



# IT Assessment and Security Review

Case for Change | December 2021



**PROJECT  
OVERVIEW**

**CURRENT STATE  
REVIEW**

**DEFINING THE  
AREAS OF  
FOCUS**

**DETERMINING  
THE PATH  
FORWARD**

# IT Assessment and Security Review Overview

The objective of the assessment is to review and evaluate the current information technology (IT) & cybersecurity environment and provide recommendations and a roadmap for improving and aligning IT capabilities to meet the strategic needs of Virginia Tech (VT) students, faculty, researchers, and staff.

Phases



## CURRENT STATE ASSESSMENT

Will focus on understanding the current state of each area in scope through interviews, detailed documentation reviews, and extensive qualitative and quantitative analysis of governance, finance, talent, infrastructure, applications, service management data, and cybersecurity



## FUTURE STATE DELIVERY MODEL

Defines a recommended future state for VT that addresses identified gaps and risks from the Current State and leverages best practices from benchmarking in higher education that can be undertaken in the short, medium, and long term



## IMPLEMENTATION ROADMAP

Identifies the prioritization, sequence, resources, risk/dependencies, and other considerations necessary to achieve the identified future state

Focus Areas

Current State Assessment

Future State Delivery Model

Implementation Roadmap

1. IT Governance

2. IT Finance

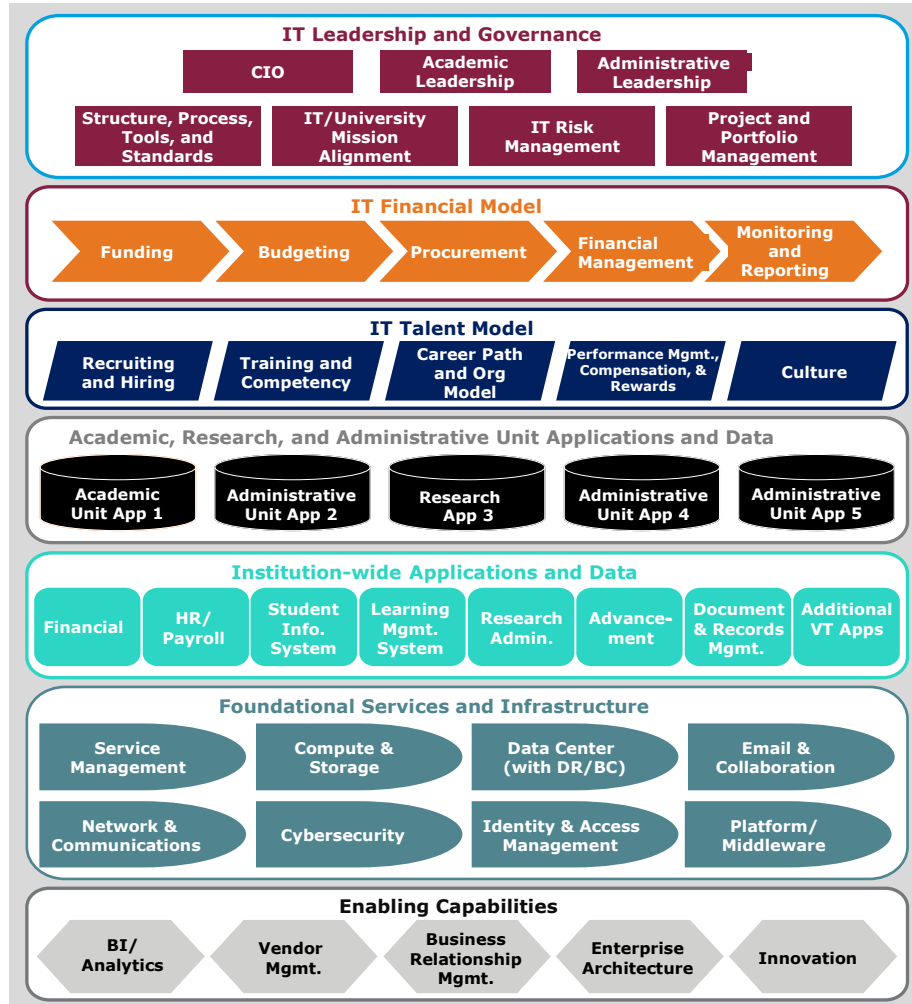
3. IT Talent Management

4. Technology Capabilities and Services

5. Cybersecurity Review

# Application of the IT Transformation Framework

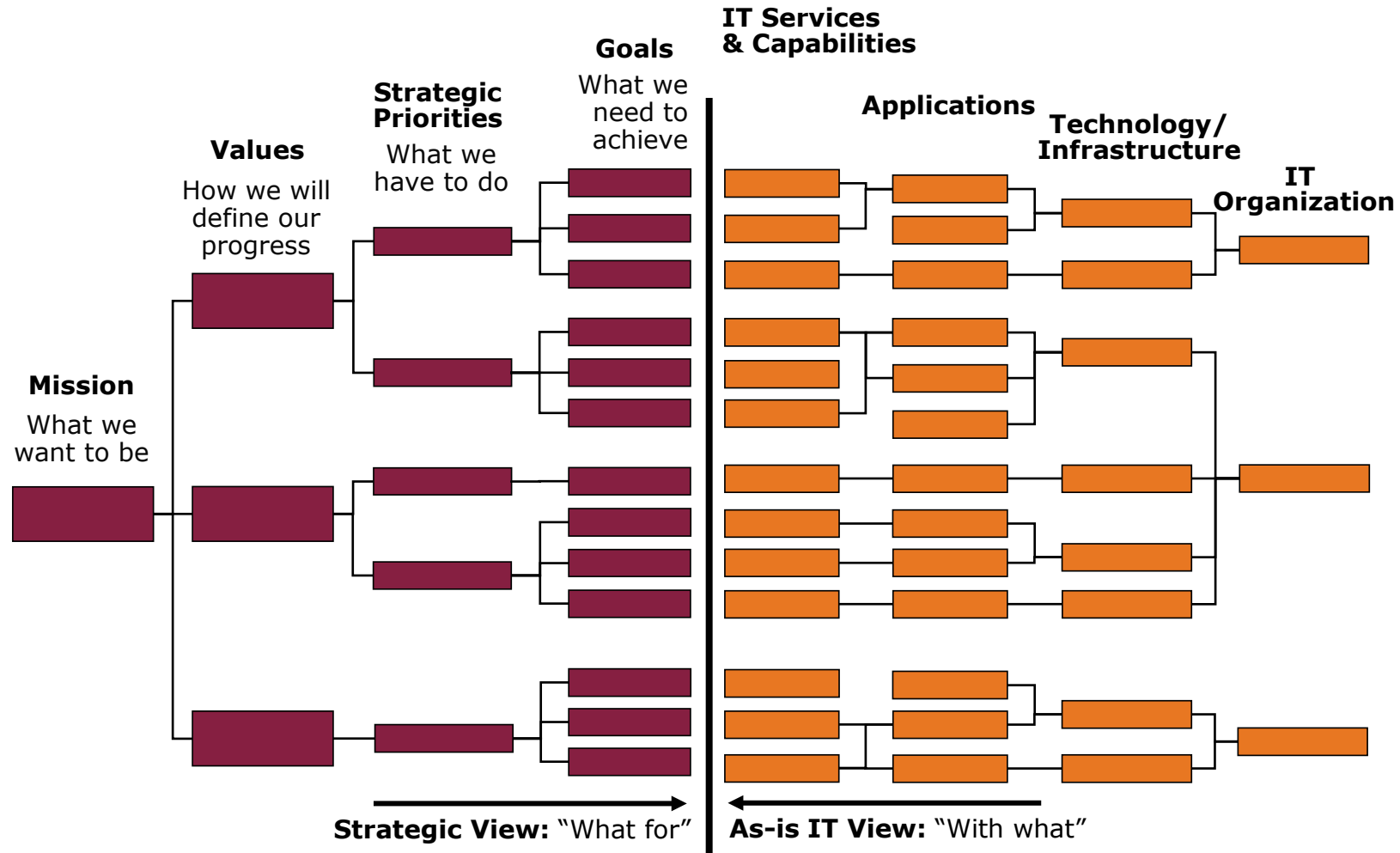
For this assessment, Deloitte references an IT operating model framework for higher education to systematically evaluate the IT operations across the institution.



- **IT Governance:** Practices that support effective IT and data oversight, strategic direction, decision-making, risk management, and coordinated budgeting across the organization, with clear roles and responsibilities defined across federated and central IT.
- **IT Finance:** Functions that establish effective financial planning and oversight, funding, and controls for IT spending across the organization.
- **IT Talent:** Functions that support talent growth, retention, and attraction, inclusive of an effective organizational design and supporting culture.
- **Technology Capabilities and Services:** Foundational technologies – including infrastructure, cloud, research computing, applications, and data – aligned to leading designs and solutions that support defined services for customer along with the core service management practices to manage those services effectively.
- **Cybersecurity:** Practices and tools that enhance controls and the infrastructure in place to protect information against cyber threats and vulnerabilities, contributing to operational efficiency and cost effectiveness across the institution.

# IT at Virginia Tech

Assessing IT at Virginia Tech requires having clarity about the institution's mission, priorities, and goals.



**"IT Strategy Tree" model maps the University's goals against the capabilities of IT**

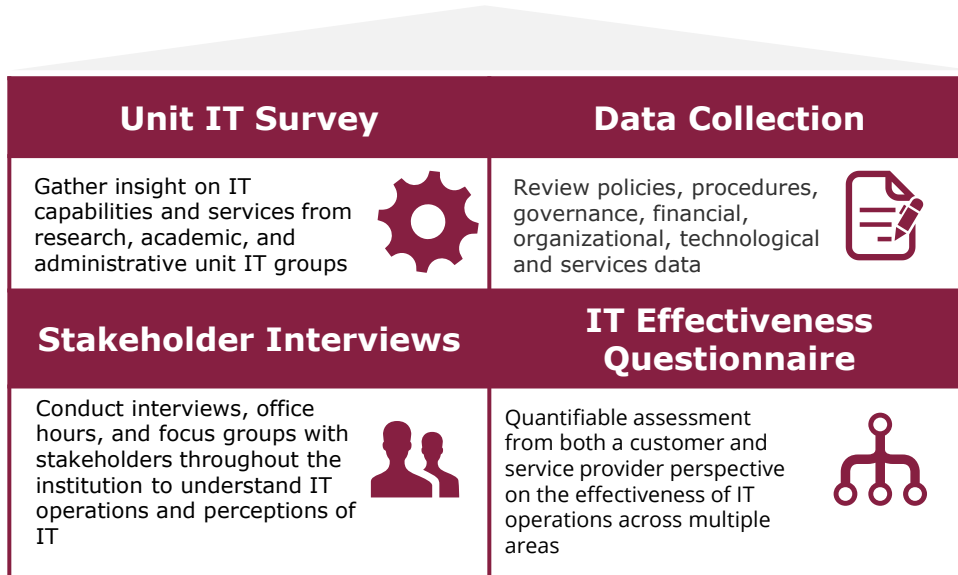
# Project Objectives and Activities

This project seeks to understand the extent to which IT at Virginia Tech is positioned to meet the institution's current and future needs

## IT Assessment and Security Review Objectives

- Understand the current state of each assessment area in scope through interviews, data analysis, and detailed documentation reviews, focusing on Division of IT.
- Analyze Virginia Tech's current IT capabilities and services relative to industry best practices and identify opportunities between the current state and future needs of faculty, staff, and students.
- Provide overall recommendations regarding IT services and a Future State capability model based on findings to enable a recommended future state.
- Identify actions to be taken in the immediate, near, and long terms to "future proof" the institution from emerging and long-term cyber threats.

## Assessment Inputs

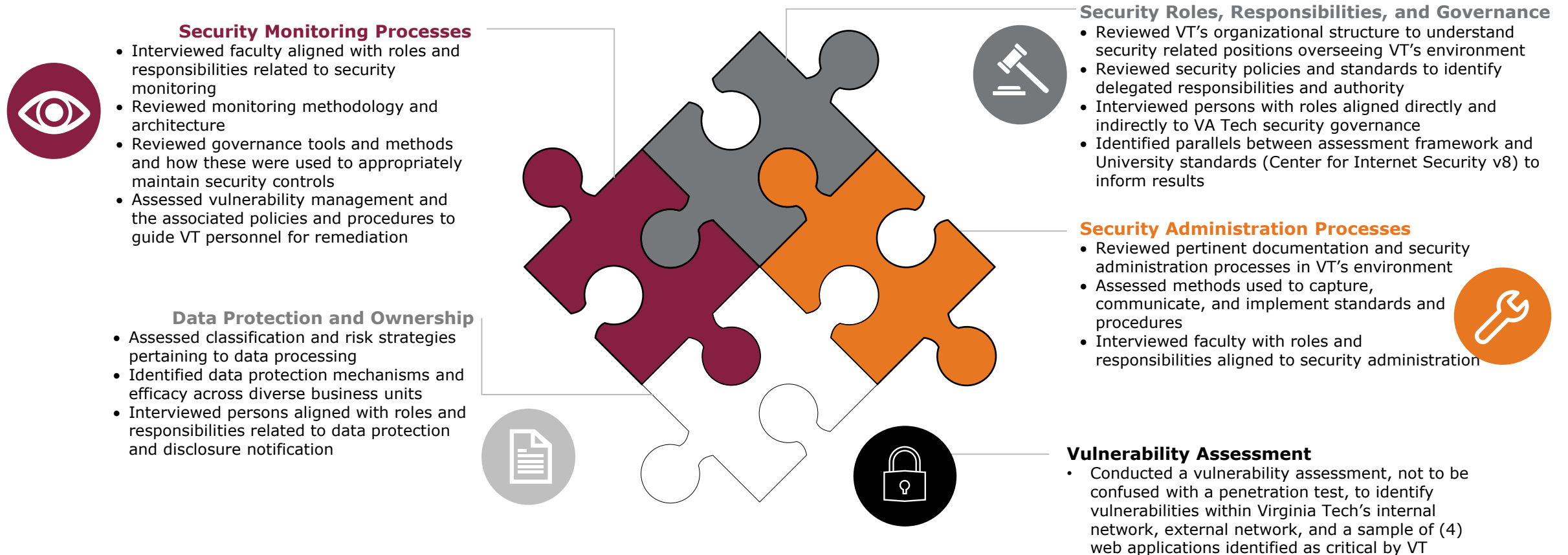


## Accomplishments

- Collected and reviewed **200+** documents/data.
- Interviewed **100+** stakeholders through 1-on-1 interviews, focus groups, and office hours including VT leadership, Division of IT managers and directors, and institution-wide IT staff, and researchers, faculty, staff, and students.
- Analyzed survey responses from **109** stakeholders on their perceptions of IT effectiveness across the institution.
- Reviewed survey responses from **11** unit IT leaders<sup>1</sup> on the IT capabilities and services they manage to support VT academic, research, and administrative units.
- Analyzed governance, finance, talent, infrastructure, applications, and services data.
- Conducted a cybersecurity assessment to identify opportunities where VT can manage risk and proactively prepare for threats.

# Cybersecurity Strategic Approach

The Virginia Tech environment was assessed for cyber-related risk and vulnerabilities across the enterprise cybersecurity environment. The diagram below illustrates the 'pieces' of the cybersecurity posture that we reviewed and assessed.



## How We Leverage The Results

Based on findings identified through the assessment approach areas listed above, recommendations in subsequent deliverables will account for urgency, impact, and the estimated level of effort to implement the associated solution.

Disclaimer: Physical testing of Virginia Tech systems did not occur due to the remote nature of the assessment.



**PROJECT  
OVERVIEW**

**CURRENT STATE  
REVIEW**

**DEFINING THE  
AREAS OF  
FOCUS**

**DETERMINING  
THE PATH  
FORWARD**



## Current State: Core Themes

While DoIT has effectively managed many services in their purview, many activities are outside their direct responsibility and the distributed IT environment largely lacks an effective operating model to efficiently manage risk and cost to the institution while also delivering on the needs of faculty, staff and students. A culture and mindset change, focused on central IT as the strategic enabler of the mission of the University, in a wholistic manner, is necessary to deliver on the evolving technology needs of the institution.



While there are emerging opportunities for governance, VT lacks a clear framework for academic, research, and administrative leadership and distributed IT leaders to provide input to align the work of DoIT with the mission and strategies of Virginia Tech.



Virginia Tech has cybersecurity leading experts within the IT leadership team. However, these individuals lack the authority and resources to effectively manage the cyber-risk to the institution.



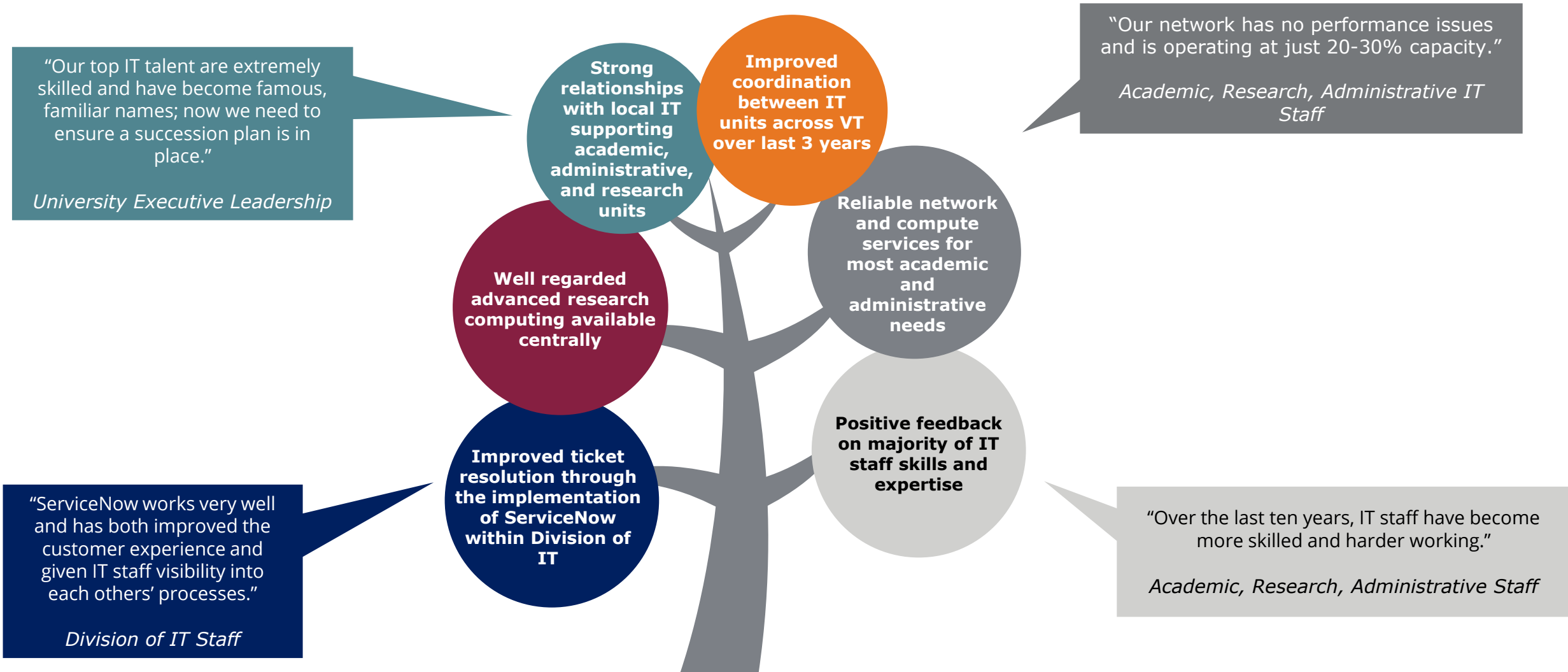
The culture of deploying technology at the institution is weighted towards "build" over "buy." This has roots in the University's historic position as a leader in development of innovative, customized software solutions, and is reinforced by the time and effort the end-to-end software purchasing process takes across all VT reviewers (often 3 to 6 months). Peers have shifted to off-the-shelf solutions, which trade customization for ease of security, lower cost to maintain, and less dependence on in-house talent. This also involves an institutional willingness to modify process, policy and workflow to conform to the delivered functionality and leading practice within off-the-shelf software solutions.



Of the ~650 IT FTEs across VT, only 60% are employed by Division of IT. Institutional funding model and decision rights sit significantly with the distributed units, limiting DoIT's span of authority. Staff in distributed units – and, to some extent, within DoIT—lack consistency across roles and responsibilities, pay, and expectations. Siloed data, systems, and processes across units result in inconsistency, duplication, and a disjointed faculty, staff, and student experience.

# A Chance to Grow, an Opportunity to Build on Strengths

Over the last three years, VT has made strides in improving collaboration and communication across the institution to improve technology efficiency, effectiveness, and information security.



# Current State IT Landscape at Virginia Tech

VT maintains a wide and diverse IT footprint across its campuses, reflecting the strategic importance that IT holds in fulfilling the University's mission.



VT spends **\$111M** on IT across the entire institution, \$68M of which is toward staff salaries and benefits. **56%** of total IT spend is from Division of IT and **44%** is charged to non-Division IT units.



IT staff at VT are distributed among **26+ different IT, academic, administrative, and research units** across the institution, many of which have their own help desks and systems.



Of **649** IT staff FTEs across VT, approximately **60%** are employed by Division of IT.



VT's IT workforce has **43** unique position classifications with over **400** job titles.



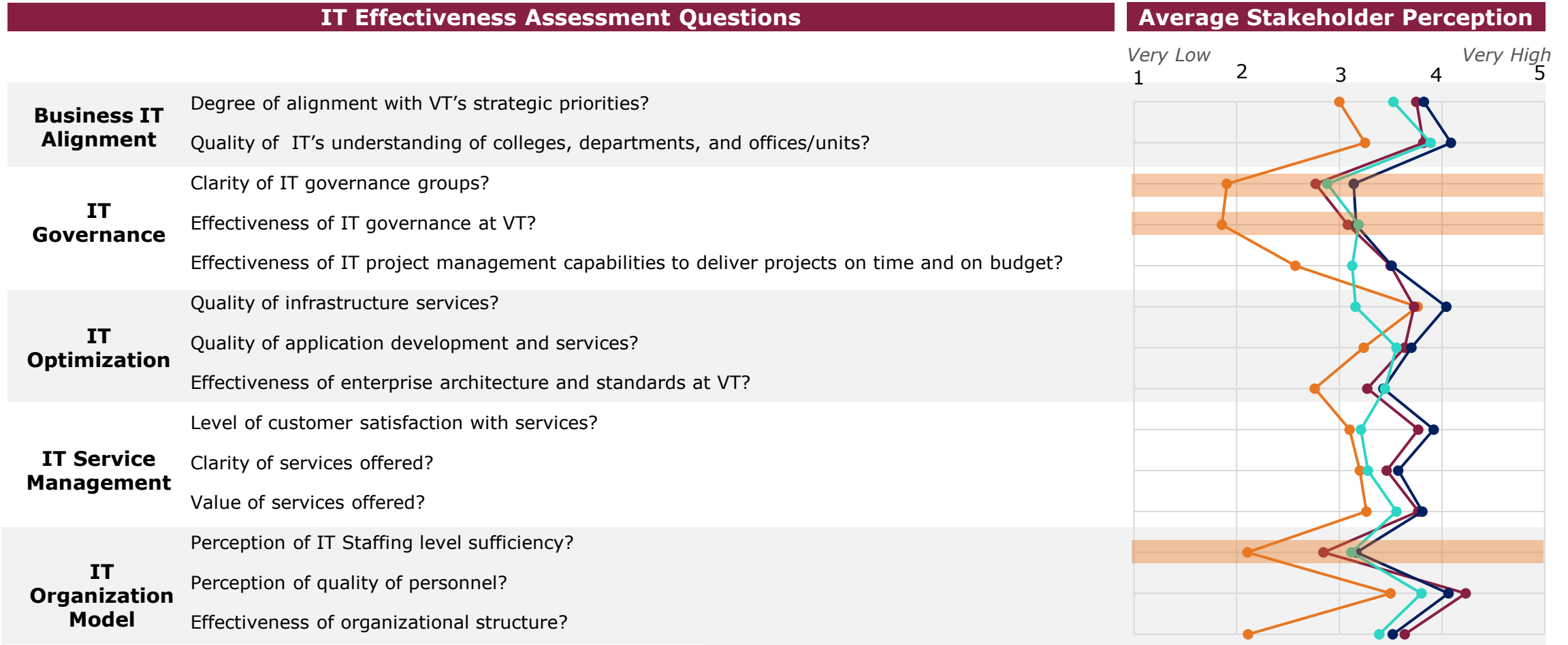
Feedback from surveys and interviews identified at least **13** VT datacenters and/or server rooms that are separate from the main and backup datacenters maintained centrally.



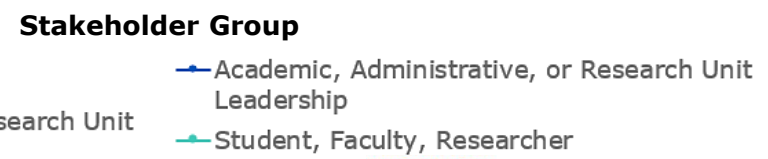
**Lack of visibility** for compliance and protections over **high-risk systems and data** across the institution

# Perceptions of IT at Virginia Tech

Deloitte received responses from 4 stakeholder groups comprising of over 100 respondents across the University to gather perceptions of the current state of IT effectiveness on five dimensions.



= Shared area of stakeholder concern



[Perceptions of DoIT vs. Distributed IT Units](#)

Note:

- Data from IT Effectiveness Survey last updated 10/5/2021
- Division of IT Sample size n=23
- Academic, Administrative, or Research Unit Support Sample size n=14
- Academic, Administrative, or Research Unit Leadership Sample size n=51
- Student, Faculty, Researcher Sample size n=21

# Virginia Tech's Business Requirements for IT

Institutional stakeholders have a variety of business requirements that are not being addressed by the University's current IT operating model.

## Distributed Unit IT Leadership

We need clarity on the Division of IT services and priorities, an easier procurement process, and proactive support for complying with University security policies

## Faculty and Researchers

We need an easier process by which to get software to support our research and teaching

## IT Security Office

We need greater visibility and support in effectively monitoring and mitigating risk

## Students

We need modern tools with better navigational functions and reliability to improve our ability to enroll in classes and better Wi-Fi in popular areas of campus such as Drill Field and Lane Stadium

## University Leadership

We need IT to function as a platform that supports innovation and the University mission

## Deans

We need more parity across distributed units -- some areas have strong local support, yet others struggle.

## Division of IT Directors

We need better coordination and collaboration within the department so we can more effectively support the University

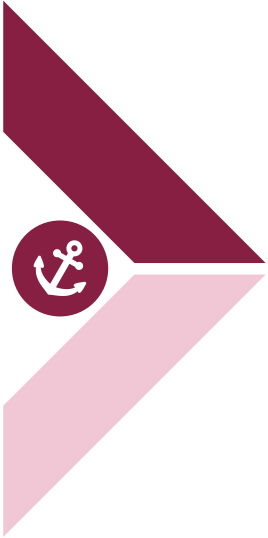
## Administrative VPs

We need better data analytics for business decision-making - there needs to be a clear and transparent way to steward and access data throughout the institution

Note: These are not direct quotes, but instead represent anecdotes and common themes shared during interviews with these various stakeholder groups.

# The Imperative for Change

Based on the current state challenges, three focus areas are emerging to shape the roadmap for establishing a more secure and effective future state IT Operating Model for Virginia Tech.



## Strengthen the Core

VT's initial focus must be on reducing risk while bolstering the organization and capabilities of Division of IT to cultivate greater institutional trust and improve morale through the delivery of reliable, cost-effective core infrastructure and services.



## Build a Culture of Collaboration

In parallel, VT must establish a shared vision for IT, including defined roles and responsibilities for central and distributed IT units to proactively collaborate through a clear governance model.



## Foster Innovation and Efficiency

Ultimately, VT needs to focus on enhancing the student, faculty, staff, and research experience by implementing efficient, effective, timely, and innovative services across the Institution.



**PROJECT  
OVERVIEW**

**CURRENT STATE  
REVIEW**

**DEFINING THE  
AREAS OF  
FOCUS**

**DETERMINING  
THE PATH  
FORWARD**

# Imagine If....

Imagine if the transformation of IT across VT could enable a best-in-class experience for VTs diverse stakeholders.



- **Imagine if...**there was a self-service portal for obtaining data so administrators, faculty, and researchers can make smarter data-led decisions and conduct research.
- **Imagine if...**faculty and staff could obtain desired software when they needed it at a reasonable cost without feeling the need to build it themselves, compromise on governance, or circumvent security review.
- **Imagine if...**there was a single easy-to-use communication platform that VT could use to communicate to various constituents through their preferred mediums in real-time.
- **Imagine if...**there was greater transparency of roles and responsibilities, enabling individuals flexibility and autonomy to guide their career goals entirely within VT.
- **Imagine if...**students could leverage a modern and intuitive platform to register for classes and plan their course selection throughout their University experience



# IT Transformation Recommendation Overview

A portfolio of “Transformational” recommendations provide opportunities to address critical current state challenges to improve how work is done at Virginia Tech.

1. IT Governance	2. IT Finance	3. IT Talent	4. Technology Capabilities	5. Service Management	6. Cybersecurity
<p><b>Clarify roles and responsibilities for providing IT services across the institution</b> (1.1 Define the University-wide IT Operating Model)</p>	<p><b>Simplify funding and paying for common IT services</b> (2.1 Optimize Funding Model)</p>	<p><b>Simplify reporting within DoIT’s organizational structure</b> (3.1 Revise DoIT’s Organizational Model)</p>	<p><b>Enhance data quality, access, and tools</b> (4.1 Enhance Data Governance)</p>	<p><b>Create processes and tools to track IT assets</b> (5.1 Implement University-wide CMDB Processes and tools)</p>	<p><b>Elevate security leveraging organizational standards already in place throughout the University</b> (6.1 Enforce the CIS IG2 Minimum for Systems Processing Sensitive Data)</p>
<p><b>Clarify roles and responsibilities for making VT-wide IT decisions</b> (1.2 Establish a University-wide IT governance model)</p>	<p><b>Reduce time to procure software</b> (2.2 Streamline Software Procurement Process)</p>	<p><b>Create common roles and responsibilities for IT staff</b> (3.2 Standardize job classifications for IT staff across)</p>	<p><b>Improve solution integration and data availability across systems</b> (4.2 Deploy a Common Integration Layer)</p>	<p><b>Improve processes for delivering IT services</b> (5.2 Enhance Maturity of Core ITSM Processes)</p>	<p><b>Increase coverage and decrease incident response time across crucial systems</b> (6.2 Managed 24x7 Security Operations Center (SOC))</p>
<p><b>Improve delivery of IT projects and development of IT standards</b> (1.3 Establish University-wide IT PMO and IT architecture functions)</p>			<p><b>Reduce number of duplicative IT solutions</b> (4.3 Rationalize Application Portfolio)</p>		<p><b>Control identities and access to Virginia Tech data and systems</b> (6.3 Reshape Identity through Identity and Access Management (IAM))</p>
			<p><b>Optimize IT infrastructure across VT</b> (4.4 Establish Data Center Consolidation Strategy/ Cloud Enhancement)</p>		<p><b>Stop data exfiltration and breach attempts before data leaves the network</b> (6.4 Deploy an Endpoint Data Loss Prevention (DLP) Solution)</p>
			<p><b>Improve strategy for using 3<sup>rd</sup> party solutions</b> (4.5 Define Strategy for Adopting Managed Services &amp; SaaS Solutions)</p>		<p><b>Increase visibility and control over the most crucial borders of the University’s landscape: the endpoint</b> (6.5 Full Deployment of Endpoint, Detect, and Respond (EDR) Solution)</p>
					<p><b>Create consistency and document practices to empower the University to secure the infrastructure</b> (6.6 Develop Procedure Guides to Augment the Minimum Security Standards)</p>

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# Summary of Recommendations | IT Assessment

Recommendations are aligned to current state assessment finding areas, taking into consideration the guiding principles and ongoing VT initiatives impacting IT.

Recommendation	Summary	Benefits
<b>1. Governance</b>		
<b>1.1</b> Define the University-wide IT Operating Model to clarify roles and responsibilities for IT across VT.	Articulate clear roles and scope of services provided by the Division of IT, and distributed IT service providers across VT.	➔ Provides for a cohesive and coordinated operating model that clarifies authority over various services, creates efficiency and consistency in the customer experience, and allows for distributed IT groups to focus on value-added services for end users.
<b>1.2</b> Establish a University-wide IT governance model to enable greater collaboration, transparency, and mission alignment in IT.	Establish and define a coordinated governance model to facilitate effective IT decision-making and establish clearer decision escalation and communication paths between groups.	➔ Promotes transparency and effectiveness through a clear and comprehensive interaction model among groups comprised of the right people to make business, IT, and financial decisions around IT projects, standards, and priorities.
<b>1.3</b> Establish University-wide IT project management office and IT enterprise architecture functions with defined tools and methods.	Standardize University-wide IT project management and IT enterprise architecture capabilities to provide clear oversight of VT-wide IT initiatives and facilitate development of University-wide standards, frameworks, and principles.	➔ Provides clarity over foundational IT disciplines that are either immature or not well understood, allowing for consistent and effective project implementation across VT.

# Summary of Recommendations | IT Assessment

Recommendations are aligned to current state assessment finding areas, taking into consideration the guiding principles and ongoing VT initiatives impacting IT.

Recommendation	Summary	Benefits
<b>2. Finance</b>		
<b>2.1</b> Optimize funding model to centrally fund more commodity IT services and simplify cost-recovery.	Centrally fund more IT services provided by DoIT, simplifying cost-recovery, promoting standardization, and encouraging greater use of DoIT services.	 Provides opportunities to reduce cost-recovery administration and increase standardization of solutions while creating a base-line set of services for all customers.
<b>2.2</b> Streamline software procurement process to expedite acquisitions and improve the customer experience.	Define a standardized procedure for procuring IT goods and services, improving category management, contract management, and IT spend reporting.	 Creates a unified customer-oriented approach to IT procurement and aligns policies and processes to support the strategic sourcing of IT goods and services.
<b>3. Talent</b>		
<b>3.1</b> Revise the organizational structure within DoIT to streamline reporting and establish additional capabilities.	Design a future state Division of IT organization that can more nimbly make decisions and execute projects more efficiently with improved consistency.	 A revised organization structure can improve understanding of IT org role arrangement, communications, and responsibilities throughout DoIT; it enables more effective and efficient coordination and use of resources by streamlining duplicative functions and addressing functional gaps within DoIT.
<b>3.2</b> Standardize job classifications for IT staff across VT to improve career pathing, training, and performance & compensation management.	Develops a systematic framework for roles to be defined, types of responsibilities to be managed, and methods for compensating and developing careers as a VT IT professional.	 Sets expectations for IT workforce that provides compensation transparency and empowers employee career growth and training opportunities in an industry increasing in competition; reduces/eliminates unplanned cross-institution talent migration.

# Summary of Recommendations | IT Assessment

Recommendations are aligned to current state assessment finding areas, taking into consideration the guiding principles and ongoing VT initiatives impacting IT.

Recommendation	Summary	Benefits
<b>4. Technology Capabilities</b>		
<b>4.1</b> Enhance data governance to enable greater access, reporting, quality, and clarify over data roles and responsibilities.	Establish a standardized data governance policy and update the data access/request process for VT.	➔ Defines data governance and matures data warehousing capabilities to assist in data quality and availability, and research data management University-wide.
<b>4.2</b> Deploy a common integration layer to enhance data sharing across systems.	Establish a standard platform for integrating common data among disparate systems and applications.	➔ Adopts a single middleware application to improve application functionality through data consistency across distinct application environments.
<b>4.3</b> Rationalize application portfolio across VT.	Create a catalog of University-wide and department-specific applications to identify approved systems and duplicative functionality across IT units.	➔ Eliminates redundant, unsupported software applications and deploys modern applications to meet unmet user needs in a way that is centralized and secure.
<b>4.4</b> Establish data center consolidation strategy and explore enhancing cloud capabilities.	Rationalize the need for separate data centers across IT units to determine proper consolidation in centralized facilities and/or cloud storage environments.	➔ Creates cost efficiencies for data storage through economies of scale and establishes centralized solutions for IT Units.
<b>4.5</b> Define strategy for effectively adopting managed services and increased "SaaS" solutions.	Maturing already implemented solutions and exploring services to manage processes from a University-wide level.	➔ Increases effectiveness of IT management and standardizing processes to create a wholistic view of services.

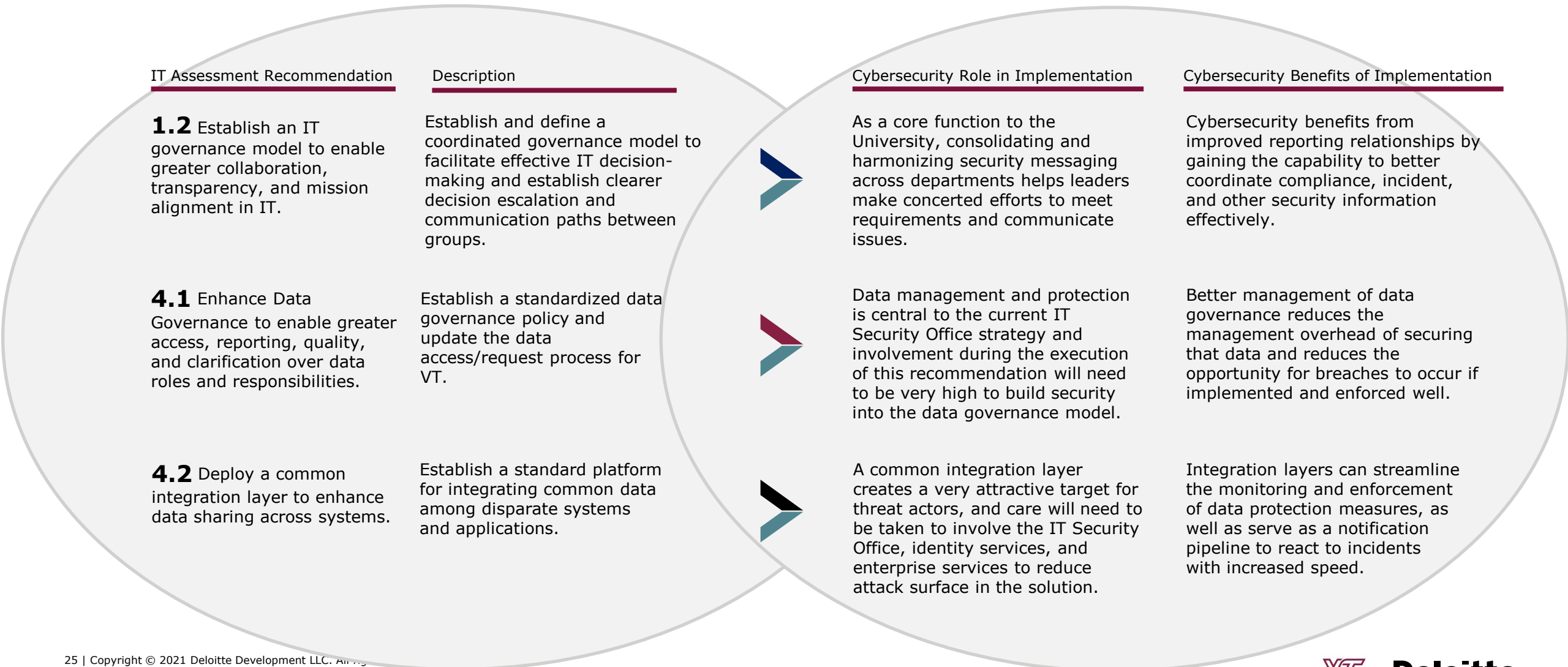
# Summary of Recommendations | IT Assessment

Recommendations are aligned to current state assessment finding areas, taking into consideration the guiding principles and ongoing VT initiatives impacting IT.

Recommendation	Summary	Benefits
<b>5. Service Management</b>		
<b>5.1</b> Implement University-wide configuration management database processes and tools.	Implement CMDB system and policy to improve tracking of IT assets to reduce risk, increases visibility, manages costs, and enables capacity planning.	➔ Increases accuracy in data to plan renewal and replacement investments, increases efficiency by streamlining Asset Lifecycle Management strategy and tracking all VT IT assets from deployment to retirement, and decreases likelihood of security risks from mismanaged or forgotten assets.
<b>5.2</b> Enhance maturity of core ITSM processes to enable service delivery and Improve the customer experience.	Identify improvements to the ITSM tool that will provide cross-campus consolidation opportunities and provide a foundation for additional capabilities outside of ITSM.	➔ Improves effectiveness through improved usability of the tool and sets the foundation for adding key features within the ITSM platform.

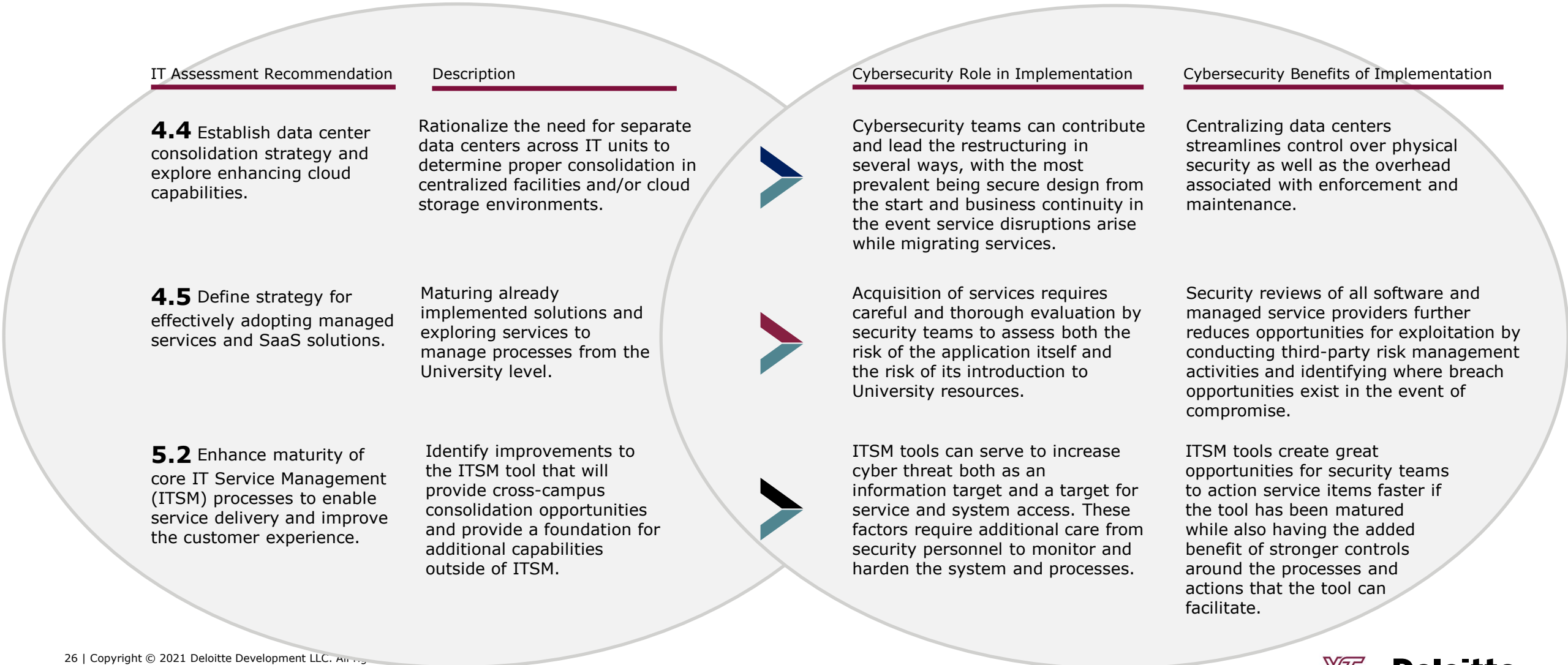
# Cybersecurity Review Intersection Points with IT Assessment

The items below illustrate several of the interconnections between the recommendations of the IT Assessment and the Cybersecurity Review assessments. IT Assessment Recommendations map to the IT Assessment future State Report.



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The items below illustrate several of the interconnections between the recommendations of the IT Assessment and the Cybersecurity Review. IT Assessment Recommendations map to the IT Assessment Future State Report.

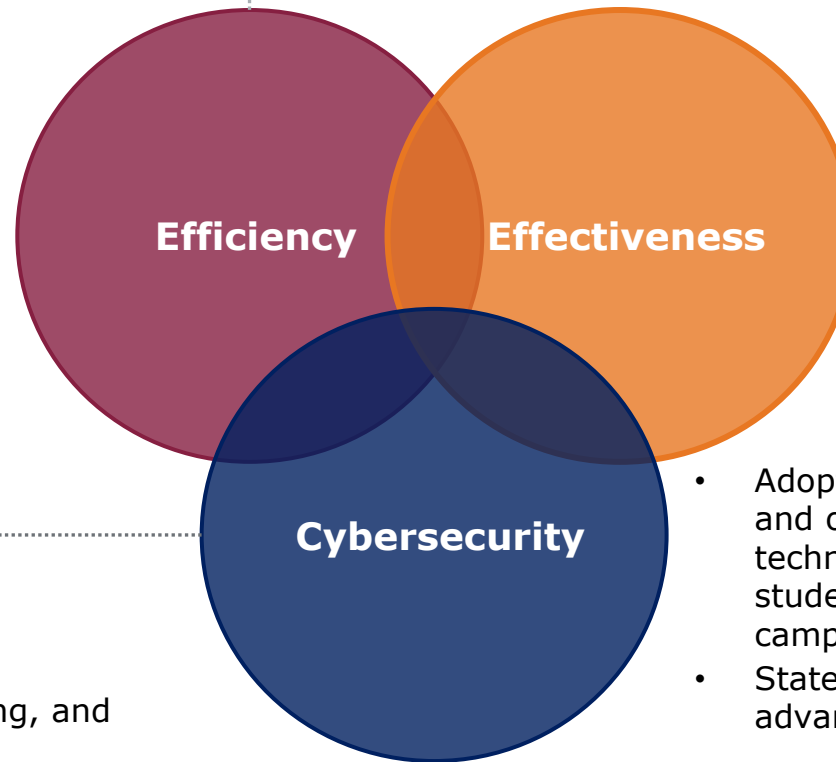


# Transformation Benefits

By taking the steps necessary to transform its IT Operating Model, VT can expect to achieve the following benefits relative to its current strategic priorities.

- Streamlined service delivery that reduces duplicative services and creates a common IT experience for all customers.
- Improved collaboration and transparency in decision making.
- Investments and processes that save VT time and money.

- Stronger data protection.
- Improved monitoring, detection, alerting, and response capabilities.
- Decrease risk of damage to VT reputation, disruption of services, and associated costs.



- Adoption of cloud, advanced analytics, and other leading-edge practices and technology capabilities to transform the student experience, catalyze a digital campus, and advance the future of work.
- State-of-the-art services for faculty to advance research and teaching.





**PROJECT  
OVERVIEW**

**CURRENT STATE  
REVIEW**

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AREAS OF  
FOCUS**

**DETERMINING  
THE PATH  
FORWARD**

# High Level Implementation Plan

VT should realign the IT operating model and strengthen the foundation of IT services before rationalizing common administrative and academic services.

## KEY IMPLEMENTATION PRIORITIES

	Year 1*				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>ENABLING ACTIVITIES</b>												
0.0 Establish and Launch IT Transformation Program Management Office and Change Management Strategy												
<b>GOVERNANCE</b>												
1.1 Define the University-wide IT Operating Model to clarify roles and responsibilities for IT across VT.												
1.2 Establish a University-wide IT governance model to enable greater collaboration, transparency, and mission alignment.												
1.3 Establish University-wide IT project management office and IT enterprise architecture functions.												
<b>FINANCE</b>												
2.1 Optimize funding model to centrally fund more commodity IT services and simplify cost-recovery.												
2.2 Streamline software procurement process to expedite acquisitions and improve the customer experience.												
<b>TALENT</b>												
3.1 Revise the organizational structure within DoIT to streamline reporting and establish additional capabilities.												
3.2 Standardize job classifications to improve career pathing, training, and performance & compensation management.												
<b>TECHNOLOGY CAPABILITIES</b>												
4.1 Enhance Data Governance to enable greater access, reporting, quality, & clarification over data roles, responsibilities.												
4.2 Deploy a common integration layer to enhance data sharing across systems.												
4.3 Rationalize application portfolio across VT.												
4.4 Establish data center consolidation strategy and explore enhancing cloud capabilities.												
4.5 Define strategy for effectively adopting managed services and SaaS solutions.												
<b>SERVICE MANAGEMENT</b>												
5.1 Implement University-wide CMDB processes and tools.												
5.2 Enhance maturity of core ITSM processes to enable service delivery and improve the customer experience.												
<b>CYBERSECURITY</b>												
6.1 Enforce the CIS IG2 Minimum for Systems Processing Sensitive Data.												
6.2 Augment Monitoring with a 24x7 Security Operations Center (SOC).												
6.3 Develop Identity & Access Management (IAM) Program Strategy and Governance Discovery.												
6.4 Fully Deploy an Endpoint, Detect, and Respond (EDR) Solution.												
6.5 Deploy an Endpoint Data Loss Prevention (DLP) Solution.												
6.6 Develop Procedure Guides to Augment the Minimum Security Standards.												

\*Note: Timeline represents a calendar year with an assumed start date of Monday January 3<sup>rd</sup>, 2022

# Where to begin?

Twenty (20) projects are a significant undertaking and invite the questions: What do we do now that we have these recommendations? Where do we start?

## Short Term

- Regroup on areas requiring further discussion.
- Review opportunities and prioritize.
- Identify high-level cost and staffing estimates.
- Receive approvals for prioritized projects.

## Program Initiation

- Define:
  - Program and project management
  - Change management plan
  - Owners and resources for selected projects
- Initiate detailed design and implementation planning.



**Appendix – Recommendation Prioritization Considerations**

# Future State Recommendation Prioritization Inputs

Recommendation Number	Focus Area	Recommendation Description	Effort Level	Risk Level	Impact Level	Approx. Time to Complete
1.1	Governance	Define the University-wide IT Operating Model to clarify roles and responsibilities for IT across VT.	High	High	High	12 Months
1.2	Governance	Establish a University-wide IT governance model to enable greater collaboration, transparency, and mission alignment in IT .	Medium	Medium	High	12 Months
1.3	Governance	Establish a University-wide project management office with defined tools and methods to more effectively manage large University-wide IT projects and initiatives.	Medium	Medium	Medium	15 Months
2.1	Finance	Optimize funding model to centrally fund more commodity IT services and simplify cost-recovery	High	Medium	Medium	24 Months
2.2	Finance	Streamline software procurement process to expedite acquisitions and improve the customer experience.	High	Medium	Medium / High	12 Months
3.1	Talent	Revise the organizational structure within DoIT to streamline reporting and establish additional capabilities.	Medium	Medium	Medium / High	24 Months
3.2	Talent	Standardize job classifications for IT staff across VT to improve career pathing, training, and performance & compensation management.	Medium	Medium	High	18 Months
4.1	Technology Capabilities	Enhance Data Governance to enable greater access, reporting, quality, and clarification over data roles and responsibilities.	Medium	Medium	High	18 Months
4.2	Technology Capabilities	Deploy a common integration layer to enhance data sharing across systems.	Medium	Low	Medium	18 Months
4.3	Technology Capabilities	Rationalize application portfolio across VT.	High	High	High	30 Months
4.4	Technology Capabilities	Establish data center consolidation strategy and explore enhancing cloud capabilities.	High	Medium	Medium / High	27 Months
4.5	Technology Capabilities	Define strategy for effectively adopting managed services and SaaS solutions.	Medium	Medium	Medium	10 Months
5.1	Service Management	Implement University-wide CMDB processes and tools.	High	Medium	Medium / High	24 Months
5.2	Service Management	Enhance maturity of core ITSM processes to enable service delivery and improve the customer experience.	Medium	Medium	Medium / High	18 Months

## Future State Recommendation Prioritization Inputs (continued)

Recommendation Number	Focus Area	Recommendation Description	Effort Level	Risk Level	Impact Level	Approx. Time to Complete
6.1	Cybersecurity	Enforce the CIS IG2 Minimum for Systems Processing Sensitive Data	High	High	High	12 Months
6.2	Cybersecurity	Augment Monitoring with a 24x7 Security Operations Center (SOC)	Medium	High	High	8 Months
6.3	Cybersecurity	Develop Identity & Access Management (IAM) Program Strategy and Governance Discovery	Medium	Medium	High	12 Months
6.4	Cybersecurity	Fully Deploy an Endpoint, Detect, and Respond (EDR) Solution	High	Medium	Medium	24 Months
6.5	Cybersecurity	Deploy an Endpoint Data Loss Prevention (DLP) Solution	High	Medium	Medium	12 Months
6.6	Cybersecurity	Develop Procedure Guides to Augment the Minimum Security Standards	Medium	Medium	Medium	6 Months

Virginia Tech Policies and Procedures should be refreshed on an annual basis