

# Master Technology Plan

*2021 – 2025*

# Table of Contents

<b>ACKNOWLEDGEMENT</b> .....	<b>4</b>
<b>PREFACE</b> .....	<b>4</b>
<b>VISION, MISSION, VALUES, AND PRINCIPLES</b> .....	<b>5</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>6</b>
<b>PLANNING PROCESS – ENVIRONMENTAL SCAN</b> .....	<b>7</b>
KEY SOURCES OF INFORMATION FOR THIS PLAN .....	7
RCTC BROAD STATEMENTS OF NEED FOR TECHNOLOGY .....	7
<i>President’s Office:</i> .....	7
<i>Academic Affairs:</i> .....	7
<i>Student Affairs:</i> .....	8
<i>Human Resources:</i> .....	8
RCTC COMMUNITY THEMES OF NEEDS FOR TECHNOLOGY .....	8
<b>7 CORE INFORMATION TECHNOLOGY (IT) STRATEGIES</b> .....	<b>11</b>
1. <i>Increase Organizational Alignment</i> .....	11
2. <i>Improve Customer Service</i> .....	11
3. <i>Evolve to Service Management</i> .....	11
4. <i>Transform IT</i> .....	11
5. <i>Manage Architecture and Assets</i> .....	11
6. <i>Roadmap the Future</i> .....	11
7. <i>Enhance Organization Decision-Making</i> .....	11
IT STRATEGY MAP .....	12
<b>KEY GOALS, THEIR ALIGNMENT, AND FEASIBILITY ANALYSIS MATRIX</b> .....	<b>13</b>
IT GOALS ALIGNED TO IT SERVICE PORTFOLIOS .....	17
<b>IT AS AN ENABLING SERVICE</b> .....	<b>18</b>
IT INVESTMENT AND GOVERNANCE .....	18
FUNDING OF IT .....	18
<b>ORGANIZATION DESIGN</b> .....	<b>21</b>
ORGANIZATION STRUCTURE.....	21
NEXTGEN – STATEMENT ON PROJECT AND RESOURCE NEEDS .....	22
<b>APPENDICES</b> .....	<b>24</b>
APPENDIX A – ENTERPRISE ARCHITECTURAL PRINCIPLES.....	24
APPENDIX B <sup>1</sup> – IT INVESTMENT PROCESS .....	27

APPENDIX B<sup>2</sup> – IT INVESTMENT PRINCIPLES .....28

*Principle 1: Information is a Strategic Asset, Owned by the Enterprise* .....28

*Principle 2: IT Investments will be based on the needs of the Enterprise* .....28

*Principle 3: IT Services are Coordinated through a Central Organization* .....29

*Principle 4: IT Management Shall Foster Innovation through a Disciplined and Agile Process* 29

APPENDIX C<sup>1</sup> – IT GOVERNANCE STRUCTURE & RESPONSIBILITIES (EXTERNAL FACING) .....30

*Structure:* .....30

*Responsibilities:* .....30

APPENDIX C<sup>2</sup> – IT GOVERNANCE STRUCTURE & RESPONSIBILITIES (INTERNAL FACING) .....32

## Acknowledgement

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## Preface

This Master Plan has a companion document called the “Master Technology *Playbook*” that has much more detail and key elements for IT operations management. The *Playbook* has all the elements of the Plan but also includes additional research information and operational definitions that guides the IT Division of RCTC with its overall work responsibilities and approaches. The Technology Master Plan has the key elements for public understanding of the key IT issues and plans at RCTC.

## Vision, Mission, Values, and Principles



### Vision

To be recognized by our customers (the College and our Students) as a trusted, best value, strategic partner in delivery of Information Technology (IT) solutions, enabling their work and learning.



### Mission

Enabling valued, stable, innovative educational and business-driven IT solutions and services.



### Values

- Integrity
- Teamwork
- Problem-Solving
- Service Excellence

#### *IT Values Statement*

“We strive to...with integrity, working as a team, solve problems of value, through the delivery of timely, excellent service.”



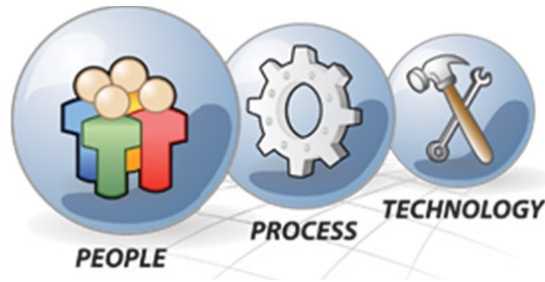
### Guiding Principles

- ‘**Universal Design**’ should drive solution development.
- ‘**Cloud 1<sup>st</sup>**’ options should be considered before hosting locally.
- ‘**Mobile 1<sup>st</sup>**’ should be a priority design consideration.
- ‘**Data and Analytics**’ should guide decision-making/support.
- ‘**Self-service**’ support should be the default design approach.
- ‘**Speed, Agility and Rapid Turnaround**’ are key to staying current.

[Appendix A – has a more comprehensive list of Architectural Principles]

## Executive Summary

The Rochester Community and Technical College (RCTC) Technology Master Plan articulates a **common vision** for technology and provides a **framework for future investments (in people, process, and technology)**, that are aligned with institutional goals, and that complies with Minnesota State Colleges and Universities policies and direction.



The **overarching goal** of the IT Division is to **continuously improve and create new capabilities** in support of IT's mission.

RCTC has several areas of **gaps and challenges** related to technology implementation:

1. Most of the emphasis of the College and IT is on operational support – keeping things running.
2. Academic Technology and Student Services Technology do not get the level of attention and resources that they require to support their functional activities effectively and continuously.

To address these gaps, IT's emphasis is simply stated as ***incrementally and systematically shifting the IT organization from operational support, towards strategic services to enable mission-critical functions of the College.*** To accomplish this, we intend to:

- a) redesign existing positions,
- b) reskill existing staff,
- c) leverage vacant positions to recruit a mix of current and new skills for the future,
- d) leverage student workers more in appropriate operations support services (a win-win for both the students and IT),
- e) establish best-practice operational processes and tools to meet College needs, and
- f) given the state of the College's enrollment, budget, and finances position, to work as much as possible, within the existing IT budget and position/staffing allocations in meeting both current and future needs.

These actions are intended to create new service capabilities that can enable growth needs of the College, e.g., in Cloud services, etc.

## Planning Process – Environmental Scan

Strategic Plans are developed from a wide array of information that is collected, assessed, and synthesized into general statements of direction and strategy. This is the ‘Environmental Scan’ that was conducted to create this plan. Since information creation and flow is never ending and changes constantly, key sources of information have been included that impacts RCTC; however, the list can never be exhaustive.

### Key Sources of Information for this Plan

- IT Division SWOT (Strengths, Weaknesses, Opportunities, Threats) Assessment.
- IT Division Risk Analysis.
- IT Assets Inventory Assessments.
- IT Capabilities Model Assessment.
- IT Service Portfolios and Service Catalog.
- IT goals and direction from the Minnesota State System Office.
- Vision Statements from the College’s senior leaders, namely, the Cabinet members.
- Student Senate input.
- Student surveys.
- Industry trends as defined by Educause, Gartner Inc. and other key IT thought leaders.
- Survey of all Staff and Faculty across the College.
- The College Information Technology Advisory Council (CITAC).
- General, day-to-day, end-user and customer feedback, especially via interactions and support activities handled through the Technology Service Center (TSC).

### RCTC Broad Statements of Need for Technology

#### *President’s Office:*

- Establish capabilities for finance and budget to **link funding to strategic plans**.
- Rearchitect and enhance our **Intranet (SharePoint)** so that all employees have easy, timely and accurate access to information whenever they need it. [Repeated]

#### *Academic Affairs:*

- Our focus on ‘education’ should highlight – ***delivery to anyone, anywhere, anytime, within our College’s Mission responsibilities.***
- Paradigm shift towards increased **online expansion**.
  - Formal Organization Change Management (OCM) strategies to increase faculty engagement, awareness and promote and transition to the new paradigm/culture of the future.

- **Digital equity** – ensure each student has the tools they need both in school and at home, to participate in their education fully. [Repeated]
- **Academic management tools** – workflow tools for curriculum and course management, scheduling, assessment, syllabi development and program review.
- **Simulation technologies** to facilitate both in-person and immersive online learning.
- Enhanced **data and business intelligence/analytics** capabilities to support data-based decision-making. [Repeated]
- **Staffing and skills** needed for sustainability of critical technology services we require to further our work. (See *Enterprise Architecture in Appendix A – Sustainable Support – “Rule of 2”*.)

### ***Student Affairs:***

- Put students first, adapt to them, **shift the culture** to achieve this.
- **Digital equity** – ensure each student has the tools they need both in school and at home, to participate in their education fully. [Repeated]
- Communication is key – well-defined portfolio of means and **tools to communicate with 100% of students**, in a timely manner, to ensure that *action* is taken to address needs and issues.
- Extensive/integrated student **Case Management** (contact, notes, documents, etc.), from interest/prospect students to separation (i.e., graduation) and alumni services.
- Enhanced **data and business intelligence/analytics** capabilities to support data-based decision-making. [Repeated]
- **Training and skills development** in the tools we already have, to improve efficiency and effectiveness. [Repeated]

### ***Human Resources:***

- Rearchitect and enhance our **Intranet (SharePoint)** so that all employees have easy, timely and accurate access to information whenever they need it. [Repeat]
- Migrate existing paper-based approaches towards utilization of **more digital approaches**.
- Enhance **employee orientation, onboarding and offboarding** through automation.
- Knowledge management and sharing through **training and skills development** in the tools we already have, to improve efficiency and effectiveness. [Repeated]

## **RCTC Community Themes of Needs for Technology**

While continuing to support the College’s on-going operational needs, these additional considerations are also desired by the broader college community.



- **TRANSPARENCY:** Make **IT service expectations and outcomes clear and consistent, and IT support processes more transparent** so we know what's going on. E.g., "Status of my ticket/project", "Completion of tickets", etc.
- **OPERATIONAL EXCELLENCE:** Make the **internal operations of IT** more efficient and effective to better meet the demands and future needs of all stakeholders. These activities include, but are not limited to: (a) Demand/Request Management, (b) Service Management, (c) Project Management, (d) Governance, (e) Technical Architecture, (e) Asset and Contracts Management, (f) Security Management, (g) Service Continuity Management, (h) Change Management, (i) Knowledge Management and Staff Development, etc.
- **ACCESS:** Improve **Faculty/Staff and Student onboarding and offboarding processes** - make them more efficient and complete e.g., **getting access to all required accounts; removal of all access when people leave**, etc. (*Note: this must be coordinated with Human Resource processes and Student Services for Student orientation.*)
- **ACCESS:** **Efficient remote support** capabilities for administrative permissions to systems and **Student access to shared (e.g., lab) devices**.
- **ACCESS:** Improve simplified and relevant **access to resources and communication effectiveness** through the establishment of "**Single Portals**" for tools and training information for both Faculty/Staff and Students.
- **LITERACY:** Technology literacy for Faculty and Students.
- **TRAINING:** Provide **training/help develop skills** in the tools we have, including 'Enterprise' software e.g., ISRS/NextGen, D2L, classroom technologies, etc.
- **ARCHITECTURE/TRAINING:** Specifically: design, re-architect and train college community in the effective use of the **Office365 tools**:
  - MS SharePoint – redesign it!
  - MS Teams – how should we effectively use it?
  - Content Management – which tools and repositories should we use to store various kinds of data and information for different purposes?

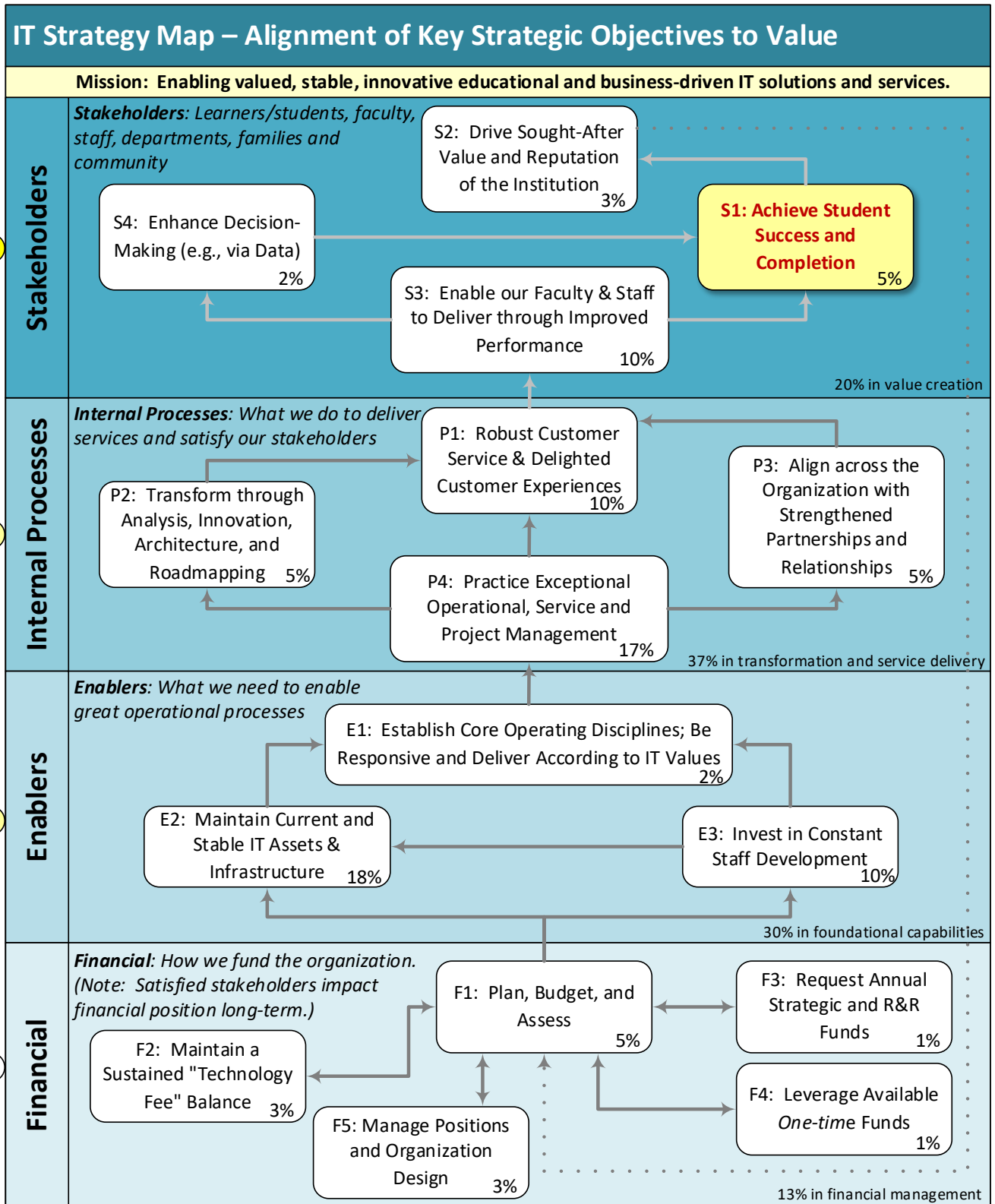
- **ARCHITECTURE:** Make collaboration technologies **consistent** in each classroom and meeting spaces.
- **EQUITY:** Develop "**Digital Equity**" solutions, such as, a **laptop program** for Students, a **Student loaner program**, etc. [Some considerations: pivot from traditional lab devices towards increased loaner devices and financial aid/fee payment options to cover costs.]
- **REFRESH:** Keep software and technology **up to date**, current (and affordable).
- **DIGITIZATION:** Establish more means to **digitize** work that we do, for instance, fillable forms, workflow automation, eSignatures, PDF editors, etc.
- **SUPPORT:** Establish capabilities to provide **specialty labs support**, for instance, to CAD labs, to Music labs, etc.
- **CONTRACTING:** Make the process for **purchasing and contracting** for technology services within the college, with Procurement and the System Office, more efficient.
- **SECURITY:** Establish a **security program** to continuously keep faculty, staff, and students aware of security issues and prevent cyber-attacks through **proactive** steps to monitor and mitigate risks.

## 7 Core Information Technology (IT) Strategies

To accomplish the varied desires of the College community and to better meet the needs of the College as driven by market trends, several key strategies are defined.

1. ***Increase Organizational Alignment:*** Expand integrative technology governance, collaboration, buy-in across all areas of the College, from requesters to managers and the Cabinet to ensure that what is being asked for is planned, resourced, funded, and aligned to College goals. Increase collaboration with non-IT areas.
2. ***Improve Customer Service:*** Improve customer service through increased agility/speed and responsiveness to priorities. Also, promote an environment of increased self-service capabilities for staff. Establish key customer service principles, culture, and behaviors, and live by them.
3. ***Evolve to Service Management:*** Clearly define IT service offerings aligned to institution customers' demanded needs (through a Service Catalog) and IT resources capacity. Make service management process consistent, complete, and transparent.
4. ***Transform IT:*** Shift, as much as possible, IT services and staff from operations and commodity-type activities (basic, interchangeable goods) towards higher valued capabilities (e.g., problem-solving), projects, and management of platforms (e.g., Cloud, Office365, SharePoint, etc.). Develop increased utilization of Student Workers, where appropriate, to provide support in "Level 1" support needs, which is a win-win both for the students to gain real-world experience and for IT to meet lower-level support needs without having to distract higher skilled staff.
5. ***Manage Architecture and Assets:*** Identify, understand, document, and manage IT architecture and \$6.5 million+ current assets across the institution to ensure sustainability (funded) and responsiveness (to uses/users). Improve efficiencies through elimination of manual and outdated services, removal of duplications, simplification and reengineering, automation, delegation or outsourcing to third parties. Manage true costs of services and maintain a modernized infrastructure.
6. ***Roadmap the Future:*** Define the key IT Roadmaps for the core College functions (Academic, Student, Administrative) and key IT Infrastructure that defines current capabilities against 1, 3, and 5-year timetables, to constantly innovate and modernize the technology environments in support of the College's mission.
7. ***Enhance Organization Decision-Making:*** Grow towards being able to increase effective, simple means to use data and business intelligence capabilities to support organization-wide modeling, forecasting and decision-making.

# IT Strategy Map



## Key Goals, their Alignment, and Feasibility Analysis Matrix

*Note:* Projects to be pursued will be dependent on the specific needs and currency of technology at that time, etc.

Pr <sup>1</sup> .	Goals <i>(Projects to be defined and prioritized based on these)</i>	IT Strategies Alignment	RCTC Strategic Plan Alignment	Degree of Value <sup>2</sup> (H/M/L)	Degree of Difficulty <sup>3</sup> (H/M/L)	Within Existing Staffing Levels	Within Existing Budget Levels	Organizational Design & Capabilities
1	<b>NextGen/Workday (ERP) Coordination and Support</b> (mandated effort)	2, 4, 5, 6, 7	Goals 1, 2 All Strategies	High  (major parts of all of the College's business and operations work)	High (project)  Moderate (post-production)	No – during project timeframe  Likely – post-project timeframe	Somewhat (Would have to reallocate funds; hence, change priorities.)	Need to re-skill staff (functional and IT) to work with new ERP system
2a	<b>Classroom Upgrades to Allow for Hybrid / HyFlex Teaching Modes</b> (active effort into FY23 due to COVID)	2, 5, 6	Goal 1, Strategies 2, 3 Goal 2, Strategies 1, 4 Goal 3, Strategies 2, 3 Goal 4, Strategies 2, 4	Moderate	Moderate	No (Using COVID funds to support one-time efforts)	Somewhat (Using COVID funds to support one-time efforts. Note: future upgrades WILL require budget/affordability assessment)	No
2b	<b>Improve Purchasing and Contracting of IT Services</b> (coordination w/ RCTC procurement and OGC)	1, 2	Goal 1, Strategies 2, 3 Goal 2, Strategies 1, 4 Goal 4, Strategies 2, 4	High	High (Lately, due to Office of General Council (OGC) review, this process is slow and cumbersome)	Somewhat (Can't control OGC resources, these are tight)	Yes	System Office (SO) – we are not in control of them  Procurement – need to think about alternative approaches
3	<b>Improve Orientation, Onboarding/Offboarding Processes (Faculty &amp; Staff, &amp; Students)</b> (Note: this initiative could benefit from other initiatives being completed, such as, "Single Portals of Information")	1, 2	Goal 2, Strategy 2 Goal 3, Strategy 3	High (Universal Design plays a role, ties into retention)	Moderate (requires coordination across College)	Yes (all internal resources)	Yes	No
4	<b>Technology Literacy for Faculty, Staff, Students</b>	2, 5, 6	Goal 1, Strategy 3 Goal 2, Strategies 1, 4	High	Moderate	No	No	Yes

<sup>1</sup> Pr. = Priority (sequence). Considerations: mandate & compliance; low-hanging fruit requiring limited to no additional resources; *feasible* strategic breakthroughs for institution.

Priorities that are related, that feed off or impact one another, or could happen in parallel are noted as #a, #b, #c, etc.

<sup>2</sup> Value = greatest impact on students and our institution's ability to deliver the service intended (e.g., teaching, support, etc.).

<sup>3</sup> Difficulty = how complex is the implementation and our ability to sustain it post-implementation.

Pr <sup>1</sup> .	Goals <i>(Projects to be defined and prioritized based on these)</i>	IT Strategies Alignment	RCTC Strategic Plan Alignment	Degree of Value <sup>2</sup> (H/M/L)	Degree of Difficulty <sup>3</sup> (H/M/L)	Within Existing Staffing Levels	Within Existing Budget Levels	Organizational Design & Capabilities
			Goal 3, Strategies 2, 3 Goal 4, Strategies 2, 4		(may have to require it)	(Involves IT, EdTech, CTL, Faculty Online Learning, etc. but requires more integrated services across the entire college.)	(Will need to add resources for training, reallocate resources or increase staffing levels)	Requires investment in expansion of <i>EdTech</i> service group.
5a	<b>Reorganization &amp; Redesign of IT Division</b> <i>(Service Management, creation of “Field Techs”, increased staffing support in Academics &amp; Student Services; Systems Analysis, Project Management, Architecture skills)</i>	1, 2, 3, 4	Goal 2, All Strategies Goal 4, Strategy 2, 4	High	Moderate	Somewhat <i>(most yes, growth areas depend on attrition and reallocation of positions or new positions)</i>	Somewhat <i>(budget must keep pace with market and portfolio of current assets invested)</i>	Yes Need to shift from operations to more value-added services.
5b	<b>IT Service Management</b> <i>(Service Portfolio/Catalog, Customer Service, Request Intake, Request Status, Assets Management, Self-Service, Documentation, etc.)</i>	1, 2, 3, 4	Goal 2, All Strategies Goal 4, Strategies 2, 4	High	Moderate	Yes	Yes	Yes Need to mature existing processes and acquire some key tools to improve communication and transparency.
5c	<b>Remote Support Tools and Processes (including Administrative Account Management)</b>	1, 2, 3, 4, 5	Goal 1, Strategy 3 Goal 2, Strategies 1, 4 Goal 4, Strategies 2, 4	High	Moderate	Yes	Yes	Yes Need to be able to accommodate Administrative Rights and Routine updates to systems.
6a	<b>Modernize &amp; Stabilize Core IT Infrastructure</b> <i>(Network, Data Center, Communication Closets, Software/Package Deployment, Phones move to VoIP<sup>4</sup>, Windows 11, etc.)</i>	1, 2, 3, 4, 5, 6	Goals 1, 2, All Strategies Goal 4, Strategies 2, 4	Very High <i>(If core is not working, everything else is impacted)</i>	Moderate	Yes	Somewhat <i>(requires on-going investment through Strategic, R&amp;R or TechFee funds)</i>	Yes Need to modify existing staff PDs and realign to new Org. Design; also augment with additional skills.
6b	<b>Electrical Power Stabilization to Prevent Equipment Damage or Malfunction</b>	2, 4, 5	Goals 1, 2, All Strategies Goal 4, Strategies 2, 4	Moderate <i>(major distraction for IT; causing</i>	Moderate	No <i>(will require partnership with Facilities and external vendor contractors)</i>	Somewhat <i>(will need to shift internal budgets to cover costs)</i>	No

<sup>4</sup> VoIP = Voice over Internet Protocol i.e., telephones through an online/internet connection versus a land line.

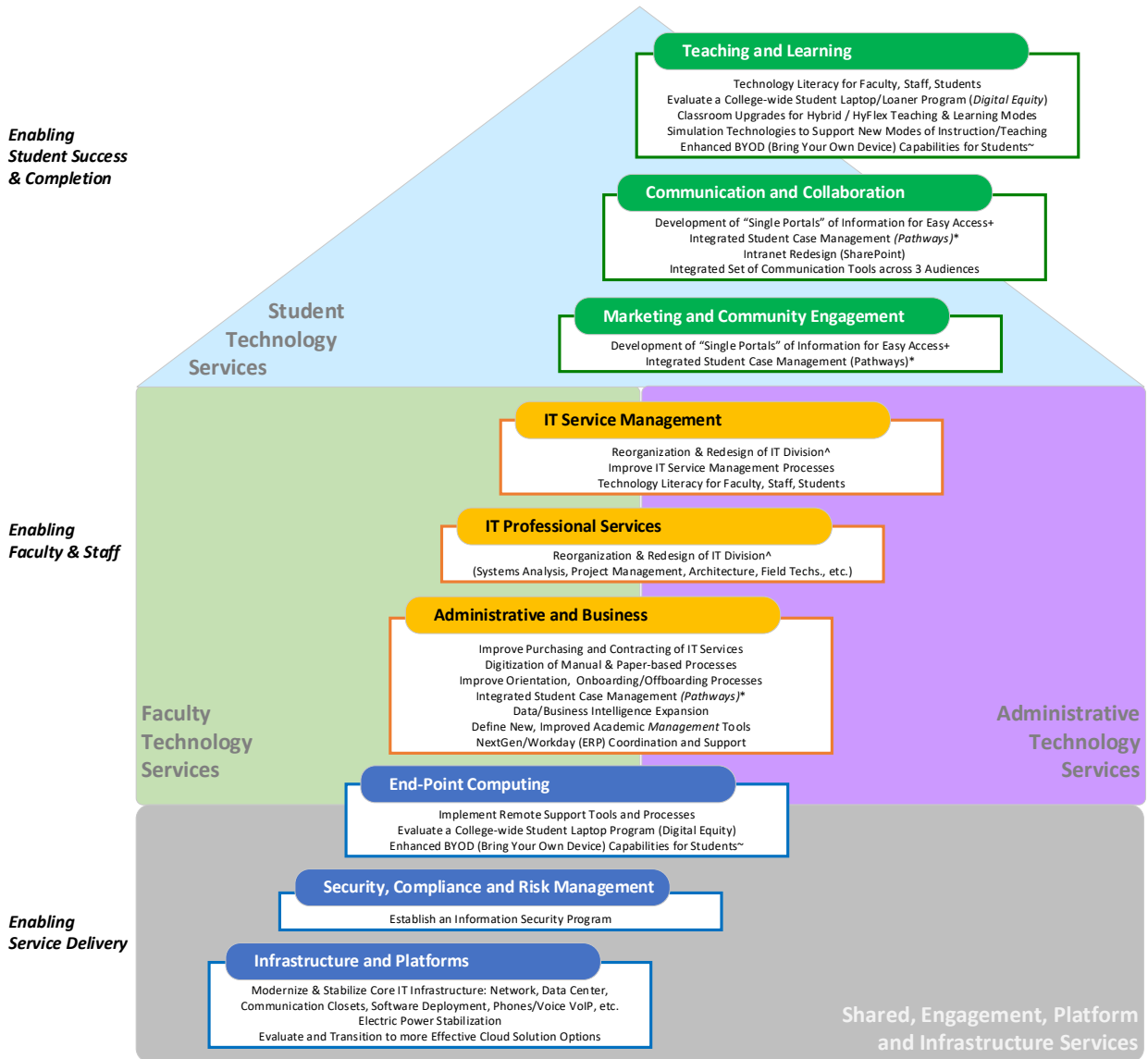
Pr <sup>1</sup> .	Goals <i>(Projects to be defined and prioritized based on these)</i>	IT Strategies Alignment	RCTC Strategic Plan Alignment	Degree of Value <sup>2</sup> (H/M/L)	Degree of Difficulty <sup>3</sup> (H/M/L)	Within Existing Staffing Levels	Within Existing Budget Levels	Organizational Design & Capabilities
	(Due to lightning, surges from RPU, various line conditioning issues, etc.)			functional impact & costs)				
6c	<b>Evaluate and Transition to more effective Cloud Solution options</b> <i>(Hosting/data/application services in the cloud e.g., databases, website, etc.)</i>	1, 2, 3, 4, 5, 6, 7	Goals 1, 2, All Strategies Goal 4, Strategies 2, 4	Moderate <i>(major distraction for IT; causing functional impact &amp; costs)</i>	Moderate	No <i>(will require external vendor contractors)</i>	Somewhat <i>(will need to shift internal budgets to cover costs)</i>	No
7a	<b>Integrated Set of Communication Tools Across 3 Key Audiences (Students, Faculty, Staff)</b>	1, 2, 3, 4, 5, 6, 7	All Goals All Strategies	High	Moderate <i>(O365 in place, many others too)</i>	Yes	Yes <i>(if focus is on strategy and use of existing tools)</i>	No
7b	<b>Intranet Redesign (SharePoint)</b>	1, 2, 3, 4, 5, 6, 7	Goal 4, Strategies 2, 4	High	High	No	No	Yes Need to establish an ongoing governance process.
7c	<b>Development of “Single Portals” of Information for Easy Access</b>	1, 2, 3, 4, 5, 6, 7	Goals 1, 2, 4, Various Strategies	High	Moderate	No	No	Yes Need to establish an ongoing governance process
8	<b>Data/Business Intelligence Expansion</b>	1, 2, 3, 4, 5, 6, 7	All Goals All Strategies	High	Moderate <i>(leverage Precision Campus)</i>	Somewhat <i>(IR + IT)</i>	Somewhat	No <i>(for short-term)</i>
9a	<b>Integrated Student Case Management</b> <i>(including supporting tools – CRM, Mobile Apps, Workflow Automation, Forms Mgt. Solutions, “AdvisorVue” as an interim solution, etc.)</i>	1, 2, 3, 4, 5, 6, 7	Goal 1 All Strategies	Very High	High	No	No <i>(requires multi-year investments)</i>	Need to expand capacity in Student Technology Service analysis, design, implementation.
9b	<b>Digitization of Manual &amp; Paper-based Processes</b> <i>(including fillable forms, workflow automation, eSignatures, PDF editors)</i>	1, 2, 3, 4, 7	Goal 1, Strategy 2 Goal 2, Strategy 1, 2 Goal 3, Strategy 2, 3 Goal 4, Strategy 1, 2, 4	Moderate	Moderate	Yes <i>(depends on if using simple approach e.g., PDF, or a DocuSign type services implementation – much more expensive)</i>	Yes <i>(depends on if using simple approach e.g., PDF or a DocuSign type service implementation – much more expensive)</i>	No
10	<b>Establish an Information Security Program</b> <i>(a matter of risk management)</i>	1, 2, 3, 4, 5, 6, 7	Goal 2, Strategies 1, 4	Moderate	Moderate	Somewhat	Somewhat <i>(would have to make reassignments within existing staffs’ position descriptions)</i>	Yes Need a functioning or partial <i>Chief</i>

Pr <sup>1</sup> .	Goals <i>(Projects to be defined and prioritized based on these)</i>	IT Strategies Alignment	RCTC Strategic Plan Alignment	Degree of Value <sup>2</sup> (H/M/L)	Degree of Difficulty <sup>3</sup> (H/M/L)	Within Existing Staffing Levels	Within Existing Budget Levels	Organizational Design & Capabilities
								<i>Information Security Officer (CISO) role.</i>
11	<b>Simulation Technologies to Support New Modes of Instruction/Teaching</b>	2, 4, 5, 6	Goal 1, Strategies 2, 3, 4 Goal 2, Strategies 1, 4	Moderate	Low <i>(technically, assumed to be covered by vendor)</i>	No	Yes	May have to consider different staffing mix to both run simulation and provide instruction to students
12	<b>Define New, Improved Academic Management Tools (e.g., assessment, curriculum development, etc.)</b>	1, 2, 3, 4, 5, 6, 7	Goals 1, 2 All Strategies	High	High	No	No	Need to expand capacity in Academic Technology Service analysis, design, implementation.
13a	<b>Evaluate a College-wide Student Laptop/Loaner Program (Digital Equity)</b> <i>(research options effort)</i>	2, 5	Goal 1, Strategy 2, 3 Goal 3, Strategy 1, 2, 3	Moderate	Moderate	No Additional staff would have to be funded thru program	No Needs to be self-funding through a fee or other source (like Financial Aid)	Yes Need to expand existing capabilities + outsourced value-add services
13b	<b>Enhanced BYOD (Bring Your Own Device) Capabilities for Students</b> <i>(including supporting components, such as, charging stations)</i>	2, 3, 4, 5, 6	Goal 1, Strategy 2, 3 Goal 3, Strategy 1, 2, 3	Moderate	Moderate	Yes	Yes	No



## IT Goals Aligned to IT Service Portfolios

The below structure summarizes all the IT Goals that were identified and synthesized during this plan’s data gathering process. The Goals are mapped to the Service Portfolios that IT currently supports. Also, for more understanding about dependencies, the Goals are mapped into a structure that depicts a ‘house’ – *foundational elements* that allows for everything else to be built upon and which holds all other services together; *main internal use elements* by key institution stakeholders; leading up to the *end service goals* of delivering on our Mission and meeting student needs and outcomes. Since this plan represents a long-term horizon (i.e., multiple years), priorities and resources for the Goals listed will have to be defined annually. An initial priority list is provided in the previous section titled, “Key Goals, their Alignment, and Feasibility Analysis Matrix”; however, these priorities will likely change with shifts in the operating climate of the College, budget availability and the internal maturity of the institution itself.



## IT as an Enabling Service

Nowadays, Information Technology (IT) is a critical part of the operating environment of RCTC and any organization. IT is an enabling service to further the mission and purpose of RCTC, in providing its primary product/service – teaching and learning.

### IT Investment and Governance

Governing investments in technology is a necessary enterprise-wide function for both creating new value and minimizing risk, through defining priorities, ensuring alignment to College goals and strategies, and allocating the right resources to accomplish goals and objectives. IT investments are dynamic and constantly changing, but it is safe to say that RCTC has an annual investment of about **\$6.5 million+ in current usable IT equipment and services**. (*For more detailed information on the IT Investment Process, please see Appendices B<sup>1</sup> and B<sup>2</sup>*)

**Governance** ≡ **Maximizing the value of our portfolio of investments while managing/minimizing risk.**

**Governance is about making better, well-informed, and collaborative decisions i.e., increasing the quality of our decisions.**

For RCTC, the IT Governance model consists of:

1. The IT Division (ITD) is responsible for defining the IT Governance model.
2. The **external-facing** (i.e., facing outward from the IT Division) IT Governance structure and responsibilities consists of the following (*for details please see Appendix C<sup>1</sup>*):
  - a. The **Cabinet** serves as the IT Investment Council (ITIC).
  - b. The Chief Information Officer (CIO) is responsible for setting up and administering the IT Steering Committee or **College IT Advisory Committee (CITAC)** of various college stakeholders and representatives.
  - c. Several operational structures will be used to manage architecture, project management, funding, and risk management.
3. In addition to the external-facing or institution governance structures noted above, IT has several **internal-facing**, operational management governance structures to assist the Division in managing its day-to-day work activities (*for details please see Appendix C<sup>2</sup>*).

### Funding of IT

Technology investments (funding) in **Higher Education is in the range of 3.5% up to 11%, out of Total Revenue, with an overall average of about 5%**, depending on the institution type and how management sets their priorities. (Source: Gartner Inc.) Technical colleges tend to spend more on IT than, for example, liberal arts institutions.

All technology has a lifetime, some, such as laptops, have a life of between 3 and 5 years, while others, such as, a data center’s HVAC<sup>5</sup> systems, might last 15 to 20 years. The first year of any technology’s implementation includes, (a) the acquisition cost, and (b) the implementation and roll-out costs. After year one, continued licensing, maintenance, upkeep, and support are the primary costs. **RCTC currently has an investment of about \$6.5 million+ in total technology assets and services** that need to be constantly supported and maintained for the duration of their lifetime.

RCTC-IT has the following funding model:

**A. Sources of Revenue**

- a. Operating funds
- b. Student Technology Fee
- c. Sometimes, one-time project or grant funds.

**B. Key Costs**

- a. Personnel expenses (~80%)
- b. Equipment expenses (~8%)
- c. On-going licensing expenses (~8%)
- d. Miscellaneous: supplies, training, travel, incidentals, etc. (~4%)

The **Student Technology Fee (TechFee)** has been \$10 per credit for the past 13 years (since 2009). This fee should have been raised by now and must be raised soon to cover the expanded footprint of technology that is in the College. However, even an increase to the maximum allowable rate (to \$12 per credit), the level of revenue generated is not sufficient to meet current and future demands. Over the past several years, the TechFee has been declining in available dollars because of the drop in enrollments; however, our investment in technology has been increasing.

FY23 Budget Scenarios					
Year:	FY2021	FY2022	FY23 Enrollment Scenarios		
			3,000 Enroll	2,900 Enroll	2,500 Enroll
TechFee	\$1,000,593	\$995,000	\$891,000	\$861,300	\$742,500

We have postponed and drawn-out certain technology updates, beyond their End of Life (EOL) or End of Support (EOS) or been more selective in what we invest so that the available funds could meet priority obligations. This type of strategy has other ramifications, for instance, it requires **more support personnel to handle constant break-fix issues** and impacts overall service performance, compatibility, and efficiencies, not to mention being more likely to be vulnerable to security concerns.

**Note:** Recent Federal COVID funds have helped to address some of the updates we have not been able to make over the years; however, we have also added about \$2 million of *new*

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<sup>5</sup> HVAC = Heating, Ventilations, Air Conditioning

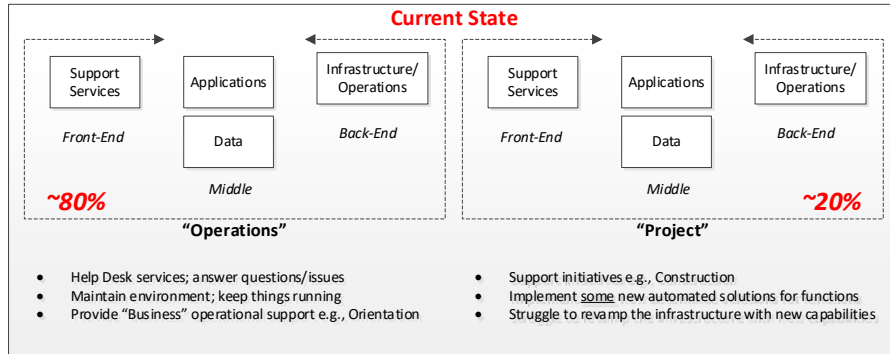
technology in our environment that will require decisions on whether to continue them or not, in four-to-five-year time period, because updating all of them will not be affordable for the College long-term.

About **11 IT positions** are being funded either fully or partially by the TechFee. It would be ideal (a best practice) to keep personnel costs associated with the TechFee to about 1/3 or less of the total funds so that technology updates, new acquisitions and other needs could be effectively met. Also, using the TechFee to offset institution budget challenges will set the College in a precarious situation for addressing technology and automation obligations that the institution should meet.

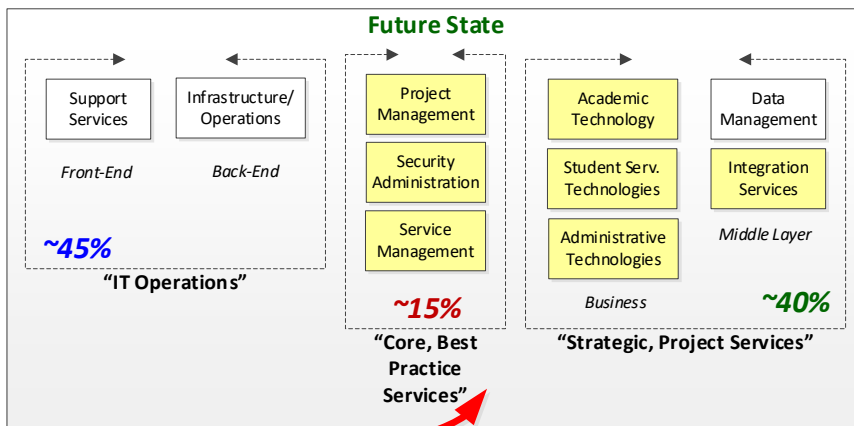
# Organization Design

## Organization Structure

The past RCTC IT organization structures have primarily focused on **operational support** with little capability to **focus on business value creation**. Therefore, there are **gaps** in providing certain kinds of higher-level services to the key functional areas of the College (Student Services, Academic, Administrative), beyond day-to-day support needs, as depicted in the current state structure in the image below.



Consequently, to achieve a shift from operations to projects and value, IT is intent on reducing/eliminating operational needs, *as much as possible*, so that capacity (within existing resources) can be created to address broader strategic needs. Since growth through new allocation of resources/positions is almost impossible in the current budget/operational environment, part of our strategy must be to use **more student workers** to address basic operational needs, to the extent allowable/possible.

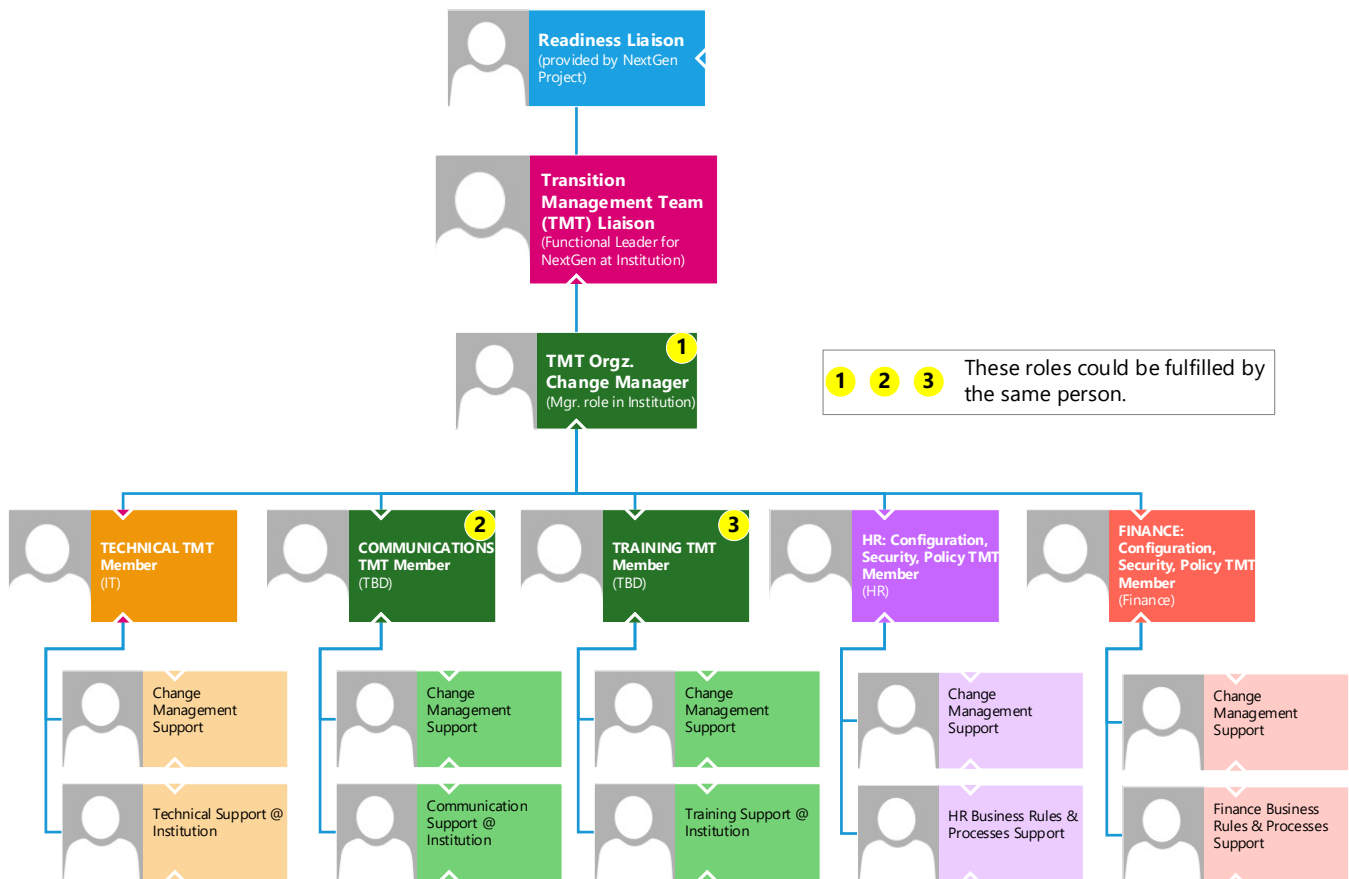


**Shift ~35% of focus...**

- This will take time and will require...
- Leveraging more student workers
  - Shifting staff over
  - Shifting appropriate vacant positions over (as retirements occur)
  - Re-skilling staff (if feasible)
  - Looking at 3<sup>rd</sup> party services to offload commodity operations
  - Governing through better priorities alignment with expectations

### NextGen – Statement on Project and Resource Needs

NextGen is a major, system-wide initiative to implement a new, modern Enterprise Resource Planning (ERP) system that replaces Minnesota State’s, in-house and aging ISRS system. This project involves replacement of the Finance system, Human Resources system and ultimately, the Student system, as well as many other dependent components. As part of this initiative, across all 37 colleges and universities in Minnesota State, over a seven (7) year period (concluding in 2027<sup>6</sup>), at a cost of more than \$150 million+, **each institution will also need to plan for its own transition to the system(s)**. Larger institutions will have an easier time meeting this expectation than smaller ones due to available funding and staffing levels. Regardless, each institution will need to plan for, out of its own resources, the following key roles/functions:



After the Finance and HR implementations are complete, the Student system will require a similar allocation of resources across IT, Student Services and Academic areas.

Given the magnitude of staffing support needs for the NextGen project, which has not been set aside/designated solely to the project, **the institution will likely feel some levels of resource shortages on other initiatives and projects**, from ALL areas of the College, over the course of this project’s timeframe. In addition, alternatively, the College may incur augmented staffing costs of about \$150,000 to \$300,000 annually to support key work assignments for this project

<sup>6</sup> NextGen *planning* efforts started in 2015; the project is expected to conclude in 2027.

through contracted services, such as, the hiring of a Change Manager, Project Manager, Business Analyst, or other key roles needed for the project.

## Appendices

### Appendix A – Enterprise Architectural Principles

BUSINESS ARCHITECTURE PERSPECTIVE	PRINCIPLE DETAIL
<b>Primacy of principles</b>	These principles of Enterprise Architecture <u>apply to all</u> departments within the enterprise/College.
<b>Enterprise Architecture scope</b>	Enterprise Architecture is intended to <u>present options and alternative</u> to problems and opportunities, to facilitate quality decision-making, while taking into consideration various constraints. EA is not about just managing to standards.
<b>Enterprise Architecture is everyone's responsibility</b>	<u>Business requirements will drive</u> the use of technology. Also, business units will participate in the information management decisions needed to accomplish business objectives.
<b>Project Initiation</b>	Successful project initiation resulting in quality <u>outcomes requires (1) inclusivity and involvement upfront (2) prioritization by the highest level of governance</u> , without it, the level of commitment and the desired results will always be in flux and questionable.
<b>Enterprise value/view focus</b>	Enterprise Architecture decisions are made for <u>maximum benefit</u> to the broader enterprise, as a whole, while minimizing total cost of ownership and risks.
<b>Complete solutions available on “Day 1”</b>	Solutions deployed across the College should be <u>available on the 1<sup>st</sup> day</u> they are needed e.g., academic/curriculum software on 1 <sup>st</sup> day of class.
<b>People, process knowledge, and skills are a vital asset</b>	People, their process knowledge, and their <u>skills are a vital asset</u> and will be developed and managed accordingly.
<b>Enabling business transformation</b>	Flexibility will be incorporated into the Enterprise Architecture framework, so that it <u>supports changing business needs</u> , and enables transformation.
<b>Business continuity</b>	Business functions and technology <u>operations are maintained</u> despite process or system <u>interruptions</u> .
<b>Process alignment to technology</b>	To allow for flexibility and control costs, the organization will <u>align processes to the technology</u> needed, rather than match the technology to <u>custom</u> processes.
<b>Compliance to laws and regulations</b>	We will maintain and operate our environment <u>in compliance</u> to all applicable laws and regulations.
<b>Simplicity</b> (also refer to “Universal Design” below)	Choose the <u>simplest solutions</u> and aim for <u>reduced operational complexity</u> for the enterprise/College. Simple, effective solutions that are <b>configurable</b> and meet functional needs are recommended over highly complex and <b>customized</b> solutions.

INFORMATION ARCHITECTURE PERSPECTIVE	PRINCIPLE DETAIL
<b>Information is a corporate asset</b>	Information will be managed as a corporate asset. It is vital to all aspects of the enterprise and for decision-making.
<b>There is only one primary source of data</b>	There will be one authoritative Master definition of data. Data will be <u>captured once</u> and <u>shared</u> as a copy across dependent systems and applications. This master data, a.k.a. source system, will be referred to as the “system of record”. Necessary, permanent modifications will only be made to the source/master data, not the copies.
<b>Managed data</b>	<u>Data will be classified</u> and managed, enabling the efficient administration and search of critical business information to support effective decision-making.



## TECHNOLOGY ARCHITECTURE PERSPECTIVE

## PRINCIPLE DETAIL

<b>Reuse before Buy before Build</b>	When new technology is required we should <u>leverage existing investments</u> prior to venturing to seek new ones. Next, investigation and evaluation of vendor products will be done before building it ourselves. Customization of purchased technology will be avoided when possible.
<b>Invest in stable platforms</b>	When purchasing technology, it is preferred that it be implemented after a point in its life cycle where it <u>has become stable</u> (in other words, we want to be “early followers” and avoid being at the “bleeding edge” of technology products, standards, and resulting implementations that have not been vetted effectively in the market).
<b>Out of the box preference</b>	Technology implementation will <u>focus on “out of the box” implementation</u> while meeting the core (e.g., 80%) of our needs; configuration is the next level of complexity we will consider; then, minimal, necessary customization, that create value and can be supported, will be considered versus major customizations, which should be avoided.
<b>Obsolescence will be avoided</b>	<u>Technology will be replaced</u> well before the time that it is no longer supported by the vendor, assuming proper notice is given. We want to avoid last minute migrations or operating under high degree of risk where we cannot recover from a failure.
<b>Guided by total business impact</b>	<u>Total business impact</u> (time, money, staff, skills, sustainability, etc.) and value, not just total cost of ownership, will be used in making technology decisions.
<b>Controlled technical diversity</b>	<u>Control the variety of technology platforms to use</u> , in the form of standards. Focus on 1 to 2 rather than a basket of options. Multi-tool solutions are okay when part of a well thought-out and integrated strategy that is designed to fill necessary gaps, with supported resources.
<b>Sustainable support</b>	“Rule of 2” – any mission-critical activity, both within the functional area and within IT needs to <u>have at least two (2) people with the knowledge</u> to ensure continued/sustainable support in case of staff being on leave or attrition.

## SECURITY ARCHITECTURE PERSPECTIVE

## PRINCIPLE DETAIL

<b>Security Ownership</b>	<u>Security is “everyone’s responsibility”</u> since it can occur at any part of the organization.
<b>Managed security</b>	Manage security enterprise-wide in <u>compliance to current best security practices</u> and security governance policies.
<b>Provide adequate information security</b>	<u>Adequate security will be provided</u> to protect our business information from inappropriate access or disruption, while assuring regulatory compliance and managing risk. Goal: zero (0) breaches in mission-critical systems & data.

SOLUTION/APPLICATION  
ARCHITECTURE PERSPECTIVE

## PRINCIPLE DETAIL

<b>Solutions are corporate assets</b>	<u>Applications and infrastructure will be managed as corporate assets</u> throughout their lifecycle including selection, acquisition, operation and retirement.
<b>Universal Design</b>	Whenever feasible and not cost prohibitive, all solutions should consider the <u>7 universal design principles</u> :

**SOLUTION/APPLICATION  
ARCHITECTURE PERSPECTIVE**

**PRINCIPLE DETAIL**

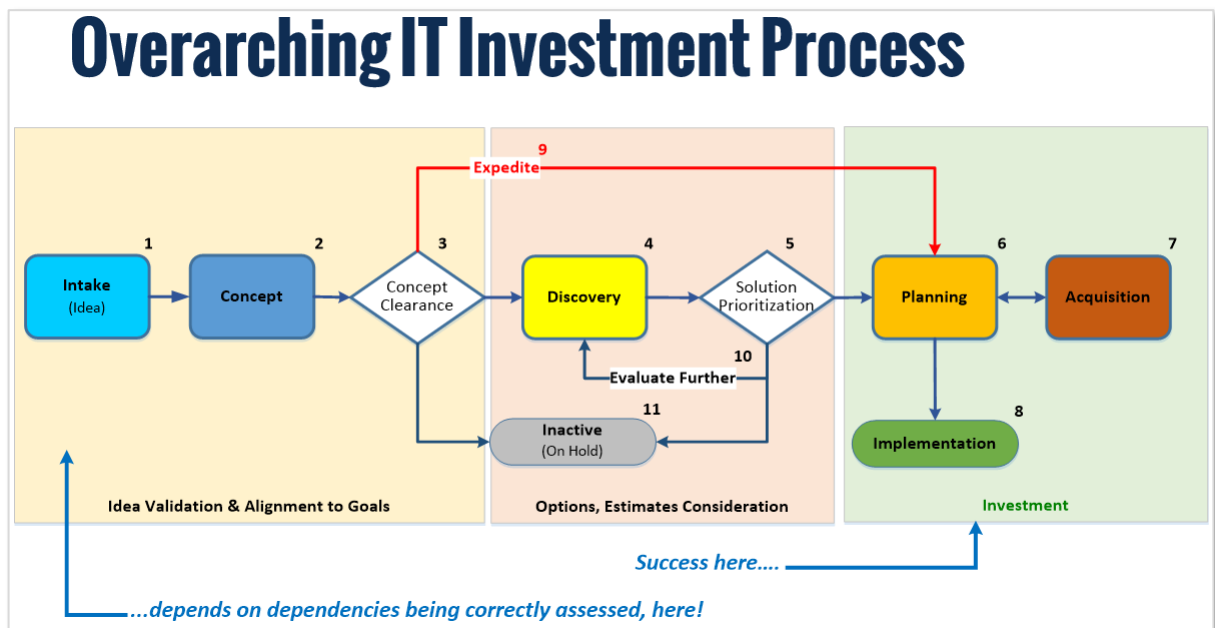
	<table border="0"> <tr> <td>1. Equitable Use (for diverse users)</td> <td>5. Tolerance for Error (prevention)</td> </tr> <tr> <td>2. Flexibility in Use (preferences &amp; abilities)</td> <td>6. Low Physical Effort (no fatigue)</td> </tr> <tr> <td>3. Simple and Intuitive Use (understanding &amp; skills)</td> <td>7. Size and Space for Approach and Use (independent of physical form)</td> </tr> <tr> <td>4. Perceptible Information (independent of senses)</td> <td></td> </tr> </table>	1. Equitable Use (for diverse users)	5. Tolerance for Error (prevention)	2. Flexibility in Use (preferences & abilities)	6. Low Physical Effort (no fatigue)	3. Simple and Intuitive Use (understanding & skills)	7. Size and Space for Approach and Use (independent of physical form)	4. Perceptible Information (independent of senses)	
1. Equitable Use (for diverse users)	5. Tolerance for Error (prevention)								
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3. Simple and Intuitive Use (understanding & skills)	7. Size and Space for Approach and Use (independent of physical form)								
4. Perceptible Information (independent of senses)									
<p><b>Design for scalability, change and reuse</b> <small>(Build for change (than to last))</small></p>	<p>Always architect, design, and implement <u>solutions for the long-term</u>, to change and reuse at the broadest level possible. Employ separation of concerns (SoC) design principles to separate code/modules/services into distinct sections and also separate stable from volatile services and code.</p>								
<p><b>Integrated use preference</b></p>	<p>Solutions should be designed with an <u>integrated, collective view of functional/business policies and processes (not silos)</u>. We should strive to <u>eliminate redundancy</u>.</p>								
<p><b>Self-service</b></p>	<p>Solutions should be designed and implemented for <u>increased ability by end-users to fully support themselves</u>.</p>								
<p><b>Fit for purpose</b></p>	<p>Maintain capability levels and create solutions that are <u>fit for purpose without over-engineering them</u>. Design solutions towards “Minimum Viable Product” (MVP), not maximum future potential, which may not be utilized due to the rapid change in IT.</p>								
<p><b>Adhere to industry standards</b></p>	<p><u>Industry standards will be leveraged for solution development</u>, to minimize technical diversity and complexity, improve interoperability and reduce the long-term total cost of ownership.</p>								
<p><b>Current to existing environment</b></p>	<p>Solutions should be current to the existing times and environment in which we operate, which is defined as:</p> <p style="text-align: center;"><b>Mobile 1<sup>st</sup>. Cloud 1<sup>st</sup>. Data and Analytics Capable. Self-Service Oriented. Rapid Turnaround/Speed.</b></p>								

## Appendix B<sup>1</sup> – IT Investment Process

All IT investments must **follow a disciplined, rigorous process** to ensure that what we do is going to generate value and not be a waste of time, waste of funds and distract our employees. This type of process minimally involves: (a) developing an idea into a concept or business case that aligns to our overarching goals, strategies, architectural roadmaps and standards; (b) identifying key dependencies, such as, time, costs, people’s involvement; (c) evaluating the information to make a decision; (d) conducting research or developing prototypes if necessary to assist with making the final decision; (e) prioritizing in the context of all other work, projects and initiatives that are underway; (f) developing a plan; (g) following approved procurement guidelines; (h) implementing using sound project management and change management approaches. The below image shows this approach in a simple flowchart.

Some of the key requirements for successfully executing IT investments include:

1. Projects and enhancements must be reviewed, approved, and prioritized by the IT Investment Committee (ITIC), in the context of all active assignments, before they become a work item for IT.
2. Ownership of solutions must have both: (a) functional owners (including executive sponsorship) – those that need the solution to further their operational activities and will ensure the use of the solution long-term; and (b) technical owners – those that will ensure that the solution is up to date and fully functional/working technically.
3. Projects must have a start and end period. Projects cannot be in a ‘continuous development’ (never-ending) state; however, release cycles can be used to accommodate on-going need for enhancements.



## Appendix B<sup>2</sup> – IT Investment Principles

All IT Principles are designed to help RCTC achieve its **mission** in a consistent and effective manner, increasing focus, reducing confusion with all stakeholders, and reducing waste (time and funds).

### *Principle 1: Information is a Strategic Asset, Owned by the Enterprise*

RCTC's operations centers on knowledge. The College shall **manage information as a strategic, enterprise-wide asset and resource** (vs. silos), using best practices in architecture, data management, application design, security, and technology integration.

RCTC shall invest in IT assets necessary to **effectively communicate** with its varied stakeholder groups including students, families, faculty, staff, businesses, and other partners.

### *Principle 2: IT Investments will be based on the needs of the Enterprise*

RCTC will evaluate potential IT investments with an **enterprise perspective**, seeking where possible to leverage investments to **avoid silos and redundant expenditures**, increase sharing and maximize the Return on Investments (ROI) and seek broader, integrated solutions.

RCTC will establish IT plans and evaluate IT investments within established best practices in **IT Architecture for educational institutions**, to promote coordination and enhance prospects for maximizing funding and standardize services and processes, while also addressing specialized requirements.

RCTC will assist staff **improve business operations** and effectively meet their client and stakeholder needs through well planned IT investments and services that includes an integrated solution of functional processes plus technology.

RCTC employs the “**Build Once, Reuse Often**” strategy, where application and data strategies and designs will, when feasible, follow an **encapsulated, component-based, interoperable, service-oriented architecture**, resulting in solutions being implemented/built once, reused often, and maintained efficiently and easily over time. Services are built on standard architecture and integrated with other core services for increased ability to exchange and share information.

To the extent possible, RCTC will leverage **shared, commercial, and existing** solutions and deploy technology using an “**Out of the Box**” configuration strategy; deviations, customizations and modifications will need business justifications with appropriate Return on Investment (ROI) analysis.

RCTC Budgets will not employ a “**Use-it or Lose-it**” approach. College functional areas will not be **penalized** for not using their allocated funds within a designated timeframe. Instead, functional areas will be incentivized to be stewards of their allocated funds and update and adjust plans, taking into consideration strategic needs and the associated funding required to support them.

### ***Principle 3: IT Services are Coordinated through a Central Organization***

The foundation for RCTC Information Technology operations is a comprehensive **central organization**, responsible for the College's IT Architecture, which works in close cooperation with individual business functions providing excellent customer service.

IT services provided shall be customer/**user friendly, reliable, flexible, accessible, secure, and responsive** to current and emerging needs.

To the extent possible, RCTC will implement technology with “**Self-Service**” capabilities to increase client, stakeholder, and functional areas' ability to **perform activities on their own** expediting operational changes and requiring minimal support.

### ***Principle 4: IT Management Shall Foster Innovation through a Disciplined and Agile Process***

RCTC shall operate within an **established, integrated, and collaborative governance process** for IT investments across all functional areas, divisions, departments and the college, with defined project identification, prioritization, and escalation processes.

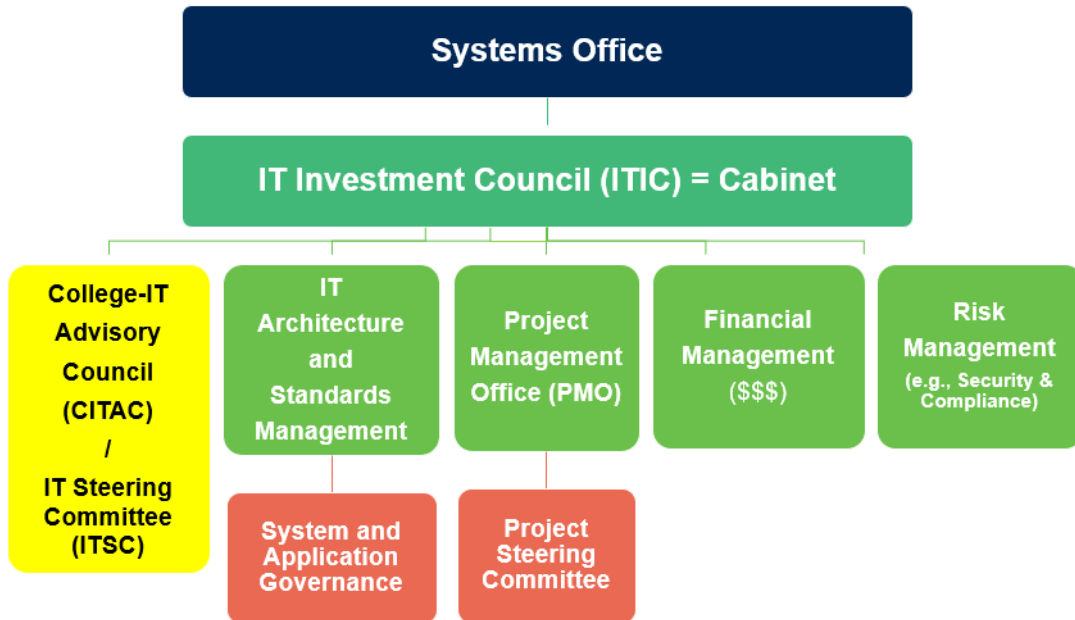
All IT investments will be effectively managed through the **application of best practices in project management**, with the goal of increasing transparency, accountability and achieving project benefits on time and within budget.

As stewards of public resources, all IT investments will be carefully assessed to verify that expected benefits will be realized and are worth the costs i.e., **Total Cost of Ownership (TCO)** and **Return on Investment (ROI)** analysis.

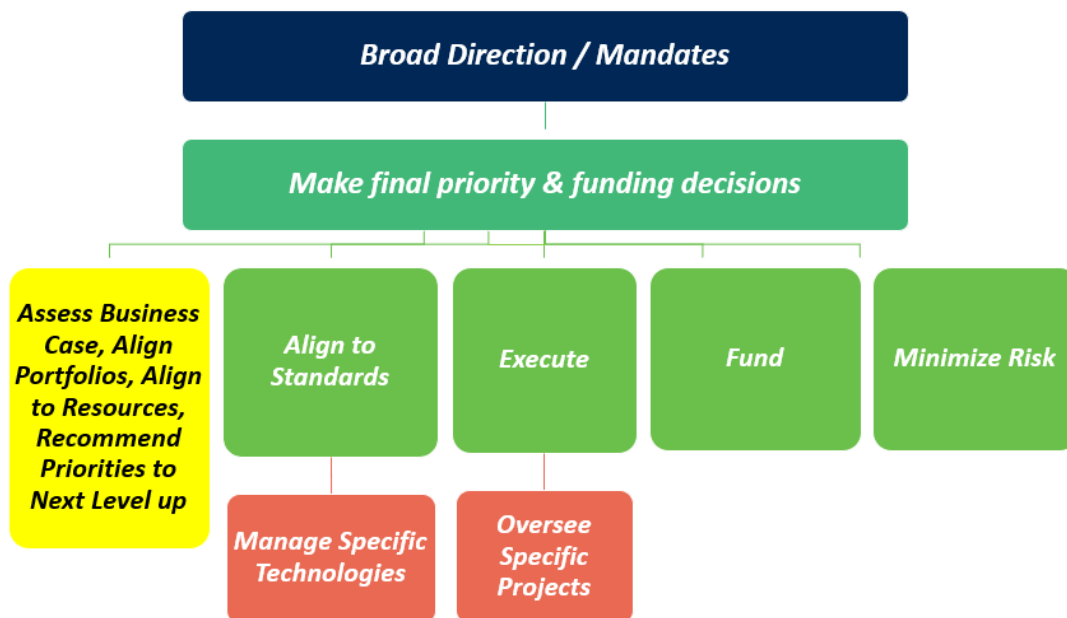
Innovation and emerging technologies (R&D) are encouraged in a disciplined context, needing to be evaluated, piloted, and pursued as appropriate to ensure that RCTC's **workforce remains productive, nimble, and responsive** to changing needs while the **IT environment remains stable and supportable**.

## Appendix C<sup>1</sup> – IT Governance Structure & Responsibilities (External Facing)

### Structure:



### Responsibilities:



1. The President’s Cabinet, functions as an **IT Investment Council (ITIC)**, approves final business cases for projects and allocates funds to support them. This group’s primary responsibilities are to: (a) set the College’s priorities, (b) make better College-wide investment decisions, (c) ensure an integrated, cross-functional participation on key projects, (d) raise the awareness and increase the transparency on active or tentative projects.

2. The next layer is the operational advisory group called, the **College-IT Advisory Council (CITAC) or IT Steering Committee**, which evaluates project requests, compares and contrasts business cases for projects and recommends moving forward with investment decisions, stopping a low-value effort or putting a project on hold. Supporting the College-IT Advisory Council are a set of operational functions that perform key activities that enhance and provide information to the Council for assessment and decision.

**CITAC Membership: 7-13 members**

- CIO (co-chair)
- Rotating council member – 12 months (co-chair)
- Members:
  - 1-2 deans
  - 2-4 faculty (appointed from Faculty Shared Governance/Assembly)
  - 2-4 administrative support areas (admissions, registrar, financial aid, business office, student life, etc.)
  - 1-2 students (*whenever possible*)
- As Needed:
  - College or IT staff related to a specific topic of discussion

- 2.1. **IT Architecture and Standards Management** ensures that the technical architectural issues surrounding projects has been considered.
- 2.2. **Project Management Office (PMO)** ensures that project requests have legitimate business cases, they are aligned to the College's goals, the technical assessment of the projects has been completed, tentative solutions follow established policies and standards, and information is available to the governance Councils to make an advisory or final decision.
- 2.3. and 2.4 **Financial Management and Risk Management** are two other key functions for consideration, ensuring that projects are (a) funded and (b) any compliance and vulnerability issues for the project have been taken into consideration. Within these levels is inclusion of **Student Government**, as appropriate, to provide information to them and obtain feedback from them on key issues, needs and direction (e.g., Technology Fee utilization).
3. The last layer is the **day-to-day system or software application operational governance structures and project-specific steering committees** to support, large, multi-functional, mission-critical system, application or project. At this level, the focus is on the complex workings of a one particular system, platform or application across the stakeholder community e.g., the LMS.

## Appendix C<sup>2</sup> – IT Governance Structure & Responsibilities (Internal Facing)

IT’s internal governing structures consist of the **IT Operations Lead Team (ITOLT)**, which performs several functions: (1) operations improvements within IT, (b) acts as a technical **Change Advisory Board (CAB)**, and (c) as the **Technology Architecture Board (TAB)**.

In addition, IT has several operational management structures to ensure that day-to-day issues/needs, communication, and coordination are occurring effectively. Some of these structures are invoked on an *as-needed* basis, depending on the circumstances.

