Data: the Lifeblood of State Government

25%
50%
75%
100%

NASCIO represents state chief information officers and information technology executives and managers from state governments across the United States.
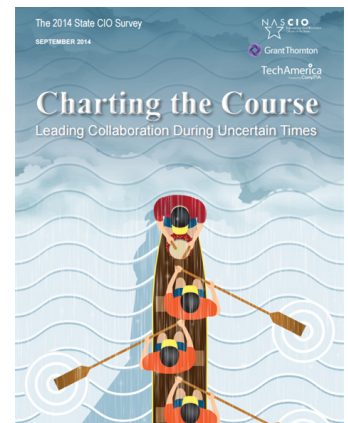
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Data and Information – A top priority for modern organizations

NASCIO has presented the importance of data and information in its series on records management, its series on data governance and the NASCIO Enterprise Architecture Toolkit. Some states have begun their journey toward a maturing data management discipline but there is a long way to go. State CIOs recognize the importance of their role in promoting and advancing data management across the state government enterprise as presented in the both the 2015 and 2014 State CIO Surveys. Business Intelligence and Business Analytics has been on the State CIO Top Ten Priority Technologies, Applications and Tools since 2009. For 2015, it is a number four priority and receiving considerably more attention in state IT strategic plans. And, for 2015, Data Management joined the top ten priority strategies list for the first time at number eight.[1]

The importance of data in state government prompted NASCIO to publish a series on data governance, reports on the subjects of open data and big data, and deliver discovery sessions at recent NASCIO conferences.   The demand for data, the need for more data sharing and the accelerated growth in data generation has been acknowledged by NASCIO and its members. The 2014 and 2015 State Annual CIO Surveys included Managing Data as a Strategic Asset as one of the topics addressed

The 2014 State CIO Survey
SEPTEMBER 2014

Charting the Course
Leading Collaboration During Uncertain Times

Key Question

What is the level of budget that will be required to support a formal data management function and capability?

by survey respondents and a discussion of the results.[2] The choice of this priority issue and state CIO perspectives reflects the strategic importance of management of data and information as strategic state government assets.

Lots of data and more coming . . .

As presented in the annual surveys and NASCIO issue briefs, states are dealing with more and more generators of data and thus, more and more data, particularly unstructured data. States are responding to the public demand for open data and presenting more datasets in online portals and dashboards, including opening up legacy data resources. States recognize data and information are essential to cross agency and cross jurisdictional collaboration. Furthermore, states are exploring new ways to support and improve the performance of programs and service delivery through better management of government data, business intelligence and business analytics.

The growth in big data, the growing number of generators of data, and the anticipation that this burgeoning resource will continue to balloon, has prompted 35% of the states to pursue big data initiatives. The growth in data generation is also one of the major impacts of the Internet of Things (IoT), unmanned aerial systems (UAS)[3], body worn cameras, and the recognition of the value derived from inter-agency and cross jurisdictional information sharing.

To summarize, effective governance and proper management of data and information are viewed by CIOs as a major issue. Data and information are philosophically known to be strategic assets that have long been neglected within most agencies and departments. Historically, only a small percentage of data collected is ever analyzed for insights on citizen service delivery, improving performance and making better policy decisions. Transactional data is often collected, stored and retrieved, but not analyzed in depth. States are now devoting resources to these most important assets. They are also facing many challenges, barriers and quandaries in how to get their arms around this priority.

Data Governance is Needed: There are Resources

As articulated in prior research by NASCIO, data governance is fundamental to achieving the vision of a state government managing data as an enterprise asset. The full discipline for managing data is well articulated in the DAMA Data Management Body of Knowledge (DMBOK[3]). The DMBOK is the product of international collaborative efforts devoted

to providing the much needed guidance on how to govern and manage data and information assets. This should be a foundational reference for all of state government. States need to know how to get started. The complexity of data management is evident as one looks at the many functions that comprise data management.

Data Architecture Management
- Enterprise Data Modeling
- Value Chain Analysis
- Related Data Architecture

Data Development
- Analysis
- Data Modeling
- Database Design
- Implementation

Data Quality Management
- Specification
- Analysis
- Measurement
- Improvement

Database Operations Management
- Acquisition
- Recovery
- Tuning
- Retention
- Purging

Meta-data Management
- Architecture
- Integration
- Control
- Delivery

Data Governance
- Strategy
- Organization & Roles
- Policies & Standards
- Projects & Services
- Issues
- Valuation

Data Security Management
- Standards
- Classification
- Administration
- Authentication
- Auditing

Document & Content Management
- Acquisition & Storage
- Backup & Recovery
- Content Mgmt.
- Retrieval
- Retention

Data Warehousing & Business Intelligence Management
- Architecture
- Implementation
- Training & Support
- Monitoring & Tuning

Reference & Master Data Management
- External Codes
- Internal Codes
- Customer Data
- Product Data
- Dimension Mgmt

DAMA Data Management Functions[4]

Each of these functions has a detailed workbench that presents inputs, outputs and process. The DMBOK also presents seven Environmental Elements for each of these functions that include goals and principles, roles and responsibilities, and practices and techniques. The DMBOK is certainly a primary reference for any state government or state agency data management initiative. DAMA is expanding these functions to include new areas related to data management including big data and data maturity.
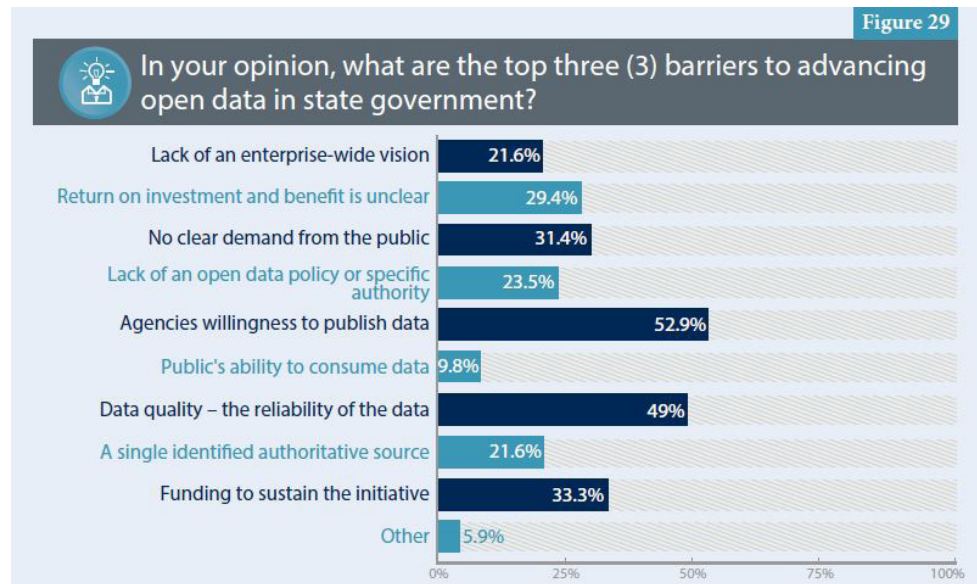
Key Question

What are candidate funding sources?

What is stopping us?

The world is changing at the speed of life. Technological innovations are transforming governments, industries and societies. DAMA is keeping up with those changes with new functionality being added to the DMBOK. In seeking successful initiatives in data management NASCIO will highlight in its series on data management the work currently underway across many of the states and territories as well as local government in order to provide lessons learned, what works and what doesn't work. So, the discipline exists and is growing. The guidance exists and is growing. However, significant challenges exist for state governments. These are highlighted in both the 2014 and 2015 State CIO Survey reports. A question presented in the 2014 survey was directed at open data initiatives. However, the state CIO responses provide insight into some of the issues states face relative to the broader topic of data management. For example, one of the barriers to open data is data quality. Another is no single identified authoritative source for data.

Figure 29

In your opinion, what are the top three (3) barriers to advancing open data in state government?

Barrier	Percentage
Lack of an enterprise-wide vision	21.6%
Return on investment and benefit is unclear	29.4%
No clear demand from the public	31.4%
Lack of an open data policy or specific authority	23.5%
Agencies willingness to publish data	52.9%
Public's ability to consume data	9.8%
Data quality – the reliability of the data	49%
A single identified authoritative source	21.6%
Funding to sustain the initiative	33.3%
Other	5.9%

And, if we don't do anything – what happens?

So what happens if state governments continue to ignore, under invest and fail to gain commitment from agencies to share an enterprise view of data and information? A lot. The diagram below presents a shortlist of issues that will remain significant issues for state government absent a deliberate operating discipline for managing data and information as strategic enterprise assets.

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How might the structure and membership of governance change and mature over time?
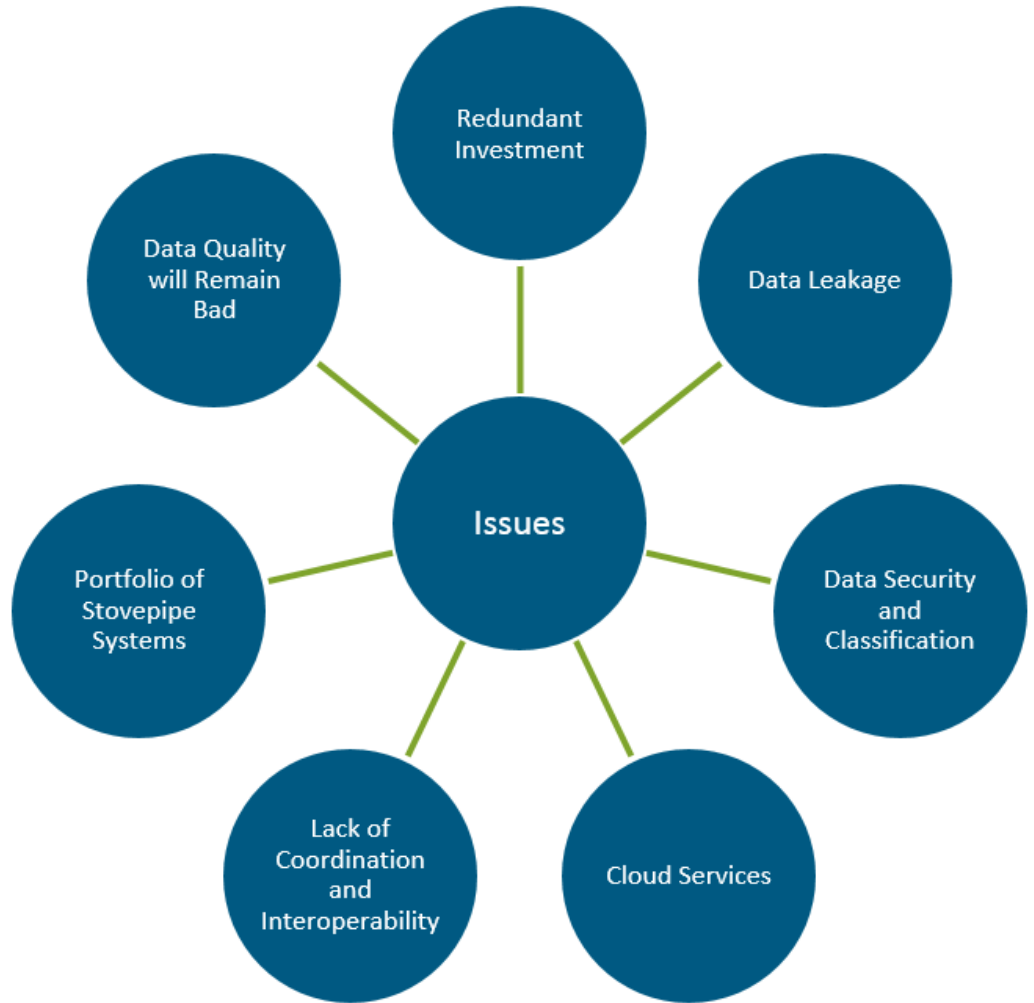
Issues Requiring a Data Management Discipline

In summary what is lost is opportunity and value. Data and information are strategic assets that have tremendous value for improving the quality and efficacy of government through better informed policy decisions. These are assets that must be proactively managed and protected. In meantime, the storehouse of data continues to expand and diversify.

So let's discuss this subject of data management in order to explore, explain and hopefully convince state government leaders, policy makers, management, professionals, staff, strategic partners, and even citizens, that data management is essential to government doing its job. Let's explore what information and content should reside in the messaging to the stakeholders and potential champions in state government.

Key Question

How should a data management initiative be planned and staged?

"Manage your data as a strategic business asset"

We've all heard it. Most of us have said it. But do we really know what it means?

If we are able to explain it, can we successfully communicate that explanation and the significant business impact that managing data as an asset will have to our executive stakeholders?

Most importantly, can we convince one of them to be our champion?

So let's break it down first.

Simply put, an asset is something of value, and a business asset brings value to an organization. Items of value are usually monitored, maintained and protected – in other words, their value is managed. It's also worth noting that assets can be tangible or intangible, because depending on how your organization perceives it, data may fall in both camps.

Data may be considered a tangible asset when defined as a single unit of fact that can be documented and validated. The physical tables, spreadsheets, databases, logs, journal entries, sensor readings, written notes and anything else recording those "single units of fact" might be considered tangible data assets.

Some organizations stop there in defining data and use the term interchangeably with information, but they are not really the same. Going one step further, data that has intelligence or intellectual property applied to it becomes information and information is the fuel needed by the business of government to execute programs and make informed decisions. The interpretation, method of analysis, and manner of application of an organization's information might be considered intangible business assets.

OK, I understand the nuance between data and information,
but how can they be "strategic"?

Strategies are developed to tackle specific challenges and opportunities. If there isn't a concrete, measurable business goal that needs to be achieved, there's not going to be a strategy against which information will be needed to measure progress and make decisions.

![NASCIO logo - Representing Chief Information Officers of the States]

Key Question

What data management capabilities currently exist?

First and foremost, for data and information to be considered "strategic," their generation and utilization must be in support of, and tied back to, specific business goals. This is the foundation of a data-driven, decision-making organization. Next, information must be delivered in a manner that is usable for the business – when, where and how it is needed. Information that is not available, useful, and consumable cannot be used to make informed decisions. Finally, information must be reliable, based on data supported by standards, and validated by business rules. Reliable information enables a nimble, educated response to an opportunity or threat.

Bringing it all together

"Managing data as a strategic business asset," means that <u>data must be managed to create reliable information that can be readily consumed by the business of government.</u> This explanation and approach supports, fosters, and facilitates program execution, better informed decisions, and the achievement of business goals, which all bring value to the organization.

How Does One Demonstrate the "Business Value" of Strategic Data Management?

Show Them the $Money$

First adopt an outward looking approach and assess the environment from an Agency point of view. What key drivers are necessary for them to successfully achieve their mission?

- In the private sector, the more you can tie efforts back to specific financial impact, the more you will have the business's attention and be positioned to gain support and active advocacy from management.
- In the public sector and government, most goals can be grouped into one of three categories:
  - Service Delivery (Execution)
  - Efficiency (Cost and Process)
  - Data Stewardship (Transparency/Privacy/ Security)

Shared handling of data between agencies with different business rules and data definitions creates inconsistency, leads to poor data

Key Question

Do we have the resources to act once we have the necessary support?

quality, and reduces agencies' ability to achieve business goals and execute their missions.

Managing data as a strategic asset, generates specific, measurable, positive impacts on four key drivers: (Costs, Revenues, Risks, and Stakeholder Engagement)

1. **Costs**
   - Improved error prevention– (proactive)
   - Increased error detection and correction – (reactive)
   - Reduced overpayments (claims/settlement costs)
   - Reduced rework / workload / processing times
   - Decreased cost per volume (throughput, average cost per transaction)

2. **Revenues**
   - Improved forecasting
   - Reduced erroneous bill-backs/invoicing
   - Prevented delayed or lost collections
   - Increased confidence in analysis and reporting

3. **Risks**
   - Improved regulatory compliance
   - Fully utilized system investment & development
   - Quicker Integration of new systems
   - Reduced fraud – improving processes and sharing across systems
   - Better decision making – inaccurate information cannot support well informed decisions

4. **Stakeholder Engagement**
   - Improved ease of doing business with Stakeholders
     - Increased stakeholder satisfaction
     - Improved agility in responding to consumer demand & market changes
     - Faster identification of challenges
     - More opportunities for innovative solutions
     - More information available when, where, and how the customer wants it

   - Reputation
     - Improved organizational trust
     - Increased confidence in the State/Agencies
     - One common image across the State

Elevator Pitch

Managing data as a strategic business asset requires that **data must be managed to create correct and reliable information that can be easily consumed by the business**.

This approach is directly tied to the achievement of specific business goals and brings value to an organization by:

- generating trusted information for swift decision making,
- reducing costs,
- increasing operational efficiency,
- mitigating risks,
- increasing opportunities for stakeholder engagement
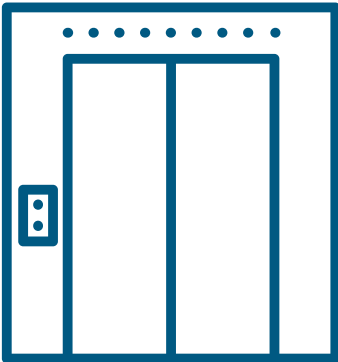
Using these drivers and examples, messaging and business cases can be created and tailored to support the individual strategies developed by the business to achieve their goals.

But there's much more…

Preparing for discussions with the business and securing an executive champion to support managing data strategically is critical. However, these are only the first steps on the path to Enterprise Data and Information Management.

Recommendations for Advancing Enterprise Data Management

- Assemble an early organizational structure, roles and responsibilities that will form the early governance and management of data management. Identify and recruit champions that will support a data management operating discipline with funding and authority.

- Develop a change management strategy to move the culture toward better data management and understanding the strategic nature of data and information.

- Develop a communications strategy for delivering a compelling message regarding data management and its value to government and citizens. Develop a communications plan that describes the changing business environment, global economic dynamics, regional and local economics, and the related importance of good data management operating discipline for preparing for these environmental factors.

- Create a strategic plan for data management that includes mission, vision, goals, objectives and relevant metrics. The business case for data management must show clear alignment with the strategic intent of state government. Align and clearly articulate data management strategies that will directly support strategic initiatives.

- Clearly articulate organizational strengths and weaknesses related to data management – either due to a lack of data management discipline, or due to a strong or maturing data management discipline. The former case is essential for getting support to initiate a data management discipline. The latter is important for maintaining support for such discipline.

Key Question

Who are the key stakeholders that should be represented in any governance function that is created?

- Clearly describe the risks state government faces if data management is not properly managed. Describe why the effort must be expended now to either begin or to continue investing resources in data management. The risk portfolio should include regulatory, economic, and security risks.

- Describe the importance of data management in support of cybersecurity, cyber disruption response planning and privacy.

- Make the case for the importance of data management as critical for preparing for emerging trends and the future. This includes preparing to properly govern and manage the Internet of Things, Big Data, Open Data, Unmanned Aerial Systems (UAS), cross agency and cross-jurisdictional collaboration.

- Develop data management strategies that can assist with immediate concerns and future needs. Map the data management strategies to elements within the state and agency strategic plans.

- Continue to reference NASCIO resources as it continues to develop guidance on data management.

Key Questions

- Who are the key executive level champions?

- What governance should be in place in the early stages of a data management initiative?

- Who are the key stakeholders that should be represented in any governance function that is created?

- How might the structure and membership of governance change and mature over time?

- How should a data management initiative be planned and staged?

- Who should participate in planning and coordination of effort in developing and maturing a data management discipline?

- What is the current state of support for data management at the executive level? Across the culture?

- What barriers will have to be overcome in order to gain support from the various stakeholders?

- What communications capabilities are required to support the change management process?

- Do we have the resources to act once we have the necessary support?

- What is the level of budget that will be required to support a formal data management function and capability?

- What are candidate funding sources?

- What are the roles and responsibilities and when should these roles be created?

- What data management capabilities currently exist?

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Resources

See NASCIO reports under the category "Enterprise Architecture."
www.nascio.org/Publications

What to look for:
- Data Governance Series
- Data Transparency
- Open Data
- Cloud Computing – Capitals in the Clouds: The Case for Cloud Computing in State Government Part II, Challenges and Opportunities to Get Your Data Right.
- NASCIO Enterprise Architecture Toolkit Version 3.0
- Unmanned Aerial Systems

DAMA International
www.dama.org

The DAMA (Data Management Association) is a not-for-profit, vendor-independent, international association of technical and business professionals dedicated to advancing the concepts and practices of data management.

What to look for:
- The DAMA Guide to the Data Management Body of Knowledge" (DAMA-DMBOK Guide)

EndNotes

1. See NASCIO Top Ten Priority Technologies, Applications and Tools published each year since 2009 as the second part of the annual Top Ten report. www.nascio.org/publications.

2. The 2014 State CIO Survey – Charting the Course: Leading Collaboration During Uncertain Times. September 2014. Published by NASCIO, Grant Thornton, TechAmerica. www.nascio.org/publications.

3. See NASCIO report Unmanned Aerial Systems, Governance and State CIOs:On the Radar. May 2015. Available at www.NASCIO.org/Publications.

4. DAMA Data Management Body of Knowledge (DMBOK) – www.dama.org