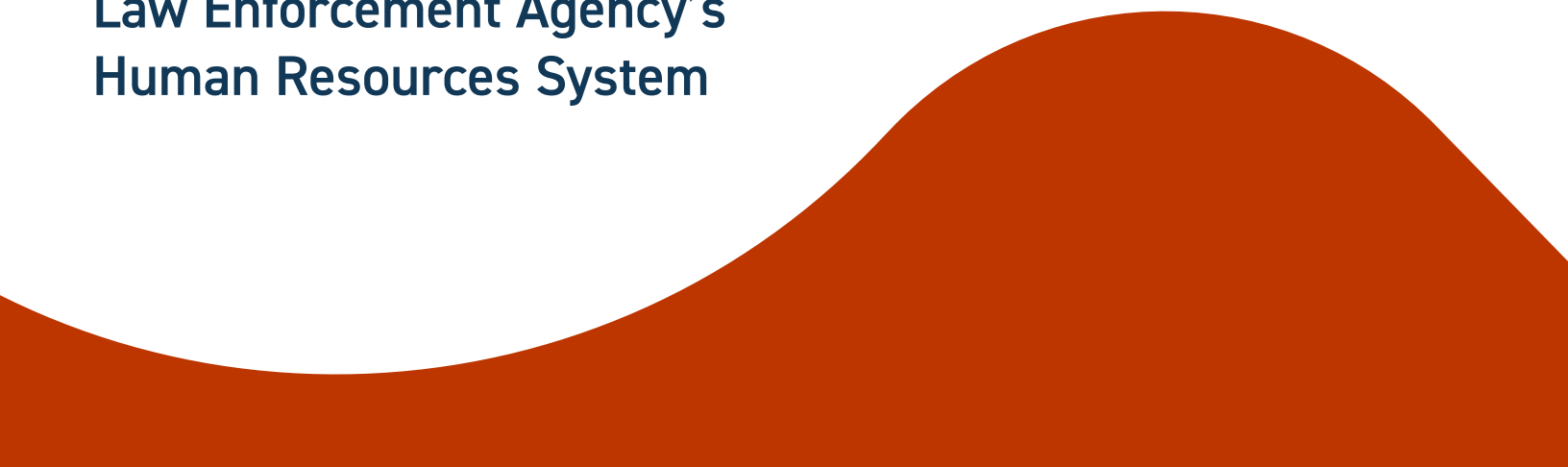




| CASE STUDY

Leveraging Data to Solve Complex HR Problems

**How SMX Modernized Data and
Analytics Capabilities for a National
Law Enforcement Agency's
Human Resources System**





INTRODUCTION

Public cloud spending is projected to jump more than 20% (\$561 to \$675 billion) from 2023 to 2024, according to a recent [report from Gartner](#), with much of this growth driven by generative AI and application modernization. This growth is reflected in a recent [Forbes survey](#) of public IT professionals, with nearly two-thirds expecting their use of cloud applications to increase by at least 25% over the next five years. While government agencies are making progress on Web 2.0 applications such as information portals and wikis, wider adoption has proven more challenging because of burdensome legacy systems. In fact, in a recent report, one-quarter of IT professionals said that these outdated systems are a severe hindrance to service delivery.

To transform legacy systems and enable agencies to deliver the kinds of services that meet public expectations, working with an experienced public sector cloud partner is a key differentiator for government agencies. In this case study, we'll explain how one large national law enforcement agency partnered with SMX to modernize its human resources (HR) data and analytics capabilities inside the cloud.

SMX was selected by a large national law enforcement/intelligence agency to guide their human resources division on a multiphased, decade-long IT modernization journey. The agency wanted to modernize its hiring, retention, and training processes by leveraging cloud, analytics, machine learning (ML), and generative AI to provide predictive insights. To meet this need, SMX designed, built, and implemented a cloud-powered human resources analytics platform that transformed legacy HR processes, allowing the customer to accurately predict its staffing needs up to a year in advance. This ongoing effort has empowered the agency to identify and retain a diverse workforce, added invaluable process efficiencies and tool upgrades, ensured data security, laid the groundwork for future innovation, and saved the customer \$500K+ in operational costs.

Replacing Fragmented Legacy Systems With Cloud-Driven Innovation

When SMX first began its relationship with the law enforcement/intelligence agency, the organization was operating on a 38-year-old custom-built legacy mainframe. This was an enterprise resource planning (ERP) system that had undergone numerous modifications and scope changes in its 38 years. The customer faced various infrastructure and system challenges as they initiated this transformation, including:

- X SYSTEM INSTABILITY**
- X AN ANTIQUATED USER INTERFACE**
- X LIMITED REPORTING CAPABILITY**
- X DIFFICULTY INTEGRATING WITH OTHER SYSTEMS TO LEVERAGE DATA ACROSS DIVISIONS**
- X THE INABILITY TO SCALE AND INNOVATE DUE TO NO SINGLE SOURCE OF RELIABLE DATA**

Before partnering with SMX, the law enforcement customer had relied on a fragmented approach to managing its HR-related data and applications. Over the years, additional applications and systems were added to the original platform—but none of them were integrated. The result? The organization lacked a single source of reliable HR data, requiring staff to perform a series of time-consuming workarounds.

In response, SMX developed a roadmap for modernizing the agency's HR infrastructure, positioning it to drive improved mission results.

The first step was to stabilize and organize the HR data before transitioning all the backend and reporting functionality to a modern and supportable on-premises stack. Unfortunately, this is where many agencies get stuck, unable to migrate for a number of reasons, including a lack of budget, an ill-defined vision of the project, or inadequate access to resources and expertise. Thankfully, this customer worked with SMX to actualize a long-term development plan.

Migrating Workloads to the Cloud

After developing the new technology stack, SMX's next task was to update the agency's HR data platform. Specifically, SMX migrated the agency's infrastructure to Amazon's newly available Secret Commercial Cloud Services (SC2S). This migration provided increased processing power to improve data loading speeds, and increased innovation with cloud-native services—particularly machine learning.

In 2020, SMX added a new data analytics tool, ThoughtSpot, to the agency's stack. With this tool, HR analysts can now execute thousands of dynamic searches to curate personalized insights and build self-service dashboards. A year later, SMX implemented MicroStrategy's Hyperintelligence technology, empowering the agency's HR analysts to determine a candidate's current stage in the background process without having to navigate back to the background processing system. Both of the new tools created efficiencies that allowed analysts to do their work much faster. More recently, SMX rolled out MicroStrategy Library, a business intelligence tool that serves as a hub for accessing analytics dashboards. This platform lets staff group and bookmark the dashboards that they create, saving time and effort by not having to duplicate processes for each inquiry.

Challenges

- On-premises platform that was dated and unstable
- Slow processing power and data loading speeds

Solutions

- Lift and shift applications and data to SC2S
- Leverage AWS native services

Benefits

- Achieved getting the agency's first major application on SC2S
- Improved data-loading speeds from 5 hours to 2 hours, allowing SMX to perform same-day loading of the entire warehouse
- Ability to quickly innovate via tools like ThoughtSpot, MicroStrategy Hyperintelligence, and MicroStrategy Library
- Running 10,000 reports a day, including data insights that were previously inaccessible

Cloud Optimization Unlocks Data Possibilities

Following a successful migration to the cloud, SMX continued to find opportunities to enhance the law enforcement agency's ability to manage and analyze human resource data. In 2022, SMX migrated the cloud architecture to Datashift, a proprietary SMX solution that uses a cloud-based data warehouse to analyze exabytes of data at a time.

Datashift increased the speed of data warehouse queries by 3x or more, seamlessly integrated with S3, and allowed the customer to parse storage from compute. This Extract-Load-Transform (ELT) platform enabled an increase in the number of complex queries answered using the customer's HR data. Datashift uses Amazon DMS (Data Migration Service) for real-time change-data-capture updates, Apache Airflow for job orchestration, and the high-powered Amazon Redshift database, which allows for running the ELT process continuously during the business day.

This end-to-end process gave the customer's HR division access to near real-time data compared to the data that was only available to users from the nightly batch loads on the previous platform. Thanks to this data accessibility, HR staff can use accessible AI tools to develop algorithms for prediction modeling on attrition. These models run every day, providing valuable daily insights into the number of employees that are predicted to leave the agency over the course of three-, six-, nine-, 12-, and 24-month intervals.

More recently, open-source API functionality has been added. Rather than having to import information onto a separate server to perform analysis, programmers can now use the API to quickly access and analyze data within the same program. This API component highlights the "fail fast" benefits that the cloud provides the agency. Prior to implementing API access, programmers would need to submit a work ticket, often requiring three weeks for approved access—a huge barrier to innovation. The API makes this process automatic, giving users the autonomy to rapidly develop insights from the agency's data.

Challenges

- Stale Data

Solutions

- Modernized data warehouse and reporting infrastructure
- Migration from Informatica to Redshift

Benefits

- Near real-time data vs. nightly batch loads
- Leveraged reusable ETL scripts, improving load time from 24 hours to 15 minutes.
- Eliminated Informatica licensing costs of \$100K/ year
- Scalable for future increased concurrency
- Increased the speed of data warehouse complex queries by 3x or more
- Ability to parse compute and storage costs and right-size each
- Easy-to-use AI-powered predictive modeling capabilities
- API access to data for quicker time to innovations

Leveraging Data to Solve Complex HR Problems

Thanks to their cloud-powered data warehouse, the U.S. law enforcement group now has the information it needs to solve complex human resources problems, including modernizing hiring processes, promoting diversity within the law enforcement group, and monitoring insider threats. Here's how the org uses cloud-based AI and ML to help up-level their HR process.

REDUCING STAFFING GAPS WITH PREDICTIVE HIRING

The hiring process at this law enforcement group was long and arduous. It included multiple rounds of interviews, background checks, exams, and physical fitness tests for prospective hires. Waiting until someone left to start the process with a new recruit created problematic gaps in staffing. The organization now uses its data warehouse to forecast how many employees will leave their positions each year based on previous trends, the date of employee retirement eligibility, and other factors. This approach allows each department to anticipate vacancies each year and fill those positions proactively to avoid being short-staffed. Additionally, SMX has built platforms that allow the customer to develop complex hiring strategies with ease. For example, they can match the number of interns looking for positions with vacancies or predict how many candidates will pass the background check.

IMPROVING DIVERSITY DURING HIRING AND BEYOND

The law enforcement agency tapped SMX to analyze hiring data and identify elements of the hiring process where candidates were falling off and, more granularly, where women and candidates of color were walking away. This data allowed them to identify efficiencies that could be made in the process to enhance recruitment. Since implementing this data analysis process, the agency has increased its overall hiring percentage, and, more critically, minority hires went from 41% to 52% by improving upon key areas in the hiring process.

MONITORING INSIDER THREATS

The HR department at this agency plays an important role in insider threat monitoring through the data they collect. Part of the functionality includes assigning a risk-assessment score to each employee. These scores are based on several data points, including performance reviews, participation in a performance improvement plan, overdue annual polygraph examinations, and more. SMX then sends those scores to HR leaders, who combine them with external data from other departments to reduce the risk of insider threats. SMX has made a tremendous impact on the HR division's ability to collect, maintain, and utilize data.

PREPARING FOR FUTURE IMPROVEMENTS

Moving its systems to the cloud positioned the HR department for continuous improvement of its capabilities. In particular, it can now make wider use of generative AI tools. With SMX having migrated workloads to Redshift, the agency will be able to take advantage of the numerous AI-powered plug-ins available for this data warehouse platform. Some of the business intelligence features that the agency will be able to roll out to use with Redshift include visualizations, integrations, alerts for anomaly detection, and embedded analytics.

CONCLUSION

Transform Your Organization With HR Analytics

Thanks to SMX, the agency's HR division's ability to collect, maintain, and utilize data has been completely transformed. By eliminating outdated on-premises systems and replacing them with a technology stack in the cloud, the HR team has experienced substantial money- and time-savings. Today, the HR unit is a data-driven organization, with staff able to develop insights from their personnel data to improve recruiting, diverse hiring, and retention efforts. In addition, migrating to the cloud has enabled the use of APIs, allowing connections between systems to remain seamless through future upgrades and migrations, laying the foundation for the use of new AI tools and continued innovation.

