

**INTERNAL AUDIT REPORT**

**2021**

# **Capability Assessment SCDOT IT Governance**



SOUTH CAROLINA OFFICE OF THE STATE AUDITOR

**INTERNAL AUDIT  
SERVICES**

**April 16, 2021**

# 1 EXECUTIVE SUMMARY

## Capability Assessment – SCDOT IT Governance

### OBJECTIVE:

SCDOT’s objective is to establish a formal IT Governance structure to ensure technology leadership roles, structures, and processes are appropriately engaged in a dependable and strategic decision-making process that aligns with achieving business objectives effectively and efficiently.

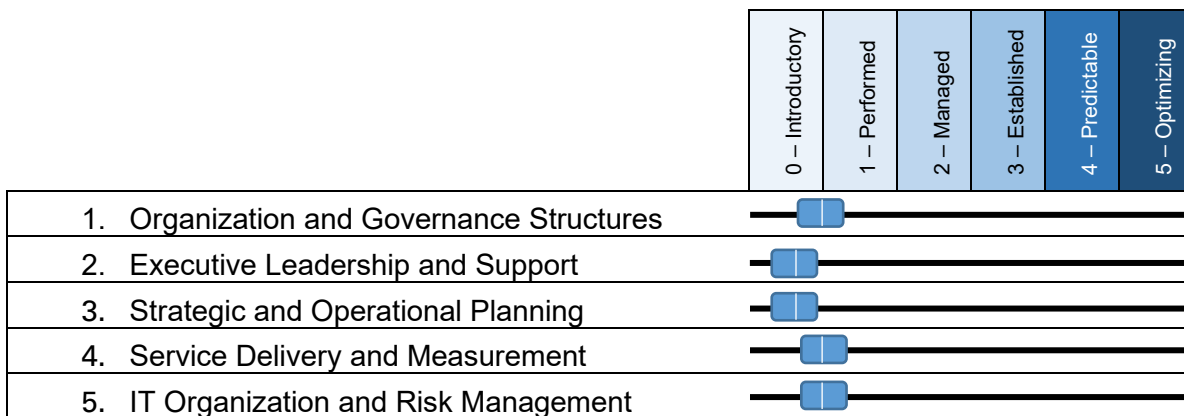
Our engagement objective was to help SCDOT Management understand the current IT governance environment in order for Management to develop a roadmap for maturing its IT governance.

### BACKGROUND:

- Over the last few decades, SCDOT’s IT support and solutions have been built or installed in a reactive ad hoc way to meet business needs.
- This has created a vast agglomerate of information systems, databases, middleware, and shadow IT (persons or units that create or install their own IT solutions without going through established channels) that is challenging to manage and support as a collective resource.
- In the last couple of years, Management has taken decisive steps to improve the overall manner in which IT service decisions are made.
- To optimize the collection, storage, and delivery of data, SCDOT has created the Technology Advisory Steering Committee (TASC) that provides oversight and approval of the Agency’s IT systems in alignment with the Agency’s strategic goals.
- The TASC is intended to help centralize authority and oversight over enterprise IT, a key component to maturing the Agency’s IT governance.

### CONCLUSION:

SCDOT’s goal should be to achieve at least a “Performed” capability level, which is considered mature enough to achieve effective IT governance; maturing beyond that level enhances consistent performance, efficient organization of assets, the ability to measure performance, and optimization through continuous improvement. In our opinion, based on the assessment performed, SCDOT’s IT governance capability in the following five governance areas is assessed as follows:



Our assessment results and Management’s roadmap for prioritizing IT governance capability enhancements are included in Section 5.

# C CONTENTS

---

	<u>Page</u>
<b>1</b> Executive Summary	1
<b>2</b> Foreword	3
<b>3</b> Internal Auditor's Report	4
<b>4</b> Engagement Overview	
<b>4.1</b> Background	5
<b>4.2</b> Objectives	5
<b>4.3</b> Scope	6
<b>4.4</b> Conclusion	6
<b>5</b> Assessment Results	
<b>5.1</b> Organization and Governance Structures	8
<b>5.2</b> Executive/Senior Leadership and Support	11
<b>5.3</b> Strategic and Operational Planning	13
<b>5.4</b> Service Delivery and Measurement	15
<b>5.5</b> IT Organization and Risk Management	16

## 2 FOREWORD

---

### **AUTHORIZATION**

The South Carolina Office of the State Auditor established the Internal Audit Services division (IAS) pursuant to SC Code Section 57-1-360 as revised by Act 275 of the 2016 legislative session. IAS is an independent, objective assurance and consulting function designed to add value and improve the operations of the South Carolina Department of Transportation (SCDOT). IAS helps SCDOT to achieve its objectives by bringing a systematic, disciplined approach to evaluating the effectiveness of risk management, internal control, and governance processes and by advising on best practices.

### **STATEMENT OF INDEPENDENCE**

To ensure independence, IAS reports administratively and functionally to the State Auditor while working collaboratively with SCDOT leadership in developing an audit plan that appropriately aligns with SCDOT's mission and business objectives and reflects business risks and other priorities.

### **REPORT DISTRIBUTION**

This report is intended for the information and use of the SCDOT Commission, SCDOT leadership, the Chairman of the Senate Transportation Committee, the Chairman of the Senate Finance Committee, the Chairman of the House of Representatives Education and Public Works Committee, and the Chairman of the House of Representatives Ways and Means Committee. However, this report is a matter of public record and its distribution is not limited.

### **PERFORMED BY**

Todd Wilkins, CEH, ECIH, CISA, CRISC, CPM  
Senior Manager  
Specializing in Information Technology

### **REVIEWED BY**

Wayne Sams, CPA  
Director of Internal Audit Services

### **ACKNOWLEDGEMENT**

We wish to thank members of management and staff in the Division of IT Services and business units across the Agency for their cooperation and sharing their knowledge and experience.



## 3 INTERNAL AUDITOR'S REPORT

April 16, 2021

Ms. Christy A. Hall, Secretary of Transportation  
and  
Members of the Commission  
South Carolina Department of Transportation  
Columbia, South Carolina

We have completed a capability assessment of the South Carolina Department of Transportation's (SCDOT) IT Governance. The objective of this engagement was to help SCDOT Management understand the current IT governance environment in order for Management to develop a roadmap for maturing its IT governance.

We planned and performed the engagement with due professional care in order to obtain sufficient, appropriate evidence to provide a reasonable basis for our conclusions. Our assessment results are included in Section 5 of this report.

George L. Kennedy, III, CPA  
State Auditor

# 4 ENGAGEMENT OVERVIEW

---

## 4.1 BACKGROUND

Over the last few decades, SCDOT's IT support and solutions have been built or installed in a reactive ad hoc way to meet business needs. This has created a vast agglomerate of information systems, databases, middleware, and shadow IT (persons or units that create or install their own IT solutions without going through established channels). This agglomerate is challenging to manage and support as a collective resource. In the last couple of years, Management has taken decisive steps to improve the overall manner in which IT service decisions are made. With technology solutions being so pervasive and expensive, it made economic sense to ensure the decision-making process was planned, routine, and methodical. The Agency's current technology environment consists of an enterprise technology function, but there are also splinters of this function operating at the business unit level. These splinters or silos of the technology function often provide business unit specific solutions without concern for the overarching enterprise IT environment or strategy. As a result, these solutions may perform well for a particular business unit but cannot be easily leveraged by other business units. This has created an environment in which the Agency is data rich but information poor. To optimize the collection, storage, and delivery of data, SCDOT has created the Technology Advisory Steering Committee (TASC) that provides oversight and approval of the Agency's IT systems in alignment with the Agency's strategic goals. The TASC has created a committee charter and approved policies and procedures that will help centralize authority and oversight over enterprise IT, a key component to maturing the Agency's IT governance.

## 4.2 OBJECTIVES

Management's objective is to establish a formal IT Governance structure to ensure the leadership roles, structures, and processes are appropriately engaged in a dependable and strategic technological decision-making process that aligns with achieving business objectives effectively and efficiently. The general goal of IT Governance is to ensure the business investment in technology-generated value-add while mitigating risks associated with the technology investment. With this in mind, the leadership roles, structures, and processes that support IT Governance are to guide the decision-making processes in a repeatable, structured methodology.

Our engagement objective was to help SCDOT Management understand the current IT governance environment in order for Management to develop a roadmap for maturing its IT governance.

### 4.3 SCOPE

We assessed SCDOT's IT Governance capability using the Institute of Internal Auditors' best practice guide "Auditing IT Governance." That guide identifies five areas to evaluate an organization's governance capability:

1. Organization and Governance Structures
2. Executive Leadership and Support
3. Strategic and Operational Planning
4. Service Delivery and Measurement
5. IT Organization and Risk Management

We have assessed SCDOT's IT governance maturity (see assessment results in Section 5) using the following capability levels:

- 0 **Introductory** — The process is at a beginning stage and will inherently lack in some capability or be incomplete to address the governance and management purpose.
- 1 **Performed** — The process more or less achieves its purpose through the use of a quasi-defined set of activities. The process could be described intuitive— meaning it is not very organized or documented.
- 2 **Managed** — The process achieves its purpose through the use of a basic, yet complete, set of activities that can be characterized as consistently performed.
- 3 **Established** — The process achieves its purpose in a much more organized way using organizational assets. Processes typically are well defined.
- 4 **Predictable** — The process achieves its purpose, is well defined and its performance is quantitatively measured.
- 5 **Optimizing** — The process achieves its purpose, is well defined, its performance is measured to improve performance and continuous improvement is pursued.

### 4.4 CONCLUSION

Taking a strategic approach to implementing information technology (IT) governance helps organizations address the speed of technological advancements, IT services proliferation, and the greater dependency on IT to meet organizational objectives. Effective IT governance contributes to control efficiency and effectiveness, and allows an organization's investment in IT to realize both financial and nonfinancial benefits. Often when controls are poorly designed or deficient, a root cause is weak or ineffective IT governance. Organizations that achieve at least a "Performed" capability level are considered mature enough to achieve effective IT governance; maturing beyond that level enhances consistent performance, efficient organization of assets, the ability to measure performance, and optimization through continuous improvement. IT governance in practice typically is continuously maturing as technology is a rapidly changing field. The goal should be to attain at least a "Performed" capability level and to prioritize resources toward the highest risk aspects of governance.

In our opinion, based on the assessment performed, SCDOT’s IT governance capability in each of the five governance areas is assessed as follows:

	0 – Introductory	1 – Performed	2 – Managed	3 – Established	4 – Predictable	5 – Optimizing
1. Organization and Governance Structures						
2. Executive Leadership and Support						
3. Strategic and Operational Planning						
4. Service Delivery and Measurement						
5. IT Organization and Risk Management						

Our assessment results and Management’s roadmap for prioritizing IT governance capability enhancements are included in Section 5.



# 5 ASSESSMENT RESULTS

---

## 5.1 Organization and Governance Structures

### **Structures**

The Agency formally established the Technology Advisory and Steering Committee (TASC) through a Department Directive (DD52) dated January 14, 2020. The stated primary objective of the TASC was to set vision, mission, and strategic direction of IT in alignment with the Agency's vision, mission, and strategy. We consider this committee to be in its infancy and to have the potential to become the guiding force behind the Agency's technical innovation and durability. The TASC membership is compiled of executive and senior leadership as voting members (decision makers) and senior IT leadership as advisors providing IT project proposals and IT project change proposals.

### **Empowerment**

We believe the TASC is appropriately empowered through the Department Directive with full support of the Secretary. However, the TASC's purpose and authority was not clearly communicated and accepted throughout the ranks of the Agency, which has led to the potential for technical decisions not being vetted through the TASC. These non-vetted decisions could run contrary to the vision, mission, and strategy set by TASC and executive leadership potentially raising IT risk above acceptable levels. Executive leadership acknowledged "stovepipes" exist and are currently formulating ideas to identify and address these areas of restricted information flows.

### **Accountability**

We do not see clear evidence for how the TASC was held accountable for decisions other than the general oversight provided by the Secretary. The Department Directive does not identify checkpoints or pathways for evaluating the TASC's performance and effectiveness. Furthermore, it is not clear to us how decisions that circumvent the TASC's authority should be addressed.

### **A Path Forward**

For IT governance to be effective, the Agency should have multiple organizational structures characterized by heterogeneous membership from business and IT at differing levels within the organization. The TASC subscribes to this practice. We encourage the TASC to fully develop this practice as it matures and finds the need to create additional organizational structures to support the IT Governance activity.

The first such structures the TASC should consider establishing are an IT Architecture Group and a Technology Council. These two structures should function in tandem working to define the plans to achieve the IT vision, mission, and strategy established by the TASC. The Technology Council should consist of select IT Senior Leadership Team members and Business Unit Managers. The Council should be charged to:

1. Determine how efficient and effective the current technology environment meets business needs.
2. Identify any needed technology solutions to meet current or future business needs.
3. Determine the risk for the current and proposed technology solutions.

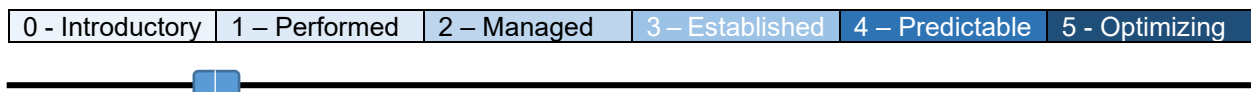
The IT Architecture Group should primarily be the IT senior leadership team given the following objectives:

1. Define/document the current technical architecture (enterprise, infrastructure, and software).
2. Provide technical plans for implementing needed technology assets to meet technology solutions.
3. Address changing IT procedures and standards to keep pace with planned technology innovation.

These two groups should be held accountable by TASC in that TASC should review and approve proposals submitted by them.

A third group, Data Protection and Standardization Team, should also be considered. This group would consist of the Chief Information Officer (CIO), the Chief Information Security Officer (CISO), the Enterprise Risk Officer (ERO), the Director of Internal Audit Services, and the data/business unit owners. The purpose of the Data Protection and Standardization Team is to evaluate the risks and strategies to protect the Agency’s data assets. Additionally, the Agency has an ongoing project to establish data governance; roles developed from this project should be considered for input to the Team.

### Capability Measure



We assess “Organization and Governance Structures” to be borderline between the “Introductory” and “Performed” capability levels. TASC will achieve its defined purpose (“Performed”) as the TASC becomes accepted and “stovepipes” come under the TASC’s oversight. Considering the TASC was established a year ago, it made great strides during a pandemic and appears to be headed in a good direction to establish itself.

**Management's Roadmap**

While the TASC was formally created in DD52 in January 2020, the unit had begun operations prior to that time through informal agreement of the Deputy Secretaries. This was the first attempt at agency-wide IT governance in a number of years. The evolution of TASC has largely been positive and has been accepted by all three major operating units. Management recognizes that the structure and the processes underlying that structure are new, evolving, and still need to be refined.

Management intends to undertake an IT strategic planning process in Fiscal Year (FY) 21-22. This will be done in line with the update of SCDOT's agency strategic plan to understand the strengths, weakness, opportunities, and threats that impact IT's operating environment. It is anticipated improving architecture governance, standardizing data, and evaluating emerging technologies will be items to consider. Management will work in tandem with the TASC to develop the strategic plan and better align IT to Agency needs. From that strategic plan process, additional structures for the TASC will be considered and implemented.

**Roadmap Owner and Division**

Justin Powell, Deputy Secretary for Finance and Administration  
George Kinard, Chief Information Officer

**Priority**

Medium

## 5.2 Executive/Senior Leadership and Support

### Support

The Agency's former CIO retired July 2020 and the new CIO officially took charge October 2020. We recognized during the review that the tone at the top (culture and atmosphere) under the new CIO is different. We noted a marked difference between each leader's approaches for working with the business units. In the past, the business side struggled to view IT as a partner because its perception of IT was to enforce security features over business functionality. Now, the new CIO took steps to meet with business unit managers for building relationships and trust equity. We also discovered that IT played a critical role for the ongoing achievement of the Transportation Asset Management Plan (TAMP). The business was hopeful for IT to become a more attentive partner in achieving TAMP goals. We noted that both IT and the business managers need to learn how to listen and understand each other's priorities and goals.

### Strategy

We believe a collaborative development of a strategic plan is in its infancy form. The new CIO took proactive steps to start a dialog in an informal manner with some of the business unit managers.

### Funding

At the time of the review, we believe that current IT project objectives are not impeded by funding challenges and leadership shows support of IT through proper funding of technology projects and activities. The Agency has a centralized enterprise technology function; however, there are some aspects of this function that are transacted in a decentralized manner at the business unit level with little or no oversight by IT or the TASC. This is evidenced by the use of certain federal funding streams by the decentralized units to pursue their internal IT initiatives. This practice gives rise to an unofficial decentralized IT function and has the potential to raise IT risk for multiple factors such as cost, duplicity, and support. Of these, the most significant risk is an inability to identify the true cost of IT across the agency.

### A Path Forward

The Agency should leverage our office or other third party who specializes in collaborative strategic plans; this may prove beneficial for the Agency to mature in its capability. The goal for using a third party was to develop synergy between the second and third tier managers during this process to foster alignment and partnerships. IT management, in the meantime, should become more intentional to develop a documented strategic plan aligned with Agency vision and the Transportation Asset Management Plan (TAMP).

### Capability Measure

0 - Introductory	1 – Performed	2 – Managed	3 – Established	4 – Predictable	5 - Optimizing
------------------	---------------	-------------	-----------------	-----------------	----------------



We assess “Executive/Senior Leadership and Support” to be in the “Introductory” capability level meaning there is some evidence for achieving this purpose. We determined that Executive

Management is supportive of the new CIO and hopeful in his ability to change the current perception of IT by becoming a more attentive partner with the business units.

**Management’s Roadmap**

As noted in Management’s Roadmap on page 10, Management intends to develop a strategic plan in FY 21-22 in concert with the Agency’s strategic plan update. This will provide the framework for better aligning IT and the Agency’s resources to meet customer needs. TASC will be relied upon to give its input and approval to the final document.

The budget process was reformed in FY 22 to encourage line managers to participate in the development. This reveals shortfalls in understanding the total picture of IT spending. Management recognizes that the IT Department’s budget is not fully inclusive of the Agency’s total spending on IT services and equipment. There is inconsistency on what is best paid for at an enterprise level and what should remain in the budget of an operating unit. To that end, in developing its FY 22-23 budget, IT will work with the Budget Office and Procurement to fully isolate IT costs and revise the budget to consistently treat all IT expenses in the same manner.

**Roadmap Owner and Division**

Justin Powell, Deputy Secretary for Finance and Administration  
George Kinard, Agency Chief Information Officer

**Priority**

Medium

## 5.3 Strategic and Operational Planning

### Planning

IT is more reactive than proactive in addressing issues. In some cases it is because IT decisions are made at the business unit level and the result of that decision became IT's burden without much consent. The activity of formal planning is not evident as a whole. However, there are pockets such as within the newly created IT Project Management Office and CADD - Engineer Tech & Research Office where proactive planning and forecasting appear to take place.

### Performance

Measuring performance is in the beginning state. The IT helpdesk software provided some details but does not appear to monitor quality of work – only timeliness of response. IT created a customer survey several months back and used that to gauge satisfaction. The survey provided useful feedback that IT was able to address customer concerns on both wholesale and individual levels. One of the deputy secretaries mentioned that IT priorities and service levels appear to differ greatly between first tier software (used by most or all business units) and second tier software (specific to one or two business units). This has the potential to raise business risk when an issue develops at the second tier that is an input into the first tier. This relates to the design of IT architecture, an understanding of business workflow and IT's understanding of business needs and priorities.

### A Path Forward

IT needs to develop a systematic approach to planning and forecasting. IT should leverage our office or other third-party expertise while developing its strategic plan and the plan should align with the Agency's strategic plan and TAMP. Once the plan is made, at least annually, IT should review the plan to determine achievement of goals and make alterations for changes in the Agency's priorities and objectives. The purpose is for the planning process to become iterative and ongoing.

### Capability Measure

0 - Introductory	1 – Performed	2 – Managed	3 – Established	4 – Predictable	5 - Optimizing
------------------	---------------	-------------	-----------------	-----------------	----------------



We assess “Strategic and Operational Planning” to be in the “Introductory” capability level as there is little evidence of any systematic achievement of this purpose. Planning appears to be more reactive than proactive categorically.

**Management's Roadmap**

As noted in Management's Roadmap on page 10, Management intends to develop a strategic plan in FY 21-22 in concert with the Agency's strategic plan update. This will provide the framework for better aligning IT and the Agency's resources to meet customer needs. TASC will be relied upon to give its input and approval to the final document.

Management intends to create a performance index for various measures of IT performance (system reliability, security, end user support, etc.) for review by the TASC. The preliminary report will be ready by December 2021. This will be a preliminary document and will be enhanced with measures tracking to the goals and objectives of the strategic plan, as well as indicators from the new help desk system.

**Roadmap Owner and Division**

Justin Powell, Deputy Secretary for Finance and Administration  
George Kinard, Agency Chief Information Officer

**Priority**

Medium

## 5.4 Service Delivery and Measurements

### Measurements

At the time of the review, there was not a formal process or method for measuring IT performance using clear metrics. The best litmus test was based on helpdesk calls and closed tickets. However, we did note the IT Project Management Office monitored and reported status to the TASC on a regular basis.

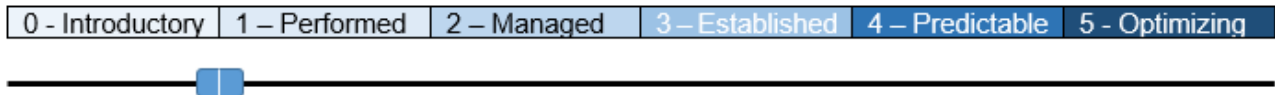
### Costs

There is not a clear process to collectively report on the total cost of IT across the Agency. Even when technology is funded at the program level, the total cost of ownership for technology solutions is not evident. Because the cost of IT is not transparent, it is unclear if the Agency is investing in the right areas and the right technologies.

### A Path Forward

Executive and senior managers need to set clear IT priorities and goals. These priorities and goals should be relevant in light of the Agency's and IT's strategic direction and mission. Secondly, key performance indicators (KPI) should be defined for each priority and goal. IT should then create methods to monitor, track, and report to the TASC at given intervals. Additionally, executive and senior managers need to get a better understanding of the total cost of technology, especially the costs that are buried within business units.

### Capability Measure



We assess “Service Delivery and Measurements” as borderline between “Introductory” and “Performed” capability levels because the TASC has identified some projects to monitor but does not indicate how effective or efficient IT as a whole operated.

#### Management’s Roadmap

As noted in the previous Management’s Roadmaps, Management intends to create a performance index for the TASC to track performance with the preliminary report in December 2021. In addition, Management intends to restructure the IT budget in FY 2023 to gather a full picture of IT budgeting agency-wide and allocate costs in a consistent manner.

#### Roadmap Owner and Division

Justin Powell, Deputy Secretary for Finance and Administration  
George Kinard, Agency Chief Information Officer

#### Priority

Medium



## 5.5 IT Organization and Risk Management

### Risk

Annually, our office conducts a risk assessment of all Agency divisions for audit planning. IT participated in this process for the IT audit plan activity. For the Agency, IT risk was evaluated generically and risk tolerance levels were documented. We, in partnership with IT, provided risk updates to Executive Management and the Commission's audit committee. Little evidence supports IT had its own active internal process or method for identifying, documenting, and reporting IT-related risk.

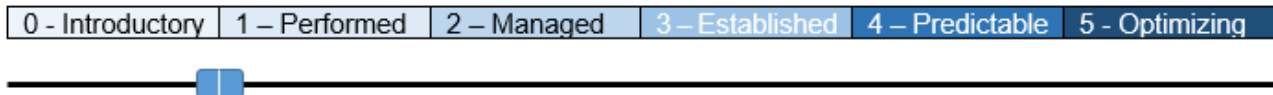
### Standards

The Agency's data standardization activity is found to be in its infancy. Last year, IT saw the growing need for data standardization and created a position for this purpose. There was a data standardization project last year and it is still in progress. IT had an active year developing a process for creating policy. Several policies were submitted for TASC review and approval. IT developed these policies in response to internal audit reports. IT and we together provided quarterly updates to Executive Management and the Commission's audit committee for issues identified in the audit reports.

### A Path Forward

There are identified activities surrounding risk and data standardization and, at this time, we believe it more important for IT to continue its current effort. However, current efforts should be reviewed by IT to ensure these efforts will result in supporting healthy IT governance.

### Capability Measure



We assess "IT Organization and Risk Management" is moving from the "Introductory" capability level toward the "Performed" level. As IT continues to develop and implement processes for risk management and data standardization, the capability level will naturally improve.

#### Management's Roadmap

Management will undertake a risk review as part of the strategic planning process to fully understand the environment SCDOT IT operates. The risk review will be updated with each subsequent update of the IT Strategic Plan.

When enterprise risk management is adopted by SCDOT, the practice will be incorporated into SCDOT IT business practices.

#### Road Map Owner and Division

Justin Powell, Deputy Secretary for Finance and Administration  
George Kinard, Agency Chief Information Officer

#### Priority

Medium