Big Apple, Big Data, Big Lessons for the DON

By Philip Lee**

> "Being data-driven is not primarily a challenge of technology; it's a challenge of direction and organizational leadership."
>
> – Mike Flowers (Founding Director of Mayor's Office of Data Analytics (MODA))

When you mention "data analytics" to most people, their eyes glaze over and they immediately disconnect from the conversation. Most believe data analytics is too complicated to understand, requiring the latest technology with highly specialized personnel to execute. But it's not that difficult: at the core, data analytics provides knowledge to help us make more informed decisions. Anyone can capture data in a spreadsheet and draw logical conclusions from it. In order to take knowledge from seemingly unrelated datasets, an organization needs data savvy personnel, with leadership and organizational support, to discover actionable insights greater than the sum of their parts, and impossible to find without data analytics.

New York City (NYC) provides a great example of how data analytics can be effective in a large, complex organization that owns an enormous amount of data similar to the Department of the Navy (DON). The DON can use lessons from how NYC was able to overcome its own bureaucratic barriers, learning to use data analytics to advance the DON's mission.

NYC MODA Overview

The story of Mayor's Office of Data Analytics (MODA) began in 2009 when Mike Flowers joined City Hall. He was tasked to lead the city's financial crimes taskforce in the wake of the 2008 economic crisis. His team were able to identify pieces of information which, when connected, could predict those with greatest likelihood of being fraudulent. Unfortunately, this project was cut short for political reasons, but it endured long enough to develop a prediction model the team used for its next project: Fighting fires before they start.

Mike Flowers wanted to have team members who were fresh out of college with data crunching abilities so he took the unconventional approach by advertising via Craigslist. He ended up hiring five people he called "the kids", including a person majoring in Economics who had demonstrated his analytics skills by winning his rotisserie baseball league three years in a row. Among the first challenges this team tackled was preventing fires in unsafe apartment buildings. The team looked through datasets from 19 different agencies to discover the high-risk indicators (e.g. whether the

building was constructed before 1938) that correlated which buildings had fires. In addition, Mike tasked the kids to shadow front-line workers (e.g., firefighters, inspectors) in NYC's Fire Department (FDNY) to see how they performed their jobs, observing the challenges they faced, and identifying the knowledge required to do their jobs well.

The primary question the team tried to answer was: Could the factors underpinning FDNY workers' gut instincts (age of building, type of business, etc.) be quantified more precisely? During their time with a veteran inspector, the kids found that the condition of the external brickwork was a good indicator on whether a building inspection should be conducted or not. If the owner of the building cared about the outside of his building, it's likely the owner is taking care of the interior, ensuring there were no fire hazards. The team found out that brick structures hadn't been datafied, but data existed on city permits needed for any external brickwork. Taking this information along with the high-risk indicators they found earlier, the kids created a data-driven model which had far greater accuracy than the older risk model, based on focus group discussions with fire fighters. The first quarter of inspections soon identified severe violations 71% of the time. In the past, the first quarter of inspections had yielded only a 21% severe violation rate. Mike and his team were able to connect disparate data from different agencies, creating actionable insights to help building inspectors examine the most dangerous buildings first reducing the time people in NYC were at risk.

Due to success from Mike and his team, Mayor Michael Bloomberg officially established MODA in 2013 and assigned Mike Flowers as City Hall's first Chief Analytics Officer. Mr. Bloomberg understood the value of data-driven decision making, having spent 29 years in the financial services industry. Currently, the MODA team is made up of only four people, but they continue to improve the New York City's delivery of services, ultimately making the lives of residents better.

NYC MODA Lessons Learned

The Department of the Navy (DON) can learn a lot from what NYC is doing with data analytics. With two years' more experience, the following New York examples can show the way analytics can help solve problems. Fortunately, the Department is already taking steps to bring data analytics to the forefront. The following are lessons learned from MODA and are matched to what the DON is doing to apply these lessons.

<u>Strong executive support is essential.</u>

New York City:

Mayor Bloomberg was a big proponent of having a data-driven organization. Such a senior sponsor is crucial to overcoming bureaucratic barriers to making change. Despite cultural, political, organizational, and legal barriers within the NYC office, he continued to promote data sharing and data analytics to drive the delivery of services more efficiently and effectively.

The Department of the Navy:

In his FY2014-2016 DON Transformation Plan, Ray Mabus (Secretary of the Navy (SECNAV)) lists data analytics as a primary enabler to accomplish the DON's goals and initiatives. He believes in the importance of leaders having accurate and authoritative data in order to facilitate effective decisions. He recently signed several innovation memos which emphasize the use of data analytics.

Start small and use measures everyone can support.

New York City:

MODA intentionally focused their first data-driven efforts on issues which would receive universal political and public support. That's why they decided to tackle the issue of preventing building fires. No one would push back against making the city a safer place, as long as there were no major disruptions to their day-to-day responsibilities.

The Department of the Navy:

The SECNAV has instructed the DON to start small and focus on specific areas to promote the use of data analytics. These limits mean that much of the Department's day-to-day work can proceed, without disrupting the work of most people. Specifically, the SECNAV directed the Navy and Marine Corps to conduct a series of smaller, more iterative analytic games to better inform naval strategy, development, campaign analyses, and fleet experimentation while incorporating data analytics into gaming techniques. In the "Using the Civilian Talent of Navy and Marine Corps Reserve Forces" memo, the SECNAV tasked the Navy and Marine Corps to explore opportunities to align new commands to emerging workforce demands, such as advanced analytics, software engineering, and data sciences. The services were also tasked to provide options for highly qualified members of the reserve forces to participate in such analytical studies.

Spreading skills in a data-driven organization.

New York City:

The MODA team did not want to be an isolated team of experts, irrelevant to the work force they were trying to help, so they created an "Analytics 101" course on how to use data to improve day-to-day functions and make strategic decisions. This training covers basic statistical and data management techniques along with an overview of available sources and tools. This course allowed other departments to develop their own in-house team to advance their department's mission.

The Department of the Navy:

The SECNAV signed a "Creating the Data Savvy Workforce" memo, which directed the development of a tiered strategy to cultivate a data savvy civilian workforce with the requisite skills. The memo also required that training opportunities be made available for the professional development of the current DON workforce. The DON is also seeking to modernize the hiring

process so that they can attract civilians with the necessary skills outside the conventional hiring means.

Final Thoughts

There is nothing magical about data analytics; the knowledge and insights it offers are powerful, however. The above examples from New York City explain how a small office, with the strong executive support from the mayor, took on the task of making data and analytics more important to improving the safety of America's largest city. The Department of the Navy is moving in the same direction to take advantage of the power of data analytics, but much work still needs to be done. The small investment in the method, backed by resources and time, crucially matched by senior leader support, will allow our workforce to craft solutions for the Department of the Navy's challenges. In order to adapt to the today's ever-changing world, and better secure the people of the United States, the Department of the Navy must become a data-centric organization ready to unlock a future enabled by information.

If you have additional questions about what the DON is doing with data analytics, please contact the DON Open Data Officer, Mr Philip Lee at DON_Innovation@navy.mil.

For further reading:

Mayor Michael Bloomberg and Michael Flowers, "2013 NYC Analytics Report", available at: http://www.nyc.gov/html/analytics/downloads/pdf/annual_report_2013.pdf

Eddie Copeland, "Big Data in the Big Apple", available at: http://capitalcityfoundation.london/big-data-in-the-big-apple-web-version

Mike Flowers, "Beyond Open Data: The Data-Driven City", Chapter 15 of "Beyond Transparency: Open Data and the Future of Civic Innovation", edited by Brett Goldstein with Lauren Dyson, available at: http://beyondtransparency.org/chapters/part-4/beyond-open-data-the-data-driven-city

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