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Department of Information Technology

Executive Summary

The Department of Information Technology (DoIT) supports information technology (IT) needs in State agencies. This includes operations, major IT project development, security, web services, application management, the State's 700 megahertz first responder radio system, and telecommunication relay systems for hearing and speech disabled individuals.

Operating Budget Data

($ in Thousands)

	FY 18 Actual	FY 19 Working	FY 20 Allowance	FY 19-20 Change	% Change Prior Year
General Fund	$61,779	$96,394	$87,885	-$8,509	-8.8%
Adjustments	0	5,301	450	-4,851	
Adjusted General Fund	**$61,779**	**$101,695**	**$88,335**	**-$13,359**	**-13.1%**
Special Fund	8,811	17,248	16,889	-359	-2.1%
Adjustments	0	4	16	12	
Adjusted Special Fund	**$8,811**	**$17,252**	**$16,905**	**-$347**	**-2.0%**
Reimbursable Fund	66,543	61,179	80,921	19,741	32.3%
Adjustments	0	48	228	180	
Adjusted Reimbursable Fund	**$66,543**	**$61,227**	**$81,149**	**$19,922**	**32.5%**
Adjusted Grand Total	**$137,133**	**$180,174**	**$186,388**	**$6,215**	**3.4%**

Note: The fiscal 2019 appropriation includes deficiencies, a one-time $500 bonus, and general salary increases. The fiscal 2020 allowance includes general salary increases.

- The fiscal 2020 Budget Bill includes three fiscal 2019 deficiency appropriations: $5,542,000 in additional general funds to support fiscal 2019 infrastructure operations; $2,000,000 in additional general funds to support shortfalls in enterprise IT services; and a $343,000 reduction to major IT project development oversight.

Note: Numbers may not sum to total due to rounding.

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- Infrastructure, application management, and security are operations that support State agencies. Funding for these programs totals $65.8 million in fiscal 2020.

- Spending for major IT project development totals $83.9 million. This includes appropriations for large projects being implemented like the shared human services platform, procurement system, integrated tax system, and hospital records system.

Personnel Data

	FY 18 Actual	FY 19 Working	FY 20 Allowance	FY 19-20 Change
Regular Positions	234.60	234.60	223.60	-11.00
Contractual FTEs	2.00	2.00	1.10	-0.90
Total Personnel	**236.60**	**236.60**	**224.70**	**-11.90**

Vacancy Data: Regular Positions

Turnover and Necessary Vacancies, Excluding New Positions	21.07	10.64%
Positions and Percentage Vacant as of 12/31/18	52.60	22.42%

- DoIT continues to have high vacancy rates as 22% of positions are vacant. In fact, rates have increased since January 2018 when 16% of positions were vacant.

- In fiscal 2020, 11 procurement positions are transferred to the Department of General Services (DGS) as part of procurement reform that consolidates procurement in DGS.

- The use of contractual full-time equivalent positions is reduced in infrastructure and radio programs.

Key Observations

- In fiscal 2020, DoIT fully transitions to a fee-for-service model for enterprise IT services. DoIT and the Department of Budget and Management have developed a fee schedule for the services that DoIT provides. General fund appropriations to DoIT are reduced, while reimbursable funds increase.

- The cybersecurity program has 5 employees that monitor $3.5 million in cybersecurity contracts. Since January 2017, 57% of the positions have been vacant. The department responded to a request in the 2018 *Joint Chairmen's Report* to review cybersecurity. The

response notes that actions have been taken to reduce cybersecurity threats. Audits in calendar 2018 show reduced cybersecurity findings.

- With 22% of positions vacant, the department's vacancy rate remains higher than the statewide average. Vacancy and retention rates are higher among senior positions as 26% of positions are vacant and 37% have been with the State for less than five years.

Operating Budget Recommended Actions

		Funds
1.	Delete funds for the Statewide Grant System.	$ 2,000,000
2.	Adopt narrative requiring the Managing for Results indicators to measure major information technology projects developed using Agile.	
	Total Reductions	**$ 2,000,000**

Updates

- The Office of Rural Broadband is now in the Department of Housing and Community Development.

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Department of Information Technology

Operating Budget Analysis

Program Description

The Department of Information Technology (DoIT) contains the following programs:

- ***State Chief of Information Technology:*** Responsible for executive direction and major information technology (IT) project oversight. This includes a chief operating officer and a chief data officer as well as enterprise architecture, application development, project management, communication, and legislation.

- ***Security:*** Responsible for developing statewide security policies, enforcing policies, and supporting State agencies' security efforts.

- ***Application Systems Management:*** Responsibilities include web systems, geographic information systems (GIS), and operating statewide systems, such as the Financial Management Information System (FMIS) and the new Enterprise Budget System.

- ***Infrastructure:*** Responsibilities include operating networkMaryland, the State's data network, voice systems, and maintaining and supporting day-to-day IT operations for Executive Branch agencies that are referred to as the enterprise IT services.

- ***Chief of Staff:*** Responsible for finance. This program had been responsible for procurement, but Chapter 590 of 2017 consolidated procurement in the Department of General Services (DGS). In fiscal 2020, 11 procurement positions are transferred from DoIT to DGS.

- ***Major IT Projects:*** Development of major IT projects.

- ***Radio:*** Operates the Maryland First Responders interoperable Radio System Team that is the State's 700 megahertz radio system.

- ***Telecommunications Access of Maryland (TAM):*** Provides telecommunications relay service for Maryland's hearing and speech disabled citizens. The program also provides assistance with telephone equipment for financially qualifying citizens with a variety of needs.

The department administers the Major Information Technology Development Project Fund (MITDPF). This is a nonlapsing fund that supports large IT initiatives as defined in Sections 3A-301 and 3A-302 of the State Finance and Procurement Article. Major IT development projects are projects that meet one or more of the following criteria:

- the estimated total cost of development equals or exceeds $1 million;
- the project is undertaken to support a critical business function associated with the public health, education, safety, or financial well-being of the citizens of Maryland; and/or
- the Secretary of Information Technology determines that the project requires the special attention and consideration given to a major IT development project.

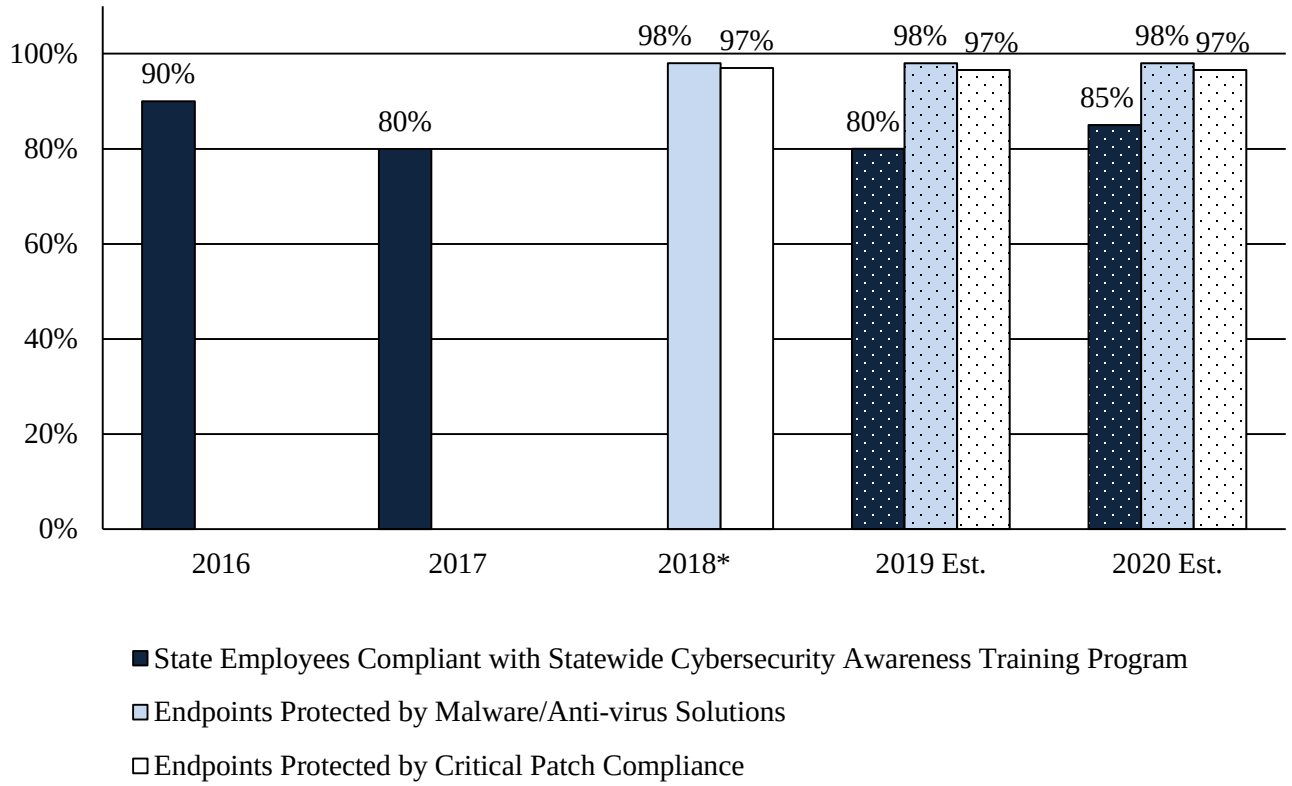
Performance Analysis: Managing for Results

1. Cybersecurity

DoIT's first Managing for Results (MFR) goal is to provide "leadership and support to State agencies in areas of cybersecurity policy, risk and vulnerability assessment, technology implementation, awareness training, and incident response to raise the security posture of State government." The budget committees have expressed concerns about cybersecurity and have asked the department for performance indicators that can better assess the State's progress. In response, DoIT has updated its performance indicators. **Exhibit 1** shows actual data for fiscal 2016 to 2018 with projections for fiscal 2019 and 2020.

Cybersecurity professionals have noted that the average employee is often the weakest link. Employees let hackers in by inadvertently providing passwords or loading malware into a system. As such, employee cybersecurity training is probably the most effective defensive measure an organization can take. DoIT introduced a cybersecurity awareness training program in December 2013. The Department of Budget and Management (DBM) advises that the cybersecurity training contract lapsed in fiscal 2018; therefore, the training was not provided. It is unclear as to why DoIT would allow such a critical contract to expire. **The department should be prepared to brief the budget committees on steps taken to ensure that there is continuous cybersecurity training.**

Exhibit 1
Cybersecurity
Fiscal 2016-2020 Est.



* No cybersecurity training was provided during fiscal 2018 due to a lapse in the contract.

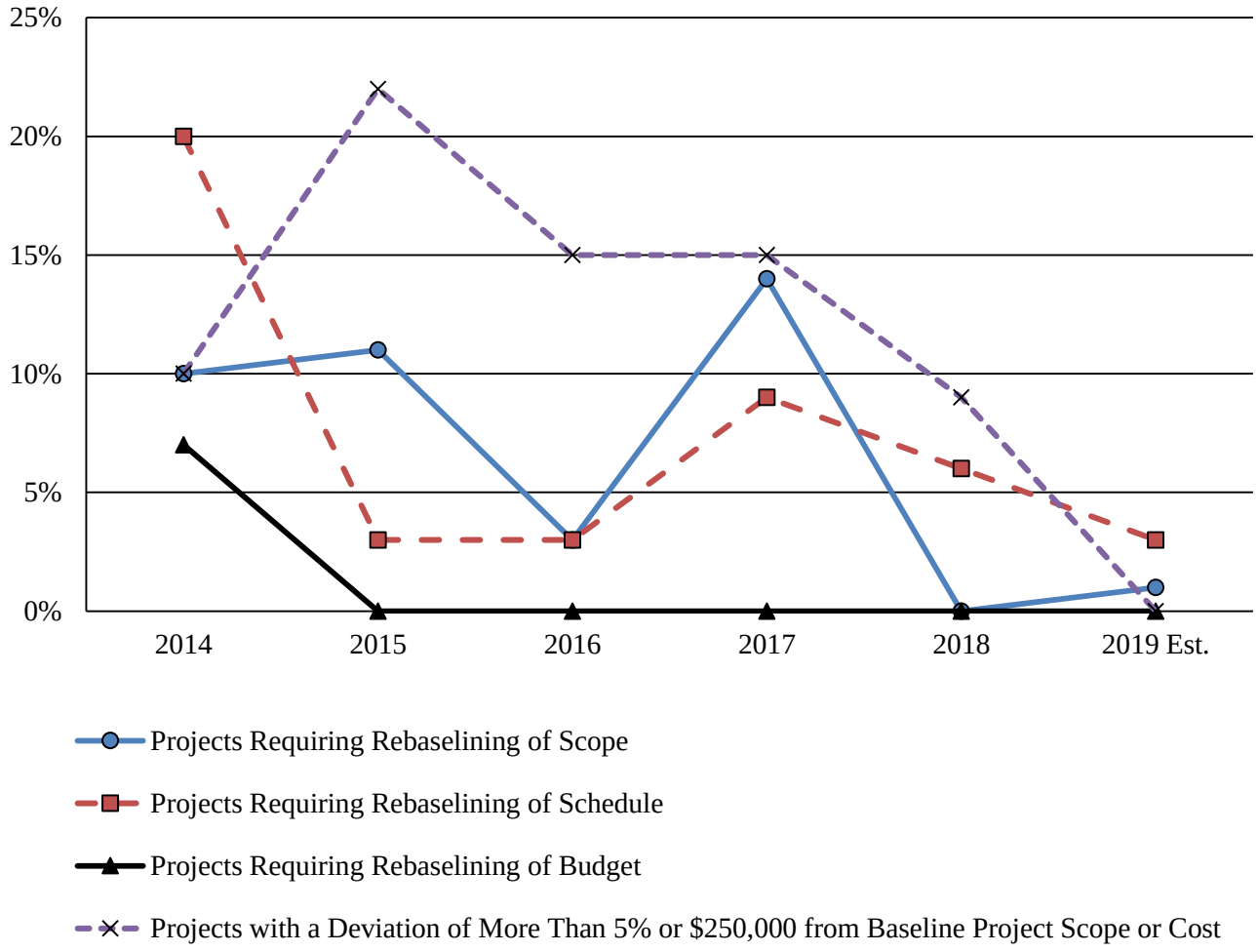
Source: Governor's Fiscal 2020 Budget Books

2. Oversight of Major IT Projects

The fiscal 2020 budget includes $75.7 million funded by the MITDPF and another $8.2 million budgeted in DoIT's major IT project development program. DoIT expects to oversee 54 projects in fiscal 2020. The department's second MFR goal is that State agency IT systems meet State IT master plan objectives of consolidation, interoperability, and standardization. The objective is that all major IT development projects executed by Executive Branch agencies are successful. The department has a series of output measures that examine the extent to which major IT projects remain on schedule, on scope, and on budget.

Exhibit 2 shows that the percentage of projects deviating from baseline costs (either 5% or $250,000) has ranged between 9% and 22% since fiscal 2014 with a general downward trend since fiscal 2015. DoIT advises that this is influenced by the timing of projects.

Exhibit 2
Share of Major Information Technology Development Projects Deviating from the Baseline
Fiscal 2014-2019 Est.



Source: Governor's Fiscal 2020 Budget Books

The major IT project development approaches that DoIT has used are Waterfall and Agile. Waterfall begins with thoroughly planning all aspects of a project. At the end of the planning period, a functional review document is prepared. This document has detailed specifications that can be used in a Request for Proposals when bidding the project. The vendor then implements the project based on these specifications. It is not unusual for a project to take two years to plan and three years to implement. There are 10 phases to the Waterfall approach.

By contrast, the Agile[1] approach does not complete planning prior to beginning to build the software. Instead, the Agile approach develops a high-level plan instead of a detailed plan of all requirements. Projects are divided into a number of tracks. These are usually implemented simultaneously. Each track is broken down so that there are a number of sequential parts to build. The parts are planned and then built over a two-week period called a sprint. This is tested, and another part is planned. After a series of sprints, there is a program increment (a usable component). This approach uses the plan-do-check-act approach, which is a repetitive four-stage model for continuous improvement in business process management that is repeated until the project is done.

Waterfall is being phased out, and all new projects are using Agile. When planning a project, a baseline is prepared for the scope, schedule, or budget. DoIT has adopted policies and procedures for developing a baseline and rebaselining. The baseline is the initial measurement that a project team manages and holds accountable. Deviation from the baseline in any of those areas is likely to result in a compensating action to get back into alignment with the baseline. For instance, if a project begins to slip from its baseline schedule, to get back on track, the project manager may need to add more resources or reduce the scope. Either of these actions could cause a baseline problem in the scope or cost areas. At that point, an effort is made to determine, according to the project management plan (prepared in Phase 3, planning), how to mitigate risks that cause scope, schedule, or cost risks and then to establish a plan of action in the event that a risk becomes an issue. If circumstances make it necessary or desirable to establish a new baseline of cost, schedule, or scope, the process by which this is achieved is referred to as rebaselining.

For an Agile project, the closest element to a baseline is the project road map. At the longest projection, considered reasonable and attainable, the road map would indicate the features planned for the next six months. In the Agile development, environment priorities are constantly evaluated and adjusted based on business needs. The adjustments could result in changes to the road map but may not constitute a rebaseline as defined in the policy.

Since the Agile project development is more fluid than the Waterfall development, it may be time to reevaluate the baseline MFR indicators. The department should consider new metrics that may be better suited for Agile. Based on the review of the articles about Agile, possible indicators include:

- ***On-time Delivery:*** This can be measured after projects are completed, and it can also be measured during development. Agile is a series of sprints that culminate with a program increment that produces usable components every six months. The State should be able to measure if program increments are delivering what was expected on time.

[1] Specifically, DoIT is using the Scaled Agile Framework.

- ***Product Quality:*** This could include customer satisfaction surveys or the technical aspects of testing conducted throughout the development process. Since Agile continuously develops and tests, data is available before the project is completed.

- ***Business Value:*** This attempts to measure how well the final product meets the intended goals at the outset of the project to evaluate if the project meets expectations.

- ***Project Visibility:*** Agile is supposed to be a collaborative process that gets various stakeholders involved with the development process. Projects should be visible in the sense that stakeholders can easily obtain information about the progress of the product. For example, the Department of Legislative Services (DLS) has asked budget analysts to set up Agile project demonstrations. Since the product is developed early, there should be ample opportunities to review it while it is being developed.

DLS recommends that the budget committees adopt committee narrative requiring DoIT to develop Agile-specific MFR indicators for the fiscal 2021 budget.

3. Online Services Provided to the Public and State Agencies

DoIT has a goal to provide efficient online services to the public and support State agencies so that the agencies can provide them. Objectives include expanding services and usage while keeping users satisfied. **Exhibit 3** provides a summary of indicators. DoIT measures the adoption rate. This is the extent to which online services are replacing paper services. In fiscal 2015, 40% of paper services had been replaced by online services. This increased to 78% in fiscal 2018. The data shows that the State is increasing the share of services performed online even as new online services are being introduced.

Exhibit 3
Indicators for Services Provided to the Public and State Agencies
Fiscal 2018-2020 Est.

	2018	2019 Est.	2020 Est.
Visits to the Maryland.gov Portal during Any Year	15,533,628	16,000,000	16,000,000
Agencies in the Executive Branch Using Department of Information Technology's Web Services	46	50	50
Percent of Time Each e.government Service Is Available	99.9%	99.0%	99.0%
Percent of Satisfied e.government Customers, as Measured by Survey Responses of Unique Visitors	96.7%	97.0%	98.0%
Adoption Rate of New Online Services After First 12 Months of Deployment	78.0%	80.0%	80.0%
Percent of Users Accessing State Websites Via Mobile Devices	40.0%	45.0%	50.0%

Source: Governor's Fiscal 2020 Budget Books

Every two years, the Center for Digital Government, the research and advisory arm of *Government Technology* magazine, evaluates state governments' ability to improve internal processes and better serve citizens. The most recent evaluation was released in calendar 2018. In the survey, Georgia, Michigan, Missouri, Ohio, and Utah received an A grade and topped the rankings. Maryland's grade was a B+. Positive comments were made about DoIT's consolidation of IT services through enterprise IT services, which "consolidate commodity services with cross-agency similarity, leading, ultimately, to an improved cybersecurity posture and streamlined operations." The One Stop Portal project was also mentioned as an opportunity to "improve the user experience." A summary of the One Stop Portal project is provided in **Appendix 4**.

4. Support Services for State Agencies

DoIT's fourth goal is to provide "efficient and high-quality IT services to State agencies." Among other things, this addresses the State's consolidated IT operations through the enterprise IT services initiative. New indicators have been adopted to measure this goal. **Exhibit 4** shows that the goals address workload (tickets submitted), satisfaction (through surveys), and effectiveness (percentage of issues resolved on first contact).

Exhibit 4
Support Services Measures
Fiscal 2017-2020 Est.

	2017	2018	2019 Est.	2020 Est.
Service Desk Tickets Submitted	75,291	68,524	68,000	60,000
Percent of Respondents to Survey Who Are Very Satisfied or Satisfied with the Service Received from the Department of Information Technology	85%	93%	93%	94%
Percent of Issues Resolved on First Contact	n/a	56%	59%	60%

Source: Governor's Fiscal 2020 Budget Books

With respect to enterprise IT services, it would be helpful to have a measure of how long it takes to resolve a problem. DoIT agrees that measures such as mean time to resolution or percent of tickets completed in 24 hours is useful information. The department has increased its tech support responsibilities substantially in recent years and is more focused on stabilizing its operations. It anticipates that such indicators will be developed for subsequent budgets. Enterprise IT services are discussed in more detail in Issue 1.

Fiscal 2019 Actions

Proposed Deficiency

As introduced, the budget includes three general fund deficiency appropriations in the infrastructure program, specifically:

- ***$5,542,000 for Fiscal 2019 Underfunding:*** As DoIT has expanded the enterprise IT services, appropriations were not expanded correspondingly. The department has also found many agencies with aging equipment that needs to be replaced. To address this, the budget provides $4,392,000 to support IT contracts and $1,150,000 to replace equipment. This deficiency has been added to the fiscal 2019 working appropriation to reflect anticipated fiscal 2019 spending. Enterprise IT services are discussed in more detail in Issue 1.

- ***$2,000,000 for Fiscal 2018 Shortfalls in Enterprise IT Service Revenues:*** Prior year spending exceeded revenues. The deficiency addresses budget shortfalls. This appropriation is not reflected in the budget data.

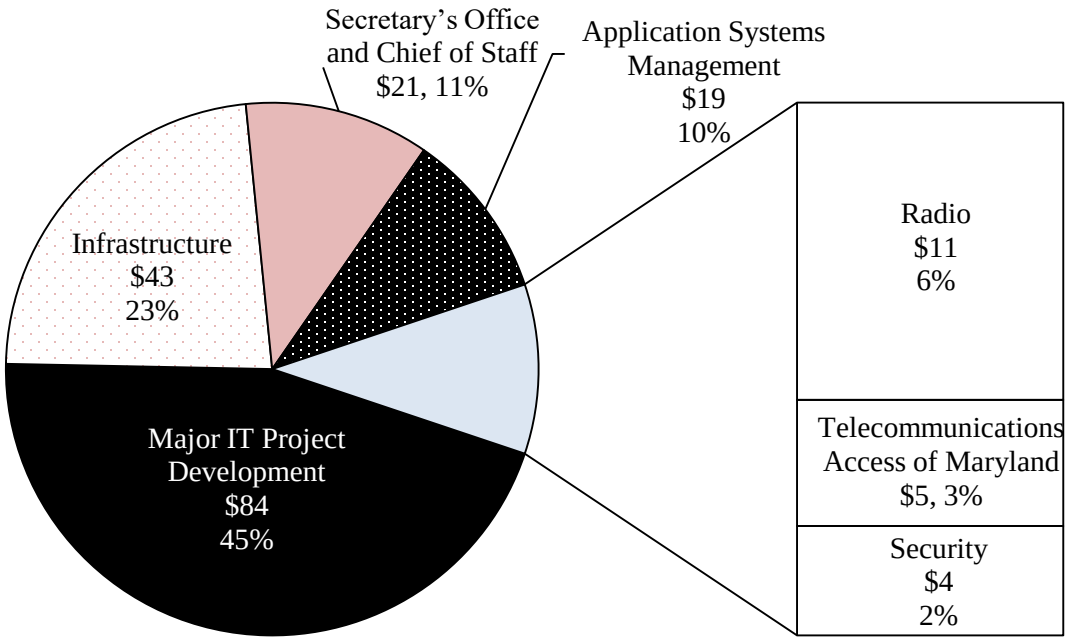
- ***$343,000 Reduction to Major IT Development Project Oversight:*** In addition to project development costs, the State appropriated funds for project oversight. The budget is reducing the appropriation to reflect unspent funds from prior appropriations. DoIT advises that these costs will be absorbed elsewhere.

Fiscal 2020 Allowance

Overview of Agency Spending

Exhibit 5 shows that major IT project development and infrastructure account for over two-thirds of DoIT's spending. Infrastructure includes enterprise IT services, which have expanded in recent years as DoIT serves more agencies.

Exhibit 5
Spending by Program
Fiscal 2020
($ in Millions)



IT: information technology

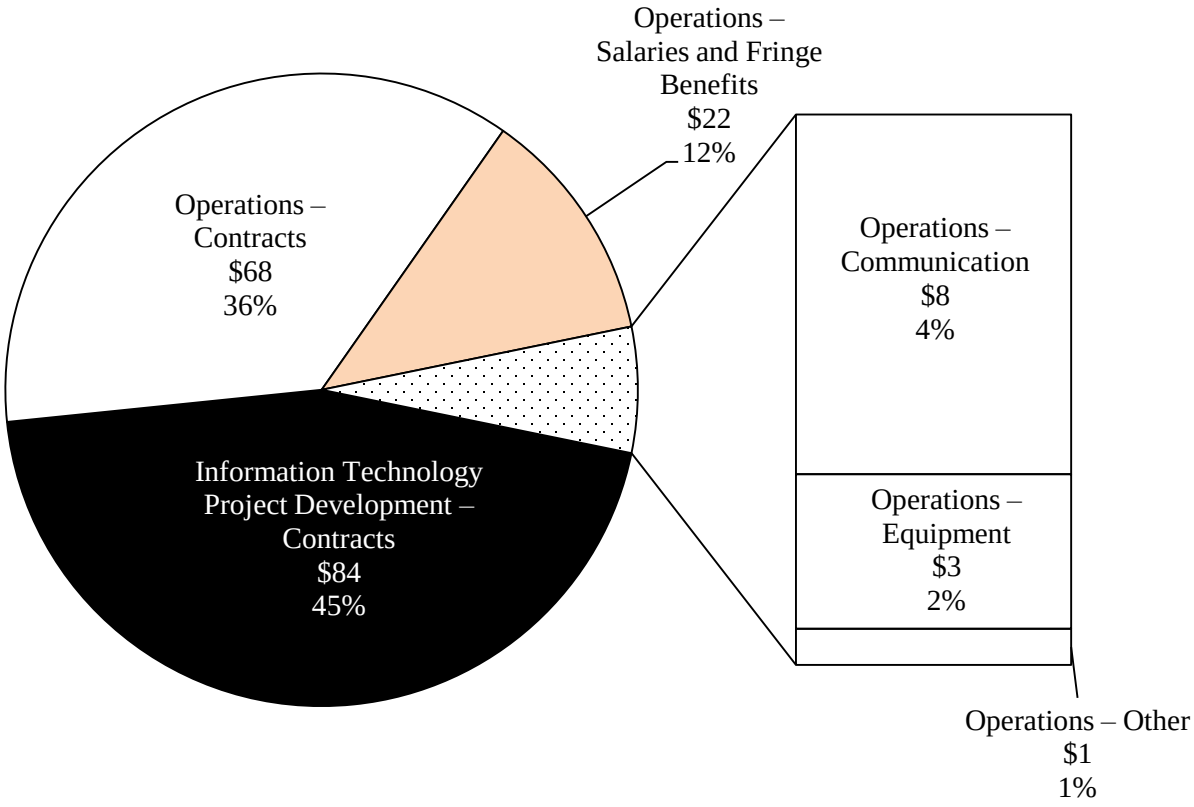
Note: Major IT Project Development includes statewide and Department of Information Technology projects.

Source: Governor's Fiscal 2020 Budget Books

The next two charts group the department by (1) major IT development and (2) operations. Major IT project development only includes funds for IT development and third-party oversight. Major IT includes projects funded by the MITDPF as well as DoIT-developed major IT projects. Operations includes administration, DoIT staff overseeing major IT, network, security, applications, radio, and TAM programs.

The department relies heavily on contracts to provide services. **Exhibit 6** shows that contracts for major IT project development and operations are 81% of spending. This is almost seven times as much as salaries and fringe benefits. Operating contracts support applications, web systems, security, and personnel needs.

Exhibit 6
Objects by Agency
Fiscal 2020
($ in Millions)

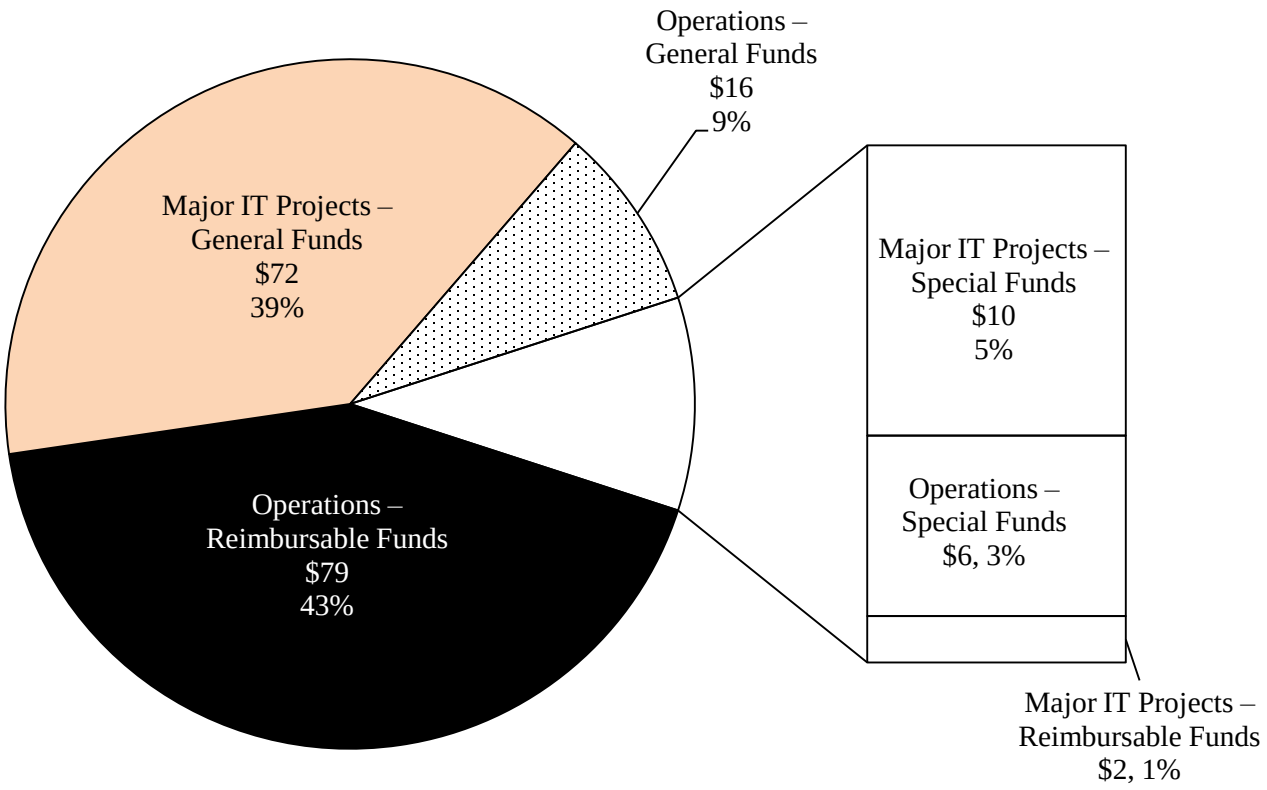


Note: Major Information Technology Project Development includes statewide and Department of Information Technology projects.

Source: Governor's Fiscal 2020 Budget Books

Exhibit 7 shows that the two largest revenue sources are reimbursable funds for operations and general funds for major IT project development, which support 82% of the department's spending.

Exhibit 7
Revenues by Agency
Fiscal 2020
($ in Millions)



IT: information technology

Note: Major IT project development includes statewide and Department of Information Technology projects.

Source: Governor's Fiscal 2020 Budget Books

Proposed Budget Change

Exhibit 8 shows that the fiscal 2020 allowance is $186.4 million, which is 3.4% more than the fiscal 2019 working appropriation. Unlike prior years, the fiscal 2019 working appropriation includes $12.1 million in reimbursable funds transferred from DoIT's MITDPF to DoIT's major IT project development program. The projects being developed by DoIT are $10.1 million for transitioning State telephones to Voice over Internet Protocol (VoIP), $1 million for the One Stop Portal project, and $1 million for developing drone detection technology at State prisons. Since these funds are appropriated in the MITDPF and transferred to DoIT's development program, the funds are shown in the budget twice. DoIT's fiscal 2019 spending totals $168.1 million after adjusting for this double count. After adjusting for reimbursable funds, fiscal 2019 is $18.3 million less than fiscal 2020.

Exhibit 8
Proposed Budget
Department of Information Technology
($ in Thousands)

How Much It Grows:	General Fund	Special Fund	Reimb. Fund	Total
Fiscal 2018 Actual	$61,779	$8,811	$66,543	$137,133
Fiscal 2019 Working Appropriation	101,695	17,252	61,227	180,174
Fiscal 2020 Allowance	88,335	16,905	81,149	186,388
Fiscal 2019-2020 Amount Change	-$13,359	-$347	$19,922	$6,215
Fiscal 2019-2020 Percent Change	-13.1%	-2.0%	32.5%	3.4%

Where It Goes:

Personnel Expenses	
Transfer 11 procurement positions to the Department of General Services	-$878
General salary increase	667
Remove one-time $500 bonus	-265
Employee and retiree health insurance	-221
Turnover adjustments	-648
Other salary and fringe benefit changes	52
Secretary's Office and Statewide Expenses	
Contract for statewide cybersecurity assessment	5,000
Department of Information Technology services allocation	4,475
Operations – Network, Security, and Applications	
Contractual services, including software, centralized service desk, remediating agency legacy systems, local area networks, and data center backup and recovery	4,043

Where It Goes:	
Enterprise IT support equipment replacement	1,343
Annapolis Data Center charges	451
One-time ServiceNow web applications platform upgrade	450
One-time SharePoint web applications platform upgrade	150
Radio Operations	
Maintenance and repair contracts	1,741
Telecommunications Access of Maryland	
Adjusting tablet program to reflect demand	-500
Major Information Technology Projects and Oversight	
Statewide major IT project development and oversight	3,238
One-time fiscal 2019 Voice over Internet Protocol transition funding	-10,095
Statewide personnel system	-2,178
Central Collection Unit system modernization	1,107
One-time fiscal 2019 drone detection major IT project funding	-1,000
One-time fiscal 2019 One Stop Portal major IT project funding	-1,000
One-time negative deficiency reducing fiscal 2019 oversight appropriations	343
Other Changes	-60
Total	**$6,215**

IT: information technology

Note: Numbers may not sum to total due to rounding.

Personnel Changes

Exhibit 9 shows that the department is transferring 11 procurement positions to DGS in fiscal 2020. This implements procurement law changes enacted during the 2017 legislative session. Positions in the Secretary's office increase as Deputy Secretary, Attorney General, and communications liaison positions are transferred into the office. A security position that supports infrastructure is moved into that program. The office is expanding its capacity to develop applications, implement innovations, and manage its data office, which includes having a chief data officer. The office is also responsible for major IT project oversight.

In fiscal 2020, the Maryland First Responders Radio System Team deploys the final region, which is the nation's capital area and Southern Maryland. The program receives an additional position to manage the workload.

Exhibit 9
Personnel Changes by Program
Fiscal 2019-2020

Program	2019	2020	Difference	Comment
Secretary	18.0	20.0	2.0	2 positions from chief of staff; 1 position from applications; 1 position to radio.
Security	6.0	5.0	-1.0	1 position to infrastructure.
Applications	59.6	58.6	-1.0	1 position to secretary.
Infrastructure	117.0	118.0	1.0	1 position from security.
Chief of Staff	23.0	10.0	-13.0	11 positions to DGS; 2 positions to secretary.
Radio	5.0	6.0	1.0	1 position from secretary.
TAM	6.0	6.0	0.0	No position changes.
Total	**234.6**	**223.6**	**-11.0**	

DGS: Department of General Services
TAM: Telecommunications Access of Maryland

Note: The data for the Secretary and Security do not match the budget books, which show 21 and 4 positions in fiscal 2020, respectively. The department advises that a planned transfer from Security to the Secretary will not occur.

Source: Governor's Fiscal 2020 Budget Books

Major IT Development Project Fund and Major IT Project Expenditures

Chapters 467 and 468 of 2002 created the MITDPF. The fund replaced the Information Technology Investment Fund, required all general funds appropriated for major IT projects to be held in the fund, and enhanced the oversight role of DoIT (then known as the Office of Information Technology) in approving projects from the fund.

MITDPF-funded Projects

Exhibit 10 shows fund transactions for the MITDPF for fiscal 2017 through the proposed budget in fiscal 2020. Fiscal 2020 includes a $71.8 million general fund appropriation, $3.9 million in special fund appropriations, and $0.3 million in interest earnings.

Exhibit 10
Major Information Technology Development Project Fund Data
Fiscal 2017-2020

	2017	2018	2019	2020
Opening Fund Balance	**$45,522,085**	**$66,104,804**	**$83,976,855**	**$5,638,702**
Revenues				
General Fund	$34,942,697	$29,412,775	$67,600,896	$71,802,399
General Fund – Deficiency Appropriation		1,000,000		
General Fund – Reversion		-500,000		
Special Fund – Carryover from Canceled Projects				3,900,000
Special Fund – Investment Interest	944,194	1,419,705	300,000	300,000
Transfers to or from Other Agencies		163,934		
Resource Sharing Revenues	211,832	1,226,870		
Project Reimbursement		3,863,980		
Cost Containment	-803,000			
Total Available Revenues	**$80,817,808**	**$102,692,068**	**$151,877,751**	**$81,641,101**
Expenditures				
Transferred to Agencies	-$14,713,004	-$18,715,213	-$146,239,049	-$81,641,101
End-of-year Fund Balance	**$66,104,804**	**$83,976,855**	**$5,638,702**	**$0**

Sources: Department of Information Technology; Department of Budget and Management; Department of Legislative Services

Exhibit 11 shows that fiscal 2019 and 2020 have unusually high amounts of general fund appropriations. The administration has made a commitment to fund more large IT projects. Examples of additional fiscal 2019 expenditures include:

- increasing project funding for the Maryland Department of Health's (MDH) Shared Human Services project funding from $6.5 million to $18.2 million;

- upgrading the State's telephone system from Time Division Multiplexing technology to VoIP. Costs for the migration are increased from $3 million to $10.5 million, including $4.5 million in special funds;

- updating the Department of Public Safety and Correctional Services' Electronic Health Records system, which receives $7.3 million; and

- adding $6.4 million for the Comptroller's tax system.

Commitments remain high in fiscal 2020, including:

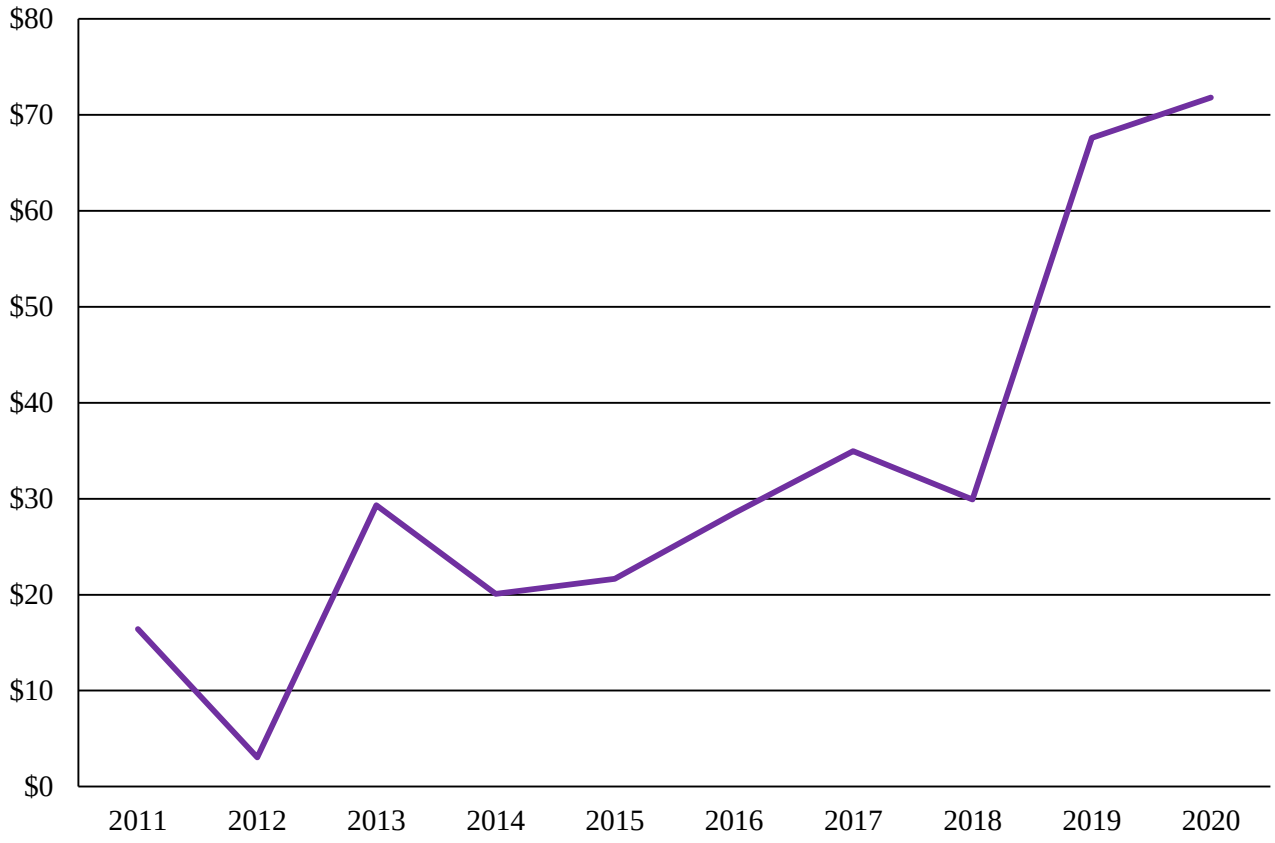
- $22 million for the Department of Human Services' (DHS) Shared Human Services project;

- $15 million for DoIT and DGS' eMaryland Marketplace (eMM) replacement;

- $8 million for the Comptroller's tax system; and

- $6.4 million for MDH's Computerized Hospital Record and Information System replacement.

Exhibit 11
General Fund Appropriations into the Major Information Technology Development Project Fund
Fiscal 2011-2020
($ in Millions)



Source: Department of Information Technology; Department of Budget and Management; Department of Legislative Services

The special fund appropriation includes $3.9 million from reallocated projects. As part of the budget process, the department regularly cancels funds if the projects are no longer needed and reappropriates that as special funds to support other projects. Generally, these projects are operational and are ending development. **Exhibit 12** lists the projects whose funding was reappropriated.

Exhibit 12
Canceled Funds Appropriated as Special Funds
Fiscal 2020
($ in Thousands)

Project	Amount
MSP – 700 Megahertz Public Safety Communication System	$1,487
DoIT Oversight Project Management	1,372
Other Oversight	374
DHS Enterprise Content Management	356
DoIT Enterprise Solutions Planning System	153
MDA Telecommunication Network Upgrade	107
MSP Computer Aided Dispatch/Records Management System	51
Total	**$3,900**

DHS: Department of Human Services
DoIT: Department of Information Technology
MDA: Maryland Department of Agriculture
MSP: Maryland State Police

Source: Governor's Fiscal 2020 Budget Books

Fiscal 2020 appropriations are detailed in **Exhibit 13**. The allowance includes funding for the following three new projects totaling $5.4 million: MDH's Integrated Electronic Vital Record and Information System ($2.4 million); MDH's Data Center Migration to Cloud ($1 million); and DBM's Statewide Grant System ($2 million).

Exhibit 13
Maryland Information Technology Development Project Fund
Fiscal 2020

Agency	Project Name	Project Description	MITDPF Funding	Comment
Ongoing Projects				
State Board of Elections (SBE)	Agency Election Management System Modernization Project	Replace legacy ballot system that was developed in 1985. Integrate with the new voting system and other systems, such as voter and candidate systems. Will link existing data from MDVOTERS and conform to the Department of Information Technology (DoIT) and SBE security policies and standards.	$262,500	The remaining work to be completed relates to import ballot data (Electionware) and import election results. This is expected to be completed in the third quarter of fiscal 2019. Concerns are that aging legacy systems are often difficult to replace (stakeholders may be slow to adapt and effective training is key). The project is critical for the 2020 election. **The Department of Legislative Services (DLS) recommends approval.**
Comptroller	Integrated Tax System	Replace current State of Maryland Tax, Computer Aided Collection System, and other systems. Objectives are to integrate systems for efficiency, to simplify taxpayer compliance, reduce wait times, and improve security, including disaster recovery.	$8,022,000	Currently, the project has contracted with a vendor to provide information technology (IT) management consulting services. A Request for Proposals (RFP) for a commercial-off-the-shelf (COTS) product was awarded in October 2018, and notice to proceed is expected this spring. Project includes risks such as organizational culture (resistance to change) and implementation (technical personnel shifts to new technologies required). **DLS recommends approval.**

Agency	Project Name	Project Description	MITDPF Funding	Comment
Maryland Department of Health (MDH)	Medicaid Management Information System Modular Replacement	Implement federally required Medicaid changes and assess current system to develop a plan for replacing a legacy system with a modular-design system.	$300,000	This supports necessary changes and planning for a legacy system replacement. An RFP is being developed for independent verification and validation for an independent assessment of the project. The RFP should be released in March 2019. High risks include resources (dedicated experts required), interdependencies with other systems, and complex implementation. **Updates to the current system are required, and the legacy system is becoming obsolete, so DLS recommends approval.**
MDH	Long Term Services and Support Tracking System	Implement a system to track long-term care services as well as develop a standardized assessment and in-home services verification tool. The system is key to the State's strategy to support home and community services for vulnerable Medicaid recipients.	$200,000	The appropriation supports oversight costs. This will be the last appropriation for the project. The State is receiving $20.2 million in federal funds in fiscal 2020. The project is generally considered low risk and, at this point, most risk is associated with integrating with the Developmental Disabilities Administration (DDA) which is technically difficult. **DLS recommends approval.**
MDH	Statewide Electronic Health Records System	Replace a legacy Computerized Hospital Record and Information System. The current system is over 25 years old. The goal is to procure a COTS product. Review of available products should begin this spring.	$6,390,476	The current system's deficiencies include the inability to process electronic records (including doctor's care instructions), inability to access the web, need for additional software to access other hospitals' systems, and outdated operating systems. High risks include interdependencies (interfaces with numerous hospitals and agencies), organizational culture (new web system to replace long-established paper-based system), and flexibility (COTS and agency will need to adapt). The schedule has been delayed about six months. The RFP is expected to be released in spring 2019. A project manager started in December 2018. **DLS recommends approval.**

Agency	Project Name	Project Description	MITDPF Funding	Comment
Department of Human Services (DHS)	Automated Financial System	Replace fiscal system that tracks payments, maintains transaction history, generates reports, and produces data for other systems. Old system uses antiquated technology and is difficult to modify. New system will interface with the Internet. The system is widely used by local offices.	$1,028,584	The project's solution has been modified so that the Agile approach will be used, which delayed vendor selection. An implementation vendor started in August 2018. Planning was competed in September 2018. The project plan is to have planning, configuration, conversion, and integration phased in with the counties. Training content and schedules are currently being completed. Highest risk is implementation since this requires a data conversion. **DLS recommends approval.**
DHS	Shared Human Services Platform	Integrate human services systems among State agencies. MDH, the Department of Juvenile Services, and the Maryland Health Benefit Exchange are collaborating with DHS. The objective is to provide a streamlined application process for customers and workers.	$22,044,655	The third phase of the eligibility and enrollment system for processing long-term care was implemented in August 2018. Risks include interdependencies, organizational culture, implementation, and the large scope of this project. Federal funds totaling $67.4 million are also budgeted in fiscal 2020. **DLS recommends approval.**
Department of Public Safety and Correctional Services (DPSCS)	Electronic Patient Health Record (EPHR) Replacement	EPHR will replace an outdated system with a comprehensive health records system that interacts with inpatient, social work, and mental health systems.	$1,500,000	Solution expected is a cloud-based COTS product. Risks include funding (fully State funded) and supportability (24/7 service). Business analysts have been procured and are evaluating bids and expect to award before the end of fiscal 2019. The project is medium risk without any high-risk factors. **DLS recommends approval.**

Agency	Project Name	Project Description	MITDPF Funding	Comment
DPSCS	Maryland Automated Fingerprinting Identification System Upgrade	Upgrade the current fingerprint identification system with a system that has fewer parts to monitor and requires fewer security upgrades.	$800,000	The current system was scheduled so that the contractor would no longer be supported as of June 30, 2019. The contractor has agreed to support it until a new system is in place. The bids are being evaluated, and an award is expected to be made this spring. DoIT did not identify any high-risk factors. **DLS recommends approval.**
Maryland State Department of Education	Maryland Direct Certification System (MDCS)	MDCS will centralize local school nutrition certification hosted by the State.	$11,250	This is considered a low-risk project using proven technologies. A vendor has been procured, and the system should be completed in the first quarter of fiscal 2020. The U.S. Department of Agriculture is providing a $213,750 grant. **DLS recommends approval.**
Department of State Police	Automated Licensing and Registration Tracking System	Automate and streamline the process by which a citizen requests approval to purchase a firearm.	$500,000	The first phase, licensing portal, has been implemented. Phase 2, the electronic form for a handgun permit application, was on hold after the State Treasurer's Office (STO) objected to the vendor. A new RFP was released in late 2018. Phase 3, for security guards, dealers, and other components, has architecture similar to other phases and should go live in 2020. **DLS recommends approval.**
STO	Financial Systems Modernization	Replace the State Treasurer's Treasury Management System	$614,078	The current system will no longer be supported after December 2018. STO was able to purchase a one-year extension to support the current system. The system supports banking interface, ledgers, payables, receivables, and other functions. High risks include interdependencies with other State agencies and the deadline. Implementation is scheduled to begin in the fourth quarter of fiscal 2019. **DLS recommends approval.**

Agency	Project Name	Project Description	MITDPF Funding	Comment
DoIT	eMaryland Marketplace (eMM): Statewide Procure-to-pay system	Replace current eMM procurement system with cloud-based, software-as-a-service system.	$15,000,000	The current contract expires on August 28, 2019. Bids have been received and reviewed. The bid is on the February 20, 2019 Board of Public Works agenda. The plan is to have a functioning system operational in July 2019 and to add management information systems in the following year. High risks are organizational culture and the August 2019 deadline. **DLS recommends approval.**
DoIT	Statewide Voice over Internet Protocol (VoIP) Migration	Migrate the State's telephone system into VoIP. This replaces older Time Division Multiplexing technology. Hardware, such as private branch exchange (PBX) equipment, and software will be replaced.	$6,518,626[1]	Most PBX equipment is at the end of manufacturer support and need to be replaced. The Maryland Department of Agriculture and DDA have been successfully migrated. The DHS migration has begun and should be completed by the end of fiscal 2020. Although generally a low-risk project, interdependencies requiring remediation for network hardware upgrades and cabling are expected. **DLS recommends approval.**
DoIT	Enterprise Solutions Planning Initiative	Institute central review and planning for and assess Statewide needs. Assist in implementing the Scaled Agile Framework development approach.	$1,400,000[2]	A new information system for managing major IT projects has been implemented. Improved data, project, and document management systems are being planned. Processes and technologies will also be standardized. **DLS recommends approval.**
DoIT	Maryland One Stop (One Portal)	Develop a portal that directs Internet searches to the appropriate online form.	$4,967,500	To date, 26 work orders that add functionality to One Portal or automate licenses have been engaged A project manager should be on board by spring 2019. The high risk is interdependencies. **DLS recommends approval.**
Office of the Attorney General	Case Management and Document Management	Replace obsolete system with new web-based system.	$556,000	This is being implemented. The civil eProsecutor should be operational in spring 2019. DoIT has not identified any high risks. **DLS recommends approval.**

Agency	Project Name	Project Description	MITDPF Funding	Comment
State Department of Assessments and Taxation (SDAT)	Strategic Enterprise Application Assessment	Replace paper-based and mainframe systems with cloud-based system.	$152,500	This project is generally medium risk. Implementation began in early fiscal 2019. Residential tax credits and the homestead tax credit program should be operational in spring 2019. SDAT is reviewing additional homeowner tax credit business rules functionality. Risks are considered low to medium. **DLS recommends approval.**
Subtotal			***$70,268,169***	
New Projects				
MDH	Integrated Electronic Vital Records Registration System	Replace legacy paper and electronic system with a system that will allow eligible professionals, hospitals, and health departments to submit data electronically. It should include improved pharmacy and medical records.	$2,434,230	An RFP should be released by spring 2019. A program manager began in December 2018. One high-risk factor is that the system supports three types of hospitals that complicate configuring the system. Other high risks are the organizational culture (hospitals see themselves as independent) and implementation (related to the difficulty in configuring the system.) **DLS recommends approval.**
MDH	Migration of the Cloud Data Center	Migrate all systems in the MDH data center into the cloud, including systems that support Medicaid, the Behavioral Health Administration, DDA, and certain boards. The cloud solution will need to comply with State and federal privacy laws and security policies.	$1,000,000	This project is being planned. MDH does not have an inventory of systems and data. Since success is dependent on the inventory, this poses a high risk. Another high risk is resource availability. The project needs a clear leader to coordinate across agencies with stakeholders, which is often challenging. **DLS recommends approval.**

Agency	Project Name	Project Description	MITDPF Funding	Comment
Department of Budget and Management	Statewide Grant System	There is no centralized system for grant tracking and reporting grants. The system will integrate existing statewide accounting and personnel systems to report on the use of grant funds.	$2,000,000	This project has been identified, but little planning has been done. Gathering requirements is scheduled to begin in September 2019. Drafting an RFP is expected to begin in November 2019, and the bid should be awarded in June 2020. **Insofar as less progress has been made with this project and bid is not scheduled to be awarded until the end of the fiscal year, DLS recommends removing these funds.**
Subtotal			***$5,434,230***	
Total Fiscal 2019 Allowance			**$75,702,399**	
Fund Sources				
General Funds			$71,802,399	
Special Funds			$3,900,000	
Total Funds			**$75,702,399**	

MITPDF: Maryland Information Technology Development Project Fund

[1] Special funds totaling $2,500,000 support the VoIP migration project.
[2] Special funds totaling $1,400,000 support the Enterprise Solutions Planning Initiative project.

Source: Department of Information Technology; Department of Budget and Management; Department of Legislative Services

Out-year Forecast

Major IT projects require substantial financial commitments and require years to complete. The department uses Agile to guide the planning and implementation process. In the Budget Highlights of the Governor's fiscal 2020 Budget Books, the department provides a list of all projects that have received appropriations. Costs are based on the current projects that have been identified by DoIT. As new projects are approved, out-year costs could increase.

Exhibit 14 shows the expected out-year costs of major IT projects. In fiscal 2021, $159.2 million in total appropriations and $102.7 million in general fund appropriations are expected.

About 64% of costs are supported by the General Fund, which is higher than in recent years. These costs include the following projects with substantial commitments in fiscal 2021:

- DHS expects costs for the Shared Human Service Platform to total $38.2 million, including $28.1 million in general funds;

- MDH's Medicaid Management Information System modernization has budgeted $27.1 million, including $4.1 million in general funds;

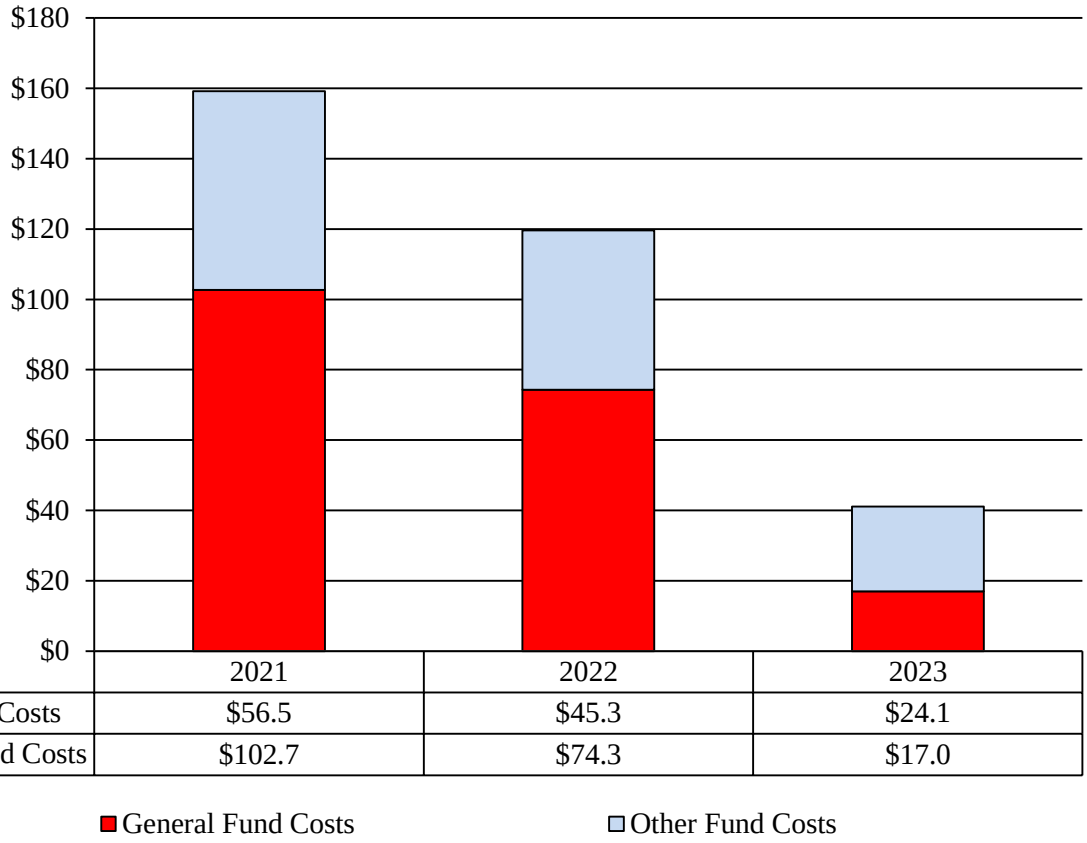
- The Comptroller's Office's Integrated Tax System expects $22 million in total costs and $17.2 million in general fund costs;

- DoIT's VoIP migration is projected to spend an additional $17.2 million in general funds;

- DoIT and DGS' eMM procurement system is expected to require $15 million in general funds; and

- MDH's Computerized Hospital Record and Information System replacement expects to spend $9.8 million in general funds.

Exhibit 14
Major Information Technology Development Project Fund
Projected Out-year Expenditures
Fiscal 2021-2023
($ in Millions)



	2021	2022	2023
Other Fund Costs	$56.5	$45.3	$24.1
General Fund Costs	$102.7	$74.3	$17.0

Source: Governor's Fiscal 2020 Budget Books

Issues

1. Enterprise IT Services

In fiscal 2016, DoIT implemented its enterprise IT services initiative. The goal of the initiative is that DoIT support day-to-day IT operations for Executive Branch agencies. The kinds of services that DoIT supports include Internet connections, application software, security, help desks, servers, and hardware. DoIT keeps staff near the agencies that it supports so that someone does not need to be dispatched every time there is a problem. The expectation is that this will reduce costs and improve services.

In order to provide agency technology support, DoIT increased its staff by transferring agency personnel into its budget. The increase in staffing from 134 at the beginning of fiscal 2016 to 235 in the fiscal 2019 working appropriation is largely attributable to the Enterprise IT services initiative.

DoIT Transitions into Fee-for-service Billing in Fiscal 2020

The billing process that was initially implemented for enterprise IT services was imperfect. A schedule of costs was not adopted so the billing process was ambiguous. Agencies were not always aware of the costs, and DoIT was not reimbursed for all costs. Recent closeout audits have identified millions of dollars of uncollectable reimbursable funds. This has led to deficiency appropriations. Recent deficiency appropriations include $1.5 million in the fiscal 2019 Budget Bill to support fiscal 2017 deficiencies, $2 million in the fiscal 2020 Budget Bill to support fiscal 2018 deficiencies, and $5.5 million in the fiscal 2020 Budget Bill to support fiscal 2019 deficiencies.

The fiscal 2020 budget fully transitions DoIT into fee-for-service (FFS) billing. DoIT and DBM have developed a schedule of costs so that agencies are aware of costs before the start of the fiscal year. These costs have been budgeted in agency budgets. The programs that provide enterprise IT services (security, application systems management, and infrastructure) no longer receive any general fund appropriations in their budget. Instead, the programs receive reimbursable funds. As **Exhibit 15** shows, general funds declined from $29.9 million to $0. This is offset by an increase in reimbursable funds from agencies.

Exhibit 15
Changes in Agency Funding
Fiscal 2019-2020
($ in Millions)

	2019	2020	Difference	% Change
Secretary's Office and Chief of Staff				
Secretary – General Funds[1]	$4.1	$16.1	$12.0	289.5%
Secretary – Reimbursable Funds	6.4	4.8	-1.6	-25.2%
Subtotal	***$10.5***	***$20.9***	***$10.3***	***98.4%***
Operations: Security, Applications Systems Management, and Infrastructure				
Operations – General Funds[2]	$29.9	$0.0	-$29.9	-100.0%
Operations – Special Funds	2.0	2.0	0.0	0.0%
Operations – Reimbursable Funds	30.0	63.8	33.9	112.9%
Subtotal	***$61.8***	***$65.8***	***$4.0***	**6.5%**
TAM – Special Funds	$5.0	$4.5	-$0.5	-10.0%
Radio – Reimbursable Funds	8.9	10.7	1.8	20.0%
Total	**$86.2**	**$101.8**	**$15.6**	**18.1%**

TAM: Telecommunications Access of Maryland

[1] Fiscal 2020 Secretary costs include $5 million for a statewide cybersecurity assessment, a $4.6 million increase for the Department of Information Technology's enterprise information technology services, and $1.6 million for budgeting the full increase in employee and retiree health costs in the Secretary's Office.
[2] Fiscal 2019 infrastructure funding includes a fiscal 2019 deficiency and excludes the prior year deficiency.

Note: Totals may not sum due to rounding.

Source: Governor's Fiscal 2020 Budget Books; Department of Information Technology

Under the new billing schedule, DoIT receives fees for:

- ***Enterprise IT Services:*** This is DoIT's full service IT operation support. DoIT provides hardware, software, storage, help desk, local and wide area network, firewall management, and cybersecurity services. **Appendix 3** lists the State agencies that receive this service.

- ***Applications Services:*** To keep costs down, statewide contracts are procured. A recent example is the State's GIS contract. In fiscal 2012, the State entered into a statewide contract with Esri for GIS. The cost of the statewide contract was equivalent to the amount paid by the Maryland Department of Planning, the Maryland Department of Transportation, and the Department of Natural Resources for individual contracts. DoIT was able to obtain GIS for all agencies at the same cost that these three agencies paid. This is not just done with GIS. Examples of other applications supported by DoIT include Amazon Web Services, FMIS, email, networkMaryland, open data, and telephones. There is a fee schedule for these services as well.

Exhibit 16 shows that the department receives $63 million in reimbursable funds for enterprise IT services in fiscal 2020. This is $34 million more than in fiscal 2019. Approximately 44% of the fees received are from agencies receiving enterprise IT services.

Exhibit 16
Fees Received for Enterprise IT services
Fiscal 2020
($ in Millions)

	Amount
Enterprise Fees for IT Operation Support	$27.6
Application Fees for Agencies Receiving Enterprise IT services	12.5
Application Fees for Agencies Not Receiving Enterprise IT services	22.7
Other[1]	0.2
Total Fees	**$63.0**

IT: information technology

[1] The State Board of Elections is using server and storage service but is not participating in enterprise IT services.

Source: Department of Information Technology

Enterprise IT Services' Costs and Benefits

The State has realized benefits by implementing the enterprise IT services initiative, specifically:

- ***Reduction in the Number of Positions:*** The 2018 *Joint Chairmen's Report* (JCR) required that the department update the budget committees on any cost savings generated by enterprise IT services. In its response, DoIT advised that 60 regular positions with an annual cost of $6 million have been abolished.

- ***Avoided Costs:*** The consolidation has also resulted in avoiding costs through software licensing, training, and application consolidation.

- ***Centralized Cybersecurity:*** Legislative audits regularly find deficiencies in the State's cybersecurity efforts. While DoIT is responsible for developing cybersecurity standards and supporting agency efforts, DoIT cannot ensure that agencies are complying if agencies are managing their IT systems. Consolidating and centralizing IT gives DoIT direct control over cybersecurity.

- ***Staff Specialization:*** Under the decentralized approach, there were a number of smaller agencies that could not support a large IT staff. Employees staffing these agencies were generalists that had to manage networks, update software and hardware, support a help desk, and manage cybersecurity, among other tasks. Centralized staffing allows the IT staff to specialize and become more effective.

- ***Consistent Hardware and Software Replacement:*** Many agencies struggled to keep up with software updates and hardware replacement schedules. Some agencies had aging equipment and software. The centralized approach allows DoIT to keep agencies on consistent replacement schedules.

While there are benefits to enterprise IT support, there are some concerns, such as:

- ***Measuring Quality:*** DoIT has an MFR goal to provide "efficient and high-quality information technology services to State agencies." New indicators have been adopted to measure this goal by measuring workload (tickets submitted), satisfaction (through surveys), and effectiveness (percentage of issues resolved on first contact). It would be helpful to have a measure of how long it takes to resolve a problem. DoIT agrees that measures such as mean time to resolution or percent of tickets completed in 24 hours is useful information. The department advises that it has increased its tech support responsibilities substantially in recent years and is more focused on stabilizing its operations. It anticipates that such indicators will be developed for subsequent budgets. **The department should be prepared to brief the committees on efforts to provide high-quality services and measure service quality.**

- ***Loss of Agency Control:*** Under the decentralized approach, agencies that have control of their IT and IT staff can quickly respond to management's priorities. Centralized control adds a layer of bureaucracy to IT that can be inefficient. For example, hardware and software is sometimes upgraded while an individual is busy instead of when individuals are on vacation. Agencies often have control over scheduling so that upgrades can be scheduled to minimize interference with operations. **The department should be prepared to brief the committees on how it ensures that agencies' priorities are managed.**

2. Cybersecurity

The State manages a substantial amount of sensitive data. By law, the State is required to protect that data from inappropriate access and uses. The State must adopt appropriate standards, policies, and procedures to protect the data that it keeps.

Cybersecurity is a major concern for the State. The media routinely reports cybersecurity breaches, and many incidents are unreported. In recent years, the State has made efforts to identify weaknesses and make improvements. These include scrutinizing practices in audits and requesting improved performance measures. Cybersecurity is also the first MFR goal for the department. The budget committees have encouraged that DoIT manage a robust cybersecurity program by requiring improved performance indicators and appropriately deploying sufficient resources.

Section 3A-303 of the State Finance and Procurement Article gives DoIT the responsibility to develop, maintain, and enforce IT policies, procedures, and standards. The department is also required to provide technical assistance, advice, and recommendations concerning IT matters, which includes cybersecurity. This issue examines DoIT's cybersecurity program policies, procedures, and standards.

The department also recognizes the importance of enhanced cybersecurity efforts. DoIT is the primary resource for managed security services and the senior authority for best practices. Key components of the department's mission are to:

- protect and effectively monitor the security of the State's information environment;
- quickly identify, analyze, and respond to security threats and incidents;
- promulgate new and better ways to improve the State's security posture as well as implement and integrate new security technologies to State enterprise data systems;
- collaborate with the federal Department of Homeland Security and the Maryland Emergency Management Agency to meet cybersecurity requirements;
- assess agency programs, identify and quantify risks; and
- develop a roadmap to protect sensitive data aligned with State agency missions.

As required, DoIT has developed cybersecurity policies for State agencies. The department's cybersecurity program is guided by CIA principles, which are commonly recommended by cybersecurity professionals. CIA stands for:

- ***Confidentiality:*** keeping unauthorized individuals from obtaining data;
- ***Integrity:*** keeping data in its original form when stored, processed, or transmitted; and

- ***Availability:*** keeping systems open so that they can be accessed when needed.

The policies are informed by standards developed by the National Institute of Standards and Technology (NIST) as the framework behind the planning, procurement, development, and implementation of State IT and telecommunications systems. DoIT's policies are available online. Areas covered include email, data security, social media, contingency planning, and configuration management. DoIT offers a substantial amount of guidance for State agencies.

Audit Findings

The Office of Legislative Audits (OLA) examines programs, policies, and procedures. Audit findings identify areas in which the State can improve its policies and procedures. This includes reviewing agencies' cybersecurity practices. Through its audits of agencies, OLA identifies findings that can address cybersecurity risks.

Exhibit 17 shows the most common findings since 2015. This can provide a guide that identifies what is at risk. The most common findings in fiscal 2018 are that personal identifiable information is not protected and lacking or inadequate System and Organizations Control[2] (SOC) 2 reports. Other common concerns relate to anti-malware software not being used and software not being upgraded.

The audits show that there are policies with which State agencies are struggling to comply. Although agencies are given policy guidance, implementation has been uneven, and there are weaknesses in the State's cybersecurity defenses.

[2] The SOC 2 report is a third-party report that evaluates an IT service provider's controls. SOC 2 reports are unique to each company. When developing a system, the service provider evaluates requirements, decides which ones are relevant to their business practices, and implements controls to fit those requirements. OLA advises that the SOC 2 reports can include an evaluation of system security, availability, processing integrity, confidentiality, and privacy trust principles. The SOC II audit is an opinion on how that organization's controls fit the requirements.

Exhibit 17
Audit Instances
Audits Released Calendar 2015-2018

Type of Audit Finding	Findings 2015	Findings 2016	Findings 2017	Findings 2018	Total Findings
Multiple Findings in 2018					
Personal Identifiable Information	8	8	10	4	30
No or Inadequate SOC Review	2	0	3	4	9
Anti-malware not Properly Installed	5	8	6	2	21
Software Not Updated	5	5	2	2	14
Inadequate Disaster Recovery Plan	1	0	1	2	4
One Finding in 2018					
Excess Administration Rights	6	4	4	1	15
Log/Monitor Security Events	7	4	3	1	15
Unnecessary User/File Access	10	2	2	1	15
Intrusion Detection Prevention System Problems	4	4	5	1	14
Excessive Network Level Access	2	6	4	1	13
No Findings in 2018 with Multiple Findings in Prior Years					
Inadequate Firewall	5	4	3	0	12
Available Software Security Not Used	0	1	5	0	6
Subtotal	***55***	***46***	***48***	***19***	***168***
Uncommon Findings	8	6	6	1	21
Total	**63**	**52**	**54**	**20**	**189**
Audits with Findings	16	14	14	10	

SOC: System and Organizations Control

Note: Uncommon findings include virtual private network access and data loss prevention problems.

Source: Office of Legislative Audits

Social Engineering

Cybersecurity weaknesses can be grouped into two categories: technical and personnel. Technical issues involve hardware or software weaknesses, such as using the Windows phone application that is no longer supported by Microsoft. Personnel weaknesses include individual errors or individuals inadvertently providing crucial information to unauthorized users.

Many data breaches are not the result of technical inadequacies but are the result of human activity. Even if a system is free of any technical vulnerabilities, that system is vulnerable to social engineering. Social engineering is the use of deception to manipulate individuals into divulging confidential or personal information that may be used for fraudulent purposes. The purpose of social engineering is to have employees give unauthorized users vital information that can be used to compromise a system.

There is widespread concern about the IT systems' vulnerability to social engineering. A 2016 survey of organizations across a range of U.S. industrial sectors revealed that 60% of security leaders say their organizations were or may have been the victim of at least one targeted social engineering attack in the past year, and 65% of those who were attacked say that employee credentials were compromised as a result of the attacks.[3] It is commonly accepted that social engineering is the most significant vulnerability to most systems.

Policies to reduce the risk of social engineering can be implemented. Specific defenses against social engineering include:

- ***Use of Technology:*** Organizations should invest in modern antivirus and anti-malware software that will help prevent and manage potential intrusions. This includes evaluating email filtering software that can identify and remove phishing attacks before they make it to an employee's inbox.

- ***Educating Staff:*** Social engineering attacks rely on either the naiveté or gullibility of staff. This includes providing them with regular security and awareness training that outlines common tactics and strategies that criminals will use.

- ***Limit Information Access:*** Since many social engineering attacks rely on using privileged information to gain further access, limiting access is important.

As recent audits and MFR data show, the State is vulnerable to social engineering. Common audit findings reveal that not all agencies are using anti-malware software (insufficient use of technology). Administration rights and excessive network level access (insufficiently limiting information) are also common findings. Surprisingly, DoIT allowed a training contract, which is one of

[3] https://www.scmagazineuk.com/60-of-enterprises-were-victims-of-social-engineering-attacks-in-2016/article/576060/.

the key elements of a cybersecurity program, to lapse. **The department should be prepared to brief the committees on its efforts to minimize the risks of social engineering.**

Personnel Are Required to Implement Cybersecurity Policies

Enforcing cybersecurity standards, policies, and procedures is the responsibility of DoIT's cybersecurity program. The program is a mix of State employees and contractors. Specifically, in fiscal 2020, the program has 5 regular employees that are supplemented by contractors. The cybersecurity program's budget includes approximately $422,000 in salaries and fringe benefits and $3.5 million in service contracts. Effective contract management is clearly a critical function for this program.

If the Maryland Cybersecurity Program is to enforce cybersecurity standards, policies, and procedures adequately, the program needs to have a stable and competent staff. Ideally, the program's employees are properly trained and have the institutional knowledge necessary to effectively keep State IT systems secure. Most of the budget is service contracts, but the program still needs State leadership. While contractors can provide valuable services, cybersecurity leadership should be provided by employees that are accountable to the State and who hold the State's interests as their objective. A common concern with contracting is that a contract's incentives may not align exactly with State objectives. In economics, this is referred to as the principal-agent problem. With respect to program management, State employees are critical to ensure that the State's interests are protected. Furthermore, State employees must have sufficient technical expertise to effectively manage complex contracts such as cybersecurity contracts.

DLS is concerned about the stability of staffing for the Maryland Cybersecurity Program. A primary concern about the program is the high vacancy rates. **Exhibit 18** shows that the program's 5 core positions were vacant 57% of the time over a 26-month period from January 2017 through February 2019. The director's position was vacant for 13 months, which is half of the period. The concern is that a program with the most positions unfilled is probably not as effective as it could be. In a January 2018 JCR response, DoIT and DBM noted that State IT salaries tend to lag behind other jurisdictions.

Exhibit 18
Cybersecurity Program Vacancies
Months Vacant from January 2017 through February 2019

Position	Months Vacant	Percent of Period Vacant
Director – Senior Program Manager IV	13	50%
Information Technology Assistant Director III	16	62%
Administrator IV	0	0%
Computer Network Specialist Manager	26	100%
Computer Network Specialist II	19	73%
Total	**74**	**57%**

Note: Over the 26 months, a computer network specialist lead position was assigned to the Security program. The department advises that the position's work is more closely aligned to the infrastructure program and will be moving to the infrastructure program in fiscal 2020. The position was vacant for four months, which is 15% of the period.

Source: Department of Budget and Management

Response to JCR's Request for a Review of Cybersecurity Practices

The 2018 JCR required that the department report to the budget committees on cybersecurity practices. DoIT responded in November 2018. Some key points from the report are:

- ***There Are Drawbacks to the State's Federated Approach to Cybersecurity:*** Specific issues raised include difficulty in securing 70 data centers instead of 1 data center, duplication of effort, lack of specialized skills, poor and inconsistent service quality, inconsistent compliance, and lack of standardization.

- ***DoIT Recommends Additional Consolidation of IT Services:*** Consolidation addresses the issue previously listed. Consolidation would make it easier for DoIT to comply with audits. DoIT also complies with NIST guidelines to ensure the highest level of cybersecurity defenses. This should also provide improved asset management and reporting.

- ***Steps Have Been Taken by DoIT to Improve Cybersecurity:*** These include establishing an Identity and Access Management Program, IT Asset Management Program, and Desktop Management Team to standardize and harden DoIT's operating system, removing local administration rights for approximately 10,000 end users, optimizing critical patch compliance (now approximately 97% compliance) and malware compliance and procedures (98%

compliance), encrypting approximately 12,000 desktops and laptops, and creating a real-time security dashboard.

- ***State Cybersecurity Salaries Are Not Competitive Making It Difficult to Hire and Keep Staff:*** The response notes that the "primary cause is that salaries offered by the State are below what other employers in the area are able to offer." This includes private industry, the federal government, and local governments.

- ***Hiring Contractors Can Be More Expensive Than Hiring Employees to Perform the Same Service:*** To compensate for low salaries, more is spent on contracting. DoIT notes that for some functions this "does result in spending two to three times more than if these functions were conducted by State employees at market rates."

Included in the fiscal 2020 budget is $5 million for a statewide cybersecurity assessment.

DLS recommends that the State cybersecurity positions be considered in the Annual Salary Review (ASR) process in the fiscal 2021 budget cycle.

3. Personnel

One of the ironies of preparing the DoIT budget analysis is that the most recurring issue is personnel. In recent years, it has been impossible to prepare an evaluation of State IT without discussing personnel concerns.

No Action Taken on Recommendations from Fiscal 2018 JCR

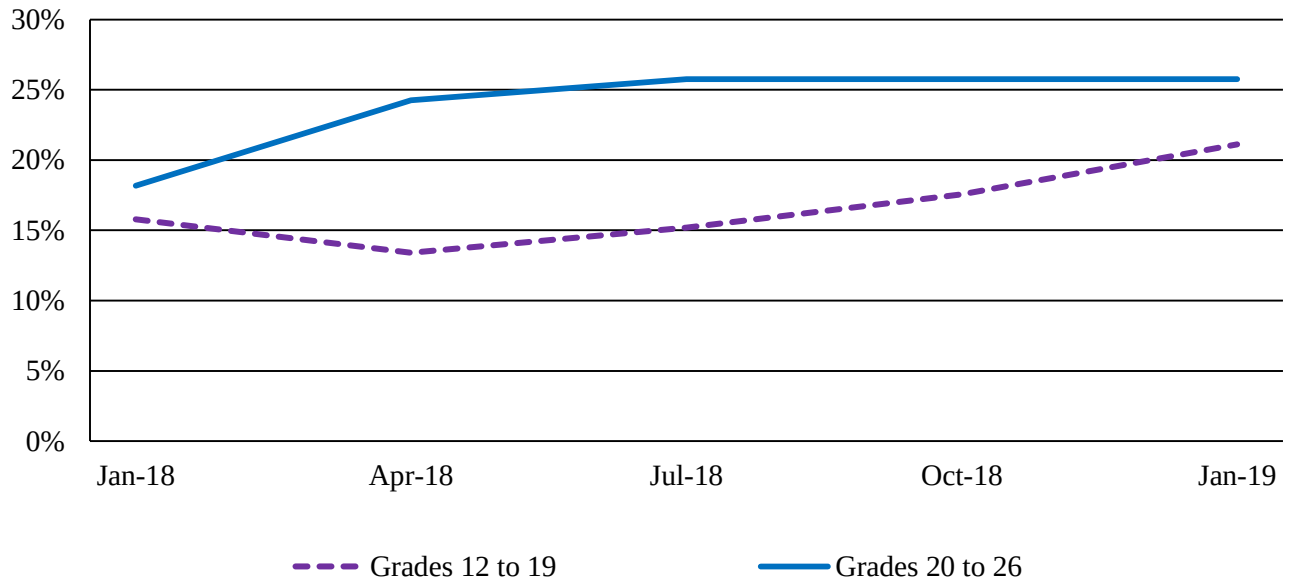
The 2018 JCR required that DoIT and DBM update the budget committees on IT personnel policies in response to concerns about high turnover rates and low salaries. The report noted that an analysis of 52 IT classifications revealed that IT vacancy rates, turnover rates, and resignation rates are higher than the statewide average. The report also noted that "salaries lag behind the survey jurisdictions an average of -6% against the states surveyed and -39% against the metro counties." The conclusion is that some IT classifications may be considered for a salary adjustment through the ASR process. "In particular, the IT Functional Analyst and IT Programmer Analyst series may benefit from an in-depth review because of the relatively high numbers of positions, the vacancy rates, and the disparities in pay." It has been over a year since the recommendation was made, but no discernable action has been taken.

Vacancy and Retention Problems Are Most Severe Among the Most Highly Skilled Positions

This analysis shows that 22.4% of DoIT positions were vacant at the beginning of January 2019. This is almost twice the statewide rate, which is 11.6%. The department has consistently had high vacancy rates. Data show that this problem is more severe among DoIT's leadership and highest skilled positions. All positions are important, and DoIT's positions tend to be more highly skilled than many other agencies. The department does not have any positions in grades 5 to 11, so 12 is the lowest grade of any DoIT employee. But leadership positions play an outsized role in an agency's success. It is therefore critical that agencies have effective leadership. This includes hiring and retaining employees.

Exhibit 19 shows that vacancy rates for grade 20 to 26 positions are consistently higher than vacancy rates for grades 12 to 19 positions. Positions in grades 20 to 26 tend to be management positions (such as senior program managers and directors) while positons in grades 12 to 19 tend to be less senior (such as network specialists and webmasters). While vacancies are unusually high in all positions, it is clear that the problem is more acute among senior positions.

Exhibit 19
Vacancy Rates by Range of Grades
January 2018 to January 2019

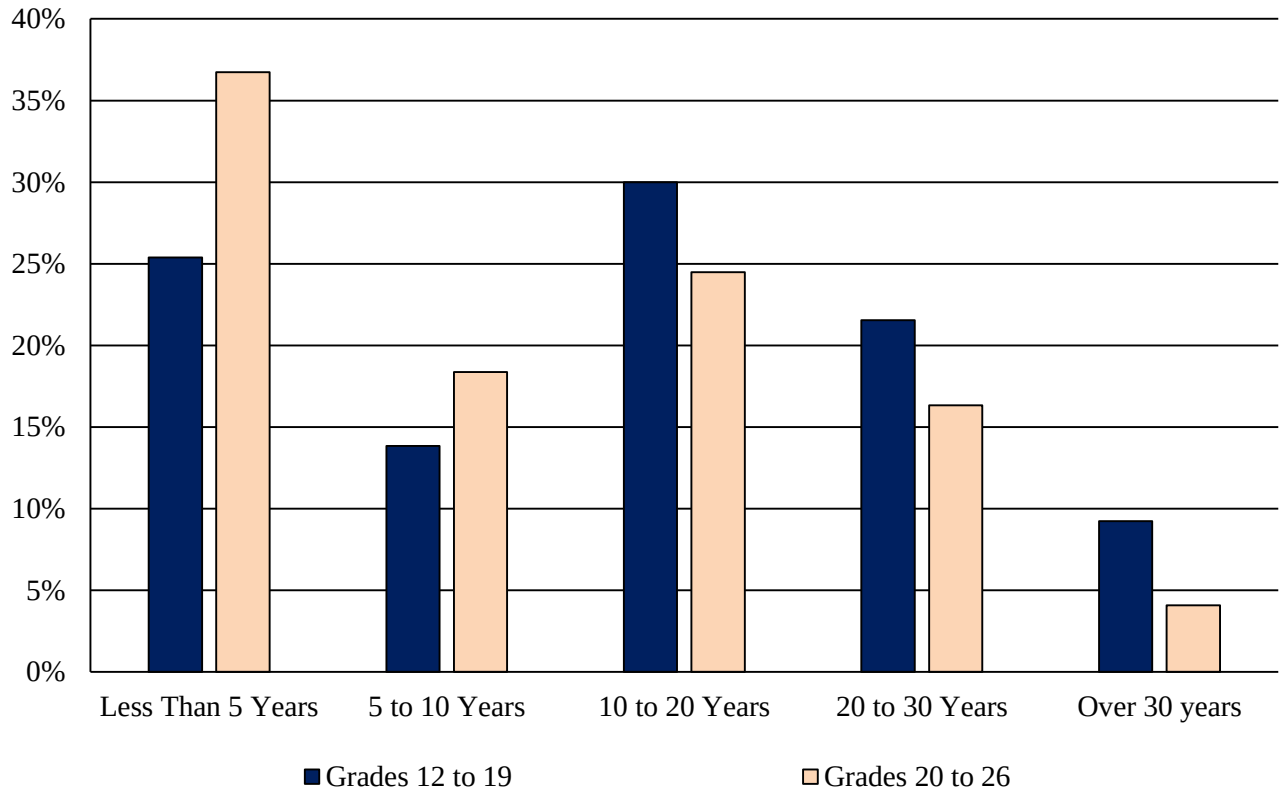


Note: Non-Executive Pay Plan positions in the Department of Information Technology range from grades 12 to 26.

Source: Department of Budget and Management

Senior positions also tend to be less tenured. **Exhibit 20** shows that 37% of senior positions have been with the department less than five years, while 25% of positions in grades 12 to 19 positions have been with the department for less than five years. DoIT not only struggles to hire staff to fill positions, but the department also struggles to keep positions for any length of time. Anecdotally, the department has had to replace the security director and the chief operating officer[4] in the last year. These are two critical positions.

Exhibit 20
Time on the Job
As of January 2019



Source: Department of Budget and Management

[4] The chief operating officer left State service in December 2018, and the security director left State service in January 2018. As this analysis is going to print, neither position has been filled.

There has been a lack of stability in this department in recent years. The department has struggled in a number of ways. Problem areas include the eMM contract, cybersecurity program, and budgeting.

In July 2017, the eMM contract expired. The State had not procured another vendor and was required to pay $3.6 million for a two-year, sole source contract with the same vendor. Additionally, the vendor received $3.6 million for work that was done to improve the system that was ultimately unusable. OLA raised concerns that the State was being overcharged by $1,516,092.[5] In fiscal 2018, the employee cybersecurity training contract lapsed. This contract is considered among the most effective cybersecurity tools. Budgeting has also suffered in recent years with deficiencies and uncollectable reimbursable funds.

Most work is performed by contractors; contracts are 81% of the budget, and State employee salaries and fringe benefits are 12%. Consequently, contract management is a key part of DoIT's operations. As such, stable effective leadership is needed to manage such a large array of contracts.

Improvements have also been made. Fully transitioning to FFS billing should provide agencies some certainty with respect to costs and reduce the need for deficiency appropriations. Adopting Agile for major IT development has allowed agencies to get deliverables sooner and get more stakeholders involved in the IT development process.

The department needs stable and effective leadership. Leadership, however, is not just the Secretary. The department has multiple programs that support different IT programs. These programs also need to have effective leaders and deputies in place to be managed effectively.

Improved fiscal and major IT development processes and effective cybersecurity is important. But even processes that follow best practices are still difficult to manage and require stable, effective leadership. **The department should be prepared to brief the budget committees on the high vacancy rate and difficulties in retaining personnel. This should include any actions being taken to recruit and retain senior level personnel.**

[5] The auditors reviewed invoices and determined that there were questionable charges such as $250,493 in charges occurring before the work order was executed, $522,071 in charges occurring after the work order was executed, $243,016 for indirect charges already billed, and $500,512 in labor charges that could not be substantiated.

Operating Budget Recommended Actions

		Amount Reduction	
1.	Delete funds for the Statewide Grant System. This is a new initiative to develop a statewide system for tracking grants. According to the Information Technology Project Request, initial functions such as developing a project charter and project management plan are not scheduled to be completed until fiscal 2020. In spite of this late start, the project has an aggressive schedule to complete a Request for Proposals by the end of calendar 2019 and have a vendor on board at the end of the fiscal year. Since procurement is late in the year and short delays can move the procurement into fiscal 2021, it is recommended that the funds be deleted and instead appropriated in fiscal 2021. If funds are needed in fiscal 2020, the department may transfer funds from other projects.	$ 2,000,000	GF

2. Adopt the following narrative:

Managing for Results Indicators for Major Information Technology Projects Developed Using Agile: For major information technology (IT) development projects, the Department of Information Technology (DoIT) has transitioned from the Waterfall method to the Agile method. Some of the key Managing for Results (MFR) performance indicators measure rebaselining, which is more suited for Waterfall and less helpful with Agile. DoIT should develop performance indicators more suited to the Agile approach. This can include indicators measuring on-time delivery, product quality, business values, and project visibility. The indicators should be included in the Governor's fiscal 2021 Budget Books.

Information Request	Author	Due Date
Agile MFR indicators	DoIT	With the fiscal 2021 Budget Books

Total General Fund Reductions	**$ 2,000,000**

Updates

1. Report on Rural Broadband

In order to be responsive to concerns about the availability of broadband in rural areas of the State, on June 28, 2017, the Governor signed Executive Order 01.01.2017.14, which created the Office of Rural Broadband in DoIT. The 2018 JCR asked that DoIT update the budget committees on the State' rural broadband efforts. The Task Force for Rural Internet, Wireless, and Cellular Service issued a report that recommended that the Office of Rural Broadband be housed in the Department of Housing and Community Development (DHCD) instead of DoIT. The recommendation was accepted, and so the office was transferred to DHCD. On October 12, 2018, DoIT submitted a response. This issue will be addressed in the DHCD capital budget.

Appendix 1
Current and Prior Year Budgets
Department of Information Technology
($ in Thousands)

	General Fund	Special Fund	Federal Fund	Reimb. Fund	Total
Fiscal 2018					
Legislative Appropriation	$59,168	$11,086	$0	$49,713	$119,967
Deficiency/Withdrawn Appropriation	4,724	-8	0	0	4,716
Cost Containment	-909	0	0	0	-909
Budget Amendments	-704	1,806	0	15,749	16,851
Reversions and Cancellations	-500	-4,073	0	0	-4,573
Actual Expenditures	**$61,779**	**$8,811**	**$0**	**$65,462**	**$136,052**
Fiscal 2019					
Legislative Appropriation	$96,258	$17,244	$0	$49,084	$162,587
Budget Amendments	135	4	0	12,095	12,235
Working Appropriation	**$96,394**	**$17,248**	**$0**	**$61,179**	**$174,822**

Note: Total fiscal 2018 reimbursable fund expenditures and total expenditures are $1.081 million less than the amounts shown in Appendices 5 and 6. The funds support an appropriation for eMarylandMarketplace. At closeout, the Comptroller's Office had budgeted these appropriations as nonbudgeted funds. The Department of Budget and Management advises that the funds should have been budgeted as reimbursable funds and is showing this as such in its budget data.

Note: The fiscal 2019 appropriation does not include deficiencies, a one-time $500 bonus, or general salary increases. Numbers may not sum to total due to rounding.

Fiscal 2018

Fiscal 2018 actual appropriations totaled $136.1 million in fiscal 2018, which is $16.1 million more than the legislative appropriation. Deficiencies and withdrawn appropriations added $4.7 million to the budget, specifically:

- $2,780,875 in additional general funds for the eMaryland Marketplace (eMM) procurement system contract;
- $1,539,886 in additional general funds for infrastructure program spending;
- $1,000,000 in additional general funds for the One Stop Portal major information technology (IT) project;
- $150,000 in additional general funds for major IT project review costs for procuring a new procurement system to replace eMM;
- $516,251 general fund reduction in infrastructure program salary expenses; and
- $230,159 in general funds and $8,148 in special funds in withheld allotments for employee and retiree health insurance costs.

Cost containment reduced fiscal 2018 spending by $0.9 million, specifically:

- $482,114 in the infrastructure program by negotiating better contract pricing and eliminating software;
- $200,000 by reducing the reliance on contractors by using regular positions;
- $145,000 in Application Systems Management by negotiating better contract pricing and eliminating software; and
- $81,951 by holding positions vacant.

Budget amendments added $16.9 million to State spending. General funds were reduced $703,727 by moving elections system major IT funding to the State Board of Elections. Special funds were increased by $1,480,678 to construct fiber optic cable for the public safety communication system project in Wicomico County and $325,405 to construct fiber optic cable for One Maryland Broadband in Allegany County. Reimbursable fund amendments added $15.7 million, specifically:

- $4,682,299 for the Central Collection Unit major IT project development;

- $3,208,526 for operations in the infrastructure program supporting State agencies;
- $2,900,000 for upgrading telephone service to Voice over Internet Protocol (VoIP);
- $1,442,480 for major IT project oversight;
- $1,000,000 for a drone detection major IT project for the Department of Public Safety and Correctional Services;
- $1,000,000 for the One Stop Portal major IT project;
- $890,263 for application system management operation supporting State agencies; and
- $445,000 for eMM major IT development oversight.

The Department of Information Technology also reverted or canceled $4.6 million in fiscal 2018, including:

- $3,000,000 in special funds for unspent VoIP transition expenses;
- $500,000 in general funds and $500,000 in special funds for major IT project development and oversight;
- $329,172 in special funds for the Telecommunications Access of Maryland program due to a decrease in customer requests; and
- $243,410 in special funds attributable to unspent funds related to the construction of fiber optic cables for the public safety communication system project in Wicomico County.

Fiscal 2019

To date, one budget amendment was processed in fiscal 2019. Employees received a 2% general salary increase on January 1, 2019, and the department received $135,358 in general funds and $4,334 in special funds to support the increase.

Appendix 2
Audit Findings

Audit Period for Last Audit:	January 2012 – June 2017
Issue Date:	August 2018
Number of Findings:	12
Number of Repeat Findings:	n/a
% of Repeat Findings:	n/a
Rating: (if applicable)	n/a

This is a performance audit examining resource sharing agreements (RSAs) between State agencies and private companies. RSAs provide for the non-exclusive, long-term use of State rights-of-way, communications infrastructure, and real estate by private companies to install, operate, and maintain communication systems. In return, the private companies provide monetary compensation, communications equipment, or services to the State.

The audit is limited to agreements for which the Department of Information Technology (DoIT) has oversight responsibility so agreements for agencies such as the University System of Maryland, the Maryland Port Administration, the Judiciary, and the legislature are excluded from this audit. The audit also excludes RSAs between the State and other governmental units, such as the federal government or local jurisdictions.

The Office of Legislative Audits has prepared a presentation for the budget committees that will be presented on the day of each committee's budget hearing.

Finding 1: DoIT had not established comprehensive policies to guide State agencies on the proper execution, control, and monitoring of RSAs.

Finding 2: DoIT and most State agencies did not maintain comprehensive records of RSAs.

Finding 3: DoIT and certain State agencies lacked comprehensive inventories of State-owned telecommunication towers and fiber optic cables for potential resource sharing.

Finding 4: State agencies did not treat certain agreements as RSAs, resulting in a lost opportunity to maximize compensation.

Finding 5: Certain State agencies did not ensure that all monetary compensation was received in accordance with the RSAs, resulting in the failure to collect approximately $6.0 million.

Finding 6: DoIT did not monitor State agencies to ensure that resource sharing monetary compensation was deposited into the Major Information Technology Development Project Fund, as required by State law.

Finding 7: DoIT did not have a strategic plan for marketing resource sharing opportunities to generate revenues and to help achieve statewide telecommunication infrastructure goals.

Finding 8: DoIT did not monitor RSAs with a nonprofit organization providing broadband networks in rural and underserved areas and has not made any attempts since 2013 to negotiate additional RSAs to further expand broadband in rural areas.

Finding 9: RSAs did not always include adequate provisions to ensure that the State received the appropriate compensation, was protected from liability, and had approved the equipment installations on State resources.

Finding 10: Eight State agencies did not obtain DoIT, Legislative Policy Committee, and the Board of Public Works approvals for 79 RSAs as required by law.

Finding 11: State agencies did not always document and obtain the required approvals when exercising renewal options on RSAs.

Finding 12: State agencies did not always maintain inventories of private telecommunication equipment on towers.

Appendix 3
Agencies Receiving Enterprise Information Technology Support Services

Financial Agency Code	Agency	Regular Position Count
C82	Office of the State Prosecutor	13
D10	Governor's Office	83
D12	Department of Disabilities	28
D13	Maryland Energy Administration	28
D15	Governor's Coordinating Offices	144
D16	Secretary of State	25
D26	Department of Aging	39
D27	Maryland Commission on Civil Rights	31
D40	Maryland Department of Planning	130
D50	Maryland Emergency Management Agency	67
D50	Military – Department Operations and Maintenance	235
D55	Department of Veterans Affairs	111
E50	State Department of Assessments and Taxation	592
F10	Department of Budget and Management	322
F50	Department of Information Technology	224
H00	Department of General Services	608
K00	Department of Natural Resources	1,348
L00	Maryland Department of Agriculture	1,417
M00	Maryland Medical Cannabis Commission	18
P00	Department of Labor, Licensing, and Regulation	1,417
R00	Maryland State Department of Education	1,426
R11	Maryland State Library Agency	30
R62	Maryland Higher Education Commission	58
T00	Department of Commerce	188
U00	Maryland Department of the Environment	1,987
V00	Department of Juvenile Services	2,445
Total		**13,011**

Note: Numbers may not sum to total due to rounding.

Source: Department of Information Technology; Department of Budget and Management

Appendix 4
Major Information Technology Projects
Department of Information Technology
eMaryland Marketplace

Project Status	Implementation.	**New/Ongoing Project:**	Ongoing.
Project Description:	The current electronic procurement contract expires on August 28, 2019. The new system is a cloud-based, software-as-a-service solution that supports sourcing, receiving, vendor registration and management, solicitation, quotes, accounts payable, and requisitioning. The system should, for the first time, provide management information data to allow the new Office of State Procurement to use data to become more efficient. This includes identifying and tracking spending in real time, ensuring that contracts are responsive or can be modified to meet changing requirements, and providing strategic enterprise reports.		
Project Business Goals:	Increase transparency and accountability of purchases, improve customer service, decrease cycle times, and reduce maverick spending and operating costs.		
Estimated Total Project Cost:	$41,595,000	**Estimated Planning Project Cost:**	n/a.
Project Start Date:	Ongoing.	**Projected Completion Date:**	Ongoing.
Schedule Status:	Approving the vendor is on the February 20, 2019 Board of Public Works (BPW) agenda. A simple cloud-based system should be implemented by July 2019. Additional components providing management information should be implemented in fiscal 2020.		
Cost Status:	According to the February 20, 2019 BPW agenda, the preferred bid's initial 10-year contract is $38.1 million with a $15.8 million initial 5-year renewal and a second $16.5 million five-year renewal.		
Scope Status:	No change.		
Project Management Oversight Status:	The Department of Information Technology is providing project oversight.		
Identifiable Risks:	Organizational culture is high risk. The system will be unlike previous systems and require training and buy-in from current staff. In recent years, the State has implemented systems with similar concerns, such as the Statewide Personnel System, in which implementation problems identified were attributable to insufficient training. Another high risk is that the project does not have a project manager.		
Additional Comments:	None.		

Fiscal Year Funding ($ in Thousands)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Balance to Complete**	**Total**
Personnel Services	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Professional and Outside Services	1,595.0	15,000.0	15,000.0	10,000.0	0.0	0.0	0.0	14,595.0
Other Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Funding	**$1,595.0**	**$15,000.0**	**$15,000.0**	**$10,000.0**	**$0.0**	**$0.0**	**$0.0**	**$41,595.0**

Statewide Voice over Internet Protocol Phone Services Transition

Project Status	Implementation.	**New/Ongoing Project:**	Ongoing.
Project Description:	Migrate the State's telephone system into Voice over Internet Protocol. This replaces older Time Division Multiplexing technology. Hardware, such as private branch exchange (PBX) equipment, and software will be replaced.		
Project Business Goals:	Enhance communications and modernize infrastructure to reduce duplication and enhance capabilities.		
Estimated Total Project Cost:	$54,871,268	**Estimated Planning Project Cost:**	n/a.
Project Start Date:	April 1, 2016.	**Projected Completion Date:**	n/a.
Schedule Status:	On schedule.		
Cost Status:	This is a multi-year project to replace telephone infrastructure. Costs are being refined, and additional appropriations may be required.		
Scope Status:	On schedule.		
Project Management Oversight Status:	The Department of Information Technology is providing project oversight.		
Identifiable Risks:	High risk is funding since this project is expensive and network hardware upgrades and configuration changes may be needed.		
Additional Comments:	Most PBX equipment is at the end of manufacturer support and need to be replaced.		

Fiscal Year Funding ($ in Thousands)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Balance to Complete**	**Total**
Personnel Services	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Professional and Outside Services	6503.5	3,498.3	7,402.3	4,984.6	1,265.1	0.0	0.0	23,653.8
Other Expenditures	8,583.1	4,617.0	9,769.2	6,578.5	1,669.7	0.0	0.0	31,217.5
Total Funding	**$15,086.6**	**$8,115.3**	**$17,171.5**	**$11,563.1**	**$2,934.8**	**$0.0**	**$0.0**	**$54,871.3**

One Stop Portal

Project Status	Implementation.	**New/Ongoing Project:**	Ongoing.
Project Description:	To provide a single website that allows the State portal's visitors to search for all State licenses and permits.		
Project Business Goals:	Identified goals include (1) going paperless; (2) creating a quality digital experience; and (3) modernizing the legacy application through Agile methods by releasing minimum viable product early, testing with users, and adding features.		
Estimated Total Project Cost:	$6,967,500	**Estimated Planning Project Cost:**	n/a.
Project Start Date:	April 1, 2018.	**Projected Completion Date:**	June 30, 2019.
Schedule Status:	No change in schedule.		
Cost Status:	Cost estimates have increased by $967,500 since the initial funds were appropriated in the fiscal 2019 budget.		
Scope Status:	Provide one-stop site for over 1,000 State forms across State government.		
Project Management Oversight Status:	The Department of Information Technology is providing project oversight.		
Identifiable Risks:	High-risk factors are interdependencies and costs.		
Additional Comments:	None.		

Fiscal Year Funding ($ in Thousands)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Balance to Complete**	**Total**
Personnel Services	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Professional and Outside Services	2.000	4.968	0.0	0.0	0.0	0.0	0.0	6.968
Other Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Funding	**$2.000**	**$4.968**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$6.968**

Enterprise Solutions Planning Initiative

Project Status	Planning.	**New/Ongoing Project:**	Ongoing.
Project Description:	Provide integrated planning support to information technology projects received to combine planning activities that have traditionally occurred in silos.		
Project Business Goals:	(1) Centralize planning; (2) ensure that solutions are scaled at an appropriate level and apply enterprise model to reduce duplicative systems; (3) support Agile approach to system development; (4) influence common modeling, designing, and coding practices for systems architecture; and (5) ensure that priority needs/solutions are addressed timely and funded appropriately.		
Estimated Total Project Cost:	$11,882,480	**Estimated Planning Project Cost:**	n/a.
Project Start Date:	Ongoing.	**Projected Completion Date:**	Ongoing.
Schedule Status:	n/a.		
Cost Status:	Annual costs have increased by $880,000, when compared to the initial estimate. This is a new initiative, and the department's initial estimate was too low.		
Scope Status:	No change.		
Project Management Oversight Status:	n/a.		
Identifiable Risks:	High risk is agency interdependencies. This project interfaces across agency systems and platforms to commonalities.		
Additional Comments:	None.		

Fiscal Year Funding ($ in Thousands)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Balance to Complete**	**Total**
Personnel Services	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Professional and Outside Services	3,642.5	1,400.0	2,280.0	2,280.0	2,280.0	0.0	0.0	11,882.5
Other Expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Funding	**$3,642.5**	**$1,400.0**	**$2,280.0**	**$2,280.0**	**$2,280.0**	**$0.0**	**$0.0**	**$11,882.5**

Appendix 5
Object/Fund Difference Report
Department of Information Technology

Object/Fund	FY 18 Actual	FY 19 Working Appropriation	FY 20 Allowance	FY 19 - FY 20 Amount Change	Percent Change
Positions					
01 Regular	234.60	234.60	223.60	-11.00	-4.7%
02 Contractual	2.00	2.00	1.10	-0.90	-45.0%
Total Positions	**236.60**	**236.60**	**224.70**	**-11.90**	**-5.0%**
Objects					
01 Salaries and Wages	$ 22,200,155	$ 24,224,714	$ 22,390,581	-$ 1,834,133	-7.6%
02 Technical and Special Fees	81,054	129,423	114,737	-14,686	-11.3%
03 Communication	8,090,582	8,555,615	7,788,244	-767,371	-9.0%
04 Travel	82,083	84,145	83,460	-685	-0.8%
06 Fuel and Utilities	67,509	45,500	61,500	16,000	35.2%
07 Motor Vehicles	6,897	7,420	7,420	0	0%
08 Contractual Services	104,325,793	138,933,889	151,379,141	12,445,252	9.0%
09 Supplies and Materials	103,447	80,250	82,750	2,500	3.1%
10 Equipment – Replacement	1,834,725	1,919,874	2,924,859	1,004,985	52.3%
11 Equipment – Additional	16,241	430,000	430,000	0	0%
13 Fixed Charges	324,530	410,746	431,968	21,222	5.2%
Total Objects	**$ 137,133,016**	**$ 174,821,576**	**$ 185,694,660**	**$ 10,873,084**	**6.2%**
Funds					
01 General Fund	$ 61,779,449	$ 96,393,798	$ 87,884,950	-$ 8,508,848	-8.8%
03 Special Fund	8,811,036	17,248,337	16,889,006	-359,331	-2.1%
09 Reimbursable Fund	66,542,531	61,179,441	80,920,704	19,741,263	32.3%
Total Funds	**$ 137,133,016**	**$ 174,821,576**	**$ 185,694,660**	**$ 10,873,084**	**6.2%**

Note: The fiscal 2019 appropriation does not include deficiencies, a one-time $500 bonus, or general salary increases. The fiscal 2020 allowance does not include general salary increases.

Appendix 6
Fiscal Summary
Department of Information Technology

Program/Unit	FY 18 Actual	FY 19 Wrk Approp	FY 20 Allowance	Change	FY 19 - FY 20 % Change
0A Major Information Technology Development Project Fund	$ 29,209,048	$ 72,464,845	$ 75,702,399	$ 3,237,554	4.5%
0B Office of Information Technology	107,923,968	102,356,731	109,992,261	7,635,530	7.5%
Total Expenditures	**$ 137,133,016**	**$ 174,821,576**	**$ 185,694,660**	**$ 10,873,084**	**6.2%**
General Fund	$ 61,779,449	$ 96,393,798	$ 87,884,950	-$ 8,508,848	-8.8%
Special Fund	8,811,036	17,248,337	16,889,006	-359,331	-2.1%
Total Appropriations	**$ 70,590,485**	**$ 113,642,135**	**$ 104,773,956**	**-$ 8,868,179**	**-7.8%**
Reimbursable Fund	$ 66,542,531	$ 61,179,441	$ 80,920,704	$ 19,741,263	32.3%
Total Funds	**$ 137,133,016**	**$ 174,821,576**	**$ 185,694,660**	**$ 10,873,084**	**6.2%**

Note: The fiscal 2019 appropriation does not include deficiencies, a one-time $500 bonus, or general salary increases. The fiscal 2020 allowance does not include general salary increases.