

Integrated Law Enforcement: A Holistic Approach to Solving Crime



Redguides
for Business Leaders

Steve Dalzell
Barbara Kennedy



- Comprehensive tools to help reduce crime and increase public safety
- Enhanced situational awareness through advanced analytics and visualizations
- Speedier outcomes, better decision-making, and more effective resource allocation



Executive overview

IBM® i2® Integrated Law Enforcement (ILE) is a preconfigured law enforcement solution that provides the optimum knowledge tools for intelligence analysis, lead generation, operational effectiveness, and agency collaboration. It can connect to a variety of Geographic Information Systems (GIS), and has communication integration in the form of a suite of collaborative tools.

i2 Integrated Law Enforcement takes a holistic view of policing and partner agencies' information – removing barriers to information access and sharing, enabling the entire organization to focus solely on its mission of predicting, preventing, and defeating sophisticated criminal and terrorist threats. A modular design allows i2 Integrated Law Enforcement to integrate with many parts of an organization's preexisting information structure.

This flexible approach provides the freedom to deploy functionality based on the most prevailing business needs first and to complement existing capabilities. Using the core components of i2 Integrated Law Enforcement, organizations can readily integrate functionality that provides extended value for them. Case management, sophisticated analytical modeling, big data hardware and software solutions, and video analytics are several of the more common capabilities that can be added later as extensions to i2 Integrated Law Enforcement.

i2 Integrated Law Enforcement is one solution supporting multiple user communities:

- ▶ *Command and operational staff*: Expressing clear, easily understood information for rapid situational awareness to ensure resource synchronization, officer safety, and attainment of performance targets
- ▶ *Analysts and investigators*: Supporting long running and complex analytical tasks requiring specialist skills, with sharing and collaboration on the gathering, analysis, and dissemination of intelligence
- ▶ *Front line officers*: Providing tactical lead generation through access to historical and near real-time records from a single source to assist in generating investigative leads, developing links, associations, and crime analysis

Modern day pressures for public safety are intensified by the surge in urbanization. Today, half of the world's population - 3 billion people - lives in cities and *every day* the worldwide population of cities grows by almost 180,000 citizens. The police departments that begin to use the force multiplier of advance analytics and collaboration today to help close the operational gap are going to be the best equipped to fight crime and ensure public safety tomorrow.

i2 Integrated Law Enforcement can help meet these challenges.

This IBM Redguide publication describes the i2 Integrated Law Enforcement business value and the solution capabilities, which include a modular design that enables organizations to deploy the solution in phases according to their most pressing needs. This guide is intended as an introduction for law enforcement executives and those evaluating advanced law enforcement software solutions for their organizations.

Business value

i2 Integrated Law Enforcement provides one solution to address the myriad of challenges law enforcement faces in the modern and sophisticated world of crime. i2 Law Enforcement offers several benefits:

- ▶ A single view of data from multiple sources with identification resolution and no duplication to increase the speed of discovery and reduce the risk of missing connected information.
- ▶ Increased officer safety by reducing or eliminating surprises when responding to a call. Understanding the situation that law enforcement is entering helps officers make better tactical decisions.
- ▶ Decisions based on current, fact-based information. Information in i2 Integrated Law Enforcement helps officers make better decisions by giving them more current, accurate facts to use.
- ▶ A view of the bigger picture by including data from the surrounding regions.
- ▶ Exposure of crime patterns to answer specific questions and suggest insights, and to make strategic and resource deployment decisions.
- ▶ A decrease in time to solve crimes through the discovery of a series of crimes that are already underway leads to better resource allocation, quicker resolution, and safer communities.
- ▶ Significantly decreased time to uncover robust case leads, enabling law enforcement to solve crimes faster. Faster case closure leads to the ability to work on more cases.
- ▶ Intelligence analyses and reports that clearly outline timeline progressions, cause and effect, link charts, social network analysis, and more that can be developed and analyzed.

Modular design: Integrated modules - one solution

i2 Integrated Law Enforcement is designed to be implemented to address the most pressing needs of the organization first. Prioritization of the deployment sequence of the i2 Integrated Law Enforcement modules is the focus of initial architectural discussions. The concepts and functions described in the following sections explain the capabilities provided by integrating large amounts of data from disparate sources to surface insights that increase officer safety, effectively deploy resources to maximize results, and reduce crime.

Regardless of immediate needs and near-term requirements to augment current law enforcement processes, the goal of i2 Integrated Law Enforcement is to provide role-based access to current, valid data made available through collaboration with a common information hub.

As shown in Figure 1, there are three major logical user interfaces, Policing, Analysis, and Portal, to provide data that is appropriate for each primary law enforcement role. Each underlying data source contributes to the *Public Safety Information Hub*, which represents the logical grouping of all repositories and databases used within i2 Integrated Law Enforcement. The Public Safety Information Hub implements one of the most important value propositions of a holistic law enforcement solution, *data integration and sharing*. It is from this one source that each function of law enforcement draws the same data according to authorized need.

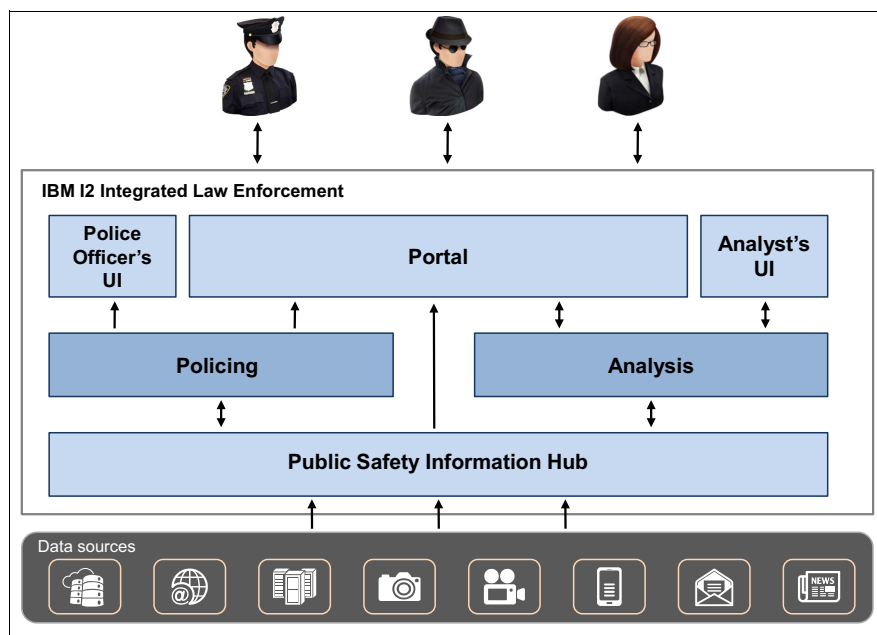


Figure 1 Logical architecture of IBM i2 Integrated Law Enforcement enabling data sharing

Integrated Operations: Serving the command and operational community

Decision makers have little time and no need to understand the analytical process or tactical lead generation. They need clear, easily understood briefings for rapid situational awareness to ensure that resource synchronization, officer safety, and performance targets are being met.

A key component of i2 Integrated Law Enforcement is IBM Intelligent Operations Center, which can provide situational awareness and information for decision support. It also provides status about key performance indicators (KPIs) and events in near real time within a common operational picture that provides these functions:

- ▶ Assists command staff with making better decisions based on a *single source* of trusted, consolidated information
- ▶ Helps ensure that crime-reduction *operations meet their targets* with repeatable, accurate, and timely information
- ▶ Provides crime trend analysis and allows the quick *development of crime patterns* by answering specific questions, such as “Where are most vehicle thefts occurring on Monday mornings?”

- Increases confidence for key tactical and strategic decisions
- Removes the manual effort of reporting, allowing *reallocation of resources* to perform other functions
- Supports command staff briefings of status against goals (KPIs)
- Uses criminal behavior patterns to quickly and confidently *support strategic and resource deployment* decisions

IBM Intelligent Operations Center provides a system for storing the correct procedures and workflows that are based on activities associated with events. For example, after IBM Intelligent Operations Center recognizes an event, it can choose several actions to mediate or manage the event. Typically, the first action involves escalating the event to an incident. The operator might first consult and communicate with local teams through collaboration tools that are provided by IBM Intelligent Operations Center.

Standard operating procedures (SOPs) are the predefined instructions for dealing with events or situations that a city can anticipate and plan for. SOPs can be reduced programmatically to a series of steps and actions. Certain SOPs can be automated, and others require a person to make a decision.

For example, an incident can be flagged to require special attention and handling. After an event is escalated to an incident, a workflow or other predefined series of actions begin in accordance with an SOP. You can track the progress of workflows and monitor or update the status of activities that are assigned to you. Information about a range of available resources can be highlighted on a map. The information is easy to access when and where you need it.

IBM Intelligent Operations Center can help to tailor and define KPIs, which are automatically updated as the underlying data changes. Through this function, users of IBM Intelligent Operations Center can perform the following actions:

- Summarize the executive-level status for a single domain or across domains
- Highlight issues and identify problems
- Investigate further by drilling down into the KPI details

KPIs are used to measure nearly anything of importance to city leaders, from the number of traffic accidents in this calendar quarter and where they occurred, to the on-time performance of the public transportation system. IBM Integrated Operations Center receives raw or computed metrics and uses them to compute the actual KPI.

A good example of KPIs for public safety is the establishment of an overall crime rate as the highest level KPI, which can then be broken down by departments and geographies, type of crimes, date and time of occurrences, and even other factors, such as weather or key social events. Visualizing trends for KPIs while they emerge is a significant advantage in efforts to be proactive.

Executive dashboards, built on IBM Intelligent Operations Center, can show color-coded KPIs to reflect their status, quickly bringing focus to the area that requires attention. Alert conditions are immediately reflected in the dashboard, notifications are received, and the SOPs associated with the event are outlined in the Activities list.

Figure 2 on page 5 shows an example of monitoring intervention tactics with instant facts delivered across a range of dashboards.

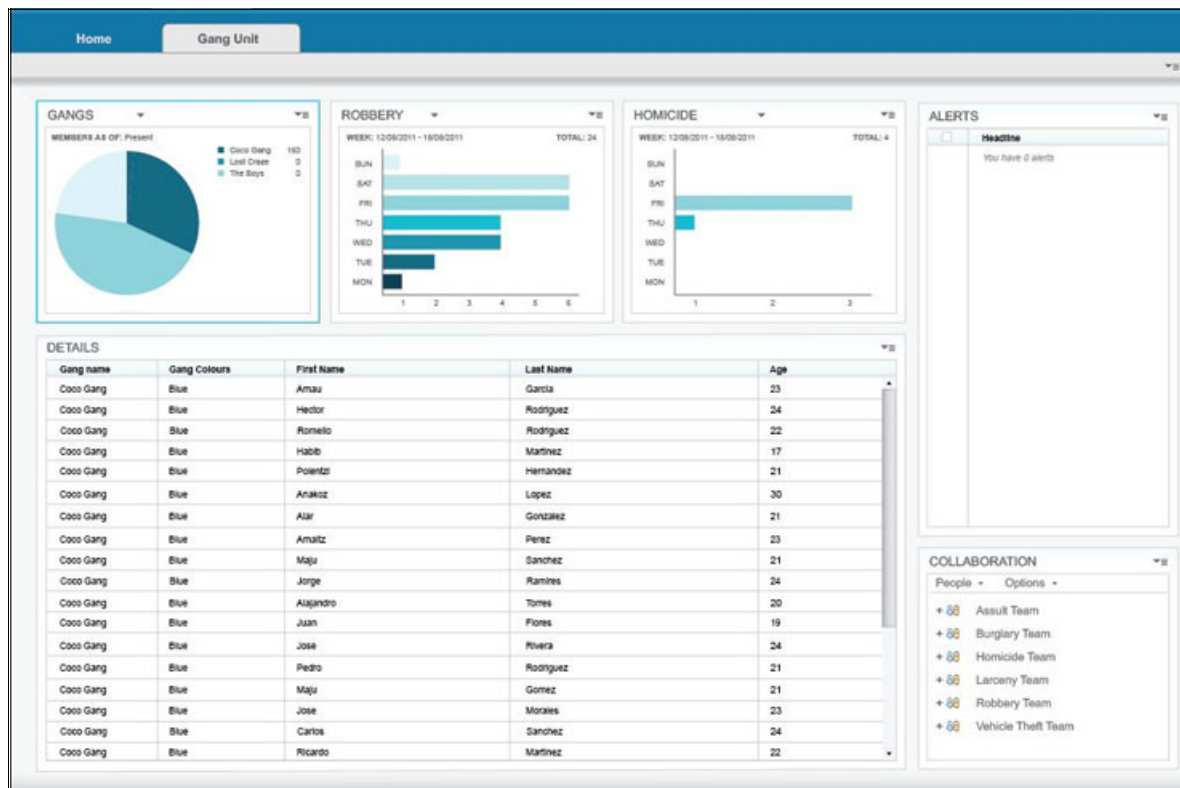


Figure 2 i2 Integrated Law Enforcement dashboard facts

An integrated collaboration and communication tool is also provided in IBM Intelligent Operations Center for messaging and communication among users where and when it is needed. If an instant messaging tool is already deployed within a jurisdiction, it can be readily integrated with IBM Intelligent Operations Center. IBM Intelligent Operations Center also has an integrated reporting facility to set up and run reports with the events and KPIs that are supplied by the solution.

Although numerous agencies might target the functionality of IBM Intelligent Operation Center as the key objective for i2 Integrated Law Enforcement, many agencies can also begin deployment by addressing another area of primary need.

Intelligence Analysis: Serving the analyst and investigative community

Intelligence analysts often engage in lengthy and complex analytical tasks requiring specialized skills. With the i2 Analyst Notebook capabilities within i2 Integrated Law Enforcement, analysts are able to share and collaborate on the gathering, analysis, and dissemination of intelligence not only with each other, but with command staff, officers in the field, and other jurisdictions.

These capabilities identify key targets, associations, commodity flows, and complex networks and can help you achieve these functions:

- ▶ Build a single common intelligence picture
- ▶ Develop a clear operational view of threats that are being tracked
- ▶ Identify emerging threats to enable decision makers to choose an appropriate response
- ▶ Concisely present fact-based information to decision makers, courts, or other bodies

- ▶ Develop intelligence packages that outline timeline progressions, cause and effect, and criminal network weaknesses and strengths
- ▶ Collaborate with colleagues and maintain continuity over long-running investigations

i2 Integrated Law Enforcement also includes an extensible, scalable, service-oriented analytical environment that is designed to provide organizations with access to intelligence when and where they need it for faster, more informed decisions.

This capability helps organizations to translate data efficiently and effectively to actionable intelligence by performing these functions:

- ▶ Providing advanced data management tools to collect, collate, and consolidate data from various disparate sources, creating a richer, centralized, aggregated view of analysis-ready information. Whether the analysis requires data on demand or a bulk data load, the correct model or a combination of models can be implemented to complement operational needs.
- ▶ Delivering intuitive visual analysis tools that allow all key stakeholders to use greater insight from information and existing intelligence products. Situational awareness is improved across the operational community through the on-demand visualization tools.
- ▶ Bridging operational knowledge gaps through a single, security rich collaborative environment that addresses both need-to-know and need-to-share directives through both built-in tools and existing security services. Flexible features enable analysts and the greater operational team to work cooperatively across a centralized aggregated view of information with operational governance that includes the ability to track and retain the provenance of information gathered from various sources.

Visualizing associations among people, objects, and events builds a common intelligence picture which can include commodity flows and highlight criminal networks, yielding a clear operational view of current and emerging threats.

Figure 3 on page 7 illustrates this visualization technique to present the relationships and potential linkages among individuals, objects, and events. It provides the ability to zoom in, drill down, and save relationship maps. Visualization provokes insights in ways that are not possible with tabular or textual data.

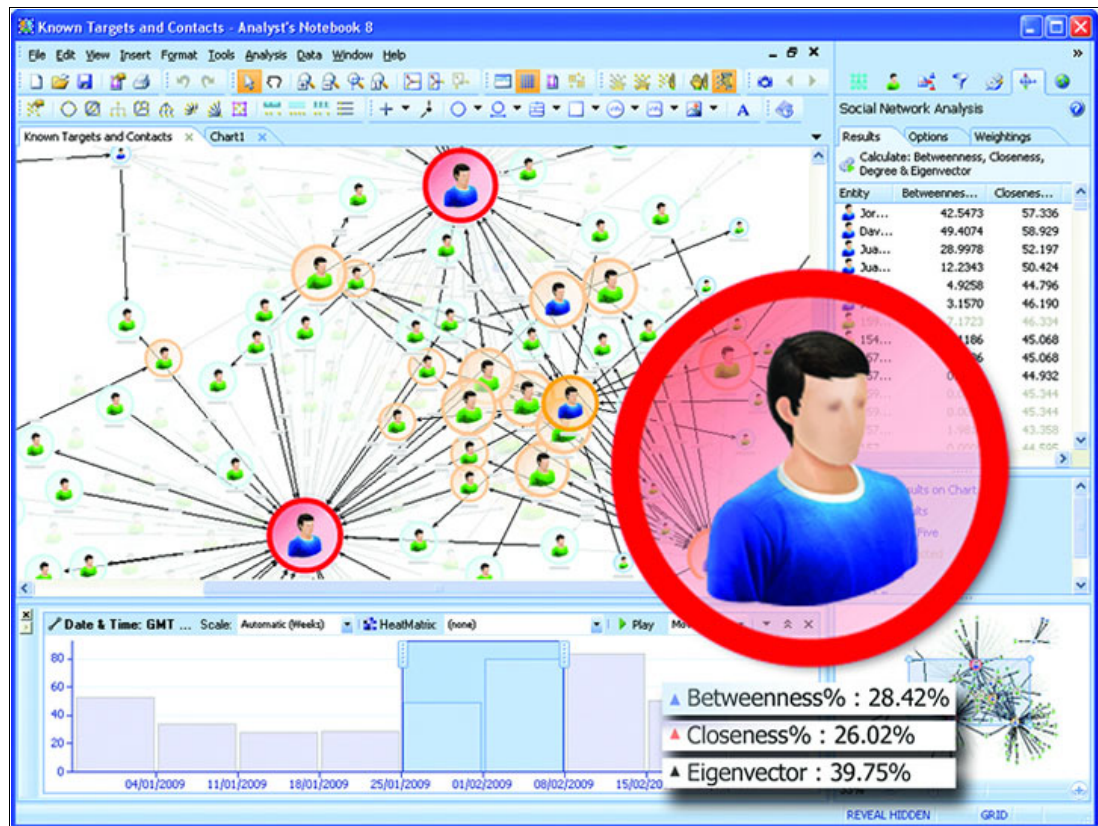


Figure 3 Visualizing relationships

Integrated Policing: Serving the front line officer community

i2 Integrated Law Enforcement provides access to historical and real-time records from a single source to assist in generating investigative leads and developing links, associations, and crime analysis. These modules push information to the tactical edge to provide situational awareness and information for investigative lead generation.

The key engine that drives this capability is IBM i2 COPLINK®. i2 COPLINK is a tactical, line-level solution to the problem of inaccessible or irretrievable information as a result of disparate law enforcement information systems that lack a common language or platform. These capabilities were designed with continuous feedback from the users – line-level officers and detectives – and are continually evaluated for new functionality. i2 COPLINK provides an easy-to-use, intuitive, web-based interface that can be mastered by even inexperienced computer users in less than a day. The information is presented in a clearly labeled format that includes hypertext links to the underlying data and originating documents. Additional custom links can be accommodated for direct document retrieval from underlying databases. The browser-based format allows the user to navigate through the program as though they were navigating the Internet.

From its beginnings as an information sharing and tactical lead generation tool, i2 COPLINK has evolved into a solution that covers the continuum of law enforcement activities from pre-dispatch to post conviction. Modules with specific functions, such as facial recognition, can help criminal justice agencies accelerate the entire criminal justice process, providing information that was difficult, if not impossible, to secure in a timely fashion. In today's criminal justice environment, the need to improve efficiency and effectiveness has never been greater. Public safety resources are stretched; police and criminal justice agencies need help dealing with the ever-increasing volume of demands for service. i2 COPLINK can help provide that assistance.

The solution suite offers the following broad features:

- ▶ Data integration from disparate information systems without redundant manual entry of data. Integrated data is refreshed (updated) on a schedule that is determined by the contributing agencies. Individual agencies control the data that is integrated. Integrated data allows advanced analysis by using artificial intelligence-based searches.
- ▶ Monitoring, collaboration, and notification to assist on-going investigations.
- ▶ Wireless connectivity.
- ▶ Security through role-based system access of authorized users.
- ▶ Regional node concept that permits queries between agencies across jurisdictions.
- ▶ Web browser-based user interface.
- ▶ Connection to external data sources for extended queries.
- ▶ Visualization tools for developing networks, statistical patterns, and GIS-mapping displays.
- ▶ Real-time notification of events based on user-defined tasks and thresholds.

The policing capabilities that are available for front line officers and detectives address many of the problem areas commonly found in existing law enforcement systems:

- ▶ Difficulty in sharing information across jurisdictional boundaries (or in some cases within a single jurisdiction)
- ▶ Lack of sophisticated analytical tools to solve crimes quickly
- ▶ Lack of collaboration notices to bring together different investigations
- ▶ Lack of notification tools that alert users to new information

To address these capabilities, a comprehensive consolidation database for policing that receives, sorts, consolidates, indexes, and stores data from disparate data sources is provided.

After the initial data migration is complete, an automated refresh schedule can be implemented as necessary for the data source and jurisdictional needs. Modern records management systems that support XML can refresh the tool virtually in real time. After the initial required data is loaded, officers can begin to realize these benefits:

- ▶ More quickly discover investigative leads
- ▶ Generate leads with little or even partial information
- ▶ Save critical time to enable cases to be solved faster
- ▶ Reduce the backlog of unsolved cases, without further hiring
- ▶ Improve the quality of life for citizens

Various specialty modules further refine an agency's ability to meet specific needs and address priorities. i2 COPLINK Face Match for facial recognition, i2 COPLINK Adaptive Analytical Architecture (A3) for temporary data consolidation, and an adapter to integrate Esri ArcGIS Server 9.3 are a few of the specialty modules.

Figure 4 highlights the many types of information and various display formats that are readily available through the i2 Integrated Law Enforcement policing modules.



Figure 4 The many specialty data displays that are available for police officers and detectives

Integrated law enforcement: Extending the value of integration

The IBM portfolio is rich with capabilities that enhance the ability of law enforcement to more readily respond to criminal threats and quickly solve crimes. These additional functions include, but are not limited to, the following highly sought after specialty functions:

- ▶ Analytical modeling to identify crime patterns and discover hidden relationships that enable proactive policing
- ▶ Identification of persons of interest through video analysis and facial recognition techniques
- ▶ Management of enormous quantities of data - big data - through both hardware and software solutions
- ▶ Case management
- ▶ Enhanced identity information for driving investigative efficiencies

Each of these in-depth and focused solutions can be integrated and implemented through IBM i2 Integrated Law Enforcement. The wide range of functionality in the portfolio enhances the value of i2 Integrated Law Enforcement and strengthens the power of collaboration that is inherent in i2 Integrated Law Enforcement and vital to public safety. Individual agency decisions regarding maximum value, minimal risk, and speedy implementation time determine the solution's unique extended configuration.

The i2 Integrated Law Enforcement solution also recognizes the uniqueness of each agency's operational environment and provides for the integration and extension of additional data, applications, and access. For example, the IBM i2 product management and development teams have worked closely with the IBM Business Partner ecosystem to ensure that the unique functionality of a business partner application can be integrated, analyzed, and implemented within the i2 Integrated Law Enforcement solution.

Summary

IBM i2 Integrated Law Enforcement is a single solution that supports three primary types of user communities with three major logical components:

- ▶ Integrated Operations, serving the command and operational community
- ▶ Intelligence Analysis, serving the analyst and investigative community
- ▶ Integrated Policing, serving the front line officer community

i2 Integrated Law Enforcement offers a modular design and flexible deployment options. Agencies can choose to deploy the entire preconfigured law enforcement solution or they can gradually deploy modules, prioritizing their most pressing business needs – allowing their return on investment (ROI) to be established at the early stages of a project. Its modular design allows i2 Integrated Law Enforcement to integrate with any part of an organization's information structure.

As a core component of the solution architecture, the Public Safety Information Hub provides a logical grouping of all repositories and data in relevant law enforcement organizations. It provides data consolidation, data integration, data storage, information discovery, and information sharing.

i2 Integrated Law Enforcement is a proven solution that provides real value to law enforcement agencies around the world. IBM has a leadership position in public safety law enforcement solutions with a combined history of close to 40 years of forming trends in law enforcement information usage. IBM i2 public safety offerings not only include leading-edge technologies but also deep domain expertise and experience working with law enforcement agencies around the world. IBM i2 has been supporting law enforcement transformations for over 20 years.



Other resources for more information

- ▶ i2 Integrated Law Enforcement product page
<http://www-03.ibm.com/software/products/en/integrated-law-enforcement>
- ▶ Public Safety and Law Enforcement Operations
<http://www-01.ibm.com/software/city-operations/public-safety-law-enforcement/#overview>
- ▶ IBM i2 Intelligent Law Enforcement video demo
http://www.youtube.com/watch?v=9B_GGJzap44&feature=youtu.be

- Predictive Analytics: Using Real-Time Data to help transform Public Safety
<http://www.youtube.com/watch?v=6FEKGRf3mLo>
- IBM Big Data & Analytics Technology Helps Durham Police Reduce Crime
http://youtu.be/sj_ItgsvEUo
- Mesa, Arizona PD - Smarter Policing with IBM i2 COPLINK leads to a safer Mesa
http://www.youtube.com/watch?v=RFmISr_PX-Y

Authors

This guide was written by a team of IBM i2 specialists in collaboration with the International Technical Support Organization (ITSO).

	<p>Stephen Dalzell is a Senior Product Line Manager for IBM i2 law enforcement solutions. Steve had a successful and varied 25-year career in the military before he retired from active service in 1995. After retirement from the military, Steve pursued a rewarding business career resulting from which was appointed Principal Intelligence Analyst for Hertfordshire Constabulary, where he developed and implemented a successful program to increase intelligence capabilities while reducing intelligence costs and simultaneously increasing detection rates and reducing crime. Steve has been involved in delivering effective intelligence solutions around the world.</p>
	<p>Barbara Kennedy is a senior Marketing Manager on the IBM Smarter Public Safety® team within the IBM Smarter Cities® group. She is responsible for worldwide marketing of the IBM law enforcement portfolio in all media formats: print, web, video, live events, and demonstrations. Barbara has more than 30 years of experience in software services, sales, and marketing. She has led enterprise implementations in the public sector and Fortune 100 companies.</p>

The project that produced this publication was managed by **Marcela Adan**, IBM Redbooks® Project Leader - International Technical Support Organization, Raleigh Center.

Now you can become a published author, too!

Here's an opportunity to spotlight your skills, grow your career, and become a published author—all at the same time! Join an ITSO residency project and help write a book in your area of expertise, while honing your experience using leading-edge technologies. Your efforts will help to increase product acceptance and customer satisfaction, as you expand your network of technical contacts and relationships. Residencies run from two to six weeks in length, and you can participate either in person or as a remote resident working from your home base.

Find out more about the residency program, browse the residency index, and apply online at:

ibm.com/redbooks/residencies.html

Stay connected to IBM Redbooks

- ▶ Find us on Facebook:
<http://www.facebook.com/IBMRedbooks>
- ▶ Follow us on Twitter:
<http://twitter.com/ibmredbooks>
- ▶ Look for us on LinkedIn:
<http://www.linkedin.com/groups?home=&gid=2130806>
- ▶ Explore new Redbooks publications, residencies, and workshops with the IBM Redbooks weekly newsletter:
<https://www.redbooks.ibm.com/Redbooks.nsf/subscribe?OpenForm>
- ▶ Stay current on recent Redbooks publications with RSS Feeds:
<http://www.redbooks.ibm.com/rss.html>

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing, IBM Corporation, North Castle Drive, Armonk, NY 10504-1785 U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

This document, REDP-5116-00, was created or updated on June 23, 2014.




Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. These and other IBM trademarked terms are marked on their first occurrence in this information with the appropriate symbol (® or ™), indicating US registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at <http://www.ibm.com/legal/copytrade.shtml>



The following terms are trademarks of the International Business Machines Corporation in the United States, other countries, or both:

COPLINK®
i2®
IBM®

Redbooks®
Redguide™
Redbooks (logo) ®

Smarter Cities®
Smarter Public Safety®

The following terms are trademarks of other companies:

Other company, product, or service names may be trademarks or service marks of others.