

IBM's Next-Generation Smart City Solutions

Planning and Management, Infrastructure Planning, and Human Services offerings to lead the way

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SUMMARY

Catalyst

At the Ovum conference "From Smart to Future Cities" held in June 2013, the emphasis was on how the market is at an inflection point between talking about what "smart city" means and understanding how to implement it. The evidence of the shift is the increasing maturity of the demand side, the development of standards, and the arrival of investment in the form of stimulus funding from government, sovereign wealth funds, and venture capital.

Ovum view

The maturing of the demand side and the creation of "smart city" strategies by city authorities means that cities are now better placed to analyze the value propositions put forward by vendors. In the past, some vendors have been guilty of attempting to sell their existing portfolios of point solutions as smart city solutions simply by wrapping them up in smart city slide ware.

IBM has upped its game with the launch of its next-generation smart city solutions, announced in August 2013, which are the result of an iterative learning process that began in 2007. The company currently claims 1,000 client implementations through 4,000 global engagements, resulting in 2,000 city projects. The launch includes three new or substantially upgraded capabilities, centering on water efficiency, infrastructure planning, and a new version (v1.6) of its Intelligent Operations Center.

Key messages

- Smart city solutions need to be connected, holistic, and tailored.
- Analytics are key to the progress of the smart city market.
- The optimal partner ecosystem goes beyond IT.

SMART CITY SOLUTIONS NEED TO BE CONNECTED, HOLISTIC, AND TAILORED

A city is a system of systems

The most advanced city leaders put citizens at the center of the planning process and innovate across services to meet their increasing needs and expectations. City authorities are there to serve their citizens, who require a level of service equal to that provided by the private sector. The need for greater integration of information has been intensified by requirements for collaboration and the increasing penetration of smart mobile devices. Each city believes it faces a unique set of challenges and priorities, but there are common needs, such as the need to streamline services delivery, to optimize scarce resources, to manage costs, and to deliver improved outcomes. A city is therefore a set of interconnected systems, and although each city has many verticals, a number of key systems can be prioritized to support overall city livability and, in turn, a city's competitiveness and ability to sustain economic growth.

IBM is creating solutions for a system of systems

With the launch of its next-generation smart city solutions, IBM has directed its thinking toward three main themes, which are tailored for cities, holistic in their execution, and interconnected. These are: Planning and Management, Infrastructure Planning, and Human Services.

Planning and Management

The first of the themes relates to the planning and management that allows a city to realize its full potential as a place to live and work while operating efficiently day to day. This theme focuses on the need for public safety, governance, and urban planning, including the creation of smarter buildings.

Infrastructure Planning

The second theme relates to the infrastructure that delivers fundamental city services that make a city livable. At a base level, this includes, for example, water, energy, transportation, and environmental services, and will change depending on where the city is located.

Human Services

The third theme is centered on supporting the needs of citizens as individuals. This can include tangibles areas such workforce services, social programs, healthcare, and education, but can also include intangible areas such as social capital and the notion of "belonging."

IBM's new or upgraded capabilities

The three capabilities in IBM's second-generation offering are precisely what the market requires:

- Water Efficiency Management for Non-Revenue Water is a solution that is as relevant for the developed world as it is for emerging economies. In essence, it is about saving money, lowering repair costs, and extending asset life, while reducing energy bills. It does this by using instrumented information to reduce business risk through preventative maintenance. Water wastage is endemic in the developed world and a scarce commodity in the developing world: the City of Johannesburg, having analyzed the use and growth of its water resources, has declared that it will run out within seven years.
- The Infrastructure Planning offering is the one that will drive the smart city market forward. It provides a solution to the most challenging problem of how to predict requirements and plan a holistic approach to infrastructure development across diverse needs. It gives city authorities the ability to create a cross-agency strategy for asset investment planning, by predicting, prescribing, and coordinating capital planning and acting as a unifying entity by providing a single view.
- The next iteration (v1.6) of the Intelligent Operations Center puts a brain at the center of the city. Facilitating the dynamic configuration and customization of data sources, it allows for realtime management, operational execution, and intelligent response.

ANALYTICS ARE KEY TO THE PROGRESS OF THE SMART CITY MARKET

Cities are currently "data rich, information poor"

The ubiquitous connectivity inherent in the concept of the "Internet of Things" means city authorities are faced with the task of making sense of an ever-increasing amount of data. As Ovum wrote in its June 2013 report *Deriving Insight from Data for Smarter Urban Operations*, the reasons behind the "data rich, information poor" nature of today's cities are myriad, including issues with data collection, standalone siloed systems, human capital/analytic know-how, local politics, agency culture, and budget. Although technology is clearly not the solution to all aspects of this problem, it can serve as the major catalyst. Ovum sees tools surrounding data integration, master data management (MDM), data quality, business intelligence (BI), advanced analytics, and visualization as key to the progression toward smarter municipalities characterized by operational systems that provide rapid insights for more informed, transparent decision-making.

The biggest barrier has been the lack of maturity on the demand side

The biggest barrier to the market's progress has been the inability of the enterprise side to field a team that has the concomitant authority, responsibility, and budget control to engage with the holistic solutions put forward by vendors. There is a historic disconnection between city departments that has resulted in competing interests, schedule conflicts, and costly rework – not least the tendency for different utility companies to dig up roads in an ad hoc manner. To improve the quality and responsiveness of services for citizens, cities need to support better collaboration and coordination among its various departments and provide them with the shared data that they need to do their jobs.

A city needs a brain

A city needs a central planning tool to bridge the gaps between, for example, the police department, regulatory services, and the public works department, and help them to work together to improve city operations, public safety, and efficiency. Combining data from these three agencies, such a tool provides sophisticated analytical models and geospatial mapping capabilities to support integrated planning. This unprecedented visibility would help city officials predict the location and timing of criminal activity, traffic jams, and other disruptive events, while forecasting the impact of special events, construction, road closures, and adverse weather conditions.

With better access to information, a city increases the efficiency and responsiveness of its services, improves public safety, and boosts citizen satisfaction. The solution also helps the regulatory services department coordinate city events and activities more effectively, reducing the number of scheduling conflicts between, for example, sporting events and street sweeping operations. This allows the city to reduce traffic jams by planning ahead for scheduled construction, road closures, and maintenance operations.

An interconnected city is an intelligent city

In the IBM vision for a smarter city, the city first needs to be instrumented. The Intelligent Operations Center solution collects data in near-realtime from disparate sources, including traffic monitoring systems, public events calendars, police dispatch systems, utilities systems, and street sweeping and garbage collection schedules, making it available for combined analysis and planning.

Once a city has basic instrumentation, it can be interconnected, facilitating a central city-planning process that allows departments and agencies to share data, prioritize activities, and deliver seamlessly integrated services to citizens. The ability to see the city as interconnected begins the move toward an intelligent city. The analytical models and geospatial mapping help city officials, planners, police investigators, and other users identify hotspots, patterns, and anomalies in data, making it easier to anticipate disruptive events and predict the impact of specific events on municipal operations.

THE OPTIMAL PARTNER ECOSYSTEM GOES BEYOND IT

City partnerships should be wide-ranging

Ovum has consistently highlighted the need for the formation of the right partner model to reflect the complex nature of the requirements of the smart city market. In the past, there has been criticism of the way in which different verticals, such as IT, telecoms, utilities, and construction, approach the smart city market from their different comfort zones. Utilities say the market is about energy, while the IT sector focuses only on IT and telecoms players push for connectivity, but in reality, the market requires many verticals to work together. It is heartening to see the range of partners that IBM has brought together under its three themes. However, more work may be necessary to inculcate IT in the smart city story with developers. Equally, clients want to see local SMEs as part of any successful bid.

RECOMMENDATIONS

Recommendations for enterprises

Enterprises should spend time understanding why IBM has fine-tuned its smart city offering in the way it has. It provides an excellent example of how enterprises should be developing their smart city strategies.

Recommendations for vendors

Smart city suppliers should take heed that the market has moved away from offerings that do little more than bundle existing point solutions. The smart city market has now shifted to integrated, in-depth value propositions.

APPENDIX

Further reading

Deriving Insight from Data for Smarter Urban Operations, IT007-000705 (July 2013)

Opportunity and Innovation in Smart Cities, IT005-000182 (May 2012)

"London City Airport gets smart and shows channel development flightpath," IT007-000691 (April 2013)

Smart Planning for a Smart City Infrastructure, IT002-000214 (March 2012)

"Fast cars, clever trolleys, and the battle for lamp posts: M2M is coming of age," IT007-000624 (July 2012)

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