

**Financial Services**

# Data Analytics Automation: How Public Sector Companies Can Take Controls Testing to the Next Level

**Contacts****Caitlin McGurn**

Partner, Financial Services  
cmcgurn@guidehouse.com

**Farhan Bandukda**

Associate Director, Financial Services  
fbandukda@guidehouse.com

Government and public sector organizations today are under enormous pressure. They are constantly working to generate more value, enhance their operational efficiencies, and attract and retain skilled employees—all while facing increasing levels of risk and public scrutiny.

Within this challenging environment, the importance of having meaningful governance and effective internal controls has never been greater. The challenge is that managing and monitoring internal controls is a complex, time-consuming, and highly manual exercise.

In 2019, Guidehouse partnered with the Association of Government Accountants on an intelligent automation survey. A large majority of respondents to this survey saw considerable potential for the use of automation in the government audit process—with 83% saying it could improve data accuracy, 80% saying it could improve data availability, 60% suggesting it could improve security of information systems by reducing human error, and 50% believing it could reduce the complexity and cost of audits.<sup>1</sup>

While many controls testing groups within government and public sector organizations see enormous potential for data analytics automation to help them enhance their management of internal controls, far fewer have moved forward with integrating automation into their activities. This is because it can be very difficult for controls-testing groups to determine how to move forward with integrating data analytics automation within their activities at a level that meets assurance standards.

In this position paper, we explain what data analytics automation is and examine the key factors driving its use before introducing our four-step approach to helping organizations more effectively integrate data analytics automation into their controls-testing processes. Whether you are new to the concept of using data analytics automation or want to enhance your approach, this paper will give you a strong place to start.

**What is data analytics automation?**

Data analytics automation refers to the use of innovative technologies, tools, and processes to perform specific analytical tasks independent of a human being. For example, in the controls-testing process, it can be used to automatically review invoices and confirm whether approvals occurred according to an organization's previously defined procedures.



1. Caitlin McGurn, "2019 Automation Survey: Automation and the Government Finance Office of the Future," February 24, 2020, Guidehouse, <https://guidehouse.com/insights/financial-services/2020/public-sector/2020/2019-intelligent-automation-survey-aga>.

## Key drivers of data analytics automation

Similar to many businesses in the private sector, government, and public sector organizations are under intense pressure to achieve more value with constrained or limited resources. Data analytics automation is seen as a major way that controls-testing groups can reduce the manual effort required to conduct controls testing while maintaining risk management program integrity and driving efficiency. Data analytics automation is expected to help controls testing groups:

- **Improve cost effectiveness:** Organizations can use open-source software to reduce some licensing costs, while automating tests where data is available can reduce manual effort and potentially increase the amount of testing that controls-testing groups conduct.
- **Enhance efficiency and optimization:** Taking time to develop repeatable codes and scripts can enhance efficiency and optimize the process of controls testing over time. It can also reduce the number of time-consuming manual tasks that need to be conducted, allowing employees to focus on higher value activities.
- **Conduct wider population testing:** Whereas human-led controls testing typically involves sampling and testing, data analytics automation, in most cases, can review entire populations of activities for discrepancies when data quality is strong. It can also be used during the planning phase to perform exploratory analysis to understand trends, anomalies, and potential outliers.
- **Increase the level of assurance:** Using data analytics automation as part of the controls-testing process can reduce potential human error, support more targeted risk testing based on high risk areas identified during data exploration, and allow for more complete testing, rather than sampling. This can give government and public sector organizations a higher level of assurance for controls compared to traditional testing approaches.

## Integrating data analytics automation within controls testing

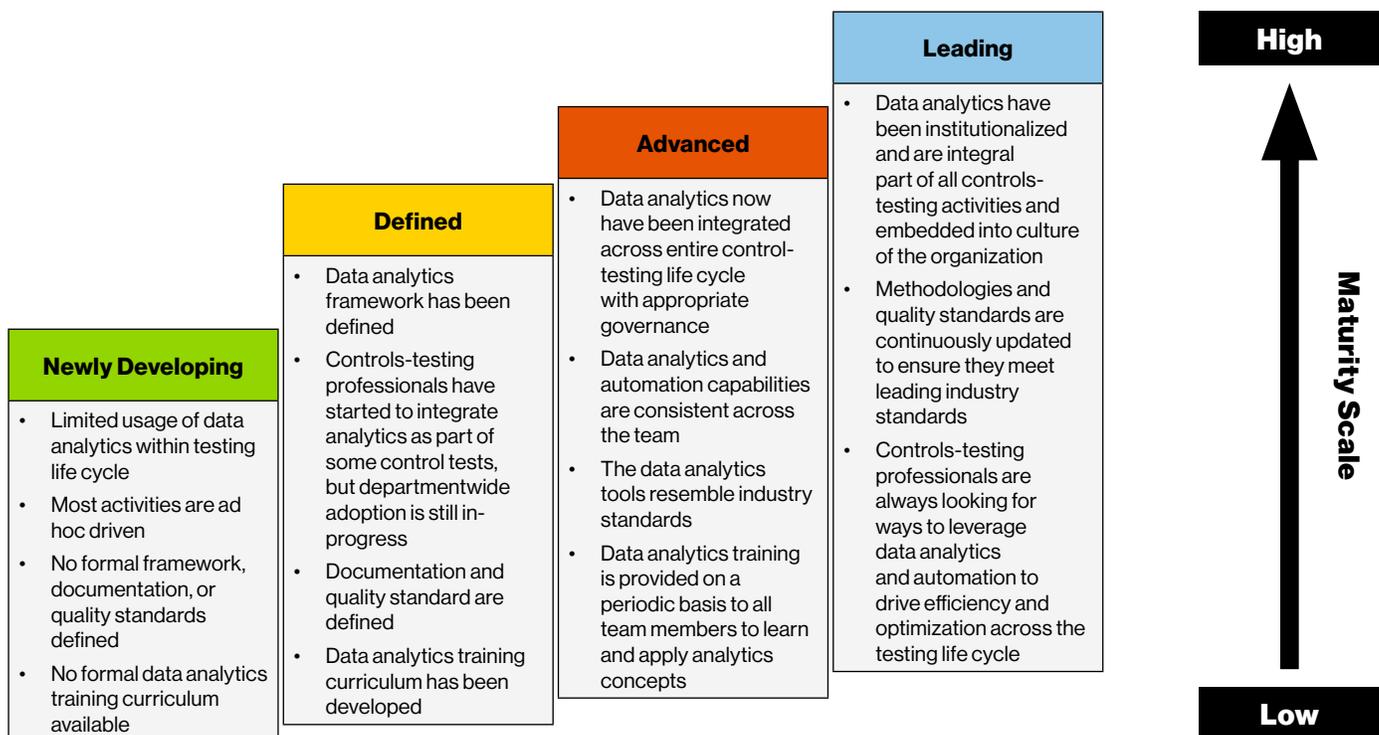
At Guidehouse, we have worked with a wide range of local, state, and federal governments and broader public sector organizations to implement or enhance their use of data analytics automation in controls testing. Through our work, we've developed a scalable four-step approach to data analytics automation integration focused on creating repeatable, reliable, and sustainable value for our clients. Below, we provide a brief overview of each stage in the data analytics automation integration process.

### 1. Understand where the organization is today

Integrating data analytics automation into controls testing can be a challenging task, particularly for organizations that have not completed the foundational work required to ensure automated tasks are accurate and reliable. Before creating a strategy and roadmap for how a controls-testing group can move forward, it is critical to determine where they are on the data analytics automation maturity scale (see Figure 1).

Organizations that fit within the *Newly Developing* stage will likely need to conduct a significant amount of groundwork upfront to ensure they are well-positioned to use data analytics automation effectively. As organizations move up the maturity scale, they will be able to enhance their use of data analytics automation until it is fully integrated within their controls-testing activities.

**Figure 1: Data analytics automation maturity model**



## 2. Develop a robust data analytics automation framework

To improve the outputs of controls testing, reduce potential risks, and create long-term sustainable value from the use of data analytics automation, organizations should clearly document their data analytics automation framework. They can then use this framework as a guide for implementing and enhancing data analytics automation activities over time.

A robust data analytics automation framework should include four key components:

<b>Governance</b>	<ul style="list-style-type: none"><li>• Defining vision and objectives for using data analytics automation</li><li>• Identified leadership support and ownership for the program</li><li>• Dedicated budget for implementation and continuous improvement</li><li>• Determine and procure best automation software to achieve goals</li></ul>
<b>Methodology</b>	<ul style="list-style-type: none"><li>• Defined considerations for integrating data analytics automation within controls testing</li><li>• Guidance for the use of data analytics automation across the controls-testing life cycle</li><li>• Clear analytics documentation standards, quality standards, and standardized templates</li></ul>
<b>People</b>	<ul style="list-style-type: none"><li>• Well-defined roles, responsibilities, and skill sets required to support data analytics</li><li>• Clear team structure for managing data analytics automation (i.e., centralized or hybrid)</li><li>• Identified training based on the needs of the controls-testing group and identified gaps</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Investment in data analytics tools and technologies based on defined needs</li><li>• Process for reviewing and adapting activities based on new trends and innovations</li><li>• Dedicated data repositories, computing power, and services to support analytics activities</li><li>• Documented library of processes to gain access to systems to support data analytics</li></ul>

Organizations should review their framework on a regular basis to ensure that it accurately reflects their activities. This can help ensure consistent and accurate definitions, data, and use of data analytics over time.

## 3. Assess and prioritize areas of focus

To be most effective, organizations should evaluate their controls-testing activities and related operational processes upfront to determine how they can best use data analytics automation. This can help them prioritize integration activities and create a roadmap for making the changes required to enhance their data analytics automation program—and move up the maturity scale—over time.

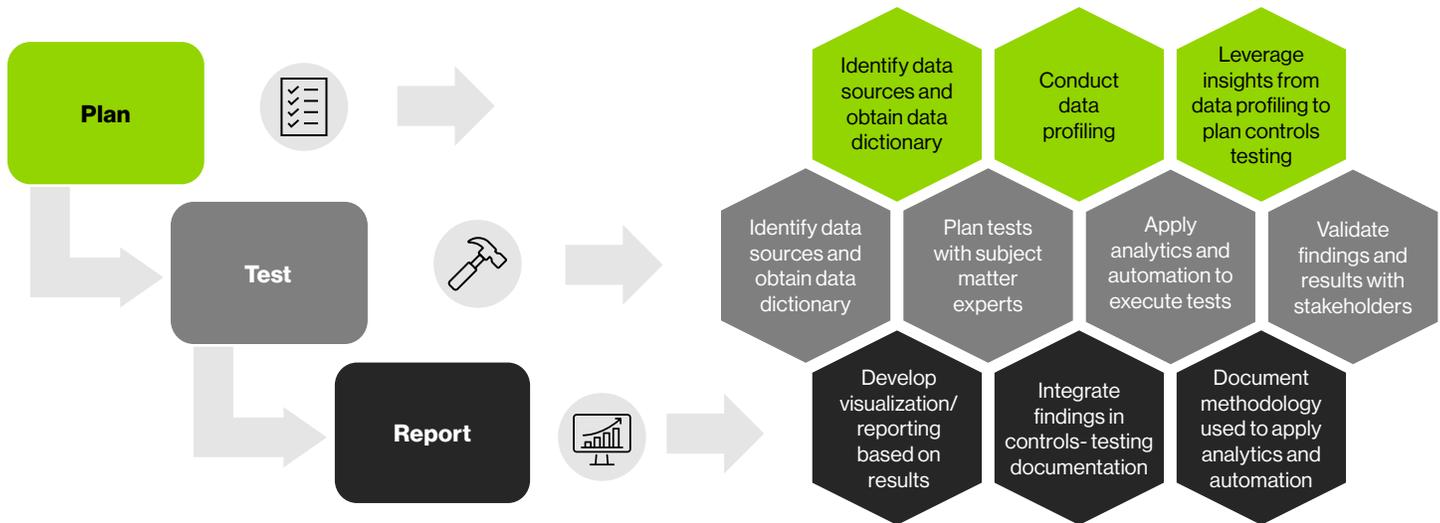
### Here are factors an organization can use to help assess and prioritize areas of focus:

- **Data quality:** The quality of the data (e.g., complete, accurate, consistent) available for analytics purposes
- **Manual testing vs. script automation:** The time required to develop automation and data analytics scripts/codes compared to manual testing
- **Data availability:** The availability and ease of access to required data—both structured and unstructured
- **Data documentation:** The availability of documentation or a data library that clearly defines required data elements

#### 4. Document the data analytics integration approach

Once areas of focus have been prioritized, controls testing groups can move forward with documenting and verifying their approach to integrating data analytics automation at each stage of the controls-testing life cycle (see Figure 2). This step is critical for ensuring automated controls-testing activities are valid and that any data analytics are being conducted based on complete, accurate, and consistent data. Further, this approach can withstand regulatory scrutiny and is auditable.

**Figure 2: Data analytics automation integration across the controls-testing life cycle**



#### Creating value for the long term

Data analytics automation can help government and public sector organizations improve the efficiency and effectiveness of their controls-testing process while freeing up their staff to focus on higher value activities. That said, integrating data analytics automation within an organization isn't an easy task. Controls testing groups need to make sure they have the foundational building blocks in place so that they can use data analytics automation effectively.

Controls-testing groups that take a methodical approach to data analytics automation will be in the best position to enhance leadership trust in key outputs and build momentum for further initiatives. This can help accelerate their journey up the maturity curve and further enhance the value generated from data analytics automation activities over the long term.



**guidehouse.com**

#### About Guidehouse

Guidehouse is a leading global provider of consulting services to the public and commercial markets with broad capabilities in management, technology, and risk consulting. We help clients address their toughest challenges and navigate significant regulatory pressures with a focus on transformational change, business resiliency, and technology-driven innovation. Across a range of advisory, consulting, outsourcing, and digital services, we create scalable, innovative solutions that prepare our clients for future growth and success. Headquartered in McLean, VA., the company has more than 8,000 professionals in over 50 locations globally. Guidehouse is a Veritas Capital portfolio company, led by seasoned professionals with proven and diverse expertise in traditional and emerging technologies, markets, and agenda-setting issues driving national and global economies. For more information, please visit: [www.guidehouse.com](http://www.guidehouse.com).

©2021 Guidehouse Inc. All rights reserved. W266251

This proposal contains Guidehouse proprietary and confidential information, and shall not be disclosed outside the recipient's company or duplicated, used, or disclosed, by the recipient for any purpose other than to evaluate this proposal. Any other use or disclosure without the express written permission of Guidehouse is prohibited.

