



Highlights:

Cities today are facing significant challenges including increasing populations, aging infrastructures, and declining budgets.

Forward-thinking cities are addressing these challenges and taking action now — focused on staying competitive, maximizing the resources at their disposal and laying the groundwork for transformation.

Smarter, More Competitive Cities

Forward-thinking cities are investing in insight today

In our world of seven billion people, the global rural-urban balance of populations has tipped for the first time in favor of cities.¹ About one in two people lives in a city, and in only about 35 years, two out of three will.² Not surprisingly, this urbanization is putting significant strain on city infrastructure which, in many cases, was built for populations a fraction of their current size.

At the same time, urban citizens have come to expect more from their cities. They want a high quality of life and optimal conditions for business creativity and professional development. They want efficient, sustainable transportation and energy systems that feed robust economic development and healthy job markets, and they want to engage in public discourse, be inspired by their leaders, and take pride in where they live.

All of this comes at a time in history when tax revenues are shrinking in many cities, making public works projects increasingly difficult to support. In fact, the economic conditions in some cities have forced leaders to implement austerity measures in an attempt to stanch the flow of red ink. In an economic environment such as this, it would seem counterintuitive to ask city leaders to take bold and urgent action. But that is exactly what they must do, because in the 21st century, cities compete globally to attract both citizens and businesses. A city's attractiveness is directly related to its ability to offer the basic services that support growth opportunities, build economic value and create competitive differentiation. Potential inhabitants, of both the commercial and residential variety, are a discriminating lot, and they are looking for cities that operate efficiently and purposefully. They are looking for smarter cities.



IBM Smarter Cities

Point of view

Fortunately, city leaders today have capabilities that yesterday's leaders could not have imagined. Today's cities can collect and analyze data to monitor, measure and manage the complex systems that facilitate life in urban environments. They can understand how transportation, water and energy systems interact, and optimize their operations, individually or collectively. They can predict the impact of changes to the public safety system on adjacent systems, such as education, healthcare and social services. In doing so, they can make confident, informed decisions that will reduce costs and improve living conditions citywide.

In particular, we are seeing the most advanced cities focus on three areas of expertise:

- Leveraging information to make better decisions
- Anticipating and resolving problems proactively
- Coordinating resources to operate more efficiently

Forward-thinking cities are not waiting for better economic times to take action. They are focused on staying competitive, maximizing the resources at their disposal and laying the groundwork for transformation. They are redefining what it means to be a smarter city.

Leveraging information to make better decisions

Our cities are awash in data. It comes from buses and trains, water pipes and gas lines, hospitals and buildings. We have the ability to collect and analyze this information in real time. Using advanced analytics solutions, both structured and unstructured data can reveal insights that make it easier to understand and to act at every level of city administration, from the mayor's office to the subway train conductor. When cities give the right information to the right people at the right time, they make better decisions and measure the ongoing impact of their decisions.

To better understand the dynamic behavior of its city, Portland, Oregon has developed an interactive model of the relationships that exist among the city's core systems, including the economy, housing, education, public safety, transportation, healthcare, government services and utilities. To support the model, the city held sessions with more than 75 Portland-area subject matter experts in a wide variety of fields to learn about where these systems interconnect. Later, with help from researchers at Portland State University and Forio Business Simulations, the city collected approximately 10 years of historical data from across its many systems. The resulting computer simulation allowed Portland's leaders to see how city systems work together and, in turn, identify priority projects and set 25-year objectives and performance metrics for each.

Anticipating and resolving problems proactively

Advanced analytics solutions can help city leaders discover patterns and trends in structured or unstructured data efficiently and cost effectively. Analytics help government agencies and departments unite data silos and provide broad-based access to consistent information. By applying performance and predictive analytics to this trusted data foundation, departments can make better decisions and even anticipate the results, from where to allocate funding to where best to deploy patrol cars.

In 2005, the Memphis Police Department (MPD) partnered with the Department of Criminology and Criminal Justice at the University of Memphis to create a predictive analytics system called Blue CRUSH (Criminal Reduction Utilizing Statistical History). The system uses predictive analytics to chart and analyze crime patterns. By recognizing crime trends as they are happening, MPD's predictive enforcement tool gives precinct commanders the ability to change their tactics and redirect their patrol resources in a way that both thwarts crimes before they happen and catches more criminals in the act. Since Blue CRUSH was rolled out citywide, it has produced a 30-percent reduction in serious crime and a 15-percent reduction in violent crime.

Coordinating resources to operate more efficiently

The complexity and interconnectedness of city systems can often mask inefficiencies that can be easily addressed. For example, a simple lack of coordination may result in the city and private enterprises digging up the same road twice within the same week. At times, this lack of coordination can be even more expensive and inconvenient, such as when flooding waste water systems cause electrical outages that shut down traffic lights and require public safety intervention. Analytics can help city agencies prepare for these situations, coordinate and manage response efforts and enhance the ongoing efficiency of overall city operations. By sharing information across agencies, such as metrics, events and processes, and by collaborating in real time, cities can better anticipate and respond to situations while optimizing city resources.

In December 2010, Rio de Janeiro opened an information management center that integrates information and processes from across 30 different city agencies into a single operations center, providing a holistic view of how the city is functioning on daily basis. The operations facility serves as the nerve center for the city, applying analytical models to more effectively predict and coordinate reaction to emergency incidents. City operations officials now collaborate daily to manage the movement of traffic and public transportation systems, and the efficiency of power and water supplies. “In Rio de Janeiro, we are applying technology to benefit the population and effectively transitioning to a smarter city,” said Mayor Eduardo Paes. “In addition to using all information available for municipal management, we share that data with the population on mobile devices and social networks, so as to empower them with initiatives that can contribute to an improved flow of city operations.”

Conclusion

The IBM® approach to smarter cities is based on insights drawn from more than 2,000 engagements worldwide. By working with inspiring leaders to solve difficult challenges, IBM has developed repeatable best practices that can be applied to cities of all sizes. And in forging relationships with non-traditional partners, including consultants, property designers and energy companies within cities, IBM is truly transforming and improving the efficiency of city operations by providing actionable insight.

Becoming a smarter city is a journey, not an overnight transformation. But the first step requires a profound shift in thinking and a break from the past. Officials should assess their city, from a holistic point of view, and identify differentiating strengths that will attract skills, knowledge and creativity. A strategy should be created that centers around these strengths. During the assessment, “hot spots” or priorities should be identified to enable a quick start on the journey to becoming smarter.

Every step towards becoming a smarter city creates efficiency, and every bit of efficiency alleviates some of the strain on city budgets, freeing up time and resources to focus on driving economic development and prosperity. Developments in technology have fundamentally increased the value that cities can generate for their citizens, their city, and the planet. Let’s build a Smarter Planet™, city by city.

For more information

To learn more about IBM’s vision for Smarter Cities , visit ibm.com/smartercities



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Produced in the United States of America
January 2012

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- 1 United Nations Population Fund, *State of world population 2011: People and possibilities in a world of 7 billion* (New York, New York: 2011), 77.
- 2 United Nations Population Fund, *State of world population 2011: People and possibilities in a world of 7 billion* (New York, New York: 2011), ii.



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