications to run slower which has an impact on the Officers ability to access data on the computer. During field trial the live view frame and quality had to be turned down but video still played slow. The field trial of the in-car camera demonstrated that the window for software screen would jump around. The proposed solution had the largest footprint in trunk tray so no more expansion available. In the application, it takes seconds to switch tabs, and during field trials the screen would freeze until list is generated which limits officer use of mobile data computers and other tasks performed by officer (approx. 15-25 seconds). The VMS proposed had a very time consuming setup time for field trails. Some functionality that originally worked during the field trials stopped working which took longer for setup time and implementation. Server ran at 30% utilization without knowing what was taking place and no uploads taking place while Panasonic was working to try to resolve. User Accounts had to be updated one by one even though Active Directory group was setup. Metro could not modify district attorney user account because there was a dot in middle name which resulted in separate non-AD user account and was not resolved before conclusion of field trial. Proposed solution requires a separate application on every computer was needed for viewing videos for web based client functionality. To search for videos by Officer name, login IDs has to be searched rather than first name or last name. Export conversion from AV3 to MP4 is extremely slow. Reaction tool tested was 3rd party software and is an adequate redaction tool being proposed. Field trials demonstrated that the upload communication between server and device was chatty and bidirectional, which is problematic. To prevent uploading of video to the wrong store-n-forward server, a complex configuration across all store-n-forward host based firewalls was required. No current CAD, Courts, or RMS interface and no proposed date until after contract is signed. During field trials stacked on categories was used for retention process. Proposal

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demonstrated the 2nd overall best cost. Proposed cost spreadsheet option that was not tested during field trials. Field trials included a two camera solution but submitted cost for single camera solutions.

WatchGuard Video – Proposal demonstrated strong experience using in-car camera and body worn camera. Proposal demonstrated experience using on-premise with both in-car camera and body worn camera. Proposal demonstrated a two and half (2.5) months implementation plan which is unrealistic given the size of the MNPD. Proposal included a schedule summary rather than detailed Gantt charts. Proposal recommended five (5) year refresh on equipment. Proposal included a per diem for travel cost as part of proposal. Proposal demonstrated plenty of mounting options. Product information submitted would not require a different uniform for officers. Proposal showed 30 frames per second which demonstrated resolution and pixels within acceptable range. Proposed product appears to be like having a digital camera. Proposed product information demonstrates compliance with h264. Proposed product cannot take a still photo with Body Worn Camera. Proposed product utilizes a standard USB Cable that is a breakaway magnet. Proposed product has a four (4) hours battery charging time. Proposed product has 32GB storage which should be plenty for scope. Proposal stated that the proposed product is tamper proof. Proposed product requires pre-buffering at 120 second with feature that allows for going back to capture recording. Proposal states that everything is written including pre-buffer to non-volatile storage. Proposed product has the ability to categorize straight to the Body Worn Camera. Proposed a kiosk ability to recognize who picks up camera. Proposal demonstrated the ability to play back in the field. Proposal demonstrated that GPS is on Proposed Body Worn Camera device. Proposed In-car camera product has the ability to remove storage and also have USB. Audio and video synced together plus puts into one container. Product information demonstrated that audio and video synced together. Proposed product is HTTPS is complying. First tested magnet mounts out of the box did not work well for officers and actually broke as part of field trials but then provided new strong magnet mounts. During last month of field trial provided strong magnet mount for Body worn cameras. Proposed product had a soft button that must be held down for several second to turn off camera, so very difficult to mistakenly turn off. Demonstrated a magnetic quick release charging function that allows for charging of device while in car and cable just breaks away if officer had to get out of car suddenly. Proposed solution demonstrated a LCD screen on top of camera that displays lots of information for the officer. During the field trials the officer can go through menus which displays officer name to ensure correct camera is with the right officer. During field trials officer can categorize video from camera once recording has stopped. The proposed solution has the ability for the officer to

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adjust the lens vertically depending on where on shirt BWC is attached. The proposed solution has GPS on device. LCD on the body worn camera gives a lot of information but had to be in good light to see it and low light conditions made it difficult to viewing.

During the in-car camera field trials, the front camera can be easily rotated by the officer. Proposed a self-contained solution which means nothing had to be done with mobile data computers to get the system to function properly. Device provides good information about status uploads on display. During field testing nothing had to be changed in the vehicle mobile router/network from an IT perspective to get the system to function properly. During field testing there was one single known issue when the device stopped recording and had to be rebooted but no further issues were noted. The proposed VMS had no core server or software upgrades during field trials. The next normal release version of the redaction module was provided as part of field trials but not required during field trials. During playback, the metadata displayed which allows commanders and supervisors to view metadata with the video. In car camera and body worn camera can play synchronized video. Reporting functionality demonstrated can be easily run and customized in SRSS. During wireless upload it was documented on four occasions that uploads did not automatically start within WIFI range. Reboots allowed uploads to start. Watchguard provided diagnostics instructions, but issue did not occur again. The redaction tool being embedded with video management was easily to use during field trials. The proposed CAD interface was implemented during field trials, and provided accurate and easily reviewable integration. Interfaces demonstrated audit trails exist. Field trial demonstrated the ability to share data, photos, and videos to specific devices. Field trials demonstrated ease when granting access to other domains if in secure area. The functionality of the cloud and local premises during field trial testing worked the same. Store and forward functionality works well. The highest cost proposed but cost includes the two in-car front facing integrated camera solution as installed and demonstrated in field trials. Failed to provide catalog pricing that percent discounts would be applied to. Failed to provide a detailed explanation why one storage option (cloud vs. on-premise) would be most advantageous to Metro in round 4. Failed to provide a detailed explanation as to how the overall proposal, including cost, would be impacted, along with any other information that may help Metro in determining which is most advantageous to Metro if the term of the contract was longer than 5 years.

COBAN Research – Proposal included examples of on premises. Proposal demonstrated experience with projects that included 300 body cameras and 1000+ in-car camera. Proposal demonstrated experience with very large customers.

Brite Computer – Proposal demonstrated limited implementation experience of both In-Car and Body-Worn Camera within the same organization. Proposal demonstrated installation experience using Cloud.

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References provided were not for Brite Computer. Experience demonstrated was not within the same size. Proposal failed to link with scope as required. Proposal failed to address litigation.

Digital Ally – Proposal demonstrated experience with body worn cameras used by the railroad. Proposal demonstrated on-premises and in-depth intergraded system; however, no experience of similar size scope and complexity. Proposal provided litigations.

Infinite Information – Failed to provide project experience and/or reference information.

L-3 Communication – Failed to provide any reference information for body worn cameras. Proposal Demonstrated experience with on-premises. Proposal mentioned using March 2018 second generation equipment.

Motorola – Proposal demonstrated cloud based experience only. Proposal failed to demonstrate any experience with in-car camera experience. Proposal demonstrated an in-depth intergraded system previously used; however, experience demonstrated within the proposal was not of similar size scope and complexity.

Municipal Emergency – Proposal demonstrated that there are no customers with integrated solution. Proposal demonstrated a lack of understanding of the definition of on-premises. Proposal did not include any details for the equipment. Proposal failed to link with scope as required. Proposal failed to provide individual project descriptions. Proposal demonstrated limited implementation experience of both In-Car and Body-Worn Camera within the same organization.

ProLogic ITS – Proposal demonstrated no experience with body worn cameras. Proposal demonstrated experience in an on-premise option for in-car cameras. Proposal failed to include storage time as part of the experience provided.

Utility Associates – Experience within proposal reflects using amazon. Proposal experience demonstrated using cellphone as body camera. Demonstrated experience using cloud based only.

Proposer: WatchGuard

Function	Field Trial Results
BWC Durability	During Training Academy grappling exercises (starting in the standing position and on the ground), the WatchGuard BWC stayed on the Officers' uniform and recorded during the entire exercise.
BWC Mounting	<p>WatchGuard's locking BWC mounts did not work well with MNPD uniforms due to the zipper in the shirt. The pins in the mounts kept breaking off. WatchGuard then provided a new strong magnet mount which performed well.</p> <p>The lens on the WatchGuard BWC can be rotated up or down as needed to allow officers to adjust for the best field of view for most mounting location on their uniform, vest or jacket.</p>
BWC Video Clarity - Day	Good daytime clarity
BWC Video Clarity - Night	Good low-light condition recording.
BWC Video Field of View	Good field of view
BWC battery	<p>Good battery performance</p> <p>WatchGuard Vista BWC's have a magnetic "quick-disconnect" vehicular charging cable that Officers can magnetically connect to their BWC while it is still mounted to their shirt, if charging is needed. The magnetic connector breaks away from the BWC harmlessly if the officer has to exit the car quickly.</p>
BWC Indicators	<p>The LCD display on the BWC provides useful information such as number of recordings, officer name, and battery meter.</p> <p>The LDC display and buttons on the BWC allow the officer to categorize the BWC video from the BWC itself.</p> <p>The backlit LCD display on the top of the BWC is hard to read. Lettering needs to be bolder.</p>
BWC Category	Officers can categorize video from the BWC device itself
BWC Playback	Integration with metadata is good.
BWC Metadata	acceptable
BWC Overall Ease of Use	good
BWC video storage size	acceptable
BWC Interface	good
BWC Triggers	good
BWC Video Upload	good
BWC GPS	built in GPS - good
BWC Live Stream	acceptable
BWC Training Tools	good
BWC Implementation/Install	good
In-Car Durability	good
In-Car Mounting	good
In-Car Video Clarity - Day	Good daytime clarity

Proposer: WatchGuard

Function	Field Trial Results
In-Car Video Clarity - Night	Good low-light condition recording.
In-Car Video Field of View	excellent with the field tested integrated panoramic camera with second 67 degree turret camera
In-Car Indicators	excellent display
In-Car Category	easy categorization in the vehicle
In-Car Playback	user friendly playback in the vehicle
In-Car Metadata	good
In-Car System Ease of Use	<p>As part of the equipment that was provided during the trials, the front cameras could be easily rotated by the officer to view a different angle of the incident. This proved to be a valuable asset to officers as they could essentially point a camera in the direction it might be needed.</p> <p>The WatchGuard InCar solution included a display screen that allowed the Officers to control, categorize, and playback recorded video directly from the display screen without any interface needed with the MDC. Since WatchGuard does not require integration with the MDC, there is less administration burden on Police IT staff and it frees up CPU/Disk/Memory resources on the MDC for more critical applications.</p> <p>One officer had an issue where the WatchGuard system would not stop recording. A reboot of the smart power switch resolved that issue.</p>
In-Car video storage size	acceptable
In-Car Interface	good
In-Car Triggers	good
In-Car Video Upload	<p>WatchGuard's InCar display screen provides the officer with valuable information during the uploading process such as speed, estimated time left for upload, and how many events they have recorded that day.</p> <p>On four separate occasions, officers reported that the DVR/BWC doesn't start automatically uploading when in range of WIFI. On all these occasions, we verified the vehicle mobile routers were connected to our WIFI network and could reach the WatchGuard server. Powering the WatchGuard system down and rebooting allows the upload to start. WatchGuard provided us instructions for creating a "capture state" to send them for diagnostics, but the issue did not occur again after that.</p>
In-Car GPS	Built-in GPS - good
In-Car Live Stream	acceptable
In-Car Training Tools	good training tools
In-Car Implementation/Install	The WatchGuard InCar solution required no configuration or operational changes to the Police vehicle mobile router.
BWC/In-Car Integration	well integrated
VMS Security	good

Proposer: WatchGuard

Function	Field Trial Results
VMS Redaction	<p>The export video process is simple and quick. The application has its own tab for exports, so it is easy to work on exports and the user can easily see when exports are finished. The application allows the user to continue working while the video exports.</p> <p>The WatchGuard Redactive module is a web based client. Therefore, no software is required to be installed on the users' computer. Also, all processing happens at the server, so no special hardware needed on the users' computer.</p>
VMS Outside Sharing	good
VMS Ease of Use	<p>WatchGuard client is web-based.</p> <p>When viewing video in the WatchGuard VMS, metadata is displayed above the video. This metadata includes speed, light bar status, and camera status. Having this information in one place is extremely useful for supervisors and command staff.</p> <p>When viewing video, you can play BWC video and InCar video from that incident at the same time in a "split screen" format. The user can also choose a source of audio for this playback. For instance, the user could be watching the front facing camera and the rear seat camera at the same time, but choose to listen to the rear seat audio.</p>
VMS Deletion Process	good
VMS Searching	good
VMS Export	good
VMS Interfaces	<p>WatchGuard developed and provided a CAD interface very quickly during field trials.</p> <p>Police Information Technology personnel had direct access to WatchGuard developers/implementers during the development, review, and testing of the CAD interface.</p> <p>The CAD interface results are easily reviewable within the WatchGuard VMS web client.</p>
VMS AD Integration	well integrated with Active Directory
VMS On-Premise Tools	good dashboard provides quick glance into storage/video statistics
VMS Audit Trials	good
VMS Reporting	WatchGuard reports are done in SQL Server Reporting Services. Therefore our development team can build custom reports as needed.

Proposer: WatchGuard

Function	Field Trial Results
VMS Admin Tools	Assigning cameras to an officer is done through the web interface and is quick and easy to perform. Administrators can also see in real time what cameras are docked in which location. This has proved to be helpful when troubleshooting.
VMS Setup	easy and timely setup
VMS Training Tools	good
VMS System Implementation/Install	After initial installation of the WatchGuard system, there were no core software upgrades necessary during the field trials, except for one scheduled release of the WatchGuard Redaction module, the addition of some custom reports, and installation of WatchGuard's customized CAD and RMS interface for MNPd.
Equipment/Software Warranty	acceptable
Equipment/Software Maintenance	acceptable
Service Level Agreement	acceptable
Adherence to Test Plan	acceptable

Proposer: GovDirect

Function	Field Trail Results
BWC Durability	acceptable
BWC Mounting	The magnet mount option was strong and held the BWC well.
BWC Video Clarity - Day	acceptable
BWC Video Clarity - Night	acceptable
BWC Video Field of View	acceptable
BWC battery	acceptable
BWC Indicators	BWC has too many lights and icons on the top and proves to be confusing to users.
BWC Category	categorization via the MDC software proved to be cumbersome for Officers.
BWC Playback	Playback from MDC software was slow to load and increased CPU/memory usage considerably on the MDC causing other applications to run slow.
BWC Metadata	acceptable
BWC Overall Ease of Use	BWC is large and sticks out on the officer's chest.
BWC video storage size	acceptable
BWC Interface	good
BWC Triggers	good
BWC Video Upload	<p>Docks have a USB/LAN switch on the front of the 8-bay upload dock, which makes it too easy for a user to misunderstand the purpose of the switch and unintentionally change the switch to "USB". During the field trials, this has happened on a couple occasions which caused any BWC's which were docked to not upload video.</p> <p>BWC's could not connect to the Sierra Router's WiFi network, although all other devices could. Through a process of elimination, led by MNPd, it was discovered that the BWC needed a firmware update to be able to connect. Eventually, the firmware issue was resolved and the BWC's could connect to the Sierra Router's access point although this did not get resolved until the last month of the field trial.</p>
BWC GPS	built in GPS - good
BWC Live Stream	not available
BWC Training Tools	acceptable
BWC Implementation/Install	The assigning of BWC is not intuitive and required too many steps for the officers.
In-Car Durability	good
In-Car Mounting	acceptable
In-Car Video Clarity - Day	Optical/Digital zoom capability in front facing camera is good.
In-Car Video Clarity - Night	good
In-Car Video Field of View	good
In-Car Indicators	good
In-Car Category	categorization via the MDC software proved to be cumbersome for Officers.
In-Car Playback	Playback from MDC software was slow to load and increased CPU/memory usage considerably on the MDC causing other applications to run slow.
In-Car Metadata	acceptable

Proposer: GovDirect

Function	Field Trail Results
In-Car System Ease of Use	<p>Panasonic application on the MDC runs slow and makes other apps run slower. Switching between tabs inside the application took an average of 4-6 seconds. Live view frames per second and quality was turned down to its lowest setting but officers still complained of slowness.</p> <p>During implementation, MNPd found an issue that made the client move to another side of the screen so the "X" button was not visible nor could the user move the window to get the application restarted. Custom client code from Panasonic rectified this issue</p> <p>When the officer goes to the "Upload" tab, the software takes at least 4-5 seconds to switch tabs, and then makes the officer wait until the software generates the list of all files for upload on the recorder. If officers have 20-25 videos, just clicking the tab and viewing the list of videos for upload could take 15-25 seconds.</p>
In-Car video storage size	good
In-Car Interface	good
In-Car Triggers	good
In-Car Video Upload	<p>On one occasion, video would not upload from the InCar Video Processing Unit (VPU). MNPd confirmed connectivity to the server, and even brought another car into the garage to make sure server/network connectivity were working properly. Panasonic suggested switching the VPU in the car with a known good VPU to troubleshoot the issue. Before we were able to arrange that test, the car began to upload properly. Logs were retrieved from the server, but no root cause was found.</p> <p>Traffic between the vehicle DVR and the server requires many bi-directional connections, mostly on UDP ports, and seems unnecessarily chatty. With Panasonic's solution, DVR's in the vehicle polls for the server constantly but the server still initiates the upload connection to the client, which is difficult to manage. The client should initiate the upload to the server.</p> <p>Panasonic Store n forward servers are defined in the vehicle DVR's as a prioritized list of IP addresses, but it will always use first in the list regardless of which precinct the Officer is uploading from. We had to create host based firewall rules on the store n forward servers to work around this issue.</p> <p>During the uploading of video, in the MDC software, certain application tabs and controls are taken away from the officer and controlled by the server until the upload is finished, which limits application function during uploads.</p>
In-Car GPS	built-in GPS acceptable
In-Car Live Stream	not available
In-Car Training Tools	acceptable
In-Car Implementation/Install	Panasonic's hardware took up a significant amount of space in the truck tray.
BWC/In-Car Integration	BWC video is stored in a different format than the InCar video.
VMS Security	poor - due to complexity in adding users and groups to roles.
VMS Redaction	Provided 3rd party video editing tools for redaction functions.
VMS Outside Sharing	acceptable

Proposer: GovDirect

Function	Field Trail Results
VMS Ease of Use	<p>User client is web-based, except for the video player, which requires this software to be installed on all MNPD computers that need to use this system.</p> <p>Video search function is not user friendly and requires officer's usernames instead of last name/first name. Users also have to go into Advanced Options to see this basic search option.</p>
VMS Deletion Process	acceptable
VMS Searching	Video search function is not user friendly and requires officer's usernames instead of last name/first name. Users also have to go into Advanced Options to see this basic search option.
VMS Export	Export conversion from AV3 to MP4 is extremely slow. There is no indication where the export will be saved. There is not a status bar, so there is no way to know how long it will take. While the export is going, user cannot do anything else in the application.
VMS Interfaces	GovDirect/Panasonic did not provide a working CAD, RMS, or Court Interface during field trials. We received only a design interface document.
VMS AD Integration	<p>After Active Directory synchronization takes place, user accounts do not automatically get the role permissions that are assigned based on group membership.</p> <p>User accounts have to be manually edited one-by-one after Active Directory synchronization to assign a Panasonic role. Assigning roles based on group membership does not work.</p> <p>Modifying user accounts fail when there are any special characters such as parenthesis or periods in any of the name fields that come over from the Active Directory synchronization. Manually taking out the special character usually allows the user account changes to be saved, but in the case of the middle name, UDE does not allow any edit, so changes cannot be saved for those user accounts, which required manual user accounts to be created.</p> <p>All Active Directory synchronized user accounts automatically get a 90 day expiration date from the date the user account was synced/created. When expired, users are not allowed to login anymore. Panasonic does not disable its own password expiration and allow Active Directory to handle password expiration, and there was no way this feature could be modified in the administration module. I was advised by Panasonic that a bug in the AD integration sets the expiration date to be set when it should not do so.</p>
VMS On-Premise Tools	acceptable
VMS Audit Trials	acceptable
VMS Reporting	acceptable
VMS Admin Tools	Panasonic's Dashboard tab provides useful graphs and statistics for real time monitoring of video storage and video classifications.
VMS Setup	The initial server install was complex, time consuming, and took many detailed steps by Panasonic personnel. During the course of the setup, services that, at first, were working, no longer worked, which took hours for Panasonic to find and resolve.
VMS Training Tools	acceptable

Proposer: GovDirect

Function	Field Trail Results
VMS System Implementation/Install	The initial server install was complex, time consuming, and took many detailed steps by Panasonic personnel. During the course of the setup, services that, at first, were working, no longer worked, which took hours for Panasonic to find and resolve. After initial implementation, Panasonic server ran at over 50% CPU utilization for over two weeks as they troubleshot the issues. (stuck file and memory leaks)
Equipment/Software Warranty	acceptable
Equipment/Software Maintenance	acceptable
Service Level Agreement	acceptable
Adherence to Test Plan	acceptable

Proposer: AXON	
Function	Field Trial Results
BWC Durability	<p>During Training Academy grappling exercises (starting in the standing position), for Officer A using the Axon BWC, the “suspect’s” actions caused the BWC to turn off during grappling. The “suspect” was not even trying to turn the camera off and did not know how to operate the camera.</p> <p>During Training Academy grappling exercises (starting in the standing position), for Officer B using the Axon BWC, the BWC popped of his shirt during grappling.</p> <p>During Training Academy grappling exercises (starting on the ground), for Officer B using the Axon BWC, the “suspect’s” action caused the BWC to turn off.</p>
BWC Mounting	good mounting options
BWC Video Clarity - Day	acceptable
BWC Video Clarity - Night	The Axon BWC does not perform well at night/low-light conditions.
BWC Video Field of View	acceptable
BWC battery	acceptable
BWC Indicators	LED indicators only. The Axon BWC does not have an LCD display, therefore there is no way to verify who the BWC device is assigned from the device.
BWC Category	The Axon BWC does not allow for categorization of video from the BWC device.
BWC Playback	The watermark/overlay on AXON video is not configurable. For example; the time format is Greenwich Mean Time (GMT), and cannot be changed to CST/CDT, which demonstrates a lack of configuration granularity.
BWC Metadata	If BWC video is uploaded from the in-car system, then the metadata incorrectly shows the video as an in-car camera video.
BWC Overall Ease of Use	easy to use with large button.
BWC video storage size	acceptable
BWC Interface	good
BWC Triggers	acceptable
BWC Video Upload	<p>While configuring and registering the upload/charging docking stations, it became apparent that AXON was taking a dock that was designed to register and upload directly to the cloud, and re-engineering it in the field to work in an on-premise environment. This process required adhoc programming to each dock. Then a hidden registration webpage had to be accessed to register the dock to the on-premise Commander server, and a new firmware version had to be written by their developers and installed. We found that, if this adhoc process was not followed in specific order, then the dock would automatically be connected to the AXON cloud, instead of the on-premise server.</p> <p>Axon upload/charging docks have a DHCP server you cannot turn off. Maintaining unauthorized DHCP servers on devices connected to our network presents security and manageability challenges. This is an example of the lack of configuration granularity in the Axon software and hardware.</p> <p>The AXON dock equipment only uses an Internet-based certificate authority. That works well for cloud based solutions, but not for truly on-premise solutions within an enterprise network such as Metro. For Axon, this is apparently hardcoded in firmware with no ability to change or allow an additional certificate authority, such as the Metro PKI authoritative source for all internal MNPDC hosts.</p>
BWC GPS	Since Axon cameras do not include onboard GPS, the Axon solutions require us to provide them with GPS coordinates from our vehicle systems. Although we provided this function for the Axon solution, it adds complexity to the solution and adds multiple potential points of failure which could prevent GPS coordinates being applied correctly to the video. In addition, GPS coordinates will not be applied to the BWC video if the Officer does not have the BWC paired with ViewXL app on their MDC.

Proposer: AXON	
Function	Field Trial Results
BWC Live Stream	Not available
BWC Training Tools	good
BWC Implementation/Install	Inventory Management is a challenge with Axon's Commander VMS. Assigning a camera to an officer requires the administrator to enter the nine digit serial number of the camera into the system.
In-Car Durability	During the course of the field trials, we have experienced front camera hardware failures in all seven vehicles (at different times). The failure is in the Axon camera power switch, which would not allow the camera to be turned off. This issue required the vehicles to be brought back to the garage for replacement of the camera. Axon's response was that this was a bad batch of cameras and they normally don't have hardware issues
In-Car Mounting	acceptable
In-Car Video Clarity - Day	good
In-Car Video Clarity - Night	Does not perform well at night/low-light conditions.
In-Car Video Field of View	good
In-Car Indicators	good
In-Car Category	good
In-Car Playback	The watermark/overlay on AXON video is not configurable. For example; the time format is Greenwich Mean Time (GMT), and cannot be changed to CST/CDT, which demonstrates a lack of configuration granularity.
In-Car Metadata	acceptable
In-Car System Ease of Use	During field trials, the Axon View XL app on the MDC was receiving critical errors and the Axon service would then crash. The generic error message received was, "If you see this message for longer than 30 seconds, Axon View XL has encountered a serious problem. Please contact your department's IT or Axon Support. Axon system service not available." Axon advised they had identified an issue where if a video file hash does not match, Axon View XL service will crash. Axon provided a ViewXL software upgrade to address the issue
In-Car video storage size	acceptable
In-Car Interface	acceptable
In-Car Triggers	Since AXON signal vehicle devices sending triggers via a wireless Bluetooth burst, it has to wait at least 15 seconds until the current Bluetooth burst is complete before it can send another command to the in-car cameras, which means that Officers have to wait up to 15 seconds before they can restart recording, if needed.
In-Car Video Upload	cellular verses WIFI at the precincts. With Axon, uploads happen immediately out in the field via 4g cellular, possibly tying up cellular bandwidth from more critical MDC functions. This also creates concerns for MNPd if our cellular providers start to limit our bandwidth usage. This issue is very difficult to address in Axon's on-premise solution, given their chosen architectural design of their system. Axon worked during most of the 90-day field trial to try to find an adequate solution for this. The only solution provided was to create a new Commander server software update in which, after installation, allowed a new configuration to be pushed down to the Fleet ViewXL application on the MDC's, which implemented "constant pings" to an Axon cloud-based server to determine if the vehicle is on 4G cellular or WIFI. Although this solution allowed us to only upload video across WIFI, unfortunately, this solution added a "cloud-based" component to Axon's on-premise solution. In addition, due to this design, If Metro were to experience an Internet outage, then video could not be uploaded to the on-premise servers from the vehicles, since this Axon component requires connectivity to a "cloud-based" server before any video can be uploaded to the on-premise server. Provides officer with status information on video uploads within their Axon ViewXL MDC application.

Proposer: AXON	
Function	Field Trial Results
	Upload of video from vehicles takes more time due to the fact that the video being uploaded is copied twice, first from the Axon camera to the MDC, and then from the MDC to the Commander server. Once the Officer clicks <submit> on the category screen; View XL app copies video from the fleet cameras to the MDC via WIFI. Once the video is copied to the MDC hard drive, then View XL uploads the video to the Commander server via our existing NetMotion connection. So the video is copied twice during the upload process.
In-Car GPS	Since Axon cameras do not include onboard GPS, the Axon solutions require us to provide them with GPS coordinates from our vehicle systems. Although we provided this function for the Axon solution, it adds complexity to the solution and adds multiple potential points of failure which could prevent GPS coordinates being applied correctly to the video. In addition, GPS coordinates will not be applied to the BWC video if the Officer does not have the BWC paired with ViewXL app on their MDC.
In-Car Live Stream	Not available
In-Car Training Tools	good
In-Car Implementation/Install	<p>Axon InCar camera installations takes less time to install in the vehicle, because they only need to run power cables to the cameras and install the signal input/output device and the two power supplies. No DVR is required since the recordings happen on the cameras. The complexity of this solution is shifted to our other In-car systems where more complex configurations are required in our existing vehicular mobile router, MDC, and NetMotion.</p> <p>AXON fleet requires us to define unique WIFI SSID's for each vehicle mobile router that is tied to the vehicle id. On the MDC, if Officers mistypes the vehicle id at the AXON View XL login window, then uploads and camera control will not work for the Officer. Requiring that each vehicle has their own unique WIFI network name creates additional administrative work for Police IT, since unique configuration files must be maintained for each vehicle.</p> <p>Officers reported consistent WiFi disconnects, this was also verified in a ride along. Sporadic disconnects of the in car cameras from the Sierra wireless access point causes a delay in copying InCar video to the MDC, and would have an effect on the time to complete an upload. Axon made a firmware update available to MNPDP a week before the end of field trials, however this was not enough time at the end of field trials for MNPDP to validate and test this firmware update</p>
BWC/In-Car Integration	acceptable
VMS Security	good
VMS Redaction	The export video process is quick, and gives the user an informational status bar. The user can define where to save the export. The application allows the user to keep working while the video is exporting.
VMS Outside Sharing	acceptable

Proposer: AXON	
Function	Field Trial Results
VMS Ease of Use	<p>AXON does not have a full web client for the Commander client. The Commander client runs in a VMware thin client from the server. The method in which the software runs on the client computers triggers Metro's Malware Detection system. File exclusions have been implemented, but the client sometimes run from other paths (such as when video is exported with player). It is unsustainable to keep defining all the different locations the executable could run from. Further, creating virus protection exceptions based on executable filenames effectively disables virus protection checks for that specific filename. Since this exception would have to be implemented on all MNPd computers that access the system, it is within reason that hackers/actors who knows that MNPd uses Axon software, could potentially try to attack the MNPd network by trying to send malware disguised as the same filename as Axon software.</p> <p>Axon Commander does not sync video in multi-cam playback.</p> <p>In the Commander client software, the application window cannot be maximized on the secondary display. Users can move the Commander client window over to a secondary display, but when they click maximize, the window snaps back to the primary display. Issue not resolved to date.</p> <p>In the Commander client: the hover-over popup informational window does not work when the application window is moved over to a secondary display. Axon provided a Commander server</p>
VMS Deletion Process	acceptable
VMS Searching	Provides a search function that searches across all defined fields. Has easy to use search filters.
VMS Export	good
VMS Interfaces	Axon did not provide a working CAD, RMS, or Court Interface during field trials. We received only a design interface document.
VMS AD Integration	Commanders Active Directory Integration supports users from one domain only. It does not support multiple domains within an Active Directory Forest, as is the Metro structure. For example, a JIS user (District Attorney user) added as a member of a sync'ed group caused Axon Commander's AD sync to fail.
VMS On-Premise Tools	acceptable
VMS Audit Trials	good
VMS Reporting	acceptable
VMS Admin Tools	Inventory Management is a challenge with Axon's Commander VMS. Assigning a camera to an officer requires the administrator to enter the nine digit serial number of the camera into the system.
VMS Setup	acceptable
VMS Training Tools	acceptable
VMS System Implementation/Install	<p>Axon provided and installed no less than ten (10) Commander Server Upgrade Installations over the course of the 90-day Field Trials to fix issues and add functionality to their on-premise solution.</p> <p>Axon BWC's auto-activated from Fleet signal when the inCar cameras were turned on, however, there was no way to turn this feature off in AXON's current on-premise solution. Axon provided a Commander server upgrade to install, along with new configuration fields which had to be manually defined for each signal device I/O's before the BWC auto activations could be configured.</p> <p>GPS extraction was not included in the original on-premise Commander Server Installation, therefore GPS was not saved with the video with the initial Install of the system. After finding the issue, Axon provided a Commander Server upgrade to address this issue.</p> <p>Some videos were failing to be ingested at the server upon upload, which was causing video files to be moved to an "Offline folder". This issue was due to the BWC's configuration being incompatible with the on-premise Commander server, in relation to the categories field being named differently between the server and the devices. Axon provided a Commander server upgrade to address the issue."</p>

Proposer: AXON	
Function	Field Trial Results
	<p>Upon video ingestion, file size mismatch errors were showing up in the logs. When the Commander server generated the imd file for each video, it stores the size of the video file which was different from the actual size of the video file. Axon advised they need to change the way their software makes calls to the windows OS for the file size. Axon provided a Commander server upgrade to address the issue.</p> <p>Duplicate videos exist in the Commander video repository due to the hash calculation timeout issue during upload</p> <p>In the Commander client, text searches for incident numbers comes back with no results. It worked in the beginning of the field trial, but it appears one of the Commander upgrades performed during the field trial broke this function. Axon provided a SQL script to fix this issue</p>
Equipment/Software Warranty	acceptable
Equipment/Software Maintenance	acceptable
Service Level Agreement	acceptable
Adherence to Test Plan	acceptable