

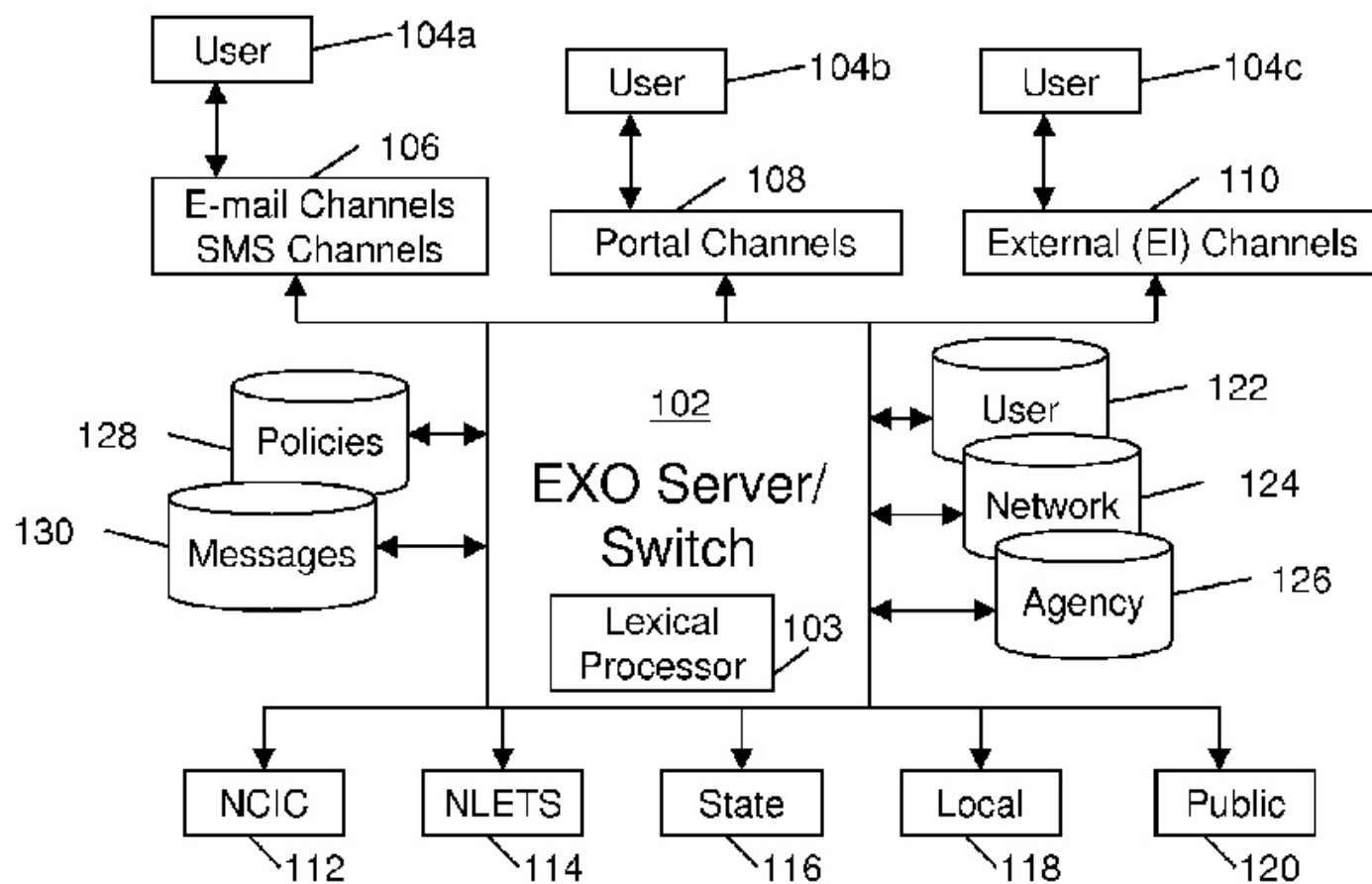


Fig. 1

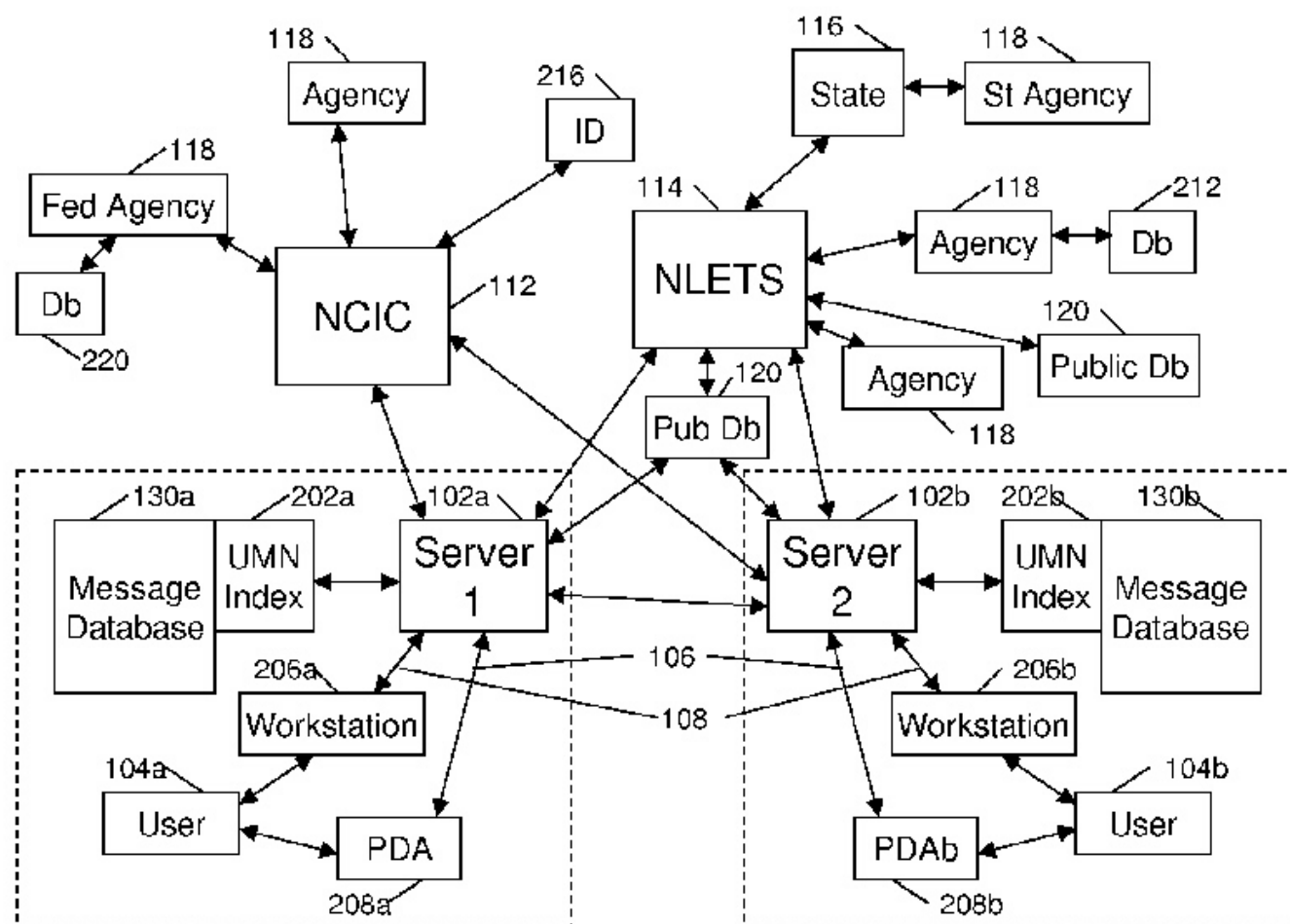


Fig. 3

[USPTO PATENT FULL-TEXT AND IMAGE DATABASE](#)

(18 of 25)

United States Patent
Waters**7,797,309**
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System and method for search parameter data entry and result access in a law enforcement multiple domain security environment

Abstract

A system and method for law enforcement query entry that enables universal platform access without requiring specialized platform software by utilizing a keystroke efficient lexicon for data entry that is converted to standardized search commands by a back end server and by displaying search results in accordance with user, platform, network, and data security constraints.

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Claims

What is claimed is:

1. A system for accessing a law enforcement data source server comprising: a processing server in network communication with said law enforcement data source server; said processing server being a physical computing device; at least one channel in network communication with said processing server for receiving at least one query message from a remote user terminal; said at least one query message including a single character transaction code and a data field, said data field providing data relating to the single character transaction code; said single character transaction code defining a distinct query function; said single character transaction code: identifies the query message as a command, indicates a distinct subject matter area for the query message, indicates any required parameters to be found in the data field, and indicates at least one parsing rule for the data field; and a lexical processor associated with said processing server, said lexical processor configured for parsing said data field in accordance with said single character transaction code to generate an interpreted

query message; said processing server configured for converting said interpreted query message to an output message having a format required by said law enforcement data source server; said processing server sending said output message to said law enforcement data source server; said processing server receiving a query response from said law enforcement data source server, said query response responsive to said output message, and said processing server delivering said query response to said remote user terminal; wherein the single character transaction code has a predetermined position in said query message and said predetermined position is the first character or last character in the query message; a plurality of users having a plurality of respective accounts, wherein the transaction code predetermined position is determined separately for each said account of said plurality of accounts; wherein the single character transaction code is from a set of transaction codes, said set of transaction codes comprising a respective single character transaction code for each of the following functions: 1) "M", "m", "F", or "f", conveying male or female gender information respectively, the data field containing at least three subfields separated from one another by delimiters and distinguished from one another by an elimination process, said at least three subfields comprising a state code subfield, a date code subfield, and a first name subfield, said elimination process comprising: said state code subfield distinguished from the other subfields of said at least three subfields by the state code subfield matching a table of state codes, said date code subfield distinguished from the other subfields of said at least three subfields by the date field being numeric, and said first name field distinguished from the other subfields of said at least three subfields by being a sequentially first remaining subfield after identifying said state code subfield and said date code subfield; 2) "B" or "b", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first subfield, said first subfield identified as a state registration number by the first two characters matching an entry in a table of state codes, said first subfield identified as a hull number by said first two characters not matching any entry in said table of state codes; 3) "C" or "c", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first subfield, said first sequential subfield being an identification number appropriate to the data source server, a second sequential subfield being identified as a state code by the first two characters matching an entry in a table of state codes; 4) "D" or "d", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being identified as a drivers license number if the first sequential subfield is all numeric; a second sequential subfield being identified as a state code if a first two characters are found in a table of valid state codes; 5) "G" or "g", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being identified as a make identifier by matching the first subfield with an entry in a table of valid make identifiers, if no match is found, said first subfield is ignored; a second sequential subfield is identified as a model number if the field is

numeric; 6) "H" or "h", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being identified as a United Nations Number by the first character being numeric, and said first sequential subfield being identified as a railroad tank car number by said first character being alphabetic; 7) "I" or "i", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being an identification number for an image to be retrieved; 8) "P" or "p", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a state code subfield distinguished from the other subfields of said one or more subfields by said state code matching an entry in a table of state codes; and optionally including a type code subfield distinguished from the other subfields of said one or more subfields by said type code matching an entry in a table of type codes; 9) "S" or "s", the data field containing one subfield being identified as a social security number; and 10) "V" or "v", the data field contains one or more subfields separated from one another by delimiters, said one or more subfields including a state code subfield distinguished from the other subfields of said one or more subfields by said state code matching an entry in a table of state codes; and optionally including a make code subfield distinguished from the other subfields of said one or more subfields by said make code matching an entry in a table of make codes.

2. The system of claim 1, wherein the data field includes a first subfield, and a type of data contained in a first subfield of said data field is determined from a feature of the first subfield.

3. The system of claim 2, wherein the feature of said first subfield is that the first subfield is all numeric characters.

4. The system of claim 2, wherein the feature of said first subfield is that the first subfield matches an entry in a predefined table.

5. The system of claim 2, wherein the feature of said first subfield is based on a portion of said first subfield.

6. The system of claim 5, wherein said portion of said first subfield is the first two letters of said first subfield.

7. The system of claim 1, wherein said data field includes a second subfield, wherein said first subfield and said second subfield are entered in arbitrary order and the order is detected by a feature of one of said first subfield or said second subfield.

8. The system of claim 1, wherein the single character transaction code defines an additional data parameter not defined within said data field.

9. The system of claim 8, wherein the single character transaction code is "F" and the additional data parameter indicates a female attribute.

10. The system of claim 1, wherein the data field may optionally be separated from the transaction code by a delimiter character.

11. A computer readable medium containing computer readable instructions for configuring a processing server for accessing a law enforcement data source server; said processing server in network communication with said law enforcement data source server; said processing server being a physical computing device; at least one channel in network communication with said processing server for receiving at least one query message from a remote user terminal; said at least one query message including a single character transaction code and a data field, said data field providing data relating to the single character transaction code; said single character transaction code defining a distinct query function; said single character transaction code: identifies the query message as a query command, indicates a distinct subject matter area for the query message, indicates any required parameters to be found in the data field, and indicates at least one parsing rule for the data field; and a lexical processor associated with said processing server, said lexical processor configured for parsing said data field in accordance with said transaction code to generate an interpreted query message; said processing server configured for converting said interpreted query message to an output message having a format required by said law enforcement data source server; said processing server sending said output message to said law enforcement data source server; said processing server receiving a query response from said law enforcement data source server, said query response responsive to said output message, and said processing server delivering said query response to said remote user terminal; wherein the single character transaction code has a predetermined position in said query message and said predetermined position is the first character or last character in the query message; a plurality of users having a plurality of respective accounts, wherein the transaction code predetermined position is determined separately for each said account of said plurality of accounts; wherein the single character transaction code is from a set of transaction codes, said set of transaction codes comprising a respective single character transaction code for each of the following functions: 1) "A" or "a", the data field containing one or more subfields separated from one another by delimiters and distinguished from one another by an elimination process, said at least three subfields comprising a type code subfield, a date code subfield, and a first name subfield, said elimination process comprising: said type code subfield distinguished from the other subfields of said one or more subfields by the type code subfield being the first subfield in the data field, and said type code validated by matching a table of type codes; 2) "M", "m", "F", or "f", conveying male or female gender information respectively, the data field containing at least three subfields separated from one another by delimiters and distinguished from one another by an

elimination process, said at least three subfields comprising a state code subfield, a date code subfield, and a first name subfield, said elimination process comprising: said state code subfield distinguished from the other subfields of said at least three subfields by the state code subfield matching a table of state codes, said date code subfield distinguished from the other subfields of said at least three subfields by the date field being numeric, and said first name field distinguished from the other subfields of said at least three subfields by being a sequentially first remaining subfield after identifying said state code subfield and said date code subfield; 3) "B" or "b", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first subfield, said first subfield identified as a state registration number by the first two characters matching an entry in a table of state codes, said first subfield identified as a hull number by said first two characters not matching any entry in said table of state codes; 4) "C" or "c", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first subfield, said first sequential subfield being an identification number appropriate to the data source server, a second sequential subfield being identified as a state code by the first two characters matching an entry in a table of state codes; 5) "D" or "d", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being identified as a drivers license number if the first sequential subfield is all numeric; a second sequential subfield being identified as a state code if a first two characters are found in a table of valid state codes; 6) "G" or "g", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being identified as a make identifier by matching the first subfield with an entry in a table of valid make identifiers, if no match is found, said first subfield is ignored; a second sequential subfield is identified as a model number if the field is numeric; 7) "H" or "h", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being identified as a United Nations Number by the first character being numeric, and said first sequential subfield being identified as a railroad tank car number by said first character being alphabetic; 8) "I" or "i", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a first sequential subfield, said first sequential subfield being an identification number for an image to be retrieved; 9) "P" or "p", the data field containing one or more subfields separated from one another by delimiters, said one or more subfields including a state code subfield distinguished from the other subfields of said one or more subfields by said state code matching an entry in a table of state codes; and optionally including a type code subfield distinguished from the other subfields of said one or more subfields by said type code matching an entry in a table of type codes; 10) "S" or "s", the data field containing one subfield being identified as a social security number; and 11) "V" or "v", the data field contains one or more subfields separated from one another by delimiters, said one or more subfields including a state

code subfield distinguished from the other subfields of said one or more subfields by said state code matching an entry in a table of state codes; and optionally including a make code subfield distinguished from the other subfields of said one or more subfields by said make code matching an entry in a table of make codes.

12. The system as recited in claim 11, wherein the transaction code is as follows: "A" or "a", referring to an article check; "B" or "b", referring to a boat check; "C" or "c", referring to a criminal record check; "D" or "d", referring to a person check by driver's license; "F" or "f", referring to a female person check by name; "G" or "g", referring to a gun check; "H" or "h", referring to a hazardous materials check; "I" or "i", referring to an image retrieval; or "M" or "m", referring to a male person check by name.

13. The system as recited in claim 12, wherein the set of transaction codes further includes all of the following transaction codes; "O" or "o", referring to a protective order check; "P" or "p", referring to a license plate check; "S" or "s", referring to a person check by social security number; "U" or "u", referring to unit status check; "V" or "v", referring to a vehicle check by vin number; and "W" or "w", referring to severe weather check.

14. The system as in claim 11, wherein only upper case letters are used or only lower case letters are used.

15. The system of claim 11, further including one or more additional data fields separated by a delimiter selected from the group consisting of: space, dash, period, comma, colon, semicolon, and hyphen.

16. The system of claim 11, wherein each respective single character transaction code in the set of transaction codes need not be separated from the data field by a delimiter character.

17. The system according to claim 11, further including a plurality of additional data source servers in network communication with said processing server; wherein said lexical processor generates and sends a respective output messages to each additional data source server of said plurality of additional data source servers, at least one respective output message differing in format from another of said respective output messages.

18. The system as recited in claim 11, wherein the transaction code is "M", "m", "F", or "f", wherein said at least three subfields includes a second name field and said second name field is distinguished from the other subfields of said at least three subfields by being a sequentially second remaining subfield after identifying said state code subfield and said date code subfield.

Description

RELATED APPLICATIONS

This application contains related disclosure to concurrently filed application Ser. No. 11/759,441 titled "System and Method for Efficient Indexing of Messages in a Law Enforcement Data Network," by Jonathan Waters, which is incorporated herein by reference in its entirety.

BACKGROUND

1. Field of the Invention

The present invention pertains generally to the field of data search request entry and search result access among multiple terminals, devices, users, and databases in a layered security environment, more particularly in a Law Enforcement and Criminal Justice related network environment.

2. Background of the Invention

Access to Law Enforcement and Criminal Justice data is becoming increasingly important to more authorized individuals on a daily basis. Also, new technology is providing a much wider array of physical access options for such personnel.

Due to the implementation of current Law Enforcement and Criminal Justice systems, it is difficult to provide secure, easy to use access, for authorized personnel without extensive system and software development on the physical devices used. Furthermore, the structures of the existing systems require extensive training for the end users of such systems, and are not intuitive to the user.

Coupled with the rate of technological change of devices such as personal Digital Assistants, there are many challenges for an agency that wishes to grant access from a variety of devices, with a variety of physical infrastructures, including, but not limited to, the need to develop unique applications for each device, the need to develop security procedures for each device and the need to train users on the unique characteristics of the applications that have been developed for that device.

These problems are compounded when a specific user may access data from several different devices and or locations, such as from a cell phone, a desk top or a Personal Digital Assistant.

Security is another concern. The National Crime Information Center ("NCIC", a division within the federal Bureau of Investigation) has strict rules for the access and security of data that is accessed via their databases, and all access must be made in compliance with the NCIC Criminal Justice Information Security policies.

Further, there is an increasing need for the permanent keeping of records of transactions with these databases for future review of historical case activity. The compiling of a permanent record presents challenges with respect to efficient and speedy access of records in such a massive database.

Thus there is a need for a system that allows a secure, intuitive access for authorized personnel to access Law Enforcement and Criminal Justice databases from any type of physical communications device with no specific software application (out side of manufacture supplied generic applications) installed on that device and without specialized training for the end users of such devices. There is further a need for a database and method of accessing that can handle the data volume anticipated for decades of use while providing fast access to the data without requiring changes in the current network infrastructure.

BRIEF DESCRIPTION OF THE INVENTION

The present invention pertains to a system and method for law enforcement query entry that enables universal platform access without requiring specialized platform software by utilizing a keystroke efficient lexicon for data entry that is converted to standardized search commands by a back end server and by displaying search results in accordance with user, platform, network, and data security constraints.

One aspect of the invention includes a keystroke efficient lexicon with inferential syntax wherein the lexical processing is performed at the server, thus enabling the use of simple cell phones or other devices as entry terminals. The keystroke efficient lexicon speeds entry of data on all terminals and can generate multiple parallel requests in different formats directed to different data source systems.

In one embodiment, a single character transaction code may be adjacent to a data field, without the need for entering a delimiter. The data field type and order of data fields may be detected and interpreted by a property of the data field, such as whether the data field is all numeric characters, whether the field or a portion of the field can be found in a table of valid values, the length of the field, or another property or feature of the field. In one embodiment a transaction code may define one or more data fields associated with the transaction code.

In another embodiment, a number of characters may be used as delimiters at the convenience of the user to allow the use of different keyboards. The alternative

delimiters may include space, dash, period, comma, colon, semicolon, and hyphen.

In one aspect of the invention, the input message may be translated to multiple formats for multiple data source servers and sent to multiple data source servers based on user and group permissions and preferences and based on the message type.

Another aspect of the invention includes a multi faceted permission security hierarchy for display of results, thus further enabling the use of low and medium security devices to participate at an appropriate level in the network while permitting full capability on fully authorized terminals. The security hierarchy allows for departmental and interagency data access and sharing agreements and limitations, thus fostering interconnection with all data sources.

These and further benefits and features of the present invention are herein described in detail with reference to exemplary embodiments in accordance with the invention.

BRIEF DESCRIPTION OF THE FIGURES

The present invention is described with reference to the accompanying drawings. In the drawings, like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit(s) of a reference number identifies the drawing in which the reference number first appears.

FIG. 1 illustrates the basic interconnects of a system in accordance with the present invention.

FIG. 2 further illustrates interconnections among users and data sources.

FIG. 3 illustrates the operation of two independent systems in accordance with the present invention.

FIG. 4 illustrates the various relationships involved in connecting a user to the server.

FIG. 5 illustrates an exemplary operational flow using an exemplary system in accordance with the present invention.

FIG. 6 shows a table with an exemplary set of universal transaction codes with parameters and optional parameters that may be entered for each one.

FIG. 7A shows the steps for processing a user input and generating a query message.

FIG. 7B illustrates the steps associated with parsing a user input string.

FIG. 8 illustrates the steps for processing transaction code "A".

FIG. 9 illustrates the steps for processing transaction code "B".

FIG. 10 illustrates the steps for processing transaction code "D".

FIG. 11 illustrates the steps for processing transaction code "F" or "M".

FIG. 12 illustrates the steps for processing transaction code "G".

FIG. 13 illustrates the steps for processing transaction code "X".

FIG. 14 illustrates the steps for processing transaction code "Y".

FIG. 15 illustrates the steps for processing transaction code "Z".

FIG. 16 illustrates the processing steps performed after the query is validated by the user.

FIG. 17A shows an exemplary Universal Message Number (UMN) in native format for a typical 32 bit machine.

FIG. 17B illustrates an exemplary operator visual display format in accordance with the present invention.

FIG. 17B shows the user display format as would be used for the 89th message from the date of Apr. 11, 2007.

FIG. 17C illustrates the context field format for the UMN.

FIG. 18A and FIG. 18B illustrate the control (context) field in an exemplary message.

FIG. 19 illustrates an exemplary message and response path through the system and external data sources.

FIG. 20 illustrates several exemplary indexing operations using the UMN to retrieve a message.

FIG. 21 illustrates a use of the UMN to collect responses from multiple data sources.

DETAILED DESCRIPTION OF THE INVENTION

The present invention pertains to a system for accessing Law Enforcement, Criminal

Justice, and related data efficiently, and rapidly from a wide range of terminal devices. The system opens up the field of eligible user terminal devices by enabling access from any device with messaging or email capabilities including devices, such as cell phones, with minimal keyboards, no security, and with no special installed software. The system may be used with devices supporting text messaging (Short Messaging Service, SMS) that is pervasive on the majority of new devices widely available to the public. The system can even enable an officer, such as an off duty officer, to borrow a cell phone from anyone at the scene of an emergency to enter data and receive basic query responses. The system accommodates a wide range of terminal device security capabilities by defining a security structure that permits the display of response data in accordance with the security attributes for the user, terminal, and channel to the user.

Throughout this disclosure an exemplary system embodiment used to illustrate elements and features of the invention is referred to as Exemplary System Omni-access (EXO). One should understand that EXO is discussed for illustration purposes only and that the many potential features of EXO are not all required to practice the invention.

The exemplary system, EXO, may include a number of aspects and features contributing to the benefits described herein.

EXO may include a keystroke efficient data entry lexicon and inferential syntax processing that enables data entry on minimal keyboards, such as from cell phones, and speeds entry on full keyboard devices.

EXO may include a multi faceted permission security hierarchy for entry of queries and display of results, thus further enabling the use of low and medium security devices to participate at an appropriate level in the network while permitting full capability on fully authorized terminals.

EXO may further include a message indexing method that allows permanent archival of each query and the associated response data according to a permanently assigned message number called a Universal Message Number (UMN). A "message" refers to a unit of information communicated in a Law Enforcement network. A message, for example, may be a query for information on a person based on a driver's license number. The message may reach a server and spawn additional messages to state drivers license databases and crime databases. Each database may then respond with response messages routed back to the user. Response messages may include the UMN of the original query message so that responses may be directed and organized relative to the originating query. The invention provides a method for mapping the UMN to a control field in presently established message protocol standards so that the UMN can be used with the current message infrastructure. Within this disclosure, the UMN may refer to a particular instance of a number or the set of numbers or values available

to the number according to one or more defined formats. A number having the same value in a different format means that there is a one to one correspondence between the representations for the value in the respective formats according to a defined conversion or mapping algorithm.

User Access to Criminal Justice and Law Enforcement Databases.

FIG. 1 illustrates the basic interconnects of a system in accordance with the present invention. Referring to FIG. 1, the exemplary system server, EXO 102 negotiates data flow from each data source to each user 104 in accordance with policies that may be specific to any particular data source or network. The system includes a database which includes user data 122, network data 124, agency data 126, and database security policies 128 that control the flow of data. The system may also include a database of historical messages 130.

EXO is connected to data sources. The data sources range from local 118 and State 116 interconnection systems, e.g., Florida Crime Information Center, (FCIC) to national systems, e.g., National Crime Information Center 112 (NCIC), National Law Enforcement Telecommunication System.RTM. 114 (NLETS.RTM.) to generally available data sources, e.g., Public Records 120, Hazardous Materials (HazMat), Vehicle Tracking, etc. Reference to law enforcement data, databases, or data sources within this disclosure refers to NCIC, NLETS, FCIC and other state databases, as well as any related agency database or public database, individually or collectively.

EXO has channels to connect to users. Channels include each different type of interconnect that may require separate security consideration. Channels include e-mail and SMS (Short Message Service, also known as text messaging) 106, portal channels 108, such as web browsers, and external channels 110, such as direct connections to users. EXO has a lexical processor 103 to convert user commands to a format appropriate for each data source.

FIG. 2 further illustrates interconnections among users and data sources. Referring to FIG. 2, the EXO server 102 may receive inputs from a user 104 through a fully enabled secure workstation 206 or through a less enabled Personal Digital Assistant 208 or other cell phone type device that may have little or no security. (Note that some cell phone devices may have full security.) The server 102 then translates the input message to a format appropriate for each connected database system (alternatively referred to as data sources or data source servers) and may send the translated message to any number of database systems. The database systems may themselves be collections of database systems, such as the NCIC 112 and NLETS.RTM. 114. NCIC 112 may then forward the message to a number of Federal or local agencies 118 that may operate various databases 220, such as fingerprint databases or social security ID databases 216 and such. NLETS.RTM. 114 also may connect to agencies

118 and state networks 116, such as Florida Crime Information Center, which then may connect to state agencies 118 that operate databases 212. NLETS.RTM. 114 and others may also provide access to public data sources 120. Various public data sources 120 may be accessed directly from EXO 102.

EXO 102 also includes a message database 130 containing all messages handled by EXO. The message database 130 includes all query messages from users and all response messages from external databases. The message database is indexed by a unique Universal Message Number (UMN) 202 assigned to each message. The UMN 202 has a format with sufficient capacity to permanently store messages in accordance with a unique value UMN for each message. The message database may also be indexed by a user ID value that relates all originating and returned messages to the user.

FIG. 3 illustrates the operation of two independent systems in accordance with the present invention. Referring to FIG. 3, two servers 102a and 102b operate two different systems serving different users. The systems 102a and 102b may operate independently or may interchange data as needed. Each system may maintain its own message database 130a and 130b. The respective UMN 202a and 202b may also contain a field to designate the system so that messages may be distinguished from one system to the other, as will be further explained later in this disclosure.

FIG. 4 illustrates the various relationships involved in connecting a user to the server. Referring to FIG. 4, a user 104 is a member of an agency 118. Agencies may be defined in various terms, ranging from a Police department in Florida to a Federal Agency to a civilian agency. The user may contact the user's server access account 410 through an access path 404 connected to a channel 106 associated with the access account 410. Each element in the path has associated security levels, permissions, and policies that dictate which information may be received from or sent to the user 104 and which databases and external connections may be accessed. For example, although the user 104 may be allowed access for certain data, the access path 406 device (web browser) may not have sufficient security to pass the data.

A channel 106 is a processing interface technology such as Electronic Mail, Portal Messaging, or Internet Search engine that provides access to the server for the end users.

An agency 118 has "Access Paths". This defines the interface structure (which server, which protocol, etc) that is used for the agency's own servers that provide input to EXO.

A user 104 may be authorized for one or more of the data sources that are available to the agency of which the user is a member, again, depending on policies, and

certifications. A certification is granted to an end user who is qualified for access to various functions within the system.

A user 104 has access accounts 410. An access account 410 is analogous to an E-mail (or similar) address. For example, a BlackBerry.RTM. user may have `jdoe@myblackberry.cingular.com` or `"ImAnyPdCop@nypd.org"`. A user may also have desktop type accounts that are accessed from a browser.

An access account 410 has properties. These properties range from return data formats (Yes/No, parsed, truncated, full, attachments for images, no images, etc), security levels (fully secured for NCIC, partially for DMV, etc), function permissions (e.g. only HazMat or such queries). The access account 410 that receives a message will determine what functions can be performed. Note that the formatting properties still do not speak to the actual device type, but provide a convenience factor. An individual user may take advantage of several different channels, depending on the access account properties.

An agency 118 has access to data sources in accordance with rules and policies. For example an FCIC agency may access the FCIC, HazMat and Public Records, but not directly the NCIC or NLETS.RTM.. An agency also typically has a "Terminal Access Control Officer (TAC) function. TAC is a person who is responsible for ensuring the appropriate and authorized (and legal) access to all components of the NLETS.RTM. system. The TAC's location is generally always manned or attended in such a manner that decisions can be made to take action, when needed. This manned location acts as a point of contact for critical messages, such as "Wanted Persons" notifications that may be received.

Security Processing.

The EXO server operates in a "trusted server" environment, i.e., the logon processing and user validation is performed by standard software and hardware that is validated and controlled by standard security practices. Note that this processing could be part of the EXO system in a Network Operations Center (NOC), which may be a shared BlackBerry.RTM. Enterprise System.TM. (BES.TM.) server for BlackBerry, for example, or could be performed elsewhere (e.g. a BES server at New York Police Department (**NYPD**), a secure server at Los Angeles Police Department (LAPD), etc).

Note that a BlackBerry.RTM. device and BES.TM. are significant in that, depending on model and configuration, BES.TM. can support connection security adequate for NCIC data. The use of a BlackBerry.RTM. example within this disclosure, however, is intended for exemplary purposes only. Any terminal or device having adequate security may be used.

In one embodiment, the user may be authorized remotely, e.g., at **NYPD**, and may send a message through the **NYPD** server to the EXO server.

The account verification process will identify the user and agency. From the collected properties of the linkages, the transactions permitted transactions can be determined. That is, the most restricted properties of the access account, the access path, the agency and the user define the permissions for the connection.

Data returned will be sent or queued based on the response path security considerations. For example, a request sent via a non-secure cell phone may be processed, but secure response data (e.g. an NCIC response) may be routed to a separate access account, with only a notification that a response exists being sent to the user at the first access account. This allows the user to take alternate action. Depending on security policies, it may be possible to provide a HIT/NoHIT response to low security terminals, without providing the supporting data.

The availability of a central delivery point as described above is beneficial to the operation of the system.

Typical Processing Scenario.

FIG. 5 illustrates an exemplary operational flow using an exemplary system in accordance with the present invention. Referring to FIG. 5, the following is a possible operational flow from an agency such as **NYPD**, using a Blackberry.RTM. (any model that supports BES):

1. The user (for example at New York Police Department, "**NYPD**" who may be referenced by "ImAnyPdCop") logs on to his BES server 502.
2. The user addresses an E-mail to exo@dmx.com, using his thumb from the address book 504.
4. The user requests a plate check via "P ABC123" in the subject line 506.
5. The user sends the transaction 506.
3. The EXO channel "dmx.com" receives the message and decomposes it to a user and domain 508.
6. The EXO server receives the request and inspects the originator 510.
7. The EXO server recognizes permission to access the **NYPD** system and other data sources such as NCIC and NLETS.RTM. 512.

8. EXO creates a unique reference (Universal Message Number, "UMN") and saves the query in the EXO database 514. User identification and address information may also be saved with the query.

9. EXO creates a message or messages and sends the message to the various data sources that are authorized for that user to access 516, in the format appropriate for that format.

10. The data sources return various messages to the EXO server. (Note that there may be other users' messages intermingled as there may be multiple users active and responses may arrive within any time frame and order from the data sources) 518. EXO assigns new message numbers to the return messages and stores the return messages with linkage to the originating message based on the UMN reference in the response message. 11. The EXO server identifies the user based on the UMN reference in the response message 520. The UMN may be used to retrieve user information associated with the query message stored in the database. 12. The EXO server calculates the permitted destination(s) from the permissions and policies of the data sources that have responded to the request 522. 13. The EXO server delivers the results to the user via the appropriate channel 522, i.e., some of the data may be blocked, but stored for later display when the user logs on from a secure terminal, or may be redirected to another team member who has a secure terminal 524. The selection of data to send to each terminal may be referred to as filtering the data in accordance with a security attribute. Components Involved.

One component in the EXO operation is that of EXO server, which manages all access by the channels and calculates the available data sources and return routing based on security profiles.

Another component is the implementation of the "Universal Message Number" processing, which may be used to track all messages within the system, and relate request to their return responses.

EXO processing may be completely "server side", i.e., the essential processing may be accomplished without loading any specialized software on the user terminal. However, even if some specialized functions are desired or required by concerns outside EXO processing, EXO would not know or care. One example may include a Binary Runtime Environment for Wireless.RTM. (BREW) application for CDMA phones by Qualcomm, Inc., San Diego.

Expanded Processing Model.

EXO itself is a transaction processor that "reaches out" for messages, but also can

have message "pushed to it". In the case of a locally hosted sever, it will "reach out" to the BES/Exchange server to get the requests. However, there are also configurations that may require a somewhat different approach.

Take the example of the `ImAnyPdCop@nypd.org`. It is assumed that there is a secure link from the **NYPD** server to the EXO server, which does exist. However, normally the **NYPD** BES/Exchange server would send that type of external message via the Internet, unless configured otherwise. Changing some of these routing configurations within an agency may be difficult, and might meet with resistance.

An alternate approach would be to configure EXO to read an account at **NYPD** (or any agency, for that matter). In this case, the **NYPD** users would send to `exo@nypd.org` and the EXO server would use that account as the communications channel, which would effectively be transparent to EXO. This model then expands to any agency that is on a State network that can be reached via the NLETS.RTM. communications interface, thus preserving the security model. Effectively, EXO takes a "your server or ours" approach, and does not care.

In the case where a direct or NLETS.RTM. type connection is not available and the Internet must be used, there are at least two approaches. Either a Virtual Private Network (VPN) can be implemented into the EXO NOC or an "agent" can be deployed that is a simple Web Service that access the user server, encrypts the request using appropriate FIPS-140-2 and sends it to EXO via the Internet. The response data would return via a pair of "Web Services". "Web Services" are industry standard communications components that are used to exchange data amongst disparate systems.

Keystroke Efficient Lexicon and Lexical Processing

In accordance with the present invention, user inputs may be entered using a keystroke efficient lexicon and open content driven syntax that can be translated to standard query commands by a back end server. The server may then route queries to various data sources as established for the data type at the server and in accordance with data interchange rules.

In the current Law Enforcement Data handling systems, there are strict rules and formats that must be followed when making request to the Law Enforcement and Criminal Justice system, especially for queries involving persons, property (e.g. guns) and vehicles.

The general form of queries to the National Crime Information center is as follows, as documented in the "National Crime Information Center Operations Manual":

"FunctionCode.agencyid.Search Parameters"

Where:

"Function Code" is a two to four character data string defining the function to be performed

"agencyid" is a nine character agency identification code assigned by NCIC

"Search parameters" are data elements in a strict format (and often order) required to complete the search.

For example, to query a stolen vehicle by license plate "ABC123" from an agency in Florida, the following would be used:

"QV.FL9999999.LIC/ABC123.LIS/FL"

As an example, to query a male person "John Doe, born on Mar. 31, 1949, the following would be used:

"QW.FL9999999.NAM/DOE,JOHN.DOB/19490331.SEX/M"

For functions that must access data in other systems but must traverse the NLETS.RTM. system the functions may be even more complicated. The general format of an NLETS.RTM. function is as follows, as documented in the "National Law Enforcement Telecommunications System Operations Manual":

"FunctionCode.agencyid.Destinationsystem.Search Parameters"

Where:

"Function Code" is a two to four character data string defining the function to be performed

"agencyid" is a nine character agency identification code assigned by NCIC

"Destinationsystem" is a two character code indicating the system to which this function should be sent.

"Search parameters" are data elements in a strict format (and often order) required to complete the search.

For example, to query the driver license status of an individual in Arizona (John Doe,

Male, born Mar. 31, 1949) from a system in Florida, the following would be used:

"DQ.FL9999999.AZ.NAM/DOE,JOHN.DOB/19490331.SEX/M"

Not only are the strings required to be exact in all cases, the contents of each field must be in a specified format, which can be cumbersome. Furthermore, the format of the date fields (e.g. Date of Birth) may change from function to function, and not be consistent across all processing systems. Thus extensive training is required for a user, and the data formats are not intuitive.

In order to mitigate these issues partially, many systems provide "formats" into which the user types data (in the prescribed format). This means, though, that an application must be loaded on the device to create the formats and the user trained on that application. The lexical parsing of the present invention totally eliminates the need for any such applications.

The lexical parsing removes all those restrictions by the following.

- 1) The function (e.g. "QW") is replaced with a single code that is intuitive and also in some cases provides one of the data elements (e.g. the "Sex" code).
- 2) The agency identifier is inserted automatically by the server based on the profile.
- 3) The order of the fields is not important, and the meaning of each field is inferred by the parser using various data analysis techniques, such as an all numeric field that can be inferred as to have a valid date of birth under the rules of the function.
- 4) The delimiters are free form and are detected from a list which avoids multiple keystrokes on a hand held device.
- 5) The lexical parser combines all the received data and creates the output string as requested for the exact system to which it is addressing the function.

The increased flexibility in entry formats may be illustrated by the following example. Any of the following (amongst others) could be entered by the user to create the driver license query as described above from Florida to Arizona:

TABLE-US-00001 TABLE 1A Example Input String 1 MJOHN, DOE, 033149, AZ 2 M
JOHN DOE 19490331 AZ 3 MAZ, 03311949, JOHN, DOE

Referring to Table 1A, in example 1, "M" is the transaction code. There is no space separating "M" and "JOHN", the first field. No space is needed because the transaction code is fixed length. The remaining fields are separated by commas, resulting in the

following set of data fields: "JOHN", "DOE", "033149", and "AZ". "AZ" is recognized as a state code because it is found in a state code table. "033149" is recognized as a date because it is all numeric characters. "JOHN" and "DOE" are the remaining fields of alpha characters and are taken in sequence as first and last name.

The same principles apply to example 2. Note that the delimiters are spaces. Note also that the date is an eight character format, which can be recognized by the number of characters and decoded or parsed into year, month, and day accordingly. Note also that a space was placed between "M" and "JOHN". The space is optional as all delimiters are deleted once the fields are parsed.

Example 3 illustrates that the order does not matter. Note also that the order of the date fields, month-day-year differs from that of example 2, year-month-day. The two formats may be distinguished by noting that the two valid centuries 19 and 20 are invalid months. Thus, if 19 or 20 are the first two digits of an eight digit date, the year-month-day format is used.

Thus, the fields may be entered in any sequence and any of several formats, yet the data may be correctly parsed and interpreted based on features of the data itself.

Alternatively, the transaction code may be placed at the end of the input string. This accommodates users who prefer to enter the data first and then decide how to use the data. In one embodiment, the selection of placing the transaction code at the first or last may be a configuration parameter selection on account setup. Table 1B shows the exemplary inputs of Table 1A with the transaction code at the end of the input string.

TABLE-US-00002 TABLE 1B Example Input String 1 JOHN, DOE, 033149, AZM 2
JOHN DOE 19490331 AZ M 3 AZ, 03311949, JOHN, DOEM

The data fields are then assembled into the standard command using a standard command template:

"DQ.FL9999999.dest.NAM/nnn.DOB/dddddddd.SEX/s"

where,

DQ is the function code;

FL99999999 is an exemplary requesting agency ID;

dest is the destination state code;

NAM/designates a name to follow;

DOB/designates a date of birth to follow; and

SEX/designates a sex to follow.

Inserting appropriate data into the above template yields:

"DQ.FL9999999.AZ.NAM/DOE,JOHN.DOB/19490331.SEX/M"

The result is a total of 47 characters compared with 19 characters for example 1 above.

In a further advantage, a single entry command could (if configured as such) also create and send a query function to NCIC in the NCIC required format. Thus, from a single input, EXO can create far ranging queries to multiple data sources.

The user simply enters the data in the order that the user sees fit and as meets the needs of the situation. This is intuitive to the user and does not require any knowledge of the format of the function itself that must be generated.

The benefits of the lexicon and inferential syntax include rapid entry of query data on any platform, universal platform access, support of cell phones, PDA's (personal digital assistants) and other minimal keyboard devices. Together with the layered display security protocol, allows the use of any available terminal for data entry, i.e. an off duty officer at a scene may use anyone's cell phone to enter data or request searches, thereby increasing the speed of response to an incident. Data entry is simplified, encouraging the entry of more data.

Several properties of the lexicon include: single character transaction codes, acceptance of a wide range of alternative delimiters, inferential data interpretation. The single character transaction codes minimize keystrokes. The acceptance of most non-data characters as delimiters simplifies the use of restrictive keyboards, where access to what may be considered common characters on a standard desktop or laptop keyboard are accessed by multiple keystrokes on a handheld device. Examples include "." or "," characters on a RIM BLACKBERRY.RTM. device. Thus, the user may choose a delimiter with the fewest keystrokes for the terminal in use.

To further simplify data entry, inferences are drawn from the entered data, where possible, to determine data type properties, thereby eliminating the need for separate data type entry. For example, with hazardous materials, a UNN code has a four numeric digit format, whereas a railcar has a format always beginning with an alphabetic character. Thus the determination of the type of code can be inferred from the first character being numeric or alphabetic and the entry of the type of code can be eliminated from the user entry requirement, reducing keystrokes, and speeding and

simplifying the entry process.

In order to allow for this type of operation, the server must be able to interpret the data deterministically, and make processing decisions based on the data provided. Accordingly, a general transaction format for data entry is defined as follows:
 $T\{s\}\{d\}\text{parameter-1}\{d\}\text{parameter-2}\{d\} \dots \text{Parameter-n}.$

Where:

`T` is a transaction code from a fixed list, as shown below,

{s} is an optional secondary transaction code, as defined by an agency,

{d} is a delimiter from the delimiter set, as defined below, and

Parameter-1 through parameter-n are input data elements to the transaction.
Parameters may also be referred to as data fields.

The delimiter between the transaction code (or the secondary code) and the first data field is optional. Extraneous embedded spaces and delimiters will also be ignored, allowing user flexibility and reducing unnecessary error messages.

An alternate format as illustrated in Table 1B where the transaction code is placed at the end of the string is as follows: $\text{parameter-1}\{d\}\text{parameter-2}\{d\} \dots \text{Parameter-n}\{d\}\{s\}T$

Where:

`T` is a transaction code from a fixed list, as shown below,

{s} is an optional secondary transaction code, as defined by an agency,

{d} is a delimiter from the delimiter set, as defined below, and

Parameter-1 through parameter-n are input data elements to the transaction.
Parameters may also be referred to as data fields.

The delimiter between the transaction code (or the secondary code) and the last data field is optional. Extraneous embedded spaces and delimiters will also be ignored, allowing user flexibility and reducing unnecessary error messages.

These combined aspects allow for the simplest form of data entry possible, with a minimum of activity by the user. Note that the delimiter between the Transaction code

and the adjacent parameter is optional, as the transaction codes have a predetermined length.

The transaction codes are divided into two groups, as follows:

- 1) Universal functions that are provided for general query purpose germane to all agencies.
- 2) Specific functions that are germane only to a specific agency.

The difference between these two groups may be illustrated by example. An exemplary universal function may be defined as: "person check by driver's license". A request made with this function will spawn requests to all configured data sources, including possible an agency's own Records Management System (RMS). An agency "RMS" is a database that contains records pertinent to functions within a local level that do not necessarily have national visibility, but are germane to a local municipality or similar political organization such as a county. However, that agency may have a unique function that is applicable only to its users, such as "query intelligence data base by licenses plate." The former is considered a universal function, the latter a specific function.

The input transaction format allows for a mix and match of universal and specific functions, with specific functions being configured at an agency level.

Transaction Codes.

Exemplary (not all inclusive) Universal Transaction codes (for the universal functions) and possible parameters are described in this section. After the first parameter which is a fixed data element, others may follow in any order or presence. Note that the first parameter may be defined as at least one of multiple mutually exclusive data elements but the actual element can be determined from the data content, i.e., the parameter order may be flexible and up to the user with the parameter type being determined by inference from the data entered.

FIG. 6 shows a table with an exemplary set of universal transaction codes with parameters and optional parameters that may be entered for each one. FIG. 6 is exemplary in that other codes for other functions may be added or codes shown may be assigned different values or may have different fields. In one embodiment the codes may be upper or lower case for the same function. In an alternative embodiment, the upper and lower case letters may designate different functions or special features of the same basic function.

Delimiters

Any of the following characters shown in Table 2 may be used as a delimiter. Delimiter character selection may be mixed and matched in any transaction. The delimiter characters have been chosen as a common subset of handheld devices and provide single character entry on standard desktop or laptop keyboards. An exemplary set of permitted delimiters includes:

TABLE-US-00003 TABLE 2 Char Name Space . Period , Comma : Colon ; Semicolon ! Exclamation point * Asterisk + Plus sign - Dash / Slash

Data Element Processing

The data element processing is based on the property that a field usually may be identified by content. To cover for rare instances where conflicts and mis-assessments may arise, several techniques may be employed. Where the data are obviously in error and the value is a non-critical value, the value may be ignored to avoid unnecessary error messages and repeated entry. As a further measure to ensure reliable entry, a text summary of the fields as they are processed may be provided as immediate feedback, so the user can be informed of how the entry is interpreted.

The details of lexical input processing may be better understood with reference to FIG. 7A. FIG. 7A shows the steps for processing a user input and generating a query message. In FIG. 7A, an input is received from the user 702. The input is then parsed into data fields 704. The characters between delimiters are identified as a data field character string. Delimiters are removed and each string is stored 714 separately. The parsing process depends on the command and data structure entered by the user. Certain characteristics (also referred to as properties or features) in the data may be used to interpret the type of data in each field, such as whether the field is all numeric or all alphabetic characters, or if the string can be found in a table.

Once the input is parsed, any signs of invalid data, such as date out of range, or string not found in a table, may be noted 706. If the data are invalid, the data may be displayed 708 to the user for correction. If the input is valid, the system then converts the data field information to standard format 710. The type of command, together with user account defaults, are referenced to determine the various destinations for the query. Since each database system may have its own required format, each different request would be converted to the appropriate format for the target database. The resulting commands are sent to target databases selected in accordance with request type, user account defaults and selections, and established permissions 712.

FIG. 7B illustrates the steps associated with parsing a user input string. In step 722, a letter is examined. If the letter is a delimiter it is ignored and the next letter is examined. If the letter is a valid command 724 the process branches to the code for parsing the

respective command 726. Each command processes each following character by removing delimiters and assembling sequential characters into a field string 728. Each field is examined for some feature 730 according to procedures specific to the command to determine the type of data and validity of data in each field. Each field is processed to the end of the input 732. When completed, the field is displayed 708 as described in FIG. 7A.

The following identifies the processing considerations for each Universal Transaction code of FIG. 6. Each example is further illustrated by an associated figure.

"A". Article. Articles are typically property articles such as personal property that has a value. The Article transaction code includes a type code. Several exemplary type codes include "MACCORD", and "RCELTEL", which define the musical instrument the accordion and a cellular telephone respectively. Type codes have a characteristic format of 4 to 7 alphabetic characters.

Referring to FIG. 8 for transaction code "A" 802, if a field 804 contains a string in accordance with the type code format 806 and can be found in a type code table 807, it will be interpreted as a type code. Otherwise, the entry will be ignored. Remaining fields may be copied as description 808.

"B". Boat. The registration data has a well defined, fixed format that begins with two character codes from a table, followed by numeric digits. The target state can be identified from the registration data. If the field does not meet the requirements for registration, it is considered a hull number query.

Referring to FIG. 9 for transaction code "B" 902, if a field 904 begins with two letters that are a valid state code 906, the state code format is assumed, otherwise 908, the hull number format is assumed.

"C". Criminal Record Check. The first field is the ID number appropriate to the data source. The second field, "state," if present, can be verified against a table of state codes. If there is no match, the field may be ignored.

"D". Person check by Driver's License Number. The second field, "state," if present, can be verified against a table of state codes. If there is no match, the field may be ignored.

Referring to FIG. 10 for transaction code "D" 1002. The first field 1004 should be a numeric driver's license number, if not, an error is noted. The second field is optional and may be a two letter state code 1006. If present, the code is checked against a table of valid codes 1008. If valid, the state is displayed 708, otherwise ignored 1010.

"F". Female person check by name and DOB. The name should be the first parameter. The date of birth (DOB) or state code may follow in either order. Since there may or may not be a middle initial, and the middle initial does not have to be accounted for, the detection of either an 8 character numeric field or a 2 character field that has a valid state or region code signifies the end of the name. The DOB or state code can thus follow in either order. Note that the sex is indicated in the transaction code, obviating the need for separate entry of the person's sex.

Referring to FIG. 11 for transaction code "F" 1101. Upon entry 1101 or 1102, the sex attribute is noted. The first several fields are collected in the loop 1104 and 1106 until a valid state code or numeric string is detected. A valid state code should be followed by a date of birth. 1108. Conversely a valid date of birth may be followed by a state code 1110. The results are then displayed 708.

"G". Gun check. The make field must come from a table, and thus is distinctive. The caliber is all numeric. Thus these fields can be identified and processed, but will be ignored if erroneous.

Referring to FIG. 12 for transaction code "G" 1202. The first field 1204 should be a make and should be found in a table 1206, if not, ignored 1208. The next field should be numeric 1210. If not, ignored. The results are then displayed 708.

"H". Hazardous Materials. Hazardous materials may be entered by the UNN (United Nations Number) or railroad tank car designation. The UNN field is distinctive with 4 numeric characters, where as a railroad tank car has a distinctive reporting mark structure that always begins with an alphabetic character.

"I". Image Query. The first parameter is the identification number of the image to be retrieved.

"L". Log User Activity. May be used to log any activity by the user for historical or narrative purposes. Exemplary activities may include the noting of suspicious activity or the recording of time spent off duty.

"M". Male person check. See "F", "Female person check," above.

"O". Protective Order Check. May use the same parameters as the M or F person check, but may be treated differently because of state data transfer rules.

"P". License Plate. The state and type codes are from validated tables, and thus can be determined. Note that in a query, only a few type codes are used, and they do not conflict with state codes. Invalid codes will be ignored.

"Q". Query. Performs the query provided.

"S". Person check by Social Security Number. There is only 1 parameter, and this function is deterministic.

"T". To: Send a message to a user. First parameter is the User ID. The second parameter is the message text.

"U". Unit Status Check from a Computer Aided Dispatch System (CAD). Without a parameter provides status of all units. With a unit specified, the system returns the status of the specified unit.

"V". Vehicle check by VIN Number. The state codes and vehicle make codes come from tables and do not conflict, and thus they are deterministic. Invalid codes will be ignored.

"W". Severe Weather Check. Retrieves local weather unless a state is specified.

"X". Specific agency transaction. The format will be determined by the actual transaction. Note that there will always be a "sub transaction code" after the "X", which signifies the actual agency transaction code. These may chain further, if needed.

Referring to FIG. 13 for transaction code "X" 1302. The fields are processed 1304 and passed on to the agency 708. Agency codes may be programmed as an extension of the lexicon, or may be piped through without conversion.

"Y". Reserved for future use. It is expected that a transaction will be added, and "Y" is reserved as a placeholder for expansion with compound transaction codes, for seldom used functions, essentially providing a "sub menu" extended by the compound transaction code.

Referring to FIG. 14 for transaction code "Y" 1402. The first field 1404 is a one letter expansion transaction code. The following processing is dependent on the one letter command 1406.

"Z". Emergency message to agency. The data following the code is sent to the agency and all its users, without inspection.

Referring to FIG. 15 for transaction code "Z" 1502. The fields 1504 are sent as is.

"?". Help. Displays available commands and parameters. Note that the help command need not generate a message to the databases.

FIG. 16 illustrates the processing steps performed after the query 1602 is validated by

the user. Referring to FIG. 16, the destination databases and system are determined from the query type, i.e., person check, gun check, and HazMat queries go to different databases. Databases are further selected based on the user's agency preferences and requirements. Finally, user requests and preferences are included. 1604. Once a set of databases is established, the query is converted to the correct format for each respective database 1606, 1610, and 1614. Conversion to each format should be a straightforward application of assembling the string field data into the documented format for the respective database. The process should be within the ordinary skill of those in the art of such programming. Upon completion, each message is sent to its respective database 1608, 1612, and 1616.

Universal Message Number (UMN)

One embodiment of the present invention includes a method for referencing messages within a law enforcement database and reporting system. The method is based on a universal message number, which may be used as an index for storage and retrieval of message. The UMN may be applied to any message traffic both within and outside the realm of an individual agency, and provide immediate indexing and routing of any message, plus allow for "marshalling" of and tracking of messages returned from various data sources responding to a common, singular, request by a user. The UMN is of sufficient capacity to permanently store messages by indexing them using the UMN.

The message number being permanently assigned to the message means that there is no anticipated need to reuse a message number, thus eliminating ambiguity in the reference of a message number, for the foreseeable, expected, life of the system. System life may be indefinite, but systems typically become obsolete in ten to twenty years. Even if the system is replaced, the new system could retain the old database and translate a new reference system to the old system, thus keeping the original assignment of reference number to message permanently.

One advantage of the UMN of the present invention is that the UMN may be expressed in various forms. One form is a 64 bit binary number. The 64 bit binary number format has particular advantages with respect to indexing data within a computer or system. Another format is a control field format that is useful for communication with and through established networks and databases. Still another format is an operator display format that is easier to read and remember by an operator when reviewing data.

This UNM can be presented in a format that is compatible with the NCIC and NLETS.RTM. systems, but also used for immediate indexing within an agency for any type of traffic, ranging from Database activity to person-to-person messaging. It is a unique indicator that can be applied to all messages in a system to identify a particular message, and to provide correlation to other messages in the system.

The UMN has the following beneficial properties:

The UMN can uniquely identify each message in the projected database, which may span decades or more into the future.

The UMN can be efficiently integrated into and used by algorithms.

The UMN can be usable, preferably directly, as an index for message data.

The UMN is processing platform independent.

The UMN can be converted to a display format an operator can understand intuitively.

The UMN can be converted to a data field format that can be transmitted across systems, within the limits of the data fields present as of Jan. 1, 2000.

The conversion can be reversed from the data field format back to its original (native) format

The UMN can be uniquely generated from a "stateless" system, which may be operating in parallel with other systems, providing the same function, without contacting other systems in the array, or maintaining common files.

The UNM addresses computer architecture issues by utilizing a native format aligned with computer word boundaries and using binary representation. The UNM addresses network data field limitations by efficiently mapping the native data to make maximum use of the available format structure. The UNM further provides for a user friendly display and print format for improved data recognition and interpretation.

The current nationwide infrastructure, primarily the National Crime Information Center (NCIC) and the National Law Enforcement Telecommunications Network System (NLETS.RTM.) provide for persistent data to be transmitted between end points, and returned. This is known as the "control field", and is typically used by an individual system for its own purposes, typically for tracking. The most restrictive format for such a control field within the national systems is a format consisting of 10 upper case alphanumeric characters and the dash '-' character, resulting in 37 characters, 26 alpha plus ten numeric plus one dash. This permits 37 to the 10th power, or 4,808,584,372,417,849 unique control field combinations. All major interconnected systems that access NLETS are required to use a ten character alphanumeric field. However, there is no specific composition of this field required by NLETS. A typical system may incorporate a fixed system identifier followed by a numeric component to identify the message, limiting the total number of messages that can be identified without re-using numbers. In accordance with the present invention, the maximum

range available to the format is used as a message number allowing sufficient range for permanent assignment of a number to a message.

The next power of 2 that is greater than $37^{**}10$ is $2^{**}53$, (where "****" represents "to the power of"). Thus, a set of numbers of $2^{**}52$ values or less can be mapped uniquely and reversibly to corresponding representations in the $37^{**}10$ control field space.

An exemplary UMN structure in accordance with the present invention comprises a temporal component and a sequence number component. The sequence number component may be a message sequence number, and the temporal component may represent an increment of time, for example, one day. The UMN may further include a system value to identify a system or subsystem of message origination and may further include additional bits for future definition.

For a typical computer system having a 32 bit word data type, an exemplary native UMN structure can be defined by linking a 32 bit integer value with a 16 bit integer and an 8 bit integer value. (more specifically, unsigned positive integers)

These values can be combined to create a 52 bit integer, which in general computation is a subset of a 64 bit integer. The 52 bit integer is a number that can be contained within a typical 64 bit number and utilized as a 64 bit number by neglecting unused bits. Note that a local system may wish to expand to the full 64 bit integer by defining unused bits, but the full 64 bit number may not be able to be exposed nationally due to the 10 character format limitation and thus would be limited to use within the bounds of the local system. The 64 bit integer can be created in a format that allows arithmetic operations and manipulation. By defining the message sequence number portion as 32 bits and placing the temporal and system information in a separate 32 bit word, the design allows for efficient operation in both 32 and 64 bit instruction set modes.

In accordance with one aspect of the present invention, it is desirable to provide a number that may be permanently assigned to a message for the life of the system and/or database. It is also desirable that the number be usable to access messages by indexing, i.e. by direct calculation and/or table lookup of the message address without searching a list or database for the message or an attribute of the message.

A new system being introduced would hopefully have a life of greater than ten years. The cost of training, hardware and software infrastructure, and the cost of historical data conversion to a format of a new system suggest that major system architecture changes should not be undertaken frequently. However, technology changes rapidly and systems administrators must respond to the demand for the benefits of the new technology, thus, new systems inevitably have a finite life time. However, Systems designers can learn from the Y2K experience (Year 2000 date change computer format issue) that one needs to plan for the extended life of a system and, in particular, the life

of data structures that may outlive one system and transition to the next. Thus, ten years of data is a bare minimum. A better life time is twenty years. Fifty to one hundred years lifetime seems to have sufficient margin to expect that technology will obsolete the data structure before the data structure runs out of room. Now, how much index space is needed? At a typical present system message rate of one million messages per day, ten years of messages would be 3650 million messages. 3650 million could be expressed as ten numeric digits and passed through NLETS control field using only numeric digits. Thus, in one embodiment of the invention, the index could be a ten digit base ten number by eliminating fixed system identifiers or multiple fields passed in the control field value and dedicating the entire ten digit control field to the index number. However, a ten digit base ten number has issues relating to the short life time (ten years at 1 million per year) and inevitable increase in traffic over time. The increase in traffic will shorten the life time to less than ten years. It would not be unreasonable to expect a ten fold increase in traffic over ten years. A better solution uses alpha characters to provide additional symbols per digit and represents the message index number as a numerical base higher than ten. A base sixteen value could increase the space considerably. A base twenty value would allow even more space. A base twenty six value could be implemented using only alphabetic letters. A base 36 value could be implemented using letters and numbers. A base 37 value could be implemented using numeric, alpha and the "-" character as allowed by the NLETS.RTM. standard.

In one exemplary embodiment, there is sufficient capability in the UMN to index four billion messages per day for 178 years. The exemplary number portion of the UMN, being 32 bits allows 4 billion messages to be indexed. The temporal portion at 16 bits allows 65536 temporal increments. If the temporal increment is one day, the field will allow for nearly 178 years accumulation of messages at 4 billion messages per day. These 32 bits of number portion and 16 bits of temporal portion may be combined with four bits of system information and reversibly mapped to the ten character base 37 representation. Thus, there is sufficient capacity to accommodate message growth for database lifetimes exceeding 10, 20, 50, and 100 years or more without reusing an index value.

FIG. 17A shows an exemplary UMN in native format for a typical 32 bit machine. Referring to FIG. 17A, the native UMN format 1700 comprises a message sequence number 1702, a temporal component 1704, a system identification component 1706, and reserved bits 1708. (Note that the numbers shown in the figure are position indicators. The actual numbers would be binary 0 or 1.)

The system identification (SI) component 1706, shown as 8 bits, is an indicator assigned by the system that is using the UMN structure. Component 1706 may be typically zero for a network comprising a single system; however, the SI component 1706 allows a complex of systems, possibly distributed, to operate in parallel without the need to synchronize message traffic information across up to 16 systems by using

four of the eight bits shown.

When 32 bits are used for the sequence number 1702 and 16 bits for the temporal component 1704, 4 bits are available for the SI component 1706 to remain within the 52 bit constraint for mapping to the control field. More bits can be allocated to the system component 1706 if fewer bits are used for the temporal or sequence component, or if the message will not encounter the most restrictive control field.

The temporal component 1704, shown as 16 bits, is an unsigned integer starting at 0 and incrementing for up to 65535. The actual granularity of the temporal component may be determined by the generating system implementation, and can be any desired value such as a day, a unit of 6 hours, an hour, etc, as meets the needs of that system. The granularity is not exposed to remote systems as those systems simply return the value provided. The `base` (or starting date/time) is determined by the system implementation.

The message sequence number, shown as 32 bits, is an unsigned positive integer starting at 0 for the first access of every day after midnight, and incrementing by 1 on each access. This allows for 4,294,967,296 messages per temporal unit.

Arithmetically, the UMN may be defined as the number component plus the temporal component plus the system component shifted into such positions as to allow for arithmetic operations.

An exemplary formula for the UMN of FIG. 17A is: $\text{System component} * (2^{**48}) + \text{Temporal component} * (2^{**32}) + \text{Number component}$.

Alternatively the UMN may be described as $\text{Sequence Number} + \text{Temporal (shifted left 32 bits)} + \text{System (shifted left 48 bits)}$.

Thus, the UMN can operate extremely efficiently from a machine instruction point of view because the data fields are aligned with byte, word and double word boundaries of a typical machine.

Further convenience may be found in that by placing the message sequence number in the low order positions, the next sequential value may be generated simply by incrementing the whole 64 bit number. This format also allows for simple indexing operations to be defined, as the date and sequence number fields are in separate 32 bit words. This simplifies searching for records by date, as the temporal portion is date relative. The format also permits easy sorting by date or sequence number.

In order to display and process this number in messages, two external formats are defined: the operator visual display format and the user control context field format.

FIG. 17B illustrates an exemplary operator visual display format in accordance with the present invention. The operator visual display format comprises the system component (optional, not shown), and the date component 1712 followed by the number component 1714. The system component may be displayed as an integer or a mnemonic name of the system. The temporal component 1712 is typically the data or date and time expressed in a typical ASCII character format for date and time. The sequence number 1714 may be shown as an integer and may include spaces or commas or other formatting to ease review and transcription. These formats allow intuitive tracking and retrieval of messages by an operator. The display format may vary from system to system, and may be as exemplified in FIG. 17B or other formats such as the format "s-mmdd-nnnnnnn", where "s" is the system identification (if present) "mmdd" is the month and day of the date component, and "nnnnnn" is the number component.

FIG. 17B shows the user display format as would be used for the 89th message from the date of Apr. 11, 2007. The number of digits for the sequence number and the format separators will vary from system to system, but the calculations remain the same, independent of the display format.

FIG. 17C illustrates the context field format for the UMN. The User Control (Context) field format 1710 allows this number to be transmitted in messages for system such as NLETS that provide a user definable field with a field length that is exactly 10 characters long and consists of only alphanumeric characters, and a dash ("-") without spaces or special characters. The context field format must be reversible, so that when the context value is returned, the returned context value can be converted to its original 64 bit format, with all elements. The context field format expresses 52 bits of the 64 bit format in base 37 notation, using alphanumeric characters plus the dash "-", right justified, padded to the left with as many "0" equivalent characters as is necessary to create the 10 character wide data field. Note that alphanumeric includes both numeric and alphabetic characters. NLETS allows only upper case alphabetic characters.

FIG. 18A and FIG. 18B illustrate the control (context) field in an exemplary message. FIG. 18A illustrates a query message sent to a database. The message typically includes some header information 1802 and data information 1806. Included somewhere in the message is the ten character control field 1804 which is copied unchanged to a corresponding field 1804 in a reply message. This field is shown in FIG. 18B, which shows the format of a reply message. The reply also includes header information 1808 and data information 1810 and includes the control field information 1804 unchanged.

FIG. 19 illustrates an exemplary message and response path through the EXO system and external data sources. Referring to FIG. 19, the user enters a query through a user

terminal device 206. The EXO server 102 assigns a first UMN 202, stores the message in a message database 130, and translates the query to the NLETS.RTM. format and sends the translated message and UMN, as converted to control field format, to NLETS.RTM. 114. NLETS.RTM. 114 sends the message with UMN (control field) to an agency system 118 and then to a database server 212. The database server 212 develops a reply message with reply data and copies the UMN control field data to the reply. The reply is routed through the agency 118 and NLETS.RTM. 114 to the EXO server 102. The EXO server 102 receives the reply, decodes the UMN control field and retrieves the original query and associated user information from the EXO database 130. The EXO server assigns a second UMN 202 to the received message and archives the received message in the message database 130. User security data is then processed to determine the routing and display of the received message for the user. The received message is then formatted and sent to the user terminal 206 for display.

FIG. 20 illustrates several exemplary indexing operations using the UMN to retrieve a message. One of the advantages of the permanent UMN is that messages may be archived based on the UMN and further that the messages may be stored and retrieved by indexing the message database based on the UMN as an index.

Messages, however, may be stored in various locations--on different disk drives, different servers, different record storages, and such as appropriate to different types of messages, which may range from a single text line to an image or video clip. Thus, it may be desirable to provide one or more stages of index translation (alternatively referred to as indirect addressing) to generate the actual address of the message given a UMN. Referring to FIG. 20, the UMN may feed an index calculation. One exemplary index calculation may include a base address and increment value per UMN increment. For example, a base address 1000 k plus and increment of 1 k per UMN increment. Alternatively the calculation may relate to a file name plus a record number. Alternatively, the calculation may involve an indirect table 2004 where the UMN identifies a table location 2006 that stores the full address 2008 of the message. Alternatively, the process may involve a combination of calculation and table lookup to achieve the most efficient storage of variable length messages. FIG. 20 shows a combination where a simple calculation 2002 stores messages on a local database 204a and an indirect addressing table 2004 is used to locate messages on remote databases 204b, even over a network 204c and 204d.

Thus, using the UMN messages can be located by direct index calculation without the need to search through a sequential list of messages to find the desired message.

FIG. 21 illustrates a use of the UMN to collect responses from multiple data sources. When a query is sent to multiple data sources, the replies may come in at various times and may be mixed with replies from other queries. Thus, there is a need for a

method for collecting the various replies and relating them to the originating query. Using the UMN to designate the original query message and embedding the UMN for the original query in the control field of the query message 2102, the received replies 2104 may be collected by recovering the UMN from each reply 2106 and assembling the reply messages or alternatively, assembling a list of reply message numbers 2108 that are associated with the original query message. Upon some trigger, such as a request by the user or an accumulation of a number of responses, or some timeout, a reply message is sent 2110 to the user that includes or references the returned messages.

The native format UMN (64 bit binary format) can be mapped to the context field format (ten character format) by various methods. One exemplary method uses the symbols available in the context format to define a base 37 number. The native 64 bit UMN binary number is converted to the equivalent base 37 number. The conversion may be performed by repetitively dividing by 37 and finding the remainder. Each remainder is then expressed in the base 37 symbol set according to a predefined table. The sequence of remainders as expressed in the base 37 symbol set becomes the context field value. Reverse conversion may be achieved by repetitively multiplying a conversion value and adding the next less significant symbol value. The details of base conversion are well known in the art.

Three exemplary correspondence tables are shown in Table 3. Table 3 shows a first correspondence (Sequence 1) starting with the alpha characters followed by the numeric characters followed by the "-" dash character. An alternative correspondence (Sequence 2) starts with the numeric characters, followed by the alpha characters and then the dash. A third exemplary correspondence (Sequence 3) mixes characters to illustrate that any predefined correspondence table may be used.

A base with fewer than 37 characters may be used, for example a base 36 conversion that does not use the dash. Fewer than 37 characters, however, do not utilize the full range capability of the 10 character standard format.

TABLE-US-00004 TABLE 3

Number	Sequence 1	Sequence 2	Sequence 3
0	A	0	A
1	B	1	B
2	C	2	C
3	D	3	D
4	E	4	E
5	F	5	F
6	G	6	G
7	H	7	H
8	I	8	I
9	J	9	J
10	K	10	K
11	L	11	L
12	M	12	M
13	N	13	N
14	O	14	O
15	P	15	P
16	Q	16	Q
17	R	17	R
18	S	18	S
19	T	19	T
20	U	20	U
21	V	21	V
22	W	22	W
23	X	23	X
24	Y	24	Y
25	Z	25	Z
26	-	26	-
27	-	27	-
28	-	28	-
29	-	29	-
30	-	30	-
31	-	31	-
32	-	32	-
33	-	33	-
34	-	34	-
35	-	35	-
36	-	36	-

The components have properties that can be used easily for indexing and calculations. The number can also be treated as a 64 bit integer (in systems that support them) by treating the number component as the low 32 bits, and the date and system components as the high order 32 bits, thus allowing direct date and sequence comparisons to be made easily.

Messages may be accessed directly across the system by indexing based on the temporal and sequence components of the UMN. Typical prior art systems allow access to messages by searching a database of messages, which is very slow and becomes impractical as the number of messages grows and spans multiple systems and databases. The UMN allows direct access to any message by referencing the message using the UMN as an index. Messages may reference multiple other messages by listing the respective UMN's. This capability is critical to meeting performance goals with increasing message traffic and expanding historical databases.

The system identification component, when used, can identify a particular message store database, or processing system, or external system that may contain message data of interest.

Security Processing Model

In order for EXO to function within the guidelines and regulations of national, state and local security policies, the EXO server must have enough information on these policies to properly and efficiently route information among the users and data providers. Further, the implementation should be both expandable and scalable to accommodate projected growth and unforeseen issues.

In accordance with the present invention, security attributes are defined for each user and separately, for each access account for each user, i.e. a user may have both secure and non-secure terminals available and it is desired to maximize the utilization of any available terminal within the parameters of governing security policies.

These policies may generally be addressed by defining two types of security properties:

Authorizations: Authorizations define which functions a user may perform. A user profile will contain Authorizations. These authorizations are based from the certifications which describe what an individual user is trained and authorized to perform.

Categorizations: Categorizations define the type of data that is being accessed, and how it can be related to the various secured or non-secure delivery channels. An access account profile will contain Categorizations.

User accounts are related to each user and each user may access the system through a number of channels, each channel having channel specific security attributes, typically defined in terms of the data that is allowed on the channel.

Although these are independent items, they are related in their application and

implementation.

Authorizations.

Authorizations are applied to a request made by a specific user. In the user account profile, these will be listed, or "all" indicated by use of the "*" character.

In the database, these will be individual character string entries, such as "PER" for persons, "GUN" for gun queries, etc

An authorization defines which functions (e.g. gun query, person query, etc) a user may perform. The authorizations may also be qualified by a categorization, as defined below.

Categorizations.

Categorizations define the properties of data sources and their associated security levels. They are indicated by character string codes, and can represent data sources such as NCIC, Motor Vehicle, Public Records, Hazardous Materials, etc

An access account for a user will list the codes for the categories that the account can legally transmit, depending on the security applied to that account.

For example, a system using a BlackBerry Enterprise Server (BES) server with Federal Information Processing Standard, FIPS 140-2, encryption may indicate that all data may be transmitted, by user of a "*" wildcard character. Another account, such as public E-mail access such as "Hotmail" may only have the codes indicating access to Hazardous materials (e.g. "HZM") or Public records ("PBR").

This approach obviates the need to try to force all data sources into fixed categories, as it is possible that State level data may have different requirements from one to state to the next. Thus, the approach is completely open ended.

Categorization also operates with authorizations, as a user may be authorized to make person queries, but only to State or DMV files, not NCIC. In this case, the "person" authorization (e.g. "PER") would be qualified to allow only State (e.g. "STA") and DMV (e.g. "DMV") functions.

EXAMPLE

The following show examples of various combinations of authorization and categorization. In these the following assumptions are made:

PER. Person Query Authorization

GUN. Gun query authorization

PBR. Public records authorization.

NCI. NCIC data category

DMV. Motor vehicles category

PBR. Public records category

STA. State database category.

An exemplary user has full access to person queries to all categories. The user has two access accounts, one with FIPS-140-2 encryption and another with no encryption.

The user's authorization would appear as:

PER [NCI,DMV,STAS,PBR] (person queries, to the stated categories)

The profile entry controlling the response transmission for the first account (FIPS 140-2) would appear as:

* (all categories)

The second account (non-secure) would appear as:

PBR, DMV (Public records and DMV responses may be transmitted).

Thus, depending on the account from where the query was submitted, either all responses or just those within the permitted category would be returned, while other responses that could not legally be sent would be held in the database (and optionally sent to a delivery point) for later review, under appropriate security control.

Thus, a user may be able to initiate a query for information on a non-secure terminal even though all responses may not be viewed on that terminal. All responses, however, are stored and may be viewed later at a secure terminal.

CONCLUSION

One should understand that numerous variations may be made by one skilled in the art based on the teachings herein. Such variations include but are not limited to variations

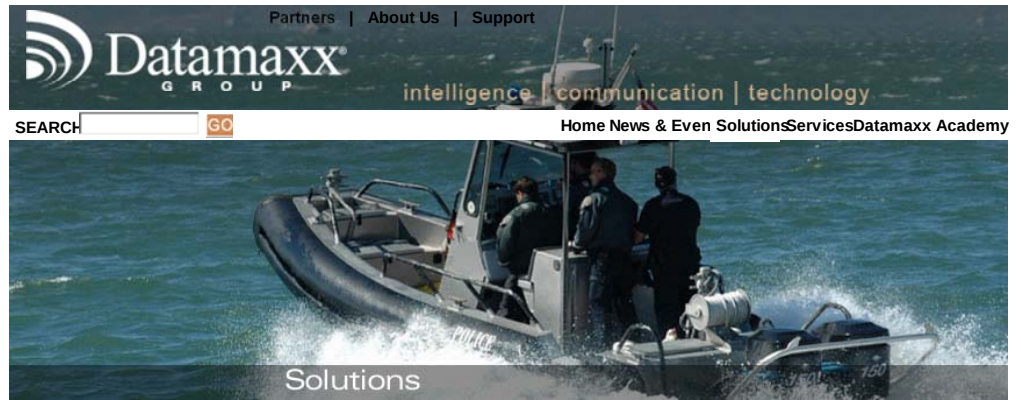
in the specific transaction codes or the assignment of transaction codes to function or the details of each function.

The present invention has been described above with the aid of functional building blocks illustrating the performance of specified functions and relationships thereof. The boundaries of these functional building blocks have been arbitrarily defined herein for the convenience of the description. Alternate boundaries can be defined so long as the specified functions and relationships thereof are appropriately performed. Any such alternate boundaries are thus within the scope and spirit of the claimed invention. One skilled in the art will recognize that these functional building blocks can be implemented by discrete components, application specific integrated circuits, processors executing appropriate software and the like or any combination thereof.

While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

* * * * *





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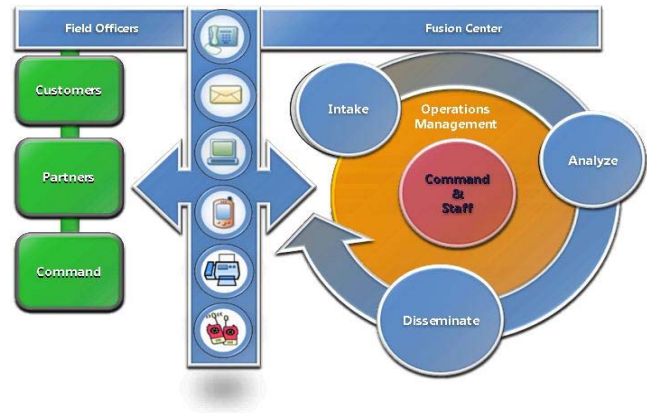
Omnixx Fusion Core

Datamaxx Group, Microsoft Corporation, and Environmental Systems Research Institute, Inc. (Esri) have joined forces to develop an innovative set of technical capabilities designed to help Public Safety and Homeland Security professionals more effectively identify and help prevent threats posed by organized crime, gangs, drug cartels, and terrorists while strengthening the ability of government to prepare for and respond to natural disasters and other events.

Through close collaboration, three industry leaders are proud to jointly introduce the Omnixx Fusion Core Solution, a public safety and homeland security solution being offered in the Secure Datamaxx Cloud. Datamaxx, Microsoft and Esri have architected a framework to leverage the best capabilities from each organizations' software components in a simple-to-use, easily configurable solution that provides seven key capabilities for municipal, county, regional, state, or federal intelligence and fusion centers that are easily adaptable to other public safety sector information fusion and collaboration needs.

Key Capabilities

1. **Managed Intake** — Pre-loaded and fully customizable forms for processing, assigning, and satisfying many different types of intelligence and information service requests.
2. **Enterprise Search** — Provides tools to search across multiple data sources including NCIC, Nlets, State and Local CJIS repositories, transactional systems, file shares, web sites and databases.
3. **Integrated Analytics** — Powerful link chart, pattern, and geospatial analysis capabilities are included and extendable to integrate new or existing applications.
4. **Analyst Collaboration** — Integrated capabilities to enable analyst and customer collaboration using Secure Enterprise Messaging, Web sites, wikis, and blogs.
5. **External Systems Connectivity** — Easily configured, secure connections to external data sources and supported connectivity to a Department of Homeland Security (DHS) Information Sharing Environment (ISE) Shared Space, eGuardian, and the Automated Critical Asset Management System (ACAMS).
6. **Robust Security** — Meets stringent CJIS Security Policy requirements for encryption and advanced authentication and can also be integrated with existing authentication and auditing systems.
7. **Tools for Managing Operations** — Manage analyst staffing and monitor center activities through powerful management reporting capabilities.





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Information Sharing



The Omnixx Enterprise Intelligence Suite®

Timely and accurate information sharing is at the heart of most criminal justice and law enforcement activities. Investigations are all about capturing facts, analyzing those facts, drawing conclusions, and documenting those conclusions and related actions. Sharing mission-critical information is often daunting. There are issues of jurisdiction, protecting confidential information, and need-to-know requirements. There are also cultural issues and the tendency to protect what is considered important which may include specific knowledge and information. There is also the lack of integrated databases. Although databases must be integrated, those databases may only contain structured data when in fact the vast majority of information that exists throughout the law enforcement and intelligence communities exist in unstructured form, often as paper records. The challenges of sharing information are basically all the same, whether it be counterterrorism information, complex criminal investigations, or data collected by a local gang task force. Some inhibitors may be very obvious, but even the obvious often become significant inhibitors to effective information sharing.

With the Omnixx Enterprise Intelligence Suite, Datamaxx leverages its considerable expertise of the law enforcement and criminal justice communities to mitigate these complex issues and deliver a very powerful industry-specific information distribution system.

Benefits of the Omnixx Enterprise Intelligence Suite

Utilizes Existing Data Systems

Because the Omnixx Enterprise Intelligence Suite is built utilizing open standards, Datamaxx enables agencies to use the same system for both data access and information sharing. Most legacy data access systems can be integrated into a fusion center/information sharing solution, eliminating the need for reprogramming or data re-entry. The end result is faster data integration and system implementation.

Leverages Industry-Leading Technology from Microsoft and Esri

The Omnixx Enterprise Intelligence Suite combines the power of Microsoft and Esri, the leaders in commercial off-the-shelf software components and GIS solutions partnered with Datamaxx domain expertise and information technology solutions developed over more than twenty years of law enforcement and criminal justice experience and technology innovation.

Harnesses Open Standards, Not Proprietary Solutions

Our customers are provided prevalent, readily available technology tools to implement their systems. They are not locked into a single data-sharing solution that forces the use of proprietary software, which typically results in higher costs and customer dependence. Datamaxx makes a concerted effort to offer our customers with as much or as little technology independence desired.

Realizes Cost Benefits Through Flexible Implementation Models

The Omnixx Enterprise Intelligence Suite is the only solution of its kind being offered in a "Cloud" environment. This flexibility, combined with our architecture, allows smaller agencies or those with conservative budgets to access innovative, complex technology solutions similar to those of their larger agency counterparts.

but without the need for in-house agency expertise and the related costs associated with an onsite solution. The Datamaxx On-Demand Cloud environment is the only FBI CJIS audited facility that meets FBI CJIS Security Policy requirements, as specified for solutions housed outside the confines of a law enforcement or criminal justice entity. Datamaxx actually acts on behalf of its government customers, as their information technology component for the solutions we host.

Draws on Established Mission-Critical Expertise

For more than twenty years Datamaxx has been a leader in delivering innovative Law Enforcement and Criminal Justice Technology Systems and Integration Services. We understand the environment and its needs. We get the challenges. We provide the solutions.

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FOR IMMEDIATE RELEASE

PR- 291-12**August 8, 2012**

MAYOR BLOOMBERG, POLICE COMMISSIONER KELLY AND MICROSOFT UNVEIL NEW, STATE-OF-THE-ART LAW ENFORCEMENT TECHNOLOGY THAT AGGREGATES AND ANALYZES EXISTING PUBLIC SAFETY DATA IN REAL TIME TO PROVIDE A COMPREHENSIVE VIEW OF POTENTIAL THREATS AND CRIMINAL ACTIVITY

System Designed Jointly by NYPD Officers and Microsoft, Pools Existing Streams of Data from Live Camera Feeds, 911 Calls, Mapped Crime Patterns and More to Help Officers Prevent Crimes and Respond Faster

Microsoft to Sell System Software to Other Governments – City Receives 30 Percent of Future Sales

Mayor Michael R. Bloomberg and Police Commissioner Raymond W. Kelly today announced a new partnership with Microsoft designed to bring the latest crime prevention and counterterrorism technology capabilities to New York City and to law enforcement, public safety, and intelligence agencies worldwide. The NYPD and Microsoft worked together to develop the Domain Awareness System, a sophisticated law enforcement technology solution that aggregates and analyzes existing public safety data streams in real time, providing NYPD investigators and analysts with a comprehensive view of potential threats and criminal activity. For example, analysts are quickly notified of suspicious packages and vehicles and NYPD personnel can actively search for suspects using advanced technologies like smart cameras and license plate readers. The NYPD and Microsoft jointly developed the system by bringing together Microsoft's technical expertise and technologies with the day-to-day experience and knowledge of NYPD officers. As part of the agreement, the City will receive 30 percent of revenues on Microsoft's future sales of the Domain Awareness System, which will be used to support innovative and cutting-edge crime-prevention and counterterrorism programs. The Mayor and Police Commissioner were

joined at the announcement in Lower Manhattan at the NYPD's Lower Manhattan Security Initiative headquarters by Deputy Mayor for Operations Cas Holloway, Commissioner of the Department of Information Technology and Telecommunications Rahul Merchant and Vice President of Microsoft Americas Services (Ret.) Lieutenant General Mike McDuffie.

"Part of the reason we have been able to continue driving down crime to record lows while devoting considerable resources counter-terrorism is our heavy investment in technology and our willingness to develop new, cutting-edge solutions to keep New Yorkers safe," said Mayor Bloomberg. "This new system capitalizes on new powerful policing software that allows police officers and other personnel to more quickly access relevant information gathered from existing cameras, 911 calls, previous crime reports and other existing tools and technology. It will help the NYPD do more to prevent crimes from occurring and help them respond to crimes even more effectively. And because the NYPD built the system in partnership with Microsoft, the sale of the product will generate revenue for the City that will fund more new crime-prevention and counter-terrorism programs."

"The system is a transformative tool because it was created by police officers for police officers," said Police Commissioner Kelly. "Its development is a testament to the talent and experience of our officers. And this agreement with Microsoft will allow the NYPD to continue to fund innovative counterterrorism and crime prevention programs."

"Microsoft is honored to partner with the NYPD to provide these important public safety capabilities to other jurisdictions," said Kathleen Hogan, Corporate Vice President of Microsoft Services. "The NYPD is a respected leader and continuously innovating to ensure the safety of their citizens. It is a privilege to support their work with our technology and professional services."

"By providing real-time analytics and improved situational awareness for the men and women on the front lines of counterterrorism and crime prevention, this new system can help further enhance public safety outcomes for New Yorkers," said Department of Information Technology and Telecommunications Commissioner Merchant. "And by using the New York City Wireless Network - our high-speed, mission-critical wireless broadband infrastructure - to support the Domain Awareness System, we're leveraging an existing, innovative technology solution to provide ever more capabilities to police officers in the field."

The Domain Awareness System is a powerful counterterrorism and policing tool for retrieving and displaying information from cameras, license plate readers, environmental sensors and law enforcement databases. Using an intelligent and intuitive graphical interface, it provides real-time alerts and the means

to quickly call up relevant information to guide and inform police action. Its mapping features, which are tied to rich data sources, support investigations, crime analysis and effective management of police resources. The system, developed by police officers for police officers, is an innovative tool that has the potential to revolutionize law enforcement, intelligence and public safety operations.

Examples of scenarios where the new system will help the NYPD prevent or solve crimes:

- Investigators will have immediate access to information through live video feeds, and instantly see suspect arrest records, 911 calls associated with the suspect, related crimes occurring in the area and more;
- Investigators can map criminal history to geospatially and chronologically reveal crime patterns;
- Investigators can track where a car associated with a suspect is located, and where it has been in past days, weeks or months;
- Police commanders can query databases to map, review and correlate crime information with the deployment of resources;
- If a suspicious package is left at a location, the NYPD can immediately tap into video feeds and quickly look back in time and see who left it there; or
- If radiation detectors in the field set off alarms and alert the Lower Manhattan Security Initiative command center, the new system will help quickly identify whether the radioactive material is naturally occurring, a weapon, or a harmless isotope used in medical treatments.

The City has approximately 3,000 Closed-Circuit TV cameras connected to the Domain Awareness System. The majority of these cameras are in Lower Manhattan – south of Canal Street, from river to river – and in Midtown Manhattan – between 30th street and 60th street, from river to river. NYPD has begun to expand camera coverage to in the boroughs outside of Manhattan.

System Development

The NYPD and Microsoft jointly developed the system by bringing together Microsoft's technical expertise and technologies with the day-to-day experience and knowledge of NYPD personnel. Microsoft handled the coding and system architecture, and the NYPD set out the system requirements, which were developed through an exhaustive series of focus groups in which members of the NYPD thought critically and creatively about how they perform their jobs and how technology could facilitate and streamline efficient operations of our mission.

Agreement with Microsoft

Microsoft has agreed to pay the City 30 percent of its gross revenues on the sale of the system to other customers worldwide. In addition, Microsoft will provide access to any innovation derived from the sale of the system to new customers. The NYPD has agreed to describe accurately the project to prospective licensees of the base technology platform. Revenue generated for the City from the sale of this technology will be used to support innovative and cutting-edge counter-terrorism and crime-prevention programs.

The agreement encourages the sharing of cutting-edge best practices and innovation in order to fight terrorism and crime. The agreement allowed City government to leverage its resources to utilize a private sector company to create a tool to better protect New Yorkers and to create a product that can help other jurisdictions or companies benefit from the expertise of the NYPD.

For more information on the technology, law enforcement organizations can contact JPSINFO@Microsoft.com.

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Paul Browne ([Police Department](#))
(212) 360-1311

David Patterson (Microsoft) (415) 247-1666

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Aug 08

Microsoft and NYPD Announce Partnership Providing Real-Time Counterterrorism Solution Globally

By Lieutenant General U.S. Army, RETIRED Mike McDuffie, Vice President of Americas Services at Microsoft

Earlier today, Microsoft, the City of New York and the [New York Police Department](#) (NYPD) [announced](#) an unprecedented partnership, bringing the latest counterterrorism capabilities to justice and law enforcement agencies around the world. After years of working together to develop the [Domain Awareness System \(DAS\)](#), a real-time counterterrorism solution that proactively identifies potential threats and protects critical infrastructure, Microsoft and NYPD are proud to offer a functional and technical capability with the sophistication to serve as an enabler to law enforcement in protecting citizens.

Announced this afternoon in New York City, the partnership is a great example of public organizations and private industry coming together to solve the specific needs and requirements of a city and local law enforcement organization. Working alongside NYPD's Intelligence Division and Counter Terrorism Bureau over the last several years, Microsoft helped to develop the DAS, a sophisticated solution that aggregates and analyzes public safety data in real time and combines artificial intelligence analytics with video from around a jurisdiction to identify potential threats and protect critical infrastructure. Throughout its development, NYPD provided the day-to-day operational knowledge, expertise, and business processes, while Microsoft provided the technical expertise and technologies to ensure the solution contained the right functionality needed to protect citizens.

NYPD and Microsoft believe that this technology can significantly improve public safety for citizens across the globe, and this partnership aims to bring these capabilities to law enforcement organizations worldwide. As such, in a unique effort to share best practices, Microsoft and the NYPD will soon make the DAS solution available to a broad global set of cities and jurisdictions. To learn more about DAS, contact JPSINFO@Microsoft.com.



Archives

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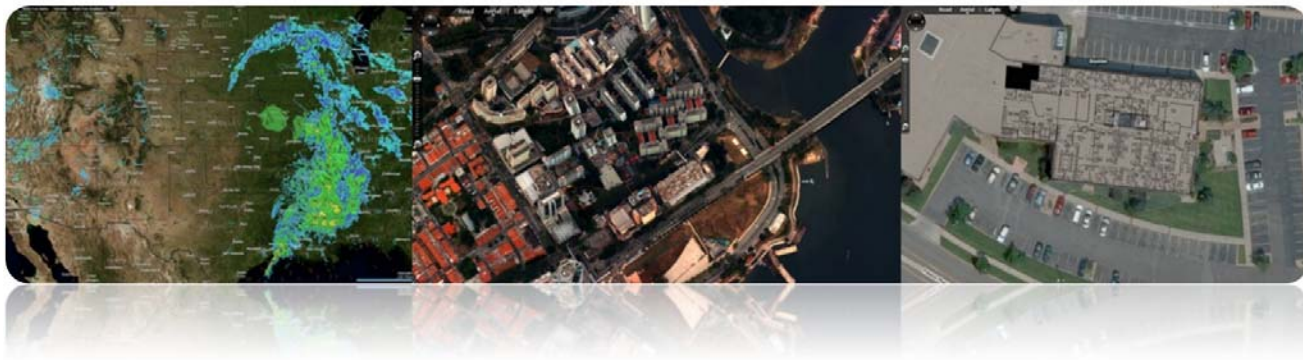
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VE Server™



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The VE Server™ is an offline, on-premises mapping and imagery visualization and collaboration platform. From standalone and mobile form-factors, to enterprise class solutions, the VE Server platform is scalable to meet exacting needs.

VE Server Features

The VE Server's strengths lie in its ability to visualize Microsoft® Bing™ Maps data, publish custom imagery and vector content, and disseminate this information using familiar controls. Whether using "out of the box" functionality or building an application using the standardized developer application programmer interfaces (APIs), the VE Server is capable and extensible.

Custom Imagery/Vector Processing and Visualization	Bing Maps Silverlight & AJAX v7 Map Control	Bing Maps Content Visualization
• Powered by SQL Server • Scalable • Highly automated • Suite of APIs for application development and customization	• Familiar end-user interface • Common developer APIs • Support for accessing WMS layers	• Map and imagery content derived from Bing Maps • Address location query capability

Bing Maps content is renowned for its coverage and quality—now with the VE Server, access this data on-premises without the security, reliability, and performance concerns associated with accessing content over the Internet.

Customer-owned GeoTIFF imagery and KML vectors can be processed, stored, and rendered using a highly automated suite of tools and APIs powered by Microsoft® SQL Server®. The VE Server also includes an address location query capability (that is, "geocoding") derived from Bing Maps.

Customizable Solutions

The VE Server platform is scalable to a variety of hardware configurations.

A Scalable Platform:

- Laptop version - portable, external storage
- Enterprise class version - racked server(s) scaled to storage and user requirements

Additionally, the VE Server can be customized to suit a variety of needs in a standalone application or as the geospatial back-end of a productivity solution like Microsoft® SharePoint®. Familiar end-user interfaces and developer APIs such as those found in the Bing Maps AJAX v7 map control and the Bing Maps Silverlight map control, are integrated and readied within the VE Server platform.

* Note: The VE Server can be purchased under the Microsoft SKU: BingMapsSvr.

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System Integration

People

As the Microsoft platform moves into the datacenter, technology integration requires a service provider that has both deep and broad expertise in a number of technologies and platforms. Vexcel can staff these diverse project teams by complementing MCS resources with junior-level Microsoft-centric resources as well as both junior and senior non-Microsoft technology professionals.

Process

Process is a fundamental differentiator for Vexcel as Vexcel's processes and methodologies are complementary to Microsoft's process and methodologies. This provides the customer with the confidence that the efficiency between Microsoft and Vexcel will be unmatched and as a result the overall effectiveness of the delivery will be superior to any other prime/Microsoft combination.

Technology and Intellectual Property

Timely access to appropriate tools and technologies is a critical success factor for delivering a solution or service to a customer. Vexcel employees have access to some of the same tools and systems that Microsoft Services use. Vexcel also has the ability to host virtual environments that can be used for user acceptance testing, system prototyping, temporary staging areas, and test beds. These environments can employ current and future versions of Microsoft products as well as third-party products.

Portfolio of Services

Vexcel extends and enhances Microsoft products and services by providing our mutual customers with an end-to-end solution that includes hardware, software, and services.

Program Office

Vexcel can staff highly qualified and experienced program executives, enterprise architects, and project managers who have experience providing system integration services specifically around the Microsoft platform. Services may also include contracting with third-party subject matter experts or performing one-time or ongoing technology reviews to help the customer maximize the value of the solution. These resources utilize industry and Microsoft standards and best practices for the delivery of engagements.

Training Services

Vexcel offers customized initial and on-going training for the solution being implemented. Training can be developed in a variety of formats (online, printed, webcast, etc.) and with different methods (instructor-led, train-the-trainer, self-help). Role-specific training can be developed for executive users, business users, or administrative staff. Training can be delivered one-time (as specified) or be part of an ongoing program that ensures resources can use the system most efficiently.

Customized Portals and Workspaces

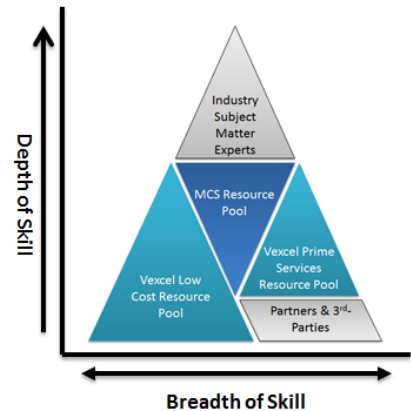
Whether it is providing secure access to project documentation or providing a customized store-front / support portal, Vexcel can plan, build, and manage limited hosted environments for the customer. This is particularly useful when managing a large number of vendors, building/hosting limited prototypes off-site, or preparing to migrate customer workloads to the public cloud.

Contract Management and Procurement Services

Vexcel holds a GSA Schedule 70 IT Consulting Services contract. In addition, Vexcel meets all FAR 15 requirements of a federal contractor and is able to resell third-party hardware, software, and services. Vexcel has extensive experience with contract management, invoice/billing, and reporting of large (\$150M+) contracts, including overall vendor management.

Hardware Procurement & Management

Vexcel is an authorized reseller of many vendors' server, desktop, storage, and peripheral equipment. Vexcel works closely with the manufacturer and Microsoft to plan, build, and operate the physical hardware residing in customer datacenters. Vexcel also has experience integrating special hardware into line of business applications. Hardware services also include monitoring, asset management, and warranty/maintenance/repair contract management.



Network Design & Operations

Vexcel has experience in designing, acquiring, and operating private wide-area/closed networks for their customers. Vexcel works closely with the manufacturers, network operators, and customers to plan and build the appropriate network. Vexcel also has experience negotiating Indefeasible Right of Use (IRU) agreements on behalf of their customers. Network services also include monitoring, asset management, and warranty/maintenance/repair contract management for network equipment.

Security

Vexcel provides security ranging from wired/wireless network security to physical monitoring solutions.

Support Services

In most organizations, support for the Microsoft platform is delivered through Microsoft Premier Support as a level 3 escalation. For those organizations that require additional levels of support that are not offered by Microsoft, Vexcel offers 24x7x365 on-premise and remote support for level 0, 1, and 2 as well and 3rd-party support contract management (e.g. Microsoft Premier). This includes resources that are skilled in Microsoft and non-Microsoft technologies alike. Working in conjunction with Microsoft Premier, Vexcel can also provide application management services that focus on both perfecting the operation of the solution as well as preventing issues and outages.

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FOR IMMEDIATE RELEASE

Thursday, May 31, 2012

POLICE COMMISSIONER RAYMOND W. KELLY APPOINTS REBECCA U. WEINER AS DIRECTOR OF INTELLIGENCE ANALYSIS

Police Commissioner Raymond W. Kelly today announced the appointment of Rebecca U. Weiner as the New York City Police Department's Director of Intelligence Analysis.

"Rebecca Weiner has been actively engaged with the NYPD over the last six years in safeguarding New York City from another terrorism attack, and before that in honing her keen intellect and experience in national security issues, including transnational threats and nuclear proliferation," Commissioner Kelly said. "New York remains at the top of the terrorists' target list, and Director Weiner is a tremendous asset in the department's understanding and evaluation of the threats the city faces."

As Director of Intelligence Analysis, Ms. Weiner serves as the principal advisor to the NYPD's Deputy Commissioner for Intelligence on all matters related to issues of international or domestic terrorism of concern to New York City. She shares responsibility for division-wide policy development and program management.

A *cum laude* graduate of Harvard Law School and *magna cum laude* graduate of Harvard College, Ms. Weiner, 35, served previously as the Intelligence Division's legal counsel for intelligence analysis and as team leader for Middle East & North Africa-security related issues.

In March 2010, in her capacity with the NYPD, Ms. Weiner became the first person from local law enforcement to serve as liaison to the President's National Intelligence Council. There, she participated in the coordination and production of strategic, estimative intelligence products related to transnational threats; supported and briefed the National Security Council, and represented the Intelligence community to policymakers. She also conducted interagency briefings during her year in Washington.

As legal counsel for intelligence analysis, Ms. Weiner drafted authorization statements for all Intelligence Division terrorism investigations, worked with federal and local prosecutors to develop terrorism cases, and provided legal counsel to the Intelligence Division's management and staff. She also authored various intelligence reports, and provided strategic direction and management of

intelligence collection and analysis for ongoing investigations.

Ms. Weiner served as an international security fellow at the John F. Kennedy School of Government's Belfer Center for Science and International Affairs; a research associate at the Monterey Institute's Center for Nonproliferation Studies; a biotechnology consultant in the Environment Directorate of the Organization for Economic Cooperation and Development in Paris; and a research consultant at Stanford University's Program on Energy and Sustainable Development.

Ms. Weiner is a member of the Council on Foreign Relations, where she previously served as research associate for its science and technology program. She is also a member of the New York State Bar. She is the author of several published scholarly articles on nuclear proliferation, international trade and national security.

Ms. Weiner succeeds Mitchell Silber who joined the private sector.

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Police Department Financial Summary

	2011	2012	2012	2013	*Difference
<i>Dollars in Thousands</i>	Actual	Adopted	Feb. Plan	Feb. Plan	2012 - 2013
Budget by Program Area					
Patrol	\$1,451,160	\$1,368,161	\$1,426,616	\$1,392,636	\$24,475
Chief of Department	728,868	684,128	831,086	803,781	119,652
Administration	450,034	449,053	452,260	444,509	(4,544)
Counter-Terrorism	33,511	29,517	42,592	47,411	17,894
Security/Counter-Terrorism Grants	107,310	98,744	204,839	4,895	(93,849)
Communications	110,678	112,232	127,340	102,232	(10,000)
Reimbursable Overtime	77,372	28,566	43,974	23,660	(4,905)
School Safety	251,519	250,454	250,454	247,925	(2,529)
Organized Crime Control Bureau	190,790	184,463	181,718	182,273	(2,190)
Criminal Justice Bureau	59,043	71,983	57,633	57,406	(14,577)
Detective Bureau	332,557	285,295	311,807	307,645	22,350
Housing Bureau	168,719	164,321	164,417	164,328	7
Intelligence Division	64,562	63,244	64,444	64,044	800
Internal Affairs	67,549	60,743	70,226	67,865	7,122
Community Affairs	11,310	10,177	13,354	13,343	3,166
Special Operations	73,806	63,854	68,659	63,854	0
Support Services	135,985	132,668	132,231	143,155	10,487
Training	77,137	94,761	100,620	100,087	5,326
Transit	223,174	225,728	210,228	210,284	(15,444)
Transportation	189,675	171,694	185,250	171,357	(337)
TOTAL	\$2,624,732	\$4,549,786	\$4,939,749	\$4,612,690	\$62,904
Funding					
City Funds	N/A	\$4,109,903	\$4,329,662	\$4,278,414	\$168,512
Other Categorical	N/A	69,082	91,281	69,082	0
State	N/A	5,124	15,993	4,936	(188)
Federal - Other	N/A	133,693	269,530	30,673	(103,019)
Intra City	N/A	231,984	233,283	229,584	(2,400)
TOTAL	\$2,624,732	\$4,549,786	\$4,939,749	\$4,612,690	\$62,904
Positions					
Full-Time Positions - Uniform	33,777	34,413	34,413	34,413	0
Full-Time Positions - Civilian	14,527	14,138	14,411	14,107	(31)
TOTAL	48,304	48,551	48,824	48,520	(31)

*The difference of Fiscal 2012 Adopted compared to Fiscal 2013 February Plan funding.

The Department's overall \$4.6 billion Fiscal 2013 Preliminary Budget reflects a modest \$62.9-million, or 1.4 percent increase when compared to its Fiscal 2012 Adopted Budget. This change results from an increase in city funds of \$168.5 million or 3.9 percent and a decrease in non-city funds, especially federal funds, of \$105.6 million or 24 percent. This reduction in federal funds

Public Security Privacy Guidelines

I. Background

In order to help ensure public safety and security and to detect, deter, and prevent potential terrorist activities, the New York City Police Department (NYPD) has developed a networked Domain Awareness System. The Domain Awareness System not only supplies critical supplemental assistance to officers' ongoing security and public safety efforts, but also enhances the collaborative nature of those efforts by leveraging the resources of the private sector and other City agencies. Given the ongoing threat of terrorist attack, the Domain Awareness System is an important part of the NYPD's integrated approach to providing protection for those who work in, live in, and visit New York City.

The *Public Security Privacy Guidelines* (the *Guidelines*) establish policies and procedures to limit the authorized use of the Domain Awareness System and to provide for limited access to and proper disposition of stored data. To ensure that appropriate privacy protections exist, the NYPD has considered and consciously incorporated technical, operational, legal, policy, and oversight safeguards throughout the development life cycle of the Domain Awareness System.

II. Legal Authority

The NYPD created the Domain Awareness System under the authority provided by Chapter 18, §435(a) of the New York City Charter, which gives the NYPD plenary power to:

...preserve the public peace, prevent crime, detect and arrest offenders, suppress riots, mobs and insurrections, disperse unlawful or dangerous assemblages...protect the rights of persons and property, guard the public health, preserve order...

...regulate, direct, control and restrict the movement of vehicular and pedestrian traffic for the facilitation of traffic and convenience of the public as well as the proper protection of human life and health...inspect and observe all places of public amusement, all places of business...enforce and prevent the violation of all laws and ordinances in force in the city; and for these purposes to arrest all persons guilty of violating any law or ordinance for the suppression or punishment of crimes or offenses.

III. Policy

A. Definitions

Archival Data: data types and/or specific data instances collected by the Domain Awareness System which have been approved by the Authorized Agent, or a designee

approved in writing by the Authorized Agent, for further retention beyond the Pre-Archival Period.

Authorized Agent: the designated NYPD official whose approval is required before certain actions may be taken.

Domain Awareness System: technology deployed in public spaces as part of the counterterrorism program of the NYPD's Counterterrorism Bureau, including: NYPD-owned and Stakeholder-owned closed circuit television cameras (CCTVs) providing feeds into the Lower Manhattan Security Coordination Center; License Plate Readers (LPRs); and other domain awareness devices, as appropriate.

Environmental Data: environmental data collected by devices designed to detect hazards related to potential terrorist threats, or to respond to terrorist attacks.

License Plate Reader (LPR) Data: license plate data collected by fixed or mobile LPR devices that are part of the Domain Awareness System.

Metadata: information about data collected by the Domain Awareness System that increases the usefulness of that data.

Pre-Archival Data: data types and/or specific data instances collected by the Domain Awareness System that are destroyed as a matter of course after the Pre-Archival Period, unless approved by the Authorized Agent, or a designee approved in writing by the Authorized Agent, for further retention.

Pre-Archival Period: the data retention period designated for routine review.

Stakeholders: companies and other government agencies that have partnered with the NYPD via memorandum of understanding, some of whom have agreed to provide feeds from their proprietary CCTVs into the Lower Manhattan Security Coordination Center.

Stakeholder Representative: a non-NYPD person affiliated with a Stakeholder who is granted access to the Lower Manhattan Security Coordination Center based on his/her specific knowledge of the Stakeholder's premises and duties in connection with maintaining the safety and security thereof.

Video: data collected from CCTVs that are part of the Domain Awareness System.

B. Statement of Purpose

The Domain Awareness System is a counterterrorism tool designed to:

- Facilitate the observation of pre-operational activity by terrorist organizations or their agents
- Aid in the detection of preparations to conduct terrorist attacks

- Deter terrorist attacks
- Provide a degree of common domain awareness for all Stakeholders
- Reduce incident response times
- Create a common technological infrastructure to support the integration of new security technology

C. Operation

The Domain Awareness System will be operated 24 hours a day, seven days a week, in a professional manner and only in furtherance of legitimate law enforcement and public safety purposes.

As with all NYPD operations, no person will be targeted or monitored by the Domain Awareness System solely because of actual or perceived race, color, religion or creed, age, national origin, alienage, citizenship status, gender (including gender identity), sexual orientation, disability, marital status, partnership status, military status, or political affiliation or beliefs.

The Domain Awareness System will be used only to monitor public areas and public activities where no legally protected reasonable expectation of privacy exists.

Facial recognition technology is not utilized by the Domain Awareness System.

All NYPD-owned CCTVs that are part of the Domain Awareness System will have accompanying signage, and the NYPD will recommend that signage accompany each Stakeholder-owned CCTV that is part of the Domain Awareness System.

In certain cases, technologies governed by the *Guidelines* may utilize or be integrated with systems and technologies deployed by other bureaus and divisions of the NYPD. In such cases, the application of the *Guidelines* will be controlled by separate memorandum from the Deputy Commissioner of Counterterrorism to the Deputy Commissioner for Legal Matters.

D. Data Storage

Generally, data gathered through the use of the Domain Awareness System will be destroyed as a matter of course at the end of the relevant Pre-Archival Period; any decision to retain certain data possessing evidentiary or other value beyond the Pre-Archival Period must be approved and documented in writing by the Authorized Agent, or a designee approved in writing by the Authorized Agent.

- **Video:**
 - The Pre-Archival Period for Video is 30 days. For any decision to retain Video beyond the Pre-Archival Period, the Authorized Agent is the

Deputy Commissioner of Counterterrorism. All Video from CCTVs will be recorded.

- **Metadata:**
 - The Pre-Archival Period for Metadata is five years. For any decision to retain Metadata beyond the Pre-Archival Period, the Authorized Agent is the Deputy Commissioner for Legal Matters.
- **LPR Data:**
 - The Pre-Archival Period for LPR Data is five years. For any decision to retain LPR Data beyond the Pre-Archival Period, the Authorized Agent is the Deputy Commissioner for Legal Matters.
- **Environmental Data:**
 - Environmental Data will be retained indefinitely.

After the conclusion of five years, Archival Data must be reviewed by the Deputy Commissioner of Counterterrorism and the Deputy Commissioner for Legal Matters for continuing law enforcement or public safety value or legal necessity; all Archival Data determined not to have continuing law enforcement or public safety value or legal necessity will be destroyed as a matter of course.

E. Data Usage

Data from the Domain Awareness System may be used in furtherance of the purposes set out in the Statement of Purpose (III.B).

In limited circumstances, data from the Domain Awareness System may also be used in furtherance of legitimate law enforcement and public safety purposes beyond the scope of those purposes set out in the Statement of Purpose (III.B). Such use is subject to certain restrictions:

- **Incidental Use:** occurs when data from the Domain Awareness System is used in furtherance of a purpose set out in the Statement of Purpose (III.B), and the user incidentally notices something useful for a legitimate law enforcement or public safety purpose beyond the scope of those purposes set out in the Statement of Purpose (III.B).
 - For Incidental Use, no additional approval is required.
- **Secondary Use:** occurs when data from the Domain Awareness System, with the exception of LPR Data, is intentionally used for a legitimate law enforcement or public safety purpose beyond the scope of those purposes set out in the Statement of Purpose (III.B). Any decision to make Secondary Use of data from the Domain Awareness System must be approved and documented in writing by the Authorized Agent, or a designee approved in writing by the Authorized Agent. Any individual seeking to make Secondary Use of data from the Domain

Awareness System must have a reason to believe that the data will further a law enforcement or public safety purpose.

- For Secondary Use of Pre-Archival Data, the Authorized Agent is the Deputy Commissioner of Counterterrorism.
- For Secondary Use of Archival Data, generally the Authorized Agent is the Deputy Commissioner for Legal Matters; however, when the data to be Secondarily Used is to be accessed in furtherance of the purpose for which that data was retained beyond the Pre-Archival Period, the Authorized Agent is the Deputy Commissioner of Counterterrorism.

F. Data Sharing

It is the policy of the NYPD to place limits on the sharing of data with third parties.

Video, Metadata, LPR Data, or Environmental Data may only be used for law enforcement or public safety purposes; except as required by law, subpoena, or other court process, such data will not be otherwise disclosed by the NYPD.

Unless otherwise provided for in a memorandum of understanding between the NYPD and a third party, any decision to share Video, Metadata, LPR Data, or Environmental Data with third parties, beyond Stakeholder Representatives, must be approved and documented in writing by the Authorized Agent, or a designee approved in writing by the Authorized Agent.

- **Video:**

- For Video requested by a third party to be used in furtherance of a purpose consistent with those purposes set out in the Statement of Purpose (III.B), the Authorized Agent is the Deputy Commissioner of Counterterrorism.
- For Video requested by a third party to be used in furtherance of a purpose beyond the scope of those purposes set out in the Statement of Purpose (III.B), the Authorized Agent is the Deputy Commissioner for Legal Matters.

- **Metadata:**

- For all Metadata requested by a third party, the Authorized Agent is the Deputy Commissioner for Legal Matters.

- **LPR Data:**

- For LPR Data requested by another government entity or Stakeholder to be used in furtherance of a purpose consistent with those set out in the Statement of Purpose (III.B), the Authorized Agent is the Deputy Commissioner of Counterterrorism.
- For LPR Data requested by any other third party, or for LPR Data requested by another government entity or Stakeholder to be used in furtherance of a purpose beyond the scope of those purposes set out in the

Statement of Purpose (III.B), the Authorized Agent is the Deputy Commissioner for Legal Matters.

- **Environmental Data**

- For Environmental Data requested by another government entity or Stakeholder to be used in furtherance of a purpose consistent with those set out in the Statement of Purpose (III.B), the Authorized Agent is the Deputy Commissioner of Counterterrorism.
- For Environmental Data requested by any other third party, or for Environmental Data requested by another government entity or Stakeholder to be used in furtherance of a purpose beyond the scope of those purposes set out in the Statement of Purpose (III.B), the Authorized Agent is the Deputy Commissioner for Legal Matters.

G. Safeguarding and Protecting Stored Data

The NYPD will take all appropriate technological, physical, administrative, procedural, and personnel measures to protect the confidentiality and integrity of all sensitive data, whether in transit or in storage.

Accordingly, the NYPD will observe the following safeguards regarding access to and use of data:

- Physical access to the Lower Manhattan Security Coordination Center is limited to NYPD personnel, authorized invited guests, and Stakeholder Representatives. Physical security protections include: guards who will keep access logs and locked facilities requiring badges or access cards for entry.
- Prior to accessing the Domain Awareness System database, all Stakeholder Representatives must be authorized, and all non-sworn law enforcement Stakeholder Representatives must be screened. All authorized Stakeholder Representatives will be briefed on the *Public Security Privacy Guidelines* and will be required to sign both a confidentiality agreement, which strictly limits the purposes for which accessed data may be used and imposes sanctions for any violation, and an agreement promising to adhere to the *Guidelines*.
- Direct access to the Domain Awareness System database is limited to authorized NYPD personnel and Stakeholder Representatives; administrative rules governing which operators may use various system capabilities will create a differentiated access system. As part of the differentiated access system, Stakeholder Representatives will not have access to NYPD-generated data that includes personally identifiable information, except as specified by the Deputy Commissioner of Counterterrorism or a designee approved in writing by the Deputy Commissioner of Counterterrorism.
- All Stakeholder Representatives and NYPD personnel with access to the Domain Awareness System and the Domain Awareness System database will complete

privacy training, based, in part, upon a curriculum covering the proper use and handling of such information, with periodic assessments.

- The Domain Awareness System will employ data security technologies to protect the integrity of its data from hacking and other risks.
- Digital watermarking or an equivalent technique will be used to create an immutable audit log of where and when data is accessed.

H. Accountability

Any violation of these *Guidelines* will result in appropriate disciplinary action.

A Counterterrorism Bureau Integrity Control Officer (ICO) is tasked with conducting periodic reviews of audit logs to ensure full compliance with these *Guidelines*.

Nothing in these *Guidelines* is intended to create any private rights, privileges, benefits or causes of action in law or equity. Rather, these *Guidelines* are designed to ensure that the Domain Awareness System is properly used based on legally appropriate and relevant law enforcement and public safety considerations and information.