NASCIO 2016 State IT Recognition Award Nomination

Title: Self-Service Data Sharing and Visualization at the State of Ohio: Accurate. Timely. Transparent

Category: Open Government and Data, Information and Knowledge Management

State: Ohio

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Executive Summary

The State of Ohio's relationship with data has evolved and matured from a "wild west" environment into a highly governed, high quality, very rigid and centralized offering. As the state transitioned from ungoverned to operational to trending reports, emerging needs for decentralization and interactive visualizations became evident. These emerging needs pointed to the opportunity to empower agencies to be self-supporting via a self-service data analysis and visualization approach to reporting and gaining insights into Agency missions.

In 2016 the State of Ohio Department of Administrative Services (DAS) created a data sharing and visualization platform as an Enterprise Service to support agency needs, and to drive analytical tools closer to the business representatives who know their data best. To ensure success of this initiative, DAS offers unique and personalized consulting and support services for the central Enterprise Business Intelligence (BI) Team's involvement with the agencies, a simple and easy service onboarding process, and a variety of different outlets for agencies to learn about the offering.

The self-service visual analytics platform has been shown to be a cost effective solution for many state of Ohio agencies - previously, only very few agencies were leveraging data sharing and visualization tools, and to date there are over 21 agencies using the platform with over 500 visualizations created. From a public transparency perspective, a key benefit of the visual analytics platform is that it supports external visualization and data sharing, leveraging a modern and innovative API framework to share data visualizations via an agency website.

The State of Ohio's data sharing and visualization platform allows agencies to move from IT as a bottleneck to the ability to quickly and efficiently gain insights from the data. The platform also creates the ability to produce prototype visualizations within weeks of onboarding to the Enterprise Service. A typical agency first starts its journey producing internal performance management visualizations and then quickly sees and exploits the value of sharing data and visualizations externally.

The State continues to expand the self-service data sharing and visualization analytics platform by adding a big data distribution to further address agency data sharing requirements for very large and disparate datasets. Leveraging adoption models, governance, and lessons learned from the state's data visualization-as-a-service platform will allow Ohio to continue to meet tomorrow's information needs.

Business Problem:

The State of Ohio's relationship with data has evolved and matured from highly disparate and uncorrelated data and reports to trusted reports, data, and metrics as the result of the introduction of a centralized Business Intelligence (BI) Program. The continued adoption of this trusted data led the organization to become more reliant upon data/reports for decision making. This was largely accomplished in an IT controlled and highly centralized manner in order to tame the "wild west".

The success of the BI Program created some challenges.

1. This continued evolution led to the need for interactive, on-click data visualizations (versus the current state standard/flat reports)
2. The centralization of data and reporting led to the need for decentralization to remove IT as a bottleneck and to get analysis tools into the hands of the agency representatives who know their data best
3. Agencies continued to lack a reliable method to share data

Although governance processes existed and could be leveraged, a more empowered self-service approach would be needed to meet increasing demands.

Concept

To address the business problem, the State of Ohio Department of Administrative Services (DAS) via its Enterprise BI services created a data sharing and visualization platform as an Enterprise Service for agencies to leverage to meet agency specific data sharing, visualization, and reporting needs. The design of this platform allowed the state to get the analytical tools in the hands of business representatives who know their data best and away from the IT teams who were unfamiliar with the business needs and required outcomes. This platform was created in the State of Ohio's private cloud which allowed the platform to reside on existing state infrastructure, adhere to data security/privacy standards and simplified security requests to connect the platform to state data, and improved adoption by leveraging an existing model with which agencies were comfortable.

The Enterprise Service surrounding this platform supports and empowers agencies to take full advantage of the technology available to them. The Service consists of four main components (all described in greater details below):

- An enterprise data sharing and visualization platform as a service (PaaS)
- Enterprise data, data sharing, privacy, security and dashboards
- Training
- Advisory, Consulting and Support services

The state created an enterprise service that is extremely unique in the public sector. DAS hosts, maintains, patches, and upgrades the technology used to enable the **data sharing and visualization platform as a service.** This platform also enables real time interaction between the state's Geographic Information System (GIS) Team to allow for

enhanced map related visualizations. The central objective of the platform was to enable agencies to visualize and share agency specific data, while supporting **enterprise wide data sources and data visualizations** – driving the State to the recognition that State Data is a State Asset. As part of the service, DAS offers enterprise data sources for inter-agency sharing. One of the main use cases prevalent when leveraging the service, is agencies want to use agency specific data in combination with enterprise data assets. In addition to the offering of enterprise data, DAS also created enterprise data visualizations to allow agencies to visualize data and metrics that are relevant and common to all agencies.

The service also includes at no additional cost, tailored, instructor led, **training** options for agencies to quickly build the skills necessary to exploit the power of the platform. In addition to the training, the service provides additional support materials such as references to online curriculum and job aids. In terms of **support**, the state leverages a service desk where agencies can obtain Tier 2 support from the central BI team. The state also maintains premium support contracts with product vendors as additional support for agency users to obtain help without adding to the central BI team's workload. Finally, an **advisory services** portion of the Enterprise Service refers to the ability of DAS to support the data sharing and visualization platforms to drive commonality and insights across the State enterprise. DAS serves as the experts and trusted advisors to review/explain the offering to agencies, how to on-board, and also guides the agencies in best practices during their visual analytics journey.

Recently, the state established an on-line Hadoop data catalogue for data sharing purposes. This data catalogue allows agencies to locate, understand and incorporate the shared data they need for visualization and reporting purposes.

To ensure agency success, the state offers a sliding scale for involvement by DAS. Some agencies choose to leverage the service options and platform resources and almost entirely work on their own in a nearly complete self-service model. For agencies that need a small amount of upfront support to build momentum, the state offers a low cost Quick Start Program. The Quick Start program partners DAS with individual agencies to build initial data models, dashboards, and work side-by-side to knowledge transfer and train agency resources to drive the visualization journey for their agency moving forward. The average cost of a Quick Start program is $15,000 and this investment allows an agency to accelerate their adoption from several months to a few weeks. Some agencies or projects may prefer to completely outsource the build of their data visualizations, and DAS supports those types of requests as well using a fee based turnkey model.

If each participating agency would pursue this type of technology investment on its own, the cumulative cost would be on the order of $10 million dollars. DAS deployed the platform and Enterprise Service for usage by all agencies, partnered with one cabinet agency on a public facing data visualization website for a total investment of less than $1M that was funded out of operational cost savings. The centralized service has made

ongoing maintenance and support costs economical to all agencies as the platform is centrally hosted.

A fast and simple service onboarding process has been implemented that allows agencies to get up and running with the service often in less than a week. The process includes an overview meeting, the creation of individualized analysis space for the agency to begin to publish and share data and visualizations, and the nomination of an agency representative to the previously established centralized governance group. This BI governance body is leveraged as a method to share agency success stories, methods, learnings and data to drive agency collaboration, while providing guidance and oversight to the enterprise data sources and data visualizations – "caretaking" the State Asset.

DAS followed proven deployment methodology that incorporated organizational change management, repeatability, auditing, data privacy and security best practices to promote awareness and adoption. DAS realized that these were some of the "core ingredients" that agencies would need to jump start their visualization journey.

Significance:

Three general use cases have emerged during the program that are common across agencies – data sharing, data discovery, and data visualization. As it relates to data sharing, many agencies share data with other agencies for federal reporting purposes, and enhanced collaboration opportunities as it relates to policy and programming creation and outcomes. During data discovery, agency specific questions are invariably answered by sourcing the data into the client based software. Exploration and experimentation with the data allows an agency to find answers and gain unforeseen insights into its business. Many agencies are producing highly durable data visualizations to help tell their agency stories – stories to policy makers, legislators and the administration, and to the general public. The in memory nature of the visualization solution provides sub second response time creating an almost dialogue like experience between the agency and their constituents. Agencies have defined success on their own terms based on individual needs.

The visual analytics platform supports both internal and external visualization and data sharing. Agencies internally monitor operational metrics and leverage a modern and leading edge API framework to share agency stories with the public via agency websites. DAS created an open API framework that is published to agencies via a digital tool kit. This tool kit provides reliable mechanisms for agencies to publish visualizations to their constituents bringing additional insight and value to the data. Rather than sharing tabular numbers, graphical representations that encourage exploration are provided to constituents and stakeholders. The flexibility of the platform to support nearly endless use cases provides the broad capabilities and coverage required by a high performance and transparent government.

The introduction of this platform aligns with the state's IT Optimization program which included a strategy to move toward an "as a Service" model and also a central theme of

the state's 2016 strategic priority to "Support State Employees with Common & Efficient Enterprise Solutions".

Impact:

The State of Ohio's new platform as a service is allowing agencies to move from IT as a bottleneck to IT as an enabler. The ability to produce initial prototype visualizations within weeks of onboarding to the Enterprise Service combined with agencies sharing their stories both internally inside the agency, and externally with public constituents adds profound value and impact to state agencies.

The progression witnessed as agencies onboard to the data sharing and visualization platform is that they initially create internal facing, performance management visualizations and then quickly see the value in sharing both data and visualizations externally. A sampling of the creative agency solutions and their impacts are highlighted below.

Performance Management Solution Examples

- The **Ohio Department of Transportation** is using the platform to analyze and answer questions regarding crash statistics data.
- The **Department of Medicaid** is using the platform to monitor Medicaid program budgets, and Medicaid payouts.
- The **Department of Public Safety (Office of Criminal Justice Services)** is using the platform to analyze the potential reasons for deaths that occur after an arrest has taken place.
- The **Ohio Facilities Construction Commission** is using the platform to analyze metrics surrounding operational efficiency including timely payment to vendors and days to process project change orders.
- The **Department of Health** is using the platform to monitor health program budgets.
- The **Enterprise HR Dashboards** allow the enterprise as well as individual agencies to visualize a variety of HR metrics including headcount, turnover, payroll dollars, and leave balance. HR Leadership plans uses these dashboards to evaluate the people impact of a variety of state policies.

Open Data and Data Sharing Solution Examples

Interactive Budget: www.interactivebudget.ohio.gov

Ohio's Interactive Budget is a first of its kind, comprehensive state financial and budgetary website that enables visitors to see not only how state money is spent, but also how revenue is generated and allocated via the state budget. Ohio's Interactive Budget - an extension of the state accounting system - provides the public with access to the financial and transactional data maintained in the state's accounting system. The website shares the state accounting system with our

citizens and the public at large in an easy-to-use, searchable format. The public is encouraged to use this innovative website to enhance its understanding of the functions and services of state government and as a resource to quickly locate state budget information of interest to them. There has been over 100,000 visitors to the website.

Operational Dashboard: https:\\analytics.public.das.ohio.gov (*Navigate to the Operational Dashboards)*

The Ohio Administrative Knowledge System (OAKS) Operational Dashboard allows viewers to visualize current case statistics which in turn gives the team insight on issues and bottlenecks, the correct allocation of resources, the team's workload over time, and the service throughput and queue. These reports were previously produced monthly where now they are updated with real time, actionable data.

Environment Protection Agency (EPA): https:\\analytics.public.das.ohio.gov (*Navigate to the EPA Dashboards)*

EPA is using the platform to monitor newspaper compliance with publishing public notices for agency actions in the state mandated time frame. This dashboard also allows EPA to monitor ongoing performance and evaluate the effect training and business process changes have on newspaper compliance.

State Health Facts:

The State Health Facts dashboards provide insight and allow for decision making based on state health data. Visualizing a variety of state health metrics at the county level allows for the development of targeted programs and policies to address state health concerns.

General Statistics

- 21 agencies are onboarded to the Enterprise Service
- 250 super user content creation licenses are in use
- 500+ visualizations created
- 112 unique users trained from 23 agencies

Future Phases:

The state continues to expand the self-service data sharing and visualization analytics platform by adding a big data distribution to further address agency data sharing requirements. With the maturity of the visual analytics platform, there are increasing opportunities for efficiencies and insights, as agencies will be able to share data which historically has been very challenging. This has created the opportunity for the next phase in the evolution of self-service analytics.

The possibilities for insights into public policy impacts, insights, outcomes and government efficiencies are nearly endless. Leveraging adoption models, governance, and lessons learned from the state's data visualization-as-a-service platform will allow Ohio to continue to meet tomorrow's information needs.