The Mission of a Real Time Crime Center

The mission of a Real Time Crime Center (RTCC) is to provide a law enforcement agency with the ability to capitalize on a wide and expanding range of technologies for efficient and effective policing. Such efforts may allow law enforcement officers to respond quickly, or even immediately, to crimes in progress or to those that recently occurred. The technologies available allow law enforcement agencies and officers to respond to crime events more efficiently, more deliberately, with improved operational intelligence, and with a proactive emphasis on officer, citizen, and community safety. However, the increasingly vast amount of data, information, and intelligence can be difficult to manage. Agencies may struggle with filtering out what is immediately important versus what can be useful later (e.g., at an investigative stage or in the court system) and delivering more critical and timely information to the appropriate constituencies (the officers or detectives on-scene, commanders in the field, law enforcement executives, private citizens, etc.).

As envisioned here and by other law enforcement agencies to date, the mission of an RTCC would centralize a broad range of current and evolving technologies, coordinate sworn and/or nonsworn human resources, and direct the attention of both to high-crime areas, active crimes in progress, large-scale public events that may require law enforcement presence or response, and/or high-profile or highly recidivistic offenders in the community. In short, an RTCC would maximize the likelihood that law enforcement can respond to crimes occurring in real time and do so effectively.

The conceptual definition and the actual implementation of an RTCC may be very different depending on resources; the nature of crime in a community; citizen, governmental, and other stakeholder interests; and a host of other factors. Most would, and should, consider the establishment and implementation of an RTCC an evolving process that will change as time passes, as lessons are learned, and as new resources and technologies become available.

Here are some RTCC videos from a variety of departments in the United States:

Albuquerque (NM) Police Department

Austin (TX) Police Department

Charlotte Mecklenburg (NC) Police Department

Fresno (CA) Police Department

Memphis (TN) Police Department

Newark (NJ) Police Department

New York (NY) Police Department and Stop Talking Start Doing-NYPD

Ogden (UT) Police Department

St. Louis (MO) Metropolitan Police Department

Useful References

Motorola (2016). “Communication Systems Stop Crime In Its Tracks: Real Time Intelligence Takes Police Beyond Responding, to Prediction and Prevention.” http://www.motorolasolutions.com/content/dam/msi/docs/solutions/law-enforcement/law-enforcement-at-a-glance-brochure.pdf

The Function of an RTCC

The temporal signature of crimes and crime patterns is obvious and observable in most cities and counties. And on a typical day, most cities and counties will not have active, live crime or public safety events that require RTCC assistance for 24 hours a day. It is safe to say that RTCC detectives in many communities will have sufficient periods of downtime when active events are not occurring. Consequently, departments should devote considerable time to developing job descriptions and position responsibilities/duties that are consistent with the number of man-hours that will be assigned to the RTCC functions.

Departments that operate RTCCs on an as-needed basis can simply ask RTCC operators to return to their normal duties when those RTCCs are not operational. In essence, real time crime center work is a part-time organizational function. As such, these agencies will likely staff their RTCCs with part-time help which, more than likely, will mean temporary reassignment of existing personnel (who can then return to their daily routines and duties when the RTCCs are not operational).

On the other hand, larger agencies that have already established, or plan to invest in, a 24/7 RTCC infrastructure that would require full-time detectives/operators will need to consider the overall real-time versus downtime workload and consider individual work assignments carefully, while being mindful that there may be plenty of downtime.

RTCC detectives can be engaged in a range of support functions and duties during downtime. For example, RTCC detectives can assist investigators/detectives and officers by doing background work, identifying and passing along useful information and evidence (including video) that can support active cases, and helping investigators navigate the video archives and numerous databases for relevant information. Other RTCC detectives may prepare reports on the activities of the RTCCs. Still others may spend time digging deeper into their various databases, learning more about how the technology operates and evolves, and exploring the ever-expanding range of data sources that are routinely available at their fingertips. Other possible responsibilities might include assisting with background investigations, cross-checking information for active cases, assisting with warrants, or helping outside agencies with requests.

However, supervisors need to be mindful about how the RTCC detectives could best occupy their downtime. The more efficient the technology becomes, the more likely it will free up additional time for RTCC operators. Therefore, agencies need to plan for these slow periods and use their resources effectively, during real-time crime events and when those events are not occurring.

A Model for Crime Analysis and Real Time Crime Centers

The primary purpose of crime analysis is to support (i.e., assist) the operations of a police department in ongoing operational and crime-reduction efforts. These functions include criminal investigation, apprehension, and prosecution; patrol activities; crime-prevention and reduction strategies; problem solving; and the evaluation and accountability of police efforts. Through access to criminal and noncriminal data and accompanying software, crime analysis is performed to address short-term situations (e.g., several days to several weeks long) and problems occurring over a longer period of time (e.g., several months to several years).

The development of Real Time Crime Centers (RTCCs) is a response to the police community's desire to provide immediate information to officers during each call for service. RTCCs are intended to initially triage information from a call for service and provide information, such as suspect vehicle descriptions, victim or suspect criminal histories, and other pertinent information, on the fly to assist in furthering an officer's investigation during a call. Because of the vast quantity and limited quality of preliminary calls for service information, RTCCs are designed to assist only with certain types of calls for service with specific information that can be used within the time span of an initial call.

Upon completion of an officer's initial response and investigation, the information provided by the RTCC becomes agency data similar to call-for-service and official report data that are captured in the department's record management system. Subsequently, crime analysts correlate the RTCC information with other reported crimes and arrests to develop short-term patterns and long-term trends as part of their normal duties supporting investigation, apprehension, prosecution, patrol activities, crime prevention and reduction strategies, problem solving, and the evaluation and accountability of police efforts.

Operationally, while crime analysts and RTCC operators often access the same data systems and software, their functions are distinguished by the temporal nature in which they are assisting in an incident in real time, in clusters of incidents over a short time or aggregate crime in the long term. It is this distinction that is important in the development of a department's crime analysis and/or RTCC capabilities.

Establishing RTCC Standard Operating Procedures

Developing a standard operating procedures (SOP) document is an important fundamental step for establishing an effective RTCC. A carefully developed SOP should, at minimum:

1) Establish the primary purpose and authority of the RTCC.

2) Clarify the RTCC chain of command (including differentiating it from the crime analysis division/unit, functions of crime analysts, and the crime analysis chain of command, if applicable) and communicate the roles and expectations of the RTCC and its employees.

3) Clarify operational procedures, including active crime scene response protocols.

4) Identify all technology used by RTCC operators.

5) Clarify follow-up and proactive investigative roles for RTCC operators.

6) Establish procedures for documenting operator workload.

7) Clarify procedures for electronic and video evidence storage, retrieval, and retention for agencies with advanced systems such as video cameras or license plate readers (LPR). Because of the potentially sensitive nature of capturing live video feeds and perhaps storing individual license plates, identity protection and privacy policies should be established proactively. As an example, some departments archive their license plate data for some period of time (e.g., three or six months) before it is permanently deleted. Many agencies also proactively work with community and citizen protection groups (e.g., the American Civil Liberties Union [ACLU]) prior to the installation of RTCC cameras in the city. Partnering with the ACLU may help the agency decide on appropriate locations for the new cameras and reach consensus on how long the department should archive captured video data.

Developing Measures of Effectiveness for a RTCC

Given the fast-paced nature of the work that occurs in an RTCC and by RTCC personnel, it can be difficult to keep track of productivity and to document the effort and effectiveness of the unit or its personnel. Proactively establishing methods for collecting and organizing data and documenting the work being accomplished by RTCC personnel serves a variety of purposes. Those purposes include providing work-performance feedback to RTCC staff and personnel, tracking and reporting accomplishments to executives/leaders and external constituencies, and building the case for additional resources as the range of responsibilities grows, as new technologies emerge, and as work demands rise.

There are several possible methods for tracking and documenting work productivity. For example, developing an in-house database can allow RTCC personnel to document their daily activities and work associated with each priority 1 call/BOLO (e.g., what cameras checked, electronic monitoring activity, officer support provided). The database also can allow personnel and

supervisors to check their daily, weekly, or monthly statistics and identify any trends in workloads or response effectiveness.

Also, it may make sense to keep track of the outcomes that RTCC activities and operations have on high-profile crimes or to systematically document cases in which a suspect was captured, or the case was solved, "in real time." These kinds of organizational successes also might be considered for public dissemination (as appropriate and remaining mindful of privacy rights, status of active cases within the criminal justice system, and other factors) via a public information office (or officer). In an era of law enforcement transparency, sharing real-time crime response successes may help to ease community tensions, establish or enhance organizational legitimacy and trust, and help the community realize that its law enforcement agency is "on top of the crime problem."

Departments also should consider assessing the impact of RTCC activities in addressing and disrupting crime patterns, impacting reductions in the amount of time between reporting a crime and suspect arrest, and measuring the additional resources that RTCC personnel provide to officers who are deployed and on-scene. Each of these different measures of productivity and effectiveness could also be used within a cost-benefit analysis, which may help demonstrate the impact of an RTCC on the overall effectiveness of a law enforcement agency and provide support during requests for additional resources. Here are some examples of measures of effectiveness, and samples of work/productivity products, which may be useful for agencies that plan to establish RTCCs:

> *Monthly activity reports*—Monthly activity reports can capture a wide range of metrics that can help document the work within an RTCC. For example, agencies might capture information on asset-type successes (videos located/saved, license plate reader system uses and hits, electronic monitoring hits, etc.), cases cleared with help from an RTCC, and calls-for-service cases that involved RTCC assistance). Departments also can gather weekly or monthly reports on BOLO successes (stolen plates, stolen vehicles, NCIC alerts, missing persons, or internal hot-list hits).
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> *Documenting RTCC impact on visible or high-profile cases or assisting with solving crimes or disrupting crime patterns*—This kind of product would likely take the form of a qualitative assessment of how an RTCC contributed to a particular case. Anecdotally, a number of such examples are always known within an agency, but systematically capturing this kind of information may be useful for those agencies that are interested in growing their capabilities. Further, an agency may want to track the impact of captured video on conviction rates (or plea bargaining). This is likely an area in which an RTCC may indirectly impact the broader criminal justice system.
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> *Time measures between crime reporting and resolution/arrest*—Real-time response suggests that an agency is responding to crimes in progress. As such, the time frame encompassing a report to the police and an arrest, an apprehension, a traffic stop, or other forms of resolution might be captured and recorded as an indicator of RTCC and organizational efficiency. These data are likely available within the agency data infrastructure, but proactive steps to capture and measure the time frame between initial report and resolution (in varying forms) can certainly be useful.

Cost-benefits analysis—Past studies are available that focus on cost-benefit analyses for introducing crime analysis functions into a law enforcement organization. Such examples, such as this one from the Vera Institute, could be used as a template for conducting a cost-benefit analysis for establishing a real time crime center. However, costs of technologies, and the broad range law enforcement technology, are rather extensive, so agencies would likely need to conduct their own internal needs assessments. Assistance for conducting a technology needs assessment is also available.

The Importance of Communication and Stakeholder Engagement as a Prerequisite to Effectively and Successfully Launching an RTCC

In addition to securing technology, hiring employees, and setting up the RTCC infrastructure, two additional steps are recommended to establish an effective RTCC. First, it is helpful to educate the organization and its employees about what the RTCC is, how it operates, and what benefits it can provide. Within this context, establishing trust among different internal stakeholders is also important. Second, the general public, local businesses, and other community external stakeholders need to be a part of the process, and engaging them will enhance organizational legitimacy and trust.

Educating and Building Trust With Officers, Detectives, Supervisors, Civilians and Other Organizational Units

As an RTCC is developed and established, and its technology and capabilities continue to evolve, it becomes ever more important to ensure that officers (current and newly hired), supervisors (including those who are later promoted), and units within the organization are educated regarding the mission of the RTCC, its capabilities and constraints, and its operating guidelines. A proactive approach to this educational process will serve the agency and its employees well, will help to minimize time dedicated to one-on-one or small group training/educating, and will allow the organization to efficiently deliver the necessary information to relevant stakeholders when appropriate. The agency might consider developing an RTCC video that can quickly summarize and explain what the RTCC is capable of providing to officers, supervisors, and others that can be shown. This would allow officers to educate themselves as needed and also allow the agency to share the information to external constituencies. Here are some examples of videos from a variety of agencies:

Albuquerque (NM) Police Department

Austin (TX) Police Department

Charlotte Mecklenburg (NC) Police Department

Fresno (CA) Police Department

Memphis (TN) Police Department

Newark (NJ) Police Department

New York (NY) Police Department and Stop Talking Start Doing-NYPD

Ogden (UT) Police Department

St. Louis (MO) Metropolitan Police Department

Building Trust With the Local Community

The first, and perhaps most fundamental pillar of the President's Task Force on 21st Century Policing is the principle of building legitimacy and trust between law enforcement and citizens. Establishing an RTCC, which could include setting up a city- or countywide video camera infrastructure, capturing license plates on public roadways, and/or electronically monitoring pretrial (and potentially innocent) offenders, represents some level of law enforcement intrusion into the private lives of law-abiding citizens.

Using RTCC resources to manage large-scale security events also can present similar challenges and sometimes can result in overly aggressive policing. As a result, proactively engaging the community, including the most challenged neighborhoods, other components of the criminal justice system, public and private businesses, local politicians and leaders, religious organizations, school systems, advocacy groups, and others prior to launching an RTCC would be advisable. In some communities, where privacy is more valued and police intrusions more carefully scrutinized, establishing an RTCC is unlikely. In other locations, part of the infrastructure may be in place already, and law enforcement can simply expand on what exists. Regardless, engaging stakeholders before you start recording their activities, capturing their license plates, or monitoring their citizens, is an important step that will further sustain the agency's legitimacy and trust, which ultimately will help ensure a safer community.

RTCC Development Decisions

Agencies interested in establishing an RTCC will need to consider a range of decisions regarding human (personnel and staffing plan) and technological resources, the chain of command, and the scope of work. There are numerous possible configurations for departments, depending on the size of the community, public safety needs, current capabilities, finances, and organizational capacity. The following sections offer some considerations that merit careful attention and planning.

Personnel and Staffing

With respect to human resources, the range of personnel decisions/options can include the following:

1) Staffing the RTCC with crime analysts (sworn and/or civilian, depending on the departmental structure)

2) Staffing the RTCC with current or former (retired) sworn officers/detectives

3) Staffing the RTCC using a hybrid model that includes civilian or sworn crime analysts and current or former sworn personnel

4) Staffing the RTCC with contractors (e.g., external contractors or perhaps retired officers who are under contract during retirement)

Staffing decisions may be based, in part, on whether the agency currently has crime analysis capabilities. Staffing the RTCC primarily with sworn personnel, versus crime analysts or other civilians, may make sense in some agencies, given that much of the work of RTCC personnel involves investigative work; speaking directly, in real time, to officers or detectives on the street; providing actionable intelligence; and essentially working cases. The skill set required to perform in this role, in part, includes familiarity with the geography of the community, investigative steps and processes, the day-to-day work of police officers and detectives/ investigators, and, more important, an understanding of how much information and actionable intelligence is necessary and sufficient for the officer/detective who is responding to a crime in progress. This is further highlighted in the need for determining when RTCC personnel should deliver information to officers on the street and when they should disengage. An RTCC captain explained this notion as follows:

> "RTCC detectives can talk directly to officers whereas it used to be just dispatchers. Dispatchers do not mind it. The biggest issue was we needed to encourage our folks (RTCC personnel) to be more assertive. They feel subservient to the cop on the street and they may undervalue the information they have available. Some were more proactive than others, some will not engage with the officer on the radio, but others will. My thought was "Let's get on the radio and tell them what we have." Some cops have not been happy about the extra chatter, but as a former shift

supervisor, we are not too busy out there. This is change and people needed to get used to it."

Agencies that develop their own RTCCs need to be clear on what their personnel will do, how they will engage those on the street, and what information may be most helpful to the officer(s) responding. This kind of law enforcement familiarity and experience is not likely to be available to civilian personnel.

Staffing an RTCC depends, in part, on how a department chooses to operate it. Some agencies have decided to staff their RTCCs with sworn personnel. This decision is aimed at staffing RTCCs with officers who have an investigative background. Sworn officers offer practical and investigative experience that police leaders determined was necessary for working effectively in an RTCC. This street-level experience provides RTCC staff members with a unique skill set that includes (1) familiarity with the geography of the community; (2) experience with investigations, the day-to-day job of police officers and detectives/investigators; and, more important, (3) an understanding of how much information is necessary when responding to an event in progress. Further, since RTCC sworn personnel are routinely communicating actively with officers in real time, they need to know how to efficiently deliver relevant information to officers on the street and when to disengage from the process.

Staffing RTCCs primarily with sworn personnel, versus civilians or crime analysts, seemed to make sense in many communities, given that much of the work of the RTCC personnel involves investigative work, speaking directly to officers or detectives on the street, providing actionable intelligence, and essentially working cases. However, some agencies have opted to hire civilian personnel with investigative backgrounds. It is possible that a hybrid approach would work well in many agencies, although relying primarily on civilian personnel is not recommended in most cases. Most civilians do not have the experience and background that is ideally suited for RTCC operations.

How can our current, or newly hired, crime analysts fit into a RTCC?

One of the major challenges that many law enforcement agencies may have when establishing a RTCC is whether staffing the RTCC should be an additional duty for crime analysts. It may be the case that utilizing trained crime analysts in a newly developed RTCC would not maximize their knowledge, skills, and expertise. However, if a department chooses to use crime analysts in its RTCC, additional training may help them to shift their focus from crime patterns, trends and series, to diagnosing and responding to crime events in real time. Historically, the job and expectations of a crime analyst vary considerably from those of RTCC personnel.

Clarifying roles/expectations of RTCC sworn personnel versus crime analysts: Minimizing overlap and resolving concerns about "who does what for whom"

The establishment of an RTCC, either in conjunction with a crime analysis unit/division or as a separate entity, requires careful consideration of the roles and expectations for each unit. Early discussions and delineations of roles and expectations for both departments can help eliminate duplication of work, limit confusion over roles and responsibilities, clearly define access to

information, and otherwise minimize territorial issues (including ownership of databases, dissemination of resources, etc.).

Some agencies may decide to establish both an RTCC and a crime analysis division. These two divisions may be organizationally separated entities, meaning that one is not a part of the other and that each reports to different supervisors. Given the different chains of command, there may be some confusion about when one division's involvement in a case begins or ends.

This confusion can be a potential cause of friction between the two units/divisions, but it can be resolved easily with some proactive decisions about who does what and when. For example, if a robbery is occurring and the RTCC is actively involved in the early stages of the investigation (e.g., following a suspect on camera, running license plates, checking electronic monitoring status), it may be unclear when the RTCC detective stops working on the investigation and crime analysis takes over. If a suspect is caught during the real-time period, this is a lesser concern, but if a suspect is not initially apprehended, the person or unit that has follow-up responsibility needs to be organizationally clarified. In other words, does the RTCC follow up to search databases to find leads, or is this now the job of crime analysis?

A secondary question is related to timing. If an incident occurs during evening or nighttime hours, when CAD is not typically staffed, should the RTCC continue working the event until a crime analyst is available? In this instance, the division of responsibility for the work could be either task-oriented or time-oriented. A clear delineation of job expectations and roles will help limit confusion.

There are two other major areas of consideration when developing an RTCC, with or without access to a crime analysis unit. The first is whether or not a crime analysis unit is already functioning in the department; the second is whether or not the crime analysis unit and the RTCC will be structured organizationally under the same chain of command.

Pre-Existing Crime Analysis Unit

For a department with a well-established crime analysis division, clearly written policies, procedures, and guidelines for how the RTCC will integrate with and augment the work of the crime analysis division will be helpful, preferably with input from the crime analysts. Input from the crime analysis unit will facilitate healthy future relationships between RTCC sworn personnel and crime analysts in a number of ways. First, identification of specific information needs can be proactively established. For example, many crime analysis divisions are not focused on immediate crime activities, but rather emphasize and assess crime trends and patterns. An RTCC can immediately assist officers and detectives, who need information in real time as they respond to a scene or follow a suspect.

Second, inviting the crime analysts into the planning process will help to proactively identify and resolve any issues of territoriality. Some crime analysis units have developed internally designed databases, search engines, or programs that are not expected to be used and accessed by a broader set of users. However, use of these databases or programs by the RTCC sworn personnel might be

necessary during the investigative stages of their work. Therefore, it is important to recognize and respect the proprietary nature of databases that the crime analysis units have developed over time.

Decisions on accessing CAD-developed information systems and databases

The overlapping functions of RTCC sworn personnel, as both initial call support and investigation and follow-up, can involve the utilization of data and databases that are traditionally used by crime analysts. Because of this overlap, there may be some concern from crime analysts about providing access to this data. These concerns may be exacerbated if the databases/search engines were developed within the crime analysis or if particular training is required to properly utilize these databases.

Agency does not have a Crime Analysis Unit

If a department does not currently have a crime analysis unit but is interested in building an RTCC, this is certainly possible. However, it is recommended that the agency consider developing the crime analysis unit first, or at least simultaneously, with an RTCC.

For an RTCC to be effective and function in real time, a crime analysis unit and crime analysis capabilities need to be present. An RTCC generally cannot replace a crime analysis unit, since each unit has distinctly different purposes. But if both divisions are developed simultaneously, many of the issues around roles and work expectations can be deliberately considered and resolved on the front end.

Embedded RTCC

If the RTCC is (or will be) embedded within the crime analysis division, some of these issues may be more easily resolved because the two divisions are expected to work in conjunction with each other. Task separation between the two divisions/sections could be divided along temporal and/or task lines, since the chain of command is likely the same for both divisions (and therefore analysts/officers are not responding to requests from different bosses).

External RTCC

If the RTCC is totally autonomous from the crime analysis unit, the clear delineation of roles and expectations is even more important. A clearly articulated set of protocols that indicate who responds to requests from particular people, during particular times, or regarding particular tasks, will help minimize issues around duplication of effort and will mitigate concerns from both units that the other is doing its job.

Establishing Operating Hours

The operational hours will also dictate, to some degree, the number of personnel required to effectively manage an RTCC. Some departments may choose to operate an RTCC 24 hours a day, seven days a week. This level of operation requires about 12 full-time RTCC personnel to accommodate shift changes, peak crime and activity times, vacation and sick leave, etc. Two to three personnel are on-duty during a typical night, and that number may drop to one or two in the early morning. While these are best-practice estimates, the workload for a given jurisdiction will dictate, to some degree, how the RTCC provides coverage.

Other departments may choose to operate their RTCCs primarily during peak crime times, during special or large-scale public events, or as needed. Further, some agencies may decide to use existing personnel to staff these special events. These decisions will obviously impact the number of personnel who are required to remain operational and the cost of maintaining RTCC operations.

Physical and Organizational Location (Chain of Command)

Establishing a clearly defined chain of command for the RTCC is another important decision for an agency. Given the time-sensitive nature of the work in an RTCC (responding to priority 1 calls, addressing active crimes in progress, and working substantial cases as quickly as possible), it may make sense that the primary law enforcement executive have routine contact with the RTCC.

Depending on the size of the agency and on access and availability of physical space, some departments may prefer to physically house an RTCC with a crime analysis division. In some agencies, an RTCC may be set up in a location that is physically separated and distant (on different floors) from the CAD. This decision may be based in part on space availability.

However, functional separation also limits the extent to which CAD analysts can engage in activities that are directed to the RTCC and limits the extent to which RTCC sworn personnel might learn about how crime analysis could assist with and impact the mission. While recognizing that the missions of an RTCC and a CAD are indeed different, some redundant skill sets and some common activities and practices might be enhanced by having RTCC sworn personnel in physical proximity to crime analysts. The general recommendation is to consider where the RTCC may be best positioned within your particular agency to maximize its effectiveness, either independently or in conjunction with a crime analysis unit.

Integrating External Agencies in an RTCC

Some departments may consider establishing an RTCC with partner agencies (e.g., departments of transportation, fire and emergency medical systems, private businesses). Ideally, these decisions should be made at an earlier stage but certainly can evolve as the RTCC evolves and capabilities and functions are added. A benefit in integration allows for crime problems to be reviewed and engaged in holistically.

RTCC Operations and Technologies

When considering the breadth of technologies that might be integrated into Real Time Crime Centers (RTCCs), there is considerable potential for broader and expanded access to additional real-time and archived information and data. Access to new and nontraditional technology and data can generate unexpected consequences and concerns. Below is a discussion of some technologies that are being and will be integrated into RTCCs and some of the difficulties that might arise from the use of these types of data/technology.

Body-Worn Cameras

The increased adoption of body-worn cameras (BWCs) in law enforcement has generated some preliminary discussions about the feasibility of allowing RTCC detectives to access BWC feeds (potentially in real time). Providing access to this data has a number of pros and cons. For example, BWCs offer access to real-time video information about a scene or a suspect in locations where other stationary cameras are not available. Offering BWC access also would allow RTCC personnel to begin working on developing intelligence and background information while an officer is still talking to a suspect/victim. For example, if a victim mentions a particular vehicle or suspect, RTCC personnel could begin searching proximal cameras, LPRs, EM databases, and other sources while the officer is still engaged with the victim. The access of RTCC personnel to live body-worn cameras feeds also can provide officers with an additional set of eyes during a contentious interaction with a suspect. This extra set of eyes can, of course, result in additional liability, since the RTCC personnel are not on-scene, or, for example, if they access the feed mid-interaction.

The integration of body-worn cameras into RTCCs has the potential to offer a valuable tool, but a number of possible issues need to be worked out prior to the use of this video footage by RTCC personnel. A range of useful resources on BWC adoption and implementation are available at the National Institute of Justice, the COPS Office (also Implementing a Body-Worn Camera Program), the Arnold Foundation, and the American Civil Liberties Union.

Facial Recognition Software

Law enforcement agencies have started utilizing facial recognition software in their communities. Some facial recognition work is not conducted in real time, and it often relies on analysts running a suspect's picture (e.g., from a surveillance camera) through FBI or third-party software to search booking photos for a match. Potential matches are then passed from an analyst to a detective. Conducting facial recognition searches in real time could become more valuable to management and solvability of top-priority calls in the future. The more quickly information about a suspect is provided to a patrol officer, the better prepared and safer that officer can be when responding to an event. Facial recognition information also will allow for quicker suspect identification if a suspect has left the scene, without having to wait for follow-up from crime analysts, since crime analysis is often focused on longer-term problem solving and is often unavailable during non-workday hours.

Facial recognition software presents a number of ethical and privacy issues that should be proactively considered. Although a number of police departments utilize this technology, it has been scrutinized by others. For example, in 2013 the Boston Police Department tested, but decided against implementing, facial recognition software because of ethical concerns. San Diego, California, which launched its Tactical Identification System (TACIDS) in 2013, is currently utilizing facial recognition software but has received some criticism. In 2015, the San Diego Police Department made its facial recognition protocols publicly available. The Albuquerque Police Department uses facial recognition software in its RTCC but also has discussed some of the privacy issues associated with utilizing this emerging technology. Finally, the American Civil Liberties Union has a question-and-answer section on facial recognition in law enforcement.

Social Media Applications

The utilization of social media applications for law enforcement purposes has been discussed as another potential tool for efficiently responding to and preventing crime. The difficulty with accessing the full potential of social media for law enforcement purposes is that it is often difficult to sort through the vast amount of information produced by these applications and platforms. Many of the tools utilized by law enforcement are not specifically aimed at accessing this data in real time; rather, detectives are constantly scraping social media for particular terms or phrases that might help them solve or prevent a particular crime (see the Lexis Nexis report for social media use in law enforcement).

When considering how social media could be utilized by an RTCC, it is important to consider how the real-time nature of social media could be accessed for quick information and response. One potential way that social media could be integrated into an RTCC is providing personnel with access to tweets, posts, and other messaging applications and utilizing both the geolocation and the actual content of the posts. Access to geolocation data would allow detectives to more accurately and quickly access social media posts for a location (or person) of interest (e.g., immediately following a shooting) rather than sorting through a large number of posts, reposts, or hashtags. In some instances, privacy concerns and complaints have led to internal and/or external investigations about how authorities are monitoring social media accounts for social and activist movements.

Integrating Other Public and Private Video Feeds

An additional avenue for expanding a community network of cameras is utilizing cameras owned and operated by other public and private entities. The Center for Evidence-Based Crime Policy at George Mason University has developed a best-practices section for the use of CCTV. The Urban Institute also developed a guide for the use of CCTV for crime-control purposes, which includes private cameras and discussions of a broad range of relevant ethical and privacy issues. Integration of these additional cameras can substantially expand the areas of a community that are visible to law enforcement in real time versus having to contact a company/organization to access a video feed after a crime has occurred.

Seamless Integration of Multiple Applications for RTCC Personnel

A piece of technology currently being integrated into the RTCC in Charlotte, North Carolina, is a software overlay that integrates the majority of RTCC personnel's applications/resources into one interface. Prior to this software integration, personnel had to log on to multiple websites/interfaces to access necessary information and then toggle between the various applications while conducting searches or accessing hundreds of cameras. This constant transition through varied programs and platforms caused delays in real-time response and also required a large number of active computer screens functioning simultaneously. For example, prior to the integration of the software, if an RTCC detective received a priority 1 robbery call and wanted to assist, he or she would need to log on to an internal database that allows the RTCC to assess the location of assets, patrol cars, cameras, etc. to see what resources were in the area. The detective would then have to switch to various camera feeds manually and pull up the LPR program on a separate screen. If the detective also wanted to access NCIC, the electronic monitoring database, or other resources, those would require additional log-on time and monitor space. The new integration software allows detectives to directly access the video feeds seen on screen, as well as integrate the additional programs and databases seamlessly. Overall, the software integration application makes it more likely that the RTCC is truly responding in real time.

Suggested Technology Infrastructure for an RTCC

The establishment of an RTCC requires a wide range of technologies and technical resources. While some of technologies and resources are fundamentally necessary for the implementation of an RTCC, others can be integrated as the needs grow or as more resources become available.

At the most basic level, an RTCC must have access to the radio system and computers with access to the computer aided dispatch system (CAD) and the department's records management system (RMS). It is highly suggested that RTCCs have a video camera infrastructure with camera directional controllers, video screens, and video recording technology to access, direct, and record camera feeds. This technology allows RTCC staff members to provide immediate support to officers responding to calls for service and to search calls for service incidents and other pertinent records, and cameras post-hoc for investigative purposes.

Access to the CAD system specifically ensures that operators are alerted when priority 1 calls are dispatched. Awareness of priority 1 calls allows RTCC detectives to check for information pertinent to the incident and for cameras near the active call-for-service or crime scene; cross-check any captured license plates; and provide useful information to responding officers, potentially before the officers have arrived on-scene. Access to the CAD priority call list allows RTCC detectives to be actively engaged with a case in real time, rather than waiting for an officer to arrive on-scene. For example, a 9-1-1 caller may be reporting an armed robbery, and sometimes the victim is able to provide a partial plate number. While an officer is being dispatched to the scene, RTCC detectives can cross-check license plates through the license plate reader (LPR) database and review video feeds in the proximal area to determine whether the cameras captured any important aspects of the crime.

The advanced capability of a camera system may include (1) cameras placed and maintained by the police department; (2) cameras placed and maintained by the local transit authorities; and (3) cameras placed and maintained by private entities and accessed with permission. A wall of large video monitors can then allow RTCC detectives to watch, record, and share live video footage within the room and, when useful, to track and follow a moving car or suspect using the camera infrastructure. This tracking process can, and often does, occur in real time.

The RTCC detectives may actively monitor the automated LPRs that are placed in both fixed and mobile infrastructure throughout the primary traffic arteries. LPRs serve a dual purpose. First, they are constantly scanning for license plates to identify cars that are listed as stolen or that may be on various watch lists (linked to prior crimes, terrorism, etc.). Current license plate reader technology can scan more than 5 million license plates per month. As plate information is captured by the LPR, it is cross-checked across multiple databases. If a plate is flagged in the system, an audible or video alert is immediately sent to RTCC detectives. The detectives can then cross-check the plate to see if it is a legitimate hit (since the LPR can only check numbers and not discern plates from different states). Often, an alert is the correct license plate number but from a different state. However, LPRs generate numerous hits each week, and these provide opportunities for a department to respond, in many cases, in real time. The data captured by LPRs are also stored for three months, which allows detectives to retroactively search to see whether a license plate was

captured on a camera. Finally, license plates or partial plates can be entered into the system, on an as-needed basis, to respond to missing person cases, crimes in progress, or other emergencies.

When responding to crimes and calls for service in real time, RTCC detectives also may have a number of additional technological resources available. For example, these resources could include (or have included) access to an electronic monitoring system (thereby allowing detectives to "ping" individuals on electronic monitoring to confirm their geographical locations and to determine whether they were around a known crime location); ShotSpotter (which allows agencies to determine the locations of shots fired); the National Crime Information Center; internal offender and victim databases; internal and proprietary interfaces that allow RTCC detectives to map assets (patrol cars, officers, etc.) continuously in real time and efficiently deploy assets; and other available resources.

It is also possible to create a user interface that effectively integrates numerous technologies, which facilitates efficiency. Such a system will allow RTCC detectives to simultaneously access different data sources such as cameras, electronic monitoring, LPRs, and other resources all from one user interface, rather than having to log on to each database separately. RTCCs also should be equipped with additional support assets that help them function effectively. RTCC detectives can have multiple screens at their workstations, allowing them to have multiple databases open simultaneously. RTCCs should have working televisions with live new feeds, kitchen facilities, and a fully equipped conference room. Each of these resources can help detectives during overnight shifts or when preparing for or working major city events. Finally, if RTCC detectives access cameras owned and operated by external agencies, such as the U.S. Department of Transportation, those agencies also might have representatives in the RTCCs (particularly during rush hour, for example).

When departments build RTCCs, it may not be feasible for them to provide their staff with all of these resources initially. As mentioned earlier, the fundamental technological requirements for the establishment of an RTCC are video cameras, database access, and electronic equipment (computers, monitors, video screens). As additional funding becomes available, resources and technology can be added to enhance the continued effectiveness of an RTCC.

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Developing Measures of Effectiveness for an RTCC

Given the fast-paced nature of the work that occurs in a Real Time Crime Center (RTCC), it can be difficult to keep track of productivity and to document the effort and effectiveness of the unit or of individual personnel. Proactively establishing methods for collecting and organizing data and documenting the work being accomplished by RTCC detectives serve a variety of purposes. Those purposes include providing work-performance feedback to personnel, tracking and reporting accomplishments to executives/leaders and external constituencies, and building the case for additional resources as the range of responsibilities grows, as new technologies emerge, and as work demands rise.

There are several possible methods for tracking and documenting work productivity. For example, developing an in-house database can allow RTCC analysts and detectives to document their daily activities and work associated with each priority 1 call/BOLO (e.g., which cameras checked, electronic monitoring activity, officer support provided). The database also can allow individuals and supervisors to check their daily, weekly, or monthly statistics and identify any trends in workloads or response effectiveness.

It also may make sense to keep track of the outcomes that RTCC activities and operations have on high-profile crimes to systematically document cases in which a suspect was captured, or the case was solved, in real time. These kinds of organizational successes also might be considered for public dissemination (as appropriate and remaining mindful of privacy rights, status of active cases within the criminal justice system, and other factors) via a public information office (or officer). In an era of law enforcement transparency, sharing real-time crime response successes may help to ease community tensions, establish or enhance organizational legitimacy and trust, and help the community realize that is law enforcement agency is "on top of the crime problem."

Departments also should consider assessing the impact of RTCC activities in addressing and disrupting crime patterns, impacting reductions in the time elapsed between reporting a crime and suspect arrest, and measuring the additional resources that RTCC detectives provide to officers who are deployed and on scene. Each of these different measures of productivity and effectiveness also could be used within a cost-benefit analysis, which may help demonstrate the impact of an RTCC on the overall effectiveness of a law enforcement agency and provide support during requests for additional resources.

Here are some examples of measures of effectiveness, and samples of work/productivity products, which may be useful for agencies that plan to establish an RTCC:

> *Monthly activity reports*—Monthly activity reports can capture a wide range of metrics that can help document the work within an RTCC. For example, agencies might capture information on asset-type successes (videos located/saved, ALP system uses and hits, electronic monitoring hits, etc.), cases cleared with help from the RTCC, and calls-for-service types that involved RTCC assistance). Departments also can gather weekly or monthly reports on BOLO successes (stolen plates, stolen vehicles, NCIC alerts, missing persons, or internal hotlist hits). Examples of report templates are on the toolbox website.

Documenting the RTCC impact on visible or high-profile cases or assisting with solving crimes or disrupting crime patterns—This kind of product would likely take the form of a qualitative assessment of how the RTCC contributed to a particular case. Anecdotally, a number of such examples always are known within agencies, but systematically capturing this kind of information may be useful for those agencies that are interested in growing their capabilities. Further, an agency may want to track the impact of captured video on conviction rates (or plea bargaining). This is likely an area in which an RTCC may indirectly impact the broader criminal justice system.

Time measures between crime reporting and resolution/arrest—Real-time response suggests that an agency is responding to crimes in progress. As such, the time frame between a report to the police and an arrest, an apprehension, a traffic stop, or other forms of resolution might be captured and recorded as an indicator of RTCC and organizational efficiency. These data are likely available within the agency data infrastructure, but proactive steps to capture and measure the time frame between initial report and resolution (in varying forms) certainly can be useful.

Cost-benefit analysis—Past studies are available that focus on cost-benefit analyses for introducing crime analysis functions into a law enforcement organization. However, the cost of technology and the broad range of law enforcement technology are rather extensive, so agencies would likely need to conduct their own internal needs assessments. Assistance with conducting such a technology needs assessment is also available.