Open Data:

The Opportunities, Barriers and Costs for Ohio

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Executive Summary

State and local governments collect and maintain large amounts of data for a range of functions including education, the economy, transportation, public safety, public services, health, the environment and the operation of government itself. The majority of this data is publicly available but in a variety of separate formats and structures, making it difficult to discover, share and use.

A school of thought exists, often referred to as open data[1], that if this publicly available data was in formats compatible with different technologies that anyone could use, government performance could be improved. Increased transparency could better demonstrate the costs and benefits of state and local government programs. In addition, this accessibility could be used by public, private sector and non-profit organizations to develop new services, stimulating innovation.

Open data makes pure public records and data available in technical formats so that data within records can be processed, analyzed and re-used electronically without human intervention. For example, when an agency publishes the data from a spreadsheet online by exporting it to a file format, such as .csv, the file can be read by a number of computers including various spreadsheet and database programs. An example of a public record **not** in an open data format is a spreadsheet containing an agency's operational statistics that is converted to a basic print-equivalent PDF and then published on the Internet.

The State of Ohio has a proven history of working with and providing access to open data. One strong example concerns spatial or digital mapping data sets. The Ohio Geographically Referenced Information Program (OGRIP) has been a focal point for sharing federal, state and local government spatial data sets for years. This open data has stimulated all sectors of government, the private sector, academic research and the citizenry.

Section 701.30 of Ohio's 2014-2015 budget bill, Amended Substitute House Bill 59 (H.B. 59), requires the Ohio Department of Administrative Services (DAS) and the Ohio Development Services Agency (DSA) to provide reports to the General Assembly and the Governor that propose recommendations on standards for state and local agencies to post open data online. This DAS report provides an overview of open data, state activities, considerations, recommendations and a roadmap.

Recommendations:
  1:   Develop an open data strategy.
  2:   Start small, follow a defined strategy and mature incrementally.
  3:   Define success measures to meet open data initiatives goals.
  4:   Prioritize data sets to publish as open data.
  5:   Adopt technical and data definitional standards.
  6:   Leverage national best practices and publish guidance on identifying, assessing and publishing open data.
  7:   Address open data barriers.
  8:   Continue work to improve the state's uniform chart of accounts.
  9:   Include data sources and disclaimers on data outputs.
  10: Monitoring the DATA Act's requirements.

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[1] The federal government defines "open data" as "…*publicly available data structured* in a way that enables the data to be *fully discoverable* and usable by end users." OMB. Memorandum, M-13-13, *Open Data Policy – Managing Data as an Asset* (May 9, 2013)

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Introduction

State and local governments collect and maintain large amounts of data that could be used to improve performance and increase transparency leading to better outcomes. However, the use of this data in an open data format could lead to other beneficial results. Could governments better demonstrate the costs and benefits of programs through open data? What if that data could be used by private-sector companies and non-profits to provide new services to the public? What new knowledge and unforeseen innovation occurs because broad sets of data are available for analyses beyond the data's use by government?

Legislative Charge

Section 701.30 of Ohio's 2014-2015 budget bill, Amended Substitute House Bill 59 (HB 59) , requires the Ohio Department of Administrative Services (DAS) and the Ohio Development Services Agency (DSA) to provide reports to the General Assembly and the Governor that propose recommendations on standards for state and local agencies to post open data online.

For open data to be effective, public records must be capable of being searched and downloaded in a uniform manner by the public. The second issue is how information exchanges can provide local governments with insights into government performance, assistance programs, and economic development.

DAS and DSA explored open data initiatives and their challenges, benefits, barriers and strategies. To reach their conclusions, DAS and DSA:

- Consulted with local government individuals to better understand local issues and assist in the development of a survey;
- Conducted a survey of local governments in Ohio on open data;
- Initiated conversations with state agencies regarding types of data;
- Interviewed local and state government officials outside of Ohio with open data initiatives to identify the opportunities, barriers and costs in providing open data; and
- Met with representatives from companies working in open data and big data.

DAS and DSA worked collaboratively and will submit their reports separately to the Governor and General Assembly.

Definition of Open Data

According to the Open Knowledge Foundation's *Open Data Handbook Documentation*, Release 1.0.0, the benefits of open data in government are:

- Improved effectiveness of government services;
- Improved efficiency of government services;
- Impact measurement of policies;
- New knowledge from patterns in large data volumes;
- Innovation;
- Improved or new private products and services;
- Self-empowerment;
- Participation; and
- Transparency and democratic control

Open data is about making public records available in technical formats so data can be processed, analyzed and re-used electronically. It allows the data to be easily used to discover and be accessed without any restriction on its subsequent use.

As defined by the Open Data Handbook, open data is data that can be freely used, reused and redistributed by anyone – subject only, at most, to the requirement to attribute and share alike.

The Handbook goes on further and summarizes most important attributes of open data as:

- Availability and Access**:** The data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the Internet. The data also must be available in a convenient and modifiable form.

- Reuse and Redistribution**:** The data must be provided under terms that permit reuse and redistribution including the intermixing with other data sets.

- Universal Participation**:** Everyone must be able to use, reuse and redistribute. There should be no discrimination against fields of endeavor or against persons or groups. For example, 'non-commercial' restrictions that would prevent 'commercial' use or restrictions of use for certain purposes (e.g., only educational purposes) are not allowed.[2]

Open Data vs. Big Data vs. Open Government

An important distinction between open (government) data and big data is focused on the result. Big data has the potential for identifying trends and directions. It is "high-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making…." [3] Big data applies to the private and government sectors as well as academia. Big data can apply not only to data made open to the public, but also to data that is restricted and not public, for example, protected health information on specific individuals. Conversely, there can be open data that is not big data. In fact, data in databases, even in large amounts, may not meet the definition of big data because traditional business intelligence tools can be used to analyze the data. However, open data sets can contribute to big data, including volume, velocity and variety of information.

Open data is related to but not synonymous with "open government." First, open data is a subset of public records provided in a machine-readable format. Government agencies are likely to have public records – hard-copy records, data in legacy systems, etc. – that do not meet the "technically open" portion of the open data definition. Furthermore, open government extends beyond public records to include open meetings and citizen engagement activities such as public notices, hearings, comment periods, town hall meetings, surveys, etc.

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[2] Source: http://opendatahandbook.org/en/what-is-open-data/index.html

[3] Source: http://www.gartner.com/it-glossary/?s=big+data (visited June 12, 2014)

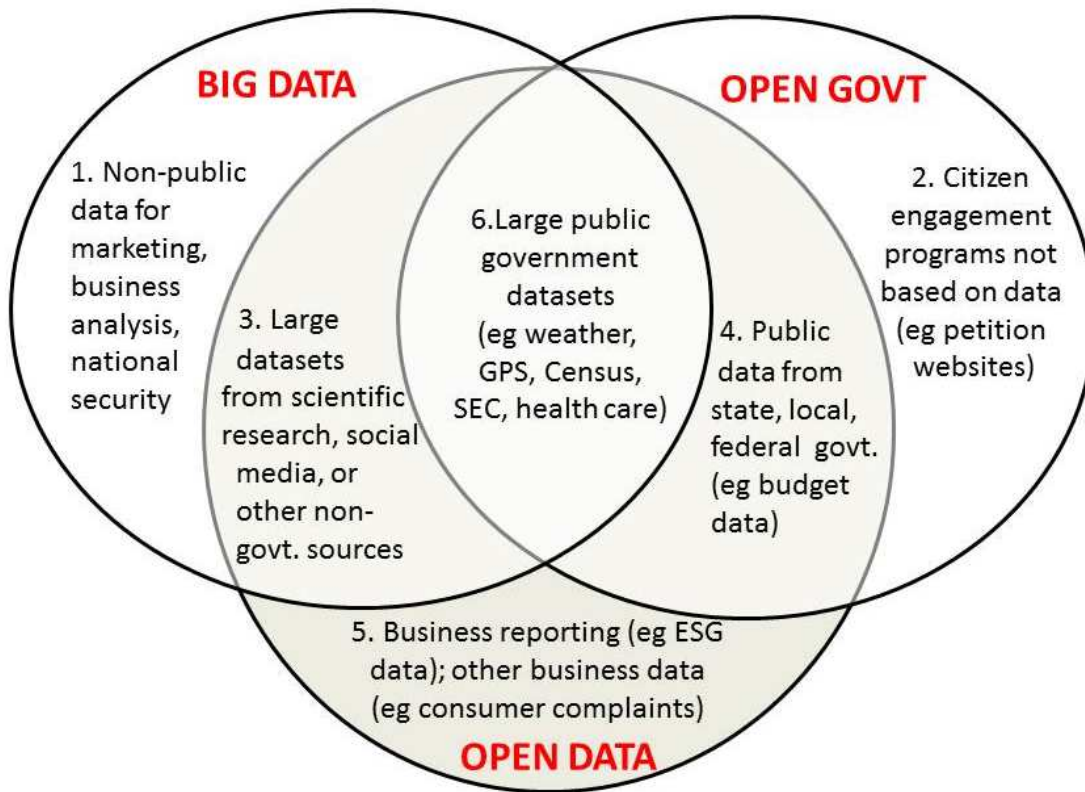**Figure 1 represents an overview of the relationship between big data, open data and open government.**

Understanding Open Data

The data that government agencies collect create and maintain roughly falls within four categories:

1. **Financial and administrative data –** Foundational information associated with revenues, costs, assets, liabilities, etc. Examples include budgets, financial statements, expenditures, salaries, contracts, assets, etc.

2. **Operational data –** Activities and service levels that are specific to an agency. Examples include miles of roads maintained, student enrollment, inspections, police calls, fire calls, etc.

3. **Programmatic data** – Program goals and outcomes tied to the agency's mission and public duty. Examples include crime statistics, graduation rates, home construction, ratings/awards, etc.

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[4] Source: Joel Gurin, OpenDataNow.com

4. **Public Filings** – Records that an agency collects and maintains for purposes of documenting activities and transactions of a public nature. Examples include property records, court records, professional licenses, permits, inspection certificates, etc.

A foundational principle of the open data movement is data that government collects and maintains is ultimately the public's data. The data exists because laws authorize a particular government agency to collect it and public resources are used to collect and maintain it. The data is, therefore, the public's data. It should be easy for the public to find, download and use.

Ohio's Proven History with Open Data

The Ohio Geographically Referenced Information Program (OGRIP) is a strong example of using spatial or digital mapping data sets in an open data approach. OGRIP was created to facilitate the development and use of spatial data in the state. It serves as the Geographic Information System (GIS) coordinating body for state and local government and has since the early 1990s. OGRIP's goals are to encourage the creation of digital geographic data of value to multiple users, foster the ability to easily determine what geographic data exists and foster the ability to easily access and use this data.

The OGRIP Council, with representation from state, local government, academia and the private sector, provided the vision of spatial data layers that would be beneficial to all, and worked together the make these spatial data layers a reality. The Ohio Department of Administrative Services Office of Information Technology houses the OGRIP Program Office and provides administrative support to the Council.

Two such collaborative OGRIP initiates are the Ohio Statewide Imagery Program (OSIP) and the Location Based Response System (LBRS). These programs develop spatial data that meet both state and local government requirements and are made available to citizens, all levels of government, academia and the private sector.

OSIP provides digital photography for the entire state. This high resolution imagery is accessed and used by the public and private sector, academia and the citizens of Ohio. LBRS is a street centerline system with site-specific addresses. Each county manages its own data. Currently 78 of Ohio's 88 counties have provided this data to the state and update it annually.

The Spatial Data Repository maintains the GEOhio Spatial Data Portal as an open data portal. GEOhio provides access to more than 40 terabytes of geospatial data maintained by the State of Ohio. Data sets are available to the public for download and have no use restrictions. The Ohio Department of Administrative Services' Office of Information Technology provides high performance networks and computing infrastructure for GEOhio, providing access to discover, view, and download data and services from state and local government partners.

This is one of the instances where the State of Ohio has served as a catalyst for data initiatives. The state has a working history of collaborating with local government to share data. Open data implies following standards on data format, definitions and accessibility to public and private sector, academia and the citizens of Ohio. Programs like OGRIP, where a coordinating body assisted in promoting and facilitating data format standards, achieved open data in its truest sense.

Findings and Recommendations

As a result of our research, we have identified 10 recommendations for building open data in Ohio. Our recommendations described were based on interviews with state and local governments inside and outside of Ohio and the results of the Ohio Open Data Survey.

The Starting Point: Open Data Strategy

Finding 1: Define a clear and concise open data strategy

The state of Ohio is in the process of defining its strategy regarding open data. This strategy will focus on state government but also provide linkage to local government. The state currently interacts with various local government agencies and offices regarding open data. The strategy the state will pursue is one that leverages data currently provided to various state agencies and targets this 'collected' data for inclusion in Ohio's strategy.

To emphasize this focus, most of the current open data activity is taking place at the state level with some leading-edge cities launching their own open data sites. None of the states taking a strong leadership role in open data initiatives are requiring or incentivizing local governments to provide open data, although Alaska is considering such legislation.

Open data activities at the local level are led by the specific local government and not the respective state. A small number of states allow a few local governments to post their data sets alongside the state data sets, but the states are not providing many resources, such as including guidance and technical and financial support to the local governments. The main factors determining whether cities decide to pursue open data are size and the existence of strong leadership within the city. Many of these cities, however, are merely posting the data and not ensuring it is in a format that is technically open (either not machine-readable or without sufficient standards.)

Within Ohio, Cincinnati has decided to pursue a partnership arrangement with a local civic organization to provide not only city data but data from other organizations that are important to the region. Columbus is beginning to look at the provision of open GIS data and is in preliminary discussions with civic entrepreneurs to make data available. Cuyahoga County is now posting all procurements, court data and financials online.

Recommendation 1: Develop an open data strategy

Develop a state strategy that includes the direction of this initiative, determines the most frequently requested data, inventories data and data formats, and develops standards for open data. This strategy would encompass data already collected by state agencies from local government, particularly when a state agency serves as a repository for local data. Some examples of state agencies receiving local government data include financial reports through the Auditor of State, school information provided to the Ohio Department of Education, and Ohio Office of Budget and Management transaction records for state support provided to local governments and schools. Recommendations include the following:

- The state, either through the state chief information officer, the Auditor of State, the State Library or other official selected as the state open data coordinator, should do an inventory of data sets already published in open formats across state agencies and should produce a website that links to those open data sets.

- State agencies that already collect and publish a large amount of local data would publish that data in an open format. The state would inventory local data and formats they already possess. This supports the quick development of best practices that agencies are currently following. The state, following defined standards, would make this local open data more discoverable. This will demonstrate the value of open data.

- The state would share the best practices learned and provide support through, among other efforts, the development of voluntary standards for local governments.

- State contracts that support open data, such as hosting services, software licenses and support services, should allow local government agencies to purchase a similar service through the Cooperative Purchasing Program at DAS.

The strategy also should specify which data collected by the state is not open because it contains confidential, personal or private information or public posting of the information is a violation of federal or state law or administrative rule. The strategy would define the necessary support in line with the results of the Ohio Survey and interviews across the United States, including identifying adequate financial resources, the appropriate technical solutions and security, the skills to prepare and publish data, and standards to make "apples-to apples" comparisons of the data.

Finding 2: Open data initiatives – start small and mature incrementally

The leading states and cities that have provisions for open data do not consider themselves to be fully mature. Interviews with cities and states and a review of their progress reports revealed that governments began with a decision to provide open data and a commitment to make incremental progress over time.

Recommendation 2: Start small, follow a defined strategy and mature incrementally

The strategy will initially focus on state agency data to ensure quick and measurable successes.

Finding 3: Clarity – Open data has wide-ranging expectations

Open data is a new and growing effort with many expectations. The open data movement is moving into a period where people see open data as a solution to many varied problems they are working to address. While the hopes and expectations create a political opportunity to establish an open data policy, the varied expectations also create difficulty in designing specific efforts, obtaining the appropriate resources and measuring success. Setting realistic objectives and timelines with measurable improvement and incremental definitions of success will be necessary. Some of the early objectives include:

- The establishment of a lightweight open data catalog with pointers to various open data sets or a catalog that is a robust searchable database as a first step;

- Identifying the number of data sets and their formats and making them available as quickly as possible;

- Making existing high-demand data sets easily available. This refers to updated data sets with high frequency of access and external entities' systems that connect to the data set rather than periodically downloading the data;

- The development of high-value data sets by identifying high-demand data to efficiently make available at in-depth levels. For example, data that allows for comparisons across state government entities requires definitional standards to be agreed upon and established. This includes efforts to ensure those inputting the data understand and follow the standards; and

- Ensuring high usability and access by developing mobile applications, Web interfaces and other applications.

Understanding the purpose of providing open data will determine what an open data website will look like. Providing open data to create "mobile applications" will look very different from open data websites established to increase citizen trust and citizen engagement. Some proprietary solutions may be easier to implement and will allow organizations to quickly comply with open data executive orders or legislative mandates, but they may restrict the specific objective being sought.

Recommendation 3: Define success measures to meet open data initiatives goals

Expectations should be clearly defined in any legislation as well as strategy to ensure open data goals, objectives, and success measures are achievable and implementable. To ensure that open data initiatives meet expectations the following should be considered:

- High value, in-depth data sets that allow for comparison across jurisdictions require data definitional standards that should be addressed similar to the way that the Federal DATA Act addresses federal expenditures.

- Decisions on the display and functionality of open data websites should be preceded by explicitly stating the goals and purposes of the open data website.

- The state open data coordinator (state Chief Information Officer, Auditor of State, State Librarian, or other) should monitor the use of the initial website and evaluate the demand for a more robust open data catalog.

Finding 4: Identifying and publishing open data

There are two philosophies in deciding what data to publish. One philosophy is to post as much available data with little concern about accuracy or how the data will be used. The second philosophy is more strategic and focuses on the particular data sets to be published that bring value. Both approaches consume time and resources that are normally in short supply.

The "publish all data" philosophy looks for "low-hanging fruit" – easy to publish data of reasonable quality. The assumption is that putting any data out encourages government to begin the process, and that someone will make use of the data even though what that use will be cannot always be predicted. There also is a concern that by waiting for the data to be perfect it will never be published. The underlying thought isn't the potential misuse of data, but rather users will provide insight and corrections to improve the quality of the data.

The "strategic and focused" philosophy is based upon governments' and the public's expectation that demonstrable results can occur from an open data effort. Advocates of this philosophy point to lessons learned from early federal open data efforts. Interviews with officials

from large state Web portals with many data sets suggest that between 10 and 20 percent of the data sets are high-value and actually used.

A level of evaluation and analysis is required for either approach. Both philosophies require the appropriate level of governance to open data and data access. Concerns regarding sensitive and confidential data will need to be reviewed and understood as a part of this process.

Recommendation 4: Prioritize data sets to publish as open data

This prioritization should take place by:

- Having mechanisms for collecting data through a website or sponsoring "hack-a-thons" and "community forums" during which businesses, nonprofits and the public can work with the government in identifying what data would be useful.

- Evaluating and analyzing data and data sets against risk management issues (personal, confidential and sensitivity restrictions) to determine value.

- Considering sharing data that improves trust, accountability and citizen engagement – all reasons identified as important by local governments in the Ohio Survey.

- Using public records requests to help identify which data already is important to the public. Should this data be provided as open data, it will have the secondary advantage of relieving government agencies of the time and expense to publish open records requests. A general categorization of previous public records requests should be gathered.

- Considering the benefits publishing data would provide in leading to insights and solutions for specific problems. This would begin by asking stakeholders what problems could benefit from the use of already collected public data.

Finding 5. A need for standards -- technical and data definitional standards

An important characteristic of open data is that it is published using data standards. Data format standards allow for increased access by technical tools. These can be leveraged fairly quickly. The more difficult standards to develop – data definitional standards – provide the most use benefit in terms of comparison.

Standards increase the usability and meaning of the data. There are two kinds of standards: 1) technical (syntactic) standards, or how the data will be formatted in an electronic file so that a variety of software can read and process the data; and 2) data definition (semantic) standards, or what the data means.

Technical standards for open data are relatively easy to establish by looking at national standards. Data definition standards are important for "apples-to-apples" comparisons of data. They are harder to develop and can take longer where definitional standards are developed within a community of practice (education, financial, etc.) but not from an enterprise perspective. Currently, there are national data definition standards being developed in such areas as community services, crime data, election data, restaurant inspection data, 311 data, residential inspection data and transit data.

Recommendation 5: Adopt technical and data definitional standards

DAS will develop technical standards for open data technical formats for state agencies in line with Section 125.18 of the Ohio Revised Code. Where feasible, new systems should generally be required to meet those standards.

- State technical standards should serve as a guideline but not a mandate for local governments.

- Ohio public professional organizations and local governments, together with the state and interested stakeholders, should develop data definitional standards that develop common definitions of what data means. The state can help support and guide these discussions. Much like the work of OGRIP for geographic data, this effort should leverage the expertise and experience of specific government functional communities such as financial (Auditor of State), education (Ohio Department of Education), and law enforcement (Ohio Department of Public Safety). Extensions of those efforts should be evaluated for cost and benefit on a case-by-case basis.

- The Ohio Office of Budget and Management and DAS should continue to monitor efforts by the federal government (see Finding and Recommendation 10), other states, and standards-setting organizations in creating standards (both semantic and syntactic) and use those standards where possible. The national standards developed for public transit are very successful and serve as one example of a good place to begin.

Finding 6: Develop an open data policy that includes implementation of best practices

Implementation requires attention to measuring success, training local governments and advising governments on how to implement open data. There are good sources (federal government, the National Association of State Chief Information Officers, and the states of Minnesota, New York and Texas) for guidance on the process of publishing data sets in terms of selection– identifying potential data sets and evaluating them for appropriateness, risk, value, quality, etc. – and then publication.

While open data is about publishing public data, there are still some privacy and security concerns. These concerns must be addressed before state and local government and the public will embrace open data.

Recommendation 6: Leverage national best practices and publish guidance on identifying, assessing, and publishing open data

- An open data policy should address implementation details and include not only the state's role but the support that can be provided by universities, nonprofits or intermediaries.

- Privacy protections need to be put in place and clearly communicated to the public. Data sets planned for publication as open data should be reviewed for personal information and other sensitive data. Government has a role in ensuring the public's trust about open data and its uses, and that adequate measures are in place to protect privacy.

Finding 7: Barriers to publishing open data

States and cities are now providing data with varying degrees of openness. Some are pursuing low-cost approaches and publishing budget or financial spreadsheets on a website without using specific standards, which prevents "apples-to-apples" comparisons. Other websites may publish council meeting minutes using various versions of Microsoft Word that may not be fully machine-readable because their version of Microsoft Word is incompatible with a citizen's word-processing software.

Other states and cities, meanwhile, will incur significantly higher costs and publish many data sets on a user-friendly Web portal with explanations of what each data element means. Given this larger context, local governments have ideas about how to share data. The Ohio Survey asked local governments what the main barriers in sharing data include.

The top barriers identified were:

- Lack of funds and staff to provide open data compete with local governments' primary functions for those resources;

- Lack of basic technology resources; and

- Lack of skills in data management and data governance.

These barriers are consistent with what we have gathered through the local government survey.

This study reviewed the leading examples of open data websites of states and large cities outside Ohio that use Web portals to publish a large number of data sets, including tools to view and use the data. The costs of these larger efforts included the costs of either the cloud service contract or the in-house operation of the open data site.

The more robust open data efforts often require one to two full-time equivalent employees. One employee would administer, manage and coordinate the program and another would provide technical assistance. Reduced open data efforts in smaller local government entities would likely not require a dedicated full-time equivalent employee, but would require additional staff resources.

State open data sites operated through a "Software as a Service (SaaS)" or a cloud solution can cost between $50,000 and $100,000 annually with a separate initial startup fee. These costs exclude additional reporting functions and capabilities. Costs associated with open source solutions can cost less in terms of software and offer customizable solutions to more specific open data goals. In-house hosting, however, may entail more development and support costs, which would vary depending on the size of the website and how robust it is.

In addition, the costs associated with creating open data sets are highly dependent on the systems in which data is stored. Some systems may maintain data in open data formats. Others, particularly legacy systems, may require conversion of data before it can be made available in an open format.

Recommendation 7: Address open data barriers

An open data strategy should:

- Conduct a thorough evaluation on data and data sets and security compliance to prioritize efforts;

- Promote open data standards but allow exemptions for older systems that may incur conversion costs to publish open data;

- Ensure the necessary communications/network connections and access to a website before there is a requirement to provide and use open data;

- Identify the cost of fulfilling public records and open data efforts as well as measurements against initiative objectives;

- Plan for the appropriate number of full-time equivalent employees to support management and operations of open data efforts at the state level and in larger cities; and

- Consider partnership arrangements among state and local governments with other government entities, nonprofits, the private sector and civic entrepreneurs in publishing open data. Government may not have the required resources and should look for partnering opportunities to reduce costs.

Finding 8: Challenges exist concerning uniform charts of accounts in both state and local governments

Uniform charts of accounts have been developed by other states and serve as a common set of accounts, organizing financial and budgetary data (assets, revenue, liabilities and expenditures).

The State of Ohio recently refined its expense accounts to better represent state spending. The state also is in the process of defining data categories and classifications to convey usable information to the public. These efforts are significant and require substantial planning and change management. As charts of accounts change, transactional processes must adapt. In addition, charts of account changes necessarily create a disconnect between old and new accounts that must be bridged to display historical reporting. This type of change is a substantial undertaking and should be considered accordingly.

Recommendation 8: Continue work to improve the state's uniform chart of accounts

In order to provide more uniform data, high-level standards should be pursued. Industry standards such as Generally Accepted Accounting Principles and Statements of the Governmental Accounting Standards Board would precipitate a greater degree of standardization if uniformly applied. The state should consider an incremental approach to standardization, whereby a small number of summary-level categories are defined in accordance with the aforementioned standards.

In parallel, the state should work with representative associations and local leaders to sample and analyze local data and its comparative value as it exists today to determine to what degree it fits the summary-level categories. At this point, the state would be able to determine the

investment necessary and time required to summarize local data into uniform categories for reporting purposes.

In addition, the state should:

- Maintain a "data dictionary." A "data dictionary" defines accounting terms and data elements. This, along with the state chart of accounts, should be routinely maintained.

- Further investigate other states that have implemented a uniform chart of accounts across all levels of government as well as those states that considered but ultimately did not pursue the initiative.

Finding 9: Government performance entails budget, financial and service levels

Providing budgetary and financial data may be of limited benefit if one of the goals of open data is to determine efficiency and effectiveness of public spending. Determining if a budget is too high or too low in the absence of understanding what services are being provided and the quality of those services is difficult.

Recommendation 9: Include data sources and disclaimers on data outputs

When posting open data sources, disclaimers, outcomes as well as contextual information ("as of" dates) should be included. This will assist in measuring efficiency and effectiveness. Any requirement that budget and financial data be published as open data should allow for description of the types of services. Performance metrics should be included.

Finding 10: Impacts of Digital Accountability and Transparency Act on state and local government.
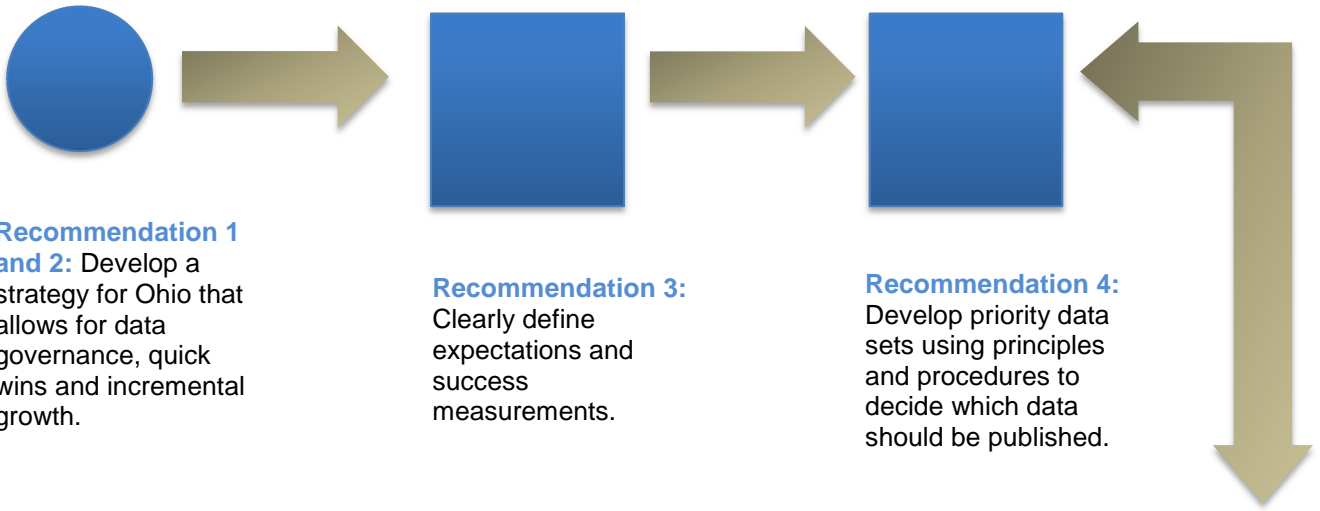
The 2014 Data Act will require state and local governments to report their use of federal funds using some variant of federal financial standards. The Data Act requires the development of financial standards within two years. This is very important legislation and will have significant implications for how the federal government collects, organizes and reports on federal agency expenditures. Preparations for the extension of these requirements to state and local government receiving federal funding must be initiated.

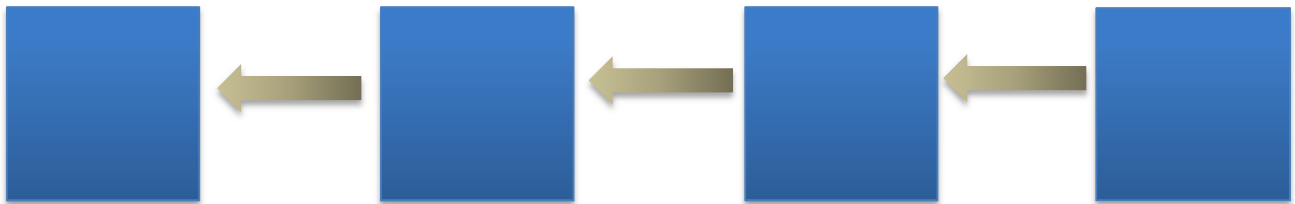**Recommendation 10: Monitoring the DATA Act's requirements.**

The Ohio Office of Budget and Management (OBM) should continue to monitor requirements from the federal government. DAS and OBM will monitor efforts of other states and standards-setting organizations (see Recommendation 6) in creating open data standards (both semantic and syntactic).

Figure 2

Start – Open Data Strategy   **Clear Expectations**   **Data Sets to Publish**   **Focus of Efforts**

Recommendation 1 and 2: Develop a strategy for Ohio that allows for data governance, quick wins and incremental growth.

Recommendation 3: Clearly define expectations and success measurements.

Recommendation 4: Develop priority data sets using principles and procedures to decide which data should be published.

Financial Data   **Barriers**   **Data Policy**   **Standards**

Recommendation 8, 9 and 10: Define data elements and include data on sources, outputs as well as contextual information. Ensure OBM monitors Data Act of 2014.

Recommendation 7: Identify and address technical, staffing and funding barriers.

Recommendation 6: Develop and promote a solid open data policy using best practices. Provide guidance to state and local governments.

Recommendation 5: Define, develop and adopt technical and definitional data standards.

Implement

SECTION 701.30. (A) As used in this section, "public record" has the meaning defined in section 149.43 of the Revised Code, and "public office" has the meaning defined in section 149.011 of the Revised Code. Not later than May 31, 2014, the Director of Administrative Services shall deliver a report to the Governor, the Speaker and Minority Leader of the House of Representatives, and the President and Minority Leader of the Senate that proposes uniform standards that should apply to a public office that chooses to post public records on an internet web site maintained by the public office. In developing the standards, the Director shall consider, at a minimum, the following factors: any recommended technology and/or software to use; the projected costs of implementing and maintaining such technology and software; and how a public office is to post a public record on its web site, or on a public web site maintained by the state, so that the public record, or the data contained in the public record, is capable of being searched and downloaded by the public in a uniform manner. The proposed uniform standards, as articulated in the report, shall seek to incorporate, insofar as practical, related practices of the Auditor of State and of other state agencies.

The Director may form, and seek advice from and consult with, an advisory committee. Members of the advisory committee shall include, but are not limited to, representatives of state and local governments and individuals having relevant expertise to assist in developing the report.

(B) Not later than May 31, 2014, the Director of Development Services, in cooperation with the Local Government Innovation Council, shall prepare and issue to the members of the General Assembly a report that recommends various means by which the information exchange may provide local governments with insights regarding efficiency and productivity, and various means by which the information exchange may help local governments improve services to vulnerable populations by providing insights regarding programs that benefit the poor, including general welfare support programs. The report also shall include recommendations, developed by the Director and the Council in consultation with the Third Frontier Commission, expressing various means by which data in the information exchange may create opportunities for private sector research institutions to develop value-added products or services that may be commercialized or create jobs, and thereby contribute to the betterment of the state economy.