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Common Operational Picture Technology in Law Enforcement: A Market Review



March 2019

Emma Wohl, Charles Stephenson, Zoë Thorkildsen

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March 2019

James R. "Chip" Coldren, Jr., Managing Director
Justice Group
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Abstract

There are no currently-known, formal studies of the frequency and use of common operational picture (COP) technology in law enforcement. This market review report is part of an overarching mixed-methods study that will include a national survey of law enforcement agencies to discern the types of COP technology used in the field and a set of case studies on the COP technology adoption process, lessons learned, and best practices for implementing and using COP technologies. This market review illustrates COP technology features and capabilities available to law enforcement agencies, though these technologies may not necessarily be in use.

This report is not intended to rank or evaluate the products listed. We did not test or evaluate the products. The report's sole purpose is to provide the law enforcement community with an overview of COP products available at the time the data was collected.

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Executive Summary

Introduction

There are no currently-known, formal studies of the frequency and use of common operational picture (COP) technology in law enforcement. The 2015 Priority Criminal Justice Needs Initiative report, “High-Priority Information Technology Needs for Law Enforcement,” identified gaps between current law enforcement needs and National Institute of Justice (NIJ) programs, grants, and solicitations (Hollywood et al. 2015). The report provides a list of potential portfolio areas that NIJ or other federal grant making agencies could invest in to support technology development that would assist law enforcement. Specifically, the report recommended that NIJ increase its investment in COP technology research, development, testing, and evaluation.

While there are many COP definitions, for the purpose of this market review report, we rely on the following definition: a common operational picture (COP) is a presentation of relevant information (e.g., the location and what is known about a criminal incident, the location and operational status of an agency’s patrol units, the duty status of officers) that is shared by the different components and levels of an agency or partnering agencies. A COP facilitates collaborative planning and informed decision-making, through common situational awareness. Situational awareness is the perception of environmental elements and events with respect to time or space, the comprehension of their meaning, and the projection of their status after some variable has changed (e.g., time, a predetermined event). It is the requisite current and predictive knowledge of the environment—including physical, virtual, and human domains—upon which operations depend, as well as all factors, events, and activities of law-abiding and non-law-abiding members of the public within a specific jurisdiction or geographical area. COP technology refers to any technological solution (e.g., software) that supports the development, display, analysis, or reporting of COP information. COP technologies offer a means to improve information management within an agency and in some cases its public safety partners. In some COP technology, the information that is provided to each level and component is tailored to their needs and functions. For example, whereas a watch commander would have access to information relevant to all the patrol areas of the units that they supervise, each unit might only have information relevant to their particular patrol areas. COP technologies may be displayed through dashboards, status boards, or other software-based mechanisms.

Examples of COP technology include relatively unsophisticated systems like computer-aided dispatch (CAD), more sophisticated systems like off-the-shelf dashboard software from vendors, and custom systems like the Los Angeles Regional Common

Operational Picture Program. These technologies help agencies make decisions on a day-to-day basis (e.g., deploying officers to respond to crimes) and during emergency operations (e.g., an event like the Boston Marathon bombing).

This market review report is part of an overarching mixed-methods study that will include a national survey of law enforcement agencies to discern the types of COP technology used in the field, a set of case studies on the COP technology adoption process, lessons learned, and best practices for implementing and using COP technologies.

This report is not intended to rank or evaluate the products listed. We did not test or evaluate the products to assess their quality. The report's sole purpose is to provide the law enforcement community with an overview of COP products available at the time the data was collected. This document should be used as a reference only, not as a resource to make a purchasing decision. Purchasers should seek additional information from the vendors of interest before deciding to procure a specific product.

Methodology

We used a three-step process to develop this report's COP market questionnaire. First, we searched for vendors using resources available from the federal government, public safety organizations, and law enforcement periodicals to collect information and data about COP vendors and products. Traditionally, the term "vendor" means any general supplier of a good or service. We use this definition for this report, and include companies that manufacture and sell a COP technology product and companies that sell a third-party COP technology product. Second, we attended several national-level law enforcement conference trade shows to identify and speak with vendors marketing COP technologies. Finally, we conducted a web search for vendors of COP technologies and products. We used information from each of these three phases to compile a list of vendors providing COP technology solutions and then asked these vendors to complete a questionnaire about their solutions' capabilities.

We initially identified a total of 52 COP product vendors. We determined that 6 were not relevant to our study because they served as technology integrators only, were no longer offering a product, were in the conceptual phase of product development, or were undergoing company reorganization. Of the remaining 46, 25 vendors completed a product questionnaire of features and capabilities. This market review presents an overview of each vendor's responses, as well as descriptive statistics of the most and least common COP technology features across responding vendors.

Conclusion

Effective decision-making and situational awareness rely upon the ability to create a COP in real time. Law enforcement departments must continually strive to leverage technologies to successfully respond to incidents and protect the communities they serve. Furthermore, law enforcement departments must collect, share, and display multidimensional information to collaboratively plan for and respond to events and incidents across jurisdictional boundaries and disciplines. Additionally, several departments across the nation use COP technology to create day-to-day situational awareness to respond to crime in real-time. Some large departments also find it beneficial to use COP technology to prevent crime through analysis and forecasting. These departments use COP technology to proactively respond to crime patterns in the moment, allowing them to disrupt these trends as they are occurring.

Current COP technologies provide a broad range of features, allowing access on mobile devices, facilitating unified communications, and providing law enforcement decision-makers the ability to track tactical strategy on a map. However, some gaps remain. Just over half of the responding vendors offer a product with a whiteboard function. Many vendors require software licensing, per-user fees, or maintenance fees. Additionally, just over 60 percent of responding vendors indicated that their product has the ability to integrate with CAD or RMS. The use of COP technology may be hindered if law enforcement is unable to create customized operations plans, must weigh significant costs against the benefits of new technologies, and is unable to integrate with existing agency systems. As departments increasingly embrace technology to improve operations, the COP marketplace will likely continue to grow.

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Glossary

3G mobile broadband	Technology providing wireless access of several Mbit/s to smartphones and laptops.
4G high speed packet access	Technology that provides wireless access using all-internet protocol (IP) packet-switched networks, giving mobile ultra-broadband (gigabit speed) to smartphones and laptops.
Automatic vehicle location (AVL)	Technology that provides a means for automatically determining and transmitting the geographic location of a vehicle.
Cloud-based storage	A model of data storage in which digital data is stored in logical pools, physical storage spans multiple servers (and often locations), and the physical environment is typically owned and managed by a hosting company.
Common operational picture (COP)	A common operational picture (COP) is a presentation of relevant information (e.g., the location and what is known about a criminal incident, the location and operational status of an agency's patrol units, the duty status of officers) that is shared by the different components and levels of an agency or partnering agencies. A COP facilitates collaborative planning and informed decision-making, through common situational awareness.
Computer-aided dispatch (CAD)	A method of dispatching services assisted by computer. It can either be used to send messages to the dispatchee via a mobile data terminal or used to store and retrieve data (e.g., radio logs, field interviews, client information, and schedules).
Dashboard	An application to view and manage data.
Deconfliction	A set of rules (algorithms) designed to coordinate activities when multiple agencies participate in an event or incident.

FirstNet	Nationwide high-speed broadband wireless network providing a single interoperable platform for law enforcement, firefighters, paramedics, and other public safety officials in every state, county, locality, and tribal area.
Geographic information system (GIS)	A system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data.
Land mobile radio (LMR)	A wireless communications system intended for use by terrestrial users in vehicles (mobiles) or on foot (portables).
Long-term evolution (LTE)	A standard for high-speed wireless communication for mobile phones and data terminals.
Record management systems (RMS)	A system (based on computer programs, in the case of the management of digital documents) used to track, manage, and store documents.
Situational awareness	The perception of environmental elements and events with respect to time or space, the comprehension of their meaning, and the projection of their status after some variable has changed (e.g., time, a predetermined event).

Introduction

There are no currently-known, formal studies of the frequency and use of common operational picture (COP) technology in law enforcement. The 2015 Priority Criminal Justice Needs Initiative report, “High-Priority Information Technology Needs for Law Enforcement,” identified gaps between current law enforcement needs and National Institute of Justice (NIJ) programs, grants, and solicitations (Hollywood et al. 2015). The report provides a list of potential portfolio areas that NIJ or other federal grant making agencies could invest in to support technology development that would assist law enforcement. Specifically, the report recommended that NIJ increase its investment in COP technology research, development, testing, and evaluation.

While there are many COP definitions, for the purpose of this market review report, we rely upon the following definition, which was developed in concert with NIJ: a common operational picture (COP) is a presentation of relevant information (e.g., the location and what is known about a criminal incident, the location and operational status of an agency’s patrol units, the duty status of officers) that is shared by the different components and levels of an agency or partnering agencies. A COP facilitates collaborative planning and informed decision-making, through common situational awareness. Situational awareness is the perception of environmental elements and events with respect to time or space, the comprehension of their meaning, and the projection of their status after some variable has changed (e.g., time, a predetermined event). It is the requisite current and predictive knowledge of the environment—including physical, virtual, and human domains—upon which operations depend, as well as all factors, events, and activities of law-abiding and non-law-abiding members of the public within a specific jurisdiction or geographical area. COP technology refers to any technological solution (e.g., software) that supports the development, display, analysis, or reporting of COP information. Users of COP technology, particularly first responders, cite as their most common goal improving situational awareness for decision-makers in an incident or event. Situational awareness allows the user to manage available, existing assets more effectively. COP technologies offer a means to improve information management within an agency and in some cases its public safety partners. In some COP technology, the information that is provided to each level and component is tailored to their needs and functions. For example, whereas a watch commander would have access to information relevant to all the patrol areas of the units that they supervise, each unit might only have information relevant to their particular patrol areas. COP technologies may be displayed through dashboards, status boards, or other software-based mechanisms.

We identified COP products based on the above definition and the presence of other common features (including the ability to aggregate and interpret data for enhanced command and control of assets). In use, COP technology serves as a point of reference

and conveys geographic, spatial, textual, and graphical data. Traditionally, COP technology has the ability to quickly provide information updates and search for and extract information in a timely manner from multiple feeds and sources. These sources include, but are not limited to, 9-1-1 systems, record management systems (RMS), dashboard cameras, body worn cameras, geographic information systems (GIS), notification systems, government databases, and social media sites. COP products also share event and incident information with partner agencies and stakeholders and facilitate real-time communication during incidents and events. These features were common to all the vendor products we identified for the questionnaire.

COP technology includes relatively unsophisticated systems like computer-aided dispatch (CAD), more sophisticated systems like off-the-shelf dashboard software from vendors, and custom systems such as the Los Angeles Regional Common Operational Picture Program. These technologies help agencies make decisions on a day-to-day basis (e.g., deploying officers to crimes) and during emergency operations (e.g., an event like the Boston Marathon bombing).

COP technology can assist in effectively, efficiently organizing responsibilities in an incident involving multiple jurisdictions or partners. For example, local, state, and federal agencies might respond to an active shooter. The decision-maker, in this case the incident commander, needs to be able to access and share pertinent information not only among agencies, but also to the response teams they are controlling. Likewise, the response teams need to share information up the chain of command.

CNA's after-action analyses of critical incidents have found that situational awareness is a critical element of successful outcomes. The COP technology used in a manhunt in Tampa, Florida, was delayed and based on incomplete and, at times, inaccurate information (Stewart 2010). The COP technology used in a Baltimore, Maryland, officer-involved shooting incident was not well established and was deficient in tracking unit and officer deployment (Stewart et al. 2011). Law enforcement decision-makers better manage incidents when COP technology is accessible, drawing upon current, accurate information, and capable of accounting for a variety of factors. The information shared during an incident can be vast and of great value, but it can create confusion and hamper a response if not managed correctly. This is where COP technology can play a crucial role: providing the means to organize, manage, and present information in the best possible manner to achieve the desired outcome.

This market review report is part of an overarching mixed-methods study of COP technology. The study will include a national survey of law enforcement agencies to discern the types of COP technology used in the field and a set of case studies on the COP technology adoption process, lessons learned, and best practices for implementing and using COP technologies. This report identifies COP technology vendors who provide tools that improve situational awareness and reviews the features each product offers. These include team management, communication, and system integration capabilities.

This report is not intended to rank or evaluate the products listed. We did not test or evaluate the products. The report's sole purpose is to provide the law enforcement community with an overview of COP products available at the time the data was collected. The report is meant to assist public safety practitioners who are considering this type of technology for their agency. However, this document should be used as a reference only, and not as the sole resource to make a purchasing decision. Purchasers should seek additional information from the vendors of interest before procuring a specific product.

Methodology

Traditionally, the term “vendor” means any general supplier of a good or service. We use this definition for this report, and include companies that manufacture and sell a COP technology product and companies that sell a third-party COP technology product. We identified COP technology vendors through several means, including law enforcement periodicals, trade shows, and online resources. We contacted vendors with a questionnaire about their COP products. We also reviewed vendor websites and marketing materials to gather the product information compiled in this report. We used the responses to the vendor questionnaire to summarize features of COP technology currently on the market, including features that are common, uncommon, and frequently available together.

Vendor data collection method

Identification of products

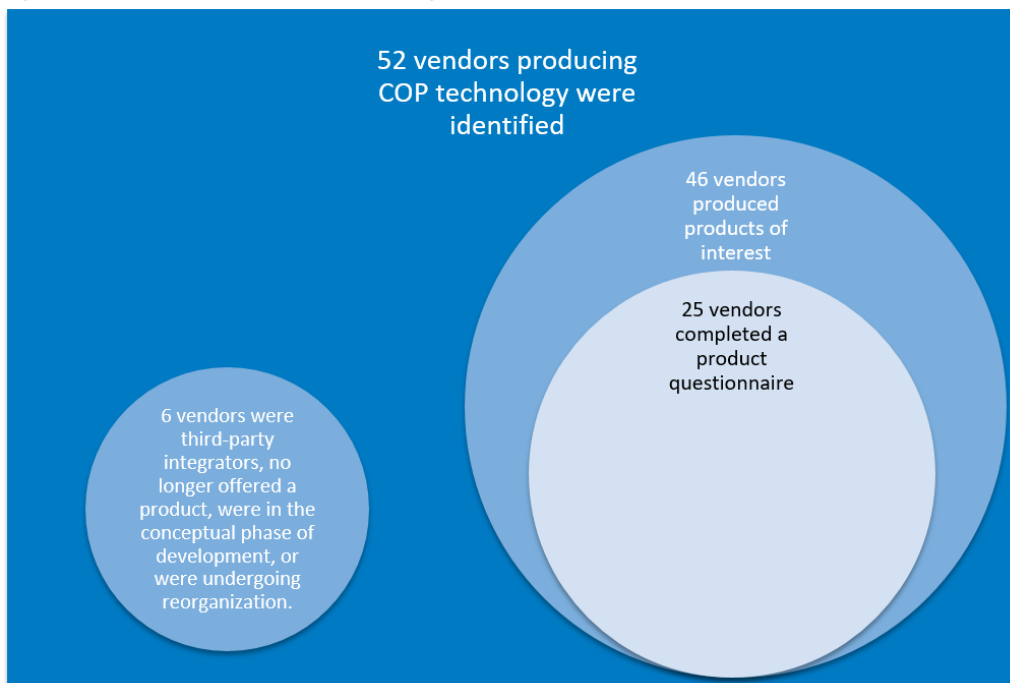
We found COP technology products via three methods. First, we used resources available from the federal government, public safety organizations, and law enforcement periodicals to collect data and information about COP technology vendors and their products. Second, we attended national-level law enforcement conference trade shows to identify and make contact with COP technology vendors and determine which products are available and promoted on a national scale. Finally, we conducted a web search to compile a list of COP technology products. In addition to gathering names of vendors offering COP technology for law enforcement, we included in the compiled list vendors whose products are intended for use in closely related industries such as firefighting and emergency response.

Data collection

We used vendor websites to collect as much relevant information as possible on product features, capabilities, limitations, customizability, and use. We then contacted, with up to three follow-ups, these vendors to request more information in the form of existing flyers, brochures, papers, and multimedia features. After initial contact, we sent vendors a digital questionnaire with questions about the features their products contained or allowed.

We identified a total of 52 vendors producing common operational picture products during our initial research. 25 vendors completed a product questionnaire of features and capabilities, for a response rate of 54.3 percent.

Figure 1. Vendors of COP technology identified and questionnaires completed



The amount of information presented for each vendor is not uniform. Some vendors did not respond to all parts of the questionnaire or provided answers that did not address the question. Sometimes, vendors provided a general package of information from which we located and extracted specific product information to be included in the vendor summaries in Appendix B. For those vendors that did not respond to attempts at direct contact, this report uses information found on their websites in Appendix B. The information obtained from vendor websites cannot be verified for accuracy; therefore, some of the product descriptions in this report may include incomplete or outdated information.

The data collection tool is reproduced below and in Appendix A. Each feature was presented in the question with an option for vendors to indicate “yes” or “no” whether their product offers the relevant characteristic. The questionnaire also offered space for vendors to elaborate on their answers as desired. We include in the questionnaire categories and characteristics of most use and interest to law enforcement agencies when choosing a COP product, based on a compilation of the most common features of COP technology and consultation with NIJ.

Figure 2. COP Data Collection Categories

Product Name

Application

Strategic – PSAP, Dispatch Center, Emergency Action Center, Fusion Center etc.

Tactical – Incident Command Post, On-scene Command Center

System Type

Hosted “cloud-based services”

Stand-alone “agency owned”

Associated Fees and/or cost

Software licensing fee

Per-user fee

Start-up cost “capital cost”

Recurring cost “operating cost”

Compatible Devices

Computer/laptop/notebook

Smartphone

Proprietary device

User Customization

Access control

Customizable dashboard

Other

Scalability

Scalable

Limitations

Connectivity

Agency/department intranet

3G mobile broadband

4G high speed packet access

Broadband (Wi-Fi)

Satellite

Land mobile radio (Radio over IP/packet radio/P25)

Other

File/Data Storage

Cloud storage

On-site

Operating System

Microsoft Windows

Unix/Linux

Android

iOS (Apple)

Other

Browser

- Single: application must use specific browser.
- Multiple: application has ability to use multiple browsers.
- Internet Explorer/Microsoft Edge
- Opera
- Google Chrome
- Firefox
- Other

Team Management

- Command and control
- Incident management
- Shared situational awareness (i.e., collaborative)
- Other

Mission Planning Tools/Capabilities

- File sharing
- Whiteboards
- Drawing free-form
- Building/floor plans import
- Diagrams import
- Pictures viewing
- Video viewing
- Other

Reports and Forms Capability

- Preloaded (e.g., after actions, situational)
- Free-form design
- Import capability (e.g., Word, Excel)

Location Tracking Capability

- Real-time
- Map-display
- GEO/time stamping (e.g., logging of actions)
- Other

Text Messaging (send/receive) Capability

- Individual
- Group

Integration

- Geographic information system (GIS)
- Computer-aided dispatch (CAD)
- Record management system (RMS)
- Automatic vehicle location (AVL)
- Other

Miscellaneous

Analysis

We used the responses from vendors to create descriptive statistics of select categories and questions. For the purposes of analysis, we excluded responses from vendors that were text outside the binary of “yes” or “no” or were blank. This analysis included the number of vendors indicating that they offered a particular feature and the percent of responding vendors offering each feature.

We also cross-tabulated vendor responses by category and specific feature questions. For the purposes of that analysis, we excluded non-binary and blank responses in the conditional feature of interest and calculated the number of vendors who responded positively to offering other features. We used the number of positive respondents to calculate the percent of vendors who also offered other features based on the condition feature.

Note that for both analyses, the total number of responding vendors varies for each feature. We present the number of respondents for each feature.

COP Technology Characteristics

This section provides a snapshot of the COP technology industry and the capabilities available at the time of data collection. Our intent is to provide information to public safety practitioners considering this type of technology for their agency. This section presents vendor-by-vendor information as well as cross-industry information.

Readers who are looking for information about a specific vendor's offering should refer to the "Cross-comparison of COP technologies" subsection and Appendix B. Readers looking to get a sense of the capabilities and features across the COP industry should refer to the "Cross-industry overview of COP products" subsection.

Cross-comparison of COP technologies

The figures below includes a column indicating the response for each question posed in the product questionnaire for each of the 25 responding vendors' products. Appendix B presents an overview of each product from all 46 relevant vendors based on information from vendors' marketing materials and websites.

The figures in this subsection are intended to provide a single overview of the COP marketplace. These figures should be considered representative of the marketplace but not comprehensive. All information presented in the figures is based on vendor survey responses, and blank spaces indicate that the vendor did not answer the particular question. Please keep in mind that this is a list of capabilities and features for each product and not an evaluation of products; we do not evaluate or judge the quality of the COP products. The reader should contact the vendor for the most complete and up-to-date information. A list of each vendor and a link to their website can be found in Appendix B.

Figure 3. COP Technology Features

COP PRODUCTS: INFORMATION TECHNOLOGY	APPLICATION	SYSTEM TYPE	ASSOCIATED FEES AND COSTS	COMPATIBLE DEVICES
PRODUCT FEATURES	Strategic-PSAP, Dispatch Center, Emergency Action Center, Fusion Center, etc. Tactical-Incident Command Post, On-scene Command Center	Hosted "cloud-based services" Stand-alone "agency owned"	Software licensing fee Pre-user fee Start-up cost "capital cost" Recurring cost "operating cost"	Computer/laptop/notebook Smartphone Proprietary device
PRODUCT NAME				
Adashi C&C	● ●	NR ●	● NR ● ●	● NR NR
Advanced Intelligence Management Platform	● ●	●	● ● NR ●	● ●
Alastar	● ●	● ●	● ● NR NR	● ● ●
Blueforce	● ●	● ●	● ● ●	● ●
COBRA Software	● ●	● ●	● ● ●	● ● ●
Command and Control Toolkit	● ●		● ● ●	●
Constellation Analytics Platform	● ●	●	●	● ● ●
DragonForce	● ●	● ●	● ● ●	● ●
Emergency and Disaster Management Simulation (EDMSIM)	● ●	NR ●	NR ● ● ●	● NR NR
GeoMOOSE	● ●	● ●		● ● ●
HiPER LOOK/KIOSK	● ●	● ●	●	● ●
Incident Action Plan Software	● ●	● ●	● ● ●	● ●
IPSecurityCenter PSIM	● ●	●	● ● ●	● ●
IQ Analytics	● ●	● ●	● ●	● ● ●
LifeRing	● ●	● ●	● ●	● ●
Mission Manager	● ●	●	● NR	● ●
New World	● ●	●	● ● ● ●	● ● ●
Octopus	● ●	● ●	● ● ●	● ●
Real-Time Emergency Action Coordination Tool (REACT)	● ●	● ●	● ● ●	● ● ●
Touch Assisted Command and Control System (TACCS)	● ●	● ●	● ● ● ●	● ●
Vidsys	● ●	● ●	● ● ● ●	● ● ●
ViewPointe	● ●	● ●	● ● ●	● ● ●
Visual Command Center	● ●	● ●	● ● ●	● ● NR
WebEOC	● ●	● ●	● ● ● ●	● ● ●
WebTAS/Dfuze 360	● ●	●	● ●	● ●

*NR= No Response

Figure 4. COP Technology Features

COP PRODUCTS: PERFORMANCE MEASURES	USER CUSTOMIZATION	SCALABILITY	CONNECTIVITY	FILE/DATA STORAGE
PRODUCT FEATURES	Access control Customizable dash-board	Scalable Limitations	Agency/Department Intranet 3G Mobile Broadband 4G High Speed Packet Access Broadband (Wi-Fi) Satellite Land Mobile Radio (Radio over IP/packet radio/P25)	Cloud storage On site
PRODUCT NAME	○○	○○	○○○○○○○○	○○
Adashi C&C	●●	●	●●●●●●●●	NR ●
Advanced Intelligence Management Platform	●●	●	●●●●●●●●	● NR
Alastar	●●	●	●●●●●●	●●
Blueforce	●●	●	●●●●●●●●	●●
COBRA Software	●●	●●	●●●●●●●●	●●
Command and Control Toolkit	●●	● NR	●●●●●●●●	●
Constellation Analytics Platform	●●	●	●●●●●	●
DragonForce	●●	●	●●●●●●●	●●
Emergency and Disaster Management Simulation (EDMSIM)	●●	● NR	● NR ●●●● NR	NR ●
GeoMOOSE	●	●	●●●●●●	●●
HIPER LOOK/KIOSK	●●	●	●●●●●●●●	●●
Incident Action Plan Software	●●	●	●●●●●●●	●●
IPSecurityCenter PSIM	●●	●●	●●●●●●●●	●●
IQ Analytics	●●	●	●●●●●	●●
LifeRing	●●	●	NR ●●●●●●	●●
Mission Manager	●●	●		●●
New World	●●	●	●●●●●●●●	●●
Octopus	●●	●	●●●●●●●●	●●
Real-Time Emergency Action Coordination Tool (REACT)	●●	●	●●●●●●●●	●●
Touch Assisted Command and Control System (TACCS)	●●	●	●●●●●●●●	●●
Vidsys	●●	●	●●●●●●●●	●●
ViewPointe	●●	●	●●●●●●●	●●
Visual Command Center	●●	●	●●●●●●●	●●
WebEOC	●●	● NR	●●●●●●●●	●●
WebTAS/Dfuze 360	●●	●	NR NR NR NR NR NR	●

*NR= No Response

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Figure 5. COP Technology Features

COP PRODUCTS: INFORMATION SYSTEMS	OPERATION SYSTEM	BROWSER	TEAM MANAGEMENT	PLANNING TOOLS/ CAPABILITIES
PRODUCT FEATURES	Microsoft, Windows Unix/Linux Android iOS (Apple)	Single Multiple Internet Explorer/Microsoft Edge Opera Google Chrome Firefox	Command and control Incident management Shared situational awareness i.e. collaborative	File sharing Whiteboards Drawing free-form Building/floor plan Diagram import Picture viewing Video viewing
PRODUCT NAME	○○○○	○○○○○○	○○○	○○○○○○○○
Adashi C&C	● NR NR NR	NR NR NR NR NR NR	● ● ●	NR ● ● ● ● ● ●
Advanced Intelligence Management Platform	NR NR ● ●	NR ● ● NR ● ●	● NR ●	● NR NR NR NR ● ●
Alastar	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ●
Blueforce	● ● ● ●	● ● NR ● ●	● ●	● ● ● ● ● ●
COBRA Software	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Command and Control Toolkit	NR ● NR NR	NR ● ● NR NR NR	● ●	● ● ● ● ● ●
Constellation Analytics Platform	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
DragonForce	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Emergency and Disaster Management Simulation (EDMSIM)	● NR NR NR	NR ● ● NR ● ●	● ● ●	● NR ● NR ● NR NR
GeoMOOSE	● ● ● ●	● ● ● ● ● ●	●	● ● ● ● ● ●
HIPER LOOK/KIOSK	● ● ● NR	● ● ● ● ● ●	NR	● ● ● ● ● ●
Incident Action Plan Software	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
IPSecurityCenter PSIM	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
IQ Analytics	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
LifeRing	● NR ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Mission Manager	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
New World	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Octopus	● NR ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Real-Time Emergency Action Coordination Tool (REACT)	● NR ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Touch Assisted Command and Control System (TACCS)	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Vidsys	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
ViewPointe	● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
Visual Command Center	● ● ● NR	● ● ● ● ● ●	● ●	● ● ● ● ● ● ● ●
WebEOC	● NR ● ●	NR ● ● ● ● ● ●	● ● ●	● ● ● ● ● ● ● ●
WebTAS/Dfuze 360	● ● ● ●	● ● ● NR ● ●	● ● ●	● ● ● ● ● ●

*NR= No Response

Figure 6. COP Technology Features

COP PRODUCTS: FIELD MANAGEMENT TOOLS	REPORTS/FORMS CAPABILITY	LOCATION TRACKING	TEXT MESSAGING	INTEGRATION
PRODUCT FEATURES	Preloaded (e.g., after-actions, situational etc.) Free-form design Import capability (Word, Excel etc.)	Real-time Map display GEO/time stamping (i.e. logging or actions)	Individual Group	Geographic Information System (GIS) Computer Aided Dispatch (CAD) Record Management System (RMS) Automatic Vehicle Location (AVL)
PRODUCT NAME				
Adashi C&C	● ● ●	● ● ●	● ●	● ● ● ●
Advanced Intelligence Management Platform	● ● ●	● ● ●	● ●	● ● ● ●
Alastar	●	● ● ●	Alerts only	● ● ● ●
Blueforce		● ● ●	● ●	● ● ●
COBRA Software	● ● ●	● ● ●	● ●	● ● ●
Command and Control Toolkit	● ●	● ● ●		● ● ●
Constellation Analytics Platform	● NR ●	● ● ●		● ● ● ●
DragonForce	● ● ●	● ● ●	● ●	● ● ●
Emergency and Disaster Management Simulation (EDMSIM)	● ● ●	● ● ●	● ●	● NR NR ●
GeoMOOSE	● ●	● ● ●		● ● ●
HIPER LOOK/KIOSK		● ●		●
Incident Action Plan Software	● ● ●	● ● ●	● ●	● ● ● NR
IPSecurityCenter PSIM	● ● ●	● ● ●	● ●	● ● ● ●
IQ Analytics	● ●	● ● ●	● ●	● ● ● ●
LifeRing	NR NR	● ● ●	● ●	● ● NR ●
Mission Manager	● ●	● ● ●	● ●	● ● ●
New World	● ● ●	● ● ●	● ●	● ● ● ●
Octopus	● ● ●	● ● ●	● ●	● ● ● ●
Real-Time Emergency Action Coordination Tool (REACT)	● ● ●	● ● ●	● ●	● ● ● ●
Touch Assisted Command and Control System (TACCS)	● ●	● ● ●	● ●	● ● ● ●
Vidsys	● ● ●	● ● ●	● ●	● ● ● ●
ViewPointe	● ● ●	● ● ●	● ●	● ● ● ●
Visual Command Center	●	● ● ●	● ●	● ● ●
WebEOC	● ● ●	● ● ●	● NR	● ● ● ●
WebTAS/Dfuze 360	●	● ● NR		● NR

*NR= No Response

This resource was prepared by the author(s) using Federal funds provided by the U.S. Department of Justice. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Cross-industry overview of COP products

The following section provides descriptive and cross-tabulated statistical information related to COP technology characteristics. The information presented is based on the data collected from the questionnaire. Readers should keep in mind that there can be a wide variance between products. Some vendors design products to provide a simple display of data to enhance situational awareness, while others incorporate analytics and provide command and control.

Descriptive statistics of product capabilities

All of the 25 vendor respondents offer both strategic and tactical applications.

Table 1. Percent of Vendors Indicating Availability of Specific System Type Capabilities

Capability	Respondents	Number indicating availability	Percent indicating availability
Cloud-based services	23	19	83%
Agency-owned software	25	21	84%

Of the total 25 respondents, 23 vendors responded to the question about cloud-based services and 25 vendors responded to the question about agency-owned software, with 83 percent offering cloud-based services, 84 percent offering agency-owned software options, and 70 percent of vendors offering both options.

Table 2. Percent of Vendors Indicating Availability of Specific Compatible Device Capabilities

Capability	Respondents	Number indicating availability	Percent indicating availability
Compatible on computer, laptop, or notebook	25	25	100%
Compatible on a smartphone	23	22	96%
Compatible on a proprietary device	22	10	45%

Of the total 25 respondents, 25 vendors responded to the question about computer, laptop, or notebook compatibility, 23 responded to the question about smartphone compatibility, and 22 responded to the question about proprietary device compatibility. All vendors indicated offering support for desktop and laptop computers, 96 percent indicated support for smartphones, while 45 percent support

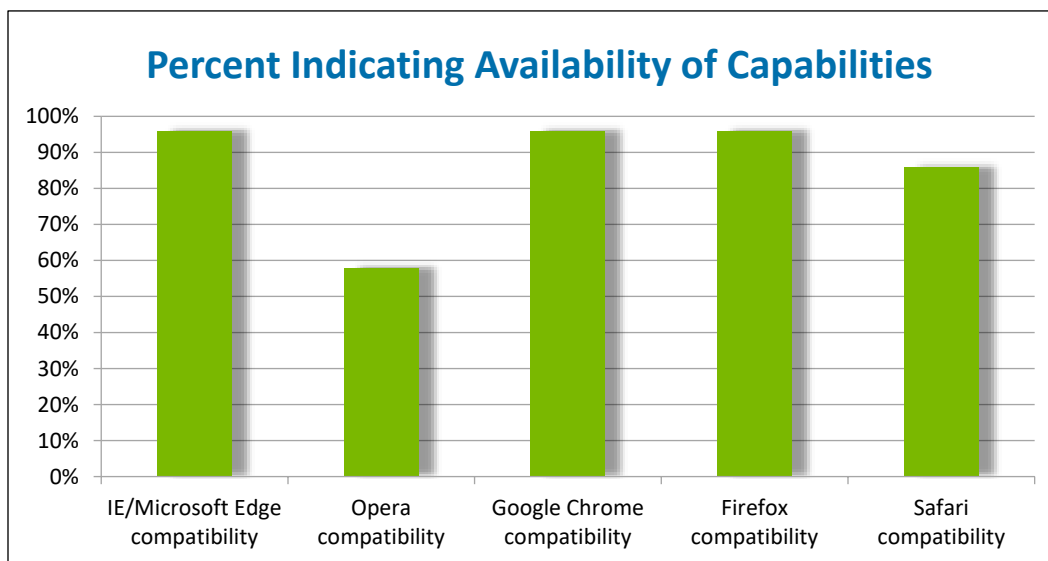
proprietary devices. 45 percent of vendors offer compatibility with all 3 types, 45 percent offer compatibility with 2 types, and 5 percent offer compatibility with 1 type.

Table 3. Percent of vendors indicating availability of specific operation system capabilities

Capability	Respondents	Number indicating availability	Percent indicating availability
Compatible on Microsoft Windows	23	23	100%
Compatible on Unix/Linux	18	11	61%
Compatible on Android	22	21	95%
Compatible with iOS	20	20	100%

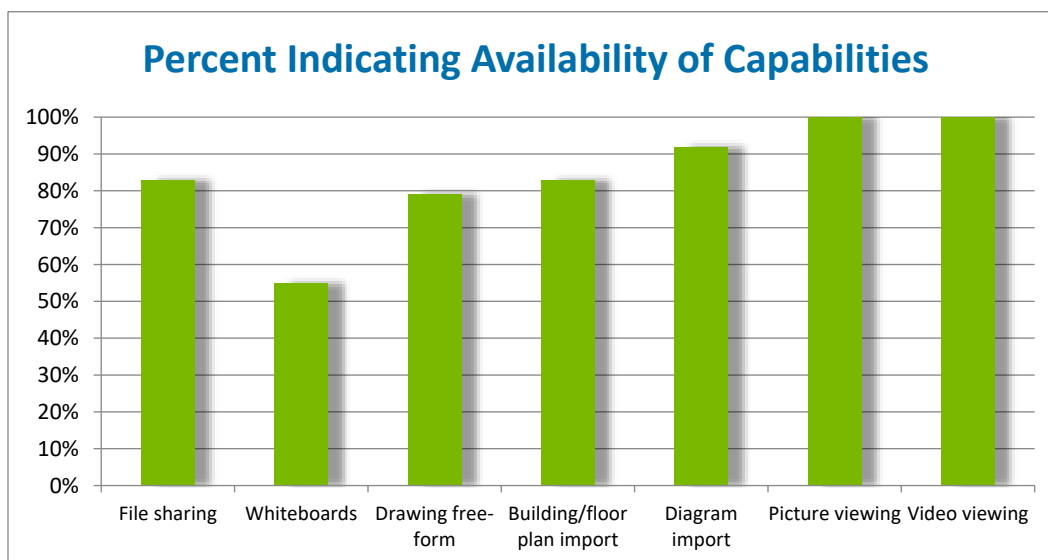
Of the total 25 respondents, 23 vendors responded to the question about Microsoft Windows compatibility, 18 responded to the question about Unix and Linux compatibility, 22 responded to the question about Android compatibility, and 20 responded to the question about iOS compatibility. All vendors indicate compatibility with Microsoft Windows and iOS systems. A majority, 95 percent, offer compatibility with Android-based systems, while 61 percent are compatible with Unix/Linux systems. 53 percent of vendors offer compatibility with 4 systems, 40 percent offer compatibility with 3 systems, 7 percent offer compatibility with 2 systems, and no vendors offer compatibility with only 1 system.

Figure 7. Percent of vendors indicating availability of specific browser capabilities



Of the total 25 respondents, 24 vendors responded to the question about Internet Explorer (IE) and Microsoft Edge compatibility, 19 responded to the question about Opera compatibility, 23 responded to the question about Google compatibility, 23 responded to the question about Firefox compatibility, and 21 responded to the question about Safari compatibility. The majority of vendors support Internet Explorer/Microsoft Edge (96 percent), Google Chrome (96 percent), or Firefox (96 percent). Somewhat fewer support Safari (86 percent) or Opera (58 percent). 61 percent of vendors offer compatibility with all 5 browsers, 17 percent offer compatibility with 4 browsers, 17 percent offer compatibility with 3 browsers, 6 percent offer compatibility with 2 browsers, and no vendors offer compatibility with only 1 browser.

Figure 8. Percent of vendors indicating availability of specific mission planning capabilities



Of the total 25 respondents, 24 vendors responded to the question about file sharing capabilities, 22 responded to the question about whiteboard capabilities, 24 responded to the question about free-form drawing capabilities, 24 responded to the question about building and floor plan import capabilities, 24 responded to the question about diagram import capabilities, 24 responded to the question about picture viewing capabilities, and 24 responded to the question about video viewing capabilities. All vendors reported support of picture and video viewing, with a substantial majority also supporting file sharing, free-form drawing tools, and the import of floor plans and diagrams (percentages range from 79 to 92 percent). Fifty-five percent indicated support for whiteboards. Forty-eight percent of vendors offer 7 features, 14 percent offer 6 features, 24 percent offer 5 features, 5 percent offer 4 features, 5 percent offer 3 features, 5 percent offer 2 features, and no vendors offer only 1 feature.

Table 4. Percent of Vendors Indicating Availability of Specific Location Tracking Capabilities

Capability	Respondents	Number indicating availability	Percent indicating availability
Real-time location tracking	25	24	96%
Map display	25	25	100%
GEO/time-stamping	24	24	100%

Of the total 25 respondents, 25 vendors responded to the question about real-time location tracking capabilities, 25 responded to the question about map display capabilities, and 24 responded to the question about GEO and time-stamping capabilities. All vendors reported offering map display and geographic/time-stamping capabilities, with 96 percent offering real-time location tracking features. Ninety-six percent of vendors offer 3 features, 4 percent offer 2 features, and no vendors offer only 1 feature.

Table 5. Percent of Vendors Indicating Availability of Specific Location Tracking Capabilities

Capability	Respondents	Number indicating availability	Percent indicating availability
Integration with Geographic Information Systems (GIS)	25	25	100%
Integration with Computer Aided Dispatch (CAD)	24	13	54%
Integration with Record Management Systems (RMS)	22	14	64%
Integration with Automatic Vehicle Location (AVL)	24	20	83%

Of the total 25 respondents, 25 vendors responded to the question about GIS integration, 24 responded to the question about CAD integration, 22 responded to the question about RMS integration, and 24 responded to the question about AVL integration. All vendors offered GIS integration, but integration with other law enforcement-specific systems occurred at a lower rate, with 83 percent integrating with automatic vehicle location systems, 64 percent with records management systems, and 54 percent integrating with computer-aided dispatch systems. Fifty-seven percent of vendors offer integration with 4 systems, 5 percent offer integration

with 3 systems, 24 percent offer integration with 2 systems, and 14 percent offer integration with only 1 system.

Cross-tabulation of product capabilities

This section presents cross-tabulations of characteristics of COP technology solutions by vendors included in our market review. Note that due to the small sample size, statistical bivariate and multivariate comparisons are not included for these results. Thus, statements about the relative likelihood of certain combinations of features should be taken as purely descriptive, rather than predictive.

Table 6. Cross-tabulation of vendors indicating associated fees and costs

	Software licensing fee N=21	Per-user fee N=16	Start-up capital cost N=13	Recurring operating cost N=16
Software licensing fee	N/A	81% (13)	85% (11)	88% (14)
Per-user fee	62% (13)	N/A	62% (8)	69% (11)
Start-up capital cost	52% (11)	50% (8)	N/A	62% (10)
Recurring operating cost	67% (14)	69% (11)	77% (10)	N/A

Vendors that require a per-user fee, start-up capital cost, or recurring operating cost are more likely to require a software licensing fee. To learn more about particular kinds of software licensing agreements, see Appendix D.

Table 7. Cross-tabulation of vendors indicating availability of reports and forms capabilities

	Preloaded reports and forms N=21	Free-form design N=16	Import capabilities N=17
Preloaded reports and forms	N/A	94% (15)	100% (17)
Free-form design	71% (15)	N/A	76% (13)
Import capabilities	81% (17)	81% (13)	N/A

Vendors that offer import capabilities are more likely to offer free-form design capabilities than vendors that offer preloaded reports and forms.

Table 8. Cross-tabulation of vendors indicating availability of mission planning capabilities

	File sharing N=20	White boards N=12	Drawing free-form N=19	Building/ floor plan import N=19	Diagram import N=22	Picture viewing N=24	Video viewing N=24
File sharing		92% (11)	84% (16)	84% (16)	82% (18)	79% (19)	79% (19)
White boards	55% (11)	N/A	63% (12)	58% (11)	50% (11)	50% (12)	50% (12)
Drawing free-form	80% (16)	100% (12)	N/A	89% (17)	82% (18)	75% (18)	75% (18)
Building/ floor plan import	80% (16)	92% (11)	89% (17)	N/A	86% (19)	79% (19)	79% (19)
Diagram import	90% (18)	92% (11)	95% (18)	100% (19)	N/A	88% (21)	88% (21)
Picture viewing	95% (19)	100% (12)	95% (18)	100% (19)	95% (21)	N/A	100% (24)
Video viewing	95% (19)	100% (12)	95% (18)	100% (19)	95% (21)	100% (24)	N/A

Vendors that offer free-form drawing capabilities offer whiteboard capabilities more often than vendors offering other capabilities.

Table 9. Cross-tabulation of vendors indicating availability of integration capabilities

	Geographic information systems N=25	Computer- aided dispatch N=13	Record management systems N=14	Automatic vehicle location N=20
Geographic information systems	N/A	100% (13)	100% (14)	100% (20)
Computer-aided dispatch	52% (13)	N/A	86% (12)	65% (13)
Record management systems	56% (14)	92% (12)	N/A	65% (13)
Automatic vehicle location	80% (20)	100% (13)	93% (13)	N/A

Vendors that offer GIS or AVL integration are likely to also offer CAD or RMS integration, but vendors that offer CAD and RMS integration are more likely to offer GIS or AVL integration.

Table 10. Cross-tabulation of vendors indicating availability of capabilities based on compatible device capabilities

	Computer, laptop, or notebook N=25	Smartphone N=22	Proprietary device N=10
File sharing	80% (20)	86% (19)	80% (8)
Whiteboards	48% (12)	50% (11)	40% (4)
Drawing free-form	76% (19)	77% (17)	90% (9)
Building/floor plan import	76% (19)	82% (18)	100% (10)
Diagram import	88% (22)	86% (19)	100% (10)
Picture viewing	96% (24)	100% (22)	100% (10)
Video viewing	96% (24)	100% (22)	100% (10)
Preloaded reports and forms	84% (21)	82% (18)	100% (10)
Free-form design	64% (16)	64% (14)	70% (7)
Import capabilities	68% (17)	64% (14)	80% (8)
Real-time location tracking	96% (24)	95% (21)	100% (10)
Map display	100% (25)	100% (22)	100% (10)
GEO/time stamping	100% (25)	95% (21)	100% (10)
Individual text messaging	76% (19)	77% (17)	70% (7)
Group text messaging	72% (18)	73% (16)	60% (6)
Geographic Information Systems	100% (25)	100% (22)	100% (10)
Computer Aided Dispatch	52% (13)	55% (12)	70% (7)
Records Management Systems	56% (14)	59% (13)	80% (8)
Automatic Vehicle Location	80% (20)	77% (17)	100% (10)

Vendors that offer a product compatible on a proprietary device are generally less likely to offer file sharing, whiteboards, individual text messaging, and group text messaging, though more likely to offer a greater number of features.

Concluding Remarks

COP technology considerations for law enforcement purchasers

Vendors of military situational awareness tools adapted the same technology for the civilian market. Vendors have recognized a growing market for similar products that are designed specifically to meet the needs of state and local first responders. This secondary market, which by the latest estimate includes approximately 18,000 law enforcement agencies (United States Department of Justice, Bureau of Justice Statistics 2016), in fact has the potential to grow substantially larger than the original military market, especially with additional demand from the private business sector. Unlike the military users that share information across standardized echelons, however, the first responder community is very diverse. No two departments or agencies look the same. It is unlikely that one product will meet the needs of both the New York Police Department, with 35,000 officers and an operating budget in 2017 of 5.2 billion dollars (The Council of the City of New York 2016) and a small department with less than 10 officers and a yearly budget in the hundreds of thousands of dollars. To add to the complexity of developing tools for such a diverse market, vendors must take into account that first responders, whether EMS, fire, or law enforcement, routinely respond to unplanned events that are urgent and fluid. These differences are one reason why vendors take a multitude of approaches in developing COP tools for the first responder community.

COP purchasing authorities need to be aware of what exactly they are procuring, not only the features and capabilities but also the support and licensing agreements for the software product. An overview of common types of software licensing agreements can be found in Appendix C. Vendors may be third-party suppliers or business entities that sell another's product. In the case of COP software, procurement through a third-party vendor usually involves a local vendor who is an authorized reseller of the software or service. Agencies should have a clear understanding of the third party's capabilities and the services associated with supporting basic installation, end-user training, customization of COP software, and integration of in-house and external data sources. When technology is a major component of a third-party relationship, purchasers should conduct a risk assessment to identify and review both the third party's relationship with the manufacturer and any gaps in service-level expectations.

Integrating new COP software likely will involve a robust degree of customization for each department; with customization comes risk. The degree of risk increases substantially as multiple products and data sources are integrated into a custom COP. Many agencies that have relied upon local third-party vendors have experienced

Figure 9. Recommendations for COP technology purchasing authorities

Recommendations for COP Technology Purchasing Authorities
Purchasers should keep in mind that the information contained in this report comes from vendors and has not been independently evaluated to verify that any described features provide or enhance situational awareness. Purchasers should make no judgments on the quality of a vendor’s product based on this information.
Any purchaser interested in one of the products described in this report should contact the vendor directly for the most complete and up-to-date information.
Purchasers should use the data in these subsections to compare product features across the industry and seek out the vendors who provide the capabilities of most interest to their agency.
Purchasing authorities need to be aware of what exactly they are procuring, not only features and capabilities but support and licensing agreements for software products and services.
Agencies should, as with any service, verify a company’s ability to provide and perform desired services.

difficulties and costly repairs when local expertise becomes unavailable. Agencies should, as with any type of service, verify the company’s ability to provide such services. There are many advantages to using system integrators. For small agencies, particularly those with fewer than 100 officers representing approximately 94 percent of U.S. law enforcement agencies in 2008 (United States Department of Justice, Bureau of Justice Statistics 2016), the most obvious advantage is that system integrators do not require an agency’s IT staff to perform the installation and initial customization, reducing direct time and cost. System integrators also minimize the risk of errors and issues when agency IT staff install and configure new software and services. The figure above summarizes recommendations for law enforcement purchasers of COP technology. The COP marketplace will likely continue to grow as departments continue to embrace the technology. With this marketplace growth, vendor offerings will continue to expand. Purchasers should use resources such as this report to understand

what features COP vendors offer, how those features fit into the context of the marketplace, and how they can find the best technology for their agency.

Conclusion

A real-time COP is key to effective decision-making and is at the core of maintaining situational awareness. Law enforcement departments must continually strive to leverage technologies if they are to successfully respond to incidents and protect the communities they serve. Furthermore, law enforcement departments must collect, share, and display multidimensional information to plan for and respond to events and incidents across not only jurisdictional boundaries but also across disciplines. In addition to using COP technology to plan for and monitor large scale incidents, many departments across the nation use COP technology to create day-to-day situational awareness to respond to crime in real-time. Some large departments also find it beneficial to use COP technology to prevent crime through analysis and forecasting. These departments use COP technology to proactively respond to crime patterns in the moment, allowing them to disrupt these trends as they are occurring.

Current COP technologies provide a broad range of features, allowing access on mobile devices, facilitating unified communications, and providing law enforcement decision-makers the ability to track tactical strategy on a map. However, some gaps remain. Just over half of the responding vendors offer a product with a whiteboard function. The use of COP technology may be hindered if law enforcement users are unable to create customized plans over their data. Many vendors require software licensing, per-user fees, or maintenance fees. It is unclear what effect multiple fees may have on a law enforcement agency's ability to implement COP technology, but long-term fees require agencies to weigh the costs and benefits of new technologies and incorporate recurring costs into future budgets. Additionally, just over 60 percent of responding vendors indicated that their product has the ability to integrate with CAD or RMS. As law enforcement agencies increasingly rely on technology, they will need to integrate their systems as much as possible. Since many agencies will rely on COP technology as a comprehensive intelligence resource, the inability to integrate with existing agency systems may be a strong disadvantage.

The mixed-methods study, which includes this Market Review, aims to further explore the existing COP marketplace in law enforcement. This study will conduct a national survey of law enforcement use of COP technology before exploring in-depth the selection, implementation, and management of COP technology through selected case studies. These additional study activities will provide the law enforcement field with a more complete understanding of the current use of COP technology, including lessons learned and areas for future research.

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Appendix A: Data Collection Instrument Definitions

Application

Strategic – PSAP, Dispatch Center, Emergency Action Center, Fusion Center etc.?

Common Operational Picture application that is integrated into databases and information sources that provides day-to-day situational awareness capability for effective decision making, rapid staff actions and appropriate mission execution by collecting, sharing and displaying multi-dimensional information that facilitates collaborative planning, and responses to emergencies and calls for service within an agency and or across multiple agencies.

Tactical – Incident Command Post, On-scene Command Center?

Common Operational Picture application that may include handheld portable devices or in-vehicle displays that facilitates the sharing and displaying of multi-dimensional information in real-time at the scene of an incident or temporary command center.

System Type

Hosted “cloud-based services”?

Managed and operated by a private company

This could be a software as a service “SaaS” or platform as a service “PaaS” that is web-based. A private company would link different information resources/data bases from participating LE departments that could then be accessed via a dashboard. An example of a cloud based service is the ShotSpotter system.

Stand-alone “agency owned”?

Software either leased or purchased under a licensing agreement specifically designed to link, organize and view different data sources that does not require a third party to manage.

Associated Fees and/or cost

Software licensing fee?

Fee paid to a private company granting rights and imposing restrictions on the use or redistribution of proprietary software. An example of this is Microsoft Office, the user purchases a license to use the software, however ownership stays with the software publisher.

Per-user fee?

A fee charged for use or access on a per user basis, for example the number of devices that allow access. The fee may be per device. In the case of software the license grants the licensee, typically an end-user, permission to use one or more copies of software in ways where such a use would otherwise potentially constitute copyright infringement of the software owner's exclusive rights under copyright law.

Start-up cost "capital cost"?

Note: One time cost incurred at start-up. An example could be purchasing computer equipment.

Recurring cost "operating cost"? List if any_____

An example of a recurring cost with COP could be the requirement for an additional T1 circuit (DS1) to handle the increased data sharing between systems.

Compatible Devices

Computer/laptop/notebook?

Smartphone?

Proprietary device?

An example of a proprietary device that may be compatible, "host a COP application" could be a Mobile Data Terminal (MDT). Which are typically found in police vehicles.

User Customization

Access control?

Ability to customize "restrict" information access by user defined parameters. Access control is a way of limiting access to a system or to physical or virtual resources. In computing, access control is a process by which users are granted access and certain privileges to systems, resources or information. Access control includes the authorization, authentication and audit of the entity trying to gain access.

Customizable dash-board?

A dashboard is a user interface that organizes and presents information in a way that is easy to read. In the case of customizable dash-board it allows the user to select what information is displayed. For example, a COP product might obtain information from the local operating system in a computer, from one or more applications that may be running, and from one or more remote sites on the Web and present it as though it all came from the same source.

Other? List if any_____

Refers to allowing the user to customize or tailor services or products to meet specific user requirements.

Scalability

Note: The ability of application or product (hardware or software) to continue to function well when it (or its context) is changed in size (example: number of users) or volume in order to meet a user need.

Scalable?

Limitations? List if any_____

Connectivity

Is the process that enables individuals and organizations to connect to computer terminals, computers, mobile devices via a network.

Agency/Department Intranet?

A private network accessible only to an organization's staff. Generally a wide range of information and services from the organization's internal IT systems are available that would not be available to the general public from the Internet.

3G Mobile Broadband?

Note: a set of standards used for mobile devices and mobile telecommunications use services and networks that comply with the International Mobile Telecommunications-2000 (IMT-2000) specifications by the International Telecommunication Union. 3G finds application in wireless voice telephony, mobile Internet access, fixed wireless Internet access, video calls and mobile TV.

4G High Speed Packet Access?

Is the fourth generation of mobile telecommunications technology, succeeding 3G. A 4G system current applications include amended mobile web access, IP

telephony, high-definition mobile TV, video conferencing, 3D television, and cloud computing.

Broadband (Wi-Fi)?

A technology that allows electronic devices to connect to a wireless LAN (WLAN) network, mainly using the 2.4 gigahertz and 5 gigahertz radio bands.

Satellite?

Is Internet access provided through communications satellites. Modern satellite Internet service is typically provided to users through geostationary satellites that can offer high data speeds, with newer satellites using Ka band to achieve downstream data speeds up to 50 Mbps.

Land Mobile Radio (Radio over IP/packet radio/P25)?

Technology used to transmit digital data via radio.

Other? List if any _____

File/Data Storage

Cloud storage?

Is a model of data storage in which the digital data is stored in logical pools, the physical storage spans multiple servers (and often locations), and the physical environment is typically owned and managed by a hosting company. These cloud storage providers are responsible for keeping the data available and accessible, and the physical environment protected and running.

On-site?

Is a model of data storage in which the digital data is stored on local servers typically owned and managed by the user (example: agency/department/municipality). The owner is responsible for keeping the data available and accessible, and the physical environment protected and running.

Operation System

System software that manages computer hardware and software resources and provides common services for computer programs. The operating system is a component of the system software in a computer system. Application programs usually require an operating system to function.

Microsoft Windows?

Unix/Linux?

Android?

iOS (Apple)?

Other? List if any_____

Browser

Is a software application for retrieving, presenting, and traversing information resources on a private intranet or internet such as the World Wide Web.

Single?

Application must use specific browser.

Multiple?

Application has ability to use multiple browsers.

Internet Explorer/Microsoft Edge

Opera?

Google Chrome?

Firefox?

Safari?

Other? List if any_____

Team Management

Command and control?

The capability to exercise authority and direction by a properly designated individual over assigned resources in the accomplishment of a common goal.

Incident management?

A capability that provides planning, tracking, risk assessment and response.

Shared situational awareness i.e. collaborative?

The exchanges and collaboration among local, state and Federal agencies, and other participants that enable each of the participants to share and have the

same level of access to information and actions being taken by participants in response to an event.

Other? List if any_____

Mission Planning Tools/Capabilities

File sharing?

Whiteboards?

Drawing free-form?

Building/floor plans import?

Diagrams import?

Pictures viewing?

Video viewing?

Other? List if any_____

Reports and Forms Capability

Pre-loaded i.e. after actions, situational etc. list if any_____

Free-form design?

Import capability (Word, Excel etc.)?

Location Tracking Capability

Real-time?

Map-display?

GEO/time stamping (i.e. logging of actions)?

Other? List if any_____

Text Messaging (send/receive) Capability

Individual?

Group?

Integration

The process of linking together different computing systems and software applications physically or functionally, to act as a coordinated whole.

Geographic Information System (GIS)?

System used to store, process and display geographic information, especially maps.

Computer Aided Dispatch (CAD)?

Method of dispatching emergency services assisted by computer. It can either be used to send messages to the dispatchee via a mobile data terminal (MDT) and/or used to store and retrieve data (i.e. radio logs, field interviews, 911 information, etc.).

Record Management System (RMS)?

Computerized control and administration of files, documents and physical property pertaining to law enforcement activities and investigations. Police records include everything from activity logs to evidence, and may include audio, video, documents, photographs, physical property and other formats. A police records management system enables law enforcement officials to monitor activity as well as control property and evidence throughout the chain of custody.

Automatic Vehicle Location (AVL)?

A system that has the ability to determine the location of a vehicle with the ability to communicate the vehicle location to those who need to know (i.e., the dispatch center); and the ability to translate the vehicle's location, generally computed in latitude/longitude, into a format meaningful to the dispatcher.

Other? List if any_____

Miscellaneous – list anything that is not listed above (features, capabilities and/or limitations).

Appendix B: Vendor COP Product Information

The following provides a high level description of each common operational picture (COP) software product. The products listed cover a broad range of features and capabilities and in some cases are part of a larger software suite or are designed to interface, translate, and visually display data. We compiled product descriptions from publicly available sources, including promotional literature, product datasheets, and marketing material on each company's website. Readers should keep in mind that this information come from the vendor and has not been independently evaluated to verify any described feature to provide and/or enhance situational awareness.

4D Security Solutions, Inc. – Wisdom Command & Control and LE

www.4-dsecurity.com

Wisdom Command & Control and LE software provide an operational picture with displays of situational awareness, trigger event management, and video management. Users can configure the Wisdom LE software displays to meet operational needs in an incident or command center application. A typical Wisdom display arrangement includes the trigger event manager on the left, situational awareness in the center, and video manager on the right. The principal Wisdom situation awareness screen is built on Esri maps or other high-quality geolocation mapped information. Wisdom displays vital data on the Wisdom situation awareness map, such as sensor locations, vehicles and people being monitored, and alarm zones. The software includes functions like deconfliction tailored for informing command officers in law enforcement applications.

4QTRS Holding, LLC – ViewPointe and ViewPointe CAD-to-CAD

www.4qtrsholdings.com

ViewPointe is an integration framework that enables real-time amalgamation of data from multiple first responder systems for situational awareness. The product provides multivendor system integration by enabling disparate systems to integrate natively. ViewPointe provides the intelligence to interpret the data and enable data sharing across a unified platform with a user map-based dashboard enabling users to access information to evaluate a situation, identify available resources and provide incident response. ViewPointe CAD-to-CAD provides real-time access to emergency responder resource and unit availability, incident details, and other critical information to be shared across all authorized users of the system. The dashboard can be viewed and

updated simultaneously from the dispatch center, incident command post, emergency operations center, or any other authorized location.

Adashi Systems, LLC – Adashi Command & Control

www.adashisystems.com

Command & Control is an incident and resource management platform designed for use at all types and sizes of incidents. The software platform provides the user an interactive data dashboard for decision making and situational awareness with real time collaboration, tactical planning, tracking, management, communication, logging, and reporting.

Advanced Ground Information Systems, Inc. – LifeRing

www.agisinc.com

LifeRing is a technology that provides a comprehensive common operational picture along with the ability to collaborate and command integrated digital data, voice, and video encrypted within a single application. LifeRing is available in military, federal law enforcement, and first responder versions. The first responder (fire departments, police, and emergency medical services) version is customized with the appropriate symbols and other features. These symbols can be customized for groups that have their own standard symbols.

Alastar – Alastar

www.alastar.com

Alastar offers wide-area situational awareness information that improves response times, increases coordination, and allows organizations to effectively monitor and protect their communities and large events. The software leverages a lightweight, stateless, web-friendly architecture to provide an all-inclusive, real-time situational awareness tool. Alastar collects and fuses data from various feeds including incident reports, resource tracking maps, weather, traffic, stationary cameras, and reports, photos, and videos submitted by in-field personnel. The “big picture” is presented in an intuitive, easy-to-navigate interface that can be customized based on user preferences.

BAE Systems – GXP OpsView/GXP OnScene

www.baesystems.com

GXP OpsView provides situational awareness and operational visibility through strategic planning tools, simplified communications, and a COP. The GXP OnScene mobile component of GXP OpsView allows incident command and responders in the

field to work from a COP for shared geospatial awareness at the scene of an event or crisis.

Blueforce Development – Command Center/Tactical

www.blueforcedev.com

Blueforce Command Center is a COP software application for Windows and HTML5 client computing platforms. Command Center combines information from deployed personnel, autonomous agents, information services, and body-worn or unattended ground sensors to provide a broad spectrum of information for commanders and staff members and enables synchronized planning and decision support.

Blueforce Tactical is a mobile software application that enables the formation of teams and facilitates information sharing among team members using Android and iOS smartphones and tablets brought to the tactical environment. The software provides shared awareness and extended presence of people, sensors, and services; and it provides secure information exchange between them using standard cellular, 3G, 4G, LTE, and FirstNet networks, tactical LTE, Wi-Fi, satellite, and mobile ad-hoc networks (MANETs).

Borsight, Inc. – Goliath AR/David Mobile ISR Solution

www.borsight.com

GoliathAR and David software is for intelligence, surveillance, and reconnaissance (ISR) customers. Users can tailor the software for many mission sets, including those for military, law enforcement, and commercial. GoliathAR is a desktop solution that overlays real-time georeferenced data onto real-time video, bridging the worlds of georeferencing, video, imagery and radio and data interfacing providing a COP for multiple users. The David mobile ISR solution provides the same features as the GoliathAR software, but with the added capability of running on the Android operating system.

Braxton Technologies – Advanced Control Equipment Premier Universal Command and Control (AceUC2)

www.braxtontech.com

AceUC2 is a web-based command and control (C2) system implemented on open source technologies providing integration of disparate data sources into a single visual display. AceUC2 provides autonomous data dissemination among all networks in support of modern military, intelligence, emergency management, and law enforcement operations dependent on timely access to information. AceUC2 has an integrated COP web application that provides the user with configuration, control, and views of mission data feeds.

C4i – SENTIO

www.c4ic.com

SENTIO is a lightweight, intuitive situation awareness tool designed to support Emergency operations. SENTIO allows users at various levels to share the COP of participating agencies and planned operations. A user interface and automated position updates from Global Positioning System (GPS)-enabled radios allow decision makers to share the operational picture.

CIRCINUS – TD Information Aggregation System (TDIA)

www.circinus-llc.com

CIRCINUS developed TDIA for aggregation and analysis of information from disparate data sources to develop actionable intelligence for law enforcement officers. The TDIA System employs proven intelligence tradecraft, advanced surveillance techniques, facial and voice recognition technologies, and document analysis linked to an information aggregation and analysis system. TDIA exploits existing, independent data silos to optimize, automate, and convert pre-existing infrastructure into a COP.

CNL Software – Physical security information management (PSIM)/IPSecurityCenter

www.cnlsoftware.com

PSIM is a category of software that provides a platform and applications created by middleware developers, designed to integrate multiple unconnected security applications and devices and control them through one comprehensive user interface. PSIM allows a centralized law enforcement command and control center to pull live video feeds from public space, public transport, and any other closed-circuit television (CCTV) system, forming and communicating a complete picture of an event. PSIM presents each user with customized screens and information depending on their role or the status of a particular incident. PSIM creates hierarchies of information delivering situational awareness to users in a COP.

Cody Systems – Anywhere Public Safety Software System/Cobra.net

www.codysystems.com

Anywhere Public Safety Software System is a public safety data management solution that allows an agency to reliably cross reference, link, dispatch, analyze, and provide flexible reporting of data captured from a variety of sources, locations, and jurisdictions from command staff to officers on patrol. The integrated modular solution provides access points for all levels of use at the desktop or in the field. COBRA.net is a holistic, real-time data source aggregator, exchange, and sharing platform that provides real-time cross-jurisdictional data sharing and exchange for

police departments and other law enforcement, public safety, and criminal justice agencies to share a number of data sources, creating one single view. The product is compatible with external systems and third party tools including visual analysis, real-time intelligence, and dashboards with a unified data picture.

Command & Control Technologies Corp. - Security & Surveillance Toolkit (SSTK)/COP

www.cctcorp.com

SSTK provides real-time surveillance analytics, automatic threat characterization, and rapid response management for complex wide-area border and perimeter security installations. SSTK provides security teams full situational awareness through an information fusion technique that forms an intuitive real-time, geo-referenced, COP coupled with automated threat prioritization, interrogation, and interdiction tasking. SSTK integrates sensors and other surveillance equipment to efficiently secure borders, perimeters, seaports, harbors, airports, utilities, and other high value wide area installation. The SSTK COP integrates overall operations situation awareness by providing views and sensor controls from a single GIS map-based user interface. The COP integrates all available information concerning tracks, sensors, and blue force agents into a series of configurable views.

Drakontas - DragonForce

www.drakontas.com

DragonForce supports small, specialized teams and large multidepartment organizations with hundreds of users. The software provides teams of mobile users an integrated set of communication and collaboration capabilities that include real-time personnel tracking, file sharing, secure text messaging, incident reporting, digital forms, a collaborative whiteboard capability, and a COP. DragonForce runs on Android and iOS smartphones, as well as tablets and other devices using standard web browsers.

Dynamis - COBRA

www.dynamis.com

COBRA is a turn-key, commercial-off-the-shelf emergency management solution designed to work on modern web browsers, including mobile formats for Microsoft, iOS, and Android mobile devices. COBRA software provides scalable incident management and COP solution.

Edge360 - Slingshot

www.edge360.com

Slingshot integrates data from databases into a single interface that intuitively visualizes intelligence to enable decisions. Slingshot's seamless data integration provides organizations that have disparate, legacy, or difficult-to-access data repositories a quick and easy method for discovering and fusing data in one intuitive, application. The intuitive user interface provides users with information enabling decision making in response to incidents.

Enforsys® , Inc. – I-3 Exchange®

www.enforsys.com

I-3 Exchange is a decision support suite that organizes unrelated data to provide tactical, strategic, and command users with access to shared data in a single, or multiple, consolidated repositories. I-3 Exchange's sharing applications encompasses a dynamic, actionable, analytical, and collaborative process. I-3 Exchange shares and analyzes data between agencies utilizing proprietary middleware software and publishes it to a regional database. I-3 Exchange is scalable and can be adapted for the exchange of data between various agencies

Haystax Technology – Constellation for Law Enforcement

www.haystax.com

Constellation for Law Enforcement allows agencies to maintain domain awareness in an operational area with integrated apps designed to provide a detailed and continuously updated picture of incidents and events, viewable on a map or in a sequential timeline. Additionally, the software allows for connecting to social media feeds, integration with third-party data from computer-aided dispatch (CAD), video, and other sources and the capability to send and receive alerts and keep track of your officers and other deployed personnel through blue force tracking.

IDV Solutions/everbridge® – Visual Command Center

www.everbridge.com

Visual Command Center provides a real-time COP of assets, personnel, and operations in relation to potential risks. The Visual Command Center brings together information and capabilities from organizational data sources and security systems into one platform accessed through a browser, along with automatically generating alerts and providing tools to assess and take action.

iLink Systems, Inc. – Situational Awareness Framework

www.ilink-systems.com

Situational Awareness framework provides a platform to provide a COP with integrated unified communications. Powered by technologies such as Win8, Bing Maps, Surface

2.0, Lync, Skype, Windows Presentation Foundation (WPF), Microsoft .Net, and Modern Style, this framework provides organizations with the ability to uniquely identify and respond to the situational needs of different operational units in the field, providing instant access to the “field-view” and a COP to resources in different command centers.

Incident Response Technologies, Inc. – The Rhodium Incident Management Suite

www.irtsoftware.com

The Rhodium Incident Management Suite provides a command and control solution, allowing you to consolidate information, coordinate assets, manage day-to-day incidents and large scale, multi-agency responses and share data instantly with incident stakeholders both on the scene and remote.

Intelligent Software Solutions – WebTAS Enterprises

www.issinc.com

WebTAS Enterprise is a government off-the-shelf, platform-independent suite of tools that supports the integration, visualization, analysis, and production of actionable information across multiple data sources, user communities, and missions. It is an accredited framework that accelerates development and deployment of mission applications and provides out-of-the box user capabilities. WebTAS Enterprises Dfuzer Net provides a built-in command and control interface that allows users to view the location of incidents and operators that are connecting to the secure server using Dfuzer Mobile or OnSiteC2, creating a command and control COP that fuses intelligence with operations in near real time.

Intermedix, Corp. – WebEOC Enterprise

www.intermedix.com

WebEOC supports state and local agencies in handling day-to-day operations, managing special events, and responding to disasters. The technology makes it possible to intelligently aggregate diverse data sources and share critical information across government and non-government agencies. WebEOC’s user interface is designed to support the mission of crisis management, public safety, and emergency response personnel and provides simplified information access promoting intelligent incident response. The system supports organizations of all sizes with a platform for daily operational and emergency management, supported through a customizable set of utilities for complete situational awareness.

Intrepid Networks – Sting Suite/Command

www.intrepid-networks.com

STING Suite is designed for law enforcement, fire and rescue, and emergency medical services and provides a real-time COP either in the field or within a command post, operations center, or emergency operations center. The suite of tools allows users to collect, analyze, and distribute information, plus view real-time intelligence feeds utilizing an automated system.

IPVideo Corp. – C3fusion

www.ipvideocorp.com

C3fusion filters and prioritizes data generated by integrated security subsystems, internet of things (IoT) devices, and other sensors into a COP, enabling security personnel to make informed decisions with complete situational awareness. Communicated data is filtered and prioritized. Utilizing Case Maker and Case Explorer, an operator then can take control of a security event, resolve the incident, and then automatically archive the incident in a common database for later review or forensic analysis.

Mission Manager, Inc. – Mission Manager Incident Management Software

www.missionmanager.com

Mission Manager is incident management software that operates via the web or offline to assist incident commanders manage their daily team operations and their missions. It provides a team-based operational environment for day-to-day tasks and also serves as an online command center during real-time incidents. During a crisis or planned event, Mission Manager allows agencies to manage mission data via the web, providing situational awareness. It allows commanders to track all phases of the event in real time, including team locations, event and radio logs, and assignment status. It provides a COP across multiple devices using extensive mapping tools with 106 overlays.

Motorola Solutions, Inc. – Intelligent Data portal and Command Central Analytics/Aware/Inform

www.motorolasolutions.com

Intelligent Data Portal gathers location-based information from existing databases, organizes it, and maps it using layers to show the location of people, resources, events, alerts, and developing situations. Designed for public safety, this cloud-based mobile application integrates data from disparate public safety systems and third-party applications, providing responders in the field with critical information for improved decision making and multiagency collaboration. HTML5-based, Intelligent Data Portal can be used on nearly any device, operating system, and network.

Command Central Analytics integrates data from PremierOne CAD and Records or any third-party CAD system or RMS into a customizable dashboard with analytics, query,

visualization, and information sharing. The product allows the user to instantly review descriptive and visual analytics data in multiple visually-intuitive formats including heat maps, trend analyses, and charts to uncover emerging trends and gain insight into key issues and areas.

The cloud-based application can be accessed from any internet-connected device, enabling your agency to make better intelligence-led decisions at every level.

Command Central Aware software supports real-time operations from the command center by combining voice, data, and video into a single, integrated position in a complete operating picture.

Command Center Inform software is designed to enhance decision making across an entire operation by consolidating real-time event data into one map-based view extending a common operating picture to various devices.

NC4 - E Team

www.nc4.com

E Team is designed for large or cross-jurisdictional emergency management organizations. It provides a COP so organizations can respond to a crisis situation and execute a coordinated response based on real-time and historical information. The information in E Team can be simultaneously shared among emergency response teams, decision makers, and other agencies during the planning, response, and recovery phases of an emergency.

NVision Solutions, Inc. - REACT/REACT Scout

www.nvisionsolutions.com

Real-Time Emergency Action Coordination Tool (REACT) is a web-based emergency management system for first responders. The REACT Scout application allows public safety officials in the field to send GPS-located photos and incident reports to a central COP. Any authorized official can view these reports in a map-based common operating picture through the web. REACT is a crisis management information system combining the visual power of satellite-based geographic information systems (GIS) mapping and analysis with the Department of Homeland Security-mandated reporting and organizational requirements of the National Incident Management System (NIMS).

Octopus - Physical Security Information Management (PSIM) Command and Control Solution

www.octopus-app.com

PSIM Command & Control Center solution provides security management by unifying disparate security devices and information systems into one converged platform. PSIM

Command & Control Center is a fully cloud-based solution for security, safety, and operation centers, offering a unified COP either on a multiple screen layout or on a laptop or tablet with an internet connection. The solution includes a native mobile application that connects everyone in an organization, in the event of an emergency. The software can interface with all of your organization's security and data systems, including alarms, fraud prevention, cyberattack alerts, safety sensors, entrance monitoring, and closed circuit cameras, as well as open source intelligence and social media, providing situational awareness.

Pen Bay Solutions, LLC. – InVision Secure

www.penbaysolutions.com

Users can configure InVision Secure for either standalone operations or integration with existing safety and security systems. The software provides a full set of features and capabilities to meet safety and security requirements, providing the ability to analyze, plan, and respond to an event. The software framework allows for collaborative plan review and approval, as well as sharing with partners through secure web and mobile access.

PIXIA Corp. – Secure data access platform

www.pixia.com

The secure data access platform uses open standards architecture and allows for rapid data access and interagency and multijurisdictional coordination. Users have the ability to customize views and incorporate legacy data along with live ingest to obtain the most current COP on their device of choice. From natural disasters, to crowd management or emergency response, PIXIA provides first responders a critical decision management tool across jurisdictions and disciplines to provide a coordinated response.

PlanetRisk, Inc. – AIMS Common Operating Platform

www.planetrisk.com

PlanetRisk is a global enterprise risk analytics company, providing analytical solutions to government clients. Their analytics platform connects the dots between known, unknown, new, and emerging sources of data to provide real-time situational awareness and geospatial intelligence in the context of global events.

Priority5 – Touch Assisted Command and Control System (TACCS)

www.priority5.com

Touch Assisted Command and Control System (TACCS) provides a net-centric, service-oriented architecture geospatial operating platform, built upon open standards, that

integrates data, simulation, and tools into a single dynamic environment. Users from remote locations collaborate in real time through workgroups. Each workgroup brings all the integrated capabilities of the system into a true live COP that goes beyond the static information available using conventional viewers.

Salamander Technologies, LLC. – Salamander Live

www.salamanderlive.com

Salamander live is a web-based suite of tools designed to provide situational awareness at incidents and events. Additionally, Salamander has the ability to integrate with CAD systems to affirm accountability from dispatch through an entire incident. Salamander CAD integration aids you in comprehensively tracking resources by providing interoperable communications, accountability, and incident command.

SensorUp – IoT software platform/COP dashboard

www.sensorup.com

SensorUp's IoT platform acts as a bridge, allowing devices to interact with each other and third-party web applications. The COP dashboard provides information across a host of fixed, mobile, and wearable devices. In situation management, devices that measure disparate phenomena are sourced from numerous manufacturers and belong to different organizations. SensorUp's platform then combines that data into single portal.

SharedGeo – GeoMOOSE

www.sharedgeo.org

GeoMOOSE is free and open-source software for geospatial sanctioned by the Open Source Geospatial Foundation. Governments use it to manage and visualize the geospatial data. The software enables data to be displayed on any system that can connect to the internet. Users can augment this web-based map with other important geospatial information available online and can display on-the-fly in a unified collaborative view.

Situational Awareness Systems (SAS) FD Software Enterprises (FDSE) – COP

www.fd-software.com

SAS designed its COP incident management tool to manage one or more incidents from a facility. The COP can be configured for emergency command structure—be it a single location or a conglomeration of different organizations spread across a region. Critical information can be shared across organizational boundaries securely. The product automatically collects and organizes COP transactions and decisions in the database.

Users can generate reports using NIMS- or HICS-compliant forms. Users can automatically instantiate and manually edit these reports can be.

Spillman Technologies, Inc. – Nova and Flex

www.spillman.com

Nova is a cloud-based, hosted public safety software solution that offers smaller agencies technology for records, dispatch, and jail management. Nova is a software-as-a-service (SaaS) product, which allows agencies access to data on any device with an internet connection. This method eliminates the need for purchasing equipment and maintaining databases, while offering subscription-based pricing that can be scaled to fit agency needs.

Spillman Technologies designed Flex as an on-premises public safety software solution to meet the needs of police departments, sheriff offices, dispatch centers, correctional facilities, and fire departments. Flex provides agencies with multijurisdictional data sharing capabilities built around a central Integrated Hub.

The Omega Group (TriTech) – CrimeView Dashboard

www.theomegagroup.com

The CrimeView dashboard utilizes Esri's ArcGIS Server mapping engine and organizes complex information from multiple databases into visualizations that provide a snapshot of current activity. The entire data integration process is automated, so the information being consumed is always current. Users can import data from records or dispatch system and view it in several formats including heat maps, repeat call locations, day of the week charts, and time of day graphs. These visuals allow for assessment and dissemination of critical information throughout an entire organization.

The Response Group – Common Operating Picture (COP)

www.responsegroupinc.com

The Common Operating Picture is a command and control tool that provides situational awareness, enabling users to make accurate, informed decisions based on current or planned activities under the incident command system (ICS). The product integrates data from multiple existing and live (field collected) sources to support all functions of a response using one spatial data platform. The Response Group's Common Operating Picture will provide the acting incident management team with a comprehensive picture to make adjustments to any current activity and also plan ahead for the next operational period.

Tyler Technologies, Inc. – New World Law Enforcement Solution/Dashboards

www.tylertech.com

New World Public Safety Software solutions provide access to information for dispatchers, officers in the field, firefighters, EMS, corrections officers, and command staff. New World Public Safety information flows between all applications, ensuring that mission-critical data entered into the system is secure and available. Configurable, role-based dashboards provide supervisors and command staff with a high-level overview of operations and performance. By providing the ability to drill down for additional detail, dashboards offer command staff access to information about crimes, response times, incidents, and inmate statistics.

Vidsys, Inc. – CSIM software

www.vidsys.com

Vidsys CSIM software is a scalable force multiplier for special events that geospatially aligns information for responders into a single user interface. CSIM software can create a COP that connects local, state, and federal agencies. The platform is capable of integrating security cameras, mapping technology, weather alerts, social media monitoring, mass notification, radar, and more. The result is intelligence that allows decision-makers from a single organization or multiple entities to collaborate in real time. Additionally, by leveraging mobile devices, the software also provides situational awareness and mission-critical intelligence to first responders and other authorized parties.

Zuercher – IMC/IQ Analytics/Crime View enterprise

www.zuerchertech.com

IMC is a fully integrated, single-platform system for public safety designed for small to medium agencies. The fully integrated software suite reuses data between CAD, mobile, law RMS, fire RMS, jail, civil, detective, administrative and cross-agency (data sharing). IQ Analytics support information sharing initiatives, allowing agencies to aggregate data from multiple systems by warehousing it in a public safety centric database. The CrimeView enterprise establishes a COP through visual dashboards to compare the relationships of data, identify patterns, and visualize activity geographically through interactive maps, charts, and reports. Law enforcement command staff and officers on the street can collaborate to apply data to crime prevention strategies, precision policing, directed patrol, and intelligence-led policing.

Appendix C: Types of Software Licensing Agreements

Software licenses are legally binding agreements that specify the terms of use for an application and define the rights of the software producer and the end user. Software licensing can be a confusing subject to non-IT staff. There are many different types of licenses and licensing contracts. To complicate the issue further, different vendors may use different terms to describe their licenses. A department should involve its IT specialist in any decision to procure COP software. For departments that contract out IT services, it is important that purchasing authorities consult their IT professional and become familiar with the following types of software licenses.

Proprietary license - The majority of software licenses are "proprietary" licenses, meaning the software publisher grants a license to use one or more copies of software, but that ownership of those copies remains with the software publisher.

General public license (GPL) - These are agreements under which much "open source" software is licensed. End users may do things like change the source code, but any refinements of the software must also be made available under a GPL license.

End user license agreement (EULA) - These indicate the terms under which the end user may use the software. Agreements with organizations or companies often take the form of contracts between the organization and the software publisher or vendor, and specify the terms of use for all users from the organization, superseding any EULAs that may come with the software.

Workstation licenses - These licenses permit the installation of an application on a single computer. Users may not install the software on more than one machine unless they purchase a license for each additional machine. Most workstation license agreements allow users to make a single backup copy of the software as long as that backup copy is used only to restore the software onto the same machine, or a separate machine if the software is removed from the original computer.

Concurrent use license - These licenses permit users to install the software onto multiple machines as long as the number of computers using the software at the same time does not exceed the number of licenses that you have purchased. Concurrent use licenses are usually used in conjunction with "license manager" software that prevents the number of licenses from being exceeded.

Site licenses - A site license permits the use of software on any computer at a specified site. Unlimited site licenses allow the installation of software on any number of computers as long as those computers are located at the specified site. Some site licenses permit the installation on computers owned by a particular entity (such as a

police department), regardless of the physical location. Some vendors refer to their licenses as site licenses but restrict the number of computers on which the software may be installed. The specific terms will be outlined in the license agreement.

Perpetual licenses - These are licenses without expiration dates, which permit use of the software indefinitely, without requiring a recurring fee for continued use.

Non-perpetual licenses - These are licenses that "lease" the software for use for a specified period of time, usually annually or sometimes biannually. Users are required to remove the software from their computer if they cease paying the license fee.

License with maintenance - some license agreements allow the user to purchase "maintenance" or "software assurance" along with the original license fee, which entitles the user to receive new versions of the software for one or more years until the maintenance agreement expires.

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