

# Dashboards Help Lift the ‘Fog of Crime’

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Carl Von Clausewitz, a Prussian military officer in the 1800s, coined the term "fog of war", which described the state of confusion, unknowing or otherwise general lack of information about the enemy, his whereabouts and other factors influencing a successful outcome during battle. In law enforcement a similar environment exists relating to crime, the criminals that commit them and the information-led policing strategies designed to achieve measurable outcomes in key mission areas such as crime response, reduction and prevention. The ability to draw a direct ‘line-of-sight’ between strategic objectives and tactical action is often ‘lost in the fog!’

The introduction of advanced law enforcement communications and information systems over the past fifty years, while intending to improve police operations, has had the unintended consequence of creating “information overload.” The information generated across the myriad of disparate policing systems that support strategic planning, tactical operations, decision support, performance management and administrative functions within the modern police department is disjointed. Interpreting this information and making it actionable across all levels of the agency is a daunting task.

## The Law Enforcement Dashboard Emerges

Information dashboards are not new phenomena. They have been available in the form of business intelligence solutions for Fortune 500 corporations for many decades. What is new is the recent emergence of a distinct class of Law Enforcement Information Dashboards (LEIDs) that enable police departments to see through or lift the ‘fog of crime.’ These LEIDs specifically address the unique requirements that the business of crime fighting demands.

The goal of these dashboard solutions is to provide law enforcement personnel with a consolidated, single screen, visual display of critical information required to make timely and effective decisions. Each of these LEID’s are customizable for the specific needs of first-line patrol operations, supervisory and command level interests, as well as task force operations where a particular type of information may be needed.

In a world of complex and diverse real-time streaming data, how does an agency efficiently extract the specific data that is helpful in making decisions that truly effect operational outcomes? Through various reporting requirements, both mandatory and voluntary, law enforcement agencies have become experts at data collection. However, they are desperate for tools that can translate this data into instant,

at-a-glance, operational intelligence that can lead to responsive and focused strategic deployment of assets and tactical strategies. Information dashboards have the potential to meet this challenge!

This whitepaper explores eight key LEID requirements and outlines a recommended set of dashboard functionality that best addresses the needs of the modern police enterprise.

## **LEID Solution Requirements**

### **Requirement 1: Quality Crime Data**

Data quality is critical to effective decision making, and must address the key questions asked by every law enforcement agency: Who? What? When? Where? How? Quality data will:

- Clearly identify crime trends geographically, by crime type, or by crime specific details such as Modus Operandi (MO) and offender profiles.
- Allow analysis of a specific problem by geographical region, such as residential and commercial areas. This granular focus allows for responses to each that may be very different to achieve effective outcomes for the same type of problem.
- Allow deployment strategies to focus on temporal indicators that put crime fighters where crime problems are most likely to occur at any given time.

Modern law enforcement deals directly with the public and must address the most difficult of situations which may occur in our society. Often these situations are life-threatening and must be handled with the highest degree of accuracy, urgency and sensitivity. There is little margin for error when lives are at stake and the potential impact of misinformation can be catastrophic. LEID's allow law enforcement agencies to make more effective decisions, and data accuracy and timeliness are mission-critical imperatives. Programs like COMSTAT that are institutionalized throughout an organization face severe handicaps if their data is not fine-tuned for accuracy. When choosing a dashboard application, you should carefully evaluate its data importing capabilities related to producing accurate and timely spatial crime data.

### **Requirement 2: Geospatial Focus**

Geography plays an important role in the modern law enforcement enterprise, and policing is inherently geospatially-centric. Most crimes cannot be separated from the geographic place on the map in which they occur, and the importance of geographic information in the identification, analysis and tactical utilization of crime pattern data demands that geographic information technology be 'baked' into the DNA of the LEIDS. It cannot be 'bolted on' to a traditional business intelligence system with the necessary robustness to address the dynamic and time-sensitive problems that law enforcement has to deal with.

This geospatial focus can be effectively applied to an entire "crime triangle" or other crime prevention processes. In addition to the crime specific locations related characteristics (victims), an analysis of geographical offender data such as repeat offender addresses (criminal), as well as temporal factors such as business hours or vacation rental seasons (opportunities), you can effectively utilize a LEAD system to look at big picture related to crime causation. This type of comprehensive view can be even

more effective when crime analysis extends beyond the local jurisdiction to a regional perspective, were disparate data systems prevent linkages in crime causation that may, in fact, be clearly visible when viewed in a geospatially focused application.

LEID systems must also be able to put this geospatial analysis where it is most effectively utilized. Specifically, in the hands of line-personnel that do not generally have special training or expertise in crime analysis, but know how turn that information into enforcement actions that make a difference. While law enforcement has been collecting data for decades, an effective LEID system will provide operational intelligence to line personnel specific to their areas of assignment or responsibility, and will do so dynamically to allow for rapid responses to problems.

At a minimum, a LEID must provide the following geospatial functionalities:

- Investigate incidents within any boundary or near an address or landmark.
- Switch between high-resolution satellite imagery and terrain base maps.
- View all geographic layers with advanced symbols and labeling.
- Create summary maps for any defined boundaries based on the count of incidents or true density (per square mile).
- Produce repeat locations that depict where multiple incidents occurred at the same location.
- Provide full COMPSTAT support with multiple levels of ‘compare and contrast’ by geographic area over time.

### **Requirement 3: Performance Snapshots**

LEID systems should be more focused on ‘at-a-glance’ presentation of thematic snapshots of data relevant to user roles and needs and less on interacting with the data itself. Line, command and executive personnel must each be able to quickly ascertain those elements critical to proper planning and execution of the daily tactical action plans from their own perspectives. LEID systems must be able to convey the rich veins of data that form the foundation of law enforcement operations such as calls for service, case management, arrests, field interviews as well as gang activity and trends in narcotics related offenses.

To identify trends as quickly as possible to allow for a tactical response to problems, timely data is critical. While long-term historical analysis may be effective in developing organization policy or structure changes, it has little value as a tool for developing immediate intervention strategies for a crime spree that is occurring over a few days or even hours. A dashboard should provide targeted, granular views of data that allow for line personnel or task force supervisors to deploy resources not just to reduce statistical numbers, but to catch criminals.

LEID system snapshots should also consider the vast spectrum of potential users, from front-line patrol personnel to administrative budget planners. The dashboard must present critical crime data in a format that is easily comprehensible to end users in such a way that decisions can be made quickly without complex interpretation of data. There should be no need for a crime analyst to interpret data being presented. The LEID system display should provide actionable intelligence by simply looking at it.

At a minimum, a LEID should provide performance snapshots with the following data filtering functionalities:

- Categorical search criteria such as crime type, MO, officer, location type or case number.
- Layered datasets to show visual relationships between data as well as between external data sources that may have relevance in identifying crime causation or intervention opportunities.
- Granular presentation of temporal data using flexible filtering of between dates, time of day, and blocks of time such as shift patterns, commercial business hours, or sunlight.

#### **Requirement 4: Gateway to Drill-Down**

Once the user has identified a set of desired information from a thematic view of the data, they should have the ability to drill-down to extract more specific information related to MO's, suspects, or other from predefined data sets. For example, in any particular group of incidents users should be able drill down the specifics of *each* incident, and should also be able to view to related arrests, field contacts, or any other related data set defined in the setup of the LEID system.

In essence, the LEID can become a major 'force-multiplier' providing individual officers, task forces, directed patrols/tactical interventions with their own virtual crime analyst available to officers and command staff twenty-four hours a day and seven days a week. Instead of making special requests to the crime analysis unit for follow up details for information shown on the dashboard, the LEID user should be able to transition into point-and-click analysis of data and make more timely decisions to affect operational outcomes. This capability will free up time for crime analysts to spend on the more demanding and long-term analytical needs of the department.

A LEID must contain the following components to offer real drill down analysis:

- Full integration with the RMS/CAD and other available sources in order to offer the multiple variables of data required by departments.
- Complete geographic information system that automatically and continuously maps crime incident data in near real time.

#### **Requirement 5: Strategic and Tactical**

For some dashboard users a strategic view of data, such as offered in weekly COMPSTAT meetings, may be focused on trends and assessment of directed patrols. For others a more tactical view of calls for service in the last 6 hours can provide a picture of current patrol area activity and associated resource allocation needs.

The strategies and tactics of policing are multifaceted, of course, and may range from community-oriented programs emphasizing collaboration with citizens at the neighborhood level to problem-oriented approaches that focus on specific pervasive kinds of crime affecting an entire jurisdiction. Hybrids of these two types emphasizing the joint engagement of community leaders and focusing on high impact offenders will offer further strategic crime reducing options. The tactics to bring these

strategies together will also vary to include such operations as directed patrols, increased community programs and more focused investigative efforts.

The LEID must be able to analyze the effectiveness of both strategies and tactics, and should be granular enough to focus on specific work units. For instance, if pursuing a community oriented program, the LEID must be able to show variations in levels of effort by personnel as well as the resulting impact on crime.

A LEID that only provides an overly simplistic survey of crime occurring within the jurisdiction will yield little benefit in the way of indicating what adjustments to strategies and tactics are needed. A law enforcement agency has to have valuable feedback on whether strategies work, not simply crime numbers associated with areas where strategies are employed. Any data relevant to the problem should be viewable and easily accessible.

At a minimum, a LEID should provide the following strategic and tactical functionalities:

- Provide a link between suspects, their crime patterns, and geographic boundaries.
- Target of high impact repeat offenders using buffer analysis.
- Provide feedback that considers rapidly changing crime patterns and focuses on deployment of resources as well as operational guidelines.
- Provide predictive incident based analysis that result in intervention, not just reporting.
- Define probabilities specific to crime types, geographic zones, or temporal data.
- Proactively provide data on repetitive events such as incidents, arrests, or calls for service.

## **Requirement 6: Personalization**

To create true usability, a dashboard has to be personalized to the user group for their specific requirements. There should be granular control over layout, content, and default settings that is specific to the user group, and focused on their particular needs. For example, one work unit should be able to monitor residential burglaries in a particular reporting area for a specific time frame, while another work unit may need another view related to traffic patterns and accident analysis. These views should default to the user or work group so they don't have to sort through irrelevant data to find what is useful to the unit.

A LEID system must also be goal oriented based on the needs of the user. For example, a Police Chief or Sheriff may need the dashboard to default to information for long-term strategic planning or resource allocation, while a field supervisor is concerned about the previous 24 hours in a given area or for a given crime category. Regardless of the type of user or work group, they should be able to determine how the layout of the dashboard will look, what information it provides, and they should be able to save and recall specifically that information as needed without having to recreate it each time.

A LEID must have the following personalization and customization capabilities:

- User groups can design the dashboard to display information that is important to them, including the ability to set parameters such as attribute, temporal and spatial filters.

- User groups can personalize their dashboard with the streaming (near real-time) data.
- Organizational dimensions should include at a minimum:
  1. Field Operations views (Patrol and Investigative)
  2. Supervisory views
  3. Executive views
  4. Task Force views
  5. Ad-hoc and temporary views such as special events

## **Requirement 7: Extensibility**

In addition to specific user level customization, a dashboard should be flexible enough to support various user roles based on levels of authority and responsibility. An executive level dashboard should look different than that of the watch commander or the patrol officer. The chief's dashboard role may look at the overall health of the department, including recent trends by crime type, specific hot button issues of the day and perhaps a stream of currently open calls for service. The watch commander role may also want the calls for service stream, but may be more focused on current resources, such as an AVL feed or jail intake statuses. The patrol view may focus on the current problem-oriented policing (POP) project as well as recent field interviews or outstanding warrant repositories.

Extensibility, in short, is a quality of the modern law enforcement dashboard that goes hand-in-hand with the need for personalized data views. Extensibility for the LEID must encompass multiple levels of dashboard organization, and at a minimum should include:

- Multiple layers of mapping, operational and searchable data focused on user roles.
- Ability to create different themes focused on specific parameters or measurements of data.
- A library of themes that can be easily accessed to become part of the dashboard display.

## **Requirement 8: Informed Decision Making**

Access to timely, personalized and actionable data is the cornerstone of a good dashboard system. If any of those elements are missing, it's just another reporting system. Calls for service streams, recent and focused crime trends and patterns from RMS, drill-down and hyperlink capabilities, threshold alerts, resource allocation, and temporal and geographic analytics are all needed for an agency to have true actionable intelligence.

It is not uncommon for dashboards in other industries to be used for making simple lists of tasks to be completed, issues to be discussed, people to be contacted, and meetings to prepare for and attend. However, while these kinds of reminders are important, the real benefit of a LEID is one that can alert the viewer to critical information that can immediately enhance the decision-making and action-taking process. It is the basic difference between informative, interesting reading and actionable, real-time intelligence information. The differences are substantial.

A LEID must provide the following ways of influencing the decision making:

- Identify and disseminate information about criminal activity to facilitate rapid intervention.
- Identify and disseminate information about crime to assist in long and short term strategic solutions.
- Research the key incident data patterns such as MO, repeat offender locations, or other related information such as traffic stops near the scene so suspects can quickly be identified.
- Analyzing the effectiveness of specific tactics, in near real-time through focused views.
- Analyzing workload distribution by shift and geographic area.

## **Summary**

Deploying a law enforcement information dashboard system has the potential to provide some significant benefits. By providing near real-time information to executives, commanders, and field personnel that is customizable for their particular needs, the possibilities are endless as to how that information can be effectively utilized. LEID deployment should focus on the system's ability to import clean, multi-dimensional data and present that data with a specific geospatial orientation in a format that is easy to use and understand. It should also be monitored by all agency personnel with a need for actionable intelligence. Such systems must be comprehensive enough to make intelligent decisions on behalf of the user based on their specific needs, but simple enough make it usable and scalable as those needs and personnel assignments change over time.

Focused, timely and accurate data packaged in an easy to understand and consume dashboard environment is the key to lifting the fog of situational awareness on crime patterns. While human intelligence is equally valuable, the ability to quickly recognize details collected from electronic data is essential in achieving tactical success and focusing on law enforcement performance management objectives. A law enforcement dashboard that can meet the demands of each of these core requirements will allow agencies to effectively engage problems by utilizing the tremendous amount of data that is already collected, available, and waiting to be utilized.

### ***About the Author***

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