



MASTER OF PUBLIC ADMINISTRATION  
Department of Community Development  
and Applied Economics

## **Trends in State Government Reforms: A Report to the Vermont Government Restructuring and Operations Review Commission**

Report co-authors:

Christopher Koliba, Ph.D.\*  
Shelley Bissonnette  
Ruth Checketts  
Marcella Dent  
Carmen Ekert  
Nathan Fry  
Sarah Koblin  
Kelly Lamothe  
Gabrielle Malina, MPA  
Nicole Marcheterre  
Mia Schulz  
Amanda Simpfenderfer  
Melyssa Woods

University of Vermont

Master of Public Administration Program

July 26, 2016

\*Questions or comments relating to this report should be directed to Chris Koliba, [ckoliba@uvm.edu](mailto:ckoliba@uvm.edu); 802-656-3772

**Table of Contents:**

<b>Scope of Work</b> .....	<b>2</b>
<b>Summary Recommendations</b> .....	<b>2</b>
<b>Evidence-Based Decision-Making</b> .....	<b>3</b>
<b>Results-Based Accountability</b> .....	<b>8</b>
<b>Lean Management</b> .....	<b>13</b>
<b>Data Management</b> .....	<b>18</b>
<b>E-Government</b> .....	<b>22</b>
<b>Public-Private Partnerships</b> .....	<b>25</b>
<b>References</b> .....	<b>32</b>

---

**Acknowledgements:** The co-authors of this report wish to thank the co-chairs of the Vermont Government Restructuring and Operations Review Commission, John Sayles and Paul Costello, for their encouragement of this project, and to Ian Davis for his role as liason between the co-authors and the Commission.

## Scope of Work:

---

During the spring of 2016 graduate students in *PA 302 Organizational Behavior and Change* were charged with undertaking research into what states are doing to institute state-level reforms designed to improve the efficiency and effectiveness of state government. The goal of this project was to provide useful information to members of the Government Restructuring and Operations Review Commission as they develop a set of recommendations to the State Legislature.

The research began by posing these questions: What state-wide reform initiatives have been undertaken by states since 1990? When did these efforts take place? Who initiated the efforts? What kind of reforms were considered? Is there any evidence that these reforms were enacted? A database of statewide reform initiatives since 1990 was created and is available upon request. A second phase of the project was then undertaken to research specific types of reform practices found across the states. These practices, that are highlighted here, are the main subject of this project summary and include: Evidence-Based Decision-Making; Results-Based Accountability (RBA); Lean Practices; improved Data Management and Transparency practices; e-Government and e-Governance; and Public-Private Partnerships. This combined report is organized around these topical areas.

## Summary Recommendations/Considerations:

---

The range of reform practices highlighted here should be viewed as a set of complimentary, if not overlapping, areas. The central themes across these practices concern the use of data, particularly performance data, to inform policies, programs and projects. The integration of evidence-based and results-based approaches, coupled with goals of increasing programmatic efficiency and effectiveness, is being undertaken by states across the country. The integration of data management, e-government and public-private partnerships with these broader frameworks represents what we believe to be the “state-of-the-art” in the area of state government reforms.

The following recommendations are offered here as summative observations to stem from our semester-long research into these topics. These recommendations do not due in on any one set of practices, but rather speak to the broader use of this research for the Commission.

- 1.) Consider how the recommendations stemming from the Commission relate to reform initiatives undertaken in other states.
- 2.) Invite leading reformers from other states to testify before the Commission.
- 3.) Learn from smaller scale reform efforts unfolding within Vermont and consider the opportunity to “scale-up.”
- 4.) Consider a multi-year, bi-partisan initiative designed to improve government effectiveness and efficiency through the use of evidence-based decision-making, results-based, lean management and information technologies.
- 5.) Couple the work of the Commission with the recent Special Special Committee on the Utilization of Information Technology in Government.
- 6.) If public-private partnerships are to be scale-up and used, consider a uniquely “Vermont-way” of forming and managing them.

## **Evidence-Based Decision-Making (EBM) and Accelerated Improvement Methods (AIM):**

Given the age-old need to compete for the resources required to accomplish one's goals, it is logical that public sector organizations faced with increasing service needs from citizens and society are turning to new management practices to help accomplish stated objectives with minimal resources. Throughout the cities, counties, and states of the United States, leaders and decision makers are experimenting with countless new ideas and methods to enable organizational success. Two methods – Evidence-Based Management (EBM) and the Accelerated Improvement Method (AIM) – offer executives and managers a means by which to use data-driven analysis to make gains towards a more efficient and effective organization. EBM, as a strategic and wide perspective approach to an organization's overall approach to management and decision making, is an appropriate framework for structuring an "organizational ethos" that remains open to reform and results-based approaches such as AIM. Meanwhile, AIM's focus on rapid and measurable performance improvement make it a fitting method for data-friendly organizations that require quick, positive shifts in performance.

Evidence-based Management, also referred to as Evidence-based Decision making or Evidence-based Policy, is a strategic approach to inculcating a culture of research-driven inquiry and practice in organizations. Although definitions of EBM are varied, perhaps the most holistic is Rousseau's characterization of EBM as a process that "integrates the best available research evidence with decision maker expertise and client or customer preferences to guide practice towards more desirable results" (Rousseau, 2006). Originally traced back to the origins of evidence-based medicine in the early 1800s, Evidence-based Management is considered a relative newcomer to the realm of private sector management and an even more recent addition to public sector management theory (Sanderson, 2002). As its pillars, EBM maintains the following foundational principles:

- 1) EBM uses evidence as a foundation for policy; evidence should include objective data (scientific research in applicable fields and organization- specific lessons learned) cross referenced with subjective data (managerial experience and case studies) to achieve a fully informed view
- 2) EBM informs a forward-looking policy with measurable performance indicators
- 3) EBM collects, monitors, and evaluates performance data with an eye towards client satisfaction
- 4) EBM adjusts its practices under a process of continuous evaluation to meet the needs of a changing operational environment

Implied in these pillars is that managers and decision makers must maintain a commitment to educating themselves and their team members on current research, that the organization must collect data on its performance, and that the policy is properly aligned towards the public need and public good. Ultimately EBM should be considered the framework or ethos around which an organization bases its approach to management and decision making, leaving room within this framework for recognized effective practices such as AIM, Six Sigma, Results-based

Accountability, Lean, or other emerging methods.

State governments are among the many organizations seeking to improve performance with some or all elements of the EBM framework. A review of state practices via website, literature, and policy reviews reveals that 29 of the 50 states have employed some form of Evidence-based Management since 1993. The most common areas for EBM use are in fiscal accountability and corrections/prison reform. However, it is important to note that employing only one or two isolated aspects of EBM does not mean that the state is achieving the full effect intended by practitioners of the framework. Rather, as several EBM proponents observe (Barends, Rousseau, & Briner, 2014; Rousseau, 2006; Sanderson, 2002), simply observing data or best practices does not translate into the achievement of desired results. From that perspective, only five states truly indicate full employment of the EBM practices through research-driven policy, data management, data analysis, and policy reform (illustrated in the “Whole Government Approach” of Figure 1). Of those five, the city of Louisville, KY stands out as having the most holistic approach to EBM, with documented evidence of ongoing success.

Within the context of Evidence-based Management, leaders may choose to employ cutting edge processes such as the Accelerated Improvement Method to achieve specific goals and timelines. The Accelerated Improvement Method (also known as Agency Improvement Method), or AIM, is a process improvement tool proven to help leaders within organizations improve performance, within a short duration of time, with the idea that the strategic results will provide a measurable return on investment.

AIM is an intensive performance improvement program that follows seven stages for implementation:

Stage 1: Identification of a business-critical project (or projects) with clear targets, measures and management sponsorship.

Stage 2: Selection of an appropriate team who will become certified AIM Practitioners.

Stage 3: Pre-work by AIM Practitioners to prepare themselves for the initial AIM event (to begin to focus on relevant business priorities for improvement).

Stage 4: An initial workshop event that takes the team through the AIM process in outline and devotes practice time to defining the project(s), applying appropriate performance improvement tools, and developing a plan for implementation of improvements within 3 months.

Stage 5: Support to the team in the form of checkpoint coaching sessions where actions are reviewed and additional AIM tools are introduced to help the team progress with their project(s). In this way, the team learns the end-to-end AIM process by working on their own live projects and delivering real business benefits.

Stage 6: A presentation of the results achieved by the AIM Practitioners and staff from the business area that has implemented the solution and “sign-off” by the sponsoring manager to confirm delivery against targets.

Stage 7: A final assessment of the AIM Practitioners to confirm their capability to support future AIM Projects.

Organizational “AIM” is both a name and a process – it describes the direction and goal of an organization and the methodological path to getting there. By focusing on clearly defining and communicating an organization’s aim, leaders will be well positioned to hire, develop, and maintain a staff; access necessary resources; and create proper policies and initiatives to achieve their mission (Rubin, 2011). Leaders must be able to communicate the importance of the initiative and be willing to engage employees in the process before launching any type of reform initiative (Bruel & Kamensky, 2010). Personnel buy-in and involvement coupled with data-driven and results-oriented decision making processes are the key factors for implementing a successful accelerated improvement methodology.

### Examples from the States

An outstanding example of the use of AIM in regulatory reform is Rhode Island Governor Lincoln D. Chafee’s use of AIM-like principles in an effort to accelerate a four- year regulatory review process. After announcing the initiative in September 2012, Chafee directed state agencies to make government more efficient, to streamline processes, and to reduce the regulatory impact on small businesses. Agencies responded in record time, reviewing in 17 months about 26,000 pages contained in more than 1,600 regulations. Their effort cut 21/2 years (62.5 percent) off the timeline set by the General Assembly without a decrease in effectiveness – agencies identified more than 250 changes to improve the state’s regulatory system. Almost three-quarters (70.9 percent) of these reforms are complete. Furthermore, as of a 2015 review, agencies remained on target to complete almost all of the remaining reforms by the end of the year (Rhode Island Office of Management and Budget, 2015). Some examples of the state’s regulatory reforms under the AIM process are listed in Box 1 below.

#### Box 1. RHODE ISLAND AIM REGULATORY REFORM RESULTS

48 repeals of outdated, unnecessary, or obsolete regulation 73 amendments or modifications to improve the regulatory system 133 consolidations or rejoining of regulation
---

The City of Louisville currently operates the Office of Performance Improvement and Innovation (OPI), a department of 11 personnel tasked with translating the city’s “visions and goals into a comprehensive strategic plan [that] ... aligns the strategic goals and initiatives of all Metro Departments ... with current Administration goals” (Louisville, 2016a). To that end, the OPI employs performance analysts and performance coaches to serve as mentors to the city’s department managers and assist with formulating performance indicators, monitoring indicators for success, collecting data, and making continuous improvement. Findings from surveys are displayed in the LouieStat (Louisville, 2016b), a publicly-accessible website that displays relevant readings on topics such as fire department overtime hours, air quality goals, and the status of current budget over- or under-spending. Unlike most other organizations surveyed in this research, the statistics displayed in LouieStat are tied to actual efforts at improvement. For

example, OPI cites work with the Metro Parks department to identify and implement programs of community interest in a 500% increase in the number of youth engaged in community centers and a corresponding 44% reduction in youth citations in areas with community centers. In addition to OPI's use of the first three pillars of EDM (policy based on data, performance indicators, and evaluation of indicators based on client satisfaction), the department also employs its coaching staff to educate city managers in processes such as Six Sigma and Plan-Do-Check-Act problem solving to ensure that city departments are engaged in the overarching goal of Evidence-based Management – to create an informed, forward thinking corps of leaders and decision makers that spans the transience of political office holders or single managers.

Ultimately, regardless of the process chosen, Vermont's efforts at state reform are a positive first step towards acknowledging a citizen-oriented view of government service. A focus on creating an evidence-based, process-driven, results-focused public service will pay dividends for the current and future citizens of Vermont.

## Results-Based Accountability (RBA)

---

The charge of the Vermont Government Restructuring and Operations Review Commission was created in 2015 to “identify opportunities for increasing government efficiency and productivity in order to reduce spending trends and related resource needs,” (GRORC, 2016, p. 1) aligns closely with the Results-Based Accountability (RBP) reforms unfolding within the private and public sectors. Results-Based Accountability (RBA) is a structured process for decision-making that focuses on results or outcomes. Also called Outcomes-Based Accountability, this framework was refined by Mark Friedman at the Fiscal Policy Studies Institute.

### Results-Based Accountability

1. Determine desired results or outcomes;
2. Assess current situation (baseline data from which to measure change);
3. Devolve flexibility and some decision-making power to decision-makers at the operating core;
4. Create/Seek out proven or promising strategies for achieving outcomes;
5. Determine indicators of change and performance measurement benchmarks based on desired outcomes and baseline data;
6. Regularly monitor indicators and performance benchmarks, and adjust as needed.

In practice, RBA begins when an organization specifically determines its desired results or outcomes. This is a process unto itself, and can take time and a lot of dialogue among stakeholders. Once the final outcomes of an RBA process are determined, the organization completes an assessment of the current situation. This information is critical because RBA relies on measuring change for evaluation, meaning organizations must know where they started before implementing RBA. With this baseline information and determined outcomes, decision-makers (from across all facets of the organization) can begin to seek out or craft new policies, tasks, work flows and project and program modification. Decision-makers usually employ proven or promising practices that aim to achieve the desired result. As these practices are implemented, they are evaluated over time by monitoring indicators relevant to the desired outcomes. Indicators are measurable phenomena that point to, or indicate, that desired change is occurring. *For RBA to be successful, indicators need to be regularly monitored, and adjustments should be made if indicators show deviations from the goal.*

### Examples of RBA in Other States

Washington: Priorities of Government. The State of Washington practices a results-based accountability initiative called *Priorities of Government* (POG). The program is a strategic framework for budgeting and investment decisions. The program began under Governor Gary Locke (1997-2005) by convening a team of state leaders and citizen participants who

collaborated to determine six expected outcomes, or results, for the state. Desired results include: world-class student achievement; improved health and support of Washingtonians; public safety; protected natural resources, and cultural and recreational opportunities; promote economic development; improve state government efficiency (OFM, 2016).

The Washington State Office of Financial Management (OFM) cites several benefits of their results-based approach including: their strategic and operational focus on outcomes as priorities; the program encourages systems thinking—a whole-government approach—and discourages silos; and the approach links performance to budget decisions in a meaningful way. Additionally, the OFM uses the six result areas to illustrate the budget in terms of activities and results, rather than only numbers (OFM, 2016).

Connecticut: Results-Based Public Policy in Action. In 2013, an analysis was released by the Center for the Study of Social Policy (CSSP) on a 2005 ‘experiment’ the state of Connecticut had relating to implementing RBA in the current system (Lee, 2013). The system in question was the entire state government in order to improve resource allocation with a strong focus on budget. The Appropriations Committee sought RBA for an objective, clear process to determine which programs to fund. Members of the legislature believed that the budget process required greater accountability. The “normal” practice was allocating money without evidence of effectiveness and simply checking off line items; leading to essentially no cohesion.

One of the visible improvements of this newly implemented system was that during budget presentations, departments were able to “explain challenges the agency faced and engage in a dialog with the committee” (Lee, 2013, p. 11). In turn, these meetings were no longer confrontational, but a dialogue in order to assure that programs were invested into contributing towards ‘Connecticut quality-of-life’ and serve improvement. Report cards were also developed during this process in order to see how far along a program has evolved towards the results goal.

Overall, the program garnered interested and attention of the other entities and was expanded once results were visible. Some of the results associated with RBA includes: 1) linking agencies to common results; 2) knowledge of resource placement and allocation (accountability); 3) enhance communication with constituents and agencies; and 4) organization refocused on mission and goals (Lee, 2013, 13-14).

Vermont RBA Efforts. Vermont as a state has some experience with Results-Based Accountability in both governmental and non-governmental sectors. The most notable example of RBA at the state government level is the Vermont Department of Health’s *Healthy Vermonters 2020* initiative. The Vermont Agency of Human Services houses this program, which has a long, iterated history (at least since 1990). The program has goals to achieve results related to improving the health and health-care access of Vermonters. An integral part of the program, and a prominent part of the initiative’s website, is the “Performance Dashboard” (AHS, 2016). The dashboard tracks the question “How are we doing?” with indicators of whole-populations health and performance measurements related to the Department of Health’s programming. Citizens can interact with data collected on all of the indicators, as well as thorough descriptions and explanations of each indicator. Periodic reports (2000, 2010) reflect on the progress of the initiative in addition to the regular monitoring of indicators.

In addition, the State of Vermont's Division of Environmental Conservation (DEC) has piloted RBA. Figure 1 (below) provides a visualization of how the division has enacted RBA.

**Figure 1. VT ANR DEC Results Based Accountability Framework**



In the non-governmental sector, *Benchmarks for a Better Vermont* is a partnership of Marlboro College and Common Good Vermont, the purpose of which is to increase the capacity of organizations via Results-Based Accountability. The partnership provides RBA trainings and coaching, and other support to organizations looking to implement RBA. The partnership's website links to other organizations around the state that have data that could be used as indicators or performance measurements. Additionally, Benchmarks for Better Vermont is part of the Vermont Accountability Group, which is a cross-sector group whose members have RBA training and who value the role RBA plays in increasing organizational accountability across Vermont (BBV, 2016). The partnership could be a resource for the State of Vermont if the state chooses to pursue conversations about implementing RBA.

Additional reference points from the States:

New York State wide reform to "modernize" and "right size":  
<https://www.governor.ny.gov/news/governor-cuomo-announces-sage-commission-releases-final-report-modernize-and-right-size-new>

Idaho's Office of Performance Evaluations  
<https://www.legislature.idaho.gov/ope/index.htm>

Mississippi's Joint Legislative Committee on Performance Evaluation and Expenditure Review: <http://www.peer.state.ms.us/FAQ.html>

West Virginia's Performance Review Act:  
<http://www.legis.state.wv.us/WVCODE/ChapterEntire.cfm?chap=04&art=10>

Maryland's Governor's Office of Performance Improvement:  
<http://gopi.maryland.gov/#p>

Arizona's Transformation Office  
[https://doa.az.gov/sites/default/files/editors\\_choice/attachments/GTO%20Annual%20Report\\_2013.pdf](https://doa.az.gov/sites/default/files/editors_choice/attachments/GTO%20Annual%20Report_2013.pdf)

Not a state level reform, but a good local government one, Louisville's CI Effort:  
<https://louisvilleky.gov/government/performance-improvement/continuous-improvement>

Nevada Spending and Government Efficiency (SAGE) Commission  
<http://www.nevadataxpayers.org/pdf/2010-spending-and-government-efficiency-final-report.pdf>

New Jersey's Depart. Of Children and Families CI efforts:  
<http://www.nj.gov/dcf/about/divisions/opma/cqi.html>

Michigan Performance Dashboard:  
<https://midashboard.michigan.gov/>

Minnesota's Continuous Improvement:  
[http://www.ncsl.org/documents/summit/summit2014/onlineresources/MN\\_Continuous\\_Improvement\\_Transition.pdf](http://www.ncsl.org/documents/summit/summit2014/onlineresources/MN_Continuous_Improvement_Transition.pdf)

**Challenges to Implementation at State Government Level.** Like any new program, there are always challenges that are associated with resistance and fear of the unknown, which can relate to job security or 'adding' more work down the pipeline. In the case of RBA, there are a number of concerns that equate to the challenges associated with initial implementation found across the examples. These challenges are summarized below.

**Figure 2. RBA Challenges**

1. **Initial Organization Buy-In:** The first step is admitting that something is wrong, and that is the first step that needs to be acknowledged prior to the decision to pursue RBA as a method to improve department systems. In the case of Connecticut, there was "general skepticism" that it was another tool and extra work for the department (Lee, 2013, p. 19). The concern for buy-in from staff was also "fear" of new performance indicators that would be used to "grade" staff on effectiveness and how far along they are towards their desired result/goal.
2. **Training:** Simple, yet complex concept. Although RBA is generally understood as a logical approach to identifying an end result, developing the framework has been noted as "painful" by some staff from Connecticut. Numerous trainings were required, and it was recommended that staff be included with management and the legislature in order so that the training is consistent for everyone involved.
3. **Data:** The use of data in RBA was met with various push-back, specifically from departments that were data-heavy and those that were not. In Connecticut, "Initially data staff, in particular, struggled with the process. They viewed the approach as too simplistic and an incorrect use of data" (Lee, 2013, p. 19). Another roadblock was that data had to become 'common data' in order that it be accessible throughout departments. Data is also key when it comes to understanding single agency and cross agency resource allocation, goals, achievements etc. Early on, if there is not a consistent

system throughout the government, it leads to initial frustration and coordination of available information.

4. **Agency Budget (Cuts do not happen overnight):** Incremental change is part of the reality of government. RBA is best implemented with a long-term view, including plans that span administrations. One practice is to start small to test feasibility (agency), and build up (state government).
5. **No Shortcuts:** RBA has many individual parts (data collection, results definition, monitoring, reporting), and the framework requires that these all be implemented. Skipping a step can undermine the effectiveness of the framework (see number 7).
6. **Requires Autonomy at Organization Level:** Moynihan (2006) notes that, in the U.S., results-focused accountability strategies in general have been adopted without proper attention given to role of the individual manager. The combination of low managerial authority and high focus on results produces situations where managers endure pressure to perform, but have limited flexibility or autonomy to create change (Moynihan, 2006, p. 84). In these circumstances, managers can only make change at the margins of their budgets and programs, which limits the impact of RBA. RBA hinges on the ability to link performance to decision-making; without the link, data from indicators and performance measures is collected without a purpose.

In sum, RBA has become a proven approach for structured state government reform. By integrating “best practices” elements across different types of reforms, RBA, when implemented effectively, provides stakeholders with added insight in the inputs, processes and outputs that stem from government agency activities. As a result, a level of situational awareness is evolved, allowing all stakeholders, from legislatures, to governors, to career civil servants and advocates, to develop a systems-level view of governmental processes and practices.

As noted, the State of Vermont has been actively involved in experimenting with RBA. Training programs and support networks are in place that could allow for the state to “scale up” these efforts. A deeper examination of state agency experimentation with RBA can be undertaken to learn of the opportunities and challenges associated with implementing this program.

## Lean Management

---

Another process or framework that aligns well with RBA is “Lean Management,” which offers one way for states, including Vermont, to improve the quality of services while also eliminating wasteful practices. The basis for Lean was developed at the Toyota Motor Company in the 1960s in Japan (Womack, Jones, & Roos, 1991, pg. 48-9) and popularized by Womack, Jones, and Roos in their 1990 book “The Machine That Changed the World.” Lean has been expanded beyond its original focus on operations and process improvement to areas such as customer service and product development (Samuel et al., 2015). Along the way, the concept of lean thinking evolved substantially, with many different theories and techniques falling under the umbrella of lean (Shah & Ward, 2007). Shah and Ward broadly define lean as “an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer, and internal variability” (2007).

The lean process begins by identifying the services or products of an organization that provide value to the customer (Naiknimbalkar, Slaughter, & Whythe, 2014). Activities that improve the product or service are *value-added*, and should be continued or increased, while *non-value added* activities should be eliminated whenever possible.

Lean management identifies eight areas of waste, which include:

- Wasted time
- Wasted or excessive inventory
- Underutilization of employees
- Correction of errors
- Overproduction
- Unnecessary physical movement
- Unnecessary transportation of materials, and
- Extra processing steps.

Lean process can involve a variety of tools intended to make areas of waste clearer. One popular method is *value stream mapping* (Naiknimbalkar et al., 2014), which involves visually listing all the steps, materials, information, and personnel involved in a process. It is intended to show the current state of the organization and identify non-value added activities. Once the pain points have been identified, the organization can create a new value stream map to make a plan for a new process free from waste. Another important method in the lean process is *root-cause analysis*, also known as the “5 Whys”, which involves taking a problem and repeatedly asking questions to drill down to the real source of the problem. A third lean tool for implementation is the 5S system. It helps employees organize their workspace with the directive to Sort, Set In Order, Shine, Standardize, and Sustain. The 5S method is important because lean thinking should permeate an organization, even to seemingly minor areas like an employee’s workspace.

Perhaps the most important element of lean is the commitment to *kaizen*, or continuous improvement (Naiknimbalkar et al., 2014). A lean system must constantly re-assess its processes. Once a process improvement is identified, it must be implemented, then the results must be assessed, and then further improvements must be made if necessary. Lean thinking recognizes that the people doing the work are most knowledgeable about how the work should be done. Successful implementation of a lean system will involve teaching employees how to identify and

eliminate areas of waste as they encounter them. A lean system should offer employees a degree of autonomy and authority to make certain changes themselves (Treville & Antonakis, 2006). Organizations should also consider creating “quality circles”, where teams meet regularly to suggest and discuss ideas for improving processes (Womack et al., 1991, pg. 56). Lean management works best when all members of the organization recognize the need for change and the importance of committing to the lean process.

When done correctly, lean management should substantially transform how an organization functions. It is not intended to provide quick fixes. Lean thinking recognizes that organizational improvements such as new equipment and new IT systems do not solve problems if they are not accompanied by process improvements for underlying issues (Bhatia & Drew, 2016). Some organizations have attempted to incorporate lean methods in what are termed Rapid Improvement Events (RIE) or ‘Kaizen Blitz’, where consultants are used for an intensive introduction to lean and a quick implementation of a lean system (Radnor, Walley, Stephens, & Bucci, 2006). Although this method is often popular with employees and management it can be very difficult to sustain (pg. 29-32). Since lean requires buy-in and sustainment from leadership within the department, it is not always successful for outsiders to introduce lean management.

Government has some important differences from the private sector that can make implementation of a lean system more challenging (Bhatia & Drew, 2016). Value in a public context can be hard to define. The lean system usually considers costs, quality, and production time as its main values to both the organization and the customer. However, governments must also consider citizen representation, equity, and the ability to work with a diverse customer base. In implementing lean, it is important to discuss these issues with staff, reinforcing the idea that the public is the customer and that any improvement efforts must be made with that customer in mind. Also, multiple departments or even multiple agencies may be in charge of a service. For example, health and human services often intersect with judicial and corrections systems. In addition, states are often outsourcing services to outside contractors. Because of this, state organizations must bring all stakeholders to the table when improving a process.

Lean thinking places emphasis on recognizing the value of employee skills and knowledge. Addressing long-standing issues and holding individuals accountable for poor performance can improve morale in the workplace. Lean is intended to make jobs more rewarding by offering employees greater autonomy, new skills, and a larger voice in the process. Because of these rewards, lean management systems have been found to increase worker motivation (Treville & Antonakis, 2006). By nature, a lean organization should be a harmonious, energized workplace.

In practice, lean is not a panacea for all that ails government. More successful examples of lean efforts in government have emerged over just the last decade and seem to include some basic practices such as: engagement of a broad public including employees, citizens and partners/stakeholders early on and sustainably, longer-term planning and expectations, strong leadership committed across the government to lean thinking, identification of culture as crucial to sustainability and success, and right-sized approaches with resources, time and support built-in to ongoing implementation.

### **Examples from the States**

Washington State Lean Initiatives are an excellent example of the kind of comprehensive effort required to make lean successful. Washington’s lean initiatives have exemplified both the

principles and results expected of lean management theory but also sustainability in the very complex world of public management. In 2011, then Washington state governor Chris Gregoire issued an executive order that ignited an enterprise-wide lean reform effort (State of Washington Governor's Office of Accountability & Performance, 2016). With an approach that included broad government, public engagement, and strong public-private partnerships, which lends credibility and expertise, the state had early success in adopting implementation of lean. Impressively, within one year of lean implementation, 6,400 state employees were trained in lean practices in addition to 1,600 leaders. By July 2012 the state surveyed 52,000 employees and learned 73% were familiar with lean and 60% reported being involved in lean planning and implementation (State of Washington Governor's Office of Accountability & Performance, 2012). In addition, prior to the full-fledged launch of lean in 2011, the state solicited ideas and feedback from the public on cost-savings and reform which yielded more than 2,000 submissions (Office of the Governor - Chris Gregoire, n.d.). This feedback initiative was made permanent through investments in website infrastructure. As noted earlier, lean works best when all members of an organization recognize the need for change and commit to the lean process. Washington seems to have made this a significant priority from the beginning.

There are well-documented results related to improved processes and business outcomes in Washington, documented online, project-by-project, or, category by category by state goals (State of Washington Governor's Office of Accountability & Performance, 2012). One simple result that exemplifies the pace and effectiveness of reform is progress with assessment around "customer satisfaction." In 2015 satisfaction data showed 63% of agencies were reporting on customer satisfaction and by 2016 data showed 83% were tracking and reporting on this key marker. Another broad result was related to the goal of increasing the percent of lean projects in government that reported measured improvements in cost and/or, quality, safety, time, customer satisfaction, and employee satisfaction to 100% by December 2015. By January, 2016, 92% of participating projects were reporting measurable improvements.

The identification by Washington of results and goals specific to the public sphere seem key in driving a broad-based approach throughout state government. Lean leaders looked to eliminate backlogs, reduce lead times and complexity of processes, improve quality of applications and consistency of reviews/inspections and to allocate more staff time for "mission critical" work which would also improve staff morale and process transparency. What Washington seems to have committed to--ongoing, sustained training, employee engagement, alignment of lean activity between agencies, and the importance of culture in lean implementation--may have made a significant difference in addressing challenges and goals of lean efforts in the public sector. In addition, in the case of Washington, a change in administration remained committed to the reform effort which seems to have been a barrier to continued and effective reform in other states. In reviewing comprehensive reform efforts by state government nationwide it is observable that a common factor in reform disruption or failure was a change of administration.

Lean Ohio is another state with a well-established lean initiative with 34 participating state agencies, boards and commissions. Lean was introduced in Ohio by Governor John Kasich in 2011 (Ohio Department of Administrative Services, n.d.-a). The approach in Ohio is a hybrid of Lean and Six Sigma, with a focus on "kaizen", or continuous improvement. A very clear and accessible plan for incorporating lean across state government is evident, and although there are numerous training events, reports, and built-in benchmarks, the plan recognizes that "lean thinking becomes the normal routine rather than something done just during an event" (Ohio

Department of Administrative Services, n.d.-b). Results include the identification of “949,987 potential redirected hours, to be realized when the new processes are fully in place.” One interesting aspect of Lean Ohio, as the reform effort is termed, is the explicit stating of “out of scope” considerations for solutions which include the statement that “Job duties may change as a result of the team’s redesign of the process, but in no case will any team members become unemployed as a result of their improvement efforts.” Other stipulations, available to the public, include the notion that money, IT, increased workforce and adjustments to regulations will not solve problems. This type of transparency seems to be a hallmark of successful lean efforts in government and may address internal resistance and the need for accountability from both employees and the public, as well as other stakeholders.

Vermont has seen some early success with limited implementation of lean practices in the Department of Environmental Conservation (The Environmental Council of States, 2016). A March 2016 report from the Environmental Council of States recognizes “significant results” in the DEC’s early lean efforts including:

- A 76% reduction in the State Revolving Fund audit backlog;
- A 40% decrease in average days from date of invoice to payment for grants and contracts
- Evaluation and correction of public notice data errors for seven environmental programs
- A 62% increase in number of claims paid within 30 days for the Petroleum Cleanup Fund.

Relevant State-level links to Lean Initiatives:

Illinois Bill creating Office of Lean Enterprise.

<http://www.ilga.gov/legislation/BillStatus.asp?DocNum=5942&GAID=12&DocTypeID=HB&LegId=81249&SessionID=85>

Wisconsin’s Lean Government Initiative

<http://walker.wi.gov/wisconsin-priority/reforming-government/lean-government>

Lean Ohio: <http://lean.ohio.gov/network.aspx>

California’s Lean 6-Sigma Program:

<http://business.ca.gov/Programs/Permits/Lean6SigmaTrainingProgram.aspx>

Louisiana’s Efficiency Management:

[http://www.doa.la.gov/orm/PDF/2014\\_Louisiana\\_Government\\_Efficiencies\\_Management\\_Support\(GEMS\)Final\\_Report.pdf](http://www.doa.la.gov/orm/PDF/2014_Louisiana_Government_Efficiencies_Management_Support(GEMS)Final_Report.pdf)

Continuous Improvement Lean New Hampshire: <http://lean.nh.gov/>

In summary, lean could be described as a way of thinking that permeates an organization. There is evidence that a committed approach to this way of thinking yields positive results for organization, employees and customers. Lean may be an effective management approach for Vermont. However consideration for the tools that work most effectively for each state within the lean practice would be recommended in addition to the recognition that the intersecting nature of government agencies might require a more collaborative and enterprise-wide approach.

Key findings from other state government efforts stress the importance of culture, public-private partnerships, agency alignment and coordination, involvement of all stakeholders (which seems a particular challenge in the public sector as opposed to private sector) and consistent and transparent communication internally and externally. Another aspect of lean that presents unique challenges is the need to increase value-added activity and decrease non-value-added activity. Defining value, both across complex government structures and across the public domain may be a significant hurdle in public sector lean implementation.

## Data Management Trends in State Government

Data Management (DM) refers to a series of disciplines and practices related to managing data as a valuable resource. DM as a discipline stems from the belief that data generated within a state’s computing resources and networks is a valuable asset of the state. As a valuable asset it should be well-utilized, managed efficiently and shared consistently including the requirements of security, privacy, and confidentiality, and with timely access to state officials in useful forms. (State of Arkansas, n.d.) In a presentation on managing data as a strategic asset, the National Association of Chief Information Officers (NASCIO) also identified the need for states to have intent, architecture, policies, processes and methods to be successful (Robinson, 2015).

Data management is used in state government to enhance transparency, mostly for public engagement. Transparency increases the accessibility and usability of information and data within the state. The idea of transparency is to create more accountability, visibility, and openness as it pertains to the public eye. Increased availability of open data/transparency websites give both decision-makers and the public the ability to access budget and revenue information. Effective states have easily accessible open data portals that display a broad range of information and graphics, making it more appealing to citizens.

The Data Management Association Data Management Body of Knowledge (DAMA DMBOK) framework for the management of data has become increasingly popular in states undertaking data management reforms. The DAMA framework is consensus-driven by the largest body of data professionals worldwide not affiliated with any specific vendor or technology. The framework provides a “common language” and concepts for all of their agencies, IT, and data personnel with which to engage in planning.



**Figure 3. DAMA DMBOK the 10 major functions of Data Management with Data Governance being the core component of the ten tying together the other nine disciplines**

Within the DAMA DMBOK Framework, Data Governance is identified as the core component of Data Management, tying together the nine other disciplines within it. These nine disciplines include categories such as data development – which encompasses analysis, data modeling, database design, and implementation, and the more technical category of data quality management – specification, analysis, measurement, and improvement (Guess, 2012). Data Governance is an overarching statewide plan for security, confidentiality, and decision-making. It includes the specification of permissions and accountability used to encourage desirable behavior in the creation, valuation, storage, use, archiving, and deletion of data (Wang, 2010). The centrality of data governance to all the other disciplines strongly suggests the need for a statewide data governance body to set policy and to oversee the overall framework and implementation.

“Open Data” or sharing datasets publicly, is one of the most visible aspects of government usage of data. The federal government may have set the tone in 2009 when the President released an executive order, “The U.S. Open Government Directive” of December 8, 2009, that required all agencies to post at least three high-value data sets online and register them on data.gov within 45 days of the EO. The memo accompanying the EO says: “With respect to information, the presumption shall be in favor of openness (to the extent permitted by law and subject to valid privacy, confidentiality, security, or other restrictions)” (Orszag, 2009).

As the volume of digital data amplifies, an effective way to manage this growth in state governments is needed. This immense amount of digital data is often referred to as “Big Data” because of the variety of sources that it encompasses. The magnitude of this data is often too large, raw, or unstructured for analysis through conventional relational database techniques. For that reason, Big Data tries to address and adhere to five main principles when considering a current data situation: volume, variety, velocity, complexity, and variability (NASCIO, 2012).

Big Data attempts to address the volume and variety of data being accumulated, to foster the most relevant storage for use in analytics. Agencies can find a consistent way to capture transactional data between different entities, which is why looking at the variety of sources is essential. The speed at which this data is being digitized and created is also crucial to address. Although the increased data production may seem to be a benefit, it also creates more complexity and variability for the management of Big Data. With the different forms of data being created at a higher rate, it quickly becomes a challenge to evaluate different, unstructured data forms using correlational analysis, among other techniques. The variability creates a need for organizations to develop a pattern of data management to foresee relationships or uncover information to help them in the future (NASCIO, 2012).

Big Data efforts are sometimes used by state governments to uncover potential fraud scenarios or enhance cost-effectiveness. A strong example of state government using Big Data analytics is to prevent tax fraud and become more efficient in identity savings. By collecting data and using predictive analytics against a variety of sources, governments can uncover abnormalities or inconsistencies within the system to identify problem areas. Digitization, or the uploading of data into a digital format, provides another clear illustration of a productivity tool resulting from data management. Digitization in data management is the process of bringing older information and archival data into usable digital form to increase

productivity and reliability. This process of preserving and modernizing archival data is crucial in helping state governments find an efficient way to create, update and share regulations both within and between government agencies. More specifically, digitization is an effective way to process information while finding a successful way to streamline the process of data exchange between entities and across different domains.

### **Examples from the States.**

Nevada's Budget Division shows a solid method of measuring the decision-making of both agencies and the state, and how those two can be linked in terms of budgeting decisions. (Nevada PPBB webpage) (State of Nevada, n.d.) Overall, this Priorities & Performance Based Budgeting is used to clarify how and why the state is spending money. With these measures and outcomes being identified to the public, overall state transparency is improved because agencies can be held accountable. With specific objectives being published and data being managed in a way to augment accountability, the hope is to become more efficient as a state.

The Maryland Open Data Portal provides many different datasets, maps and graphs Maryland Open Data. (State of Maryland, n.d.)

Georgia used Big Data to uncover tax fraud, contracting with outside-Big Data companies to reduce the amount of fraudulent tax refunds. By using specific identity-based filters and screening those against personal records, Georgia was able to catch \$25 million in fraudulent refunds since 2012 (Bourquard, Kirsch, 2014). Fraud patterns that are uncovered by these efforts become predictors to future fraud and create opportunities for prevention.

Connecticut found an effective use for digitization in state agencies. In 2014, Connecticut revamped its regulatory process in order to improve transparency and increase state efficiency. More specifically, an electronic system was put in place to more efficiently create, update, and share regulations across state agencies. The state created a more standardized process, which allowed for a more restructured review and approval process. Any new regulations and updates would then be published digitally which would allow state employees and legislators the opportunity to collaborate on any regulatory work projects as a way to reduce the amount of content errors (Heaton, 2014) As mentioned earlier, the state had to look outside to a third-party contractor for this digital implementation. However, the organization and efficiency that the digitization creates will ultimately help the process of regulations run more smoothly.

A prime example of information sharing used within a state government can be seen in Colorado's "Vertical Domain Approach" (Colorado Data Management). (State of Colorado, n.d.) This approach follows the vertical business domain strategy to benefit the needs of the broader enterprise by collaborating with state and local governments to ensure cyber-security. The state believes in two-way sharing of information both between and among states to gather information that could be a potential threat to the infrastructure (Colorado Multi-State Information Sharing and Analysis Center) (State of Colorado, n.d.). By having a standardized approach to collaboration of data as a means for improvement, the state hopes to more effectively serve citizens and improve efficiency across all entities.

Vermont has made recent efforts to understand the state of its Information Technology capacity and identify areas for improvement. A Special Committee on the Utilization of Information Technology in Government delivered a report to the Vermont General Assembly in January of 2016, making recommendations that would address a lack of cohesive governmental strategies regarding IT and data management. The report states:

Unlike other state functions such as transportation which is guided by DOT's five year plan, IT is characterized by a laundry list of projects assembled across departments and included in DII's annual report to the legislature... In essence the State's current approach to developing and implementing IT is *reactive rather than proactive*. Projects are not consistently explained clearly and in a timely fashion with department (to stakeholders), to legislators, and to the public. (Burton et al, 2016)

The Committee found that Vermont did not have a coherent state government approach to IT, or the necessary structures yet in place to enact it. The Vermont IT Committee report suggests the creation of a Chief Information Officer as a cabinet-level position, and elevating the role of Chief Data Officer to a director position (Burton, et al., 2016).

Additional links to state level activities in this area:

Utah Data

<http://www.utah.gov/data/>

Florida High Tech Reforms

<http://www.ecommercetimes.com/story/3433.html>

South Carolina's Statewide Information Technology Plan:

<http://admin.sc.gov/files/Statewide%20Strategic%20IT%20Plan%20Final.pdf>

Colorado Transparency Online Project:

<https://www.colorado.gov/apps/oit/transparency/about.html>

States and their citizens stand to gain a lot by implementing sound data management structures rather than relying on individual agencies to prioritize their own projects haphazardly and without the support of a central vision. A common framework, and an overarching data governing body to provide rules and decision-making would ideally provide the flexibility for systems that allow agencies to meet their unique needs while still remaining maximally compatible with all other state data efforts. The recommendations to stem from the Vermont Government Restructuring and Operations Review Commission should consider the findings and recommendations of the Special Committee on the Utilization of Information Technology in Government and look to couple these findings into an integrative approach to data management, data government, and data use in the service of results-based accountability and lean practices.

## E-government in State Governments and Their Reforms

---

An additional use of data concerns the advancement of “e-government” programs. Vermont.gov defines e-government simply as “the delivery of government services and information using an electronic means.” This has been a common perception of e-government since the 1990s. However, as the 21<sup>st</sup> century has progressed, information technology has evolved to include increasingly sophisticated resources, e-government reforms must embrace a broader definition of e-government, recognizing the need for to effectively plan for the use of technology in many areas of governing. One group uses this broader definition, recognizing that e-government extends beyond simply providing a website: “The use of information technology (IT) to *integrate* government and its services for citizen, business, government, and other institutional uses” (Greenberg, 2006, 5, italics added). Another accurate, and effective, definition of “e-government” recognizes three essential focuses: “E-government is the use of information technology to *support government operations, engage citizens, and provide government services*” (Dawes, 2002, 1). In developing a plan for Vermont’s e-government, it would behoove planners to consider each of these three prongs.

The review of effective e-government reforms show that a two guiding principles should drive reform. E-government should be as centralized as possible and should remain apolitical, as much as possible. While we recognize that a government is a political institution, with many branches, departments, and groups, the more e-government can follow those principles, the more effective and cost-saving it can be in the long-term.

Centralizing technology streamlines government functions. Common technology enables individual departments to communicate better with each other. Sharing technology allows departments, and branches to share costs and be able to afford more sophisticated technology. To create buy-in for a centralized plan, it behooves decision makers to include representatives from involved groups, so that best practices can be shared and so that departments feel that they are part of the reform process. For example, when developing their e-government plan, Utah (which has one of the most effective e-governments in the nation) created a committee to include all branches of government, as well as parties outside of government who would be affected.

### Examples from the States

The [State of Illinois](#) has a very basic website but the information is broken down into easy to find categories with information available listed in each. They also have an extensive amount of information available including the following categories:

- State Government: Financial information, contract, payroll, grant tracking, stimulus spending, lobbyist registration, audit reports, comptrollers Open Book, and the budget process
- Education: statewide school report cards, teacher certifications, building inspections and school bus inspections
- Health & Safety: nursing home inspection reports, hospital report cards, health care professionals license lookup, child care facility inspections, environmental citations, death certifications

- Elections: campaign finances, campaign donations, election filing
- Transportation: bridge inspection reports, IDOT reports, gas pump inspections
- Consumer: consumer complaints against businesses, corporate accountability, business names registration, disciplinary actions against attorneys, professional license lookup, liquor licenses.

The State of Delaware has a much more aesthetically appealing website, but is still basic in how they present their information. They have many of the same data available as Illinois with the following additions:

- Delaware First Map: provides geospatial data which allows the data to be expressed in a form that can be mapped and compared to other geographic information
- Bids and RFP site
- Traffic: traffic count data, real time traffic mapping, highway capacity, ridership, and congestion data
- Demographic: population projections
- Environment: water quality, air pollution reports, mapping interface of environmental data
- Health: restaurant inspection reports, health statistics
- Economic Information: labor market info, unemployment data, foreclosure data
- Public Archives collection

Within the State of Kentucky, the city of Louisville also provides extensive services and information to its citizens through its LouieStat which seeks to answer three fundamental questions such as: What are the key services Metro Government performs? How well are we performing? How can we perform better? LouieStat utilizes data to help the government departments answer each of these questions. This data is then readily accessible online to citizens to view.

The State of Mississippi's offers their online services through their ms.gov site, which citizens can customize and even create reminders to themselves to renew driver's licenses, fishing licenses, etc. The amount of services offered through the online portal are too extensive to list, but appear to encompass most services that citizens or state employees would need from their state government. These resources have not only made things easier on citizens but have added up to substantial savings for the state. In 2014 the state reported that, "the state has saved about \$1 million per year in infrastructure, payment processing and website maintenance costs since the upgrade. In addition, citizens are increasingly accessing the site from mobile devices, and in 2013, the state launched six mobile apps to take advantage of that" (Mississippi, 2014).

The State of Utah provides very comprehensive resources through their website. They have reported that moving just nine of their services saved around \$46 million over five years and have avoided \$15 million in cost by using a self-funded model. The state also estimates that they save on average \$13 per transaction by doing things online versus doing them offline. Utah started the process of offering services online in 1999 with just one services and as of 2012 offer over 1,000 online services (Utah.gov, 2016). Utah has also emphasized the services they provide to business through their Doing Business in Utah Initiative. The goal of this program is to

simplify the process of businesses locating the services they need for their industry by grouping the online services by industry classification.

Additional states to highlight include:

Wisconsin's Local E-government Best Practices Review  
<http://legis.wisconsin.gov/lab/reports/14-5full.pdf>

Mississippi's E-government Oversight committee  
<http://www.its.ms.gov/Projects/Pages/EOC.aspx>

### **Best Practice Processes of Implementing E-Government Services**

The following practices have been identified as being of critical importance when enacting e-government projects:

- **Clear goals.** Both of these programs clearly define and highlight their goals and objectives for implementing these reform. This is an important first step in any reform process as it helps to set clear expectations and establish a common ground for all of the stakeholders to start from. Across states these goals tend to be reducing cost, providing improved customer service, and providing transparency and accountability to the citizens.
- **Strategic planning.** There is strong caution against just starting to implement e-government changes without first thinking about the implementation process. New Jersey's Data Management Framework does this by establishing the different types of data they manage and then creating a tier system which is as follows:

Tier 0: data used by all state agencies and describes people, places, and things independent of transactions with the state

Tier 1: data used by all state agencies in a common format, such as financial, payroll, and personnel data

Tier 2: data that is common to two or more state agencies because of shared area of interest

Tier 3: data that is specific to a single agency's program or operations  
The goal of breaking the data down in this manner is "to achieve optimal integration, sharing, access, utilization of technology resources, and infrastructure" (New Jersey, 2004). This helped the state to then provide a blueprint for the database that would allow them to provide better access to their citizens.

- **Continuous improvement.** E-government is not something that can just be implemented and then left alone. It must be continuously evaluated and updated in order to ensure that it stays relevant and helpful. It is also vital that government ensure that all links and services continue to be operational as we frequently found dead links when navigating

sights. LouieStat is a good example of e-government services that regularly assess its process. The mayor and his leadership team meet every six to eight weeks to review the metrics tracking and data analysis and determine what can be done to continue improving their services.

- **Leadership support.** As with any change leadership is a vital component. In order for e-government implementation to be successful the drive for change must start at the top and be integrated through all areas of the government. These reforms can mean extensive upheaval and major changes in the work of the employees within the organization, which means strong leadership is required to ensure everyone is onboard with the changes.
- **Outsourcing.** Many of the most effective e-government reforms outsourced their sites, services and payment processing to the third party company NIC. This is a private company that helps governments implement these types of reforms and takes some of the burden of the technical management off of the governments. In our review of the different state websites it was clear which states used this company and which didn't. Those that used NIC were not only aesthetically more appealing, but easier to navigate and seemed to offer more services than those that did not. Some states contract for basic services with NIC, while others are more involved with the process. As a clear e-government plan emerges, a state is better able to shape the products NIC provides for them.
- **Funding.** As with any reform, e-government reform requires funding. However, many state governments have set up their systems so that they are self-funded. This is made possible by implementing modest fees on services and transaction fees that cover the cost of implementing the reforms. It should also be noted that savings associated with e-government reforms take time in order for the state to actually begin seeing these savings.

In conclusion, we note that Vermont has the basis of a good e-government system. It is clear from the January 2016 Report that the committee is on track for developing a more robust, more future-facing e-government plan. As Vermont draws from examples like Utah, Minnesota, Louisville, and more, it will be enabled to know how to implement an e-government plan that will help it move to the next stage of development and better serve the state.

## Public Private Partnerships

---

Public Private Partnerships (P3s) are defined as agreements that allow private companies to take on traditionally public roles in infrastructure and other capital intensive projects, while keeping the public sector ultimately accountable for a project and the overall service to the public (NCSL, 2015). These partnerships can lead to not only the sharing of resources, but also the sharing of risks and rewards. P3s lessens the responsibility of states having to identify upfront funding for projects which leads to an accelerated and efficient project delivery (NCSL, 2015).

Infrastructure has been the primary objective of P3s since these partnerships work best with complex, expensive, large scale, long term projects. P3s were first seen in the United States in the 19<sup>th</sup> century. Canal and railroads were built by private investors, but the United States used public companies in the 1930s and 1940s to build modern highways. There was a resurgence of these partnerships in the 1990s that continue today as infrastructure in the US has a continuous need for improvement that is too expensive for just public companies to complete alone (PPIAF, 2009).

In the US, P3s have taken different forms. The private sector partner can design, build, finance, operate and maintain an infrastructure project for a set period of time. There is also the design-build model where the private actor designs, engineers and constructs the project. The bid-build model only has the private partner construct the infrastructure and the design-build-finance model has the public partner maintain ownership, operation and maintenance. The private sector is always involved in the construction of projects and the public sector always identifies the infrastructure need and maintains ownership. There are several factors that help to determine what is the best model to use for a project. These factors include specifics of the project, political restraints, financial costs, any existing contracts with other private sector businesses, and public perception (Sabol & Puentes, 2014).

Although primarily used for infrastructure projects, P3s have also been used in health services and homeland security. In health services, the term P3s are often categorized incorrectly. Most term contracting and collaboration as partnerships. Contracts are performance based and public involvement is limited to providing some administrative funding and encouragement for success completion. In most cases, the risk is too low for both the public and private sector for the project to be a balanced partnership. The government takes on a leadership role while the private partner is a follower in the project. The government usually has to justify the programs with increased service delivery and not cost savings (Becker & Patterson, 2005).

One of the risks of P3s lies in the development, bidding and ongoing costs for P3 projects. The greater costs associated with the negotiation process with private partners has to be justifiable to citizens. These projects can also have a significant political or social context surrounding them. Some of the concerns can be around significant land and resettlement issues as well as the fear from the public workforce of being transferred to work for the private partner. Government responsibility continues throughout the project even if they are not leading the construction efforts. Citizens may hold the government even more accountable for P3 projects. The government will need to monitor the progress of the project and acquire and retain sufficient expertise. As engaged as a private partner may be in a project, they will do only what they are paid to do as stipulated in the contract. The contract must clearly state incentive and performance

requirements. Additionally, it is nearly impossible to identify everything that may go wrong with a project during development. The need to create constituencies for these problems results in renegotiation of contracts which delay projects and add costs. Changes in government policy, failure of the government and private partner to fulfill their obligations and unpredictable events, natural disasters for example, can result in the project failure or termination of contracts (World Bank Group, 2015).

**Table 1. Levels of Private Sector Engagement in P3 Projects**

Figure 1. Different Levels of Private Sector Engagement in PPP Contracts							
	Identify Infrastructure Need	Propose Solution	Project Design	Project Financing	Construction	Operation/Maintenance	Ownership
Bid/Build	Public Sector				Private Sector	Public Sector	
Design/Build	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector		
Design/Build/Finance	Public Sector	Private Sector				Public Sector	
Design/Build/Finance/Operate/Maintain	Public Sector	Private Sector					Public Sector

Source: Brookings analysis and expert interviews

**Source: Sabol, P. & Puentes, R. (2014, December 17). Private capital, public good: drivers of successful infrastructure public-private partnership. *Brookings*. <http://www.brookings.edu/research/reports2/2014/12/17-infrastructure-public-private-partnerships-sabol-puentes> from <http://www.vermont.gov/portal/help/about.php>**

There are several benefits to states utilizing P3s. Private partners provide faster access to financing for public projects. Projects are often able to begin sooner since funding does not require voter approval and the approval processes can be clearly outlined. Private financing can keep the project debt off government budgets which is especially important for those governments that have strict laws and policies against debt limits. The government can also fund other projects with money that would have gone to the P3 project. Even though with P3s there is a shared responsibility of risk and reward, there are some significant projects risks that are transferred to the private partner: financial, construction and revenue. Financial risks include the estimated versus actual inflation during the lifetime of a project. Construction risks put the ownership on the private partner if there is the discovery of endangered species, hazardous waste, delays in permits and if the facility is costlier to operate. Private partners also take on revenue risk if the usage of a project is lower than expected. There is also streamlined processes to review and approve designs and decisions for projects which limits delays and provides schedule certainty. Private partners can be more innovative in design and construction techniques which fosters specialized expertise, lower project costs and higher quality (Legislative Analyst Office, 2012).

## Examples from the States

Utah was the first state to initiate public-private rest areas. The Utah Department of Transportation (UDOT) identified rest areas that were in poor condition and needed to be torn down or significantly repaired. Five local businesses located off Interstate 15 would now replace public rest areas. Businesses agreed to be open for 24 hours a day, provide clean restrooms (with standards set by the state) and ensure plenty of parking is available. The only cost to the state was putting up rest area signs along the highway (Higgins, 2012). Ten years later, the state reported that the rest areas had saved taxpayers \$85,000 per rest area resulting in a total savings of \$425,000 annually. Complaints about lack of cleanliness and picnic tables for recreation have increased. The partnership encouraged other states to follow the program established by Utah and create uniform signage throughout the country. Utah has been approached by many states to discuss their experiences and to review their current contracts (Davidson, 2011).

The California Department of Transportation recognized the need and the benefits of utilizing private sector partners to help improve California infrastructure. Caltrans decided to partner with the private sector to develop, construct and operate transportation projects. The goal of the projects is to accelerate good movement, improve air quality and facilitate economic development. The Department also wanted to guarantee that the P3 program would help them accomplish their mission and strategic goals. The use of the P3 program must meet all or most of the following criteria: accelerate project delivery, transfer risks to the private sector, leverage existing funds, create competition to increase value, capture private sector innovation and spur economic growth. A committee of the Department's key stakeholders guide the development and implementation of project activities. The first P3 partnership program was the South Bay Expressway which opened on November 19, 2007. The South Bay Expressway is four lanes and has seven interchanges. The expressway may be expanded to meet future growth. As of today, there are two active programs and seven in the pipeline (PPP, CA DOT).

Texas passed legislation for highway P3s in 2003 and 2005. The existing funding mechanism was not meeting the needs to improve highway infrastructure and the state decided to use toll road creation as a supplement to current funding. Citizens were concerned that P3s could lead to corruption and lack of concern for public interest. Texas passed Senate Bill 792 that placed a moratorium on P3s, with a long list of exemptions however, and established a committee to look at public policy implications of having a private partner operate and collect revenue from toll roads and selling an existing toll project to a private entity. Texas addressed several public interest concerns through this committee (Bunch, 2012).

Florida and Massachusetts also passed bills to establish task forces and commissions to facilitate P3 programs. Florida bill CS/CS/HB 85 created the Partnership for Public Facilities and Infrastructure Act Guidelines Task Force. The task force will make recommendation guidelines for the legislative to consider P3s to foster unified projects across the state (Berkowitz & Corbella, 2013). Section 73 of Massachusetts Department of Transportation established an infrastructure oversight commission. The commission would comment on and approve all requests for proposals. The proposals would include both design-build-finance-operate-maintain or design-build-operate-maintain services (189<sup>th</sup> General...MA). Similar to Texas, these

committees will assist in ensuring P3s are being used for the right use and when programs are developed and implemented, maintain the public interest.

In December 2012, the Louisiana Department of Health and Hospitals formed public-private partnerships involving three LSU hospitals. Congress in July 2012 significantly reduced Louisiana's Federal Medical Assistance Percentage (FMAP) rate to the lowest it had been in more than 25 years resulting in a loss of \$329.2 million. This sudden reduction in funding accelerated efforts to form new partnerships to alleviate the budget deficit. The private hospitals increased their access to specialty care and enhanced medical training through leasing of state property. The private sector is responsible for the maintenance and operation of the facilities. The public hospitals create a sustainable public hospital as well as be able to operate a stronger graduate medical education system (DHH LA, 2012). However, this partnership resulted in legacy costs from insurance, retirement payouts and maintenance costs from before the privatization that had to be paid by two public medical schools. There have been nine hospitals privatized since 2013 but the private partners did not take on the previous liabilities totaling \$56 million dollars. The medical schools are seeking funding from state government to assist with the shortfall or they may be forced to file for bankruptcy. State representatives were not told of this potential deficit when privatization was enacted. Additionally, privately operated hospitals are seeking \$142 million from the state government to fund care for the uninsured (The Associate Press, 2015). These P3 failures outline the need for partnerships to be fully developed and may not be successful in an accelerated formation. Also, all potential outcomes of the partnership need to be identified and addressed before entering a partnership, in particular long term costs and gains.

Perhaps one of the most successful P3 outside of infrastructure is Be Ready Utah. Be Ready Utah was developed in 2005 after a successful P3 was developed to prepare for the 2002 Winter Olympics. Utah decided to develop a more comprehensive partnership to be better prepared for future disaster declarations. The private sector is involved in all phases of emergency management through information sharing and joint-planning. It is a collaborative effort between the State Business Operations Center and the State Emergency Operations Center. Funding is provided by both federal EMPG funds and private partners who subsidized many activities and materials. One of the main objectives of the P3 is to provide basic business continuity planning instruction to medium and smaller-size businesses through a 12-Step Program that is maintained by the P3. A steering committee was established in 2008 as a central coordination point. The Be Ready Utah website is a comprehensive tool for both sectors to clearly identify to citizens and the private sector the goals, objectives, tools and successes of the partnership. FEMA has praised the collaborative work of this P3 project (Be Ready Utah & FEMA).

The Vermont Agency of Transportation (VTrans) currently contracts out some projects with a design-build method as approved by 19 V.S.A. Chapter 26. Most successful P3 projects dealing with infrastructure start out small. The privatization of some of the current VTrans projects could save the state significant money, more so than contracting out of services. The steps discussed above will assist in ensuring that the first P3 will be a success which will help to facilitate future P3s.

Vermont has active citizen participation regarding public sector projects and programs. It would be dismissive to not identify the political and social challenges that face P3s. Open communication with the public and transparency of all project information will be necessary for the establishment of P3 legislation. There needs to be a competitive bidding process. In a New Hampshire case study of small rural municipalities using one form of P3s, citizens were concerned that the limited number of bids did not provide a best value for their municipality (Halstead, Mohr, Deller & Girard, 2007). Further, quantifiable goals will need to be developed and reached with the first project to demonstrate to the public the collective beneficial impact of P3s. The best practices and those projects that failed demonstrate that P3s can be a successful tool for governments to utilize to help eliminate budget deficits while improving infrastructure and programs for the public good.

To develop a successful P3, it is important for government officials to implement rules and tools and communicate with the public and all stakeholders. The identification of a public sector champion will help to minimize any misperceptions that those impacted by the project may have. The champion can also help to identify the stakeholders of the project, affected employees, public receiving services, the media, labor units and other interests, who will have strong opinions. It is imperative to create and maintain open communication. (National Council for Public-Private Partnerships). Legislation is important to create a strong legal framework. A public sector unit should oversee the evaluation and selection process without a second legislative oversight. The legislation should allow for flexibility so the public sector can enter into P3s for different project types. It is also important to understand other legal framework that may influence future partnerships. Goals of the project must be quantifiable to provide concerned citizens with tangible results. It is also important to pick projects that are politically feasible. When initiating a first P3, it is helpful to start out small and gradually increase project size and scope. As important as it is to incorporate public interest in project interest, it is equally as important to consider private sector needs. The private sector will be looking for projects that are continuous and not every three years of work. The right revenue stream for repayment needs to be identified as part of the contract. Successful revenue streams include getting voter approval for how to repay the private partner or in the case for infrastructure projects, raise money from tolls (Sabot & Puentes, 2014).

Governments can sometimes not clearly understand their role in the project partnership and become apathetic, especially if there are a few public partners working on the same project. This apathy can lead to limited cooperation and coordination of the public partners resulting in them not meeting the collaborative goals set for a successful P3 project (Lawther, 2005). Even with all the risks, there are only a few examples of P3s not being successful for infrastructure projects. There were several private companies that operate toll roads through P3s that filed for bankruptcy. The companies' failures were a result of them not anticipating the decline in traffic on roads. The downturn in traffic was a result of the 2008 economic crash which limited leisure travel and the number of cars on the road. It is important to note that with long term leases, it is difficult to predict if and when economic downturns may occur. These occurrences are the exceptions and not the norm (LaFaive, 2014).

Citizens can be concerned that public interest is disregarded when partnerships are made with the private sector. It is important for the government to maintain and defend the public interest,

especially for P3s highway infrastructure projects. Over the next fifty years, there will be a four trillion increase in the number of highway vehicles miles traveled. The need to find funding to improve current highway infrastructure has led to over 28 states having toll roads and states entering into P3s. The most common P3 in highway infrastructure is one in which the private partner provides payment to the government at once or over time. The private partner will keep the revenue from the toll road for a specified time. If there is excess revenue and depending on lease provisions, the public partner will share the revenue with the private partner (Bunch, 2012).

## References:

---

### EBDM References

Barelds, E., Rousseau, D.M., & Briner, R.B. (2014). Evidence-Based Management: The Basic Principles. *Center for Evidence-Based Management*. Retrieved from <http://www.cebma.org/wp-content/uploads/Evidence-Based-Practice-The-Basic-Principles.pdf>

Bruel, J. D., & Kamensky, J. M. (2010, September 15). Process-Improvement Programs: Right for Government? Retrieved April 23, 2016, from <http://www.governing.com/columns/mgmt-insights/process-improvement-programs-government.html>

Grant, V. C. (2010). Transforming State Government Services Through Process Improvement: A Case Study of Louisiana. Retrieved April 23, 2016, from <http://www.thesoutherninstitute.org/docs/publications/Louisiana Case Study for IBM.pdf>

Improvement Skills Consulting. (2008). The Lean Six Sigma Accelerated Improvement Method (A.I.M.). Retrieved April 19, 2016, from <https://ianjseath.files.wordpress.com/2009/04/aim-lean-six-sigma.pdf>

Louisville, City of (2016). Office of Performance Improvement and Innovation. *City of Louisville government website*. Retrieved from <https://louisvilleky.gov/government/performance-improvement-innovation/about-us>

Louisville, City of (2016). LouieStat. *City of Louisville Statistics*. Retrieved from <http://louiestat.louisvilleky.gov/>

Rhode Island Office of Management and Budget. (2014, December 23). Office of Regulatory Reform Accelerated Regulatory Review Final Report: Results and Next Steps. Retrieved April 16, 2016, from <http://www.omb.ri.gov/documents/reform/regulatory-review/ORRFinalReport2014.pdf>

Rubin, J. (2011, February). The Field Works. Retrieved April 23, 2016, from <http://www.aphsa.org/content/dam/aphsa/pdfs/OE/2011-02-OrganizationalAim.pdf>

Rousseau, D. M. (2006). Is there such a thing as “evidence-based management”? *Academy of management review*, 31(2), 256-269.

Sanderson, I. (2002). Evaluation, policy learning and evidence-based policy making. *Public administration*, 80(1), 1-22.

United States Environmental Protection Agency. (2015, October 6). Lean and Six Sigma Process Improvement Methods. Retrieved April 23, 2016, from <https://www.epa.gov/lean/lean-and-six-sigma-process-improvement-methods>

### RBA References:

Benchmarks for a Better Vermont (BBV). (2016). Home, About Us, Vermont Accountability Group. <http://www.bbvvt.marlboro.edu/>

Berthelsen, C. et al. (2004, July 30). Governor looks beyond budget, plans big government overhaul. *SF Gate*. Retrieved from <http://www.sfgate.com/politics/article/Governor-looks-beyond-budget-plans-big-2737667.php>

California Performance Review (Agency). (2004). A government for the people for a change: A report of the California Performance Review. Sacramento, CA: Office of State Pub.

The California Performance Review. This is only one report out of four with 1) Prescription for Change; 2) Form Follows Function; 3) Keeping the Books; 4) Issues and Recommendations. Retrieved from: [http://cpr.ca.gov/CPR\\_Report/](http://cpr.ca.gov/CPR_Report/)

Center for the Study of Social Policy (CSSP). (2013). Results-Based Accountability & Connecticut State Government. Retrieved from <http://www.cssp.org/policy/2013/Results-Based-Accountability-RBA-Connecticut-State-Government.pdf>

Fiscal Policy Studies Institute (FPSI). (2016). What is Results-Based Accountability? *About FPSI*. <http://resultsaccountability.com/about/what-is-results-based-accountability/>

Friedman, M. (2014). Results-Based Accountability 101. *FPSI Workshop Materials*. <http://resultsaccountability.com/results-based-accountability-101-20-minute-presentation-2009-slides/>

Gov. Nikki Haley Signs S.22 - Government Restructuring Act Of 2014. (2014, June 2). Greenwood Today. Retrieved from <http://gwtdtoday.com/main.asp?SectionID=2&SubSectionID=235&ArticleID=28585>

Government Restructuring and Operations Review Commission. (2016). Interim Report. Retrieved from <http://aoa.vermont.gov/sites/aoa/files/Committees/GovtRestruct/GRORC%20Interim%20Report%20Final.pdf>

Komenda, E. (2014). New program to help Las Vegas business launched. *Las Vegas Review Journal*. Retrieved May 1, 2016, from <http://www.reviewjournal.com/business/new-program-help-las-vegas-business-launched>

Lee, A. F. (2013). *Results-Based Public Policy in Action* (Rep.). Retrieved <http://www.cssp.org/policy/2013/Results-Based-Accountability-RBA-Connecticut-State-Government.pdf>

Liner, B., Hatry, H. P., Vinson, E., Allen, R., Dusenbury, P., Bryant, S., & Snell, R. (2001, April 1). Making Results-Based Government Work (Rep.). Retrieved [http://www.urban.org/research/publication/making-results-based-government-work/view/full\\_report](http://www.urban.org/research/publication/making-results-based-government-work/view/full_report)

Mintzberg, H. (2011). The Five Basic Parts of the Organization. In Shafritz, J., Ott, S., and Jang, Y. *Classics of Organizational Theory*. Boston: Wadsworth.

Moynihan (2006). Managing for Results in State Government: A Decade of Reform. *Public Administration Review*. Jan/Feb 2006

Office of Financial Management (OFM). (2016). Priorities of Government. <http://www.ofm.wa.gov/budget/pog/default.asp>

ROMA. (2016). Retrieved from <http://www.caaalabama.org/roma.php>

Sheffield, S. R. (1999). Implementing Florida's performance and accountability act: A focus on program measurement and evaluation. *JOURNAL OF PUBLIC BUDGETING ACCOUNTING AND FINANCIAL MANAGEMENT*, 11, 649-669.

Vermont Agency of Human Services (AHS). (2016). Healthy Vermonters 2020. Department of Health. <http://healthvermont.gov/HV2020/>

### Lean Management References

Bhatia, N., & Drew, J. (2016, March 16). Applying lean production to the public sector [Consulting]. Retrieved from <http://www.mckinsey.com/industries/public-sector/our-insights/applying-lean-production-to-the-public-sector>

Environmental Protection Agency. (2006, September). Working smart for environmental protection: Improving state agency processes with lean and six sigma. Retrieved April 24, 2016, from <http://nepis.epa.gov/Exe/ZyPDF.cgi/P1001XQY.PDF?Dockey=P1001XQY.PDF>

Gebre, B., Hallman, P., Minukas, M., & O'Brien, B. (2012, December). Transforming government performance through lean management. Retrieved April 4, 2016, from [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwjG2Y-5s\\_XLAhVDPz4KHcI-A\\_QQFggjMAE&url=http%3A%2F%2Fwww.mckinsey.com%2F~%2Fmedia%2Fmckinsey%2Fdotcom%2Fclient\\_service%2Fpublic%2520sector%2Fpdfs%2Fmcg\\_transforming\\_through\\_lean\\_management.aspx&usq=AFQjCNHXtCXu9cNiMf11Dt-058pd2A75IQ&sig2=JRzvF8KW8HF5mncWhjmhmg&cad=rja](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwjG2Y-5s_XLAhVDPz4KHcI-A_QQFggjMAE&url=http%3A%2F%2Fwww.mckinsey.com%2F~%2Fmedia%2Fmckinsey%2Fdotcom%2Fclient_service%2Fpublic%2520sector%2Fpdfs%2Fmcg_transforming_through_lean_management.aspx&usq=AFQjCNHXtCXu9cNiMf11Dt-058pd2A75IQ&sig2=JRzvF8KW8HF5mncWhjmhmg&cad=rja)

Krings, D., Levine, D., & Wall, T. (2006, September). The use of "lean" in local government. Retrieved April 24, 2016, from <http://webapps.icma.org/pm/8808/public/cover.cfm?author=David%20Krings%2C%20Dave%20Levine%2C%20and%20Trent%20Wall%2C%20Cincinnati%2C%20Ohio.&title=The%20Use%20of%20%E2%80%99Clean%E2%80%9D%20in%20Local%20Government>

Naiknimbalkar, A., Slaughter, M., & Whyte, S. (2014, 2016). CSU Lean Process Improvement. Retrieved April 10, 2016, from <http://uknowledgeshare.com/training/sub-training/>

New Hampshire Department of Administrative Services. (2016). Lean Continuous Improvement. Retrieved March 7, 2016, from <http://lean.nh.gov/>

Office of the Governor - Chris Gregoire. (n.d.). Government Accountability & Reform. Retrieved April 22, 2016, from <http://www.digitalarchives.wa.gov/GovernorGregoire/priorities/reform/>

Ohio Department of Administrative Services. (n.d.-a). About LeanOhio. Retrieved February 18, 2016, from <http://lean.ohio.gov/Services/MeettheLeanOhioTeam.aspx>

Ohio Department of Administrative Services. (n.d.-b). LeanOhio Information Kit. Retrieved April 22, 2016, from [http://www.lean.ohio.gov/Portals/0/docs/info/LeanOhio\\_InfoKit.pdf](http://www.lean.ohio.gov/Portals/0/docs/info/LeanOhio_InfoKit.pdf)

Priolo, R. (2014, April 23). Washington State: using lean production in government. Retrieved April 22, 2016, from <http://planet-lean.com/washington-state-using-lean-production-in-government>

Radnor, Z., Walley, P., Stephens, A., & Bucci, G. (2006). *Evaluation of the Lean Approach to Business Management and Its Use in the Public Sector*. The Scottish Government. Retrieved from <http://www.gov.scot/Publications/2006/06/13162106/0>

Samuel, D., Found, P., & Williams, S. J. (2015, October). How did the publication of the book “The Machine That Changed The World” change management thinking? Exploring 25 years of lean literature. *International Journal of Operations & Production Management*, 35(10), 1386–1407.

Shah, R., & Ward, P. T. (2007). Defining and developing measures of lean production. *Journal of Operations Management*, 25(4), 785–805. <http://doi.org/10.1016/j.jom.2007.01.019>

State of Washington Governor’s Office of Accountability & Performance. (2012, October). Lean Transformation Report: 2012 and Beyond. Retrieved April 22, 2016, from <http://results.wa.gov/sites/default/files/2012LeanReport.pdf>

State of Washington Governor’s Office of Accountability & Performance. (2016, February 1). Lean Strategic Projects. Retrieved April 22, 2016, from <https://data.results.wa.gov/reports/G5-2-1-StratProj>

The Environmental Council of States. (2016, March 11). Vermont DEC’s Lean Initiative Yields Significant Results. Retrieved April 22, 2016, from <http://www.ecos.org/news-and-updates/vermont-decs-lean-initiative-yields-significant-results/>

Treville, S. de, & Antonakis, J. (2006). Could lean production job design be intrinsically motivating? Contextual, configurational, and levels-of-analysis issues. *Journal of Operations Management*, 24(2), 99–123. <http://doi.org/10.1016/j.jom.2005.04.001>

Womack, J. P., Jones, D. T., & Roos, D. (1991). *The machine that changed the world: how Japan’s secret weapon in the global auto wars will revolutionize western industry* (1st HarperPerennial ed). New York, NY: HarperPerennial.

## Data Management References

A.R. Guess. (2012, June 18). The Difference Between Data Governance & Data Management - DATAVERSITY. Retrieved from <http://www.dataversity.net/the-difference-between-data-governance-data-management/>

Bourquard, Joanne & Kirsch, Cassandra. (2014, September 1). Big Data = Big Benefits. Retrieved April 23, 2016, from <http://www.ncsl.org/research/telecommunications-and-information-technology/big-data-big-benefits.aspx>

Brito, J. (2008). Hack, mash, & peer: Crowdsourcing government transparency. *The Columbia Science and Technology Law Review*, 9, 119–157.

Burton, John, Kenney, Tim, & Schirling, Michael. (2016). *Final Report of the Select Committee on IT 1.12.16.pdf* (Committee Report). Retrieved from <http://aoa.vermont.gov/sites/aoa/files/Committees/SpecialIT/Final%20Report%20of%20the%20Select%20Committee%20on%20IT%201.12.16.pdf>

Daly, J. (2013, June). 13 Big Data Resources for State and Local Governments [Text]. Retrieved May 1, 2016, from <http://www.statetechmagazine.com/article/2013/06/13-big-data-resources-state-and-local-governments>

Gray, Jonathan. (2014). Towards a Genealogy of Open Data. In *“The Impact of Open Data.”* Glasgow, Scotland. Retrieved from <http://poseidon01.ssrn.com/delivery.php?ID=780025027093084079006102092109117031007048068055025069102114080123090064028114006024007063049014102035101118125089088030027072000033062052083122072120064006081076090005062075025075122068107091094066118114026115012001075026109124000005123103099072117098&EXT=pdf>

Hao Wang, PhD, MPA. (2010, October). *Master Data Management for State Government Presentation*. New York State Forum Emerging Technologies. Retrieved from [https://www.nysforum.org/events/EmergingTech\\_MDM\\_10\\_28\\_2010/documents/NYS\\_Forum\\_MDM\\_Session\\_1\\_v11\\_release.pdf](https://www.nysforum.org/events/EmergingTech_MDM_10_28_2010/documents/NYS_Forum_MDM_Session_1_v11_release.pdf)

Heaton, Brian . (n.d.). Connecticut Digitizing State Regulatory Process. Retrieved from <http://www.govtech.com/data/Connecticut-Digitizing-State-Regulatory-Process.html>

Kim, G.-H., Trimi, S., & Chung, J.-H. (2014). Big-data applications in the government sector. *Communications of the ACM*, 57(3), 78–85.

NASCIO. (2012, August). The Big Data Revolution - Impacts for State Government - Timing is Everything. Retrieved May 1, 2016, from [http://www.nascio.org/Portals/0/ublications/Documents/NASCIO\\_BigData\\_August2012.pdf](http://www.nascio.org/Portals/0/ublications/Documents/NASCIO_BigData_August2012.pdf)

Orszag, Peter. (2009, December 8). Open Government Directive Memorandum for the Heads of Executive Departments and Agencies. Retrieved April 24, 2016, from [https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda\\_2010/m10-06.pdf](https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf)

Robinson, Doug. (2015, May). *Managing Data as a Strategic Asset: Reality and Rewards. PowerPoint Presentation - NASCIO GTA Technology Summit 2015.pdf*. Presented at the GTA Technology Summit. Retrieved from [https://gta.georgia.gov/sites/gta.georgia.gov/files/related\\_files/event\\_docs/NASCIO%20GTA%20Technology%20Summit%202015.pdf](https://gta.georgia.gov/sites/gta.georgia.gov/files/related_files/event_docs/NASCIO%20GTA%20Technology%20Summit%202015.pdf)

State of Arkansas. (n.d.). Arkansas Data Management Strategy.pdf. Retrieved April 21, 2016, from <http://stc.arkansas.gov/techgroups/Documents/Data%20Management%20Strategy.pdf>

State of Colorado. (n.d.). Data Management - Colorado Governor’s Office of Information Technology. Retrieved May 1, 2016, from <http://www.oit.state.co.us/cto/cim/data-management>

State of Iowa. (n.d.). Iowa’s Multi-Tiered System of Supports (MTSS) | Iowa Department of Education. Retrieved May 1, 2016, from <https://www.educateiowa.gov/pk-12/learner-supports/iowas-multi-tiered-system-supports-mtss>

State of Nevada. (n.d.). Nevada Priorities and Performance Based Budget Webpage. Retrieved May 1, 2016, from <http://budget.nv.gov/PPBB/>

State of Maryland. (n.d.). Open Data | data.maryland.gov. Retrieved May 1, 2016, from <https://data.maryland.gov/>

State of North Carolina. (n.d.). NC Census Data | NC OSBM. Retrieved May 1, 2016, from <http://www.osbm.nc.gov/facts-figures/nc-census-data>

Towns, Steve. (2014, June 13). Which States and Cities Have Chief Data Officers? Retrieved from <http://www.govtech.com/state/Which-States-and-Cities-Have-Chief-Data-Officers.html>

U.S. States Open Data Census. (n.d.). Retrieved April 26, 2016, from <https://census.usopendata.org/>

## **E-Government references**

Burton, J., Kenney, T., & Schirling, M. (2016). Report of the Special Committee on the Utilization of Information Technology in Government Presented to the Vermont General Assembly pursuant to 32 V.S.A. §315 Sec. 3. January 15, 2016. Retrieved from <http://aoa.vermont.gov/sites/aoa/files/Committees/SpecialIT/Final%20Report%20of%20the%20Select%20Committee%20on%20IT%201.12.16.pdf>

Center for Technology in Government. University of Albany. [www.ctg.albany.edu](http://www.ctg.albany.edu)

Chourabi, H. & Mellouli, S. (2011). E-government: Integrated services framework. *Proceedings of the 12<sup>th</sup> Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times*, 36-44. doi: 10.1145/2037556.2037563

Colorado Transparency Online Project. (2016, March). Welcome. Retrieved from <https://www.colorado.gov/apps/oit/transparency/index.html>

Dawes, S. (2002). The Future of E-Government. Retrieved from [https://www.ctg.albany.edu/publications/reports/future\\_of\\_egov/future\\_of\\_egov.pdf](https://www.ctg.albany.edu/publications/reports/future_of_egov/future_of_egov.pdf)

Government Information Center. (2016). Delaware Open Data Portal. [Delaware.gov/topics/data.shtml](http://delaware.gov/topics/data.shtml)

Greenberg, S. (2006). State E-Government Strategies: Identifying Best Practices and Applications. Report for the Congressional Research Service. Retrieved from <http://www.utexas.edu/lbj/archive/pubs/pdf/e-government.pdf>

Mississippi E-Gov Services Save \$1 Million Annually. (2014, January). *Government Technology*. Retrieved from [http://www.govtech.com/state/Mississippi-eGov-Services-Save-1-Million-Annually.html?utm\\_source=related](http://www.govtech.com/state/Mississippi-eGov-Services-Save-1-Million-Annually.html?utm_source=related)

ms.gov. (2016). Ms.gov Popular Services & Health Center. [www.ms.gov](http://www.ms.gov)

New Jersey, State of. (2004). Shared IT Architecture. Retrieved from <http://www.state.nj.us/treasury/purchase/bid/attachments/36931-b.pdf>

NIC. (2016). EGov solutions for federal, state and local government. Retrieved from <http://www.egov.com/what-we-do#services>

Office of Performance Improvement & Innovation. (2016). LouieStat. Retrieved from <http://louiestat.louisvilleky.gov>

State of Illinois. (2016). Sunshine: Illinois Accountability Project. [Illinois.gov/gov/sunshine](http://illinois.gov/gov/sunshine)  
United Nations. (2014). United Nations Public Administration Country Studies. *At*  
<https://publicadministration.un.org/egovkb/en-us/Global-Survey>

Utah.gov: The Official Website of the State of Utah. (n.d.). Retrieved May 01, 2016, from  
<http://www.utah.gov/index.html>

Vermont.gov. (2016). Contact & Help. Retrieved from <http://www.vermont.gov/portal/help/about.php>

### **Public Private Partnerships References**

Be Ready Utah. Retrieved from <http://www.utah.gov/beready/index.html>

Becker, F., & Patterson, V.. (2005). Public: Private Partnerships: Balancing Financial Returns, Risks, and Roles of the Partners. *Public Performance & Management Review*, 29(2), 125–144. Retrieved from <http://www.jstor.org/stable/20447583>

Berkowitz, B. & Corbella, A. (2013, May 18). Florida adopts legislation on public private partnerships expanding opportunities for infrastructure projects. *The National Law Review*. Retrieved from <http://www.natlawreview.com/article/florida-adopts-legislation-public-private-partnerships-expanding-opportunities-infra>

Bunch, B. (2012). Preserving the public interest in highway public-private partnerships: A case study of the state of texas. *Public Budgeting & Finance*, 32(1), 36. doi: 10.1111/j.1540-5850.2011.01001.x

Davidson, L. (2011, July 19). After a decade, ‘public-private’ rest stops seen as mostly good. *The Salt Lake Tribune*. Retrieved from <http://archive.sltrib.com/story.php?ref=/sltrib/politics/52190511-90/clarke-extra-lot-private.html.cs>

Federal Emergency Management. State partnership – Utah. Retrieved from  
[https://www.fema.gov/pdf/privatesector/utah\\_partnership.pdf](https://www.fema.gov/pdf/privatesector/utah_partnership.pdf)

Halstead, J. M., Mohr, R. D., Deller, S. C., & Girard, P. (2007). Public-private partnerships and cooperative agreements in small and rural municipalities. *International Advances in Economic Research*, 13(4), 522-523. doi:<http://dx.doi.org/10.1007/s11294-007-9118-7>

Hodge, G. A., & Greve, C. (2007). Public-private partnerships: An international performance review. *Public Administration Review*, 67(3), 545-558. doi: 10.1111/j.1540-6210.2007.00736.x

LaFaive, M.D. (2014, April 28). Public-private partnerships: the good, bad and ugly. *Mackinac Center for Public Policy*. Retrieved from <https://www.mackinac.org/20029>

Landow, P., & Ebdon, C. (2012). Public-private partnerships, public authorities, and democratic governance. *Public Performance & Management Review*, 35(4), 727. doi: 10.2753/PMR1530-9576350408

Lawther, W. C. (2005). Public-private partnerships in transportation policy: The case of advanced traveler information systems. *International Journal of Public Administration*, 28(13), 1117-1134. doi: 10.1080/01900690500290660

Legislative Analyst Office. (2012, November 8). Maximizing state benefits from public-private partnerships. Retrieved from [http://www.lao.ca.gov/reports/2012/trns/partnerships/P3\\_110712.aspx](http://www.lao.ca.gov/reports/2012/trns/partnerships/P3_110712.aspx)

Louisiana Department of Health and Hospitals. (2012, December 10). State health officials announce landmark public-private partnership agreements for LSU hospitals. Retrieved from <http://dhh.louisiana.gov/index.cfm/newsroom/detail/2722>

Marks, J. H. (2014). Toward a systemic ethics of public-private partnerships related to food and health. *Kennedy Institute of Ethics Journal*, 24(3), 267-99. doi: 10.1353/ken.2014.0022

National Conference of State Legislatures (NCSL). (2015, December 17). Public-private partnerships for transportation: A toolkit for legislators. Retrieved from [http://www.ncsl.org/research/transportation/public-private-partnerships-for-transportation.aspx#NCSL\\_Toolkit](http://www.ncsl.org/research/transportation/public-private-partnerships-for-transportation.aspx#NCSL_Toolkit)

National Council for Public-Private Partnership. 7 keys to success. Retrieved from <http://www.ncppp.org/ppp-basics/7-keys/>

Public-Private Infrastructure Advisory Facility. (2009, March). Overview of PPP experience. Retrieved from <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=ppiaf>

Public-Private Partnerships (PPP). Retrieved from [http://www.dot.ca.gov/hq/innovfinance/public-private-partnerships/PPP\\_main.html](http://www.dot.ca.gov/hq/innovfinance/public-private-partnerships/PPP_main.html)

Sabol, P. & Puentes, R. (2014, December 17). Private capital, public good: drivers of successful infrastructure public-private partnership. *Brookings*. Retrieved from <http://www.brookings.edu/research/reports2/2014/12/17-infrastructure-public-private-partnerships-sabol-puentes>

Steijn, B., Klijn, E., & Edelenbos, J. (2011). Public private partnerships: added value by organizational form or management? *Public Administration*, 89(4), 1235. Retrieved from doi: 10.1111/j.1467-9299.2010.01877.x

The 189<sup>th</sup> General Court of the Commonwealth of Massachusetts. Retrieved from <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter6C/Section73>

The Associated Press. (2015, April 16). Privatization of LSU hospitals leaves medical school with 'legacy costs'. *The Associated Press*. Retrieved from [http://www.nola.com/health/index.ssf/2015/04/post\\_46.html](http://www.nola.com/health/index.ssf/2015/04/post_46.html)

World Bank Group - Public-Private Infrastructure Advisory Facility. (2015, October 2). Government objectives: Benefits and risks of PPPs. Retrieved from <http://ppp.worldbank.org/public-private-partnership/overview/ppp-objectives>