Report to the Mississippi Legislature

Information Technology Oversight and Service Delivery in Mississippi State Government

#639
November 19, 2019

PEER MISSISSIPPI
Joint Legislative Committee on Performance Evaluation and Expenditure Review

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The Committee assigns top priority to written requests from individual legislators and legislative committees. The Committee also considers PEER staff proposals and written requests from state officials and others.

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On November 19, 2019, the PEER Committee authorized release of the report titled ***Information Technology Oversight and Service Delivery in Mississippi State Government.***

Becky Currie

Representative Becky Currie, Chair

This report does not recommend increased funding or additional staff.

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PEER MISSISSIPPI
Joint Legislative Committee on Performance Evaluation and Expenditure Review

Joint Legislative Committee on Performance Evaluation and Expenditure Review
Report Highlights
November 19, 2019

Information Technology Oversight and Service Delivery in Mississippi State Government

CONCLUSION: PEER identified several areas of improvement the Department of Information Technology Services (ITS) should take under consideration to ensure the state is maximizing efficient and effective operation in the use of information technology (IT) resources: improved efficiency in the procurement of IT goods and services, implementation of a statewide project management framework, and ensuring the ITS workforce and operations are capable of overseeing IT service delivery provided by private vendors to state agencies. PEER also found ITS lacks performance measures in four budget programs that could better demonstrate ITS performance. Finally, PEER also reviewed the impact of paying high hourly rates to specialized IT-related independent contractors and determined the potential for cost savings if state IT employees are compensated at a competitive market rate.

Background:

ITS utilizes a hybrid consolidated model of IT governance, vesting some control of IT operations in ITS and others in state agencies. MISS. CODE ANN. § 25-53-1 et seq. (1972) establishes the ITS Board and defines the duties and responsibilities of ITS and its employees as providing technical expertise in planning, purchasing, and establishing the enterprise IT direction for the state government.

Over the past four years the Legislature twice changed how ITS is funded, before implementing the ITS hybrid funding model beginning in FY 2019. Under the hybrid funding model, ITS receives a general fund appropriation to pay for central IT operations as well as spending authority authorizing ITS to contract for vendor-provided services and then pass on those vendor costs to agencies on a fee-for-service basis.

The ITS accountability program inventory indicates that ITS has 67 accountability programs, wherein more than $25 million (68%) of total expenditures (over $36 million) are spent on the largest five programs.

Procurement

ITS conducts procurements on behalf of state agencies and institutions of higher learning utilizing 18 full-time employees, two contract employees, and two assistant attorneys general. In order to ensure sound, legal procurements, ITS utilizes a quality assurance process to review deliverables produced by ITS staff during the procurement process. Through interviews with ITS staff and a review of 14 procurement files, PEER determined various ineffiencies exist in the procurement process, some of which are a result of internal ITS inefficiencies, while others are a result of poor communication on the part of state agencies and ITS:

- ITS did not complete procurements within its own timeframes in 9 of the 14 procurements;
- The quality assurance process is not risk-based and leads to delays in the procurement process;
- ITS has no style guide and utilizes out-of-date templates, leading to delays;
- State agencies submit incomplete procurement requests, delaying the start of procurements;
- State agencies offer delayed responses to ITS requests for needed information, delaying the start of procurements;
- Miscommunication regarding when a procurement truly begins leads to frustration from the agency perspective; and
- ITS does not sufficiently monitor its procurement performance.

Project Management

ITS has not developed uniform project management standards for use in the planning, procurement, and implementation phases of an IT project, which increases the risk of IT project failure. Non-uniform requirements during the procurement phase, including not requiring business cases or security assessments for projects below $1 million in total cost, as well as ill-prepared agency presentations to the ITS board when seeking approval for a procurement, threaten successful project management from the beginning of a project. Additionally, ITS resources (e.g., agency IT plans, the Strategic Services Division, and its ability to reject procurements) are not utilized to ensure ITS and agencies are planning for IT projects sufficiently prior to initiating a procurement.

During the Department of Public Safety (DPS) Driver License System Modernization Project, an independent audit performed by MTG Management Consultants noted various project management issues, including not sufficiently validating requirements defined in the RFP, thus demonstrating a disconnect between the procurement and implementation phases of the project. Additionally, during implementation, DPS failed to assign a full-time project manager. A further issue exists in the lack of a statewide quality assurance tool to validate requirements for product acceptance – another key issue noted in the MTG audit of the DPS Driver License System Modernization Project.

Finally, MISS. CODE ANN. § 25-53-21(c) (1972) provides ITS the authority to compel agencies to produce reports and allows for inspections of IT agency operations. Currently, ITS does not utilize that authority to oversee IT project management statewide. Texas and Tennessee both utilize similar statewide project management frameworks based on accepted methodologies to promote successful IT project management.

Procurement and Project Management Recommendations:

With regard to the ITS procurement process, ITS should evaluate its procurement assignment system to allow ITS staff to begin work on procurements earlier in the process; develop a user's guide so that agencies can better understand what information is required for a particular procurement; reform its quality assurance process to a risk-based process.

ITS should evaluate the discrepancies in security assessment and business case requirements to ensure investments in IT are based on sound reasoning. Agencies should also ensure business cases are well-developed so that agency staff can adequately present procurements to the ITS Board for approval.

Under its authority in MISS. CODE ANN. § 25-53-21(c) (1972) , ITS should investigate project management frameworks used by other states to develop a statewide standard for IT project management – starting in planning, and continuing from procurement through project implementation.

The Shift in the ITS Business Model

ITS still provides some shared services, such as housing servers in the state data center, at no cost to state agencies. However, ITS is increasing its use of managed services, which private vendors provide to state agencies at a rate decided upon in a statewide master contract between ITS and the managed service provider.

PEER found that ITS does not fully utilize its planning resources (i.e., the Business Relationship team, training opportunities) to capitalize on current shared services, which could reduce technological duplication at the agency level. Further, PEER questions whether ITS has best positioned itself to expand its use of managed service providers. As ITS plans to implement a hybrid cloud managed service for agencies to utilize, PEER found ITS has not positioned its workforce (specifically the infrastructure group) to be ready for such a change and to effectively assist agencies in utilizing the managed service. Finally, PEER found contract management issues in the oversight of the Knowledge Services master contract (a contract for procuring IT-related independent contractors). Insufficient monitoring of Knowledge Services performance metrics, overlooking a requirement for a customer service survey, a lack of initial, adequate oversight parameters, and a lack of insight into fees Knowledge Services charges to potential independent contracts indicate that ITS is not fully ready to expand its use of managed service providers to deliver IT services to state agencies.

Performance Measures

ITS currently lacks performance measures in its Administration, Information Systems Services, Data Services, and Information Security Services budget programs. According to an IBM study, performance measures dependent on other organizational units meeting their targets (i.e., agencies submitting complete procurement requests) can prove challenging, though still necessary. Additionally, IT organizations need to carefully manage IT metrics for cost, such as the amount agencies are spending on ITS strategic priorities, for example the new hybrid cloud managed service.

Potential Cost Savings from Reducing Independent Contractor Expenditures

Agencies currently pay high costs for skilled IT personnel by procuring independent contractors (ICs). In an analysis of private sector IT salaries compared to IC costs at the Division of Medicaid and the Department of Human Services, PEER found that if agencies could pay ICs a comparable market rate, $2.7 million in cost savings could be realized in those two agencies alone.

ITS Business Model, Independent Contractor Cost Savings, & Performance Measurement Recommendations:

ITS should ensure staff managing contracts and services in the managed service provider business model possess the necessary skillsets and knowledge bases to allow for effective contract management, while also ensuring agencies are aware of both shared and managed service offerings to realize a benefit from reduced duplication and increased economies of scale.

The Legislature should instruct the State Personnel Board (SPB) and ITS to perform a statewide projection of cost savings from paying skilled and high-demand IT positions at a competitive market rate rather than expending funds to procure IT-related independent contractors. Findings should be reported to the Legislature by December 1, 2020.

ITS should ensure that all budget programs have necessary performance measures, such as the time needed to complete the RFP process or the percent of total statewide IT expenditures on managed services.

In order to more accurately measure its performance, ITS should ensure that all budget programs have necessary performance measures. For example, the time needed to complete the RFP process could prove indicative of ITS procurement staff performance, or the percent of total statewide IT expenditures for newly implemented managed services could demonstrate agency use and the success of the managed service.

Other Policy Options:

The Legislature should codify the principles of effective information management, as has been done by the federal government, to ensure that Mississippi takes full advantage of its information resources.

Information Technology Oversight and Service Delivery in Mississippi State Government

Introduction

Authority

The PEER Committee, under its authority found in MISS. CODE ANN. Section 5-3-51 et seq. (1972), reviewed the information technology (IT) landscape of the state government to identify opportunities to improve efficiency in the use of IT services by state agencies and delivery of IT services by the Mississippi Department of Information Technology Services (ITS).

Scope and Purpose

PEER reviewed the following:

- ITS procurement of information technology goods and services for state agencies;
- ITS management of information technology projects for state agencies;
- the shift in the ITS business model;
- ITS performance measurement; and,
- the costs of using independent contractors for information technology staffing.

Method

In conducting this review, PEER:

- reviewed relevant sections of state laws and regulations, as well as ITS strategic publications and handbooks;
- interviewed ITS Board members, ITS staff, and Mississippi State Personnel Board staff;
- utilized information from the *Mississippi Data Management Working Group Survey* to develop a sample of state agencies from which to gain feedback on ITS services and interviewed staff from seven agencies;

- researched best practices in IT service delivery, project management, data management, and performance measurement;
- reviewed FY 2018 and FY 2019 ITS procurement files;
- analyzed FY 2019 IT salary information and independent contractor expenditures; and,
- analyzed the ITS/Knowledge Services master agreement and individual scopes of work for IT independent contractors procured under the master agreement (FY 2018 through FY 2019).

Background

The Legislature established ITS to provide technical expertise and planning for the state government of Mississippi. ITS is charged with establishing the **enterprise IT**[1] direction for the state through its authority to oversee IT strategy, IT procurements, and to develop cybersecurity policy.

This chapter seeks to address the following questions:

- What is Mississippi's model of IT governance?
- What are the statutory responsibilities of ITS?
- What is the staffing and organizational structure of ITS?
- How is ITS funded?
- How does ITS expend its funds?

What is Mississippi's Model of IT Governance?

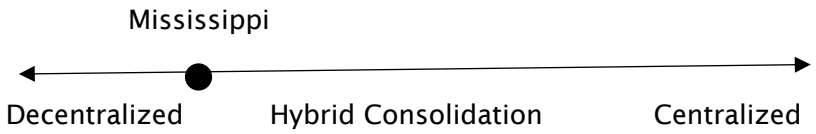
The three models of IT governance in state governments are the centralized, decentralized, and hybrid consolidation models. Mississippi uses a hybrid consolidated model, in which some IT functions (i.e., procurement, telecommunications) are within the ITS scope of authority, while other IT functions (i.e., IT personnel and funding) are left to the individual state agencies.

IT governance in state government is a concept that exists on a continuum between decentralized and centralized models of governance. In a completely decentralized state, there would be no central IT agency or office to serve in a guiding, oversight, or advisory role to state agencies. In a completely decentralized state, IT is fully left to individual state agencies' determination of how it should operate. On the other side of the continuum, complete centralization is a system in which the state IT agency completely controls statewide IT personnel, placing personnel in agencies or in support of multiple agencies and IT expenditures. Any model of IT governance existing between the centralized and decentralized models fits within the broad IT governance model of *hybrid consolidation*. Mississippi utilizes hybrid consolidation, leaning closer to decentralization (see Exhibit 1, page 4).

As an example of the somewhat decentralized nature of IT in Mississippi state government, in FY 2018, ITS expended approximately 13% of the total IT outlay of state agencies, while individual agencies expended 87% of the total IT outlay.

[1]This term is defined in Appendix A, beginning on page 72, as are all other terms indicated in bold, blue text.

Exhibit 1: Continuum of State Government Information Technology Centralization



SOURCE: PEER analysis of IT governance trends.

What are the Statutory Responsibilities of ITS?

MISS. CODE ANN. Section 25-53-1 et seq. (1972) establishes a five-member board to govern ITS. ITS is charged with providing technical expertise through its oversight of IT planning, IT-related procurements, and enterprise cybersecurity for state agencies.

MISS. CODE ANN. Section 25-53-1 (1972) establishes the Mississippi Department of Information Technology Services (ITS). In doing so, the Legislature recognized:

> *. . . that in order for the State of Mississippi to receive the maximum use and benefit from information technology and services now in operation or which will in the future be placed in operation, there should be full cooperation and cohesive planning and effort by and between the several state agencies.*

MISS. CODE ANN. Section 25-53-1 (1972) further provides that ITS:

> *. . . shall provide statewide services that facilitate cost-effective information processing and telecommunication solutions. . .*

and:

> *. . . identify opportunities to minimize duplication, reduce costs and improve the efficiency of providing common technology services across agency boundaries.*

MISS. CODE ANN. Section 25-53-7 (1972) establishes a five-member board–to govern ITS, with each member possessing at least four years of executive-level information technology-related experience.

Finally, MISS. CODE ANN. Section 25-53-5 (1972) defines the powers, duties, responsibilities, and funding of ITS. The contents of this section are summarized in Exhibit 2, page 5.

Exhibit 2: Statutory Powers, Duties, and Responsibilities of ITS

CODE Section	Summary of Power, Duty, or Responsibility of ITS
MISS. CODE ANN. Section 25-53-5(a)	Provide for the development of plans for the efficient acquisition and utilization of computer equipment and services by all agencies of state government, and provide for their implementation
MISS. CODE ANN. Section 25-53-5(b)	Shall institute procedures for carrying out the purposes of this chapter and supervise the Executive Director
MISS. CODE ANN. Section 25-53-5(c)	The title of all computer equipment of any agency of the State of Mississippi is vested in the **authority**; no equipment shall be disposed of in any manner except in accordance with the direction of the authority.
MISS. CODE ANN. Section 25-53-5(d)	Shall adopt rules and regulations for the acquisition of computer and telecom equipment and services and provide for maximum compatibility of all information systems installed or utilized by all state agencies
MISS. CODE ANN. Section 25-53-5(e)	Shall adopt rules governing the sharing, sale, or lease of IT services to any nonstate agency or person
MISS. CODE ANN. Section 25-53-5(f)	May establish a special technical advisory committee or committees to study and make recommendations on technology matters
MISS. CODE ANN. Section 25-53-5(g)	May provide for the development and require the adoption of standardized computer programs and training programs for personnel
MISS. CODE ANN. Section 25-53-5(h)	Shall adopt reasonable rules and regulations requiring the reporting to the authority through the executive director
MISS. CODE ANN. Section 25-53-5(i)	Shall require the adequate documentation of IT procedures utilized by state agencies and may require the establishment of structures within state agencies relating to IT operations as may be necessary for the purposes of this chapter
MISS. CODE ANN. Section 25-53-5(j)	May adopt reasonable rules and regulations to fully implement the purposes of this chapter and disseminate those rules to all state agencies and to all current and prospective state IT suppliers
MISS. CODE ANN. Section 25-53-5(k)	Shall establish rules and regulations for the submission of all proposed contracts for computer equipment or services proposed for authority approval. The authority may establish a lower threshold at which the executive director may execute contracts without obtaining authority approval.
MISS. CODE ANN. Section 25-53-5(l)	Authorized to purchase, lease, or rent computer equipment and services when such operation will provide maximum efficiency and economy

MISS. CODE ANN. Section 25-53-5(m)	Upon request and on a fee basis, shall assist political subdivisions, or instrumentalities of government in the development of plans for the efficient acquisition and utilization of computer equipment and services
MISS. CODE ANN. Section 25-53-5(n)	Shall adopt rules and regulations governing the protest procedures for an actual or prospective bidder, offeror, and contractor aggrieved in connection with the solicitation of the award of a contract
MISS. CODE ANN. Section 25-53-5(o)	Shall submit a report in January of each year detailing the preceding year's work as specified in MISS. CODE ANN Section 25-53-29(3) (1972)
MISS. CODE ANN. Section 25-53-5(p)	May procure telecom equipment, systems and related service in accordance with the law or regulations, or both
MISS. CODE ANN. Section 25-53-5(q)	Authorized to purchase, lease, or rent IT and IT services for establishing pilot projects to investigate emerging technologies
MISS. CODE ANN. Section 25-53-5(r)	All fees collected by ITS shall be deposited in the ITS Revolving fund unless otherwise specified by the Legislature.
MISS. CODE ANN. Section 25-53-5(s)	Shall work closely with the council (i.e., the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems) to coordinate policies, standards, and procedures relating to the procurement of remote sensing and geographic information systems (GIS) resources. The authority shall provide a warehouse for Mississippi's GIS systems data.
MISS. CODE ANN. Section 25-53-5(t)	Shall manage one or more State Data Centers to provide IT services on a cost-sharing basis to result in monetary savings to the state, improve the security and reliability of information and business systems and optimize the efficient use of the state IT assets
MISS. CODE ANN. Section 25-53-5(u)	Shall increase federal participation in the cost of the State Data Center to the extent provided by law and its shared technology infrastructure through the provision of **shared services** to agencies that receive federal funds
MISS. CODE ANN. Section 25-53-5(v)	May require new or replacement agency business applications to be hosted at the State Data Center
MISS. CODE ANN. Section 25-53-5(w)	Perform a periodic update regarding reform-based IT initiatives to the Chairmen of the House and Senate Accountability, Efficiency and Transparency Committees

SOURCE: MISS. CODE ANN. Section 25-53-5 (1972).

In addition, ITS develops the **Enterprise Security Policy** that applies to all Mississippi executive and judicial branch agencies and educational institutions. The Enterprise Security Policy defines minimum standards that state agencies must adhere to in developing IT security plans and procedures. Additionally, MISS.

CODE ANN. Section 25-53-201(2) (j) (1972) establishes the security council to provide ongoing communication about emerging issues surrounding information security through quarterly meetings.

What is the Staffing and Operational Structure of ITS?

MISS. CODE ANN. Sections 25-53-19 and 25-53-21 (1972) provide for the employment of an Executive Director and define the Executive Director's duties. To accomplish these duties, ITS employs a staff with six divisions.

MISS. CODE ANN. Section 25-53-19 (1972) provides that the ITS Board shall select an Executive Director with the following qualifications:

- a degree in engineering, business administration, electronic communications, or information technology, or a related field;
- at least ten years' experience in an IT or electronic communications, or a related field; and,
- at least five years' high-level management experience demonstrated through knowledge in the application of information technology and electronic communications.

The same section also provides, with the approval of the ITS Board, the authority for the Executive Director to employ a staff.

MISS. CODE ANN. Section 25-53-21 (1972) establishes the duties of the Executive Director as follows:

- conduct continuing studies of IT activities carried out by all agencies and develop a long-range plan for the efficient and economical performance of such activities;
- review the IT purchasing practices of state agencies and make recommendations to the ITS Board and to the Public Procurement Review Board for instituting purchasing procedures to ensure economical procurement for the efficient operation of all agencies of state government;
- see that all reports required of agencies are promptly and accurately made and make inspections of IT operations being conducted by any agency of the state;
- encourage cooperation between agencies to provide efficiency in IT operation;
- review all contracts for acquisition of computer equipment and services and negotiate a limitation on the liability to the state of prospective contractors;
- act as the purchasing and contracting agent for the state in the negotiation and execution of all contracts for computer equipment and services;
- encourage cooperation between state agencies in order that work may be done by one agency for another agency or equipment in one agency be made available to another agency;

- be designated as the Chief Information Confidentiality Officer; and,
- appoint ITS employees or other agency employees responsible for handling or processing data as information confidentiality officers.

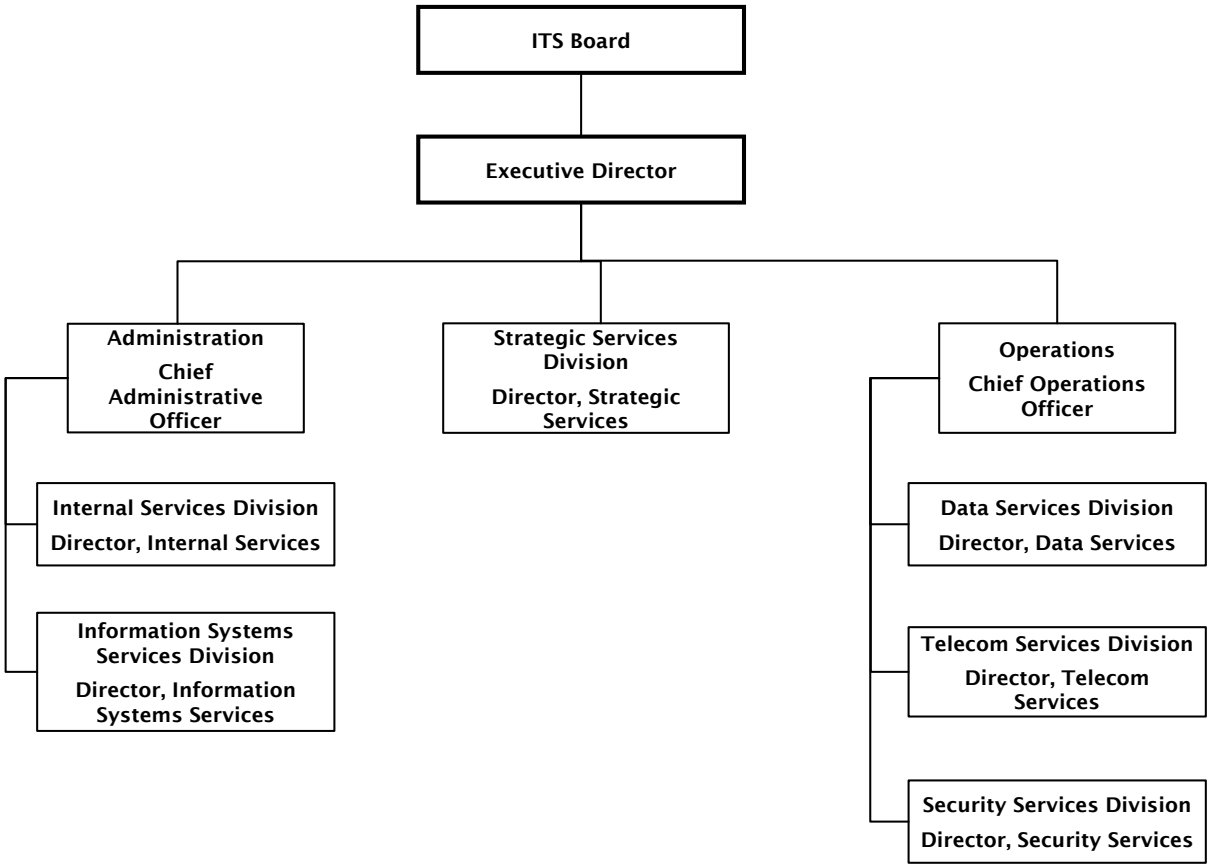
The ITS Operational Structure

ITS has six divisions responsible for fulfilling the duties prescribed to the ITS Executive Director in MISS. CODE ANN. Section 25-53-21 (1972).

- *Strategic Services*--Reporting directly to the Executive Director, the Strategic Services Division focuses primarily on planning both internally (for emerging technologies and statewide IT planning) and externally for support with annual **state agency** IT plans. In May 2019, ITS established the Strategic Services Division and began the recruitment process to fill the division's roles.
- *Internal Services*--The Internal Services Division supports ITS and the Wireless Communication Commission with administration, and provides in-house technical support.
- *Information Systems Services*--The Information Systems Services Division has three primary roles: procurement of IT goods and services, management of statewide contracts (i.e., Express Products Lists), and application development.
- *Data Services*--The Data Services Division operates the state data center and provides IT support for some of the state's mission critical systems, and technical support for the state's shared computing resources. The Data Services Division supports mainframes (e.g., MAGIC) and state agency IT operations housed in the state data center, and rectifies issues with databases and other IT infrastructure.
- *Telecom Services*--The Telecom Services Division manages and programs the state's voice and data networks, ensures accurate billing for contracted telecommunication services, works service requests, troubleshoots connectivity issues (for both voice and data connectivity), and oversees cable installation within the Capitol Complex.
- *Security Services*--The Security Services Division administers the Enterprise Security Program providing coordinated oversight of the cybersecurity efforts across all state agencies. The division manages enterprise security program activities for providing an enterprise-wide approach to cybersecurity. The division also manages the enterprise core and perimeter cybersecurity solutions protecting the state's information assets.

Exhibit 3, page 9, illustrates the ITS organizational structure.

Exhibit 3: ITS Organizational Structure



SOURCE: FY 2020 ITS organizational chart submitted to PEER November, 2019.

How is ITS Funded?

Over the past four years, the Legislature has twice changed how it appropriates ITS funding. The current ITS hybrid funding model enables ITS to pay for central IT operations (e.g., ITS staff, the state data center), while agencies pay for managed services on a fee basis (e.g., telecommunications). Mississippi is the only state with this IT funding model.

Over the past four years, the Legislature has twice changed how it appropriates ITS funding, ultimately authorizing a hybrid funding model that positions Mississippi as the only state with such an IT funding model.

Recent Legislative Changes to the ITS Funding Model

In 2016, the Legislature changed ITS from an entirely fee-based funding model to a general fund-based funding model.

During the 2016 Regular Session, the Mississippi Legislature passed Senate Bill 2362, known as the Mississippi Budget Transparency and Simplification Act of 2016, which prohibits state agencies from

charging fees to other state agencies.[2] This fundamental shift in state budgeting resulted in ITS transitioning from a predominantly fee-based funded agency to a predominantly general fund-funded agency. Under the general fund-based funding model, ITS received only state general funds to support its operations. As such, ITS was a predominantly general fund-funded agency for two years, in FY 2017 and FY 2018.

In 2018, the Legislature again changed the ITS funding model, this time to the current hybrid funding model.

The general fund only funding model restricted the state's ability to maximize federal and other special fund dollars by not allowing agencies to utilize such appropriated funds (federal and other special fund dollars) to pay for shared technology services, including those pass-through services provided to agencies by vendors. Thus, during the 2018 Regular Session, the Mississippi Legislature passed Senate Bill 2779, which changed the ITS funding model from a general fund agency to a hybrid general fund and special fund agency.

How the ITS Hybrid Funding Model Works

The ITS hybrid funding model may also be referred to as the "hub and spoke" model. ITS receives state general funds to fund the "hub" portion of the budget, which consists of the core ITS business functions. ITS funds "spoke" operations (i.e., those provided by a private vendor and consumed directly by another state agency) by charging agencies for the direct costs of consumed services.

In FY 2019, ITS became the first and currently the only state IT agency in the country that operates under the hybrid funding model, or "hub and spoke" model. "Hub" services consist of ITS core business functions that provide expertise to develop and manage shared services (e.g., housing servers in the state data center, conducting procurements, managing enterprise security functions) to be utilized by state agencies. "Spoke" services consist of centrally managed services provided by a private vendor and consumed directly by a state agency (e.g., the state's telecommunications services provided principally by AT&T), whereby each agency determines their service needs and is financially responsible for their portion of the services utilized.

Under the hybrid funding model, the Mississippi State Legislature funds the hub funding portion of the ITS budget through general funds. In contrast, the Legislature allocates spending authority to the ITS spoke funding portion and authorizes ITS to pass through to agencies the direct cost of contractual services utilized--i.e., the amount the vendor charges ITS. The actual dollars for these spoke expenditures are provided through agency funding (e.g., federal, state).

[2] Senate Bill 2362, 2016 Regular Session, states: "from and after July 1, 2016, no state agency shall charge another state agency a fee, assessment, rent, audit fee, personnel fee or other charge for services or resources received."

Agencies Pay ITS for Contractual Services, Then ITS Pays Vendors Providing Those Services

The Legislature authorized ITS to accept fees from state agencies for pass-through costs in each of the fiscal years 2019 and 2020.

The Legislature authorized ITS to accept fees from state agencies for pass-through costs in an amount not to exceed $20,570,031 in each of the fiscal years 2019 and 2020. These expenditures are represented in the ITS budget under "Contractual Services – Data Processing." In FY 2019, spoke expenditures totaled $13,092,824. Ninety-six percent (or $12,621,890) of spoke expenditures pertained to pass-through costs associated with telecommunication services provided by the state's telecommunications vendor.

Forecasted Growth of "Spoke" Expenditures

ITS expects to add avenues to pass through costs to state agencies through the increased use of managed services. For example, ITS expects new telecommunications technological offerings will become more affordable, leading to increased agency consumption.

In FY 2019, total state agency spending devoted to spoke expenditures was $13,092,824, accounting for 63.6% of the total available spending authority ($20,570,031) provided by the Legislature in FY 2019. Despite not utilizing all available spoke-spending authority in FY 2019, ITS requested the same amount of spoke spending authority for FY 2020 and FY 2021 due to a predicted increase in spoke expenditures from FY 2019 levels.

In the ITS FY 2020 and FY 2021 budget requests, ITS allocated the majority of the remaining $7,477,207 in spoke spending authority to data services (not to exceed $5.5 million), equivalent to one-fourth of expected total pass-through costs. ITS also allocated an additional $1 million for telecommunication services and $500,000 for information security services.

Additional Areas for Which ITS Expects to Pass Through Costs, FY 2020

Because of planned transitions and the relative newness of the hybrid funding models, PEER sought additional information from ITS regarding forecasted pass-through costs for the current fiscal year (FY 2020). ITS expects the primary FY 2020 increases in pass-through costs to be associated with the following:

- *Addition of the hybrid cloud solution*--The hybrid cloud solution is intended to replace the virtual hosting environment, which is paid for out of the hub portion of the ITS budget. The hybrid cloud solution will be paid for through the spoke portion of the budget as state agencies utilize the newly available technology.
- *Transitioning email/messaging to a managed service*
- *Government cloud hosting services*--In addition to the hybrid cloud solution, ITS is seeking to establish secure connections to the primary cloud service providers (e.g., Amazon, Microsoft,

Google) for government cloud hosting services in instances in which agency applications are technologically sound enough to be hosted in the pure cloud environment.

- *Enterprise virtual private network solutions*--Intended to enhance enterprise security, the Security Services Division will oversee this managed service solution based on agency consumption.

Forecasted "Spoke Expenditure" Increases Over the Next Two to Five Years (FY 2021 to FY 2024)

PEER also sought additional information from ITS regarding areas of growth and contraction related to spoke expenditures over the next two to five years as ITS continues to transition into the hybrid funding model.

ITS has forecasted growth in spoke expenditures related to the hybrid cloud solution as state agencies increase usage following its rollout in late calendar year 2019, as agencies reevaluate their existing hosting environments (i.e., power, cooling, physical security). ITS plans to present and leverage the hybrid cloud solution as a viable managed service alternative to isolated hardware purchases by state agencies.

Additionally, according to ITS, new voice and data network technologies, such as voice over internet protocol and software defined networks, will become increasingly affordable and available. This should drive an increase in consumption as state agencies use newer voice and data solutions available through the statewide master telecommunications contract.

Finally, ITS plans to implement a managed security service to aid agencies in protecting their critical data and a Secure Web Gateway feature to provide additional security features and functionality to reduce the risk of a cyber-attack.

As ITS implements more managed services, local governing authorities (i.e., school boards, county boards of supervisors) will be able to utilize the managed services, which could increase economies of scale, driving down the price of those managed services.

Exhibit 4, page 13, illustrates the change in ITS funding sources and funding as a result of the change in funding models over the period FY 2016 to FY 2021.

Exhibit 4: Illustration of Change in ITS Funding Sources, FY 2016 to FY 2021

Expenditure Category	Funding Source	ITS Expenditures					ITS Funding
		FY 2016 Actual ($)	FY 2017 Actual ($)	FY 2018 Actual ($)	FY 2019 Actual ($)	FY 2020 Estimated ($)	FY 2021 Requested ($)
	Funding Model	Fee Based (1)	General Fund Based (2)	General Fund Based (2)	Hub and Spoke Based (3)	Hub and Spoke Based (3)	Hub and Spoke Based (3)
Salaries, Wages, and Fringe Benefits	General Fund (4)	-	9,594,952	9,511,670	9,013,051	10,939,137	11,141,006
	Special Fund - ITS Revolving Fund (5)	10,258,383	-	-	-	-	-
Travel	General Fund (4)	-	59,809	18,617	60,109	68,676	68,676
	Special Fund - ITS Revolving Fund (5)	89,258	-	-	-	-	-
Contractual Services	General Fund (4)	-	26,335,251	20,593,415	13,681,493	14,741,052	14,539,183
	Capital Expense Fund	-	-	3,000,000	-	-	-
	Special Fund - ITS Revolving Fund (5)	29,796,467	-	-	13,092,824	20,570,031	20,570,031
	E-Government Fund	60,468	-	-	-	-	-
Commodities	General Fund (4)	-	382,274	199,929	454,677	357,858	357,858
	Special Fund - ITS Revolving Fund (5)	749,998	-	-	-	-	-
Capital other than Equipment	General Fund (4)	-	-	-	-	-	-
	Special Fund - ITS Revolving Fund (5)	-	-	-	-	-	-
Capital Equipment	General Fund (4)	-	1,194,949	2,690,485	2,146,052	1,727,454	1,727,454
	Special Fund - ITS Revolving Fund (5)	5,156,921	-	-	-	-	-
	E-Government Fund	178,916	-	-	-	-	-
Vehicles	General Fund (4)	-	-	-	-	-	-
	Special Fund - ITS Revolving Fund (5)	-	-	-	-	-	-
Wireless Communication Devices	General Fund (4)	-	-	230	-	-	-
	Special Fund - ITS Revolving Fund (5)	-	-	-	-	-	-
Subsidies	General Fund (4)	-	102,252	751,754	2,153,132	-	-
	Special Fund - ITS Revolving Fund (5)	99,898	-	-	-	-	-
Total by Funding Source	General Fund (4)	-	37,669,487	33,766,100	27,508,514	27,834,177	27,834,177
	Capital Expense Fund	-	-	3,000,000	-	-	-
	Special Fund - ITS Revolving Fund (5)	46,150,925	-	-	13,092,824	20,570,031	20,570,031
	E-Government Fund	239,384	-	-	-	-	-
Overall Total		$ 46,390,309	$ 37,669,487	$ 36,766,100	$ 40,601,338	$ 48,404,208	$ 48,404,208

(1) Under the initial ITS fee-based funding model, ITS charged agencies fees for services provided by ITS and passed through all costs, including agency support costs associated with providing such services (e.g., agency personnel costs, travel costs, capital costs). ITS received no state general funds under the ITS fee-based funding model.
(2) Under the general fund-based funding model, ITS received only state general funds to support its operations. ITS was prohibited from charging agencies fees for services.
(3) Under the hybrid funding model, the hub funding portion of the ITS budget consists of the actual expenditures needed to fund ITS operations. The spoke funding portion of ITS budget is the pass-through amount ITS charges agencies for contractual expenditures. To allot for spoke expenditures, ITS is appropriated spending authority through a not to exceed (NTE) special funds appropriation.
(4) ITS General Fund – Funding allocated to ITS by the Legislature for ITS related expenditures.
(5) ITS Revolving Fund (special fund) – Spending authorization up to amount not to exceed, as approved by the Legislature. ITS bills agencies for expenditures utilizing the ITS revolving fund. Agencies then pay for the expenditures with applicable agency funds (general funds or special funds).

SOURCES: ITS budget requests, FY 2016 through FY 2021.

How Does ITS Expend its Funds?

As part of legislative efforts to create a comprehensive inventory of state agency programs, PEER and ITS developed an accountability program inventory for ITS that communicates program descriptions, expenditures by program, and full-time equivalent positions (FTEs) dedicated to each program. ITS has sixty-seven accountability programs, with more than sixty-eight percent of expenditures (approximately $25 million) spent on five accountability programs in FY 2018.

MISS. CODE ANN. Section 27-103-159 (1972) requires the development of an inventory of state programs and activities for use in the budgeting process. Programs identified in the inventory are referred to as "accountability programs" and are defined as "any set of activities designed to achieve specific outcome(s)."

PEER created an accountability program inventory for ITS by reviewing budgetary documents, organizational charts, policies and procedures, and completed FY 2018 expenditures posted in Mississippi's Accountability System for Government Information and Collaboration (MAGIC).[3] ITS reviewed the completed program inventory for accuracy and as applicable, added programs, placed FTEs in the proper accountability programs, and allocated expenditures to each accountability program. PEER and ITS identified sixty-seven ITS accountability programs for FY 2018. Appendix B on page 75 contains a complete list of ITS accountability programs, program descriptions, and expenditures.

Five ITS accountability programs accounted for over $25 million, or approximately 68%, of ITS total FY 2018 expenditures of $36,766,100.[4] These five programs included Data Network Communications; Voice Network Administration and Installation; Software Acquisition, Maintenance, and Installation (Data Services); Enterprise Server (Mainframe); and Property Management, Building Services, and Equipment Management (Data Center Facilities Maintenance).

[3] MAGIC is Mississippi state government's accounting and procurement system of record, encompassing finance, logistics, and data warehouse functionality.

[4] In the accountability program inventory, ITS reported FY 2018 expenditures of $36,729,756. However, budget documents note an actual FY 2018 ITS expenditure of $36,766,100.

Procurement of Information Technology Goods and Services for State Agencies

ITS did not complete the procurement process within its published timeframes in nine of the fourteen procurements that PEER reviewed for FY 2019. Thus government agencies' utilization of the goods and services being procured was delayed from a month to over a year. Principal issues contributing to inefficiencies in the ITS procurement process included state agencies' submitting incomplete procurement requests and the ITS multiple-step, non-risk-based internal quality assurance process to review procurement documents.

This chapter seeks to address the following questions:

- How does the ITS procurement process work?
- To what extent has ITS procured contracts for state agencies in a timely manner?
- What inefficiencies exist in the ITS procurement process?

How Does the ITS Procurement Process Work?

The ITS Information Systems Services Division staff perform seven types of procurements, which include the use of competitive procurement processes, sole-source certifications, exemption requests, express product list (EPL) planned purchases, and emergency procurements.

With regard to the procurement of IT goods and services for state agencies, MISS. CODE ANN. Section 25-53-5 (1972) states:

> *The authority* [ITS] *shall adopt rules, regulations, and procedures governing the acquisition of computer and telecommunications equipment and services which shall, to the fullest extent practicable, insure the maximum of competition between all manufacturers of supplies or equipment or services…*

This section also provides the ITS Executive Director with the authority to execute contracts without ITS Board approval, if those contracts fall below a dollar amount specified by the ITS Board. To ensure compliance with these statutory requirements, ITS publishes the *ITS Procurement Handbook*, which details the policies and procedures for state agencies procuring IT goods and services.

ITS completes procurements for state agencies, which it considers its **customers**, seeking to procure IT-related goods and services. The time and level of work associated with each procurement varies based on the good or service the customer requests, its expected cost, and type of procurement tool used.

ITS processes competitive procurements, sole-source certifications for vendors with unique products, exemptions for state agencies with the ability to complete their own procurements, planned purchases for IT goods and services listed on express product lists (EPLs) for procurements requested by the customer above a dollar

limit as specified in each EPL, and emergency purchases when an event threatens life or property. If applicable, ITS also completes procurements for customers wishing to "piggyback" or buy off of a previously executed contract into which another state agency entered.

Although each of these procurement processes differs (i.e., advertising period, procurement documents required, time period required for procurement completion), the overarching processes and issues that emerge are relatively similar.

ITS completed 548 procurements during FY 2018 and 510 procurements during FY 2019.

ITS Procurement-Related Staff and their Roles

ITS manages and conducts procurements on behalf of state agencies utilizing a staff of eighteen full-time employees, two contract employees, and two assigned special assistant attorneys general.

Eleven Information Systems Services technology consultants perform the day-to-day tasks involved with conducting procurements (e.g., reviewing customer requests, reviewing and editing agency bid specifications, advertising for bids, verifying quotes received). Additionally, three Information Systems Services staff manage the Express Products List and other group purchasing agreements from which state agencies may procure IT goods and services.

ITS also utilizes a contract employee to assist with developing procurement specifications. During the procurement process contract development phase, a second contract employee writes and edits the contracts and two attorneys (who are employees of the Office of the Attorney General) review and edit the contracts. The two attorneys may also represent ITS in negotiations, post procurement reviews, and in the event of any vendor protests.

Information Systems Services Staffing Team

Comprised of the division director, the two procurement process specialists, and the two procurement team leaders,[5] the Information Systems Services staffing team assigns incoming procurements to technology consultants, troubleshoots incoming procurement requests, completes quality assurance on a variety of deliverables produced during the procurement process, and provides procurement-related training for its staff.

Quality Assurance Process

ITS requires its procurement-related documents (known as deliverables) that are released to entities outside ITS (i.e., vendors, the requesting customer, and/or the public) to go through its

[5] During the review period, the RFP team leader position was held by the previous Information Systems Services Division Director through December 2018, but has been vacant since that time.

quality assurance process. (See Appendix C, page 86, for a flow chart of quality assurance process). The number and type of deliverables that require quality assurance review depend on the procurement method.

ITS currently divides its deliverables into two categories: those requiring two-level review and those requiring one-level review. The team leader conducts the first-level review and one of the two procurement process specialists conducts the second-level review. In the absence of an RFP team leader (December 2018 through September 2019), the less experienced procurement process specialist assumed the role of first-level review and the more experienced procurement process specialist conducted second-level review.

Requirements of the ITS Procurement Process

Unlike the Public Procurement Review Board, which approves procurements for personal services and commodities, ITS both conducts the procurements for IT-related hardware, software, and services, and then approves such procurements. While the Public Procurement Review Board receives procurements in their final stages, ITS generally receives procurements in their initial request stages and then conducts the procurement on behalf of the state agency.

This process necessitates that ITS have certain information in hand to commence conducting the procurement on the agency's behalf. Over the years, the ITS Board has added requirements for board-approved projects, including a **business case** justifying a procurement and current IT security assessment for procurements costing $1 million or more (i.e., only those requiring ITS Board approval) for IT hardware and software, or $500,000 or more for IT services (i.e. IT-related independent contractors).[6]

New Leadership at Information Systems Services

Information Systems Services is under the leadership of a new director after the former long-time Information Systems Services Director retired. According to the new Information Systems Services Division Director, ITS plans to make changes to the procurement workflow and processes. While PEER and ITS leadership have discussed preliminary changes, this section describes issues as they currently exist within the ITS procurement process.

[6] Each state agency must have received IT security assessments within the previous three years.

To What Extent has ITS Procured Contracts for State Agencies in a Timely Manner?

ITS did not complete the procurement process within the timeframes published in its procurement handbook in nine of the fourteen (64%) procurements PEER reviewed for FY 2019. This delayed government agencies' utilization of the goods and services being procured from a month to over a year. Also, in two instances witnessed by PEER at ITS Board meetings, the board approved procurements without being able to ask sufficient questions or potentially delay approval to receive more information from state agency staff, because a delay in the process would lead to missed deadlines (i.e., dates when existing IT services would lapse or funding deadlines).

In PEER's utilization of the survey described on page 1, six of the seven agencies interviewed identified the amount of time needed to complete the IT procurement process as that agency's primary concern with ITS services. State agencies specifically identified a long wait time prior to ITS commencing conducting procurement on their behalf, which the state agencies identified as the amount of time their procurement request spent in the project "ready to assign" period (i.e., waiting in the queue).

In addition to interviewing state agencies about their experiences with the IT procurement process and reviewing the *ITS Procurement Handbook*, PEER individually interviewed seventeen ITS procurement-related staff to discuss their experiences with the ITS procurement process.

During the review of FY 2019 procurements, PEER first selected procurements from a list for that fiscal year. PEER then requested a selection of procurements from the ITS website's register of closed requests for proposals (RFPs), invitations for bids (IFBs), and sole-source certifications (i.e., those in which ITS is no longer accepting proposals, bids, or objections to sole-source certifications). PEER subsequently reviewed the ITS procurement document files for fourteen procurements, including three RFPs, three IFBs, one Express Products List (EPL) planned purchase, two letters of configuration (LOCs), two sole-source requests, two exemption requests, and one emergency purchase request.

In the *ITS Procurement Handbook*, ITS lists an estimated time frame required for the completion of the procurement process. ITS states that more complex procurements (e.g., RFPs) would require more time to complete, while less complex procurements (e.g., competitive procurements not requiring board approval, sole-source certifications) would require less time, as demonstrated in Exhibit 5, page 19. PEER did not assess the appropriateness of the timeframes, but rather ITS compliance with the timeframes.

Exhibit 5: ITS Estimated Timeframes for the Procurement Process, by Procurement Type

Category	Time Required for Procurement Process
Requests requiring ITS Board approval and an RFP	3-8 months
Requests not requiring ITS Board approval but requiring an RFP	2-5 months
Exemption requests requiring ITS Board approval	1-3 months
Requests for sole-source certification	1-3 months
Competitive procurements not requiring ITS Board approval and using existing procurement processes.	1-3 months
All other procurement requests	1 month +/-

SOURCE: *ITS Procurement Handbook*, November 2017.

Of the fourteen FY 2019 procurements that PEER reviewed:

- Nine procurements did not meet the timelines ITS published in the *ITS Procurement Handbook*. These nine procurements exceeded the *ITS Procurement Handbook* timeframe by one month to over a year, as shown in Exhibit 6 on page 20. Such delays could impede state agencies' utilization of the IT-related goods and services being procured, potentially resulting in delayed services.
- ITS completed the two sole-source procurements and two exemption requests requiring board approval within the one-to-three-month period ITS published in *ITS Procurement Handbook.*
- ITS completed the emergency procurement within the period prescribed.

Exhibit 6: Summary of PEER-Reviewed FY 2019 IT Procurements Exceeding *ITS Procurement Handbook* Prescribed Timelines

Requesting Agency – Project Number *Item Procured*	Project Initiated	CP1/ Contract Approved	Procurement Instrument Timeline	Actual Months to Procure
MDOC – RFP #42702 *for electronic monitoring equipment and services*	11/30/16	7/2/18	3-8 months	19
Reason for Delay	• ITS assignment time delays • MDOC submitted incomplete information necessary to begin the procurement process • The ITS Board tabled this project due to ongoing litigation.			
DFA & ITS – RFP #43271 *for disaster recovery services for state agencies*	6/5/18	12/27/18	2-5 months	6
Reason for Delay	• Repeated ITS quality assurance steps			
DMR – RFP #42754 *for vendor hosted solution for wetlands permitting*	7/26/17	9/26/18	2-5 months	14
Reason for Delay	• ITS assignment time delays • DMR requested ITS proceed on a higher priority procurement, resulting in four-month work stoppage on this procurement.			
MSU – IFB #44741 *for Oracle software licenses and services* (1)	1/8/19	6/25/19	1-3 months	8
Reason for Delay	• ITS assignment time delays • Repeated ITS quality assurance steps			
MDOT – IFB #44354 *for a mass notification system*	8/29/18	12/21/18	1-3 months	4
Reason for Delay	• ITS assignment time delays			
MDES – IFB #44511 *for Computer Associates software maintenance* (1)	10/19/18	3/29/19	1-3 months	6
Reason for Delay	• ITS assignment time delays • MDES submitted incomplete information necessary to begin the procurement process.			
MSDH – Planned Purchase #44545 *for a Microsoft Enterprise Licensing Agreement*	10/5/18	2/18/19	1 month +/-	4
Reason for Delay	• Incomplete information provided by MSDH			
MDOT – LOC #44591 *for EMC Maintenance renewal*	8/17/18	1/9/19	1-3 months	4
Reason for Delay	• Redundant, non-risk-based ITS quality assurance steps			
MDE – LOC #44408 *for Oracle licensing and support*	7/17/18	1/23/19	1-3 months	6
Reason for Delay	• MDE provided incomplete information, which led to delays in assignment time.			

(1) In each instance, ITS did not receive responses from vendors, leading to the need to issue multiple IFBs for the procurement.

SOURCE: PEER analysis of ITS procurement files and *ITS Procurement Handbook*.

What Inefficiencies Exist in the ITS Procurement Process?

In its review of fourteen FY 2019 procurement files and interviews with ITS procurement-related staff, PEER found inefficiencies within ITS, inefficiencies in interactions between ITS and its customers, and insufficient monitoring of ITS procurement performance.

During PEER's review of FY 2019 IT procurement files and interviews with ITS procurement-related staff, PEER identified the primary issues contributing to inefficiencies in the IT procurement process. These could be categorized as inefficiencies within ITS itself, inefficiencies in interactions between ITS and its customers, and insufficient monitoring of ITS procurement performance.

As discussed previously on page 18, such inefficiencies can lead to delays in completing the procurement process within the ITS-defined timelines, as evidenced by the delayed procurement times for nine of the fourteen projects PEER reviewed in its sample.

Also, PEER found instances in which ITS Board members stated that to avoid any additional delays that would cause an agency to experience a temporary lapse in service or lose access to available funding, they had felt compelled to approve procurements that they might otherwise table until the next monthly meeting in order to obtain additional information. Examples of this include the following:

- During its June 2019 meeting, the ITS Board approved an IFB conducted for Mississippi State University to procure Oracle software licenses and maintenance. The contracts for the previously procured software licenses and maintenance expired June 30, 2019. Given Mississippi State University's current reliance on Oracle, ITS Board members expressed that they had limited options but to approve the procurement prior to its expiration, a sentiment made clear by the board's former Chairman during the open meeting.
- During its July 2019 meeting, the ITS Board approved the release of an RFP for Child Protective Services to procure a Comprehensive Child Welfare Information System due to a federal deadline. However, the ITS Board expressed that the required business case Child Protective Services had provided to the ITS Board was insufficient in providing financial analysis documenting the expected **return on investment** or **cost-benefit analysis**. Given ITS Board feedback, Child Protective Services reported that it was in the process of amending its business case to resubmit to the ITS Board.

Generally, board members would prefer the option to table procurement requests until the next month in order to obtain more information without causing a service lapse or budgetary deadline to pass.

Inefficiencies within ITS

Procurement inefficiencies within ITS include a quality assurance process with multiple steps that are not based on the risk levels of different types of procurements; an inefficient, paper-intensive procurement process; and no style guide or updated procurement templates.

During analysis of ITS procurement files and processes, PEER found three ITS-specific issues that could create delays in the procurement of IT goods and services.

Quality Assurance Process has Multiple Steps and is Not Based on Risk Level

While quality assurance is necessary to ensure that ITS completes a quality procurement, the current ITS quality assurance process can add multiple weeks to the procurement process.

In a risk-based quality assurance model, quality assurance would be performed based on the potential risk associated with procurement cost, procurement process, and/or the document. According to public procurement standards, analyzing what points in the process create risk is integral to properly evaluating deliverables throughout the procurement process. In the *Principles and Practices of Public Procurement*, Element 1.4 of the Risk Management Standard deals with understanding risk, and states that: "Analysis should be performed throughout the procurement cycle to understand the probability of risk, the severity of the risk, and the actions necessary to mitigate such risk."

ITS requires procurement documents viewed by the public, vendors, and/or requesting agencies to go through its quality assurance process. This requirement is not based on risk level.

ITS quality assurance staff generally spend an hour or less reviewing each document they receive from a technology consultant, according to PEER's review of the ITS procurement staff's time-tracking software. However, ITS quality assurance staff may not review the document the same day that it is submitted to them, with one to three days passing during the time between document submission and ITS quality assurance staff giving approval to proceed to the next step. Additionally, documents that ITS requires to receive two-level quality assurance review may require the return of the document to the technology consultant to make edits before being submitted to the second reviewer. (For a more detailed explanation of the quality assurance process, see Appendix C, page 86.)

Taken individually, a one-day to three-day process is minimal. However, because ITS requires multiple deliverables to receive quality assurance review during the procurement process regardless of risk level, the quality assurance process can add multiple weeks to the procurement process. In one procurement file PEER reviewed, the collective quality assurance process added eight days to a year-plus process due to passing documents between ITS staff for quality assurance review. In another file PEER reviewed, passing documents between ITS staff for quality assurance review added nineteen days to the procurement process.

Despite the short amount of time it takes for ITS staff to actually perform quality assurance on a document, the sheer number of quality assurance reviews performed and passing of documents between ITS staff adds delays to the process.

Procurement Process is Paper-Intensive

The ITS paper-intensive procurement process increases the time needed to complete procurements and results in significant printing and postage costs that could be reduced by use of an alternative such as an electronic procurement system.

Although ITS completes all procurement documents in electronic format (except the quality assurance checklists), ITS prints all project deliverables to review during the quality assurance process and to store in the project folder. For example, ITS mails (overnight) or hand-delivers all contracts to the state agency and then to the vendor to review and then back to the state agency and then to the vendor to sign. In reviewing project files, PEER found this phase took from a week to over a month, depending on how quickly both the customer and vendor return the contract document to ITS.

The Information Systems Services Division Director stated that ITS is exploring steps to develop an electronic procurement system, including the ability to e-sign documents. ITS stated that one purported goal of an electronic procurement system would be to have a customer dashboard by which state agencies could access and view the status of their procurement requests.

No Style Guide or Updated Procurement Templates

ITS does not have a style guide for its technology consultants and quality assurance staff to utilize to develop, write, review, and edit ITS procurement documents. This lack of standardization contributes to additional time expended in the quality assurance process.

ITS technology consultants and quality assurance staff spend additional time during the writing and the quality assurance process making minor edits to wording that should be prescribed in a style guide. In files PEER reviewed, examples included whether to capitalize "vendor" or when and how to refer to ITS as ITS versus its full name, the Mississippi Department of Information Technology Services.

ITS technology consultants and ITS quality assurance staff have reported that difficult-to-use, updated versions of procurement templates have resulted in ITS technology consultants' using outdated, easier-to-use versions of older ITS procurement templates. However, these outdated templates may not contain updated IT procurement document language (e.g., contract terms), which then must be corrected during the quality assurance process.

Inefficiencies Pertaining to Interactions between ITS and Customers

State agencies should realize the collaboration necessary to make ITS procurements efficient. This includes improving the quality of the information that agencies submit to ITS, more timely responses to ITS requests, and better communication concerning the assignment of procurement requests.

PEER analysis of ITS procurement files and processes showed three primary weaknesses in ITS/customer interactions that could create inefficiency in the procurement of ITS goods and services:

- incomplete customer procurement request submissions;
- customer responses to ITS requests that are not timely; and,
- miscommunication surrounding assignment time and the role of the customer.

Incomplete Customer Procurement Request Submissions

Frequently, ITS customers submit incomplete information with which to begin a procurement or to move the procurement into the next steps.

In reviewing FY 2019 ITS procurement files, PEER found instances of state agencies not submitting needed information to begin a project. ITS staff confirmed that state agencies frequently do not provide sufficient information with which to begin the procurement process. However, in one of PEER's interviews with state agency staff, that agency's staff described the difficulty in using the *ITS Procurement Handbook* to determine what information is required to begin the procurement process.

Although ITS has a 200-plus page procurement manual, ITS does not have a condensed guide to delineate clearly each type of procurement and the required documents each customer must submit to commence each procurement. This can result in incomplete customer document submissions that require additional work on behalf of ITS to obtain the necessary agency documentation to commence the procurement process. Such documentation varies by procurement, but might include product specifications, up-to-date vendor quotes, required sole-source documentation, a business case, or an IT security assessment. For example, an incomplete business case submission could potentially cause at least a one-month delay, should the agency fail to submit complete information in time to present to the ITS Board, which meets monthly.

A useful tool for ITS might be an online guide that utilizes quick links as necessary and has a page for each procurement type, approval thresholds, the requesting agency's responsibilities at each given phase (including those prior to submission to ITS), the ITS responsibilities, and references to more detailed procedures in the procurement manual.

Also, while ITS issues do exist in the procurement process, it is crucial that state agencies realize the collaboration necessary to make IT procurements efficient.

Some Customer Responses to ITS Questions Not Timely

PEER found instances in which untimely customer responses to ITS requests delayed the procurement process, in one instance by three months and in a second instance by four and a half months.

Customer responses not made in a timely manner can delay ITS in making procurements on behalf of the customer. ITS frequently requests customers to provide the required documentation (i.e., quotes, specifications) needed to begin a procurement. However, procurement file documents detailing ITS communication with requesting agencies showed that significant time could pass before the requesting agency provided the needed documentation to begin a procurement. These communication delays contribute to the delays in assignment time and total procurement time.

In PEER's review of ITS FY 2019 procurement files, customers took, at times, from weeks to over two months to respond to questions posed by ITS procurement-related staff during the procurement planning phase (before it was assigned to a technology consultant). In one procurement file PEER reviewed, the requesting agency did not respond to an ITS request for information needed to begin the requested procurement for over three months, despite multiple follow-up emails from ITS staff. In another example, the agency's staff did not respond to a request for the necessary information to begin the procurement for over three months. Following this response, the agency did not submit the necessary information for another month and a half, bringing the total wait time for information from the agency to approximately four and a half months.

With agencies' cooperation and assistance, ITS could both reduce the wait time prior to commencing a procurement and more efficiently procure IT-related goods and services once the completed request is received from the state agency.

Miscommunication Concerning Assignment Time and Role of the Customer

While ITS informs its customers of the time a procurement takes prior to assignment to a technology consultant, ITS does not make clear the distinction between wait time due to the agency's responsibility (i.e., providing sufficient information to begin the procurement) and wait time due to ITS workload (i.e., no available technology consultant to begin work on a procurement).

One main area in the procurement process during which procurement time could be reduced is the assignment time period. ITS defines assignment time beginning at the moment when ITS receives a customer's procurement request to when ITS assigns a procurement request to a technology consultant, which is the time ITS reports to its customers. However, in actual practice, this is only the latter of two components.

The first component, which involves submitting all the necessary information required for ITS to assign the procurement to the technology consultant, is dependent on the requesting agency. The second component, which is dependent on the ITS workload, comprises the actual wait time--i.e., the time between when ITS

receives all customer information and the time ITS is able to assign the procurement to an available technology consultant. This is generally due to a backlog of requests ITS has received.

Not assigning the two components separately into categories, such as "received" and "waiting on agency documentation," results in misunderstandings about how much time a procurement actually spends in the queue awaiting ITS assignment and whose responsibility it is. In PEER interviews, ITS customers associated the entire queue wait time as time spent waiting on ITS, even if the customer has not submitted the necessary documentation needed to commence the procurement.

ITS reported that it is currently taking steps to reduce wait time, including attempting to hire additional technology consultants, assigning more procurement requests to the technology consultants earlier in the process, and reevaluating how it assigns staff to procurement teams to meet demand (e.g., reassign more proficient small procurement team staff members to the RFP team to alleviate the RFP backlog, given RFP staff are trained to conduct small procurements, but small procurement team staff are not trained to conduct RFPs).

Insufficient Monitoring of ITS Procurement Performance

ITS has not developed the necessary reporting and measurement capabilities to communicate effectively its procurement flow to its customers or to track its own efficiencies in managing and conducting IT-related procurements.

Over the years, the ITS procurement process generally adopted the culture that procurements "take as long as they take" to complete a legal, sound procurement and that long wait times were a necessary part of IT procurement oversight. Thus, ITS generally did not compare its procurement process to that of other states, identify ways to expedite its procurement process, or monitor its timeliness. However, the lengthy wait times and lengthy procurement process could be mistaken by state agencies as indifference on the part of ITS.

ITS has not developed the necessary reporting and measurement capabilities to communicate effectively its procurement flow to its customers or track its own efficiencies in managing and conducting IT-related procurements. The ITS 1990s-era ProjTrak system has minimum reporting capabilities, which prohibits it from being used to track ITS procurement performance. ITS primarily uses ProjTrak to track procurement projects from assignment to a technology consultant to issuance of the purchase approval document, known as a CP1 (through the entry of the technology consultant's project notes and time for each task). Although useful under the prior ITS bill-for-service funding model, ProjTrak has limited application today since ITS no longer bills customers for its procurement services.

PEER sought information about the ITS procurement workflow and volume as part of reviewing the efficiency of the ITS procurement process. Such information generally pertained to volume by

procurement type; employee yearly work volume by procurement type; number of incoming procurement requests by month by type; and, the amount of time it takes to assign incoming procurement requests to technology consultants. However, ITS reported that its ProjTrak system does not track such information and thus ITS was not able to provide PEER with some of the needed details without several weeks of significant staff labor reviewing paper files (i.e., reviewing 1,578 file folders to obtain data for FY 2017 to FY 2019).

For example, ITS could not provide information on the types of competitive procurements completed, even though the various IT competitive procurement methods comprised 72.4% of IT procurements in FY 2018 and 67.2% in FY 2019. Since the time it takes ITS to conduct competitive procurements varies significantly depending on the procurement method used (e.g., up to eight months for a Request for Proposal versus up to three months for a Letter of Configuration or board-approved exemption request), such information could be useful in accurately depicting the Information Systems Services work volume.

ITS could provide no information to PEER regarding when procurements were received, assigned, completed, and the amount of time a procurement spent waiting in the queue for assignment without several weeks of manual review of procurement files. The quality of information detailing the procurement processes that ITS can produce for reporting purposes is extremely limited.

Management of Information Technology Projects for State Agencies

ITS has not developed uniform project management standards that can be applied during an IT project's planning, procurement, and implementation phases. Not having a standard project management framework for agencies' use creates an increased risk of IT project failure.

This chapter seeks to address the following question:

- How can state government reduce the risk of IT project failure?
- What issues currently exist in the state government's IT project management landscape?
- How can Mississippi establish a state government IT project management framework?

How Can State Government Reduce the Risk of IT Project Failure?

ITS does not require that agencies utilize specified project management practices or frameworks to ensure their successful implementation of IT projects. Agencies do follow standard procedures required by ITS during the procurement phase of a project, but those procedures are not without problems. Projects lack cohesiveness between the procurement and implementation phases, which increases the risk of project failure (e.g., projects not completed on time and/or on budget).

With regard to project management, MISS. CODE ANN. Section 25-53-5 (a) (1972) prescribes the following responsibilities with regard to the ITS oversight of state agencies' IT operations:

> *The authority* [ITS] *shall provide for the development of plans for the efficient acquisition and utilization of computer equipment and services by all agencies of state government, and provide for their implementation.*

Further, MISS. CODE ANN. Section 25-53-21 (c) (1972) states that the Executive Director:

> *. . . shall see that all reports required of all agencies are promptly and accurately made in accordance with the rules and regulations adopted by the authority. . .he shall make such inspections of information technology operations being conducted by any of the agencies of the state as may be necessary for the performance of his duties.*

While these CODE sections do not explicitly state that ITS will provide project management guidance for IT projects in the state, they could reasonably be applied to extend ITS oversight to project management, especially in light of some failed IT projects (see "Case Example: The Driver License System Modernization Project," page 34).

IT projects may be thought of as having three main phases: planning, procurement, and implementation. The planning phase should identify both a state agency's IT needs (as identified in its respective annual IT plans) and central IT capabilities that are currently or have the potential to be shared. During the procurement phase, the state agency is ready to commence procurement and conducts planning specific to that procurement need. Once the agency submits its procurement request to ITS, ITS begins work with the agency, determines the best method for procurement, and conducts the procurement.

Once the IT good or service is successfully procured, the implementation phase commences. During this phase, ITS ceases involvement and the project becomes the sole responsibility of the agency, unless the contract must be terminated or modified. In such cases, ITS would become involved as the contracting agent for IT projects in state government.

The Risk of IT Project Failure

Nationwide, the Project Management Institute's 2017 Pulse of the Profession found that 28% of IT projects were deemed outright failures, although strategies existed to combat frequent failure. Mississippi has experienced IT project failures that, had proper project management principles been in place, might have been avoided.

According to research on the topic of IT project success, project success is determined by measuring the immediate performance of a project against its main design parameters: schedule, budget, scope, and quality. When a project meets these criteria, a project is generally considered a success.[7] In comparison, a project fails when it does not live up to the pre-defined schedule, budget, scope, and or quality (i.e., capabilities gained or business processes improved as a result of the project).

The Project Management Institute's 2017 Pulse of the Profession found that 28% of strategic initiatives overseen by survey respondents were deemed outright failures.[8] Mississippi has experienced its share of high-profile IT project failures. For example, during September 2018, the Mississippi Department of Education spent nearly $1 million of approximately $5 million approved on a software project before terminating the contract during the fall of 2018.

In an article by researchers from Colorado Technical University, the authors noted that many companies experience difficulty in executing IT projects within the pre-determined time or budget constraints. The authors noted numerous reasons for IT project failure, including poor planning and unrealistic resource estimates.[9]

[7] P.L. Bannerman. *Defining project success: a multilevel framework*. Project Management Institute, 2008.
[8] Mary K. Pratt. "Why IT Projects Still Fail." *CIO*, 2017.
[9] Emad Rahim, Maurice Dawson. "Information Technology and Project Management: How to Avoid Failure and Achieve Project Success." Colorado Technical University, 2013.

Need for a Uniform Project Management Framework

The lack of an IT project management framework can lead to an increased risk of IT project failure. While well-established project management frameworks exist, ITS does not require any uniform standards or reporting guidelines during the project implementation phase.

While ITS maintains a role during the procurement phase, not having a uniform project management framework through the planning, procurement, and implementation of an IT project can threaten successful project completion.

States such as Texas and Tennessee have adopted various recognized IT project management frameworks and adapted them to their state's environment. The project management frameworks referenced on page 39 are administered by each state's IT department or office.

Currently, a vacuum of standards exists in IT project management in Mississippi state government, which could and should be filled with a well-defined methodology or standards overseen by ITS. Additionally, ITS does not require any reporting of project status during the implementation phase. This creates the opportunity for projects to get off track from previously defined timelines and scopes, thus increasing the risk of project failure.

ITS, as the state's central agency responsible for overseeing IT procurement and planning, would be best positioned to expand its oversight role to include implementation. However, ITS may require additional resources to conduct such oversight, depending on the extent of such additional oversight.

What Issues Currently Exist in the State Government's IT Project Management Landscape?

Mississippi state government lacks cohesion (e.g., uniform requirements for financially justifying a project, having a recent security assessment, and presenting to the board) in IT projects' procurement and planning phases, which can increase risk. Additionally, ineffective use of existing ITS planning and oversight tools creates additional work to address need and scope concerns that could have already been evaluated during annual planning. As an example, issues during the implementation of the Department of Public Safety's Driver License Modernization project show a lack of cohesion between the procurement and implementation phases, as well as independent issues that can occur during project implementation.

As noted previously, ITS has responsibility for IT projects during the procurement phase and the requesting state agency has responsibility during the implementation phase. This results in a disjointed, unaccountable project management system that separates responsibility for the initial procurement almost entirely from the implementation phase. Thus ITS has no knowledge of an IT project's progress, success, or failure until such a time as the agency wishes to inform ITS or needs ITS to intervene in a contract dispute.

Further, ITS has not taken the initiative to standardize project management in the project implementation phase. As noted

previously, a lack of uniform project management framework or practices can lead to IT project failure, as evidenced by the Mississippi Department of Education's cancellation of a software project contract in 2018 and the current ongoing issues with the Department of Public Safety's Driver License Modernization project (see "Case Example: The Driver License System Modernization Project," page 34).

While ITS oversees the legality of a procurement during the procurement process, more uniform project management practices are needed to ensure that proper project management begins during the procurement phase and continues through the implementation phase of an IT project.

The Need to Improve Project Management During the Procurement Phase

In its requirements for ITS procurements of different cost levels, a discrepancy exists in the fact that business cases are only required for procurements with a total cost of more than $1 million for IT hardware and software, or more than $500,000 for IT services. Additionally, some board presentations suffered from incomplete information provided by state agencies. Finally, ITS did not require a recent IT security assessment for an agency, unless the agency was presenting the project for approval by the ITS Board, thus posing a security risk to state data and the state network.

Business Cases

Although the ITS Board established a rule requiring state agencies to present a business case for board-approved projects (i.e., those costing more than $1 million for hardware or software or more than $500,000 for IT services), ITS has exempted projects for IT hardware and software costing $1,000,000 or less, or projects for IT services costing $500,000 or less from this requirement. Thus ITS does not receive written documentation justifying the need for IT projects under the board approval thresholds.

ITS business cases are required to include a cost-benefit analysis, return on investment, need for the project, goals, risks, and critical success factors. However, during interviews with PEER, board members and ITS staff maintained that they frequently do not receive quality information in the business cases submitted.

Board Presentations

Based on PEER's observations of ITS Board meetings and board member interviews, state agency personnel presenting procurements for approval by the ITS Board were, at times, ill-prepared to answer questions posed by ITS Board members. This issue frequently pertains to information presented in the business case, particularly in response to the board's concerns about calculation of the cost-benefit analysis and return on investment. Additionally, ITS has no requirements for who must be present at ITS Board meetings to represent state agencies requesting IT

project approval. PEER observed instances in which agency personnel were unable to answer the board's IT-related questions because the agency did not send an IT representative to the board meeting. However, the ITS Board regularly approves such projects to move forward in the procurement process.

Security Assessments

For ITS Board-approved projects, ITS requires agencies to have a recent security assessment (within three years) in order to present their project for approval before the ITS Board. However, ITS does not require a recent IT security assessment if the project will cost less than $1 million for hardware and software or less than $500,000 for IT services. While different requirements for projects of differing sizes, complexities, or costs are logical, the basic step of ensuring a secure environment in which the IT project will operate should be a basic requirement for any expenditure of public funds. Smaller state agencies are less likely to have IT-related procurements costing $1 million plus for IT hardware and software or $500,000 plus for IT services, but their projects could still pose a cybersecurity risk to the state network. All state agencies connected to the state network can pose a cybersecurity risk if they do not maintain current security assessments.

In 2019, the Office of the State Auditor surveyed 125 state agencies, boards, commissions, and universities concerning their cybersecurity practices and compliance with the Mississippi Enterprise Security Program. Of the seventy-one state agencies that responded, eleven self-reported that they do not have adequate written procedures to prevent or recover from a cyber-attack. Additionally, twenty-two of seventy-one self-reported having not executed a third-party risk assessment.[10] Twenty-seven of seventy-one respondents indicated that sensitive information such as health information, tax data, and student information is not being encrypted to protect it from hackers.

Limited Coordination of ITS Resources and Planning

ITS does not fully utilize its existing tools (e.g., agency IT plan review, ITS Board oversight, procurement oversight, the state data center, business relationship team) to aid it in coordinating IT resources at an enterprise level, which could result in ITS operating in more of a reactionary setting than a planned, proactive setting. To improve IT project management as a whole, ITS and state agencies must improve front-end project planning.

Despite ITS having in place a variety of tools (e.g., agency IT plan review, ITS Board oversight, procurement oversight, state data center, business relationship team) to oversee and manage enterprise-level IT resources, ITS provides limited coordination of statewide IT resources at an enterprise level. This is in part because ITS permits state agencies to make strategic IT decisions, due to

[10] State institutions are required by law to have a third party perform a security risk assessment at least once every three years, according to the Mississippi Enterprise Security Policy, Rule 1.6 paragraph I.

the size and scope of IT staff and spending authority the Legislature directly allocates to state agencies. Currently, 87% of the state IT structure, IT-related staffing, and expenditures are generally controlled by individual state agencies in Mississippi's hybrid consolidation model of IT governance.

This situation can lead to ITS operating in more of a reactionary setting than a planning and coordination setting. For example, instead of directly requiring that state agencies relocate their in-house IT infrastructure (e.g., servers, databases) to the state data center as part of the planning and oversight process, ITS pursues such efforts on a case-by-case basis. In the case of the State Department of Health, the ITS Board utilized its procurement oversight authority provided in MISS. CODE ANN. Section 25-53-21(f) (1972) and/or MISS. CODE ANN. Section 25-53-5(t) (1972) to approve a State Department of Health procurement for hours of Microsoft Support contingent upon the department submitting procurement requests for new equipment for their in-house data center to the ITS Board for approval. This, in essence, requires the State Department of Health to begin to relocate its in-house data center operations to the state data center.

Additionally, during board meetings, the ITS Board has raised concerns about IHL member institutions' requests to procure like items under separate contracts. However, because of the lack of coordination of ITS resources, such procurements make it to the ITS Board approval level without prior requirements to identify opportunities for consolidation of services to potentially reduce costs.

These types of planning decisions could be made during both the annual planning process and the initial phase of the procurement process.

ITS Underutilizes its Strategic Services Division in Planning for and Managing IT-Related Procurements and Projects.

Although the ITS Strategic Services Division reviews customer IT plans, which must be submitted to ITS by September 1 each year, ITS does not extensively use these plans to plan for or coordinate IT resources.

For FY 2019 (June 30, 2018, to July 1, 2019), agency technology plans were due by September 1, 2017. ITS reported fifty-eight of seventy-six state agencies had submitted their FY 2019 agency technology plans to ITS as of April 26, 2019. Examples of state agencies that did not submit their FY 2019 agency technology plans to ITS by the September 1 timeframe include the Department of Environmental Quality, the Department of Marine Resources, Mississippi Public Broadcasting, and the Public Service Commission.

Agency technology plans have minimal ties to the short-term and long-term ITS strategic objectives identified in its overarching enterprise plan and architecture plan and to the procurement process. One exception pertains to ITS EPL planned purchase

requirements. ITS requires the agency's IT plan include a plan to make such purchases or the plan to be amended to add such during the procurement process.

Rather than the current limited use of agency technology plans, the ITS Strategic Services Division and Information Systems Services Division could track every large completed IT project, in-progress IT project, and in-planning IT project, including what each is designed to accomplish. Thus, the planning and procurement process would then incorporate additional steps to avoid duplication if two different state agencies were to buy or develop a similar piece of software, for example. ITS could also utilize such oversight to monitor and prevent multiple contracts by state agencies for the same license agreements, therefore seeking to consolidate such agreements and obtain a lower cost when discounted pricing for volume purchasing is available.

However, ITS does not require high-cost RFP procurements or requests for exemptions to be reviewed earlier than the presentation for approval by the ITS Board as part of the planning process. Although ITS and particularly the ITS Board raise concerns (based on PEER's observations at ITS Board meetings) as to whether university or other government agency procurements could be done in combination with other agencies instead of as multiple individual contracts, these concerns are raised at a point in the procurement and board approval process (i.e., the end of the procurement process), not during the planning phase, prior to initiating the procurement. This reactionary review occurs late in the procurement process, therefore inhibiting the ability of ITS to alter the procurement (other than to potentially add standard contract language allowing other agencies to use the same contract terms and rates) without slowing down the procurement process.

The ITS Executive Director has stated that ITS generally allows state agencies to make decisions regarding what procurements best fit their agencies' needs due to the fact that the Legislature currently allocates IT funding and staffing to each state agency rather than to ITS. However, the Legislature has delegated ITS the authority to approve agency technology plans and procurements and oversee enterprise technology efforts, an authority ITS does not fully utilize to guide agency IT procurements to be in line with statewide strategic objectives.

Case Example: The Driver License System Modernization Project

The Driver License System Modernization Project (still in progress) has experienced significant delays and publicized system outages. DPS requested an independent project audit that found significant project management issues threatening the eventual success of the project.

The Driver License Modernization Project is an IT project procured by ITS and implemented by the Department of Public Safety (DPS). Public issues make this IT project a relevant, current case example of how the state does not have adequate controls in place to ensure that IT projects are effectively managed. While PEER acknowledges that the Driver License System Modernization Project is a

substantial undertaking, ITS, DPS, and the vendor implementing the new system have issues that, had better project management principles been used, might have been avoided.

An independent audit of the progress of the Driver License System project, performed by MTG Management Consultants (MTG), notes the following risks to project success and the risk level each risk poses.

Issues Linking the Procurement Phase to the Implementation Phase

According to the MTG audit, ITS, DPS, and the vendor did not adequately validate the requirements defined in the RFP during business design sessions, thus demonstrating the disconnect between the procurement and implementation phases of a project.

The MTG audit notes that the state defined most of the requirements for the Driver License System in the RFP. However, many of the requirements defined in the RFP were not validated in the business design sessions held between the state and the vendor. This risk poses a medium-level threat to project success and reflects the disconnect between the procurement phase (where project requirements are defined) and the implementation phase (where those defined requirements were not validated during business design sessions).

Issues During the Implementation Phase

The MTG audit found issues related to project management and organization and project oversight, demonstrating project management-related errors on the part of DPS (e.g., not dedicating a full-time project manager, lacking proper quality controls) that threaten the long-term successful implementation of the Driver License Modernization Project.

Two of the organizational issues MTG found that threaten the project's success deal specifically with the lack of a full-time, dedicated project manager. Additional concerns of quality control and product acceptability also threaten the Driver License Modernization Project's successful implementation.

- *Project management personnel issues*--The MTG audit noted that the project would have benefited from dedicated DPS personnel playing a full-time role in project management. DPS does not have a dedicated full-time project manager assigned to the project, nor does DPS have a dedicated full-time business manager assigned to the project, both of which are steps that could help to ensure project success. While the DPS IT director manages the project for DPS, this staff member's additional roles and multiple responsibilities do not allow time for management of a project of such a large scale. MTG notes that the lack of a full-time dedicated project manager or business manager presents a high level of risk to the project's success.

  DPS had requested full-time project management by the vendor. MTG notes that this type of project management is nearly impossible for a vendor to accomplish and that it was

unwise of the state to expect it of a contractor on a large project of this nature.

Additionally, MTG noted that currently there is no direct statewide support of the project (i.e., no statewide dedication of resources for an IT project of this magnitude), which creates a high risk to project success. MTG recommended that a project manager with state-level project management experience for this magnitude of project. However, due to the current siloed IT and project management landscape, no such possibility exists because project implementation is the sole responsibility of DPS.

- *Project management quality control issues*--MTG noted that there is no statewide approach to quality assurance to ensure that the product the vendor provides is acceptable This creates a high risk threatening the project's success. Specifically, MTG voiced concern regarding DPS's reliance on the vendor to provide the tools necessary (i.e., project traceability) for eventual acceptance of the requirements of the new system, as well as concerns about vendor metrics, due to the complexity of documents used by the vendor. In this particular case, MTG recommended developing a statewide tool to validate which requirements are acceptable that can be used by agencies across projects.

How Can Mississippi Establish a State Government IT Project Management Framework?

By utilizing the full scope of the authority provided in MISS. CODE ANN. Section 25-53-21(c) (1972) and modeling project management standards after proven, industry-specific models, ITS could establish a project management framework that reduces the risk of IT project failure. However, without such a framework, the risk of project failure will continue to threaten Mississippi state government's investment in IT projects.

ITS already has the authority to institute project management standards and compel agencies to report project updates. By seeking proven practices currently used in other states, a model for a proven project management framework emerges. Standardizing project management from project initiation to project completion provides an opportunity to control risk and help ensure successful project outcomes.

Utilizing the Full Scope of ITS Authority

ITS could strengthen its project management oversight by utilizing its authority in MISS. CODE ANN. Section 25-53-21 (c) (1972) to compel agencies to produce IT-related reports and inspect agencies' IT operations.

In its 1999 report *Major Computer Systems in Mississippi's State Agencies: A Review of Their Development and Implementation* (Report #397), PEER found that although ITS is responsible for protecting the state's interest in the development and acquisition of agencies' information technology systems, ITS has not fully exercised its authority to use project planning and management procedures. Two decades later, ITS still does not exercise its full

authority to compel state agencies to use uniform, established project planning and management procedures.

With regard to reporting requirements ITS may institute for agencies, MISS. CODE ANN. Section 25-53-21 (c) (1972) authorizes the ITS Board to compel state agencies to produce reports required by ITS Board regulations and the ITS Executive Director to conduct inspections of information technology operations, which could include status reports and inspections of projects during the implementation phase.

More generally speaking, past PEER analyses of IT project issues, including reasons for IT project failure, identified contracts lacking a set of deliverables, ineffective contract oversight and management, and overly broad technical specifications that did not allow agencies to hold vendors responsible.

Project Management Frameworks in Other States

Texas and Tennessee both maintain project management frameworks that state agencies must follow when implementing an IT project. These standards are based on industry best practices and include reporting guidelines for agencies to provide status updates on the progress of IT projects.

Examples of best practices found in other states can offer a starting point for determining how ITS can utilize its authority to institute project management standards to manage projects of a variety of sizes, scopes, and costs. Texas and Tennessee both require agencies to comply with a statewide IT project management framework that is overseen by the state-level IT organization.

The Texas Project Delivery Framework

The Texas Department of Information Resources (DIR) operates a statewide project management framework with reporting guidelines. DIR collaborated with state agencies to create the Project Delivery Framework for major technology projects (i.e., projects costing more than $1 million). Through the use of templates and project management best practices, Texas ensures that agencies use tools to promote project success while also ensuring compliance with statewide project management requirements. The Project Delivery Framework is a five-step process, with templates designed to assist agencies in keeping IT projects on track, capture required information, and ensure that outcomes are measurable. The Project Delivery Framework is based on the Project Management Institute's Project Management Body of Knowledge (PMBOK).

DIR also requires agencies to submit periodic status reports to the quality assurance team (i.e., a team of reviewers from the Texas State Auditor, Comptroller, Legislative Budget Board, and DIR). DIR then publishes the results online, allowing the public to track the progress of large IT projects. The quality assurance team also publishes an annual report of lessons learned and project issues (i.e., missed deadlines and project cost overruns).

The Tennessee Business Solutions Methodology

In Tennessee, Strategic Technology Services (STS), a division of the Tennessee Department of Finance and Administration, requires agencies completing IT projects to use the Tennessee Business Solutions Methodology (TBSM). TBSM is based upon principles of the PMBOK and the Business Analysis Body of Knowledge (BABOK). TBSM covers both project management and business analysis techniques, systems development, life cycle testing/quality assurance, and organizational change management methodologies. PMBOK and BABOK serve as the baseline framework for TBSM, which STS adapted to Tennessee's environment.

Comparison of the Texas Project Delivery Framework and Tennessee Business Solutions Methodology

Both Texas and Tennessee use similar, recognized frameworks as a standard starting point for all state agencies to complete IT projects. Exhibit 7, page 39, demonstrates the similarities between the steps of each state's project management framework.

Exhibit 7: A Comparison of the Texas Project Delivery Framework and Tennessee Business Solutions Methodology

	Texas Project Delivery Framework	Tennessee Business Solutions Methodology
Step 1		**Pre-Engagement Phase** – Develop the initial project assessment. Draft the project charter and business case.
Step 2	**Initiate** – Define the project, scope, budget, and business case. Obtain appropriate approval.	**Project Initiation Phase** – Facilitate formal authorization to start a new project or project phase. Complete other associated templates that accompany the initiation phase (e.g., stakeholder register, required capabilities, solution scope).
Step 3	**Plan** – Finalize the scope, budget, and deliverables. Create a plan to guide the project team through execution and closure.	**Project Planning Phase** – Determine and establish the project scope, define and refine the project objectives, and develop the approach to achieve those objectives.
Step 4	**Execute** – Build the physical project deliverables and present them for sign-off.	**Project Execution Phase** – Manage the project resources so that the objectives, as defined in the project management plan, are obtained.
Step 5	**Monitor and Control** – Track, review, and regulate the project's progress and performance. This is an ongoing phase for both agencies and oversight groups.	**Project Monitor and Control Phase** – Observe project processes to identify potential issues and apply corrective actions with timeliness and accuracy. Monitoring and controlling activities occur throughout the project lifecycle.
Step 6	**Closing** – Determine what went right or wrong during the project and if the project realized the benefits identified in the business case.	**Project Closing Phase** – Finalize project activities to close out or complete the project. Aggregate lessons learned during the project.

SOURCE: PEER Analysis of the Texas Project Delivery Framework, Tennessee Business Solutions Methodology, and accompanying templates, actions, and requirements.

Mississippi's procurement process partially aligns with steps two and three of the Texas Project Delivery Framework and steps one through three of the Tennessee Business Solutions Methodology.

However, ITS then loses control of the project to the implementing agency for steps four through six of Texas's and Tennessee's frameworks. Texas's and Tennessee's project management frameworks enable those two states central IT agencies to maintain oversight over IT projects.

Texas Project Management Lite (PM Lite)

Texas also authorizes the use of the PM Lite framework for projects costing less than $1 million. PM Lite gives more authority to the agency to choose the proper methodology for a project, but still requires agencies follow an accepted project management standard to reduce the risk of project failure for lower cost IT projects.

PM Lite is based on the Project Management Institute's (PMI) widely accepted standards outlined in "A Guide to the Project Management Body of Knowledge" (PMBOK). For PM Lite, the Texas Administrative Code states that each state agency must institute, approve, and publish a methodology (i.e., one of the accepted project management methodologies such as Agile, Waterfall, or PRINCE2) that communicates an agency-wide approach for project management practices, which must be based on industry standards.[11] This allows for flexibility in small-to-midsize projects while maintaining the requirement that agencies follow an accepted project management framework.

[11] *Texas Administrative Code* Section 1-10-216

The Shift in the ITS Business Model

Traditionally, state-level IT agencies have directly provided IT services to other state agencies through shared services. However, nationally, state-level IT agencies are shifting business models, increasing the use of managed service providers to supply state agencies with IT services, rather than providing those services directly. ITS still offers state agencies shared services, but has increased its use of managed service providers to provide IT services. This shifts ITS from the role of technology expert to a vendor management and oversight role to ensure that state agencies are receiving the needed services. PEER found opportunities for ITS to increase its promotion and provision of shared services in the state. While ITS plans to continue to expand the use of managed service providers, ITS should develop steps to improve its oversight of managed service providers and ensure that its workforce is properly trained to take on new roles in the managed services model.

This chapter seeks to address the following questions:

- How are IT business models for state governments changing nationwide?
- What is Mississippi's IT business model for state government?
- Are there opportunities for ITS to increase shared services?
- Are there concerns with the ITS use of managed service providers?
- Are there opportunities to coordinate the ITS service delivery structure more effectively?

How are IT Business Models for State Governments Changing Nationwide?

States' central IT agencies are shifting their business models from providing mostly enterprise-level IT shared services with in-house staff to contracting with managed service providers. Managed services can offer state agencies cutting-edge, agile technology service options. While shared services can decrease duplication and take advantage of bulk purchasing to increase economies of scale, managed services often decrease IT infrastructure investment (i.e., servers) and allow for state governments to keep pace with rapidly changing technologies. However, drawbacks to managed services can include the potential for poor vendor performance and an overreliance on vendors to provide services.

For many years, state-level IT agencies have directly provided services to state agencies through a model known as shared services. However, rapid changes in technology frequently leave states without the personnel or funding to make large-scale IT infrastructure investments. Managed services can offer IT agencies a less expensive alternative to traditional shared services by allowing private sector vendors to maintain infrastructural components, while state governments take advantage of new, agile technological resources.

In the 2018 annual National Association of State Chief Information Officers (NASCIO) Survey, NASCIO noted that the role of the CIO, and thus the role of the state IT agency, is shifting from a direct

provider of services to a manager of services.[12] In the managed services model, the CIO becomes less of a technologist while increasing the emphasis on customer service and relationship management. When the role of "technologist" decreases, state IT departments look to managed service providers, which are private vendors that already provide the needed IT services to businesses in the private sector or to other governments.

Benefits and Drawbacks of the Shared Services Model

Shared services offer opportunities for cost savings when state IT agencies offer enterprise-level services to state agencies, rather than each agency individually providing that service in-house. However, drawbacks can include a loss of state agencies' control over IT services.

Shared services are provided by the central IT agency to state agencies and offer greater opportunities for centralization, standardization, and maximization of economies of scale by pooling resources. The provision of shared services by state IT agencies offers the opportunities for cost savings in particular areas. While centralization of IT resources and staff would remove portions of direct control and management from the agency level, the provision of shared services enables state IT agencies to expand enterprise level offerings, but at the same time enables agencies to determine which shared services fit specific business needs and processes.

One of the primary drawbacks to shared services is the loss of control at the agency level and the potential for less tailored services (a drawback seen in the use of managed services as well). This may be evidenced by the hesitancy of state agencies to utilize a highly-skilled, shared IT labor pool due to the need for IT staff to have in-depth understanding of an agency's internal operations.

An additional drawback of shared services is the investment required from the state-level IT agency to operate a shared service. Given such, there must be economies of scale so that the benefits and costs savings of providing shared services exceeds the costs of each agency individually pursuing the service. As an example, the state data center offers a co-location space for state agencies to house their servers. ITS pays for the connectivity, cooling, and uninterrupted power supplies all as a part of offering the shared service. Although the state (through ITS) must purchase equipment, pay for utilities, and maintain staff to operate the state data center, etc., the data center can be utilized by multiple state agencies, (e.g. its shared co-location service) enabling multiple state agencies to receive benefit from a shared service without the same level of investment.

[12] The 2018 NASCIO Survey seeks to identify trends, best practices, issues, and perspectives by receiving anonymous input from state-level CIOs.

Benefits and Drawbacks of the Managed Services Model

According to a 2018 survey of state CIOs, managed services can provide state agencies with access to cutting-edge technology solutions without a large investment in IT infrastructure. However, private vendors providing managed services can struggle to satisfy what could be highly specialized IT needs of individual state agencies.

Managed services are provided by a private vendor to state agencies. State agencies then pay for the amount of the managed service they utilize, while the state-level IT agency oversees the service provision by managed service providers.

According to the 2018 NASCIO Survey, state CIOs identified the following benefits of transitioning to the managed services model:

- cost effectiveness;
- modernizing capabilities;
- quality of services; and,
- access to business outcomes.

Managed services can alleviate the infrastructure and operational costs for IT departments by enabling states to gain access to IT solutions with less capital investment.

According to ITS, IT agencies can struggle to keep up with evolving technology, due to the cost of maintaining and upgrading systems. The benefit provided by the managed services model is that state governments gain access to cutting-edge technology without the investment required to procure, maintain, and operate a cutting-edge system. Rather, state-level IT agencies shift into proactively managing these services to ensure the managed service providers (i.e., vendors) are providing the services agreed to in statewide contracts.

However, an obstacle to a successful managed service portfolio is that it must be proactively managed, which requires different skillsets and additional expertise and training beyond those needed to acquire the service or manage an in-house service. CIOs noted several obstacles to the managed services transition as well, including state agencies' control of IT funding, highly specialized needs that a managed service provider may not be able to satisfy, and the fragmentation of IT services (as is seen in Mississippi's relatively decentralized IT governance model).

What is Mississippi's IT Business Model for State Government?

Through Mississippi state government's current IT business model, government agencies can receive shared and managed services to reduce technological duplication, provide enterprise-level services to state agencies, and deliver cost-effective technology solutions to business problems. ITS currently has a dual role, providing direct service delivery for shared services as well as overseeing managed services.

ITS offers two main categories of services: shared and managed. Shared services are provided by ITS to state agencies at no cost to the state agency, while managed services are provided by private

vendors to state agencies. ITS then oversees the provision of managed services to these agencies.

Shared services are services offered by ITS to meet a state agency's business needs at no cost to the agency. Private vendors provide managed services, offering an IT-related good or service that state agencies and other government entities (i.e., school districts, municipal and county governments) may purchase. In the managed services model, ITS enters into a statewide master contract with a vendor to provide a good or service based on an agreed-upon statement of work between a state agency and the managed service provider for the time, storage, or computing capacity utilized by an agency at a pre-determined rate that can decrease as more state agencies utilize a managed service.

Shared Services as Part of the ITS Business Model

Shared services offer greater opportunities for centralization, standardization, and maximization of economies of scale by pooling resources. One of the primary drawbacks to shared services is the loss of control at the agency level and the potential for less tailored services.

One of the main shared services ITS offers is the state data center, which is operated and supported by ITS. Utilizing the state data center, ITS provides various hosting environments and storage solutions that multiple state agencies may utilize. The state data center services include enterprise mainframe and virtual servers; backup and recovery services; enterprise messaging services (e.g., virus scanning all e-mails); co-location services; and database administration services (e.g., installation and upgrading of software).

ITS also provides disaster recovery services and core security services to support both the state data center and the core network infrastructure. For example, ITS has a disaster recovery plan, currently contracting with Corus 360 RES-Q™ Services, to facilitate a recovery for services in the state data centers. Agencies may test their disaster recovery plans in coordination with ITS, simulating bringing their systems back up in the event of a disaster. Additionally, in providing core security services, ITS scans all e-mails entering the state network for viruses, in addition to other enterprise-level security measures.

ITS develops and maintains the state fiber ring, which provides high-speed data, voice, and video communications to the Capitol Complex and the Education and Research Complex, as well as connection between the two major state government office complexes.

Although shared services can provide enterprise-level solutions to the state, they are provided by ITS staff, whose positions are funded through a general fund appropriation. Although agencies may utilize these services at no cost, the cost to ITS of maintaining and upgrading these services is substantial and it can be difficult, with the current ITS workforce, to meet the IT demands of state

agencies while searching for innovative methods to continue to provide the latest and most effective technology solutions.

Managed Services as Part of the ITS Business Model

As IT hardware and software continue to evolve at an ever-increasing rate, state-level IT agencies must be able to offer capable, agile services to meet increasing state government IT demands. ITS currently offers seven managed services, with plans to increase managed service offerings in the near future.

For many years, ITS has offered telecommunications services as a managed service. While the term "managed service" has evolved over time, telecommunications provides a prime example of state government utilizing a private vendor's IT infrastructure, rather than investing in that infrastructure itself. In an effort to provide more cutting-edge technology solutions to state agencies, ITS offers other managed services, providing state government with access to private vendors that can maintain complex IT infrastructures while offering state agencies the opportunity to use a portion of the existing infrastructure or process that the private vendor offers.

ITS currently offers at least seven managed services:

- telecommunications services through AT&T, CenturyLink, and C Spire;
- statewide cellular contracts with C Spire and AT&T;
- IT-related training opportunities, either through Systems IT (instructor-led training) or Skillsoft (online training);
- a contract with Knowledge Services to procure IT-related independent contractors for state agencies;
- a contract with Mississippi Interactive, LLC, for development and management of the e-Government program;
- a contract with Next Step for state agency security assessment services; and,
- a contract with Motorola for the Statewide Digital Trunked Land Mobile Radio System.

For each managed service listed above, the ITS role then becomes one of contract management and oversight to ensure vendor compliance with the services agreed to in the statewide contract.

ITS plans to increase managed service offerings to continue to provide state agencies with access to cutting-edge technological solutions.

In addition to the managed service provider statewide contracts already in place, ITS has entered into or plans to enter into managed service provider agreements for virtual private networks (VPN), hybrid cloud, and mainframe operations.

ITS recently awarded C Spire the VPN managed service provider contract, which will be overseen by the Security Services Division.

ITS and C Spire are currently implementing the new VPN solution in the state data center; after the solution is fully implemented, ITS will begin migrating agencies to the VPN solution. In July 2019, the ITS Board approved the acquisition of a hybrid cloud solution and the selection of EMC Corporation (also known as Dell EMC) as the managed service provider for six years. ITS expects to go live with the hybrid cloud solution by the end of CY 2019. Additionally, ITS is exploring adding a managed service provider within the next six months to support the mainframe server on which the Statewide Payroll and Human Resources System (SPAHRS) resides after the retirement or relocation of other agency legacy applications on the shared mainframe server.

Between the seven current managed service providers and the planned expansion of three new managed service providers, ITS has firmly positioned itself to utilize the managed services model as a business model for some of the most critical IT services. The storage and computing power of the hybrid cloud solution, the protective abilities of the C Spire VPN solution, and the e-Government services of MSI could allow agencies to utilize agile, cutting-edge solutions to assist in providing government services to stakeholders.

Are There Opportunities for ITS to Increase Shared Services?

Opportunities exist for ITS to increase shared services through more effective utilization of its existing tools (e.g., its procurement and planning oversight) and providing enterprise-wide strategic offerings. However, because the Legislature allocates funding for IT-related staffing, hardware, software, and services at the agency level, ITS has expressed reservations in utilizing its existing tools to manage state IT at an enterprise level. Such reservations generally pertain to potential external environment opposition (i.e., agency pushback).

Increased utilization of shared services offers the opportunity for the state to reduce costs for existing IT services by maximizing economies of scale, increasing standardization, and reducing duplication while enabling the state to invest in new IT technology and increase enterprise-level security enforcement.

Attempts to Utilize Shared Services to Increase Standardization and Reduce Duplication

Although the state data center was built in 2011 with the intention of the center becoming the central point for state data and computing resources, ITS is still recruiting state agencies to relocate their agency-housed IT infrastructures and off-premises backup solutions to the state data center.

Although the state built the state data center in 2011 with the general intent that it would be the central point for state data and computing resources, ITS still is recruiting agencies to relocate their servers and systems to the state data center.

ITS uses varying methods to recruit agencies to join the data center, such as agency technology councils, which has led to ideas regarding enterprise initiatives. In July 2019, ITS worked with the

Mississippi Community College Board to relocate its in-house IT infrastructure to the state data center after a power outage interrupted operations at its facility. Although both facilities are located adjacent to each other, the ITS state data center maintained power due to its being supplied by redundant power sources.

In June 2019, the ITS Board utilized its oversight authority (as part of the procurement approval process) to restrict the Department of Health from purchasing any more IT infrastructure for its data center without ITS Board approval. The ITS Board additionally included a provision that the Department of Health begin the process to relocate to the state data center. The ITS Board directed ITS staff to take such ITS Board rulings into account when conducting and handling future IT-related procurements on behalf of the Department of Health.

If ITS was operating at a more central enterprise planning level, ITS and the state agency would make decisions regarding relocation to the state data center during the IT planning process. Given such, these types of enterprise-level decisions would not be made in reaction to a power outage (in the case of the Mississippi Community College Board) or in reaction to a particular procurement on a case-by-case basis, but to achieve the strategic objective of greater shared service utilization, which could be identified during the joint planning process.

ITS has identified Microsoft Office 365 as a potential enterprise shared service offering due to increased efficiency and potential cost savings. Converting e-mail usage to Microsoft Office 365 would provide a common source for statewide e-mail for all state government. Currently agencies utilize various e-mail providers offering various levels of security.

Converting all state agencies to one Microsoft Office contract (i.e., license subscription for Word, Excel, PowerPoint, OneNote, SharePoint) would potentially reduce user licensing costs for Microsoft Office due to the economies of bulk purchasing and the ability to share licenses between agencies (i.e., fewer licenses would be needed). Each individual state agency currently procures licenses for Microsoft Office; however, these currently cannot be shared between agencies if not being utilized.

Attempts to Utilize Shared Services to Achieve Enterprise-Level Strategic Objectives

Because ITS currently permits each agency to develop its own individual standards for collecting data based on its procurement need at the time, the state is unable to capture data efficiently and analyze the state's collective data in a manner that is useful for analysis across multiple data sets.

The state has not yet established a centralized collection point for state data nor a central standard for how such state data should be collected and reported. ITS currently permits each agency to develop its own individual standards for collecting data based on its procurement needs at the time.

Although each individual state agency may not have a need for standard data collection methods, particularly during the course of any one particular procurement decision or project need, an enterprise view of data considers how to integrate, secure, and analyze data from multiple systems. Enterprise data management describes an organization's capacity to integrate, govern, secure, and disseminate data from multiple data streams.

The state's current lack of standardized data collection and reporting measures inhibits the ability to compare and contrast data from different systems in a timely manner (e.g., comparing Mississippi Department of Education data for 6th through 8th graders for the local population to those in various Department of Human Services population sets, such as child support payments).

As the central IT agency, ITS is positioned to lead changes in the state's data coordination. ITS has the capability of calling collaborative technology councils, which it has done in the past for issues such as cloud computing, e-mail, and security. Data management falls within that vein of critical issues that state agencies, through collaborative leadership, can work together to ensure that the state continues to improve the enterprise IT vision. However, the current siloed nature of the state's IT environment could create resistance to standardizing data management, as state agencies seek to retain control over their data assets.

At the federal level, the Office of Management and Budget, Office of Science and Technology Policy, Department of Commerce, and Small Business Administration have jointly studied and published practices to coordinate and drive data management. Some of the practices have particular relevance to the idea of promoting statewide data coordination efforts, including prioritizing and leveraging data standards and governance, connecting data functions across agencies, and designing data for use and re-use. Mississippi could consider best practices utilized by the abovementioned agencies in establishing a data management framework.

Are There Concerns with the ITS Use of Managed Service Providers?

As ITS transitions to utilizing more managed service providers to fulfill key portions of state agencies' IT needs, it should develop steps to improve its oversight of managed service providers and ensure that its workforce is properly trained to take on new roles in the managed services model.

As ITS expands its managed service offerings, effective management of agreements with managed service providers will be essential to ensuring that these providers offer effective service delivery to state government agencies.

Also, ITS needs to ensure that its workforce is capable of transitioning from direct technical work to the relationship building, customer service-oriented tasks needed to ensure success in a managed services model.

Concerns with the ITS Oversight of the Master Agreement with Knowledge Services

In 2017, ITS entered a master consulting services agreement with a managed services provider, Knowledge Services, to procure IT-related independent contractors for state agencies. PEER reviewed the ITS oversight of Knowledge Services and found at least four problem areas that could threaten the success of the master agreement.

ITS previously worked with state agencies to procure IT-related independent contractors through an ITS competitive procurement instrument, a Letter of Configuration (LOC). However, to reduce the Information Systems Services Division's workload and expedite state agencies' procurement of IT-related independent contractors, ITS chose to utilize the same contract Indiana had used to procure IT-related independent contractors. ITS entered into a statewide master consulting services agreement in 2017 with the managed service provider, Knowledge Services, to manage the IT-related independent contractor procurement process. The Knowledge Services contract is for three years with two optional one-year terms.

Knowledge Services is responsible for finding candidates utilizing state agency postings searching for independent contractors, vetting those candidates (through resumé submission and background checks), and submitting a list of qualified candidates to the hiring agencies. However, agencies can take a greater role in vetting candidates' resumés if they so choose.

The ITS Information Systems Services Division, more specifically the contract management team, oversees and manages the Knowledge Services master agreement, but state agencies work directly with Knowledge Services to procure the type of independent contractor to fit their IT needs.

According to the Knowledge Services master agreement, Knowledge Services receives a 2% fee for its services based on the invoiced amount that Knowledge Services reports to ITS. Additionally, ITS receives a 1% fee on all transactions, similar to the 1% fee on Express Products List (EPL)[13] purchases, which ITS remits to the general fund. In FY 2018 and FY 2019 combined, Knowledge Services received $62,689 in fees. For this same period, ITS remitted to the general fund the $31,344 that it received from Knowledge Services fees.[14] PEER reviewed the Knowledge Services master consulting services agreement and the ITS oversight of Knowledge Services for two reasons:

- the master consulting services agreement has been used multiple times by state agencies to procure independent contractors;[15] and,

[13] The Express Products List (EPL) is a list of IT products that state agencies and other local governing bodies (i.e., county boards of supervisors, school districts) can utilize to acquire commonly purchased software and hardware, such as Microsoft Office products, servers, or desktop computers.

[14] Both the 2% fee Knowledge Services receives and the 1% fee ITS remits to the general fund are included in costs agreed upon in the statements of work between Knowledge Services (on behalf of the winning independent contractor) and the requesting agency.

[15] State agencies entered into fifty-nine separate posted scopes of work between December 14, 2017, and June 19, 2019.

- the master agreement has been in effect since June 21, 2017, which permitted an appropriate period of time for analysis of the ITS oversight of a managed service provider.

Specifically, regarding the Knowledge Services master agreement, PEER found the following:

- *Insufficient contract monitoring*--Although the ITS contract with Knowledge Services specifies performance metrics, PEER found that ITS could not provide documentation to indicate that Knowledge Services tracked the required performance metrics. Though Knowledge Services maintains regular contact with ITS, ITS is not able to assess contract performance and monitor provision of services to agencies.
- *ITS overlooked the customer service requirement of the master agreement*--ITS overlooked the requirement in the master agreement for Knowledge Services to conduct a customer survey, report the results, and achieve 90% customer (i.e., agency) satisfaction with its services. In order to obtain customer feedback regarding satisfaction with Knowledge Services, PEER conducted interviews with staff from a group of agencies procuring independent contractors through Knowledge Services.
- *No adequate oversight parameters were set out in the beginning*--From the beginning of the master agreement with Knowledge Services, ITS did not set adequate oversight parameters as part of the agreement, its appendices, or in its business relationship between ITS and Knowledge Services.
- *Knowledge Services' fees charged to vendors were not capped or reported*--ITS did not cap the fees that Knowledge Services could charge vendors and did not include terms in the master agreement that require Knowledge Services to report such information to ITS.

See Appendix D, page 87, for additional information on PEER's analysis of the ITS management of the master agreement with Knowledge Services.

Concerns with ITS Workforce Planning

With the implementation of the hybrid cloud solution as a managed service, ITS does not currently have a planned direction to ensure that staff can effectively manage and support the statewide hybrid cloud contract.

As previously stated, during its July 2019 meeting, the ITS Board approved the award of the RFP for a hybrid cloud solution to Dell EMC. The hybrid cloud solution will fundamentally change the way state government utilizes and pays for computer and storage capacity, according to the ITS Executive Director. Dell EMC will assume the technical role traditionally performed by ITS staff by maintaining and upgrading the technological infrastructure needed to support the hybrid cloud solution.

Once implemented, the hybrid cloud solution will replace the virtual environment, which is currently managed by the five-person infrastructure group within the ITS Data Services Division. ITS, through the infrastructure group, uses virtual servers to run agency applications and enterprise applications, such as Microsoft Active Directory.

These applications will still be needed for the state to function. However, rather than being directly managed by the infrastructure group, Dell EMC will ensure that the infrastructure is properly functioning, upgraded, and maintained, and bill ITS for state agencies' use of the hybrid cloud solution. ITS will pass those charges on to the using agencies, based on the amount of the hybrid cloud solution utilized. Once Dell EMC is managing the technical side of the hybrid cloud, the tasks currently performed by the infrastructure group will no longer exist. Thus, logically, the infrastructure group would be repurposed and transition to become the team in charge of managing the hybrid cloud solution. According to the Executive Director, this is the plan once the hybrid cloud solution is implemented.

Management of the hybrid cloud solution at ITS will involve ensuring that agencies know about the service, know what it can provide, and are utilizing and paying for the correct amount of the service to meet the agency's needs.

The Executive Director stated that the infrastructure group would become cloud architects. *Cloud architect* is a certification for persons designing and ensuring proper usage of the hybrid cloud solution. However, ITS has not developed a plan for how members of the infrastructure group will attempt to gain cloud architect certifications or function as business systems analysts, transitioning from their largely in-house IT role to interacting with agencies on a regular basis.

In a NASCIO study regarding managing change in a sustainable way, NASCIO found that it is essential to prepare the IT workforce. According to the study, the managed service model "requires a different portfolio of skills, knowledge, and experience." It is imperative that IT departments "develop the necessary training and experiences to prepare personnel for new roles, emerging roles and evolving roles." [16]

While managed service providers can ensure that cutting-edge technology is available for state agency use, without the proper workforce in place to manage the service, ITS risks project failure and not gaining agency buy-in if the service is not effectively managed. While PEER acknowledges that research and best practice trends among state IT departments suggest a shift to more managed services, those managed services must be properly overseen by ITS to ensure successful, effective service delivery.

As seen through the ITS experience with the Knowledge Services agreement, that business model is questionable until ITS can ensure the proper staff and skill sets are present to ensure that

[16] NASCIO, Integris Applied. *The State CIO Operating Model: A Playbook for Managing Change in a Sustainable Way*. May 2019.

arrangements such as the master agreement with Knowledge Services are properly and effectively executed.

Are There Opportunities to Coordinate the ITS Service Delivery Structure More Effectively?

ITS could possibly coordinate service delivery more effectively if its Business Relationship Team becomes more proactive and by collaborating with state agencies to provide effective IT training opportunities.

ITS possesses two resources through which it could improve service delivery: by making the Data Services Division's Business Relationship Team more proactive and by collaborating with state government agencies to provide effective IT training opportunities.

Business Relationship Team

ITS utilizes its Business Relationship Team to reach out to state agencies, but has reduced the staffing associated with this function.

The ITS Business Relationship Team, which is organizationally located within the Data Services Division, serves as a liaison between ITS and state agencies. The Business Relationship Team began seven years ago with six PINs. Over time, ITS reduced the staff from six PINs to four PINs. Of the four current PINs, only two focus on reaching out to state agencies to discuss ITS service offerings.

Although the ITS Business Relationship Team primarily focuses on services provided by the ITS Data Services Division and the state data center, it also provides a general overview of services offered by other ITS divisions and contact information for key personnel for state agencies interested in the other ITS divisions' service offerings.

As ITS increases its use of managed service providers, there is potential for the ITS Business Relationship Team's role to become more prominent in order to coordinate communication across ITS divisions and with state agencies more effectively. Particularly, opportunity exists to combine the ITS Business Relationship Team's role with that of the ITS Strategic Services Division to promote more proactively the strategic alignment of IT resources and utilization of joint agreements.

Collaboration with State Agencies

ITS and state agencies should collaborate in providing effective IT training for state agencies' staffs and in increasing awareness and knowledge of ITS facilities and services.

ITS, as a service agency, interacts with each state agency (ranging from small boards and commissions with few staff to large agencies with 500 plus staff). PEER identified opportunities in which ITS should more proactively reach out to state agencies.

In PEER interviews with state agencies' personnel, some voiced concerns about current ITS training offerings, noting a desire for more advanced IT classes through the ITS education providers Systems IT (in-person training) and Skillsoft (online training).

Also, given the variety of agencies and personnel with which ITS interacts, ITS should consider providing a regular onboarding program to introduce state agency personnel to ITS facilities, including the state data center; available training spaces and opportunities; disaster recovery solutions; relevant points of contact; and available programs.

State agencies also identified issues that require communication with multiple ITS divisions as a challenge (e.g., Information Systems Services Division for procurement and Data Services Division for adjustments to applications). Although ITS did not specify any plans to change its current siloed customer service process, ITS staff did state that they were exploring developing a common e-tool to provide state agencies a central location to access all their current ITS-related activities and status updates for items currently in progress (e.g., procurement status, telecommunications request status, data services projects).

State agencies generally have a more in-depth understanding than ITS of their particular business practices and processes. Thus, state agencies could be more proactive than they currently are seeking out ITS assistance or incorporating necessary IT-related training into their onboarding for new hires for procurement, IT, and executive level staff.

Both ITS and state agencies could take steps to foster more effective communication in order for state agencies to take greater advantage of ITS service offerings.

Performance Measurement

ITS lacks performance measures in crucial program areas such as the amount of time needed to complete the ITS competitive procurement processes. Lack of performance measure information hampers legislators and ITS decisionmakers in making informed decisions about funding and resource alignment.

This chapter seeks to answer the following question:

- How and why does ITS measure its performance?
- Does ITS adequately measure its performance?

How and Why Does ITS Measure its Performance?

The Mississippi Performance Budget and Strategic Planning Act of 1994 requires agencies to measure program outputs, efficiencies, and outcomes. ITS submits performance measures for seven budgetary programs.

During the 1994 Regular Session, the Mississippi Legislature passed the Mississippi Performance Budget and Strategic Planning Act of 1994. This act, in MISS. CODE ANN. § 27-103-153 (1972), established that beginning in FY 1996:

> *The appropriation bills enacted to provide funding for each state agency or institution shall include performance targets for each performance measure established for each program within each such agency. Said performance targets shall be established annually by the Legislature and shall be based upon the funding level authorized for each agency within its appropriation bill.*

The act required all state agencies to create five-year strategic plans and include program-based performance data in annual agency budget requests. The program-based performance data includes:

- *Program outputs*, defined as the measure of the process necessary to carry on the goals and objectives of the program. This is the volume produced (i.e., how many people served, how many documents generated);
- *Program efficiencies*, defined as the measure of the cost, unit cost, or productivity associated with a given outcome or output. The measure indicates linkage between services and funding (i.e., cost per investigation, cost per student, or number of days to complete an investigation); and
- *Program outcomes*, defined as the measure of the quality or effectiveness of the services provided by the program. The measure provides an assessment of the actual impact or public benefit of the agency's actions. This is the results produced (i.e., increased customer satisfaction by x% within a twelve-month period).

In an agency's budget request, the program outputs are given a designation (e.g., A.1.1, B.3.2), which corresponds to program

efficiencies and program outcomes linked to the program output. While program outputs typically demonstrate production in a budget program, the program efficiencies and program outcomes can provide reliable indicators of agency performance and efficiency. These three categories provided in annual budget requests will collectively be referred to as performance measures hereafter.

In its FY 2020 budget request, ITS included performance measures for seven programs:

- Administration;
- Data Services;
- Information Systems Services;
- Education;
- Telecommunications Services;
- Electronic Government Services; and,
- Information Security Services.

Each program contains performance measures that encapsulate the work ITS performs both for customer agencies and on behalf of itself. In particular, the three ITS 2021-2025 Five-Year Strategic Plan's goals are:

- to provide, protect, and support enterprise technology infrastructure components to enable the effective and efficient use of IT;
- to investigate, develop, and promote enterprise business and technology solutions to maximize the benefits of shared technology services; and,
- to promote the funding, procurement, and management of IT as a strategic investment.

Does ITS Adequately Measure its Performance?

ITS does not adequately report performance measures for its Information Systems Services, Data Services, and Information Security Services budgetary programs, which means that legislators and ITS decision makers do not have all of the necessary information to make informed decisions about funding and resource alignment.

PEER found that some ITS performance measures lack crucial information that could provide insight to legislators and ITS decisionmakers.

Budget Programs Lacking Proper Performance Measures

ITS lacks adequate performance measures in three of its budget programs, as well as an agency-wide performance measure demonstrating ITS managed and shared service adoption rates and associated cost savings.

- *Information Systems Services*--ITS has no time-related program efficiency measures or program outcomes linked to the program outputs of "Requests for Proposals (RFPs) published" and "Letters of Configuration (LOC) published." In a review of FY 2019 procurements, PEER analyzed files for three RFP procurements and two LOC procurements, neither of which met the timeframe for completion of the RFP and LOC procurement processes published in the ITS Procurement Handbook (see Exhibit 6, page 19, for more detail). This gap indicates that a program efficiency measure is needed to demonstrate the pattern of delays in the ITS procurement process.

  Additionally, ITS has not developed the necessary reporting and measurement capabilities to track the types of procurements it completes. ITS was unable to provide PEER with the number of procurements it completed by competitive procurement type (i.e., RFP, LOC, Invitations for Bids), creating the need for a more accurate tracking of procurements by competitive procurement type (for more information, see "Insufficient Monitoring of ITS Procurement Performance, page 26). By tracking individual competitive procurement output, ITS could more accurately track the timeframe needed for completion of the procurement processes.

  Finally, the performance measures for Information Systems Services, which help demonstrate the quality or effectiveness of a service, lack a program output for procurement protests (i.e., the formal process of a losing vendor contesting the awarding of a procurement to another vendor), which would provide legislators and other agencies with useful information surrounding the quality of procurement produced by ITS.

- *Data Services, Telecommunications Services, and Information Security Services*--ITS has no program efficiency measures linked to "Number of closed ITS Operational Divisions[17] request tickets in a fiscal year" (i.e., a request made by an agency for a change to or addition of a service) or "Number of closed ITS Operations Divisions incident tickets (i.e., a request made by an agency for ITS service for an issue occurring within an agency's ITS-managed IT system) in a fiscal year."

  As such, program efficiency measures could demonstrate the mean time to resolve an incident ticket, or the cost per request ticket resolution and incident ticket resolution. While there may be differences in the types of requests received by ITS that may lead to difficulties in determining what an efficient timeframe is for closing requests and incident tickets, measuring the time spent on and unit cost of closing these tickets would add understanding to the efficiency of the division.

- *Information Security Services*--The percent of agencies in compliance with the State of Mississippi Enterprise Security Policy (as evidenced by compliance audits conducted by the Office of the State Auditor) could prove to be a useful performance measure.

[17] The ITS operational divisions include the Data Services Division, the Telecommunications Division, and the Security Services Division.

Such a metric would demonstrate the effectiveness of cybersecurity promotion efforts, while also demonstrating the state's cybersecurity risk without revealing in which agencies such cybersecurity risks are located.

- *Agency-Wide Performance Measures Focusing on Service Adoption and Associated Cost Savings*--As ITS attempts to increase the enterprise-wide services available to agencies in the coming years, it is crucial that ITS gain an understanding, through performance measurement, of agency use of shared and managed services and the cost savings such services provide. For example, when ITS begins offering the hybrid cloud solution to agencies as a managed service offering, it would be beneficial for ITS to add a performance measure to the Data Services program that demonstrates the cost savings realized through reduced statewide investment in IT hardware (i.e., servers) from the last full fiscal year prior to hybrid cloud, compared to the cost of agencies consuming the hybrid cloud solution. Additionally, a performance metric demonstrating the rate at which agencies adopted use of the hybrid cloud solution could demonstrate the statewide impact new services have. Such performance measures are crucial to ensuring that the ITS investment in strategic initiatives is one that makes sense from a cost perspective.

Best Practices in Measuring IT Organization Performance

Relevant best practices suggest that ITS could more accurately measure its performance by incorporating additional performance measures that provide a more complete description of the agency's performance.

In a study conducted by the IBM Center for the Business of Government entitled "Creating a Balanced Portfolio of Information Technology Metrics," the author provides various challenges, findings, and recommendations that serve as effective criteria or best practices for determining how ITS could measure its performance.[18] PEER discusses some of the pertinent challenges, findings, and recommendations below.

Many IT Metrics Depend on Other Organizational Units Meeting their Targets

IT organizations rely on other organizational units to meet targets in order to most accurately measure performance. While ITS faces this challenge in accurately measuring the time needed to complete the RFP, LOC, and IFB processes, it does not diminish the need for such a metric.

Many IT metrics depend on other organizational units meeting their performance targets. This particular challenge aligns with some challenges expressed by ITS regarding the measurement of its performance in time units. According to the IBM report, "IT departments are dependent on the performance and strength of other units and the ability of other units to complete their tasks

[18] Keven C. Desouza, IBM Center for The Business of Government. "Creating a Balanced Portfolio of Information Technology Metrics". *Using Technology Series*, 2015.

and assign resources in a timely manner. As such, IT metrics can be impacted both directly and indirectly by the performance of other units."

While PEER acknowledges this challenge, the challenge itself does not diminish the value of having time-based metrics, which ITS currently lacks (e.g., measures of the time to complete some types of procurement and response time to an ITS Operational Divisions incident ticket).

CIOs Need to Carefully Manage IT Metrics Around Cost

As ITS invests in IT from an enterprise perspective, it is crucial to manage performance measures surrounding the cost of strategic investments, such as the hybrid cloud solution.

The IBM report found that CIOs need to manage IT metrics around cost carefully, noting that "the very nature of the public sector is oriented toward service delivery and cost efficiencies." As ITS attempts to guide statewide IT infrastructure investment and increase the role of enterprise IT, performance measures--particularly those that indicate returns on investment in strategic IT directions or increased managed services (i.e., hybrid cloud)—are crucial to ensuring that statewide IT initiatives stay on track and make sense from a cost perspective.

IBM's Recommendations for Developing Performance Measures

The IBM report provides recommended metrics by which ITS could model new or revised performance measures.

Finally, the IBM report provides recommended metrics which could help guide ITS in the construction of performance measures that add to the current portfolio presented in the annual budget request. Some of the most useful examples are:

- Overall Department Performance (i.e., Administration or Strategic Services): percent of budget devoted to strategic priorities
- Servers/Network (i.e., Data Services and Data Network team within Telecom Services): Mean time to resolve incident and average response time (peak hours)
- Security (i.e., Information Security Services): Number of connected devices (to the state network or within the state firewall)
- End-User Satisfaction Metrics (i.e., Administration or Strategic Services): Adoption rates of software applications (which can be extrapolated into adoption rates of ITS shared or managed services)
- Projects (i.e., Information Systems Services): percent late (meaning projects/procurements which take longer than the ITS procurement Handbook published timeframe).

Costs of Using Independent Contractors for Information Technology Staffing

The state's current IT salary structure frequently prevents agencies from hiring and retaining skilled IT staff. Consequently, state agencies must pay high costs for skilled IT personnel by procuring independent contractors. If the state were to offer more competitive salaries at the market rate, potential savings could be realized by reducing expenditures for independent contractors.

This chapter seeks to address the following questions:

- What are the limitations of the state's current IT salary structure?
- How do state agencies procure IT independent contractors?
- How do state agencies' costs of using IT independent contractors compare to the costs of hiring IT state employees?
- Could compensating state employees in IT job classes at a comparable market rate result in savings to the state?

What are the Limitations of the State's Current IT Salary Structure?

According to ITS and the State Personnel Board, the salary structure for IT state employees was unchanged from 2007 to 2019. Thus, the state's IT salary structure is not competitive with the IT job market or with the potential annual earnings of IT independent contractors.

By attending ITS Board meetings and speaking with ITS Board members, ITS staff, and agencies' IT staffs, PEER determined that one area of concern pertained to the costs associated with agencies consistently contracting with independent contractors instead of hiring permanent employees.

As PEER further investigated IT personnel salaries, one of the primary issues raised by agencies during this process is that skilled IT labor is unwilling to work for current state IT salary levels. In order to understand the ramifications and possibilities surrounding starting salaries for IT personnel, PEER interviewed ITS staff and State Personnel Board (SPB) staff concerning the Information Technology Classifications Special Compensation Plan.[19] PEER inquired as to the following:

- current starting IT salary range under the plan;
- agency flexibility in setting starting IT salaries under the plan;
- how state IT salaries currently compare with the market; and,
- history of general salary increases under the plan.

According to ITS and SPB, the Information Technology Classifications Special Compensation Plan did not change between 2007, when the Mississippi State Legislature approved a

[19] The state initially created the special compensation salary structure for IT-related **job classes** in 1998 through the formation of the FY 1999 Information Technology Classifications Special Compensation Plan.

realignment package for state personnel, and 2019. As a result, the current state salary structure is no longer competitive with the IT job market, in relation to either the private sector or neighboring states. For example, DHS reported unsuccessfully attempting three times to hire a programmer analyst position, primarily because of a non-competitive salary. Appendix E, page 91, compares the starting salary for IT-related positions in Mississippi to both the average starting salary of Mississippi's four contiguous states and to the starting salary in the private labor market (lowest 25th percentile and 50th percentile). Depending on the position, Mississippi ranges from $1,000 to more than $15,000 below the average of the four-contiguous states and more than $20,000 below the private market (i.e., lowest 25th percentile) for comparable positions. During the 2019 Session, the Mississippi Legislature approved a realignment package for state personnel, including a 3% realignment for IT-related positions covered under the FY 2019 Information Technology Classifications Special Compensation Plan, which did raise salaries for state employees in IT-related positions. However, even with the 3% realignment, salaries still do not approach the competitive market rates seen in the 25th percentile of private market IT salaries for comparable positions.

Additionally, current restrictions placed on the state salary structure limit the ability of state agencies to offer competitive rates, even within a particular job class's publicized salary range. For example, the posted starting salary for the occupation title Business System Analyst I is $42,399.05 and the posted ending salary is $74,198.34. However, according to the State Personnel Board, nearly all state employees earn within 10% of the starting salary upon hire date. A particular employee may qualify to receive up to a 10% salary increase for additional education, experience, or qualifications at the time of hiring, if the employing agency had the funds to pay for such salary increase. According to SPB, states such as Louisiana permit agencies to hire employees with a higher than posted start salary, resulting in most employees making more than 25% than the posted starting salary. Given such discrepancies between posted starting salaries and actual starting salaries, SPB stated that salary comparisons comparing posted start salary can be misleading, since Mississippi more strictly imposes the start salary, approving a 5% to 10% increase only if the employee meets certain educational benchmarks or has additional certifications relevant to the job. Additional salary increases are permitted, up to a 6% salary increase every two years if the particular employee obtains 120 certified hours of applicable continuing education or training, and the employing agency has the funds to pay for such salary increase (and training).

Therefore, state agencies regularly contract for independent contractors to meet their IT needs, because workers with the needed IT skillsets are frequently unwilling to work for the salaries offered to IT state employees in state agencies.

How Do State Agencies Procure IT Independent Contractors?

State agencies formerly procured IT-related independent contractors through the ITS Letter of Configuration (LOC) procurement process, but now procure independent contractors through Knowledge Services, a managed services vendor. Data is not available for independent contractor expenditures still under contract from the LOC procurement process, but Knowledge Services can provide data on expenditures for independent contractors hired since CY 2018.

ITS has the responsibility to procure independent contractors on behalf of state agencies needing to augment their IT staffs. Prior to FY 2018, state agencies needing to augment their staff through the procurement of an IT-related independent contractor requested that the ITS procurement staff perform a procurement on the agency's behalf. ITS utilized a Letter of Configuration (LOC) to fulfill these requests.

To expedite the procurement process to more quickly place independent contractors in agencies needing such services, ITS sought a managed service provider (Knowledge Services) to procure independent contractors for requesting agencies, thus transitioning ITS to the contract oversight role. (See "Concerns with the ITS Oversight of the Master Agreement with Knowledge Services," page 49)

Under the Knowledge Services model, agencies post personnel requests. Vendors then submit bids associated with each potential independent contractor they have available to fill the request. Agencies have an opportunity to interview and hire the independent contractor they determine best meets their needs, based on both cost and qualifications. Agencies then enter into a signed scope of work with Knowledge Services for the identified independent contractor's services for a specific rate and time period (number of work hours and term in which work hours will be performed). Although significantly less prevalent, agencies may also seek to enter into a deliverable-based contract through Knowledge Services for a vendor to perform identified contract deliverables by a set period.

Under the LOC method for procuring IT-related independent contractors, ITS did not specifically track agency LOC expenditures for IT-related independent contractors. Thus, data is not available to report total IT-related independent contractor[20] expenditures, or to what extent such expenditures have changed over time. Thus the state has limited comparable data in which to compare pricing obtained through Knowledge Services compared to the prior method. Such limited reporting and analysis also make it difficult for decisionmakers to get a full picture of the IT staffing landscape,

[20] During PEER's analysis of IT-related independent contractors, it became evident that many independent contractors do not fit the IRS definition of an independent contractor due to the set work hours, hourly pay, agency-provided work materials, and lack of deliverables in most statements of work. Each of these characteristics more closely align with the characteristics of what the IRS defines as a contract employee. Given the widespread use of independent contractors by state agencies, it would be prudent for either the state government as a whole, or individual agencies utilizing independent contractors, to seek an IRS ruling or clarification as to how IT-related independent contractors should be classified for tax withholding purposes, which should limit the federal tax liability that continuing to operate without such a ruling might pose to the state.

particularly when it comes to making decisions concerning salary alignments, restructuring personnel classifications, or authorizing agencies to have additional limited authority in the hiring process.

How Do State Agencies' Costs of Using IT Independent Contractors Compare to the Costs of Hiring IT State Employees?

In Calendar Year 2018, state agencies spent approximately $1.9 million for the services of IT independent contractors through Knowledge Services alone. PEER compared the costs of IT independent contractors and IT state employees (plus fringe benefits) at the Department of Human Services and the Division of Medicaid for the period of FY 2019. In every case, the IT independent contractor was paid much more than if he or she had been hired into a PIN as a state employee.

Exhibit 8, below, shows independent contractor expenditures by state agencies during CY 2018. According to expenditure information provided to ITS by Knowledge Services, the Department of Human Services and the Division of Medicaid spent the most of all state agencies for IT independent contractors in FY 2019 through Knowledge Services. The Department of Human Services spent $795,514 in FY 2019 on IT independent contractors, accounting for 41.15% of FY 2019 expenditures through Knowledge Services.

Exhibit 8: Expenditures by State Agencies for IT Contractors through Knowledge Services (Calendar Year 2018) *

State Agency	Expenditures	Percentage
Department of Human Services	$ 795,514	41.15
Division of Medicaid	636,499	32.93
Department of Employment Security	210,490	10.89
Department of Wildlife, Fisheries, and Parks	148,272	7.67
Department of Finance and Administration	51,230	2.65
Information Technology Services	43,155	2.23
Office of the Secretary of State	23,496	1.22
Mississippi State University	18,917	0.98
Department of Health	5,491	0.28
Total	**$1,933,064**	**100.00%**

* This does not include expenditures by state agencies for IT contractors procured through the Letter of Configuration method. ITS does not collect expenditure data for IT contractors procured through that method.

SOURCE: Knowledge Services "State of Mississippi Client Business Review." January 1, 2018, through December 31, 2018.

However, as discussed in this report, this is not a full picture of the total spending for IT independent contractors, since ITS does not require reporting of independent contractor spending under the LOC method, which still has active contracts until such time they expire.

As case examples, PEER obtained information from the Department of Human Services (DHS) and the Division of Medicaid (Medicaid)

pertaining to their utilization and costs of IT independent contractors during FY 2019.

To demonstrate the disparities in the amount DHS and Medicaid pay for independent contractors annually and the total cost of an IT state employee for a state agency, PEER created a comparison using the following steps:

- determined into what state IT job classification each contractor would be hired;
- determined the average total cost for a comparable IT state employee by adding the average statewide salary for the job class plus the average fringe benefit rate applied to the average statewide salary; and,
- calculated the difference between annual IT independent contractor cost and average annual cost for comparable IT state employee.

For the comparison, PEER used SPB data to find the average salary of current PINs for each IT position. For example, a DHS contractor with a skillset of database administration working in the Mississippi Automated Verification Eligibility Reporting Information System (MAVERICS) DHS program would, if hired by DHS into a PIN as a state employee, fill a database administrator PIN.[21] The average salary of all database administrator PINs statewide is $63,357.89. PEER then added the average statewide fringe benefit percentage to each salary, found by multiplying the salary by 39.57244% and adding that percentage of the salary to the PIN salary to determine the total cost of the PIN.[22] So, for a database administrator, the total cost is as follows:

Total cost = ($63,357.89 * .3957244) + $63,357.89 = $**88,430.15**

Using this calculation, PEER obtained the average cost of a database administrator in a state PIN: $88,430.15, including salary and fringe benefits. This calculation was performed for all DHS and Medicaid IT independent contractors to determine how much more IT independent contractors are paid annually as opposed to how much they would hypothetically be paid were they paid the average salary for their skillset, including fringe benefits.

In every case, the IT independent contractor was paid much more than if he or she had been hired into a PIN as a state employee. Exhibit 9, page 64, shows that the average difference between the annual IT independent contractor cost at DHS and Medicaid and the total PIN cost for the current corresponding state IT employee position is $112,469.09 and $174,995.08, respectively.

[21] Maintained by DHS, MAVERICS is the system through which DHS determines beneficiary eligibility for enrollment in Supplemental Nutrition Assistance Program (SNAP) and Temporary Assistance for Needy Families (TANF).

[22] The average fringe benefit percentage was determined by the Mississippi State Personnel Board, based on current state employee fringe benefits (e.g., retirement, health insurance).

Exhibit 9: Average Annual IT Independent Contractor Cost and Average IT PIN Salary Plus Average Fringe Benefits at the Department of Human Services and the Division of Medicaid, FY 2019

Agency	Average Annual Cost per Independent Contractor	Average State Employee Salary with Fringe Benefits	Average Cost Difference per Position	Number of Independent Contractors	Total Cost Difference between Independent Contractor Cost And State Employee Salary
Department of Human Services	$185,330	$ 72,861	$112,469	24	$2,699,256
Division of Medicaid	$283,689	$108,694	$174,995	5	$874,975

SOURCE: PEER Analysis of DHS and Medicaid independent contractor costs and SPB data for statewide IT salaries.

Given the difference in the costs of IT independent contractors and IT state employees, it is evident that agencies are spending significantly more for IT contractors than for IT state employees--more than twice as much as for comparable state IT positions in the case of the Department of Human Services (DHS) and the Division of Medicaid for the period reviewed.

Could Compensating State Employees in IT Job Classes at a Comparable Market Rate Result in Savings to the State?

PEER identified potential opportunities for savings if state agencies were to hire skilled IT personnel at a competitive market rate rather than procuring IT-related independent contractors to meet core agency IT functions. If the state instead hired these IT contractors as state employees in IT job classes with compensation set at the 25th percentile of U.S. IT private sector salaries, coupled with state's fringe benefits (e.g., membership in the Public Employees Retirement System), Mississippi could save approximately $2.7 million annually at the Department of Human Services and the Division of Medicaid alone.

In order to perform a more realistic analysis of opportunities for cost savings through decreased IT independent contractor costs, PEER obtained 2019 salary survey data during agency interviews from Robert Half International, Inc., a private IT staffing company, and created a comparison of independent contractor skillsets to private sector job descriptions. Using the same DHS and Medicaid independent contractors, PEER linked independent contractors to a private sector job description and title, which allowed PEER to compare annual independent contractor cost and the 25th percentile of U.S. private sector salaries. For consistency, PEER also applied the average statewide fringe benefit rate to each salary to provide a complete example of the total cost of a state employee,

were the state employee compensated closer to a comparable market rate (i.e., the U.S. private sector 25th percentile of IT salaries).

Exhibit 10, below, demonstrates the average difference between the annual independent contractor costs and the U.S. 25th percentile salaries plus fringe benefits for the IT positions studied. Using the above described comparable market rate cost, PEER determined the difference in annual independent contractor costs and above-described comparable market rate of compensation, resulting in an average difference of $82,904.18 per DHS independent contractor and $149,350.81 per Medicaid independent contractors.

While a large difference still exists, the difference is less than the comparison between independent contractor costs and current state employee IT job class salaries. This comparison offers a more realistic look at achieving cost savings by compensating those state employees in IT job classes at a competitive market rate.

Exhibit 10: Average Annual IT Independent Contractor Cost at the Department of Human Services and the Division of Medicaid and Average Cost of U.S. Private Sector 25th Percentile IT Salary Plus Average Fringe Benefits, FY 2019

Agency	Average Annual Cost per Independent Contractor	Average U.S. Private Sector 25th percentile salary w/ fringe (1)	Average Cost Difference per Position	Number of Independent Contractors
Department of Human Services	$185,330	$102,426	$ 82,904	24
Division of Medicaid	283,689	134,338	149,351	5

(1) To obtain the average total cost of an employee paid at the U.S. private sector's 25th percentile and average fringe benefits, PEER performed the following equation for each DHS and Medicaid independent contractor: U.S. Private Sector 25th Percentile Salary + (U.S. Private Sector 25th Percentile Salary * .3957244) = Total Cost in the hypothetical comparison.

SOURCE: PEER analysis of DHS and Medicaid annual independent contractor costs, U.S. private sector job titles and salaries.

In this case study, if all DHS and Medicaid independent contractors hypothetically were hired and paid a salary that is comparable to the 25th percentile U.S. private sector salary for similar IT positions plus the average fringe benefit rate for state employees, the state could save roughly $2.7 million annually on the costs of independent contractors at DHS and Medicaid, as seen in Exhibit 11, page 66.

Exhibit 11: Comparison of Average Annual IT Independent Contractor Costs and Average Cost of U.S. Private Sector 25th Percentile Salary Plus Average Fringe Benefits at the Department of Human Services and the Division of Medicaid, FY 2019

Total annual DHS and Medicaid independent contractor costs	$5,866,370
Total U.S private sector 25th percentile salaries w/ fringe benefits	- 3,129,912
Estimated potential savings that could result from paying IT staff at DHS and Medicaid a comparable market rate rather than procuring independent contractors	**$2,736,458**

SOURCE: PEER analysis of DHS and Medicaid annual independent contractor costs, U.S. private sector job titles and salaries.

While the potential cost savings from reduced expenditures on IT independent contractors (approximately $2.7 million) is a best-case scenario, it will not be possible without compensating skilled IT personnel at a competitive market rate. As noted previously, the current state employee IT job class salary structure creates substantial difficulty for agencies attempting to hire and retain skilled IT labor.

PEER recognizes that there are situations in which an independent contractor would be necessary; there are cases when it would not be cost-effective to keep a highly specialized IT person on staff when his or her unique skill set would be needed infrequently. However, for core IT services that are consistently outsourced, it would be beneficial to the state to establish a method to obtain and retain certain skill sets within state agencies.

Recommendations

1. To address frequent delays in the procurement of information technology goods and services, ITS should consider the following actions to increase its efficiency in the procurement process:

    a. evaluate its assignment of procurements to staff. Specifically, ITS should determine:
        i. whether it could better redistribute staff to work on procurement types based on need,
        ii. whether staff members could handle a greater number of requests at any given time, and
        iii. whether staff could perform more of the initial tasks associated with those requests that are currently being performed by management;

    b. assess its quality assurance process to determine whether certain steps should be eliminated due to their low risk of having a negative impact on the procurement (e.g., two levels of quality assurance review for certain procurement documents);

    c. develop a style manual and templates that allow for consistency in writing among procurement staff, thereby reducing quality assurance steps associated with editing; and

    d. continue to develop a more electronic workflow system consisting of the following capabilities: the ability for ITS to send automated reminders to agencies regarding procurements, for agencies to access a dashboard that shows the status of each of their procurements, and for individuals involved in procurements to e-sign documents.

2. Regarding delays in the procurement process due to agencies not submitting complete information to ITS or responding to ITS staff requests,

    a. ITS should develop an online user's guide that explains the process and requirements for each of its procurement types so that it is clear to agencies what information is expected of them to expedite the process, and

    b. the ITS Board should consider the broad authority provided to it in the CODE and decide on appropriate sanctions against agencies that fail to provide complete information regarding procurements that must be approved by the board.

3. Although ITS has a process to minimize risk for IT projects over $1 million (or $500,000 for IT services), potential risk still exists for IT projects under $1 million (not including IT services).

Therefore, ITS staff should develop a method for and conduct a risk analysis of any IT project submitted to ITS for director approval under the $1 million threshold. Further, the ITS Board should provide the ITS Executive Director the authority to direct agencies to complete a business case and have an up-to-date security assessment for projects approved by the Executive Director that are deemed high risk.

4. In light of the risk for IT project failure and the issues described regarding the driver's license modernization system, ITS should develop a project management framework aimed at reducing risk through the successful implementation of projects resulting from procurements performed by ITS. ITS should consider, as models on which to base such standards, project management frameworks currently in use in Tennessee and Texas.

   In addition, the ITS Board and ITS Executive Director should exercise their authority under MISS. CODE ANN. § 25-53-21 (1972) to develop reporting guidelines and require agencies to submit periodic project reports detailing the progress and expenditures of large information technology projects.

5. Because ITS shared services (e.g., the data center) offer multiple statewide benefits, ITS should be more proactive in the IT planning process by communicating with state agencies on how to fully benefit from and utilize ITS shared services. For example, the ITS Business Relationship Team could coordinate with the Strategic Services Division to identify ways to combine resources across agencies and communicate to those agencies the benefits of combining these resources.

6. In order to ensure that state government is taking full advantage of its information resources, state agencies must manage information as an asset throughout its life cycle to promote openness and interoperability, and properly safeguard systems and information. The Legislature should codify the principles of effective information management, as has been done by the federal government. These principles include the following:

   a. collect or create information in a way that supports downstream information processing and dissemination activities;

   b. build information systems to support interoperability and information accessibility;

   c. strengthen data management and release practices;

   d. strengthen measures to ensure that privacy and confidentiality are fully protected and that data are properly secured; and

e. incorporate new interoperability and openness requirements into core agency processes.

7. As ITS expands its use of managed service providers, ITS must ensure that staff who manage these contracts possess the necessary knowledge and skill sets needed to be effective in their job duties, which includes not only proper oversight and monitoring of contract terms but also effective communication with agencies who use or may use services offered through these contracts.

8. Because the ITS contract terms for procuring IT-related independent contractors (i.e., the Knowledge Services contract) lack sufficient oversight requirements and ITS has not adequately monitored the contractor's performance, ITS should consider the following options:

   a. renegotiate the current contract with Knowledge Services to include adequate oversight parameters, or

   b. re-procure the service at the expiration of the current contract between ITS and Knowledge Services and include adequate oversight parameters in the RFP.

   Adequate oversight parameters should include elements such as requiring the contractor to report on the fees participating vendors must pay to the contractor, outlining the methodology the contractor will use to assess customer satisfaction, and establishing penalties for failure to meet performance standards.

   Further, ITS must be diligent in assessing the performance metrics of this contract (e.g., timeliness of service, customer satisfaction). If performance is not met, ITS should issue penalties according to the contract terms. After a period of monitoring performance and assessing the costs and benefits of this contract, ITS should decide whether this service should continue to be provided by a managed service provider or whether this service should be provided in-house by ITS staff.

9. To increase accountability for its resources, ITS should place a greater emphasis on its performance measurement efforts. Specifically, ITS should collaborate with the Legislative Budget Office and the Department of Finance and Administration to establish a strong set of performance measures for its activities. ITS should consider the following output, outcome, and efficiency measures in its development efforts:

   a. System-wide measures:
      i. The percentage of the budget spent on each of the ITS goals;
      ii. The adoption rate of shared and/or managed services by type of service;

i. The percent of total statewide IT expenditures state government entities expend on managed services; and
ii. The total dollar savings from implementing shared and managed services and reducing technological duplication through reduced agency IT expenditures.

b. Data Services:
i. Mean time to resolve an incident;
ii. Cost per request ticket resolution; and
iii. Cost per incident ticket resolution.

c. Information Security Services:
i. Percent of agencies in compliance with the Enterprise Security Policy (as evidenced by compliance audits conducted by the Office of the State Auditor's Office).

d. Information Systems Services:
i. Number of procurements by procurement type; and
ii. Percent of procurements completed within published timeframes by procurement type.

In light of the newly developed accountability program inventory, as seen in Appendix B, page 75, ITS should begin further developing its performance measures for each of its accountability programs. Such measures should communicate how IT resources have been utilized to achieve outcomes, and increase decision makers understanding of ITS performance. ITS should ensure that data collection for administrative budget programs (i.e., Administration and Information Systems Services) can be used over time to demonstrate the holistic effectiveness of ITS operations.

10. In order to determine how ITS can effectively support state agency IT operations, and inform itself of emerging technologies which state agencies maintain will help make their operations more effective, ITS should administer periodic surveys to state agencies and use the results to inform their decision-making.

11. The Legislature should instruct the State Personnel Board (SPB) and ITS to analyze IT positions and state agency use of independent contractors in order to perform a statewide projection of cost savings from paying skilled, high-demand IT positions a competitive market rate, rather than expending funds to procure IT-related independent contractors. Findings should be reported to the Legislature by December 1, 2020. Agencies with IT positions and IT-related independent contractors should be required to coordinate with ITS and the State Personnel Board, sharing any relevant information needed to complete the proposed projection of cost savings (e.g.,

number of IT-related independent contractors and hourly wages).

If the SPB and ITS determine that cost-savings would be realized, agencies hiring for skilled, high-demand IT positions should propose to the Legislature the inclusion of sufficient funds in their personal services budget to allow for salaries that attract prospective employees with critical IT skill sets. The increases could be paid for through a reduction in the agency's contractual services budget.

Appendix A: Glossary of Terms

Authority

According to MISS. CODE ANN. Section 25-53-3(1) (1972), whenever the term "authority…is used in any law, rule, regulation, document or elsewhere, it shall be construed to mean the Mississippi Department of Information Technology Services."

Business Case

ITS requires state agencies to submit a *business case* for IT procurements requiring ITS Board approval--i.e., those for which the total project lifecycle cost exceeds the ITS Director approval threshold. ITS staff reviews the business case as part of the procurement process prior to submittal to the ITS Board. Business cases should include: complete lifecycle costs, including identifying direct and indirect costs; appropriate quantified analyses of anticipated financial return and benefits from the implementation of the technology, such as return on investment and cost/benefit assessment; and a narrative describing the rationale for the technology and anticipated benefits from its implementation that are not financial in nature. Documentation presented to the board (prepared by ITS) should include identification of any equipment, software, staff, or services included in the acquisition that represent a redundant cost to the state, based on ITS enterprise infrastructure, along with the estimated lifecycle cost of such redundancy.

Cost Benefit Analysis (CBA)

A *cost benefit analysis* is the process used to measure the benefits of a decision or taking action minus the costs associated with taking that action.

CBA = (Benefits)/(Costs)

Customer

Customers are the state agencies, boards and commissions, and institutions of higher learning for whom ITS conducts information technology procurements.

Enterprise IT

Enterprise IT involves the planning, management, and funding of IT at both the central and decentralized level (i.e., at the ITS and state agencies. Enterprise IT includes the technology staff, services, and support associated with enterprise systems and services. Enterprise IT also includes the resources provided by central IT that enable decentralized areas (i.e., state agencies) to run their own IT shops. This may include authentication and access services, contract management, or the development of policies and guidelines for use of enterprise and core IT resources.

Enterprise Security Policy

For the purposes of this policy, security is defined as protection of the integrity, availability, and confidentiality of information and the protection of information technology assets from unauthorized use, modification, damage, or destruction. It includes the security of primary and off-site IT facilities, data storage, and operations activities; computing, telecommunications, and applications-related services obtained from other agencies or commercial concerns; and Internet-related applications and connectivity.

Enterprise Solution

An *enterprise solution* involves the networking of resources across state agencies to achieve an optimal balance of central control and efficiency, while remaining responsive to each state agency's goal of optimal delivery of services.

Governing Authority

Governing authorities include community/junior colleges, county boards of supervisors, school districts, and municipalities.

ITS Hybrid Funding Model (also known as the "Hub and Spoke" funding model)

Implemented in FY 2019, the *ITS hybrid funding model* enables ITS to pay for some shared services and core, ITS operational costs through utilizing ITS general fund funding while billing state agencies only for the costs of the managed services each state agency consumes. Mississippi is the only state to have a hybrid funding model (as opposed to an entirely fee-based model or a general fund model).

Managed Services

Managed services are centrally managed services provided by a private vendor, overseen by the central IT agency (i.e., ITS), and consumed directly by a state agency. Each state agency determines its service needs and is financially responsible for its portion of the services utilized. An example is the state's telecommunications services provided principally by AT&T and managed by ITS.

Project Management Framework

A *project management framework* is the subset of tasks, processes, tools and templates used in combination by the management team to get insight into the major structural elements of the project in order to initiate, plan, execute, control, monitor, and terminate the project activities throughout the management life cycle.

Return on Investment (ROI)

Return on investment is a performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. The return on investment formula:

ROI = (Current Value of Investment - Cost of Investment) / Cost of Investment

State Agency

State agencies, according to MISS. CODE ANN. Section 25-53-3(e) (1972) refers to "all the various state agencies, officers, departments, board, commissions, offices and institutions of the state."

Shared Services

Shared services consist of ITS core business functions that provide expertise to develop and manage services to be utilized by state agencies. Examples include ITS operating the state data center, conducting procurements on behalf of state agencies, and providing enterprise security functions.

Appendix B: FY 2018 ITS Accountability Programs Inventory

Accountability Program	Description	Expenditures	FTEs
Administration			
Executive Management	The Executive Management program at ITS is comprised of the executive director and all staff reporting to the director. Functions of the office can consist of: directing, coordinating, administering, planning, policy development and dissemination, performance review, research, legislative support, and operations of the executive director. The cost of the ITS Board is also included in the executive management program for ITS. **Note that each division director is reflected within their own division**	$453,263.15	2
Administrative Support Services for Exec. Management	Administrative Support Services staff provide administrative support to executive leadership, appointed board members, and legislative advisors.	$56,852.90	1
Internal Accountability	Internal Accountability includes compliance monitoring and reporting, quality assurance, and research and evaluation.	$37,595.00	0.5
Human Resource Management	Human Resource Management consists of recruitment, selection, performance management, and compliance management for ITS.	$33,117.47	1
Internal Training for ITS Employees	The costs of providing training and professional development to ITS staff. Includes the costs of membership dues.	$12,040.00	0
In-state Travel	The costs of in-state travel for ITS. Costs for Administration and Internal Services staff.	$4,242.19	0
Out-of-State Travel	The costs of out-of-state travel for ITS. Costs for Administration and Internal Services staff.	$445.91	0
Accounting and Finance Administration; General Agency Procurement and Purchasing	Accounting and Finance Administration for ITS involves maintaining records of the financial operations through the areas of accounts payable, accounts receivable, travel payments, financial reporting, fixed assets, budget, contract management, grants management, and payroll, and the costs of general agency procurement and purchasing for ITS.	$689,128.63	5.22
Accounting and Finance Administration; General Agency Procurement and	Accounting and Finance Administration by ITS on behalf of the WCC involves each of the tasks described above in the ITS-specific "Accounting and Finance Administration; General Agency Procurement and	$168,966.24	2.78

Purchasing for Wireless Communication Commission (WCC)	Purchasing" accountability program, but performed on behalf of the WCC and its staff.		
Strategic Communications	The Strategic Communications program at ITS provides communications and outreach to agencies, governing authorities, and private sector companies that conduct business with ITS. Staff also creates and publishes policy, procedures, special reports on key IT initiatives and goals, the ITS service catalog, and documentation to strengthen organizations' survivability in the event of a disaster. Strategic Communications provides templates to staff for presentations, assists with graphics/charts/etc., and handles the ITS social media presence. In 2018, this work and employees reported directly to the CAO but have moved to the new Strategic Services Division once it was established late in FY2019.	$150,324.10	2
Property Management, Building Services, and Equipment Management, Including Security Services	Property Management, Building Services, and Equipment Management consists of the following activities: maintenance/repair of all office space, waste disposal, janitorial services, lawn services, and related grounds keeping, maintaining buildings and property inventory, keeping the physical plant clean and ready for daily use, operating the heating, lighting, and ventilating systems, repairing and replacing facilities and equipment, and the costs of building rental and property insurance and fleet management. Also includes cost for outsourced armed security. The facilities group within Data Services Division does this work when not contracted out. The cost for most of this work unless directly related to the raised floor space of the State Data Center is assigned to the Administration Program. The Internal Services Division handles the procurement with input from the Facilities Team and then manages the contracts when ITS outsources the work.	$186,475.19	0
Utilities	Costs of utilities for ITS.	$722,042.07	0
Total for Administration Budget Programs		**$2,514,492.85**	**14.5**
Operations Management			
Operations Management	The ITS Chief Operations Officer is an executive-level position responsible for all aspects of the agency's enterprise operations that provides statewide IT services, infrastructure, and leadership to	$223,810.97	2

	facilitate cost-effective information processing, telecommunications, and strategic security solutions for state government. This position requires the incumbent to work closely with the agency's division directors and management staff to develop, coordinate, and execute enterprise level technology solutions.		
E-Rate Program Coordination and Technical Support	Statewide coordination of the E-Rate program for the public K-12 schools and libraries.	$102,114.92	1
Internal Training for ITS Employees	The costs of providing training and professional development to Operations Management staff. Includes the costs of membership dues.	$4,500.00	0
In-State Travel	The costs of in-state travel for the Operations Management Division.	$1,386.00	0
Out-of-State Travel	The costs of out-of-state travel for the Operations Management Division.	$3,959.80	0
General Agency Procurement and Purchasing	The costs of general agency procurement and purchasing for ITS in the Operations Management Division. While the work is performed by Internal Services, costs associated with Operations Management and E-Rate are assigned to this program.	$175.00	0
Total for Operations Management Budget Programs		**$335,946.69**	**3**
Telecommunications			
Management of Telecom Division	Division Director responsible for strategic planning and management of the Telecom Services Division.	$121,590.89	1
Customer and Vendor Billing for Telecommunications	Customer and Vendor Billing includes: verifying and processing voice- and data-related vendor bills monthly to ensure accuracy of state inventory and charges; remedying billing disputes with contracted vendors; processing Telecommunications Services bill to agency customers based on inventory and customer usage; performing billing reconciliation to ensure pass through costs are accurate; tracking and reporting monthly revenue and expenses; creating monthly financial and inventory reports; migrating vendor bill data from agency customers to ITS billing system; and using, managing, and modifying MySoft Telecommunications Management System.	$287,570.69	4
Customer Support for Telecommunications	Customer Support for Telecommunications includes: providing customer service and acting as single point of contact for telecommunications requests; migrating telecommunications services found outside of the state contract to Telecommunications Services management; migrating legacy	$582,773.20	8

	phone systems and voice related services at remote office locations to Centrex and/or HVoIP; providing voice and data training and consulting; audio/web/event teleconferencing support; routine customer station reviews (inventory/bill verification); call center administration for ACD groups and CMS reporting; Bureau of Buildings project management; city/county voice and data service migrations to RFP 4000/5000 contracts; managing state telephone directory updates; and management of large project implementations.		
Data Network Communications	Data Network responsibilities include: administration of the state data network, Capitol Complex fiber network, and Computer Center access to production servers; processing customer service requests; network security; project management and consulting for large network migrations and voice gateway installs across state data network; statewide data network inventory; administration of IP voice communications infrastructure; working with vendors to ensure voice and data systems are current with technology; security remediation; improving processes and communications across functional areas; and State Data Center Network and state internet access. Manage the Wide Area Network at remote agency sites. FTE count includes .5 FTE on contract for training.	$11,096,960.16	8.5
Voice Network Administration and Installation	Staff working in the Voice Networks Administration and Installation accountability program are responsible for: routine management and administration; statewide voice systems administration; management of vendor maintenance for voice systems; access to local service, toll free, long distance, authorization codes, etc.; assist with station reviews, projects, call centers, and training; work to improve processes and communications. FTE includes 1 contract for staff augmentation.	$6,011,386.11	7
Data and Voice Communication Systems Technicians	Provide design and layout for cabling plant infrastructure for voice and data projects within the Capitol Complex; cabling and installation for voice and data; physical management of Capitol Complex fiber network and copper facilities; and troubleshooting telephones and cable plant associated with Avaya phone system in Capitol Complex. Technicians support both	$265,689.30	4

	Voice and Data. FTE counts include 1 contract for staff augmentation.		
In-State Travel	The costs of in-state travel for ITS Telecommunications Services Division.	$258.67	0
Out-of-State Travel	The costs of out-of-state travel for ITS Telecommunications Services Division.	$303.16	0
Internal Training for ITS Employees	The costs of providing training and professional development to ITS Telecommunications Services staff. Includes the costs of membership dues.	$85.00	0
Other General Agency Support Services and Expenses	Other General Agency Support Services and Expenses can include mail services (e.g., postage, shipping), records management, monthly subscriptions, office supplies (e.g., copier rental, envelopes), shredding services, cellular services, food for business meetings, and reception and clerical support.	$765.86	0
Total for Telecommunications Budget Programs		**$18,367,383.04**	32.5
Data Services			
Management of Data Services Division	Division Director responsible for strategic planning and management of the Data Services Division.	$121,994.66	1
Operations and Management of the State of Mississippi Data Center	The Data Services Division operates and maintains the State of Mississippi Data Center. ITS is also a partner in the Ancillary Data Center (ADC) located in Starkville, Mississippi. This program includes co-location space in the Primary Data Center for customer-owned production equipment. It is protected by generators, uninterruptible power supply (UPS), lightning protection, environmental monitoring, and private security guards.	$908,271.65	3
ITS Data Center Support Services; Telecommunications Service Center Support	ITS Data Center Support Services provides assistance with infrastructure-related services. Staff is available twenty-four hours a day, seven days a week. Requests for assistance with a problem or changes to existing service can be submitted directly to the ITS Service Center and customers can check on the status of existing tickets via the Online Service Desk Support application. This same group of operators supports the Telecommunications Service Center Support accountability program.	$705,227.55	16
Property Management, Building Services, and Equipment Management (Data	The State of Mississippi Data Center Facilities Maintenance staff's primary responsibility is to ensure the state data center remains operational, including conducting routine maintenance and monitoring levels/conditions—e.g., checking	$1,579,465.04	2

Center Facilities Maintenance)	for hot spots, monitoring power usage in each area. This program includes costs for general property management for the agency as it relates to data services, as well as facilities maintenance for the data center.		
Open Systems Infrastructure and Application Services including Enterprise Messaging and Data Sanitization	The Data Services Open Systems Team has two groups: Infrastructure and Applications. ITS offers Open Systems, which include UNIX, Windows, and Linux server hosting for customers that are seeking a cost-effective hosting solution and Virtualized Systems. ITS manages the state active directory and provides MAGIC access. Enterprise Messaging includes email and relay services and hosted messaging solutions. ITS provides the email relay services and infrastructure to deliver secure electronic messages between state agencies and across the Internet. ITS also provides a Microsoft Office 365 hosted enterprise messaging solution that delivers messaging services directly to the state agencies.	$755,714.09	13
Backup and Disaster Recovery (DR) Solutions	ITS provides a range of solutions via a suite of specialized products that can be used to match application business cycles and meet requirements for Recovery Point Objectives (RPO). ITS has a contract with Corus 360 RES-Q™ Services out of Atlanta to facilitate a recovery for services in the State Data Centers should a significant disaster strike. The coordinators for this work are the Data Services Business Relationship and Project Management Support to Customers, but full cost cannot be attributed to that group because it includes many other accountability areas for a successful DR Program.	$431,360.85	0
ITS Database Administration (Database Systems)	ITS Database Administration (DBA) uses database technologies to provide secure, accurate, and timely access. DBA support provides technical assistance for database implementation and usage and supports most of today's common database management systems. 80% of FTE time is associated with the MAGIC mainframe DB2 database. 0.5 of FTE is assigned to a contract employee.	$370,078.33	4.5
Data Services Business Relationship and Project Management Support to Customers	ITS provides project management support for customers needing to define requirements, analyze assets, determine direction, and evaluate alternatives for infrastructure implementation and support for their mission critical systems.	$516,291.70	4

Enterprise Server (Mainframe)	The Enterprise Mainframe Hosting Services offer customers the opportunity to take advantage of comprehensive end-to-end mainframe architecture, technical expertise, support for agency applications, and documented change management processes. 80% of FTE time of this program is spent supporting MAGIC mainframe environment.	$1,916,210.15	9.5
General Agency Procurement and Purchasing	The costs of general agency procurement and purchasing for the Data Services Division. Includes credit card purchases for commodities.	$6,821.87	0
In-State Travel	The costs of in-state travel for the ITS Data Services Division.	$17.82	0
Internal Training	The costs of providing training and professional development to ITS staff in the Data Services Division. Includes the costs of membership dues.	$318.00	0
Out-of-State Travel	The costs of out-of-state travel for Data Services.	$1,052.55	0
Software Acquisition, Maintenance, and Installation	Costs of software acquisition, maintenance, and installation for Data Services.	$4,517,155.22	0
Other General Agency Support Services and Expenses	Other General Agency Support Services and Expenses can include mail services (e.g., postage, shipping), records management, monthly subscriptions, office supplies (e.g., copier rental, envelopes), shredding services, cellular services, food for business meetings, and reception and clerical support.	$14,542.68	0
Total for Data Services Programs		**$11,844,522.16**	**53**
Information Systems Services			
Management of ISS	Division Director responsible for strategic planning and management of the Information Systems Services Division.	$355,958.30	3
IT Planning	ITS staff works with agency planners to develop and prepare the agency's IT plan. An online IT Planning System is provided as a plan repository. This role has moved to the Strategic Services Division but was in Information Systems Services in 2018.	$95,333.52	1
IT Procurement Project Facilitation and Project Management for larger procurements and IT Procurement Help Desk	ITS facilitates the procurement of IT hardware, software, and services for state agency and public university customers as required by statute and can provide these services as requested for local government entities. ITS staff assist customers with the analysis and documentation of functional and technical requirements to be used in procurement documents, such as Requests for Proposals (RFPs) and IT planning	$334,970.11	5.6

	activities, including emerging technology coordination and information security planning resources. An ITS technology procurement analyst is available during normal business hours to answer procurement-related questions. A contract employee accounts for 0.6 of an FTE.		
IT Procurement Project Facilitation and Project Management for smaller procurements and IT Procurement Help Desk	ITS facilitates the procurement of IT hardware, software, and services for state agency and public university customers as required by statute and can provide these services as requested for local government entities. ITS staff assist customers with the analysis and documentation of functional and technical requirements to be used in procurement documents, such as Letters of Configuration (LOCs). An ITS technology procurement analyst is available during normal business hours to answer procurement-related questions. Service requests may also be submitted through the Online Procurement System. Work here also includes work with Bureau of Building's projects, sole sources, fast turn-around projects, extensions/amendments, and similar work.	$458,419.97	7
IT Development and Consulting	Develop, deploy, and support web-enabled applications, including partnering with Mississippi Interactive on e-Government applications for ITS and customer agencies. This work also includes general bids (Knowledge Services), LOCs, EPLs, FOI, etc. ITS publishes Express Products Lists (EPLs) for customers to use to make routine technology purchases, many times without the need for additional approval from ITS. Two independent contractors augment staff at 2 FTEs; 3 contract workers augment staff at 0.5 FTEs for a total of 1.5 FTEs	$979,002.64	7.5
Legal Services for IT Procurement and agency as a whole	Legal staff in the Information System Services Division develop contracts for IT acquisitions and assist customers in the monitoring and the enforcement of these contracts, including mediation and resolution of contract issues. Staff also provides consultation to the Director of ITS on legal matters related to HR, legislation, law interpretation, etc.	$0.00	2
Advertising and Public Information	MAGIC expenditures include Gannett River States Pub Corp for advertising in the *Clarion-Ledger* and *Hattiesburg American*.	$2,170.43	0
General Agency Procurement and Purchasing	The costs of general agency procurement and purchasing for the Information System	$8,830.43	0

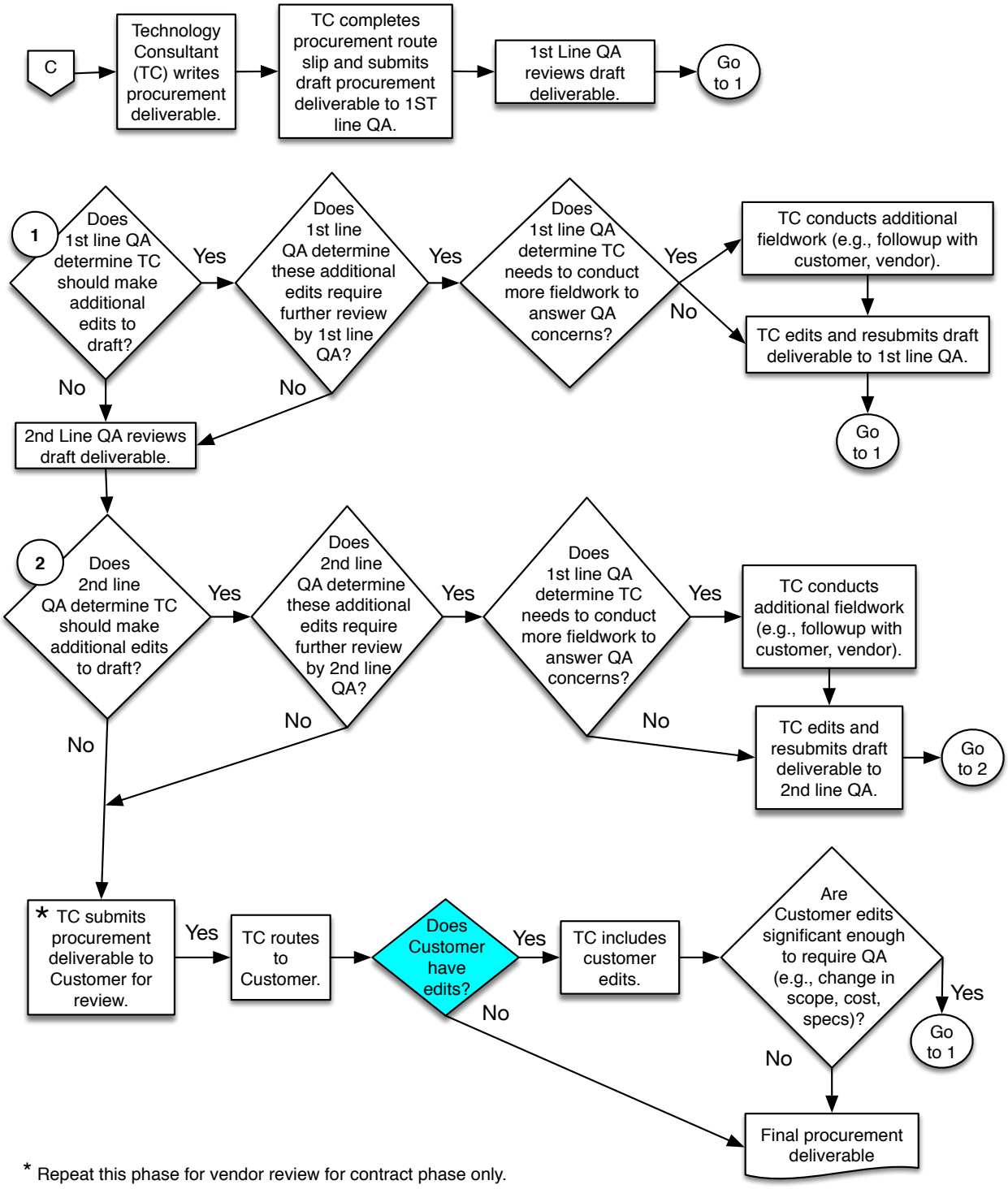
	Services Division. Includes credit card purchases for commodities.		
Internal Training for ITS Employees	The costs of providing training and professional development to ITS staff in the Information System Services Division. Includes the costs of membership dues. Expenditures from MAGIC included annual membership dues for MAGPA, Project Management Institute, and MS Society of Public Managers.	$1,126.00	0
In-State Travel	The costs of in-state travel for the ITS Information System Services Division.	$7,591.45	0
Local Area Network and VoIP Support within ITS; Software Acquisition, Maintenance, and Installation	Costs of software acquisition, maintenance, and installation for ITS as a whole. Personnel in this group have been moved to Internal Services (during FY 2019) but were in ISS during 2018.	$341,959.99	4
Total for Information Systems Services Programs		**$2,585,362.84**	30.1
Security Services			
Enterprise Security Program (Enterprise Security Operations)	The ITS Security Services Division is responsible for the oversight of the Enterprise Security Program. The program coordinates and oversees enterprise cybersecurity efforts, including defining enterprise cybersecurity systems and services and acquiring and operating enterprise technology solutions to improve the cybersecurity posture in the function of any agency, institution, or function of state government as a whole. In addition, ITS provides security information, awareness, policy development, and training to state agencies. The Security Council is an informal council led by the ITS Security Division to inform agency staff on security changes and to get agency buy-in and feedback on security initiatives.	$120,386.48	1
Security Operations (Enterprise Security Operations)	ITS provides core security services in support of the State Data Center and core network infrastructure that provides layered security and perimeter defense mechanisms.	$247,018.86	4.6
Internal ITS Security Compliance	The ITS Internal Security Group (ISG) helps facilitate the security efforts of each ITS business unit through a Security Liaison program. The group of Security Liaisons consists of the manager of each operational area within the ITS business units.	$17,603.60	0.4
Software Acquisition, Maintenance, and Installation	Costs of software acquisition, maintenance, and installation for the ITS Information Security Division.	$152,760.33	0

Enterprise Security Monitoring	Network Monitoring & Analysis is a Department of Homeland Security, federally-funded service offered through the MS-ISAC that provides behavioral and signature-based monitoring and analysis of Enterprise State Network traffic for indicators of compromise. Additionally, The Security Incident and Event Management (SIEM) is offered by AT&T and used to correlate logs from enterprise IT assets, and provides analysis of security alerts. Expenditures in MAGIC - a contract with AT&T for Threat Manager Monthly Encryption Services.	$164,292.00	0
Out-of-State Travel	The costs of out-of-state travel for the ITS Information Security Division.	$1,157.29	0
Internal Training for ITS Employees	The costs of providing training and professional development to the Information Security Division. Includes the costs of membership dues. Expenditures from MAGIC included annual membership dues for Executive Management.	$189.00	0
Other General Agency Support Services and Expenses	Other General Agency Support Services and Expenses can include mail services (e.g., postage, shipping), records management, monthly subscriptions, office supplies (e.g., copier rental, envelopes), shredding services, cellular services, food for business meetings, and reception and clerical support.	$114.24	0
Total for Security Services Programs		**$703,521.80**	**6**
Education			
ITS Instructor Led IT Training	Instructor led IT Training is offered through the ITS Eastwood Education Center and is contracted out through Systems IT, Inc. The ongoing educational program is designed to enhance and improve the computer and communication skills of personnel within state government.	$177,644.00	0
ITS Online IT Training	ITS offers online training opportunities through a contract with Skillsoft, which provides standard courses, as well as custom program development. Customer support specialists are available twenty-four hours a day, seven days a week.	$93,763.60	0
ITS Education Coordination, Management, and Support	The ITS Education Coordinator manages the contracts, tracks training for employees, and handles billing for both IT education contracts. This is done through MAGIC as well as an in-house tracking system. Ed Coordinator was 100% for Education in	$105,185.12	2

	2018. Now her time is split: about 45% of her time as education coordinator, Information Systems Services/Bureau of Buildings work is about 35%, ITS travel planning and reimbursements is about 15% and then about 5% on other agency admin-related work.		
ITS Education Support Expenses	ITS Education Support Expenses include the costs of materials (e.g., Microsoft PowerPoint, Excel, Word) supporting the education program.	$1,901.83	0
Other General Agency Support Services and Expenses	Other General Agency Support Services and Expenses can include mail services (e.g., postage, shipping), records management, monthly subscriptions, office supplies (e.g., copier rental, envelopes), shredding services, cellular services, food for business meetings, and reception and clerical support.	$33.03	0
Total for Education Programs		**$378,527.58**	2

SOURCE: ITS website, ITS budget information, and information provided by ITS staff.

Appendix C: ITS Quality Assurance Process



* Repeat this phase for vendor review for contract phase only.

SOURCE: ITS Procurement Manual, interviews w/ ITS procurement staff and review of sample of previous IT procurements from FY 2018 to FY 2019.

Appendix D: PEER Analysis of the Knowledge Services Master Agreement with ITS

PEER reviewed the Knowledge Services master consulting services agreement and the ITS oversight of Knowledge Services for two reasons:

- the master consulting services agreement has been used multiple times by state agencies to procure independent contractors;[23] and,
- the master agreement has been in effect since June 21, 2017, which permitted an appropriate period of time for analysis of the ITS oversight of a managed service provider.

Tracking Vendor Performance

According to the Knowledge Services contract in Article 7.15, Knowledge Services will track the performance of vendors and require that the following Service Level Agreements are maintained:

- requisition confirmation response in four hours from request receipt;
- requisition release to vendor network within one business day from request receipt;
- resume submittal response in three business days from request receipt;
- requisitions complete (filled) within two weeks or less;
- urgent requests for resume submittal response within forty-eight hours from request receipt;
- attrition rate of 8% or lower; and,
- 90% satisfaction rating by customer managers through an Annual Customer Service Survey.

Additionally, Article 7.13 of the master consulting services agreement states that Knowledge Services will facilitate regular contract review meetings to review their performance and service level metrics.

However, ITS could not provide PEER with documentation submitted by Knowledge Services showing that any of the above metrics were being tracked. Thus it is unknown whether Knowledge Services is meeting the performance terms of the contract identified in Article 7.15. Additionally, the Knowledge Services contract does not identify any ramifications or corrective action plan if such performance measures are not met.

[23] State agencies entered into fifty-nine separate posted scopes of work between December 14, 2017, and June 19, 2019.

Although ITS and Knowledge Services report having daily calls, biweekly meetings, and quarterly progress meetings, no documentation exists to verify that Knowledge Services is meeting contractual provisions. This is in contrast to Article 7.13, which states "Knowledge Services will facilitate regular contract review meetings to review their performance and service level metrics."

ITS did state they met with Knowledge Services management in mid-July 2019 to discuss a plan for capturing these metrics. At the time, ITS expected to receive a plan from Knowledge Services in the "near future." ITS reported it will continue to follow up with Knowledge Services to ensure these metrics are reported and met.

Upon request, ITS did provide PEER with an example of a quarterly presentation Knowledge Services presented to ITS and Knowledge Services, but it did not cover performance metrics/service level agreements, rather focusing on potential cost savings from using Knowledge Services for independent contractor procurement rather than ITS staff.

Contract Administration

PEER also assessed whether the ITS administration of the Knowledge Services contract met National Association of State Purchasing Officers' best practices for contract administration.

Among the most relevant best practices, with regard to ITS contract management of the Master Consulting Services Agreement with Knowledge Services, are:

- preparing a Contract Administration Plan;
- scheduling regular meetings or on-site visits to customer agencies to monitor and discuss the progress of the contract and contractor's performance;
- training for best practices in contract management;
- establishing good communication between the central procurement office (in this case, ITS) and customer agencies before, during, and after the contract has been awarded and signed;
- collecting meaningful data from user agencies;
- assessing contract risks and monitoring after the contract has been awarded;
- establishing performance metrics;
- implementing reporting tools and having processes in place for user agencies to report deficiencies to the central procurement office (in this case, ITS);
- using tracking tools to monitor spending patterns and whether a contract is working as intended;
- collecting data from users regarding contract performance and customer needs for existing contracts, which is critical when

drafting specifications to include in future contracts for similar products or services; and,

- having procedures in place for expedient resolution of contract disputes and claims.

PEER found that ITS is adhering to some of these best practices, such as establishing performance metrics; however, ITS is lacking in others, such as the communication between ITS and state agencies, reporting tools and processes for user agencies, and scheduling regular meetings with customer agencies to monitor and discuss the use of the Knowledge Services contract.

Customer Survey Requirement

ITS reported that it overlooked the requirement for Knowledge Services to conduct a customer survey, report the results, and achieve 90% customer (agency) satisfaction with its services. Thus, ITS did not follow up with Knowledge Services as to when the customer survey would be done and how such would be done until PEER brought the requirement to the attention of ITS. ITS did report conducting an untracked, informal survey with state agencies six months into the contract (summer 2018). Agencies appreciated quicker procurement time compared to the former LOC method, but were surprised by taking on a prominent role in scoring candidates during procurement.

Through interviews with a group of agencies procuring independent contractors through Knowledge Services, PEER received the following feedback.

- The "low cost" bidders initially provided by Knowledge Services are often not qualified, hence requiring agencies to request an additional pool of applicants.
- Knowledge Services' ability to review an applicant's technical qualifications needs improvement. The applicant may list the technical skills/education required for the job, but cannot adequately provide written answers to job applicant questions in which such technical knowledge and understanding is needed.
- The speed to procure is generally quicker than the prior LOC process but still may take one to two months. The LOC process can take anywhere from one to three months, according to the ITS Procurement Handbook, but in reality, can take up to six months.
- Although the Knowledge Services agreement states such, the vendor may not be able to provide a substitute if its contractor leaves prior to expiration. However, that was an issue, when it occurred, under the LOC process as well.

Oversight Parameters

From the beginning of the ITS agreement with Knowledge Services, ITS did not set adequate oversight parameters as part of the contract, its appendices, or business relationship between ITS and Knowledge Services.

As previously noted, although the contract includes a requirement for Knowledge Services to both conduct an annual customer satisfaction survey and achieve a 90% satisfaction rate, no determination was made as to (a) what the survey would include or (b) which party would be responsible for developing the survey. Additionally, no determination was made as to what, if any, penalties Knowledge Services would suffer for failure to reach a 90% satisfaction rate.

Fees Charged to Vendors

ITS not only did not cap fees Knowledge Services could charge vendors for participating in the Knowledge Services contract, ITS did not include contract terms that require Knowledge Services to report such information to ITS. Because ITS did not include contract terms that require Knowledge Services to report any fees Knowledge Services charges vendors, ITS does not know the amount that Knowledge Services charges vendors to apply for independent contractor positions.

The Mississippi Procurement Manual states that to obtain the best value in selecting a contract type, agencies should review elements that directly affect the cost, time, risk, and profit incentives bearing on the performance. Among the factors to be considered in selecting any type of contract are: …

> *(3) The administrative costs to both parties*

The master-level agreement between Knowledge Services and ITS provides no insight into the administrative fees collected by Knowledge Services from the vendor community. As such, agencies procuring independent contractors through Knowledge Services could presumptively receive a marked-up cost in the form of higher hourly rates, because vendors would likely have to account for these administrative fees in submitting their bids, as well as the 2% fee Knowledge Services receives for managing the contract for the state and the 1% state fee remitted to the General Fund.

Thus, while vendors compete on costs to provide IT-related contractor services for agencies, they presumptively all are charged the same mark-up "vendor costs" by Knowledge Services, which would likely be passed on to the agency in higher hourly costs. Such is the same for the 2% administrative fee Knowledge Services receives for providing services to the state and the 1% administrative fee that is remitted back to the general fund via ITS.

Outside of these reported fees, ITS does not know the amount that Knowledge Services charges vendors to apply for independent contractor positions.

Appendix E: Market Salary Comparison of IT-Related Positions Utilizing Data Obtained from the State Personnel Board

Position	Starting Salary ($) in Mississippi	Average Starting Salary ($) in Contiguous States [1]	Starting Salary ($) in Private Labor Market [2]	
			25Th Percentile	50th Percentile
Programmer Analyst II/Applications Developer	41,164.00	43,395.25	87,000.00	104,500.00
Business Systems Analyst I	41,164.00	46,310.00	78,750.00	93,250.00
Database Administrator	55,274.00	56,097.00	77,000.00	97,250.00
ERP Analyst	No PIN Exists	55,621.75	84,250.00	102,000.00
GIS Analyst	No PIN Exists	45,830.25	Not Listed	Not Listed
Systems Manager II/IT Manager	59,524.00	74,210.75	82,000.00	98,500.00
IT Security Specialist	No PIN Exists	66,814.50	93,000.00	111,500.00
Systems Administrator II/Tech Support Specialist	34,279.00	42,399.75	68,000.00	81,750.00
Network Specialist II	44,101.00	61,304.75	74,750.00	89,000.00
Lead Systems Administrator	51,358.00	60,046.50	Not Listed	Not Listed

(1) Contiguous states include Alabama, Arkansas, Louisiana and Tennessee.
(2) U.S. IT private sector using data obtained from the Robert Half International, Inc. 2019 Salary Guide.

SOURCE: Mississippi State Personnel Board IT Salaries Comparison versus Contiguous States. U.S. IT private labor market data obtained from the Robert Half International, Inc. 2019 Salary Guide.

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Craig P. Orgeron, Ph.D., Executive Director

November 14, 2019

James A. Barber, Executive Director PEER Committee
P. O. Box 1204
Jackson, MS 39215-1204

HAND DELIVERED

Re: *Information Technology Oversight and Service Delivery in Mississippi State Government*

Dear Mr. Barber:

Please accept this as the response of the Mississippi Department of Information Technology Services (ITS) to the report of the PEER Committee (Committee) following its review of the Information Technology Oversight and Service Delivery in Mississippi State Government. The PEER staff working on the review consistently displayed a sincere interest in their work and were courteousness with a high degree of professionalism. Furthermore, it became apparent working with PEER staff, that PEER understands the vital role of information technology (IT) in Mississippi State Government, as is the case in private sector companies spanning all industries nationwide. Respectfully submitted, the following information outlines the direction and initiatives that ITS is pursuing to address many of the topics noted in the review.

Challenges in Decentralized IT

As noted in the Committee's review, Mississippi government's approach to information technology (IT) organization is highly decentralized, with resources – principally personnel and funding – allocated by the Legislature via individual agency appropriations. This highly decentralized ecosystem provides for duplicative assets (hardware, software, and personnel), minimal coordination on technology initiatives among agencies or departments, and problematic tracking of IT expenditures. These challenges curtail the effective and efficient utilization of IT to deliver and enhance services and inhibit solving business problems across state government.

Proactive Planning and Collaboration

ITS' response to the challenge of effectively and efficiently managing IT in a decentralized ecosystem has been with a variety of solutions including shared services, optimization of systems, strategic insourcing and outsourcing, and intergovernmental collaborations, partnerships, and purchase agreements. Proactive, not reactive, collaboration is at the forefront of our publications, the *Strategic Master Plan for Information Technology* and the *Statewide Architecture & Technology Infrastructure Plan*. These strategic documents published annually are done so in conjunction with the statewide IT planning process. The review of agency IT plans informs the *Strategic Master Plan* and the *Architecture and Infrastructure Plan*, and both

are intended to assist state government's technology and business leaders in making informed technology decisions that support state business goals.

Additionally, over the last eight years, ITS has embarked on several first-ever initiatives centered on fostering a collaborative mindset in state government. Mississippi's Digital Government Summit, produced in conjunction with e.Republic has via an Advisory Board created an agenda that is relevant and actionable to the state and local government organizations attending the summit. Based on feedback, state government participants use the keynotes, leadership discussions, networking breaks, and timely topics discussed in the breakout sessions to help advance the goals of their agencies and their own career paths. Likewise, in its sixth year, proactive collaboration drove the creation of the Mississippi Cybersecurity Summit. State IT leaders and security professionals gather to hear impactful speeches such as those provided this year by the State Auditor and Executive Director of the Office of Homeland Security, with the goal of raising awareness about cybersecurity and working together to increase the resiliency of our technology resources.

Strategic IT Councils and Committees

Beyond strategic documents and the creation and production of technology summits, ITS has in the last few years embarked on the formation of collaborative IT councils set to achieve specific technology goals. Each of these councils, all multi-year efforts, has focused on the proactive engagement of state agencies to build consensus toward the adoption of service-oriented business practices that allows for more choice and flexibility in developing and implementing technology solutions. Utilizing MS Code § 25-53-5(f) and § 25-53-109(a), ITS scoped and managed the Email Advisory Council resulting in the award of RFP 3723 for Office 365 migration, management, and messaging services; the Network Advisory Council resulting in the award of RFP 5000 for significant decreases in telecommunications costs across state government; and, the Cloud Advisory Council resulting in the award of RFPs 3847 and 3963 for the development of the new Mississippi Cloud Ecosystem consisting of colocation, on-premise cloud, and public cloud options for agency utilization. Moreover, two councils and committees explicitly in statute have yielded collaborative results: the eGovernment Oversight Committee (MS Code § 25-53-151) resulting in the award-winning www.ms.gov website and eGovernment services; and, the Security Council (MS Code § 25-53-201) resulting in the award of RFP 4080 for enterprise Virtual Private Network (VPN) services.

Cybersecurity

In the 2018 Deloitte-NASCIO Cybersecurity Study, one state estimates that two years ago there were 150 million attacks a day, while today there is an average of 300 million attacks per day. Recognizing the criticality of the cybersecurity challenge, ITS crafted proposed legislation to govern cybersecurity. The Mississippi Legislature passed that legislation with House Bill 999 (HB 999) during the 2017 Regular Session, with Governor Bryant signing the bill into law. Codified as MS Code § 25-53-201, the Enterprise Security Program provides for the coordinated oversight of the cybersecurity efforts across all state agencies including cybersecurity systems, services, and the development of policies, standards, and guidelines.

For ITS, the newly developed *2018 – 2019 Enterprise Security Plan* documents our commitment to improving the State's cybersecurity posture, integrating security into the business operations of supporting the Enterprise State Network and State Data Centers, operating solutions to reduce the cybersecurity risks of every agency, and overseeing the enterprise-wide

cybersecurity effort. However, full engagement of all stakeholders, each understanding their roles and responsibilities for protecting State assets is essential to the advancement of the cybersecurity effort across all areas of state government. ITS' Security Services Division, in administering the Enterprise Security Program, maintains the *Enterprise Security Policy* establishing baseline requirements for preserving the confidentiality, integrity, and availability of the State's data and IT resources from unauthorized use, access, disclosure, modification, or destruction, as well as auditing and compliance rules for the Office of the State Auditor.

Data Centers and Cloud

The signing of HB 1450 in 2012 (MS Code § 25-53-5(t)-(v)) directed ITS and our partner agencies to optimize the State's IT resource investments, including, but not limited to, the newly constructed State Data Center. Specifically, HB 1450 sought to ensure that the State of Mississippi receives "the maximum use and benefit from information technology and services" and to "optimize the efficient use of the State's information technology assets." At the direction of the Legislature, ITS sought to work collaboratively with agencies to fully leverage the services offered by the State Data Center which benefit individual agencies and, in aggregate, the whole of state government.

In Mississippi state government, over 96% of the money spent on technology (IT hardware, software, and services - excluding personnel) is spread throughout 25 agencies. Of these 25 agencies, 100% of them are currently using telecommunications services provided and/or coordinated by ITS in compliance with telecommunications statute in MS Code § 25-53-111. However, use of the State Data Center by these 25 agencies, while not 100%, has increased from 28% in 2012 to a current rate of 88% with coordinated and proactive outreach and planning. Maximizing utilization of the State Data Center offers agencies the advantage of shared services, volume purchase contracts, efficient and effective use of technical expertise, and secure, high availability facilities and infrastructure.

Similar to operational efficiencies offered in standardized data center services, purposeful consumption of cloud solutions that provide infrastructure and platform support and services allow the IT staff in state agencies to concentrate on the agency's mission by focusing their energy on support of the business- critical applications, data management, and local area network support. As mentioned earlier, with the establishment of a special technical advisory council, the Cloud Advisory Council, ITS worked collaboratively to "provide statewide services that facilitate cost-effective information processing," as well as "minimize duplication" while "providing common technology services across agency boundaries." This mission directive has, via the state agency-focused, multi-year Cloud Advisory Council, resulted in multiple procurements for the development of the new Mississippi Cloud Ecosystem.

Measurement

As noted in the National Association of State Chief Information Officers (NASCIO) 2019 State CIO Survey, *The Responsive State CIO: Connecting to the Customer*, 55% of states have a performance management system, and another 18% are in the planning phases. Interestingly, according to the results, most state CIOs view themselves in a supporting, not leading, role in enterprise performance management efforts. Such would be the case in Mississippi – more than in other states – given the decentralized IT organization in Mississippi state government. This distributed ecosystem creates inherent interdependencies with the development of shared and managed enterprise IT services needing to be consumed by independent agencies in order to

maximize specific metrics of efficiently and effectively using IT to solve problems in government operations.

However, the 2019 State CIO Survey documents that a strong consensus exists among CIOs that performance management is important to improving overall government effectiveness. In fact, when asked about the attributes of their performance management program, responses focused on a clear relationship to improving government effectiveness. The top responses were: works with agencies to define meaningful and measurable metrics for evaluating agency program effectiveness (81%); informs and challenges state enterprise wide and agency level budgets and funding (66%); informs and challenges state enterprise wide and agency level strategic plans (62%); and, actively promotes a performance management mindset across the state enterprise (62%).

As highlighted in ITS' 2018 Annual Report, measurement of performance is important to ITS, as it is across the IT industry as a whole, and impacts many agencies and institutions across the State. (see attached: Critical Government Infrastructure Supported by ITS).

Procurement

ITS is responsible for the establishment of IT policy and planning, for IT procurement and contracts, and for providing the computing and telecommunications infrastructure for all information systems technologies within state government. Of these roles, technology procurement can be one of the most challenging. The acquisition of IT for all state agencies and institutions of higher learning (IHLs) is within the scope of the ITS law and the policies and procedures established in accordance with this statute (see Procurement Handbook).

In carrying out its responsibilities, ITS furnishes customers with technical guidance and assistance in complying with the legal requirements of state purchasing laws for information technology, maximizes competition among technology manufacturers and service providers, maximizes the compatibility of the State's information resources, acquires complete information technology solutions that provide the best combination of functionality and cost, and leverages the State's combined purchasing power to provide the best possible discounts.

As highlighted in ITS' 2018 Annual Report, and noted in the PEER Review, in addition to the production of 548 procurement approval documents (CP-1s) for the purchase of technology hardware, software, and services, representing $288,143,215 of purchase authority, ITS provided 26,627 hours of technical and project management services for agency projects. Specific work on competitive procurements resulted in the development of 31 RFPs, 38 Letters of Configuration (LOC), the publication of 10 Express Products Lists (EPLs) with purchases of approximately $65,251,207. These efforts resulted in the negotiation and execution of approximately 400 technology contracts and contract amendments and the approval of purchases and awards to over 200 technology vendors. Lastly, of all competitive procurements executed by ITS, only one has been protested with merit over the last two years.

Conclusion

Information technology today in Mississippi state government is at the core of everything we do to serve citizens, businesses, and employees. It is imperative that a statewide partnership in and among the state agencies and institutions in Mississippi be focused on outcomes which allow for the establishment of standards-based, enterprise solutions, minimizing operational

costs by leveraging the volume buying power of the entirety of state government, in addition to the potential inclusion of local governments and educational entities.

Furthermore, and in reference to the recommendations outlined by the Committee in the report, ITS will diligently work with Legislators and the Executive Branch, to determine how to continue to maximize the benefits of IT through procurements, planning, and effective and efficient use of the State's enterprise IT resources by state agencies.

If ITS, its Directors and staff, can provide any additional information or input that the Committee deems necessary or useful, please do not hesitate to call upon the agency for the same.

Sincerely,

Craig P. Orgeron, Ph.D. Executive Director

Attachment: Critical Government Infrastructure Supported by ITS

Critical Government Infrastructure Supported by ITS

Access to many critical state government IT applications and services is provided through enterprise contracts and dedicated core infrastructure managed by the Mississippi Department of Information Technology Services (ITS). Below are a few of the services delivered during FY2019:

Telecommunications – Statewide voice and data communications networks

- Supported over 950 Wide Area Network data circuits across the state connecting remote office locations to their headquarters and to applications that run within the two State Data Centers
- Managed the State's dedicated Internet connection providing citizens and businesses with the capability to conduct on-line e-government transactions and access to agency website information. During FY2019, over 409,950 e-government transactions were logged
- Supported over 23,200 telephone lines providing access to local and long-distance dialing
- Supported 493 toll-free numbers across multiple agencies
- Provided over 46,268 audio/video/web conference calls
- Processed over 12,809,790 minutes of long distance and 11,917,983 minutes of toll-free

  usage

  Information Security - Cybersecurity program that provides perimeter security measures to protect state government electronic information

  - Prevented over 46,000,000,000 network packets from entering the Enterprise State Network based on firewall policies and rules
  - Prevented over 4,000,000 intrusions to and from the Enterprise State Network based on intrusion prevention system (IPS) policies, rules, and signatures
  - Dropped over 7,000,000 malicious connections on the Enterprise State Network by the IPS security intelligence feed
  - Prevented over 650,000 malicious files to and from the Enterprise State Network by the advanced malware protection service
  - Prevented over 175,000,000 intrusions to and from the State Data Centers based on intrusion prevention system (IPS) policies, rules, and signatures
  - Supported 715 defined client VPN tunnels and 112 defined site-to-site VPN tunnels for secure remote access

    Data Processing - Database software, compute, network, and storage infrastructure that support many mission critical state government applications across a shared services environment and colocation environment housed within the State's Data Center providing these services to many state agencies that comprise the majority of IT spend

• **Shared Services Environment -** Provide computing hardware, software and supplemental resources that support many on-line applications managed by the agencies. During 2019 approximately 1.1 million batch jobs and over 31 million transactions were processed. More

than 634 end-user devices in all 82 counties have access to State Data Center resources. Agency customers that utilize the shared virtual environment include:

- Department of Agriculture and Commerce
- Board of Architecture
- Department of Archives and History
- Board of Exam Licensure and Professional Counselors
- Board of Funeral Services
- Board of Physical Therapy
- Boswell Regional Center
- Board of Chiropractic Examiners
- Department of Marine Resources
- Department of Human Services
- Department of Public Safety
- Department of Finance and Administration
- Division of Medicaid
- Department of Education
- Department of Environmental Quality
- Board of Medical Licensure
- Department of Mental Health
- Mississippi Military Department
- Motor Vehicle Commission
- Mississippi Board of Psychology
- Mississippi State Board of Pharmacy
- Supreme Court
- Mississippi State University - nSPARC
- North Mississippi Regional Center
- Board of Nursing Home Administrators
- Board of Nursing
- Secretary of State, Office Of
- State Board of Health
- Wildlife, Fisheries, & Parks
- Workers' Compensation Commission

• **Colocation Environment –** Solution where agency customers can house their equipment in a physically secure and environmentally controlled location. State agency systems located in the co-location environment include:

- Attorney General
- Auditor, Office of The State
- Board of Tax Appeals
- Boswell Regional Center
- Capital Post Conviction Counsel
- Department of Corrections
- Department of Environmental Quality
- Department of Finance and Administration
- Department of Human Services
- Department of Mental Health - Kronos
- Department of Public Safety

- Department of Rehab Service
- Department of Revenue
- Department of Transportation
- Division of Medicaid
- Ellisville State School
- Medical Licensure, Board of
- Mississippi Interactive
- MS Emergency Management Agency
- MS State Hospital, Whitfield
- Mississippi State University - nSPARC
- North Mississippi Regional Center
- State Personnel Board
- Public Service Commission
- Public Employees' Retirement System
- State Treasury Department
- University of Mississippi Medical Center
- Veterans Affairs Board
- Wildlife, Fisheries & Parks

• Centrally managed a 24x365 ITIL Capable Service Desk providing level 1 support to state agencies resolving over 3,503 requests and 2,410 incidents

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