October 4, 2018

To: Prospective Offerors

FROM: Department of Homeland Security, Immigration and Customs Enforcement (DHS-ICE)

SUBJECT: Request for Information (RFI) for Enterprise Video Acquisition, Exploitation, and Content Management System

POST DATE: 04 October 2018
QUESTIONS DUE DATE: 19 October 2018; 4PM EST
RESPONSE DUE DATE: 08 November 2018; 1PM EST

INTRODUCTION:

The Department of Homeland Security, Immigration and Customs Enforcement (DHS-ICE) is issuing this Request for Information (RFI), to identify potential companies that can provide a viable enterprise video content acquisition, storage, exploitation, and content management system as further described below. The system will be referred to as the Video System (VS) for ease of reference hereafter. DHS-ICE is requesting information on the availability and capability of products that are already developed. DHS-ICE WILL NOT AWARD A CONTRACT OR PAY FOR THE INFORMATION RECEIVED IN RESPONSE TO THIS NOTICE.

DHS-ICE is seeking information from the industry as market research for consideration in development of the Acquisition Strategy and Acquisition Plan for this system. This solution will include the software and any specialized hardware for enterprise video acquisition, video content management and distribution of these digital assets, and the exploitation of the video information assets as specified in this document. For this document, video information (VI) refers to all original and derivative video files and associated metadata maintained by the VS.

DHS-ICE seeks vendors that have:

1. A scalable, cost-effective solution that meets DHS-ICE's goals and requirements;
2. An existing client base in the enterprise video acquisition, exploitation, and management; and associated technology market place; with implemented solutions similar to the one specified in this RFI;
3. A commitment to industry standards;
4. A solution that uses open and non-proprietary data formats and interfaces, and is able to coexist with other vendor solutions.
5. Experience with working in the government computer environment and with cloud environments

BACKGROUND:

DHS-ICE currently employs an enterprise video system that provides video evidence collection, storage, and exploitation. This system is based on stand-alone office instances of a video management system, each of which collects video information from multiple cameras and stores it on a hard disk array in each of the offices. Users can view live or recorded video through a computer network or other secure devices. The pure video management system (VMS) is paired with analytics modules to provide a basic level of motion detection, optical character recognition, and other analytics, including those from third party vendors. Data is backed up locally to LTO-type tapes. The "enterprise" aspect of this system derives from the fact that any authorized user in any office can view live or recorded video information in any other office by means of a secure enterprise network.

The contract to provide this system is coming to the end of the period of performance, and a new contract needs to be established. DHS-ICE desires for the new contract to be for a 2nd generation system that builds on the success of the first system, while also providing the full set of capabilities described in this document. The government would like video information to be more easily shareable outside of the offices in which it is recorded, and to benefit from advanced analytics, ease of video content management, metadata tagging, and a cost-effective means to share information with authorized internal and external users.

OBJECTIVE:

The DHS-ICE is seeking market information from qualified, experienced and interested vendors who can supply an integrated enterprise-level video acquisition, storage, exploitation, and content management system.   DHS-ICE requires a state of the art, modular, extensible enterprise video system that flexibly integrates, distributes, and/or federates multiple video acquisition, management, processing, and exploitation capabilities into a composite system that will be active across the DHS-ICE enterprise.

This RFI is NOT intended to identify a company to integrate these capabilities into a system; rather it is looking for information from companies on systems that have already been developed. The extensible system is to be based upon a modular integration framework that can flexibly and natively integrate with multiple market-leading subsystems such as VMS, content management systems (CMS), analytics, and several other major subsystems as shown below in Figure 1 and outlined in the remainder of this document.   While the architecture diagram depicts a certain core framework design, the integration might be achieved in alternate methods and approaches. The fundamental information derived from this picture is twofold:

- The government requires a system composed of industry-recognized components (such as storage, video management systems, content management systems, etc.) that are integrated or federated to work together as one (1) system of systems. The actual boundaries between the modules - or the idea of grouping of

some of the capabilities into one "block" of capabilities is acceptable if conditions warrant and the overall desired effects and modularity are achieved.

- The overall system should have open standard interfaces and data exchange between the modules. This will allow modules to be replaced without a redesign of the framework or any modules. Instead, the interface (which is expected to be a code module designed to employ an API of an adjoining module) would be the only thing that requires changes to accommodate a new module.
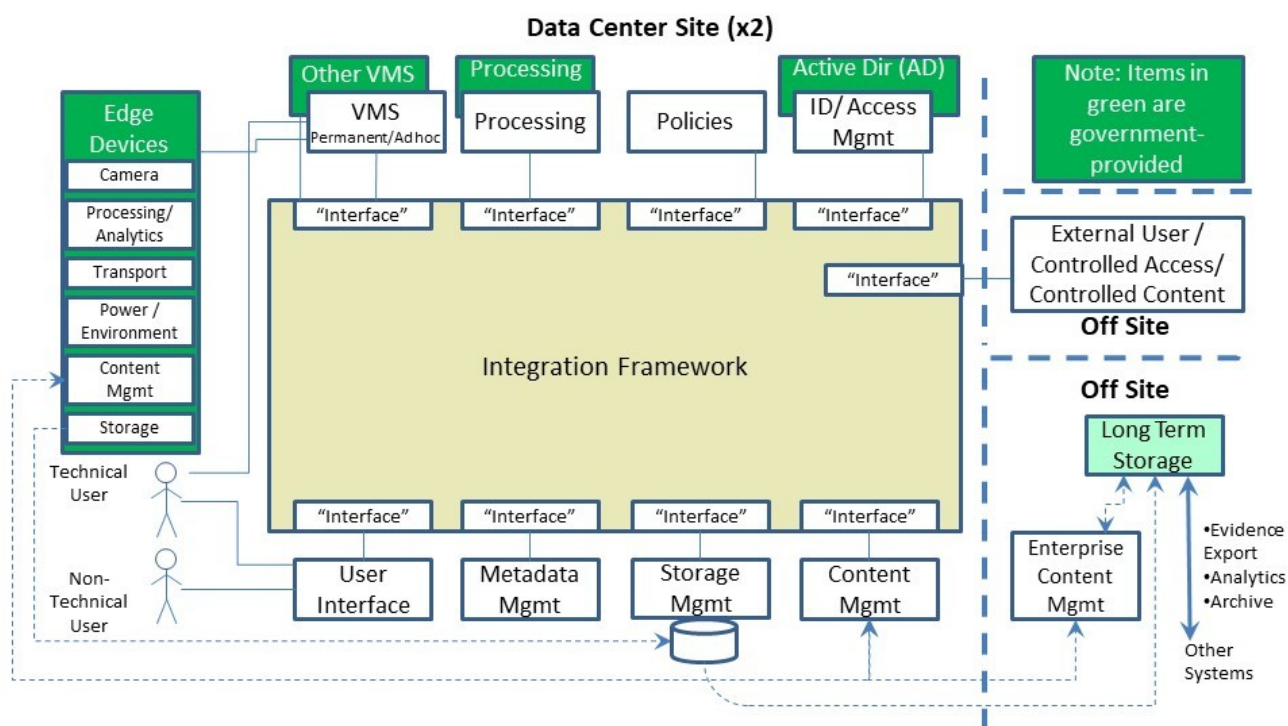

Figure 1: System Diagram
Video System Function/Capabilities:

A fully functioning VS will act as a federated enterprise entity and be composed of all of the components networked together as shown in Figure 1. From a video information lifecycle perspective, the required system should provide the following capabilities:

- The system should be able to control and receive from any one of a variety of sensors, cameras, or other similar devices (all will be termed "devices" here). Exemplar compatible behavior/performance is:

  o The system should be able to fully control standard network cameras and encoders using both streaming and file-based formats.

- o The system should be able to provide full control of the devices. Where the device employs ONVIF standards and/or command set, the system should employ ONVIF-based control.

- o If the camera locally records (e.g. records to a memory chip) employing open standard file standards, file encryption, file hashing, etc., the system should be able to control the movement of those files to the system in a lossless manner.

- The VS should record the video information in a hashed, encrypted manner, as close to the camera as possible.

  - o The VS should be able to accept multiple streams or file sets from the cameras.

  - o At any point in the video information lifecycle, a hash verification should be supported to ensure non-refutability of the content.

  - o The video files and streams from one camera should be permanently associated with each other by the content management system for as long as the files are maintained. It is expected that some of the streams/files will represent an unbroken frame sequence, while others may represent only a few minutes or seconds of coverage. The VS should be able to simultaneously display all of these streams in one time-synchronized view.

  - o The VS should be capable of negotiating a secure, lossless, transport of video files from the cameras to the VMS for recording.

  - o The VS should employ metadata throughout the video information lifecycle. The metadata will be a combination of system-generated and user-generated information. The system should automatically affix user-configurable metadata to video information to indicate video source information such as location name, location coordinates, location address, camera type, camera ID, case or category identification, indicator for presence of an analytics trigger, etc.

- The VS should be able to operate in instances of low or intermittent transport bandwidth. (Data transport in some edge areas may be of low, intermittent quality.)

- The received video information will be stored in one of the two data centers for viewing and exploitation purposes, and immediately copied to a cloud-based archive system.

- The user interface should allow users to perform multiple video information-related tasks

  - o Users shall be able to view video information served from a data center and be able to perform all standard video viewing actions such as play, pause, rewind, go to a certain time, etc.

  - o Users shall be able to select and play video files from multiple cameras simultaneously in a grid-like display on high resolution monitors – all synchronized by time. This capability will include the aforementioned, multiple streams from one camera.

  - o Users shall be able to search for video information based on time, location, case number, and any selected metadata fields. Metadata can be VS-generated or user-generated.

- The VS shall maintain logs of all user interactions.

  - o The VS shall have capabilities to perform audits on logs.

  - o Logs shall be searchable by case, user name, content, etc.

- The VS shall provide for analytics to be applied to video content.

  - o Analytics are expected to be performed at the edge and in the cloud-based system.

  - o Users may subscribe to notifications for analytics triggers for video content

  - o Analytics triggered events shall automatically be tagged with identifying metadata to reflect all available information regarding the trigger event, to minimally include start and end time, sensor information, trigger description, etc.

  - o Analytics triggers shall cause derivative video information to be generated to include (but not be limited to)

    - ▪ A video "clip" of the duration of the trigger event. The VS should also be able to provide user-selectable pre and post event periods to be included in the clip.

    - ▪ Additional information snapshots based on the nature of the analytics triggers, e.g.

- A face capture should include the aforementioned video frames as well as still JPG or similar "pictures" of the recognized person.

- A license plate identification should include the aforementioned video frames, a still JPG or similar "pictures" of the recognized license plate

- A metadata text field of the text of the license plate, face description, etc., where appropriate.

o Users shall be able to select any combination of video information for packaging into an exportable bundle. The VS should provide for video information bundles to be copied to a DVD, emailed as attachments, etc. The VS should allow for metadata redaction.

o The VS shall provide the means for authorized users external to the organization (not possessing organizational credentials) to be able to securely access all video information related to a case through a web portal or similar apparatus.

o The VS shall provide for authorized users to close a case, removing all information from the data centers on that case and ensuring that it has been archived to the cloud system.

o The VS shall provide for full information control by administrators, with full logging of all actions. System will be designed for splunk or similar tool for health monitoring.

Video System Description:

The concept of the VS Integration Framework component, shown as beige in Figure 1 above, is a key required capability of the system. Another key focus of this system is a content management system (CMS) that ties all of the data and contexts together in an enterprise content management environment.

As depicted in the diagram, one (1) VS instance would be located in each of two (2) data centers. Some components of the VS may be located in a central storage location (which will be a cloud-based system), with the CMS acting as the overall orchestrator of the system and its data. While this view is helpful in allowing for understanding of the operation and provision of capabilities, the presented architecture is not mandatory and may be achieved using a cloud or other distributed architecture – and the depicted 'instantiation' is not required.

In Figure 1, components to be specified or separately acquired by the government are shown in green. The other components, shown in white, represent functionality that will be integrated into the VS, and are initially desired as part of the overall package of capabilities to be acquired as part of the VS. The ability of the integration framework to facilitate replacing components or to allow a choice between multiple components performing the same function, such as a VMS, is important to the government. The "Interface" components shown represent generic or component-specific interfaces between the functional components and the integration framework. Please note that many of the components in the diagram are conceptual and are used as a convenient means to organize related functions, and to convey the government's desire for a highly modular system. A physical implementation may organize the functionality differently than shown here, and physical components are likely to not correspond one for one with the conceptual components. Further, the government expects that the system may need to operate on a variety of sizes of platforms, from "one off" systems to the large-scale data centers. Specifically, the government is interested in mobile versions of the system that could be employed for special events, with full federation into the permanent system.

Ideally, the VS should provide a consistent and unified user interface for the diverse components of the system while synchronizing the functionality of multiple, disparate components. For example, if the system employed multiple VMS's, and allowed a user to control any of them using the same interface, this characteristic would allow engineers to change the VMS component without affecting the user experience.

The VS should seamlessly coordinate the actions of multiple, disparate components into a synchronized system. For example, when a user accesses the VS, their roles and privileges need to be identified via the Identity and Access Management component (currently implemented by Microsoft Active Directory). This access control would then be extended to the scenario of the user setting up a new host or recording video from that host—primarily using functionality in the VMS. Here the policy component would be involved to ensure that the authorization for surveillance data had been entered, and that the surveillance was only active during the time periods authorized. To the user, his or her activities would be seamlessly coordinated among the VMS, policy, access control, and other modules and executed through a single user interface. The abstracting nature of the VS Integration Framework also has the effect of reducing the number of connections for each module to one (the module's connection with the framework), which directs the flow of information to the other appropriate modules.

The following describes the largest anticipated usage profile for the foreseeable future. These maximums may not be reached, or may only be reached over time, so the government would be interested in flexibility in licensing terms. While not currently expected, circumstances may cause the government to increase these maximums, so performance of the system should not be limited by these numbers.

- Up to 500 sites, ranging from small offices to enterprise wide
- Up to 2500 simultaneous active users, with tens of thousands of named users.
- Between 1000 and 5000 simultaneous active cameras (and a similar number of cameras in inventory or otherwise inactive).

While the desired integrated system may contain pre-selected subsystems such as a VMS, the integrated system must still be able to fully integrate with other, possibly competing subsystems. Further employing this example: if the integrated system already contains a branded or organic VMS capability, the system will still need to organically link to additional VMS subsystems specified in this RFI.

DHS-ICE needs an enterprise-level **video system** that facilitates integration of subsystems and components including the following:

Edge Devices

- These components are field-located, composite surveillance devices (frequently called hosts) that have integrated cameras, communications, routing, analytics, storage and other ancillary components. They may be simple systems consisting of a camera and data transmission devices or may be more sophisticated that include capabilities such as analytics, and/or special data compression and transmission methods to reduce bandwidth usage.

VMS

- Video Management Systems are the primary video ingest and control modules. One or more instances are expected to be continually employed in each data center.

- Portable, self-contained (ad hoc) video systems will be occasionally attached to VS so that content can be uploaded to VS and placed under VS' control.

Processing

- Host-based and cloud-based analytics will provide the system with processing capabilities such as the ability to identify video with the presence of motion, faces, text, or other information of interest to investigators, mark the information with metadata, and send notifications when events of interest occur.

Policies

- A policy module is primarily a rules manager and will be employed to accept policy input, such as authorized surveillance dates or retention period from users and exert that input on VS operations.

ID/Access Management

- This logical component will manage access control based on data in the standard access control system, which is currently Active Directory, and also maintain audit logs for user and system activities.

User Interface

- The primary purpose of the user interface component is to provide a consistent user interface for input and output among a variety of underlying subsystems and components.

Metadata Management

- Both manually entered and automatically captured metadata descriptors may be associated with any content, and then search, management, and related capabilities will be performed based on that metadata and its associations.

Storage Management

- EVS will need to provide secure storage management for original video information, metadata (auto and user-generated), and derivative video information for user-definable periods. This management may extend to content on edge devices.

Content Management

- VS is intended to provide for content management of all original, user-added, and derivative video information located in the enterprise.

Framework Attributes

- The VS integration framework should be able to employ and control add-on modules to include analytics, VMS, and other industry-standard modules.

DISCLAIMER:

This notice does not constitute a Request for Quote (RFQ)/Invitation for Bid (IFB)/Request for Proposal (RFP) or a promise to issue a RFQ, IFB, or RFP in the future.   This RFI is being issued solely for information and planning purposes and does not constitute a solicitation nor does it commit DHS-ICE to contract for any supply or service. Further, DHS-ICE is not seeking quotes, bids or proposals at this time and will not accept unsolicited proposals in response to this RFI. Respondents are solely responsible for all expenses associated with responding to this RFI and DHS-ICE will not pay for any information or administrative

costs incurred in response to this notice. Responses to this RFI will not be returned. Respondents will not be notified of the result of the review.

Responses may be evaluated by Government technical experts drawn from staff within DHS-ICE and/or selected support contractor personnel. Support contractors will be bound by appropriate non-disclosure agreements to protect proprietary information. Proprietary information, if any, should be minimized and must be clearly marked. Responders are encouraged to avoid use of excessive marketing lexicon; submission of fancy brochures; and other unnecessary sales literature.

The group reviewing responses may seek further clarification from respondents. The clarification may be requested in the form of brief verbal communication by telephone, written communication, or electronic communication. In addition, RFI respondents may be invited to present a demonstration to the reviewing group.

INDUSTRY CAPABILITY/FOCUS AREAS

- The functions described under **Video System Function/Capabilities** are generalized from the expected system specifications. Only the more significant, high level functions are described; vendors are encouraged to describe their approaches to these and other non-specified functions.

- Please describe your product with regard to the capability areas presented in this document, including the integration framework and the additional EVS components. In particular, the specific software components that the integration framework currently supports, and the facilities the framework uses to integrate new components into the framework should be described.

- Using the concept presented in Figure 1, please list the commercially available modules with which your proposed system is compatible.

- Please describe the computing environment(s) in which your system can function to include servers, virtualization, storage, networks, etc. (e.g., "only runs under MS Windows Server 2012", or "requires a minimum of 6 separate hardware (not virtualized) servers to implement")

- Please describe your licensing models, with special emphasis on pool licensing descriptions and freedom from physical key devices.

- Please describe the nature of software licensing enforcement, i.e., are license keys, dongles, or online servers (customer premise or remote) required? (Note, systems that require dongles or similar physical keys will not be favorably considered in future acquisitions.)

- Please describe the client base that currently employs your system.

- Please describe the data formats that are employed in your system and how they system supports open standard formats.

- Please describe how you comply with latest version of DHS 4300A Sensitive Systems Handbook which can be found at in the publications library on the DHS.gov website. https://www.dhs.gov/publication/dhs-4300a-sensitive-systems-handbook.

- Please describe how you approach very large (PetaByte and larger) media storage and management for up to 75 years

- Please describe how you employ reliability, failover, and restorative functions and the speed of those activities.

DATA SUBMISSION REQUIREMENTS:

The Government requests interested companies respond to the following:

a. Provide your firm's identifying information (name, address, phone number, CAGE code, and email address).

b. The anticipated applicable North American Industry Classification system (NAICS) code for this acquisition is 334310: Based on this NAICS code what is your size status?

☐ Small Business
☐ Small Disadvantaged
☐ Women-Owned
☐ Veteran-Owned
☐ Service Disabled Veteran Owned
☐ Hub-zone
☐ Large Business

c. If your company believes a different NAICS code is more appropriate, please list with explanation.

d. Tell us the reasonable number of calendar days you will need to respond to a RFP.

e. Do you have existing contract vehicles in place with DHS-ICE, or purchasing vehicles with the Federal Government (e.g. GSA, SEWP, etc.)?

f. If you do not have existing products that meet all of this RFI's technical requirements, please describe how much time or non-recurring expenses (NRE) would be needed to achieve full compliance. If a new product will be

developed, how much time would it require to deliver pre-production prototypes and then final first item for approval?

g. The Government wants to ensure transparency of this process and ensure that all interested firms are provided the same information. If your firm has a question regarding this RFI, can the Government post your firm's questions, along with the Government's response, in FedBizOpps, GSA, etc. (your firm's name will not be disclosed in the posting).

h. Submit Rough Order of Magnitude (ROM), in a dollar amount, to perform/deliver components of this RFI. Associated assumptions related to the ROM are welcomed. Indicate if the ROM includes any software maintenance or warranty.

i. Submit information and suggestions that may encourage new, different, or innovative approaches that would result in products, solutions, and direct savings to DHS-ICE.

j. Submit assessments of the experience and existing enterprise video and content management system specs and characteristics, along with proposed recommendations for enhancements or increased capabilities.

PLEASE NOTE: INTERESTED PARTIES SHALL NOT CONTACT TECHNICAL PERSONNEL ABOUT THIS REQUEST.

All questions/responses regarding this RFI shall be submitted electronically to the Contracting Office *(include both personnel on all correspondence)*

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