

MACHINE LEARNING FOR A MORE INTELLIGENT GOVERNMENT

The crown jewel of a government agency is its data, whether captured in digital or analog form. Government has always been a keeper of citizen data, and government agencies play an important role in collecting, securing, storing and ultimately presenting that data in the form of the statistics and indicators citizens rely on every day.

Oracle's genesis as a database company forms a backdrop to help agencies think differently about data and create insights for employees and citizens.

Adopting a Modern Approach to Analytics

To use data to make quick decisions and predict and prepare for the future requires data analytics tools. But traditional business intelligence solutions and processes have drawbacks. Data is often collected from multiple, disconnected sources and requires IT personnel to create extract, transform and load (ETL) connections and interfaces; transfer data from one database to another; examine data quality; enter data into spreadsheets, etc. — all of which requires precious time and resources. In many cases, program owners have to wait for insights into the data they've collected.

Modern analytics that include automation and autonomy offer a solution, changing how an agency experiences data and what can be done with it. With these new technologies at hand, government agencies can better leverage data

in different ways, including making more impactful decisions and moving to a more predictive model.

With a cloud-based database and analytics system, data can be ingested from multiple applications, platforms and clouds. Leveraging a cloud infrastructure with autonomous capabilities, data can be automatically gathered, cleaned, prepared, transformed and analyzed for predictions using artificial intelligence (AI) and machine learning (ML) tools. The result is faster, higher-quality insights and reporting that can be widely shared and applied.

The autonomous capabilities included in this type of modern platform also improve data security. According to Verizon's latest Data Breach Investigations report, 85 percent of exploits occur because an available patch was never installed.¹ A cloud infrastructure that leverages autonomous capabilities is

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USING DATA TO FIGHT A WORLDWIDE PANDEMIC

During any catastrophe, citizens look to governments to provide statistics about a crisis. When the novel coronavirus took hold in the United States in March 2020, government agencies turned to analytics to track the spread of the disease and help leaders respond more effectively.

For example, the Kansas Department of Health and Environment took advantage of a platform that uses anonymized and aggregated cellphone data to show at a county level whether residents were abiding by local stay-at-home orders. The data, updated daily, was synthesized from several different sources, including public data and data the company previously purchased from other vendors. A dashboard rated communities with an A-F based on how well they were practicing social distancing and avoiding “non-essential” venues, like stores, hotels and restaurants. This data quickly showed state leaders whether social distancing was working to slow the spread of the virus, and where the virus might hit next based on a lack of compliance with those rules.

This type of tracking technology is controversial, but given the unprecedented situation created by COVID-19, may become the norm. In Minnesota, police recently asked state authorities to share the location of people infected with COVID-19 for public safety reasons. And both Alabama and Massachusetts are currently sharing the addresses, but not names, of confirmed COVID-19 patients with emergency response personnel to protect those responders from becoming infected.

self-securing, self-patching and self-tuning, so busy IT staff no longer install patches manually.

Autonomous capabilities also enhance system scalability. This is especially important when a crisis creates spikes in demand. For example, in March 2020, several state unemployment websites crashed when they were suddenly overwhelmed with claims as COVID-19 took hold and forced businesses to close.²

A modern cloud infrastructure also allows government IT staff to free themselves from traditional database maintenance activities, which require manual intervention and involvement to set up, manage and maintain. This is important at a time when government IT staff familiar with traditional data warehouses and legacy systems are retiring.

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“That’s going to be a critical issue,” says Dan Seurer, who previously worked for the state of Wisconsin and now works with Oracle’s state and local government team in the Midwest. “The traditional data warehouse is too complex to manage, too slow and takes too long to deploy. When a crisis like COVID-19 comes up, a lot of information needs to get out quickly. We don’t have months to bring new systems online. Agencies need to look at how they can reduce complexity and drastically improve the time it takes to deploy the systems citizens require.”

Oracle’s cloud-based autonomous data warehouse can help reduce that complexity. When combined with modern analytics and machine learning, it also enables an agency to do things like identify anomalies that could be indicators of fraud, reducing the amount of waste agencies experience.

“An autonomous database with machine learning capabilities can be trained to automatically identify patterns, like people attempting to file for unemployment in different places with slightly different names, a sure hint that fraud may be occurring,” says Seurer. “Doing that kind of pattern matching manually is extremely difficult.”

Because those machine learning capabilities are built into the modern data warehouse, security concerns are further reduced.

“In many cases if you want to do machine learning, you have to take data outside of the transactional systems and

HOW ORACLE’S LEGACY EVOLVED INTO THE AUTONOMOUS DATABASE OF TODAY

No single database platform has been quite as predominant as the Oracle database over the past four decades.

As the broader IT market matured over the years, so too did Oracle’s database technology. The Oracle database has evolved into a range of fully integrated cloud and on-premises solutions. Along the way, Oracle added new capabilities to meet changing needs. A key component is machine learning through artificial intelligence, eliminating the rote tasks of database installation, configuration, tuning and patching.

With 40 years of database experience, Oracle has been developing autonomous capabilities for the past 20.

“The database is our core strength,” says Seurer. “We started as a database company and over the years we’ve been the keepers of some of the world’s most critical data.”

Today, Oracle is meeting a new challenge. At the request of the federal government, Oracle has created a Therapeutic Learning System for doctors and clinicians to enter information about their COVID-19 patients.³

move it to a third-party environment,” says Seurer. “The minute you do that, you expose yourself to breaches.”

Finally, these capabilities enable an agency to use “what if” scenario modeling to better prepare for the future.

“To use a current example, what if the unemployment rate in your state doubles almost overnight?” asks Seurer. “What does that mean for services and staffing needed to meet those needs? These technologies allow agencies to ask those questions and prepare for the types of scenarios we hope don’t happen but which we now know can.”

Getting More Out of Data

IDC predicts the global datasphere — the data we create, capture and replicate — will balloon from approximately 50 zettabytes in 2020 to 175 zettabytes in 2025.⁴ In other words, the flood of data shows no sign of slowing. An agency can choose whether to simply try to manage and report on that data, or to leverage a combination of next-generation cloud, autonomous capabilities and analytics to drive information from that data, glean new insights and enable better decision-making.

1. 2019 Data Breach Investigations Report, <https://enterprise.verizon.com/resources/reports/dbir/>

2. Coronavirus: State unemployment websites crash as applications surge, <https://www.nbcnews.com/news/us-news/coronavirus-state-unemployment-websites-crash-applications-surge-n1162731>

3. Oracle COVID-19 Therapeutic Learning System, <https://www.oracle.com/corporate/covid-19-tls-faq.html>

4. How Much Data by 2025?, <https://www.microstrategy.com/us/resources/blog/bi-trends/how-much-data-by-2025>

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