Technology Plan

Introduction:
IT infrastructure is a key part of everything we do in a modern world and within our college. We are good, as a college community, at "keeping up" with what's new and promising in the technical realm, but actually using this technology to its fullest potential takes a lot more planning and effort. It also requires the funding to purchase new technology when appropriate, replace technology as it ages, offer trainings, and maintain the knowledge base needed to support the technology.

What this plan is:
The core of this plan is based in infrastructure. It focuses on technology that other technology sits on top of, whether it's the network that our computers connect to or the classroom technology that is used to deliver our programs to students.

The Technology subplan has been split up into several specific areas; classroom equipment, computer labs, phones, simulation equipment, telepresence, wired, and wireless networks. Our focus in each of these areas includes right-sizing and updating what we have in place now, establishing and budgeting for hardware replacement cycles, and planning for innovation in the future.

What this plan is not:
This plan does not address the sorts of things that fit into our current day-to-day operations. For example, we do not talk about evaluating which software packages we choose to run as that is something that happens on an ongoing basis. We do not address user support here as that's something we talk about constantly. Though we recognize that such things are important and cannot fall by the wayside, we felt that it was important for us to focus this plan on the underlying infrastructure.

This plan also does not touch upon the technology that is provided to us by the Vermont State College system's Office of the Chancellor. We rely on much of this technology for some of the most critical parts of our business, but those technologies will be addressed by the OCIT Strategic Plan.

Updates to this plan:
Though many areas of this plan will have details that constantly as we move through projects, the plan as a whole will be evaluated each year. This will take place during the Spring semester, ahead of planning for our busy summer project season.

Technology Subplan area 1: Classroom Equipment

Introduction:
>Within the context of this plan, 'Classroom Equipment' relates to the computer setups provided in each room, A/V equipment and other peripherals that connect to them, and the furniture that houses this equipment. It does not relate to any program specific technology such as lab equipment or demonstration pieces as this will be covered in the Academic subplan.

Subplan Goals:
- Create a standard for classroom technology that can meet the needs of users of our educational spaces and which is flexible enough to fit into our varied classroom and lab environments.

- Update all of our classrooms and labs to this standard by 2023

Strategy and Schedule:
FY19
- *Establish Requirements* – The main FY19 goal is to work with students, faculty, and other users of our education spaces to establish the requirements for what we want our classroom setups to look like and how they should function.

- *Gather Information* – Another important goal of this year will be to gather information on our varied landscape. This includes floor plans, basic notes on existing infrastructure – wall types, power availability, network drops, etc.

FY20
- *Build Pilots* – We plan to build two pilot classrooms, one in Randolph Center and one in Williston, where we can turn our FY19 requirements into reality. This will involve an RFP to find a vendor to work with, research into the details of what technology we use and how it all works together, and deciding what makes the cut and what does not based on cost.

FY21
- *Incorporate Feedback* – We'll start this year by making tweaks to the two pilot rooms based on feedback we receive throughout FY20.

- *Upgrade initial rooms* – Our first round of approximately 20 classrooms will be upgraded to the new standard.

FY 22-23
- *Continued upgrades* – The rest of our rooms will be upgraded during these two years.

Technology Subplan area 2: Computer Labs PC Replacements

Introduction:

Though students do more and more on portable devices, computer labs remain a critical part of our educational experience. The ability to provide pre-configured software in a controlled environment is something that we cannot yet match on student owned laptops in a cost-effective manner.

We've been working towards a replacement schedule for these PCs for several years now and have a schedule that works for both the equipment and the college budget. We will also continue to look for ways to reduce the number of labs that we need to replace without reducing the effectiveness of our programs.

This subplan covers replacement of the PCs in our computer labs, classrooms, program-specific labs, telepresence rooms, Hartness Library spaces, and larger study areas.

Subplan Goals:

- Replace all educational PCs on a 5-year replacement cycle and in a manner consistent with our plan and budget.

Strategy and Schedule:

Yearly

- *Update Machines* – Each spring we evaluate our Academic Computer Replacement Schedule to make sure that what we plan to replace on paper makes sense with the on the ground reality. We sometimes make minor tweaks if we feel that a lab still has usable life without degrading the quality of education in those spaces. We may also re-prioritize upgrades if lab hardware requirements have changed anywhere.

- *Gather Feedback* – We talk to our Academic Scheduler as well as departments with specialized labs to make sure that we need all of the labs that we're upgrading.

- *Upgrade PCs* – After incorporating feedback from the above two bullet points, we replace PCs per the Academic Computer Replacement Schedule.

Technology Subplan area 3: Phones

Introduction: Phones represent an area where our five-year strategy can result in cost-savings and efficiencies that should mitigate the costs of upgrading technology over time. Other VSC institutions have recently had success in this area and can help inform our strategies. Over time, there will likely be increasing opportunities to adopt system-wide approaches, so our planning will have to factor in a changing landscape.

Subplan Goals:
- Continual upgrade process over next five years to include:
  - Continuing work toward achieving consistency of hardware in all locations over the short term, including exploring potential switchboard upgrades.
  - Develop strategy for eventual migration to VOIP.
- Comprehensive review of all phone-related billing, service contracts, and hardware to achieve efficiencies and cost-savings.
- Develop strategy for training and cross-training for users and administrators on an annual basis or as otherwise required.
- Work with the OC and other VSC institutions, when appropriate, to look for opportunities to consolidate management of aspects of the system.

Strategy and Schedule:
Year 1
- Convene task force to implement comprehensive review of all phone-related expenses.
  - Explore bringing Twinstate or another outside entity to the Randolph to take a deep dive on hardware?
  - Work with Mike Dente of NVU to conduct review, to include: PRI discussion, long distance and Bluetooth coms, service contracts, hardware, system redundancies, and opportunities to consolidate.
  - Explore option of using outside consultants to recommend changes, with their compensation based on a percentage of savings.
- Develop comprehensive training plan for users and administrators; explore partnering with current vendors and/or outside contractors annually.

Years 2-5
- Implement annual training plan.
- Implement recommendations of comprehensive review task force.
- Factor adaptability into all planning; remain vigilant of the changing landscape and how it factors into investments in phone technology.

Technology Subplan area 4: Printers and Copiers

Introduction:

Despite what people have been promising us for years, we are not yet living or working in a paperless environment. Copiers and printers remain critical pieces of IT infrastructure though they are often overlooked until they break. We are currently doing a good job of maintaining our printing hardware though the software side could use some serious work. We're just starting to work towards an appropriate replacement cycle for copiers.

Subplan Goals:

- Establish a replacement plan for all printers and copiers.

- Evaluate our current placement of all printers and copiers and look for efficiencies.

Strategy and Schedule:

FY19

- *Evaluate Copier Placement* – Work with faculty and staff to make sure our copiers are where they need to be, especially in Randolph Center

- *Replace Green hall "copier 2"* **–** This is dependent on the step above and it's possible that this copier will move elsewhere.

- *Upgrade to Papercut MF (Summer, 2019)* – This is a software package that will improve all aspects of our print environment from user experience to monitoring and maintenance.

FY20

- *Evaluate need for a print/copy RFP* – We need to make sure we're aware of what's available for service, what industry pricing is, and generally make sure we're getting the best deal possible.

- *Efficiency Study for printer placement* – Much like the copier placement mentioned above, we need to make sure our printers are all located in the best areas to make them convenient for all of our users.

- *Build inventory and replacement schedule* – This will use our Academic PC replacement schedule as a template.

FY21 and Beyond

- *Continued updates* – Continue to replace hardware based on our FY20 plan, update the plan, and evaluate industry print services to make sure we stay current.

Technology Subplan area 5: Simulation Equipment

Introduction: Simulation equipment replacement cycles vary by discipline. It is most often funded through a combination of grants and departmental budgets. This subplan is a compilation of strategies articulated by the programs that require simulation equipment.

Subplan Goals:
- Develop timelines, cost estimates and resources for the replacement of simulation equipment to keep pace with best practices in each respective discipline.

Strategy and Schedule:

Dental Hygiene
- Technologies currently in place: computers at every dental unit, almost completely paperless other than the consent form, HIPAA form and medical history; one mobile intra-oral camera; two sets of digital sensors for radiographs and phosphorous plates.
- Additional anticipated needs: a digital panograph machine ($25,000); intra oral cameras at every unit; additional patient monitors at each dental unit; and (wish list item) ceiling mounted cameras at each unit so faculty can monitor students.
- Licensing considerations: none.
- Cost estimates: panograph ($25,000); new computers ($20,000); intra oral cameras ($55,000 plus installation)
- Projected costs for ongoing maintenance/hardware/software: computers will probably need to be replaced in about 3-5 years ($18,000?); additional patient monitors ($6,000 plus wiring). Main concern is that equipment is now 13 years old and will probably need to be replaced in about 15 years.
- Training needs: working together to reduce costs as much as possible.

Nursing
- Technologies currently in place: Pyxis; pediatric simulators; laptops and monitors; barcode scanners; cameras; A/V system; mobile lab; Electronic Health Records software; on-line simulations; Nearpod; and Telepresence.
- Additional anticipated needs: staffing related to Telepresence and simulations (3); replacement laptops and monitors; pediatric simulators; Pyxis upgrades.
- Licensing considerations: Pyxis; PNCI; EHR; and Nearpod.
- Cost estimates: Pyxis upgrade - $19,500; pediatric simulators - $250,000; replacement monitors and laptops - $27,000; A/V solutions - $150,000; and costs related to additional Telepresence and simulation staffing.
- Projected costs for ongoing maintenance/hardware/software: see above.
- Training needs: as needed, dictated by whatever new technology is adopted.

Dental Therapy
- Technologies currently in place: none.
- Additional anticipated needs: full lab fit-up and all equipment.
- Licensing considerations: to be determined.
- Cost estimates: $1.2M

- Projected costs for ongoing maintenance/hardware/software: to be determined.
- Training needs: to be determined.

Respiratory Therapy
- Technologies currently in place: Telepresence; Moodle; CastleBranch - an online program used for maintaining the background checks and health records of all allied health students; Safe Exam Browser (free) - downloaded by students and used for secure testing; DataArc - a software program for maintaining lab and clinical records of students; RTBoard Review - an online board preparation program for the students.
- Additional anticipated needs: none.
- Licensing considerations: CastleBranch (used by both Nursing and Respiratory Therapy); Safe Exam Browser is a free download; Turning Point is free for instructors but a two-year license is purchased by the students; DataArc - students must purchase a two-year license; the program is charged a nominal licensing fee each year that comes out of the respiratory therapy budget; and RTBoard Review is purchased for each student.
- Cost estimates: please see above.
- Projected costs for ongoing maintenance/hardware/software: none currently.
- Training needs: none currently with respect to technology.

Paramedicine
- Technologies currently in place:
- Additional anticipated needs:
- Licensing considerations:
- Cost estimates:
- Projected costs for ongoing maintenance/hardware/software:
- Training needs:

Radiography
- Technologies currently in place: equipment inherited from Champlain College (in storage).
- Additional anticipated needs: to be determined.
- Licensing considerations: to be determined.
- Cost estimates: to be determined.
- Projected costs for ongoing maintenance/hardware/software: to be determined.
- Training needs: to be determined.

Technology Subplan area 6: Telepresence

Introduction:
Our state-wide telepresence system was created in response to the closure of Vermont Interactive Technologies. It uses A/V equipment in conjunction with standard PC software such as Zoom and Skype to connect classes at remote sites together. The equipment for these spaces has been budgeted for replacement since the beginning and our goals for this subplan focus on staying on that funding schedule while making sure we have the right technology in place.

Subplan Goals:
- Re-evaluate technology on a yearly basis to look for improvements that enhance the experience in the rooms without undue added cost.

- Continue funding the replacement of equipment on a per-room yearly basis.

Strategy and Schedule:
FY19
- *Wired mic replacements* – When we built out our rooms we went with wireless mics everywhere to try to maintain flexibility in the spaces and cut down on install times. Since then we have trialed and had more success with wired mics and we want to continue to build those into more of our rooms.

- *Cooling fans for equipment racks* – We've had some issues with our equipment racks overheating and the manufacturer has recently released an add-on cooling fan that we plan to add everywhere.

- *Trial PTZ camera* – We will be trying out a PTZ camera in one room in hopes of replacing multiple fixed position cameras in the future.

FY20
- *Improve camera placement and quality* – Some of our spaces have camera angles that look a little too much like the viewpoint of security cameras. We can address this to some extent by moving the cameras further back in the room and zooming in more by default. This requires rewiring the cameras.

FY21
- *Full equipment evaluation* – Our current equipment replacement plan has us replacing most of our equipment in FY21. We will first evaluate each component to determine what really needs replacing and what has useful life left.

FY22 and beyond
- Evaluate and update equipment as needed.

Introduction:
> Most of the hardware involved in our wired networks was purchased a decade or more ago. The vast majority of the wiring in Randolph Center is even older, having been installed in the mid 1990s. Though we put a lot of effort into using this technology to its fullest potential we have never had an adequate plan for it that includes replacement cycles.

Subplan Goals:
- Perform assessments on each Williston, Randolph Center, and Bennington campus buildings that is connected to our wired network in order to right-size the number and placement of network jacks in each.

- Create and fund a plan to replace all wiring, fiber optics, network switches and associated equipment on a yearly replacement cycle.

Strategy and Schedule:

FY19
- *Establish standards* – We need to create a standard for the types of fiber/network cable we will use, manufacturers, fire ratings, etc.

- *Establish priorities* **–** We will build a prioritized list of when all buildings will be updated.

- *Evaluate network ports in Nutting, Green* – We will look at where all of the ports are currently located in Nutting and Green and eliminate as many unused ports as possible.

- *Update Nutting and Green* – Replace wired networks in these buildings.

- *Establish replacement cycle and budget for switches* – This will use the Academic PC replacement cycle as a model.

FY20-23
- *Continue evaluations and upgrades* – Continue to evaluate/eliminate unused ports in each building and then upgrade the cabling.

- *Upgrade switches* – Upgrade switches based on the FY19 plan.

Introduction:
Every one of our users, whether student, employee, conference guest, or someone walking in off the street, has more wireless devices than we would have ever thought possible just a few short years ago. Our wireless system used to be one of the best college wireless systems in the state but unfortunately it has not kept up with our needs. Our Randolph Center residence halls are one of our biggest problem areas due to the block wall construction absorbing much of the signal. We are also lacking in an appropriate replacement cycle for all of our wireless hardware.

Subplan Goals:
- Establish and fund a replacement plan for all hardware associated with our campus wireless networks.

- Increase coverage in all Randolph Center residence halls by moving access points into residents' rooms.

- Simplify the guest wireless network to better accommodate conferences, other guests, and personal devices in residence halls.

Strategy and Schedule:
FY19
- *Clearpass/Airwave* – Clearpass and Airwave are pieces of software that we have purchased to work with our wireless system. They will let us provide better services to our guests, expand the types of devices that can be used in our residence halls, and help us to better track down problems. This will be a collaboration with NVU and OCIT.

- *New APs in Nutting* – We will be moving to putting a wireless access point into each residence hall room to eliminate the problems caused by the block wall construction. Nutting is first on our list and others will follow as the network in those buildings is replaced.

- *Build hardware replacement schedule* – This will be modeled on our Academic PC replacement schedule.

FY20-23
- *Hardware replacement* – Replace APs based on the plan built in FY19.