

# Data Literacy Within State Government:

## Building a Knowledgeable Workforce That Knows How to Use Data for Better Decisions



Data literacy among state employees was addressed in [The 2023 State CIO Survey](#), an annual survey conducted by NASCIO. Only 16 percent of state chief information officers (CIOs) report that they have a formal data literacy/proficiency program for state employees with 84 percent answering no. In light of this data, NASCIO recently convened a panel of state chief data officers who shared their approaches and experiences with data literacy. This panel described six competencies that comprise effective data literacy across the state government enterprise.

- Understanding the importance of data – what is data and what is its importance
- Knowing/learning where to find data needed for informing a particular decision
- Knowing how to read and interpret data
- Understanding basic principles of data management
- Knowing how to prepare and analyze data
- How to communicate with others using data

NASCIO has published extensively on data management and analytics and data management has been on the [State CIO Top Ten Priority Strategies, Management Processes and Solutions](#) since 2016. To fully manage data within state government, there is necessarily a minimum capability required among state government staff. As states employ more sophisticated automated and manual capabilities for data driven decisions making, this minimum capability is becoming increasingly important.

Further, with the emerging use of generative artificial intelligence (GenAI), the criticality of data quality becomes more profound, and the potential risk related to feeding GenAI applications with poor quality data is equally alarming. Successful implementation of GenAI applications will require data management discipline and infrastructure to enable highly sophisticated emerging technologies.

It is imperative that the state government workforce be data literate – that is to have a command of data management and an understanding that data is a critical state government asset.

The [Indiana Performance Hub](#) defines data literacy as:

Our ability to read, analyze, create and talk about data is our data literacy.

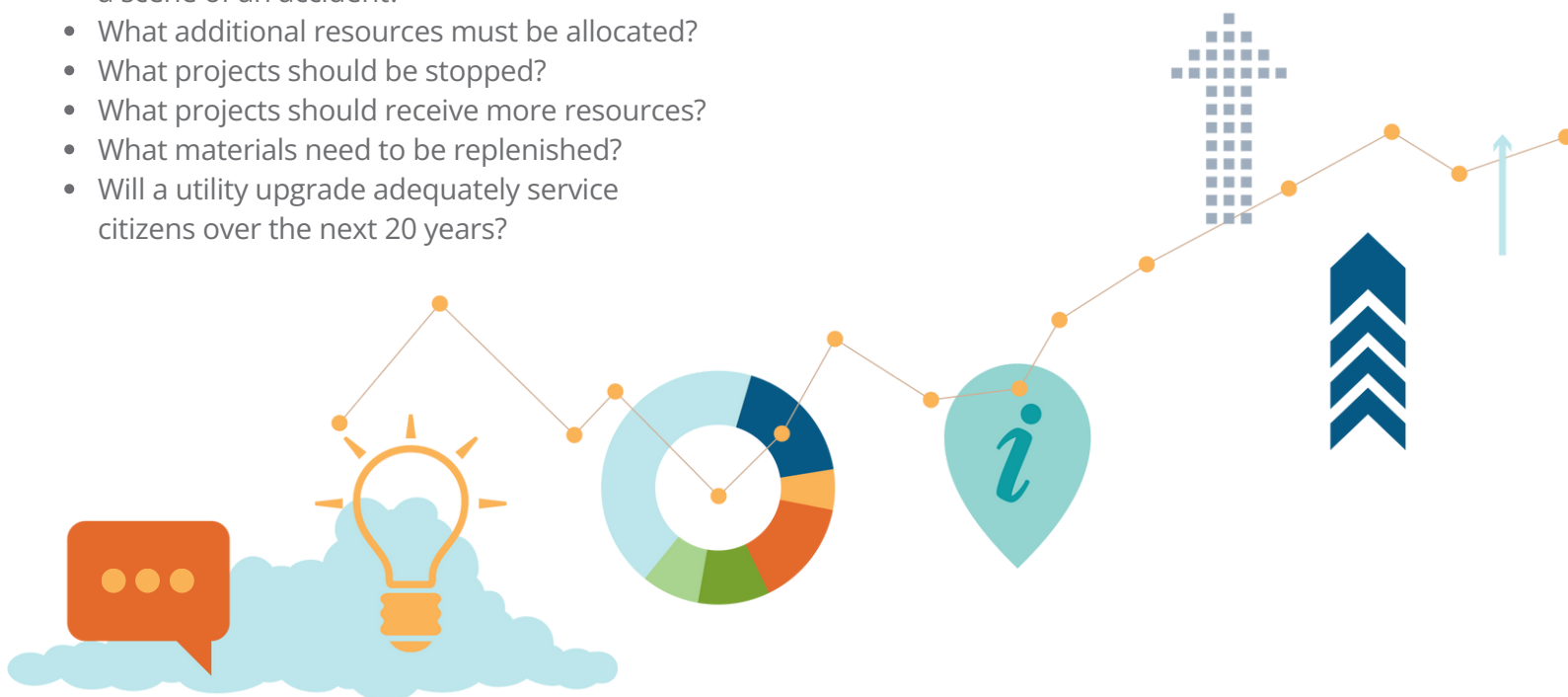
Every state employee must have a certain minimum level of understanding of data, data quality, an ability to analyze data and gain insights from that analysis. Those insights will inform decision makers and provide insights from quality data and help address topics like these:

- What policies are written and can be intelligently defended?
- What contracts are entered into?
- Who is hired?
- Who is promoted?
- What training is needed?
- How is a citizen request fulfilled?
- What roads will be repaired first?
- What route emergency services should take to a scene of an accident?
- What additional resources must be allocated?
- What projects should be stopped?
- What projects should receive more resources?
- What materials need to be replenished?
- Will a utility upgrade adequately service citizens over the next 20 years?

The circumstances where the use of data is necessary can include situations like these:

- Routine day to day functions.
- Strategy development and execution.
- Defining project scope.
- Anticipating outcomes of a project, program or management initiative.
- Responding to a crisis.
- Planning for and ensuring resiliency.

Using data is what drives an organization's mission and enables it to achieve its goals and objectives. Analysis of state data uncovers insights that inform decision makers in every agency and at all levels of the state organization. Essentially every state employee is a decision maker that touches state data and as data stewards they should consider data to be one of their most enabling assets. Every employee should have a very high regard for and dependency on this most valuable resource. Essentially, every state employee has data stewardship included in their role.



Some of the motivations for understanding data and analyzing for insights include:

- Fraud detection and prevention
- Better application of limited resources
- Saving money or better investment of funding
- Delivering transparency of government
- Avoiding errors in decision based on incorrect information
- Earning and sustaining citizen trust in their government

Some states have statutory requirements for state agencies to put in place governance for managing data. To meet these statutory requirements, agencies must have a foundational understanding of data, its criticality and how to effectively use data.

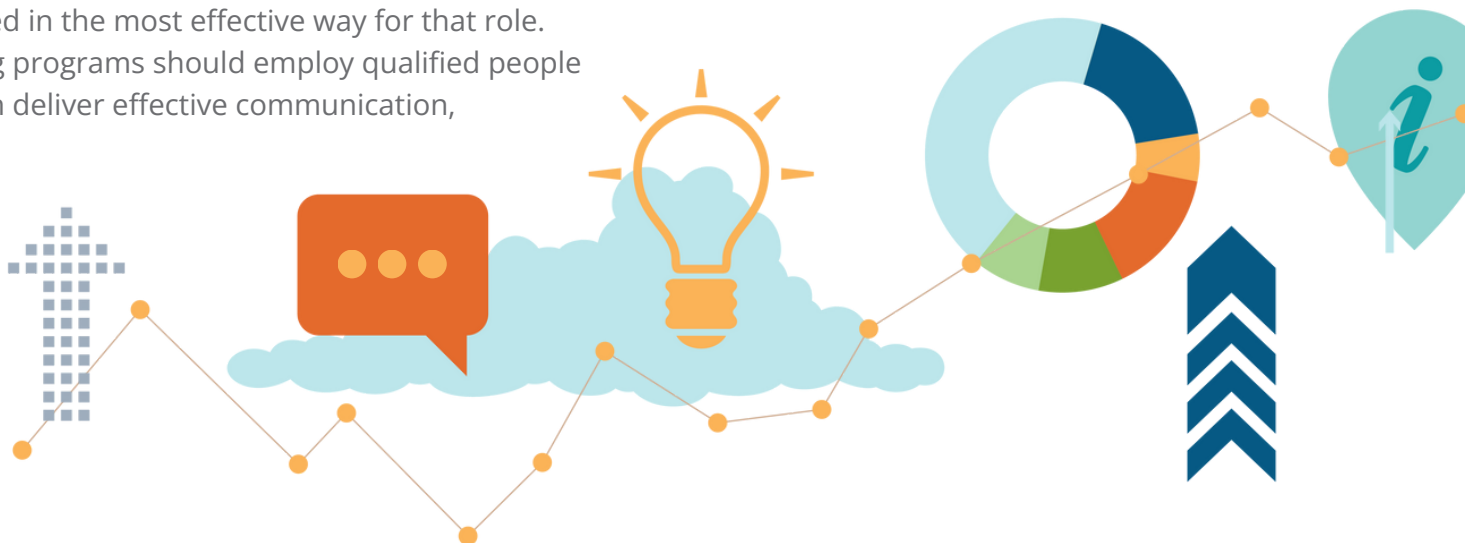
From this foundational understanding of the importance of data, some states have built educational programs that are tailored to the various roles and responsibilities across government – from the governor’s office to the offices that interact with citizens on a day-to-day basis – from road maintenance and construction to licensing and credentialing services – from in line services to online services.

Training in the use of data should be relevant to the role a state employee plays and should be delivered in the most effective way for that role. Training programs should employ qualified people that can deliver effective communication,

marketing and training that equips state employees at all levels to an appropriate level of proficiency in data management and data analysis.

State enterprises must move into a future circumstance where every employee embraces the notion that data is critical to delivering on their particular role and the delivery of state services in general. This future requires organizational, process, technical and cultural change management to work towards creating a “data culture” in state government. Everyone must accept responsibility and accountability for data quality whether it’s entering data or retrieving data. Essentially, every state employee is a “data steward” – having some level of responsibility for data quality within their purview.

To move the culture in the direction of data literacy, leadership should leverage those employees that already see the intrinsic value of data literacy to reach those employees that aren’t there yet. Communication, marketing and change management are essential disciplines that must be employed to effectively reach and resonate with other stakeholders.



Data literacy among employees is only going to become more essential as states are beginning to employ more tools for exploiting data generated and stored with a state as well as other data resources from other government and industry sources. States have been using various analytical tools for some time and the quality and reliability of data is inherited by the analysis of that data, thus, the criticality of data quality. And when conducting analysis of data there should be a healthy skepticism regarding the reliability of the data being analyzed for insights.

States are employing artificial intelligence to sift through and analyze data looking for patterns and insights and next up is the anticipated use of GenAI. However, GenAI brings certain risks as it can create artifacts that are incorrect or biased or “hallucinations” which are nonsensical or inaccurate outputs. Again, a need for healthy skepticism regarding what is generated from these capabilities is needed to prevent inaccurate poor-quality data.

NASCIO’s publication, Your AI Blueprint: 12 Key Considerations as States Develop Their Artificial Intelligence Roadmaps, presents data quality as the number 4 consideration for state government artificial intelligence roadmaps.



The “data literate” enterprise and state employee is in fact on the lookout for bias and inaccuracies, and is aware of risks inherent with interpretation of data. Training that builds the knowledge, skills and abilities in data management and analytics will impart this healthy skepticism when evaluating data, the results of analysis and the array of conclusions that might be drawn from that analysis. This perspective will be important when evaluating results from the application of GenAI and indeed any analytics. When reviewing another’s conclusions, ask what data forms the basis for such conclusions and what analysis was applied.

In parallel with the investment and effort to create this “data culture” there must be the incentives and reward structure to motivate behaviors that demonstrate an understanding and ability to make use of data management and the value of shared data from across agencies for gaining full-view insights. And there must be a commensurate level of effort to understand where and when there is resistance or challenge to this direction. Sometimes the best wisdom can be gained from naysayers. Learn what the barriers are and why they exist and then work with these state employees to take necessary corrective action.

**NASCIO**  
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**Your AI Blueprint: 12 Key Considerations as States Develop Their Artificial Intelligence Roadmaps**


With the mass availability of generative AI (GenAI) tools and large language models in the last year, states are updating or creating new policies and road maps for artificial intelligence (AI).

The NASCIO State CIO Top Ten Priorities list for 2024 includes artificial intelligence for the first time ever. As AI becomes increasingly integrated into the technology infrastructure of government agencies, an AI roadmap will emerge as an indispensable tool for states in the months and years ahead. An AI roadmap not only facilitates the seamless adoption of AI but also enhances efficiency for an already strained state government workforce.

There are several benefits to creating an AI roadmap including improving stakeholder and executive buy-in for AI initiatives, flexibility to adapt as the technology changes, efficient resource allocation and cost savings, risk management and improved service delivery.

Here are a dozen considerations states should include in their AI roadmaps for 2024 and beyond:

- 1 Align AI initiatives to strategic drivers for the organization.** First determine how AI fits into the overall goals of the state IT strategic plan. Don't assume AI will solve every problem or help you reach every goal. In addition, don't go looking for a problem to solve with AI. Identify the business case and overall strategic goals of the organization before deploying an AI tool.
- 2 Establish governance and oversight processes.** Absence of proper AI governance exposes states to potential risks such as data leakage, violations of privacy laws and erosion of citizen trust. To navigate these challenges, it is crucial to adopt established AI governance frameworks such as the NIST AI Risk Management Framework, OECD Recommendations on Artificial Intelligence and the European Union AI Act.
- 3 Inventory and document existing AI applications.** Discover the extent of AI tools employed by agencies, both knowingly and unknowingly. Some long-standing technology tools have undergone updates to incorporate new AI functionalities.
- 4 Address data quality and sourcing.** Prioritize data governance and classification to ensure the highest quality data available is used. Evaluate data sources, mindful of potential biases.



With all this foundational discussion regarding how data and analytics must become inherent with every state employee there must be a commensurate open door to welcome the insights state employees bring to issues, decisions and citizen outcomes being sought. This must necessarily bring in more collaborative arrangements between management and staff. This will require trust, business relationship management and an open culture that is non-threatening to challenges to direction and decision making. The new culture of data literacy will encourage such behaviors and not be threatened by them.

Some of the ingredients successful states have recommended include:

- Gaining executive endorsement and support.
- Publishing a data literacy policy.
- Establishing data governance that includes all stakeholders.
- Creating a data steward network.
- Employing a collaborative approach to gaining participation.
- Delivery of training that is relevant to an individual's role and responsibilities.
- Partnering with community colleges to deliver training.
- Employing effective communications and marketing to gain awareness and active participation.

A few states have published their data literacy training on publicly available platforms and two examples are: the [Texas Data Literacy Program](#) and the [Indiana Management Performance Hub](#).

NASCIO recommends that states use this research brief as a starting point to establish a data literacy program for employees.



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### **About the National Association of State Chief Information Officers**

Founded in 1969, the National Association of State Chief Information Officers (NASCIO) represents state chief information officers (CIOs) and information technology (IT) executives and managers from the states, territories and District of Columbia. NASCIO's mission is to foster government excellence through quality business practices, information management and technology policy. NASCIO provides state CIOs and state members with products and services designed to support the challenging role of the state CIO, stimulate the exchange of information and promote the adoption of IT best practices and innovations. From national conferences to peer networking, research and publications, briefings and government affairs, NASCIO is the premier network and resource for state CIOs.