# SITSD CASE STUDY
Analyzing the costs and benefits of
IT centralization vs decentralization


A Report Prepared for the
## Legislative Finance Committee


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## INTRODUCTION

HB 2 contained language which directed the Legislative Finance Committee (LFC) to conduct a study of enterprise, data storage, and network services provided by the State Information Technology Services Division (SITSD) of the Department of Administration (DOA). The 2019 Interim Work Plan adopted by the LFC instructed staff to conduct a case study analyzing the costs and benefits of IT convergence versus decoupling from the current centralized services model, the results of which are summarized in this report.

## EXECUTIVE SUMMARY

The analysis of IT convergence, sometimes referred to as centralization, has led to the conclusion that neither end of the spectrum is optimal, one extreme being IT services are completely centralized and the other being IT services are completely decentralized.  A well-conceived hybrid of the two would provide the best overall value in helping state agencies fulfill their missions, with specific elements centralized but with the ability to customize certain services and providers to best fit the needs of individual agencies and their customers.

It is difficult to argue against the cost savings possible due to the centralization of common IT services. Consolidated equipment purchases, virtualization of servers, more efficient use of shared software licenses, and shared staffing are all areas of potential and significant cost savings – especially for smaller agencies. However, the one-size-fits-all approach for complete centralization of IT services means that agencies do not have access to services that could make operations more efficient, and they may have charges for services that would not be chosen or otherwise needed by the agency in a decentralized situation.

Although our research set out to define unequivocally the costs and benefits of centralized IT services versus a decentralized environment, it quickly became apparent that each agency and each branch of government has unique and different business needs that may not be met through a completely centralized enterprise. Decisions about establishing the best hybrid package of services will take a significant and deliberate analysis for each specific agency or branch.  The benefits of full convergence alone must be weighed against the value of flexibility and, in some instances, autonomy that certain agencies may need in order to provide the best overall value to their customers.

The current move towards full convergence carries with it the risk that the need for agency flexibility, and in certain cases autonomy, will be sacrificed in order to obtain a one-size-fits-all mix of equipment, applications, and services.  In order to mitigate these risks it is recommended that SITSD engage state agencies in a genuine two-way dialogue to better understand agency concerns and needs, along with agency-specific recommendations on how best to provide the services an agency requires through a combination of centralized and outside services in a secure and cost-effective manner meant to fulfill agency missions.

## BACKGROUND

In May 2016, the Governor signed Executive Order 09-2016 implementing the SITSD Convergence Plan. This order directed DOA to implement an information technology convergence plan resulting in the full use of shared enterprise infrastructure and to that end directed all non-exempted, executive branch agencies to utilize SITSD provided enterprise systems, directory services, email, telecommunications, and state data centers by December 31, 2017. The intended outcome of the order was to remove unnecessary duplication of resources among agencies, increase security, and enhance efficiencies of information systems. The executive has estimated convergence to generate $1.6 million in information system related savings in the 2019 biennium as stated in Volume 10 of the Governor's Executive Budget for Information Technology. The projected savings include reduced hardware purchases, unnecessary duplication of software licensing, utility costs, and maintenance costs of existing systems.

The executive budget presented to the 2017 Legislature indicated the savings would be realized in the form of reduced IT budgets within the agencies of the executive branch. During the post-session customer satisfaction survey conducted by the Legislative Fiscal Division (LFD), a number of agencies indicated that their expenditures for IT services had actually increased, with some expressing dissatisfaction over rates, bill transparency, being billed for nonessential work, and the execution of the convergence process itself. A couple of agencies believe they could realize a savings if they had not been required to participate in convergence, through internally managing the services and outsourcing certain functions. These conflicting representations and impressions confirmed the need for study and analysis of SITSD services.

In order to conduct a case analysis the Legislative Branch was used as an example, providing the ability to have access to data needed for the analysis. The Legislative Branch, while not required to follow the executive order, utilizes many services from SITSD. In putting together this analysis, staff worked closely with a third-party vendor that is familiar with both SITSD and Office of Legislative Information Systems (OLIS), of the Legislative Branch, in order to obtain current and relevant cost comparisons.

## IS DECENTRALIZATION MORE COST EFFECTIVE?

Comparing the costs of a centralized versus a decentralized IT environment requires care to make sure the comparison is complete and considers all aspects of the cost including equipment, labor, and applications. An overly simplistic look at any singular service provided by SITSD, such as the cost of the data center versus cloud storage, would suggest that there are savings to be realized, however such a simple approach may leave out significant cost factors related to equipment and staffing.

It is important to note that this case study does not take into account any business changes or efficiencies that could be attained by an agency if they were not converged. An opportunity would be presented for an agency to change their methodology, structure, or business practices if convergence was not required. This analysis strictly looks at the services currently offered by SITSD, what it would take for an agency to operate at the same exact level if they were independent, and what that associated cost would be.

There are a multitude of factors to take into consideration that impact the question of cost savings. For an agency to operate on a completely decentralized information system, the analysis would need to include:

- Identified costs
  - Service fees
  - Replacement cycle of equipment
  - Additional FTE to manage services and provide backup in order to keep the systems functioning
- Additional factors with potential additional cost
  - Access to SABHRS, IBARS, Oracle, or other application agreements
  - Additional office space and associated furnishings (desks, computers, etc.)
  - Training for OLIS staff and end-users
  - Cost shift of the enterprise rate to other agencies and the impact

The following table analyzes the costs of services and the potential increase in labor force, required to replicate the current SITSD services for OLIS. As discussed in another section, there is potential for purchasing equipment dependent on the model and level of services chosen outside of centralization.

| Monthly Comparison | | |
|---|---|---|
| Decentralizing IT Systems | | |
| Service Fees | Decentralized | Centralized |
| Carrier/ISP Connectivity | $1,900 | |
| Cloud | $5,800 | $1,599 |
| Communications | $4,927 | $572 |
| Local Area & Edge Networking (Wired) | | $8,419 |
| Local Area (Wireless) & Security | | |
| Data Center | | $14,631 |
| Ancillary | | $8,356 |
| Microsoft | $3,104 | $3,104 |
| Mobile Device Management | $855 | $1,296 |
| | | |
| Service Fees Total | $16,586 | $37,977 |
| | | |
| FTE | | |
| If support is primarily outsourced  3.00 | $21,533 - 69,317 | $0 |
| If support is entirely in-house  9.00 | | |
| | | |
| Equipment | | |
| Dependent upon ratio of owned vs outsourced | TBD | $0 |

Service Fees

Service fees represent the cost breakdown of the services that are currently provided to OLIS from SITSD. They include the necessary functions in order for OLIS to continue their current operations. The decentralized service fees shown were provided by the state's current third party vendor, CompuNet. While naming conventions are different for SITSD and the vendor, all current services being provided by SITSD to OLIS are captured in the amounts shown and have been verified by SITSD.

Provided an opportunity, OLIS would not follow the enterprise model as established by SITSD. Rather the agency would evaluate the needed IT services and only purchase those that would be required. By evaluating the agency specific needs, they could choose more efficient and cost effective options that would best serve the mission of the agency. For instance, OLIS would not utilize the mobile device management system that they are currently purchasing through SITSD. They have an alternative solution that is less expensive and currently an option in their tenant space.

Additional Staff

In addition to fees for IT services, a major consideration in shifting an agency to a decentralized model is the amount and level of personnel it would take. FTE requirements can vary widely based upon the level of equipment and services chosen to performed in-house versus the outsourced.

In order for OLIS to provide all services and own and operate all equipment they currently have established with SITSD, they would need to incorporate 9.00 additional FTE to their staff levels. The FTE are the necessary personnel to manage, service, and maintain the hardware, equipment, networks, cloud, communications, etc.

Instead of hiring the full slate of FTE, there is the option to outsource many services, as well as equipment and hardware, through a consulting contract. In this scenario, the agency would still need approximately 3.00

FTE to manage onsite equipment and a private firm would manage the aspects that are outsourced, including off-site equipment, cloud services, and communications. There are benefits and drawbacks to this method as well and the cost associated dependent on what could be outsourced, while at the same time maintaining sufficient staff on-site to maintain equipment and customer support. The service level agreement between the agency and the vendor would need to clearly define conditions of use to include ownership of data, expectations, and level of service.

Some services cannot be outsourced since certain applications are managed services by SITSD and OLIS. There would need to be a service level agreement with SITSD in place to ensure accessibility of required state applications such as SABHRS and IBARS.

When increasing FTE levels, additional consideration needs to be given as to the physical location for the FTE and associated costs if the current facility cannot accommodate the increase. Beyond the physical space, additional costs could be incurred with the need to purchase additional computers, desks, and other office required needs.

Equipment/Wiring/Switches

Assigning a specific cost for equipment, wiring, and switches is not clear cut in a multi-tenant environment, with multiple agencies sharing a significant investment in common infrastructure. Should an agency be required to build a redundant, parallel system or share common infrastructure?

A good argument can be made that the upfront costs to purchase all new equipment and infrastructure are not necessary, as the equipment is owned by the State of Montana and not exclusively by SITSD. And in this case the only costs that would be included are the annual costs to maintain a five-year replenishment cycle of equipment. With a multi-tenant building, such as the Capitol building, agreements would need to be in place delineating ownership and operations since tenant space are split between floors of the building.

## OTHER CONSIDERATIONS

Agility

Decentralization does have its potential benefits. A decentralized IT would be more agile and responsive, in tune with the business needs, and more tightly integrated with the business goals and objectives of an agency. The lack of these were expressed as a result of convergence throughout the customer satisfaction survey.

Convergence Impacts

During the previously mentioned customer satisfaction survey state agencies had the opportunity to weigh in on what convergence has meant to them. Overall, agencies agreed the concept of convergence is good and likely to produce positive results. However, the methodology and implementation of the plan is where agencies had significantly different opinions.

Smaller agencies had overwhelming support for convergence and the positive impact it had for them. These agencies don't want or expect control over all aspects of their IT needs. In addition, they don't have the FTE to manage and analyze all IT solutions. By having SITSD, this gives the smaller agencies the ability to focus on internal needs while still providing for the business needs of their customers. SITSD for them becomes their expertise in areas they otherwise wouldn't be able to consider.

Medium and large agencies had a different perspective on the impact of convergence to them. The majority of agencies are mainly concerned with the loss of control and accessibility in the event of system failures. Additionally, the process of implementation created unforeseen consequences to these agencies. These

agencies felt a one-size-fits-all convergence package did not account for specialized applications used at different agencies, the procedures in place with their IT processes and business needs, and the overall impact to the customers the agency serves.

Constitutional Autonomy of Legislative Branch

The Legislative Branch is a separate branch of government, with OLIS delivering IT services for that branch. SITSD is a division of the DOA, an executive branch agency. The level of SITSD oversight and compliance required of OLIS has raised concerns. Currently, the Legislative Branch cannot choose products or software that would be specific to the needs of the branch without getting authorization from SITSD and often the request is denied. Factors to consider regarding autonomy include:

- How important to the branch and the Legislature is it to have OLIS completely independent and autonomous from the executive branch?
- Should the executive branch have the control over the firewall into Legislative Branch?
- Who should make the decisions for Legislative Branch regarding what information services and applications they may use?

Further discussions are recommended to determine the value and importance of constitutional autonomy of the Legislative Branch.

SITSD does have the capability to isolate systems. Isolating OLIS from other agencies could alleviate many concerns that have been expressed. However, as stated by the Deputy Chief Information Officer & Chief Information Security Officer of SITSD this alternative would require more time and resources to fully understand the ramifications to infrastructure and equipment in order to make it an effective solution.

Decentralized Choices

If an agency was not required to participate in convergence, it would be important to rethink the way in which an agency manages their IT solutions. It would give the agency an opportunity to build specifically to their business needs and become more fluid. Each agency will be unique in its approach and how they develop for the future. An agency isn't likely to choose the rebuild the same enterprise system currently in place with SITSD.

Hybrid IT Models

The successes, failures, and concerns experienced with convergence in Montana are not unique to our state alone.  In fact there are an increasing number of studies and industry analysis on the subject of centralization vs decentralization, resulting in many concluding that one or the other is not a perfect fit and that hybrids combining the best parts of each appears to be the wave of the future.  Gartner analysts at the Gartner Business Intelligence and Analytics Summit are encouraging CIO's to build a bimodal IT strategy rather than focus on centralized versus decentralized. The bimodal or hybrid model isolates the functions of IT that should be centralized due to the need across all factions of business. The remainder of the functions are then managed by the division, or in this case the agency. Thus creating a system where everyone is working towards the same common goal. Higher education institutions are utilizing this methodology. Montana State University has established a hybrid model and currently believes the structure works well for their multiple divisions of IT.

# CONCLUSIONS/RECOMMENDATIONS

There are many viewpoints on convergence or centralization. Several leading IT research organizations generally agree on the benefits of convergence as:

- Cost savings with hardware and software licensing
- Stabilization of systems
- Expertise in multiple facets of IT
- Staffing efficiencies
- Increase security
- Enhance procurement processes
- Reduce duplication of services and applications
- Maintain quality

An advantage to having technology for a government managed by a central IT unit, such as SITSD, is that there is a single point of contact and associated economies of scale. On the other hand, the advantage of having technology in government managed by individual agencies is that it is more customizable. For example, the technical and support requirements of OLIS will differ from those of the Montana Arts Council. Central IT units have unique capabilities and expertise but insufficient resources or time to manage each customized IT project at every agency.  To meet the needs of individual agencies, it is important to have some distribution of these resources across local IT units.

Our literature research on the subject of centralization vs decentralization has found a recent shift in the delivery of governmental IT services towards a hybrid/bimodal model that will use the best features of central and distributed IT.  This hybrid model allows the central IT unit to be responsible for core commodity services and infrastructure. The central IT units still provide certain services on behalf of its sub-agencies and are held accountable for enterprise-wide IT, but the agencies are responsible for meeting their own specialized needs and therefore are in charge of their local processes. This enables diverse management for IT which is essential for complex IT structures such as government. This type of model creates a partnership and supports innovation.

If delivery of IT services is to be based upon cost alone, centralization has the potential to provide for a low cost delivery of a standard package of enterprise services to all agencies.  Some agencies or branches of government, however, may have duties or customer needs that aren't best served by a completely centralized option and a hybrid IT model may provide a more effective solution at a reasonable, possibly equivalent cost. For a hybrid model to be effective, SITSD must identify a balance of power between their operations and those of individual agencies.

Regardless of the arguments for or against convergence there are several matters that need to be addressed that could enhance SITSD's acceptance and rapport with agencies. Throughout the customer satisfaction survey and the research associated with this report, the largest issues have been with the implementation and methodology of convergence, the loss of agency focused information systems, the transparency of billing and rate setting, and ability to provide input. Some of these were also identified in the audit report *Strengthening Processed Related to IT Governance (11DP-13)* and as indicated in the follow-up, SITSD is working on implementing the recommendations. Communication and transparency are to a large extent the underlying issues. It is recommended that SITSD continue to enhance their efforts for effective communication and transparency, and look for opportunities to improve IT efficiency and effectiveness through movement towards a hybrid IT services model.