

NYPD changes the crime control equation by transforming the way it uses information.

Overview

■ Challenge

An innovation leader in tactics, NYPD needed to more effectively exploit its data resources to strengthen its processes.

■ Why Become an On Demand Business?

By integrating its siloed crime data systems, NYPD gets a more holistic view of information it can act on more rapidly.

■ Solution

IBM and Business Partner Cognos created a real-time Crime Information Warehouse that makes NYPD more proactive and effective in fighting crime.

■ Key Benefits

- *Ability to redeploy resources in response to crime patterns and trends*
- *Ability to resolve crimes and apprehend criminals more quickly*

» On Demand Business defined

An enterprise whose business processes—integrated end-to-end across the company and with key partners, suppliers and customers—can respond with speed to any customer demand, market opportunity or external threat.



The New York City Police Department (NYPD), the largest police department in the United States, has primary responsibility for law enforcement and investigation within the five boroughs of New York City. The NYPD has approximately 37,000 sworn officers.

As a general rule, crimes occur in a particular place at a particular time. Though the effects of a crime may linger, the crime itself does not. The same is *not* true from the angle of law enforcement. From the moment a crime is detected and reported, and throughout its investigation, the law enforcement system generates broad and diverse streams of information related to that crime.

“The NYPD’s innovative policing strategies depend on our ability to gather, share and act on information. IBM—its people, partners and technology—have helped us redefine how information can be used to fight crime.”

— James Onalfo, Chief Architect and CIO, NYPD

On Demand Business Benefits

- Support for more proactive policing tactics by virtue of an ability to see crime trends as they are happening
- More efficient use of NYPD resources resulting in more public safety per tax dollar
- Faster and higher rate of case-closing through more efficient gathering and analysis of crime-related data
- Continued improvement in quality of life
- Improved overall data integrity and speed of data access to optimize decision-making
- Improved officer safety through better risk assessment capabilities

“There’s no substitute for interacting with people to solve cases. Our goal is to make the process more efficient: instead of having to talk with ten different investigators in different parts of the city, they’ll have to talk with two. That’s a lot more time available to solve cases.”

– James Onalfo

While these streams are bound by a common thread—the crime—each concerns a different perspective of it—from the 911 call, to the dispatch of officers, to the various reports filled out by officers at different stages of the investigation. Over the years, major police departments have become extremely adept at capturing this information, doing so almost as fast as it is generated. The problem, however, is where the information goes *after* it’s ingested.

Hindered by silos

Big-city police departments are for the most part highly compartmentalized, and their functions highly specialized. When crime information systems were first built as long as 30 years ago, they were—not surprisingly—designed to meet the needs of a specialized, vertically oriented process framework. At the time, little or no thought was given to more advanced forms of reporting or analysis, or to the sharing of information across different departmental functions. The result was an environment made up of siloed systems that were very efficient at capturing data but were challenged in sharing it.

This situation had a direct impact on the detectives and officers investigating crimes, whose job it is to pull together all the strands of information and create a coherent picture to guide their efforts. With case information residing in pockets throughout large departments, officers spend much of their time on the phone or on their feet trying to track it down, leaving them less time to do what they were trained to do—process the information to solve crimes.

In addition to streamlining the nuts and bolts of casework, large police departments like the NYPD are increasingly looking to the “bigger picture” to guide their policies, practices and resource decisions. The new wave among major metro police departments is to use information to become more proactive in the fight against crime. It’s about recognizing patterns within crime statistics and using this recognition to modify policing tactics so that resources are directed to where they’re most needed. The NYPD’s CompStat program is a strong case in point.

Ask any New Yorker about “quality of life” and most will tell you it improved markedly during the administration of Rudolph Giuliani, a time of dramatically falling crime rates. Driving this reduction was an increased focus on more granular policing, under which so-called “quality-of-life” crimes (such as public

drinking, panhandling and disorderly conduct) are aggressively enforced, and enforcement accountability established at the neighborhood level. CompStat, a weekly process under which crime data is gathered, analyzed and shared, has proven an effective auditing tool that holds Commanding Officers accountable for any crime spikes in their precincts. It did not however provide the powerful data mining capability that is now being employed by the NYPD to identify patterns and to find and capture individual criminals.

Putting the pieces together

The NYPD knows that it's exceptionally good at both the bottom-up casework to solve crimes and the innovative, metrics-based policies that prevent them, but never enough to be satisfied. From both perspectives, time—namely, the time required to get a holistic view of crime information and then act on it—is the enemy. Time keeps perpetrators on the streets longer, hinders efforts to spot developing trends and increases the risks to officers. The NYPD was determined to reduce this time by fundamentally transforming the way crime information is managed and exploited. The department recognized that to more effectively solve and prevent crimes, it needed to provide information to key users—from precinct detectives to crime analysts to department leadership—more holistically, thus strengthening their ability to synthesize various bits of information into actionable intelligence. A key lesson of 9/11, that having pieces of the puzzle, unassembled, isn't enough, provided a key foundation of this understanding.

To frame and execute its transformation strategy, NYPD engaged IBM Business Consulting Services. IBM's first move was to conduct a thorough user study designed to identify the information elements needed at every level of the department and from it establish the solution's high-level business requirements. From them, the team produced a conceptual design of the solution as well as a new underlying data model to facilitate the integration of information from the department's many systems. The solution that came out of this process, known as the Crime Information Warehouse (CIW), provides a single, easy-to-use point of access to data on virtually all crimes committed in NY's five boroughs. In the backend, the solution pulls data from various standalone systems, transforms it to the new data model format and integrates it on the CIW. The solution's core technology, IBM DB2 Universal Database Data Warehouse Edition, runs on an IBM System p5 575. The CIW is backed up in real time on an IBM TotalStorage DSS800 storage server running IBM Tivoli Storage Manager.

Key Components

Software

- IBM DB2® Universal Database™ Data Warehouse Edition
- IBM WebSphere® Portal
- IBM WebSphere Application Server
- IBM Tivoli® Storage Manager
- Cognos ReportNet

Hardware

- IBM System p5™ 575
- IBM TotalStorage® DSS800 storage server

Services

- IBM Business Consulting Services
- IBM Sales and Distribution
- IBM Hardware Group
- IBM Software Group

Business Partner

- Cognos

Time frame

- Business requirements: 6 months
- Design: 3-6 months
- Development: 6-9 months
- Deployment: Ongoing

Why it matters

Everyone knows good police work relies on good information. But in today's big cities, speed is becoming just as important. NYPD proved that data-driven police tactics can produce dramatic reductions in crime rates. With its Crime Information Warehouse, it's proving that integrated crime data, delivered in real time, can change law enforcement even more. It's the ability to see trends as they form—instead of in the rearview mirror. It's the ability to see connections and break cases faster. It's the ability to make life-saving decisions by seeing the big picture.

Powerful processes with real-time speed

Having replaced its siloed systems with a common crime data repository, the NYPD is now able to do far more with the information, systems and processes that it already had in place. Indeed, the solution's architecture reflects the department's key criterion that it be flexible enough to support a wide range of processes and users—both current and future. In that goal it has excelled. At the tactical control level, for instance, the CIW solution provides the information foundation for the NYPD's state-of-the-art Real Time Crime Center. Using business intelligence software from IBM Business Partner Cognos along with GIS mapping and visualization tools, officers and analysts in the center can detect crime patterns as they are forming, enabling precinct commanders to take proactive measures to keep ahead of these trends—and head off spikes in criminal activity. The department's CompStat program, already a milestone in innovative policing tactics, was also transformed into a more effective crime-fighting tool by replacing its traditionally manual method of data tabulation with the CIW's real-time data feed. Reports that could take weeks or months are now available instantly.

Empowering officers

But it's not all about the big picture. This same ability to see deep and wide also enables dispatchers to flag dangerous situations for responding officers, thus contributing to increased officer safety. The CIW also promises to transform the tasks of investigators—perhaps the most critical link in the law enforcement chain—by unleashing their most valuable quality: their judgment. Investigators that once spent a huge slice of their time chasing down information can now access all of it through a single, portal-based interface (based on IBM WebSphere Portal) or by working with the Real Time Crime Center. Freed from low-value data gathering, officers can now turn to the higher value, more analytical activities they are trained to do, such as formulating and testing hypotheses. The ability of the CIW to support robust, multidimensional queries and drill-downs on crime databases enables them to refine and test their hunches far more quickly than was even imaginable a few years ago.

The prime driver of the initiative, Chief Architect and CIO James Onalfo, sees the new solution as an example of the “culture of innovation” within the NYPD that has made New York the nation's safest large city five years running. “The NYPD's innovative policing strategies depend on our ability to gather, share and act on information,” says Onalfo. “IBM—its people, partners and technology—have helped us redefine how information can be used to fight crime.”

For more information

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