Virginia Association of Counties
ACHIEVEMENT AWARDS

SUBMISSION FORM

All submission forms must include the following information. Separate submission forms must be turned in for each eligible program. **Deadline: July 1, 2021.** Please include this submission form with the electronic entry. If you do not receive an email confirming receipt of your entry within 3 days of submission, please contact Gage Harter.

PROGRAM INFORMATION

County: _____

Program Title: _____

Program Category: _____

CONTACT INFORMATION

Name: _____

Title: _____

Department: _____

Telephone: _____ **Website:** _____

Email: _____

SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

Name: _____

Title: _____

Signature: _____

STRATIS

DELIVERING CREATIVE CLOUD SOLUTIONS
THROUGH STRATEGIC INFORMATION SHARING

2021 VACO AWARD APPLICATION

Chesterfield County, Virginia

Program Name:
StratIS
Delivering Creative Cloud Solutions through Strategic
Information Sharing

Program Category:
Information Technology

Contact:
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Deputy County Administrator
County Administration
9901 Lori Rd
Chesterfield, VA
23832

CHESTERFIELD.GOV

PROGRAM OVERVIEW

Over the last few years, StratIS — Chesterfield's enterprise data program — has grown tremendously; collecting robust datasets and leveraging cloud-based technologies to deliver dynamic tools for trending, predictive analysis, modeling and reporting. Through the StratIS platform, data is managed to support accurate reporting, offering a single source of truth and prevents duplication of efforts throughout the organization.

By first identifying problems to solve, StratIS then begins to connect with appropriate data sources, working to build data intelligence and then offer data modeling and insights. StratIS accumulates complex data to formulate analytical reviews, ultimately publishing insightful reports and offering our citizens access to information in a way not previously available.

Recently, StratIS delivered a demand forecasting model to predict where students will be living in the next five years. The goal of this work is to inform county officials making critical decisions while planning for capital facilities and assessing program and service delivery for Chesterfield citizens now and in the future. The tools, resources, data and visuals — all leveraged from StratIS — work to better inform Chesterfield leadership, Chesterfield citizens, and ultimately those making decisions, grounded in key community data.

THE PROBLEM OR NEED FOR THE PROGRAM

Chesterfield County government is comprised of over 50 different departments, as well as a separate school division and public utility division overseeing water and wastewater operations. Through the combined effort of over 12,000 employees serving more than 350,000 citizens, Chesterfield stores a lot data. That said, not all data has been accessible or even available to other internal departments. The purpose driving the work of StratIS is twofold. The first problem to solve centered around the data itself — what is it, who has it, where is it stored, and how do we extract it? After being able to answer those distinct questions, the county established a data warehouse — storing available datasets in a single, consolidated location that would be accessible by data users —and frequently updated on a recurring or scheduled basis. The second problem to solve centered around making the best use of the data —what story lies in the data and how do we uncover more information? Building a robust and sustainable data program requires a multi-disciplinary team effort. County leadership and elected officials identify issues and problems to solve; IT staff support critical technology infrastructure - managing cloud-based technologies, multi-stage work spaces, and data governance; departments house subject matter experts - constantly evaluating, analyzing, and identifying data to deliver insights and recommendations.

Initial project work delivered new data visualization tools focused on financial and human resource data to further analyze trends. Most recent project work is focused on demand forecasting. Over time, we discovered a need to offer better, more accurate accounting of projected student enrollment in Chesterfield County Public Schools (CCPS). This StratIS exercise focused on building a community demand model to predict where students would be living in the next five years. The model results and insights have helped facilitate meaningful conversation. By visualizing data on the Microsoft PowerBI platform, county and school leadership, including our elected officials, are able to access information as important decisions are being made when planning for future capital facilities or considering programs and services offered to our community.

DESCRIPTION OF THE PROGRAM

PROGRAM OBJECTIVE

Develop a robust data program for Chesterfield and implement effective tools to better analyze key community data.

TIME FRAME

○ **JULY 2015 (FY16):** CAPITAL FUNDING FOR DATA PROGRAM IN PLACE

○ **JANUARY 2017:** FOUNDATIONAL CLOUD-BASED TECHNOLOGY COMPLETED

○ **FEBRUARY 2017:** DATA VISUALIZATION TOOL AND TECHNOLOGY CAPABILITIES DELIVERED

○ **JULY 2019:** FINANCIAL AND HR USE CASES WITH DATA VISUALIZATION TRENDS TOOL COMPLETED

○ **APRIL 2019 — SEPTEMBER 2020:** DEMAND FORECASTING MODEL FOR STUDENT GENERATION

INVOLVEMENT

Numerous departments among county and schools have been represented in the development of these various efforts, including CCPS administration and planning staff, county administration, budget and management, human resources, accounting, planning, technology, and real estate assessment staff. Additionally, external consultants have been utilized during different phases of the project. Throughout the duration of the project a multitude of meetings have been held, including leadership briefings, sponsor updates, weekly core team meetings, and daily technical team stand-ups.

PROGRAM DESCRIPTION

When Chesterfield's data journey began the program focused on recognizing process efficiencies and data quality improvements:
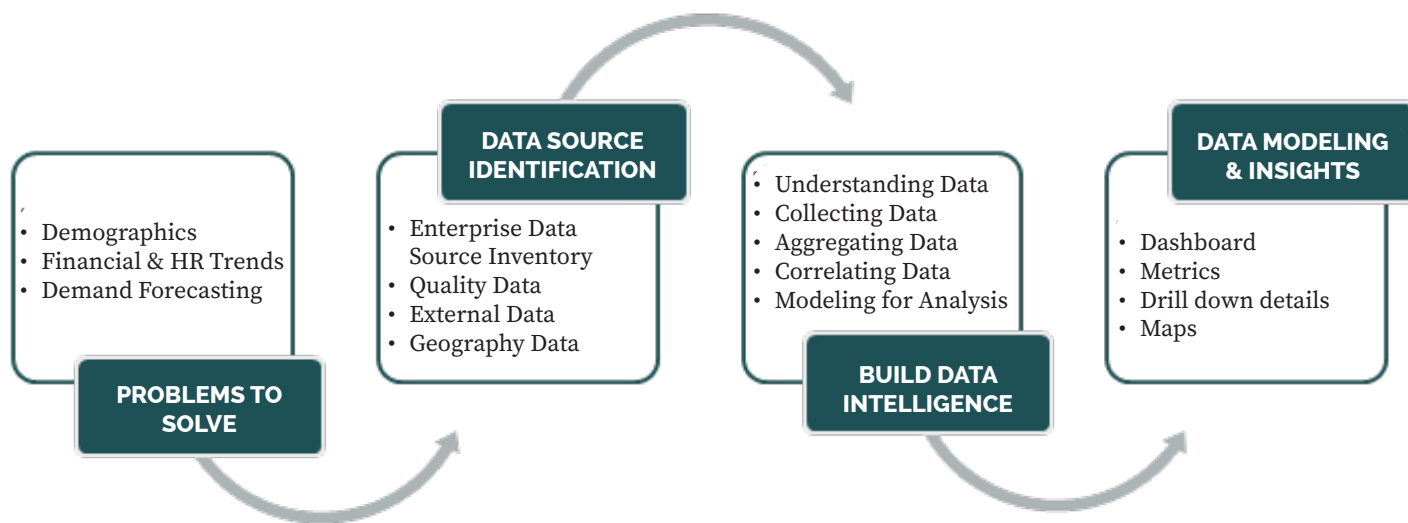
PROCESS EFFICIENCIES

- Create business glossary of terms
- Automate repetitive data collection tasks
- Enable self-service discovery & visualizations
- Execute sharing agreements that enable insights & ensure security

DATA QUALITY IMPROVEMENTS

- Establish single source of truth
- Collect historical data for trending & predicting
- Aggregate & anonymize data
- Leverage external & open data sources
- Disaster recovery & security of data

IDEAS TO INSIGHTS

Grounded in data best management practices for data governance, the StratIS platform works to manage data that supports accurate reporting, and a single source of truth, and prevents duplication of efforts throughout the organization.

PROBLEMS TO SOLVE
- Demographics
- Financial & HR Trends
- Demand Forecasting

DATA SOURCE IDENTIFICATION
- Enterprise Data Source Inventory
- Quality Data
- External Data
- Geography Data

BUILD DATA INTELLIGENCE
- Understanding Data
- Collecting Data
- Aggregating Data
- Correlating Data
- Modeling for Analysis

DATA MODELING & INSIGHTS
- Dashboard
- Metrics
- Drill down details
- Maps

Leveraging cloud-based technology, StratIS is able to deliver dynamic tools for trending, predictive analysis, modeling and reporting. The StratIS platform connects directly to the systems of record, ensuring accuracy of reporting. The project has established productive relationships among various departments throughout the county and schools.

PROJECT HIGHLIGHT

Utilizing an Azure Machine Learning workspace (aka cloud-based technologies), Chesterfield in partnership with Catapult Systems, a Microsoft Gold Partner, has configured and productionized a machine learning model to assist with predicting demand on capital facilities. The first community demand model focused on identifying where students are projected to be living in the next five years. The student generation model approach, using 2.5 million rows of historical data, works on a parcel-by-parcel review, learning the behavior of what's happening through land development, occupancy, housing types and student specific information.

Inherently, the predictive model is forecasting development growth along with changes to predict where students will be living. The modeling results are aggregated to the current school boundaries.
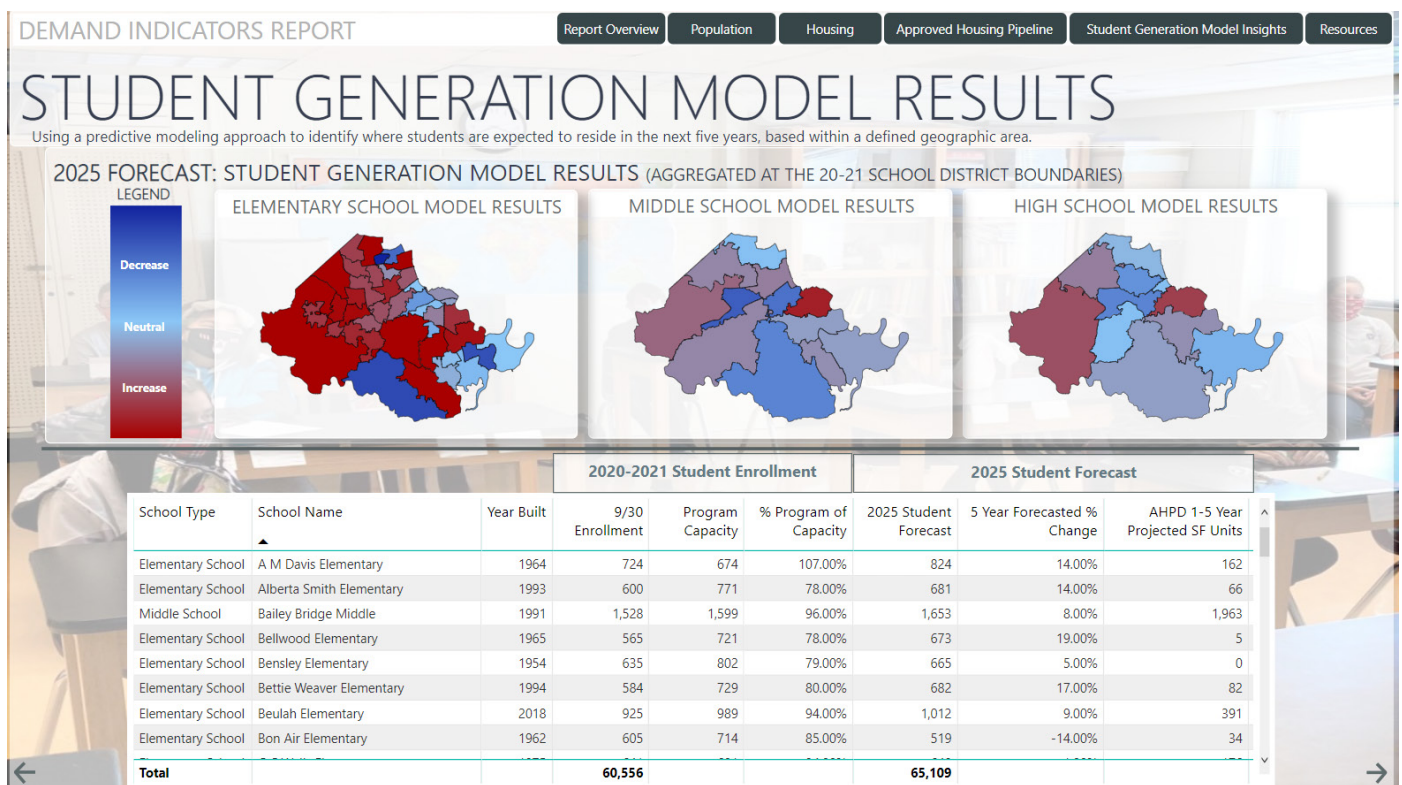
The coloration from blue to red indicates a projected decrease to increase in the number of students. It should be noted, just because the model indicates there is an increase in students, it doesn't necessarily mean there is an impact on the school capacity. Additional insights are still needed to help make sense of this information.

SHIFTING THE FOCUS TO INSIGHTS

The view below compares current enrollment to the forecasted model results. The first map on the left demonstrates the current 2020-21 school year as a percent of the current 2020 program capacity of each school in the county. Whereas, the second map compares the 2025 student forecast relative to the current 2020 program capacity.
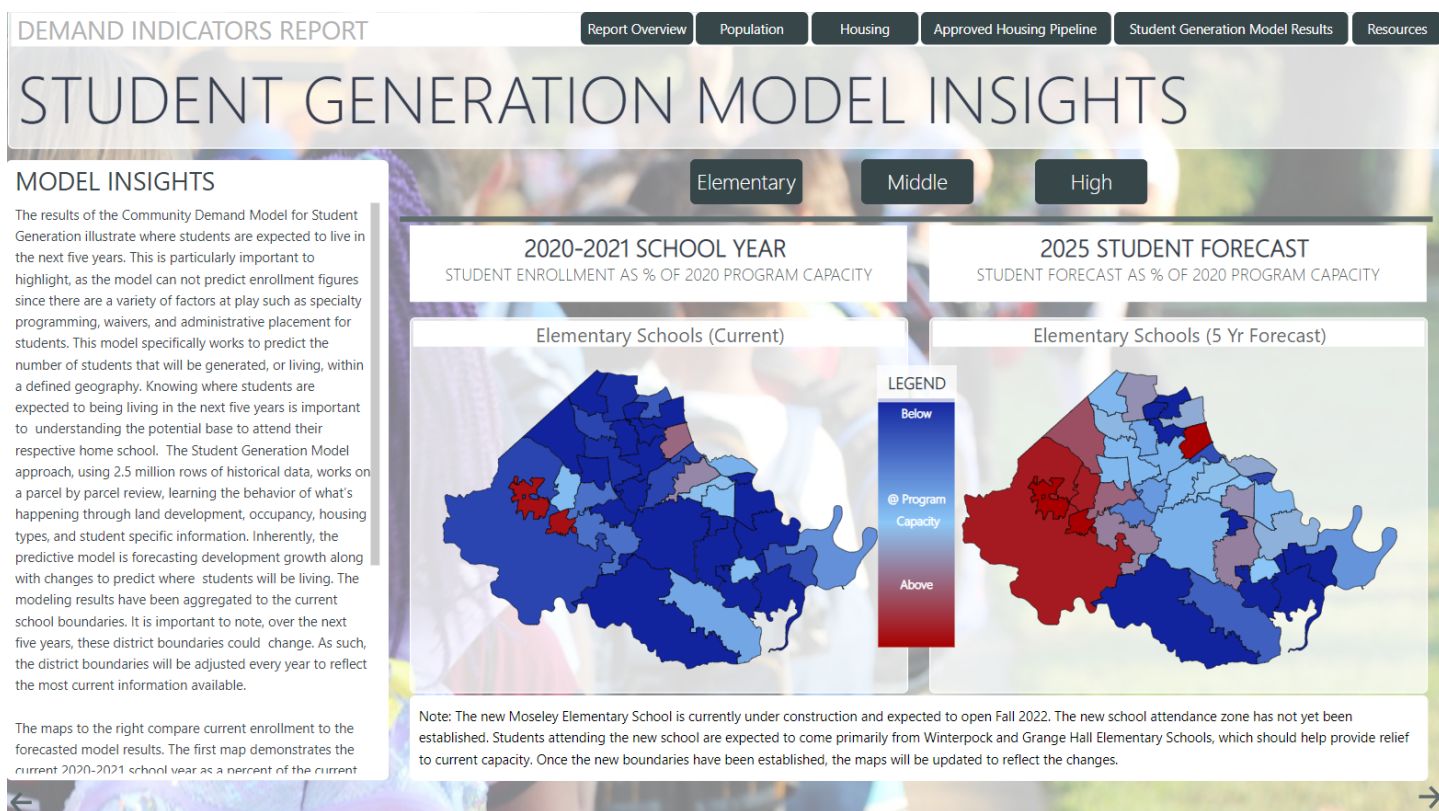
Seeing the results of the model compared to the 2020 program capacity provides the first glimpse into recognizing the impact of the change in students generated in a specific school attendance zone. In turn, these comparisons afford an opportunity to focus on those facilities impacted by the forecasted change and therefore promote additional analysis and evaluation.

The output of this information is working to inform county officials making critical decisions while planning for capital facilities and assessing program and service delivery for Chesterfield citizens now and in the future. Building a new school in the county is one of the costliest projects in Chesterfield's capital program, and as responsible stewards of our taxpayers' dollars, it's our duty to ensure we're making the most informed decisions. StratIS is not a silver bullet, as there will always be other factors that come into play when identifying and programming capital projects. However, the tools, resources, data and visuals — all leveraged from StratIS — work to better inform Chesterfield leadership, Chesterfield citizens, and ultimately those making decisions, grounded in key community data.

THE FULL REPORT CAN BE ACCESSED ONLINE. VISIT:
HTTPS://WWW.CHESTERFIELD.GOV/5003/DATA-REPORTS

COST OF THE PROGRAM

EXPENDITURE BREAKDOWN	AMOUNT
Professional/Consultant Services	$902,000
Software & Enterprise Licensing	$117,700
Training/Education	$13,200
Total StratIS Investment (July 1, 2015 - present)	$1,032,900

RESULTS/SUCCESS OF THE PROGRAM

Success of this program is measured through various means. Compared to where we are today versus where we started, the county has made significant strides in the data space to identify, curate, engineer, develop, model and provide insights. Whereas, Big Data is often a term within the government sphere, Chesterfield has harnessed the power of our own data, in turn establishing a robust, dynamic and powerful resource and tool. Success has been measured as the organization has grown to include a full-time data team that serves to support the infrastructure for our program. Departments house subject matter data experts that contribute to growing the organization in a data minded focus. Chesterfield leadership, the Board of Supervisors and citizens are able to access information and visualize data in ways not previously possible. The information available through StratIS has been successful to facilitate meaningful conversation. The value of the work presented by StratIS is demonstrated in seeing collaborative ideas come together and produce effective outcomes. In a most specific example, county and schools staff worked together to develop a capital facilities plan for future projects that aligned with the community demand modeling results.

CONSIDERATION OF AWARD

As the mission of VACo endeavors to strengthen Virginia counties and recognizing the value of our collective knowledge — the work presented here from Chesterfield not only exemplifies these core fundamentals, but as local government, we understand the power in sharing our story with others. There are no industry secrets in local government. We are excited to share our innovative work with others. We work to serve our community and promote Chesterfield as the best place to live, learn, work and play. When we are successful, others can be successful too — by having access to our information and having opportunities to connect with others to learn and create a vision for what works for them. The county's data program, StratIS, is no exception. Not only are we providing unprecedented access to data, but we're able to present it in a way that promotes meaningful engagement and serves to better inform our local leaders when making decisions to plan for program and service delivery to meet the needs of our changing community now and into the future.
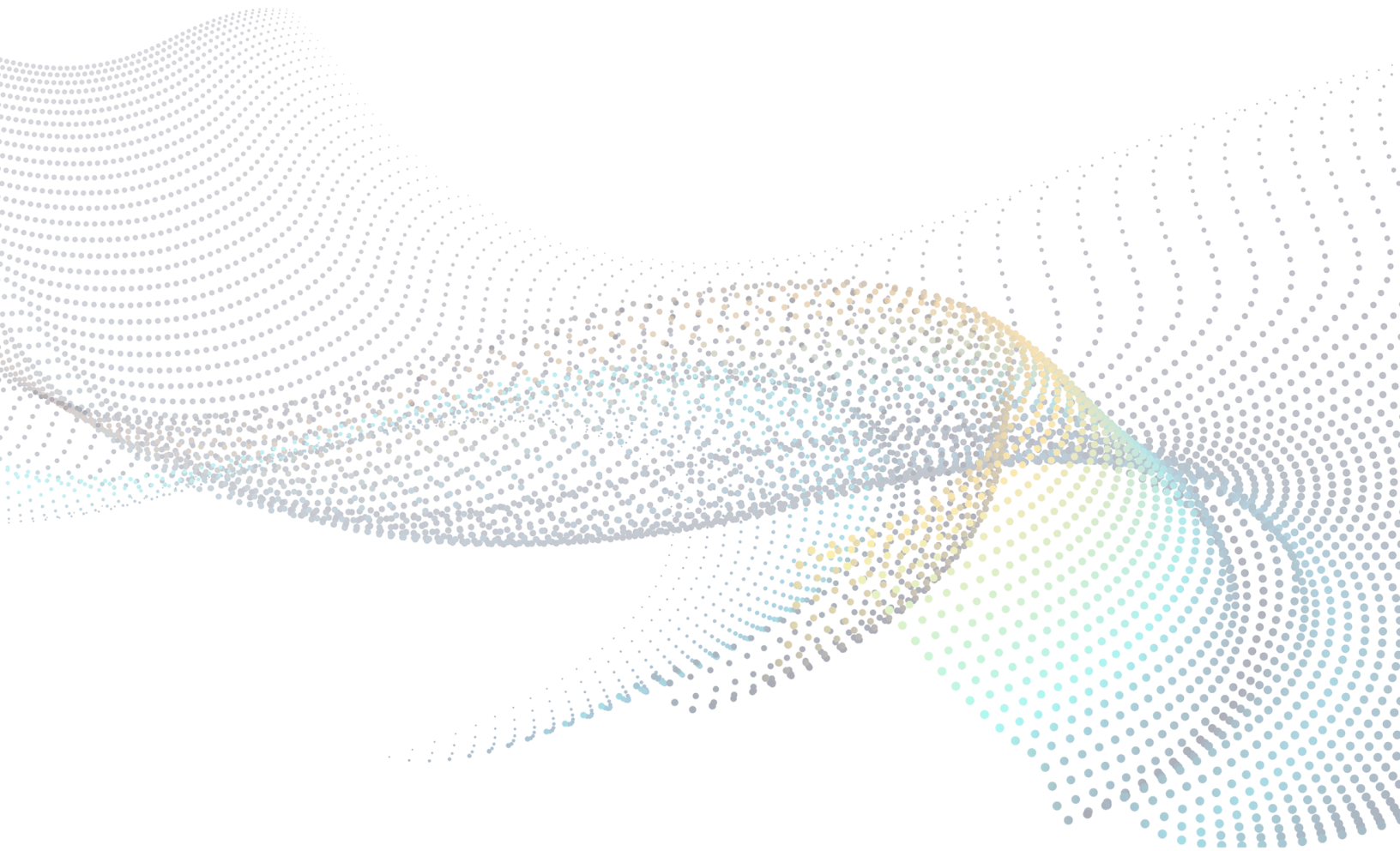
EXECUTIVE SUMMARY

StratIS — Chesterfield's enterprise data program is transforming ideas into creative and innovative solutions. Designing, building, and implementing a data program in a large organization can be challenging; however, tremendously rewarding. Through StratIS, various departmental and cross-departmental teams are able to identify data sources, access data from a single-source of truth, evaluate, analyze and ultimately visualize data by delivering dynamic tools for trending, predictive analysis and modeling.

The StratIS platform connects directly to the systems of record, ensuring accuracy of reporting. The project has established productive relationships among various departments throughout the county, including Chesterfield County Public Schools, Building Inspection, Planning, and Utilities.

Utilizing an Azure Machine Learning workspace (aka cloud-based technologies), Chesterfield County in partnership with Catapult Systems, has configured and productionized a machine learning model to assist with planning for future capital facilities. While the first Community Demand Model focused on students, next up is Fire and EMS services and future efforts will review program and service delivery in areas such as police, parks, and libraries.

The goal of this work is to inform county officials making critical decisions while planning for capital facilities and assessing program and service delivery for Chesterfield citizens now and in the future. The tools, resources, data and visuals — all leveraged from StratIS — work to better inform Chesterfield leadership, Chesterfield citizens, and ultimately those making decisions, grounded in key community data.

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