

IBM Intelligent Operations Center for Smarter Cities



Providing operational insight to help city leaders build and manage a safer, smarter city

Highlights:

- Leverage information with near-real time visibility into key data to drive better decisions
 - Anticipate problems to identify, manage and mitigate incidents that affect city operations
 - Coordinate resources and processes to respond to situations rapidly and effectively
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What if cities could improve services for their citizens without increasing costs? Each day, cities around the globe face a rising number of operational issues that affect the quality of services delivered to their citizens. To help ensure public safety and provide water, energy, transportation and other services, cities need to access an ever-increasing amount of information, facilitate real-time communication and collaboration across city agencies, and address potential problems before they occur.

Unfortunately, many cities cannot achieve this level of effectiveness and efficiency. For these cities, critical information is often stored in disparate systems across disconnected departments, hindering a clear view of the operational picture and increasing the difficulty of coordinating agency efforts. Without a single, integrated view of events, incidents or impending crises, and without the ability to rapidly share information, a city might be unable to effectively deliver services in a sustainable fashion, protect citizens or drive future economic growth.

IBM® Intelligent Operations Center for Smarter Cities is designed to address these challenges. The Intelligent Operations Center offers integrated data visualization, real-time collaboration and deep analytics that can help city agencies prepare for problems, coordinate and manage response efforts and enhance the ongoing efficiency of city operations.

The Intelligent Operations Center combines functions needed to successfully manage a complex operational environment. Integrated maps, reporting, rule engine SOPs and other features can help staff manage areas within their control.



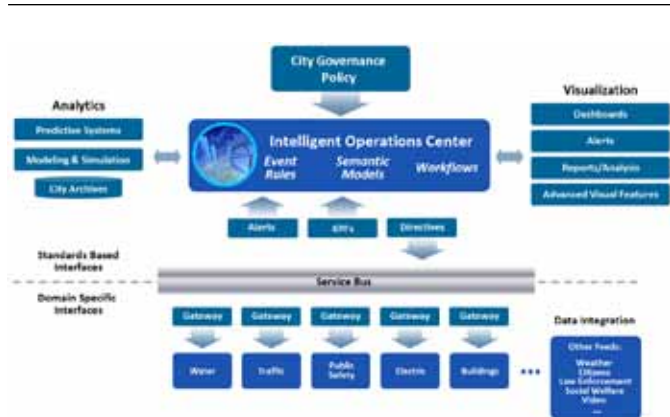


Figure 2: Intelligent Operations Center architecture

Monitor city-wide issues using Executive Dashboard

City executives want to understand the condition of the city environment before they start their day or prior to commenting in meetings or at media events. The Intelligent Operations Center Executive Dashboard allows city managers to gain critical insight into issues of the day. It captures information from a variety of sources, such as crime statistics, traffic reports and citizen happiness indices, and converts it into usable data.



Figure 3: Intelligent Operations Center Executive Dashboard

With the Executive Dashboard, city officials can log in and very quickly grasp the issues of the day. Filters and displays can be manipulated to gain additional knowledge. Executives can also use this function to help ensure all staff have received and are responding to the same information.

Whether personnel want a fast overview of an emergency situation or a deep dive into performance metrics, they can rapidly access the information they need from the Executive Dashboard. Historical reports enable city staff to view graphical representations of the number of alerts received according to urgency, severity or certainty. The interface is designed to be easy to use for a wide range of positions, from senior managers to daily operators. Users can access key information via mobile devices so they can stay on top of issues whether they are in the office or out in the field.



Figure 4: Emergency Management Situational Awareness

Improve outcomes in extreme situations with Emergency Response

Careful city planning requires preparing for both expected events, like festivals, parades and fairs, and unexpected events, such as extreme weather, public health issues and transportation problems. The Intelligent Operations Center for Emergency Response helps city agencies coordinate disaster and emergency efforts by:

- Developing effective mitigation strategies and preparing a solution to emergency situations
- Identifying resources for deployment and activating SOPs
- Restoring affected areas to their previous state, and determining future improvements
- Managing response efforts and service delivery based on a common operational picture

Develop situational practices using Standard Operating Procedures

The Intelligent Operations Center includes a system for entering and executing SOPs which are essential to delivering consistent, measured responses to unpredictable situations.

SOPs involve both manual steps assigned to individual people and automated steps that integrate with external systems. People involved in monitoring the situation can be assigned specific roles that have the authorization to perform certain functions. Steps may involve the distribution of an email message or other alert to a specified list of roles, or recipients.

The system creates a historical, electronic record of actions taken during SOP execution for effective post-situational review and analysis. It provides:

- The capability to capture information from various data sources, including computer-aided dispatch (CAD) software, handhelds, ad-hoc call-ins, environmental monitoring stations, video and advanced prediction systems
- Processing of KPIs, heat maps, user configured reports, adaptive geographic information system (GIS) maps and mobile updates inside the Intelligent Operations Center, ensuring that users have a single source of accurate information to support their decision making
- Correlation of many disparate events to help ensure that insight, which may not be obvious, is known and considered in critical decision making

- Automated workflows that facilitate the delivery of emergency management SOPs. By providing accurate and timely situational awareness of incidents, the solution can suggest responses optimized to match the particulars of the incident
- Post-incident KPIs, situation reports, SOP progress updates and activities data that emergency managers and other civic officials can easily review and assess to work toward continual improvements
- Interconnection with existing emergency systems, using an international emergency data protocol, the Common Alerting Protocol (CAP), v.1.1

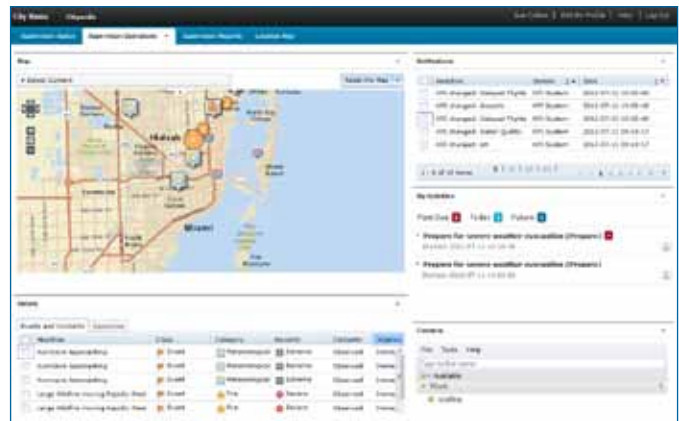


Figure 5: Emergency Standard Operating Procedures View

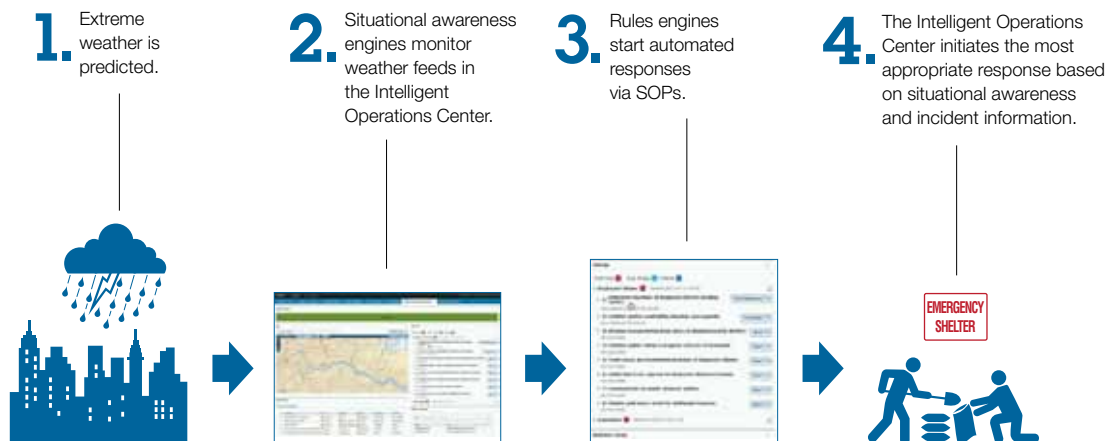


Figure 6: SOPs initiate actions based on the current situation.

Gather vital input from citizens with Citizen Collaboration

As socially responsible citizens go about their daily business, they may see non-emergency issues in the environment, such as broken pavement, graffiti or misplaced garbage. IBM Intelligent Operations Center for Citizen Collaboration allows residents to report these issues using the web and their mobile devices as they go about their daily tasks. These reported observations can be used to supply the appropriate city offices with additional data for its maintenance schedule. These notifications combine with other information to help schedule upkeep, spot trends and optimize the city's response.



Figure 7: Intelligent Operation Center Citizen Collaboration is the interactive experience that a citizen can use to report issues in the environment.

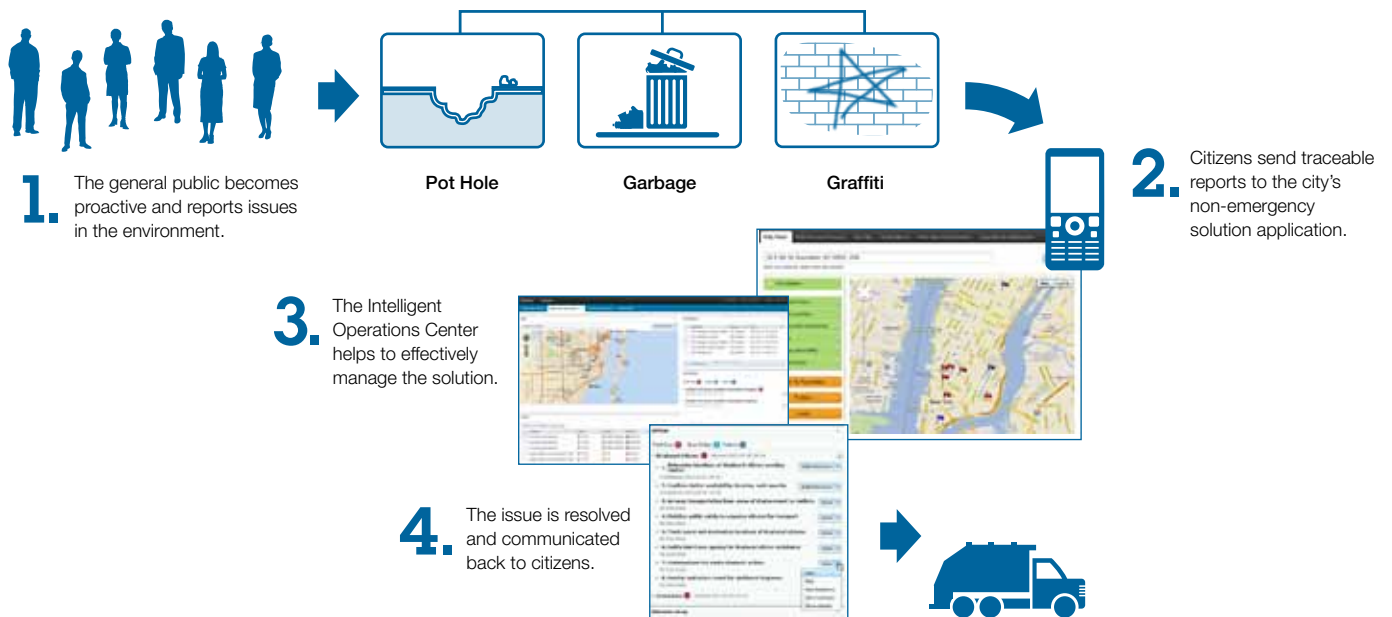


Figure 8: The Intelligent Operation Center Citizen Collaboration capability helps the city improve through citizen involvement.

Gather critical public feedback using Social Media Analytics

Cities provide many services, activities and resources for citizens. While well-intentioned, these actions may cause negative consequences, such as excess noise, limited access to businesses or traffic congestion. Understanding public concerns ahead of time can help mitigate these consequences. Intelligent Operations Center Social Media Analytics can be used as part of a full communication and strategy plan.

The event and potential downsides can be listed on city-wide sites, with comments encouraged. The Social Media Analytics feature monitors these comments as well as other social media sources, such as Twitter™, Facebook™, and outside blogs. The feature analyzes comments to determine the level of acceptance and seek out negative sentiments. Based on this input, city planners can adjust plans for urban development, citizen services and public events.



Figure 9: Social media analytics help city decision makers integrate citizen opinions into planning and communications.

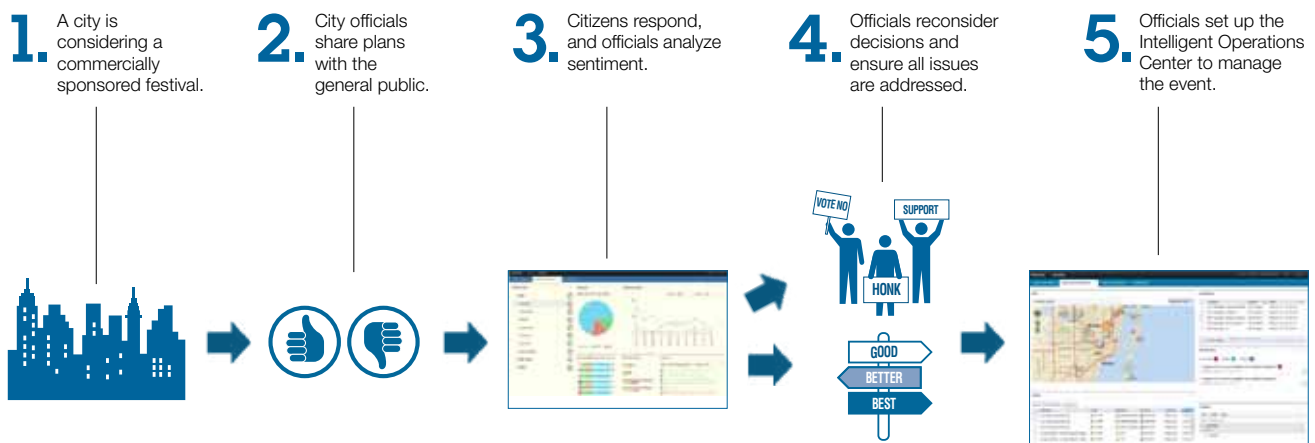


Figure 10: Cities can ensure decisions are in line with citizen opinions which can be understood through social media analytics.

Facilitate real-time collaboration in a centralized information-sharing environment

Collaboration of numerous city departments in charge of a wide range of essential functions is critical for addressing crises, successfully completing projects and enhancing the efficiency of daily operations.

IBM Intelligent Operations Center offers a centralized, real-time collaborative environment for planning, organizing, monitoring and sharing information across city departments and agencies. It processes data feeds and event information from individual departments, then presents that information in a citywide view.

In the event of a large-scale emergency, an official at a disaster site can assess the situation and send a report to the operations room via a web-based portal, while simultaneously learning that more rescue personnel are on the way. Meanwhile, agency representatives can view report details together, begin communicating instantly and start developing a recovery plan. Collaboration capabilities help accelerate resolution of problems, reduce the impact of crises and reduce the resources needed for getting work done.

On an ongoing basis, the Intelligent Operations Center can help enhance the efficiency of process management, allowing managers to link event planning to predefined business processes. Managers can choose to have processes set in motion automatically or manually when a planned or unplanned event occurs. Integration with the collaboration environment helps ensure that team members can work together efficiently on projects and events.

Measure performance through frequent data collection

IBM Intelligent Operations Center for Smarter Cities offers near-real-time KPIs to help managers monitor and optimize the performance of city services, personnel, programs and others resources. The solution helps transform raw data—collected from sensors located across the city, historical databases, existing applications and other sources—into actionable insights. Managers can adjust resource allocation or modify programs as results start to trend up or down. Managers can measure metrics against the city's own historical benchmarks or those of other cities to gain insight into comparative performance. The city government can also choose to publish metrics, demonstrating to city residents the progress toward certain goals.

After city officials have this type of visibility into operations, comparisons with historical patterns often follow. How does this event compare with previous, similar events? How often do we see this type of event occur, and what day of the week is most common? The Intelligent Operations Center provides both planned and ad-hoc reporting features relevant to such questions. These reports can help a city understand cause and effect relationships, or discover patterns not obvious in day-to-day operations.



Figure 11: KPIs help managers to monitor and optimize the performance of city services.

Manage assets and tracking service requests using integrated asset usage capabilities

To maintain the city infrastructure, facilitate resource planning and help ensure resources are ready for emergencies, city managers need ways to monitor a wide range of city assets, from sidewalks and sewers to police cars and traffic lights. IBM Intelligent Operations Center for Smarter Cities integrates resource and asset management capabilities to help managers make sure assets are available, well maintained and ready for use. The Intelligent Operations Center enables managers to quickly assess the status of assets and their impact on particular city services. A mapping function provides a means of locating key assets rapidly. With effective asset management, cities can reduce the overall cost of maintenance and repairs by avoiding unexpected issues, and help make sure services and resources are available in critical situations.

When service requests are submitted, agency managers must have ways to prioritize projects, help ensure that the right resources are allocated and then follow projects to their completion. With the Intelligent Operations Center, managers can use a high-level heat map to easily identify the most pressing issues; information is presented in a geospatial context for situational awareness. Managers can then use drill-down capabilities to access details on the service requests, team members and assets assigned to the requests and the status of projects.



Figure 12: Powerful business intelligence engines deliver simple user-configured reporting.

Gain flexible deployment options with multiple deployment models

IBM Intelligent Operations Center for Smarter Cities offers multiple deployment models to provide options for cities of virtually all sizes with varying levels of IT resources. Cities with robust IT capabilities or strong interests in “behind-the-firewall” implementations can deploy this solution in their own data centers.



Figure 13: IBM SmartCloud can help cities capitalize on the latest technology advances while controlling costs.

For cities and cross-municipality organizations without the resources or skills for deploying and maintaining this solution, IBM offers the Intelligent Operations Center as an IBM software-as-a-service (SaaS) option on the IBM SmartCloud. The IBM SmartCloud is an expansive, agile infrastructure-as-a-service (IaaS). This delivery platform is designed to provide organizations with rapid access to enterprise-class virtual server environments that are well suited for dynamic workloads, applications and solutions. Deploying the Intelligent Operations Center in the IBM SmartCloud can help cities capitalize on the latest technology advances while controlling costs.

Help to build Smarter Cities and a Smarter Planet

Today government organizations need to provide robust services, drive economic growth, anticipate problems and coordinate their responses to crises, while optimizing existing resources. IBM Intelligent Operations Center is just one of a number of IBM Smarter Cities and government solutions designed to help organizations work smarter by doing more with less.

These solutions can help organizations integrate information from disparate, instrumented systems and create an intelligent, interconnected environment that fosters collaboration, enhances efficiencies and sponsors effective decision making. IBM can help cities optimize individual departments—including buildings, energy, operations, public safety, transportation and water—while facilitating virtually seamless cross-departmental integration.



City of Davao improves public safety for a safer city

The government of the Philippines city of Davao has scaled up its existing Public Safety and Security Command Center (PSSCC) by integrating city operations into a single system. Using Intelligent Operations Center, the PSSCC will have a centralized dashboard view that will allow the city to monitor events and operations in near-real time. This high level view will enable officials to better predict and plan for potential issues. To enable Davao's smarter city transformation, the Intelligent Operations Center will integrate multiple city agencies in the PSSCC to improve interdepartmental collaboration and enhance the management of Davao's four pillars of public safety: crime prevention and suppression; emergency response; threat prevention and response; and traffic management. "We believe that building a safer city will bring us one step closer to our ultimate goal of becoming a major growth pole in the international market," said Mayor Sara Duterte.

To learn more about the City of Davao's solution, visit: <http://www-03.ibm.com/press/us/en/pressrelease/38152.wss>.

Miami Dolphins delivers meaningful fan experiences

Consider a stadium on game day and the complex interconnected systems it must manage. The Miami Dolphins recently moved to integrate analytics technology into Sun Life Stadium, to enhance the overall experience for sports, music and media fans. With millions of visitors in over 1.5 million square feet of space, coordinating 24,000 parking spaces and over 75,000 seats can present logistical and management challenges. In collaboration with IBM Business Partner, Flagship Solutions Group, Sun Life Stadium is using Intelligent Operations Center for Smarter Cities, supported on the IBM SmartCloud, to address these challenges. Stadium staff can now offer an improved fan experience by more effectively managing visitor traffic, monitoring inclement weather and analyzing visitor spending habits on concessions, merchandise and dining services. "This collaboration with IBM will provide analytics capabilities to...look through the eyes of the fan and develop unmatched services to create meaningful experiences for our visitors," said Tery Howard, Chief Technology Officer, Miami Dolphins.

To learn more about the IBM smarter stadium solution and Miami Dolphins, visit: http://www.ibm.com/smarterplanet/us/en/smarter_cities/solutions/solution/U940511D63870N80.html.

IBM Business Partners provide data streams and services to enhance Smarter Cities solutions around the globe

IBM Intelligent Operations Center provides cross-agency capabilities using a variety of data streams and services already found in city environments today. IBM is teaming with the providers of those data streams and services, developing a robust ecosystem of IBM Business Partners committed to jointly delivering IBM Smarter Cities solutions. These IBM Business Partners provide domain experience and deliver best-in-class hardware, software and service. They are helping IBM deploy Smarter Cities solutions in multiple regions around the globe.

Build a Smarter Planet one city at a time

For more than 100 years, IBM has been working to make the world a better place by helping businesses and local governments in more than 170 countries deploy innovative solutions to tackle their greatest challenges. IBM Smarter Cities solutions continue that tradition, drawing inspiration from learning and insights across thousands of cities engagements around the world.

IBM Intelligent Operations Center is one of many Smarter Cities solutions in the portfolio to fulfill the IBM Smarter Planet™ vision. By enabling cities to become more instrumented, interconnected and intelligent, Smarter Cities can help cities generate increased value for their citizens and deliver sustainable economic growth. Leaders are asking for help. We are listening. Together let's build a Smarter Planet, city by city.

For more information

To learn more about IBM Intelligent Operations Center, visit www.ibm.com/software/industry/intelligent-oper-center/.



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