

# The value of smarter public safety and security

*Reducing threats, increasing efficiency,  
delivering prosperity*



## The challenges of protecting the public

Politicians and citizens consistently rank safety and security as a high priority. Good policing, emergency services, disaster preparedness and response help communities thrive. Yet with public budgets under severe strain, funding is a challenge. New initiatives must demonstrate tangible economic benefits.

A changing security environment adds to the challenge. There is more data than ever.<sup>1</sup> Up to 80 percent of it is unstructured<sup>2</sup> and hard to analyze. New challenges range from cybercrime<sup>3</sup> to “flash mobs” driven by social media. This new landscape requires that first responders need to work together, share resources and respond quickly.

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*“It is a massive amount of information that you need to synthesize and some of it is quite obviously wrong.”*

– Tim Godwin, Assistant Deputy Commissioner,  
London Metropolitan Police, August 2011<sup>4</sup>

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Public expectations are high because of the money being spent on public safety.<sup>5</sup> Citizens also see the impact that information sharing is having in improving other aspects of their daily lives. A study of social media users reported that more than half expect first responders to monitor their social media sites and arrive in less than 30 minutes after a citizen posts a request for assistance.<sup>6</sup>

Yet, agencies are often seen as less effective than they could be. Consider recent high profile public safety events such as the July terrorist attack in Norway and the August 2011 riots in the UK. What if intelligence and real-time coordination could have mitigated those events?

Adapting to the new environment is not easy. New York’s well-known police and fire interoperability issues on 9/11 were a wake-up call. A decade later the situation is better, with the city recently installing new infrastructure so that information can be shared across emergency services.<sup>7</sup> First responders in many places still may have trouble cooperating, however. Many agencies cannot readily share information and work together because of technical, legal, privacy or policy constraints. Devoting more resources to the problem, whether people or new funds, may not be enough.

## Accomplishing the mission, better and smarter

Many agencies already invest in new technologies to become more adept at using information. While updated systems may help, they do not fully address the big picture.

A smarter approach is called for. With the right capabilities, agencies can go beyond simply managing data to exploiting it. This can be done without significantly increasing operating costs. The goal: safer, more secure and thriving communities.

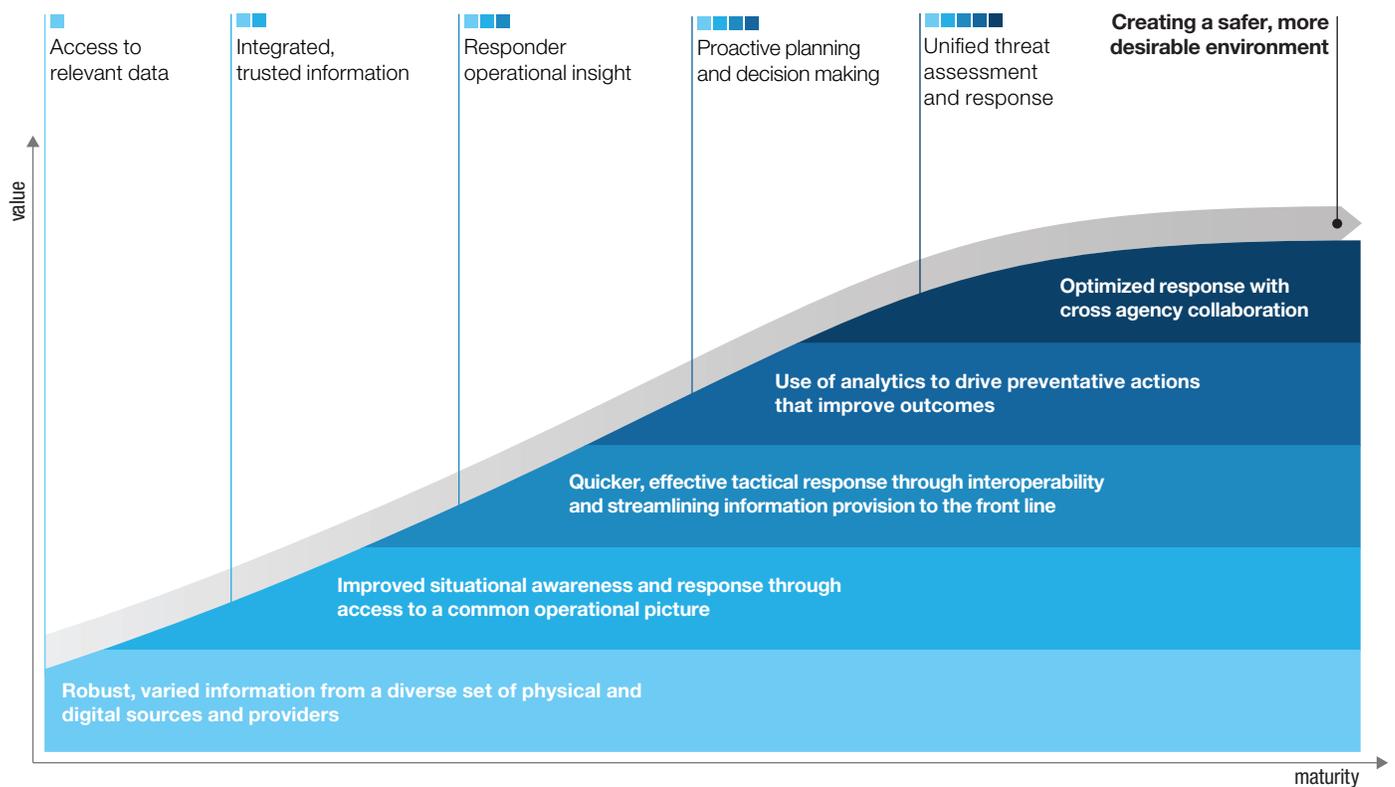
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*“[If you give] the same information to everybody at the same time... and you’ve done the planning up front, everybody knows what decisions they are responsible for and [has] the same information... I’ve got live feeds from the field. I’m seeing, I’m hearing. Now I can react.”*

– Former Sergeant, U.S. City Sheriff’s Department<sup>8</sup>

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## By developing key competencies agencies can create a safe, more desirable environment for citizens and the community.



*Figure 1:* Taken together, this range of competencies supports a more effective and agile response to public safety and security threats.

*Source:* IBM Center for Applied Insights and the IBM Global Government Industry team analysis.

We did extensive research to define and understand this new approach. Our work had two objectives. First, we determined key competencies that agencies need to develop. Second, we gauged the potential economic benefits.

The results demonstrate what's possible. For a hypothetical police department with US\$350M in operating costs, the estimated annual benefits are \$60M in direct savings. If the impact on other agencies, victims and society is accounted for, the gain rises to over US\$200M.

Figure 1 is a holistic roadmap for operational and technological change. It lays out our vision for smarter public safety and security.

Our research identified five competencies that help enable smarter public safety and security:

- **Access to relevant data**—Identify and collate data from a wide range of different sources, increasingly in digital formats so that it can be efficiently processed and used in real time.
- **Integrated, trusted information**—Integrate content from disparate sources and systems to create a trusted information base. Build data warehouses and portals accessible by all who need information. Implement data governance to promote quality.
- **Responder operational insight**—Get information to the front line in usable formats such as real-time video feeds to handheld devices and visualized combined data sets. Provide technology tools to support responder decisions. Automate reporting so that field personnel spend more time in the community and less at the office. Improve interagency collaboration among responders.
- **Proactive planning and decision making**—Make better use of available information. Improve strategic and tactical decision making including anticipation, prevention, and resource deployment. Openly share information that can benefit the public, such as crime maps and effectiveness assessments.
- **Unified threat assessment and response**—Share information and resources across departments and jurisdictions. Include those not directly responsible for response or enforcement such as transportation, weather services and utilities. Create full situational awareness at the command center level to optimize response.

Each competency yields a positive result. An agency that combines them can do much more, however. For example, a police force may already provide near-real-time access to operational data via patrol car terminals. But by going further, it can analyze and share front-line information with fire and EMS. That would help create a common operating picture. The overall response could be faster, more effective and much more efficient.

Agencies' progress in building these competencies varies widely. Many command centers built to coordinate police, fire, EMS and other services have met with some success. Agencies are still siloed in many places and are unable to tap the wealth of information they already have. They may find it difficult to team with other organizations to mount a unified response.

This range of maturity highlights an important point. The lowest two foundational competencies are agency-centric. As the agency matures, the focus broadens. Other organizations and jurisdictions benefit. Those investing in smarter public safety should take into account what their neighbors are doing. This matters because alignment and cooperation can provide the most value in terms of mission effectiveness.

The competencies can create significant economic value. Direct savings for the agency can be realized in several ways. Better resource deployment, improvements to staff efficiency and productivity, and operational savings all have an impact.

There are significant additional economic benefits to those outside the agency itself. Preventing crime avoids criminal justice and correction costs, for example. Victim impacts like medical expenses, reduced earnings or pain and suffering can be lessened. There are also community benefits such as increased economic activity and higher property values that result in more tax revenue.

Our research also identified a number of other benefits that, though equally important, are difficult to assess in terms of economic value. For example, actively sharing performance data and using social networking to communicate policy initiatives can improve transparency and community relations. These initiatives can improve law enforcement, elevate the reputation of the agency and improve relationships with other stakeholders including elected officials and funding decision-makers. Though non-monetary, these benefits merit inclusion in any business case.

#### Smarter public safety and security also delivers many other important benefits that are not monetized



*Source: IBM Center for Applied Insights. November 2011. The potential benefits above are modeled using publically and privately available data. These potential benefits reflect a relative result based on a specific set of data and assumptions. Therefore, potential benefits will vary by organization and are not guaranteed.*

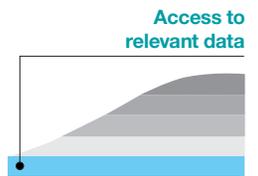
The roadmap describes the competencies at a high level, but how do they fit together? A closer look at each one shows how they can combine to enable more comprehensive, coordinated prevention and response.

#### How we put a value on “smart.”

You will see charts throughout this report that indicate how smarter public safety competencies can deliver real financial benefits. This information is based on our primary research, conducted with public safety and security leaders around the world and supported by secondary industry information. The research findings were then reviewed with industry experts, academics and first responders. To develop the potential value ranges presented in this paper, we modeled a hypothetical U.S. city police department to determine how smarter public safety and security competencies can drive value in different ways. Some of these are operating cost savings realized by the Agency. Other benefits are calculated as resulting from fewer incidents, such as the avoidance of victim costs, criminal justice cost savings and societal benefits.

**Ask yourself...**

- Are surveillance devices deployed in areas with high incident rates?
- Are video recordings available to provide evidence?
- Are digital records exchanged among agencies?
- Does my organization's technology help detect false alarms, assess situations and respond accordingly?



**Building a foundation of data**

Even today, many agencies have significant difficulty trying to access *relevant data*. While the data exists, it can be hard to collate and share.

Some records such as mug shots, fingerprints and arrest records are still not digitized. Others are in proprietary data formats. In an age of digital video, surveillance systems may still use tape. There is little, if any, consistency in terms of format or even what is kept. Duplicate records may exist.

**Access to relevant data**

**US\$2M to US\$4M**  
**(0.6% to 1%**  
**of operating costs)**

*Potential annual economic benefits from improving access to data*

**Contribution by benefit category**



*“We have human beings in here right now searching by hand, with their eyes. The automation with integrated data and the advances of sharing is going to reduce it, I’d say, a good 50 percent.”* – Former U.S. City Chief of Police.<sup>9</sup>

Newer sources can add a layer of complexity. For example, there may be legal, privacy and ownership issues associated with accessing phone records, private surveillance video and social network traffic.

This competency addresses four elements: identifying the sources, getting data into repositories more efficiently, providing easy access across multiple systems and putting it into usable formats. Considerable effort may be involved, but it can be well worth it for the net effect particularly as a foundation for future improvements.

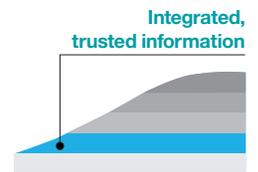
Figure 2: The direct benefit of this competency is relatively small, but it has great value as a foundation for further development.



Consider the city of Baltimore. For every dollar it spends on its advanced video surveillance system – including the start-up cost – the city estimates it saves more than US\$1.50 by avoiding criminal justice and victimization costs. Even considering only direct savings, the estimated benefits from reduced crime still exceed the cost of the cameras.<sup>10</sup>

### Ask yourself...

- Is all of our information in a single, integrated, coordinated and trusted repository?
- Does staff have easy-to-use, web-based access to information and intelligence?
- Can we easily resolve and reconcile identity information?
- How automated is our reporting?



### Having confidence in what you know

To be useful, raw data must be turned into reliable, usable information. An *integrated, trusted information base* is vital. Without it, agencies become slow and inefficient at fulfilling their mission. It becomes hard for responders to share information and work together. This is especially true when information comes from numerous sources.

Content is often incomplete or inconsistent, leading to multiple “versions of the truth” and distrust in its validity. Similar data may be recorded using different standards, formats and taxonomies. An individual’s name and address can vary across different systems. There may also be deliberate attempts to mislead by using aliases. Governance can be a real issue, with no one “in charge.”

*“As information is updated by any of the agencies... [it] is put on all the master records for all of the computer-aided dispatchers. So we have seen a significant increase in more reliable information in real time being shared across all the agencies.”*

– Communications manager, U.S. medical response agency.<sup>11</sup>

With a single view of trusted information, investigators and responders need not go to many different repositories to build a complete picture. Integrating data from diverse sources and optimizing it for use as intelligence can also create a new level of insight.

### Integrated, trusted information

**US\$25M to US\$30M**  
(7% to 9%  
of operating costs)

*Potential annual economic benefits from improving information quality*

#### Contribution by benefit category

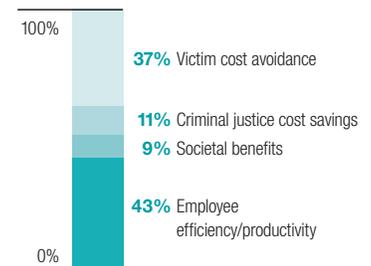


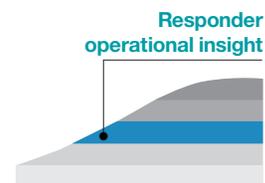
Figure 3: With better information, productivity can improve dramatically.



New York City’s Real Time Crime Center illustrates the value of trusted information. The Center’s Crime Information Warehouse queries millions of pieces of information to uncover previously unknown data relationships and points of connection. These include criminal records, parole files and photographs. The integrated analysis has contributed toward a 27 percent drop in crime since 2001.<sup>12</sup>

Ask yourself...

- Can responders on the ground access varied media and tactical information?
- How much time are responders spending in the office and in transit?
- How can this time be repurposed by providing better information?
- Do we use interactive training for new systems, equipment and procedures?



**Understanding the situation to react faster and more effectively**

Usable information must be put into the hands of responders in the field. They need *operational insight* to quickly focus on what matters. They also require good tools to collaborate with one another. This means getting information to mobile devices and presenting it in useful forms.

In many cases, responders on the scene must deal with multiple systems. Some information might not be accessible from the field at all. This may require them to return to the office, resulting in less community presence and lower mission effectiveness.

A typical emergency response scenario shows why operational insight is important. A tanker truck crashes. Responders may be walking into a hazardous situation without knowing what's there. They could avert a larger disaster if they have access to relevant information. This might include knowledge about the accident location, the cargo and the likely impact of a spill or toxic cloud.

The awareness and insight provided by interoperability can pay great dividends. Multiple agencies and even the public can become involved for the benefit of all.

*“If we could get all the agencies that have a responsibility of public safety onto the same page, with a common operating picture and doing a few simple things systematically together, the impact would be huge, potentially reducing incidents by 15-20 percent”*

– Advisor to UK city police department.<sup>13</sup>

**Responder operational insight**  
**US\$33M to US\$38M**  
**(9% to 11% of operating costs)**

*Potential annual economic benefits from getting good information into the field.*

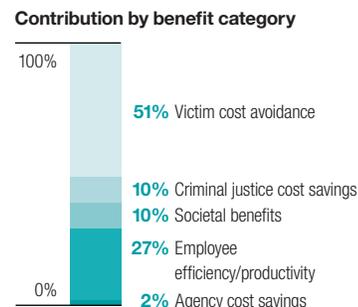


Figure 4: Situational awareness helps responders be more mission-effective, helping to mitigate the impact of incidents.

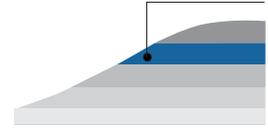


The highly successful America’s Missing: Broadcasting Emergency Response (AMBER) Alert system operated by the U.S. Department of Justice showcases the potential. It is a voluntary collaboration between law-enforcement agencies, broadcasters, transportation agencies and the wireless industry to activate an urgent bulletin in the most serious child-abduction cases.<sup>14</sup> The alerts blanket local media, subscribers’ wireless devices and even electronic road signs.

### Ask yourself...

- Does my organization have a complete, real-time view of incidents?
- Do we use predictive techniques to deploy resources when and where they are needed?
- Are we able to forecast and anticipate response needs?
- Can we engage local residents in working with public safety organizations?

### Proactive planning and decision making



### Getting ahead of the incident

Good mission effectiveness demands *proactive planning and decision making*. That takes more than accessing, organizing and integrating information. To enable action, that information must be understood and shared appropriately.

*“I’ve seen it in action when you highlight the nature of the kind of responses that you’re going to commit your officers to, when you increase their presence based on crime statistics... you can drastically impact the response times and reduction of crime.”*

– Former Chief of Police, U.S. County Sheriff’s department.<sup>15</sup>

Most agencies capture and store enormous amounts of historical data. Yet, they do little to use that information proactively. Understanding historical trends and patterns is an important input to management reports and decision making. Combined with tools and techniques that can project trends and predict outcomes, an agency can be more effective in strategic planning, allocating resources and responding to incidents. For example, analytics can enable an agency to understand the potential impact of a public demonstration, a sewer leak, a natural disaster or a terrorist attack before it happens—and then act appropriately to prevent or mitigate it.

By sharing insight and intelligence with other agencies, the benefits of this competency increase. Duplication of effort can be reduced. This can improve the speed of response, while reducing costs.

### Proactive planning and decision making US\$75M to US\$85M (21% to 24% of operating costs)

*Potential annual economic benefits from improved strategic and tactical decision making*

#### Contribution by benefit category

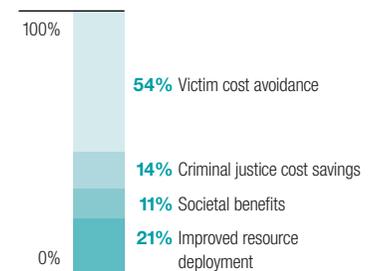


Figure 5: The majority of benefits result from avoiding costs through fewer incidents.

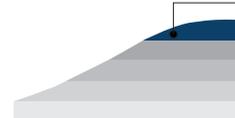


In Memphis, Tennessee, a predictive analytics system helped identify, target and better respond to crime. The city achieved a 30 percent reduction in serious crime, with one targeted area improving by more than 35 percent. At the same time, productivity and public communication both improved.<sup>16</sup>

Ask yourself...

- Can we dispatch the right equipment and resources based on information coming from the scene?
- Can we coordinate the response between agencies to minimize duplication of activities?
- Do we have real-time visibility of operations at the command center?
- Is information and evidence automatically shared between organizations?

Unified threat assessment and response



Bringing it all together

If there’s one enduring lesson to be drawn from recent events, it’s the importance of collaboration. A *unified threat assessment and response* is the goal. Agencies, municipalities, and even regional and national governments work closely together at all levels, using the same information and sharing objectives.

Unified command centers can act as central coordination and control points for incident response and management. The concept is to provide access to information sources for multiple agencies and jurisdictions. Central command also means more authority to deploy resources across organizational and service boundaries.

**Unified threat assessment and response**  
**US\$50M to US\$56M**  
**(14% to 16% of operating costs)**

*Potential annual economic benefits from managing threats across agencies*

Contribution by benefit category

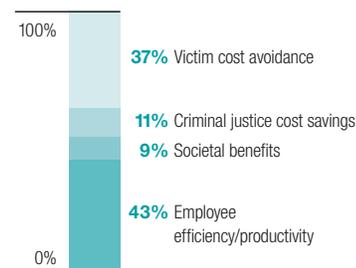


Figure 6: A unified response can be both more cost-efficient and more effective.

*“...if you’re not able to break down the problems of individual organization culture and the communication between them, everything else is really hard to do.”*

– Advisor to UK regional police department.<sup>17</sup>

It goes far beyond first-responder information sharing and collaboration. Participants might include transport systems, governments or utilities.

These centers are often thought of as a kind of “mission control” room, but they need not be in one location. Information and access is the important thing. Success relies on governance, process and policy as much as technology. Clear lines of responsibility and authority are needed so that agencies can cooperate instead of compete.

Some command centers meet with limited success. This highlights the importance of fully developing the supporting competencies. The more complete and interlinked the data sources, sensors, communications networks and collaborations, the more effective the center can be.



The city of Madrid, Spain, is an excellent example of a successful command center initiative. In response to the commuter train bombings of 2004, the city coordinated its emergency response. Its command center combines information from video feeds, field reports and mobile computers to create a real-time view of events across the city. Emergency managers can assess needs, prioritize and coordinate actions and proactively deploy assets from all responder agencies. The result has been a 25 percent reduction in response time.<sup>18</sup>

### Making the case for investment in smarter public safety and security

The vision for smarter public safety and security can guide how agencies can achieve improved public safety and security with less resources. Acting on the research-based insight is, we believe, the foundation for achieving these benefits. Our research indicates that this is both possible *and* affordable.

By addressing the relevant qualitative and quantitative aspects, you can develop a clear course of action and a way to demonstrate its value. This is vitally important when seeking investment and operational funding in a climate of tight budgets and increasing scrutiny.

To provide the protection that the population expects and deserves, agencies need to adapt their current practices. It's a new operational model, focused on better information management, sharing and collaboration. This approach helps agencies enhance their response and tackle emerging threats while improving operating efficiency. It offers an affordable path to safer and thriving communities.

### Could this be you?

#### Contribution by benefit category



**Potential industry value: US\$185M to US\$231M to be realized (53% to 61% of operating costs)**

*Annual economic benefits by category.*

#### Investment highlights

Almost half of the economic benefit comes from avoiding **costs to victims**.

Keeping people out of the **criminal justice** system can save millions.

Indirect **societal benefits** are a natural result of better public safety.

**Improved resource deployment** allows agencies to do more with existing assets.

Nearly a quarter of the benefit comes directly, from **improved productivity, efficiency, and agency cost savings**.

*Figure 7:* The direct economic benefits to the agency are significant, but the indirect benefits are even greater and make the investment case more compelling. The same investments that drive productivity and savings help to prevent and mitigate incidents.

## Seize the opportunity

The need to protect the public will only grow in the future. Now is the time to act and meet that challenge head-on. Are you prepared? Do you know how to address emerging threats and improve your performance?

We can show you how to get to the next level. Our research demonstrates that each agency has its own unique set of circumstances. We encourage you to contact us to find out more about the full scope of our work and how it can be applied to your operations.

## About the authors

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**About the  
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for  
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The IBM Center for Applied Insights integrates deep industry and analytical expertise to help chart the course to new value for clients. The Center develops research and tools with pragmatic guidance and tangible outcomes to provoke organizations to action.

The models for smarter public safety that emerged from this research, along with the hypothetical value projections, is designed to help agencies gauge their potential returns from their own, similar investments. The model can be scaled for different agency/department types and maturity profiles to produce individually tailored results directly applicable to your organization.

## Notes

<sup>1</sup> “Global mobile data traffic grew 2.6-fold in 2010, nearly tripling for the third year in a row.” Source: *2010-15 Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010–2015*. February 1, 2011. [http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-520862.html](http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html).

<sup>2</sup> Grothe, Kurt. *Unstructured Data and Electronic Content Management: A Blueprint for Child Welfare Agencies in Supporting Improved Operations, Service Delivery and Outcomes*. IBM presentation. May 19, 2010. <http://cwistraining.org/rc/rcdata/EventInformation//NationalTrainingEv//9thAnnualNational//Grothe.pdf>.

<sup>3</sup> “Cybercrime industry sees double-digit growth.” UPI, March 2, 2011. [http://www.upi.com/Business\\_News/Security-Industry/2011/03/02/Cybercrime-industry-sees-double-digit-growth/UPI-66271299103546/](http://www.upi.com/Business_News/Security-Industry/2011/03/02/Cybercrime-industry-sees-double-digit-growth/UPI-66271299103546/).

<sup>4</sup> “Police ‘prevented riots’ at Olympic site.” Channel 4 news video. August 2011. <http://www.channel4.com/news/police-prevented-riots-at-olympic-site>.

<sup>5</sup> *Smarter, Faster, Cheaper: A benchmarking analysis of 100 US Cities*. IBM. February 2011. <ftp://public.dhe.ibm.com/common/ssi/ecm/en/gbw03132usen/GBW03132USEN.PDF>.

<sup>6</sup> *Social Media in Disasters and Emergencies*. American Red Cross. August 2010 <http://www.redcross.org/www-files/Documents/pdf/other/SocialMediaSlideDeck.pdf>.

<sup>7</sup> McCaney, Kevin. “One for 911: NYC puts police, fire, medical calls on integrated system.” *Government Computer News*, January 6, 2012 at <http://gcn.com/articles/2012/01/09/nyc-unifies-911-dispatch-system.aspx>.

<sup>8</sup> Source: IBM Center for Applied Insights and the IBM Global Government Industry team interview.

<sup>9</sup> *ibid.*

<sup>10</sup> *Evaluating the Use of Public Surveillance Cameras for Crime Control and Prevention*. 2011. Urban Institute. <http://www.urban.org/publications/412401.html>.

<sup>11</sup> Source: IBM Center for Applied Insights and the IBM Global Government Industry team interview.

<sup>12</sup> *NYPD changes the crime control equation by transforming the way it uses information*. IBM case study. <ftp://ftp.software.ibm.com/software/solutions/pdfs/ODB-0144-01F.pdf>.

<sup>13</sup> Source: IBM Center for Applied Insights and the IBM Global Government Industry team interview.

<sup>14</sup> <http://www.amberalert.gov>.

<sup>15</sup> Source: IBM Center for Applied Insights and the IBM Global Government Industry team interview.

<sup>16</sup> *ROI Case Study: IBM SPSS, Memphis Police Department*. 2010. Nucleus Research. <http://www.nucleusresearch.com>.

<sup>17</sup> Source: IBM Center for Applied Insights and the IBM Global Government Industry team interview.

<sup>18</sup> *City of Madrid: Coordinated emergency response raises public safety to a new level*. IBM case study. <http://www-01.ibm.com/software/success/cssdb.nsf/CS/JSTS-7ZWSPF>



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