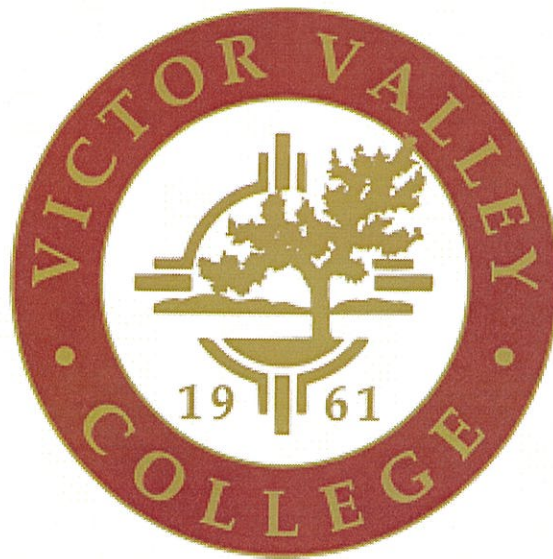


Victor Valley College

Technology Master Plan

2021 – 2025



Preamble

This document is the product of a multi-year collaboration among the entire VVC community from 2018-2021 as the campus was updating the Ed Master Plan. It was led by the Technology Committee, with input from all represented constituent groups. The final document was reviewed by the Academic Senate, Administration and the College Council.

The condition and plans shown in this document represent the current state as of the date of final approval. The VVC Technology Master Plan will be reviewed and updated with each annual planning cycle to keep it aligned with the VVC Educational Master Plan and VVC Facilities Plan. The most recent review was in May, 2021.

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Executive Summary

The Technology Master Plan (TMP) describes the way the VVC technology investments and technology services will support the goals of the VVC Educational Master Plan. It includes a discussion of the technology planning and governance processes, guiding principles and plans for each major category of enterprise-wide technology. Highlights of this plan include:

- Depiction of VVC's overall technology direction. The areas of investment emphasis align to the strategic goals of the College.
- Student success plans will include areas where technology can be used to improve the student classroom experience and to increase access to student services.
- VVC is committed to improving operational efficiency in student support processes and business processes. Automation, self-service, and digitation of current process requiring paper or manual data entry are all part of these initiatives. This will support the caring campus initiatives.
- Decision-making must increasingly be informed by data. Application architecture and data management processes must be developed to support this change.
- VVC supports the Guided Pathways model currently being implemented. Support responsive student tracking systems and structured onboarding processes that provide students with clear, actionable, and usable information they need to get off to the right start in college. VVC's explicit focus on equity also drives all efforts related to this plan. An overarching Equity Imperative serves as a beacon for VVC to truly support students who traditionally have faced greater obstacles to accessing technology.
- Gaps in the current technology infrastructure are identified for each technology investment area. The identification of gaps is followed by a description of plans to close these gaps.
- Appendices provide additional detail regarding technology roadmaps, financial requirements, and technology architecture.
- Most technology investments and most technology projects have a lifetime of over five years. This plan tries to look as far ahead as possible at the investment needed in information technology and technology-enabled processes for VVC to achieve its goals. The TMP will be reviewed annually by the VVC Technology Committee to keep it aligned with progress made on the Educational Master Plan goals and the information technology improvements envisioned in this document.

Technology at Victor Valley College

A. VVC Vision, Mission, and Values

VVC Vision

Committed to equity and social justice, Victor Valley College will be the model of an innovative community college through exceptional student experiences that drive success, promote civic engagement, and meet community needs.

VVC Mission

Victor Valley College, in partnership with the community, is dedicated to providing opportunities for student learning and success through academic advancement, workforce development, and personal growth.

VVC Values

As a student-centered learning organization, we will uphold the following core values:

- Excellence - providing superior service and educational learning opportunities
- Integrity - guiding the college's actions with an internally consistent framework of principles
- Accessibility - facilitating access to the college's programs from other locations
- Diversity - valuing different points of view and contributions of all
- Collaboration - encouraging recursive interaction of knowledge experience and mutual learning of people who are working together toward a common creative goal
- Innovation - providing creative approaches to learning problem solving and growth

B. Information Technology Services Vision and Mission

The Vision for Technology at VVC:

Technology at Victor Valley College will provide the infrastructure that effectively promotes academic success and service innovation on a digital campus.

The Mission for Technology at VVC:

In supporting the College Mission, Technology will:

- Deliver technology to the Victor Valley College District in support of the college mission;
- provide easy access to a secure, reliable computing environment; and
- provide these capabilities in an affordable and sustainable way.

Technology Governance at Victor Valley College

A. Governance Processes

Technology governance at VVC is the process that assures that technology investments are aligned with the strategic and operational goals of the College, and the oversight of the efficient and effective execution of technology programs.

Technology planning takes place on both a long-term (strategic) and a short-term (tactical) level. The Technology Master Plan (TMP) provides documentation of the long-range planning. The completed TMP assures alignment of technology planning with the VVC Mission, Educational Master Plan, and Facilities Master Plan.

This document will also provide the guidance for the alignment of technology goals with the goals of the district and will serve as a guideline for budgetary decisions. This plan is intended to provide a template to establish policies and procedures for those areas that acquire, use, and manage technology.

The Technology Master Plan is a living document. It will be reviewed and updated annually as part of the annual planning cycle.

B. VVC Technology Planning Cycles

1) Strategic planning

Long-range technology planning looks at a five- to seven-year horizon. The reason for this is most large information technology investments take almost a year to implement and have a lifecycle of more than five years. Additionally, most significant technology investments have annual costs following initial implementation that must be considered in the budgetary process.

Long Range planning will be aligned with the Education Master Plan (EMP) and Strategic Enrollment Management plan (SEM) as driven by PRAISE reports.

2) Tactical Planning

The Department of Information Technology Services will develop an annual plan for projects and technology investments for the coming year. This plan will be created in coordination with the other departments at the College, and it will be approved by the Technology Committee then the Cabinet.

The annual tactical plan will identify progress in executing the VVC Technology Master Plan, and it will forecast progress for the coming year as approved projects are completed.

In addition to the annual tactical plan, a proposal for projects will be developed for the Fall, Spring, and Summer terms. This detailed plan will include the deliverables and timelines for the projects staged for each term.

Updates to the Technology Master Plan will be integrated into the annual PRAISE process which provides for the prioritization and funding of new projects. Changes to the Master Plan will be reviewed and approved by the Technology Committee.

Throughout each planned project cycle, the Technology Committee will provide oversight of the execution of approved projects consistent with the committee's role laid out in AP1201. The purpose of this oversight is to offer input from the represented campus constituencies, and to identify and resolve, if possible, competing priorities. The Information Technology Services Department will provide regular updates to the entire campus and to the VVC President's Cabinet.

Planning Context for the Technology Master Plan

A. Changing Academic Environment

The current investment in academic technology is primarily focused on lifecycle support and upgrades to more modern equipment that improves the teaching and learning experience in the classroom. Changes in the expectations from the California Community College Chancellors Office will undoubtedly compel changes in the way students are taught and assessed.

Technology changes at a very rapid pace and VVC needs to be responsive to those changes as they occur. VVC will learn from its recent Covid experiences to adapt and respond accordingly.

B. Technology Environment

The COVID-19 pandemic has challenged all industries and sectors; higher education was no exception. Throughout the pandemic, we have all learned a different way to think about the future. We have learned the usefulness of considering scenarios and increasing our agility and flexibility. Scenarios help us anticipate alternative potential futures so that we are prepared to mitigate risk and exploit opportunities. Agility and flexibility help us move quickly and adaptively as circumstances change and new information comes to light.

Alignment with ACCJC Standards

ACC Standards III.C.1-5 address technological resources:

C. Technology Resources

1. Technology services, professional support, facilities, hardware, and software are appropriate and adequate to support the institution's management and operational functions, academic programs, teaching and learning, and support services.

This standard is addressed in *Strategic Priority 4: Instructional Technology* later in this document.

2. The institution continuously plans for, updates and replaces technology to ensure its technological infrastructure, quality and capacity are adequate to support its mission, operations, programs, and services.

This Technology Master Plan is part of our continuous effort to plan for updates in technology addressing this standard. This was more specifically addressed previously in this document in the section *B. VVC Technology Planning Cycles*.

3. The institution assures that technology resources at all locations where it offers courses, programs, and services are implemented and maintained to assure reliable access, safety, and security.

Central to VVC's mission is to "provide easy access to a secure, reliable computing environment." We also outline our goal of Equity and Access to Technology in *Strategic Priority 1* below.

4. The institution provides appropriate instruction and support for faculty, staff, students, and administrators, in the effective use of technology and technology systems related to its programs, services, and institutional operations.

As part of the stated Mission for Technology at VVC, we want to provide easy access to a secure, reliable computing environment. This is addressed later in this document in the section *Strategic Priority 4: Instructional Technology*. This document also addresses student support in *Strategic Priority 5: Student Support / Student Experience Technology Planning*.

5. The institution has policies and procedures that guide the appropriate use of technology in the teaching and learning processes.

VVC addresses the appropriate use of technology in AP 3720 and the appropriate use of email systems in AP 3721. Both of these APs have been updated and approved during 2021.

Strategic Priority 1: Equity and Access to Technology

(supports: EMP Frameworks - Caring Campus, Equity Imperative)

Equitable access to technology refers to all students having access to technology and information regardless of their ethnicity, socio-economic status, age, physical ability, or any other quality. It is not only integral for opportunities to learn, but also a fundamental component in assisting students with acquiring the knowledge and skills they need to become digitally savvy citizens.

A lack of equitable access to technology and information deprives students of learning experiences and can even limit their opportunities after graduation. This inequity is further exacerbated by the need for distance learning.

A. Technology access and community partnership

- VVC will seek out partnerships with other organizations in the community. VVC will research and develop plans for supplying Wi-Fi, free access to computers, printing, and laptops with hotspots that can be checked out.
- VVC will create a community map to show students local businesses that provide free Wi-Fi. VVC will encourage businesses to promote the message that VVC students are welcome. By creating these types of partnerships, students not only gain access but also a sense of support from individuals and business partnerships outside of the school community.

Strategic Priority 2: Information Security and Data Assurance Planning

(supports: EMP Framework - Pursuit of Excellence)

A. Data Integrity and Data Governance

VCC will participate in a Data Governance planning service. The results of this engagement will be:

- Increased knowledge and understanding of the basic concepts of data governance and how data governance can support reporting and data-informed decision-making
- The identification of a cross-institutional data governance committee
- A charter with a stated purpose and responsibilities for the data governance committee

B. Guiding Principles for Security and Data Assurance

- VVC will use NIST Security Standard version 1.1 as its compliance framework.
- Compliance with relevant privacy standards, such as HIPAA, FERPA, and PCI must also be assured.
- Future policies must align with the principles for personal data protection defined in GDPR and the California Consumer Data Protections Standard.

- Minimal risk of data loss or corruption will be assured through security protection, user awareness, and data backup.
- A system of measures will be in place to evaluate the health of the VVC information security and data assurance programs.

C. VVC Security and Data Assurance Standards

- Data management practices shall be aligned with the institutional needs.
- Data quality will be monitored and improved through a process of continuous improvement and governance.
- Data quality issues should be addressed at the root cause of inconsistencies or irregularities, rather than through quick fixes of specific issues.
- Security policies shall ensure VVC is compliant with external data access and protection regulations such as the Family Educational Rights and Privacy Act (FERPA), the Health Insurance Portability and Accountability Act (HIPAA), and the California Consumer Data Protection Regulation (CCDPR).

D. VVC Security and Data Assurance Planning

- The first step in improving VVC information security and data assurance is to conduct an audit of current systems and practices. This audit will be divided into four parts:
 - Review existing policies and policy enforcement for alignment to external standards such as FERPA and HIPAA.
 - Scan file systems, endpoints and other storage for any Personally Identifiable Information such as SSNs and credit card numbers. Correct identified issues.
 - Complete an NIST 1.1 audit of technology practices and systems. Using this audit, develop a long-term plan for improvement.
 - Use an external firm or firms to conduct a review of VVC systems for compliance with Payment Card Industry (PCI) standards and for any vulnerabilities to hacking or other intrusion that threatens data assurance.
- A security governance group will be responsible for continuing systems review and security awareness at VVC in order to promote continuous improvement. This status will be provided to the Technology Committee. This group will provide recommendations for relevant policy.
- Accountability for compliance with security policy and directives will be provided by ITS and the appropriate college leadership.
- Based upon the results of the security surveys investment will be made into needed systems and training.

Strategic Priority 3: Guided Pathways

(supports: EMP Framework - Guided Pathways)

Guided Pathways support the college in identifying and implementing technology that can facilitate implementation of each of the four pillars.

A. Clarify the Plan for Student Goals

- The VVC website will clearly show program maps, including job and transfer opportunities associated with each program.
- The VVC website will include access to up-to-date regional employment trends, wages, and job listings in fields related to each of the college's programs.
- The VVC website will include accurate information on transfer requirements and pathways by major for students' most common destination institutions.
- VVC will provide communication/alert regarding student progress and status routed automatically to the designated person(s) selected by the college (e.g., division staff, program chairs, advisors, students, coaches, etc.).

Strategic Priority 4: Instructional Technology

(supports: EMP Key Priority - Distance and Digital Learning Expansion and Enhancements)

A. Guiding Principles for Instructional Technology

In order to provide students with the best learning experience, technology decisions will be driven by pedagogy and instructional needs. We have set forth the following guiding principles:

- We are here for the students; technology will support their learning experiences.
- Technology will support instruction (pedagogy driving technology planning).
- We live in a mobile world; technology will be accessible and easy for everyone to use.
- VVC technological systems will be integrated such that students and faculty can access all key applications anytime, anywhere with a single sign-on.
- It is important that systems are reliable with a minimum baseline standard.

B. Minimum Standards

Technologies are always changing. Victor Valley College shall strive to maintain the pace with changing technologies, student technological needs, and educational best practices. Each year minimum standards are assessed and upgraded to meet current academic standards. These technical standards will be defined by the Department of ITS in consultation with the Technology Committee with the intent to provide functionality throughout the expected life of the device or system.

VVC shall provide software, hardware and lab support services. Instructional technologies, included but not limited to instructional design issues, learning management issues, computer and software issues, will have a first priority with support during all hours the campus is open. There shall be a plan in place for updating and maintaining all instructional technologies. Funds should be set aside for such needs. As VVC extends its hours of instruction, the College should explore ways to extend the hours of technology support.

There is no single solution that fits all disciplines and pedagogies; to this end, faculty and student need should be the driving force to review and set standards for instructional technology. As

student technologies develop and change, VVC technologies should mirror these changes in order to engage students and maximize their learning experiences and potential. For example, as email had been a primary means of communication in the past, we are seeing that students are using other technologies (texts, social media, etc.) to interact with each other; VVC should attempt to meet students at their point of need using technologies that will be most effective.

VVC will investigate new instructional technology, pedagogies and tools for the purpose of student success. To that effect, an annual forum for Instructional Technologies will be held on campus each spring to share findings. Faculty will be invited to share their positive classroom experiences and successes with the rest of the campus community. VVC shall have a strong commitment to providing and supporting professional development in the area of instructional technologies.

As an educational institution dedicated to student success, technological systems on campus will be integrated. Students and faculty should be able to access all their key programs in one centralized location (i.e., email, schedules and education plans, online course materials, financial aid, etc.) with a single sign-on.

C. Instructional Technology Planning

Current State

At the beginning of FY 2018-2019, the teaching and learning technology footprint at VVC was inconsistent. Some classrooms and labs had the most recent technology, while others were missing tools needed for routine instruction, such as projectors and podium computers.

To some extent, the planning processes for technology, for pedagogy, and for student engagement (as part of the whole student experience at VVC) have taken place separately, rather than as an integrated process focused on student success.

The COVID experience is changing instruction. Many classrooms will be shifting to a hybrid flexibility model as a result. VVC is beginning the planned changes to meet these needs. Faculty input will be assessed to best fit the true needs at VVC.

Plans

- Develop additional technology standards for all classrooms. Develop additional standards for classrooms to meet pedagogical needs.
- Update the lifecycle management process for academic technology to show where VVC is with respect to current and developing standards.
- A list of software site licenses will be regularly updated and made available to all VVC constituents. Access to cloud-based programs will be available both on- and off-campus. A process for recommending new software for the campus will be included in the PRAISE process.
- Develop infrastructure plans that increase the accessibility to teaching and learning systems.
- Foster innovation which enhances our teaching and learning processes. Classrooms will be flexible to meet the demands of both onsite and online courses with remote or hybrid

instruction. One such model is the Hybrid-Flexible (HyFlex) classroom.

Strategic Priority 5: Student Support/Student Experience Technology Planning

(supports: EMP Key Priorities - Retention, Persistence, Completion, and Post-completion success; Strategic and Efficient Enrollment Growth)

A. Guiding Principles for Student Support Technologies

- VVC Technology supports nearly friction-free access to student services. Student Services technologies create, wherever possible, a self-service environment to increase access and reduce the cost of services.
- Student Services technologies move VVC away from paper-driven and manual process supported customer service, such that staff time can be used to deliver the services that build relationships and require human interaction.
- Technology should be accessible and easy to use so that it meets students and staff in the mobile world they live in at their point of need.
- VVC technological systems are integrated such that students and faculty can access all key applications anytime, anywhere with a single sign-on.

B. Standards for Student Support Technologies

- Essential student services will be measured for availability, striving for 100% availability with continuous improvement.
- Student Services systems must be integrated to provide one-time entry of data, routing by workflow, and a single source of truth.
- Students must be able to easily access their applications and information, including access on small devices, such as cell phones.
- VVC applications should be intuitive for students to use.
- Student data must be accurate and accessible for reporting and analysis. Information security standards must protect student data from unauthorized access or corruption.

C. Student Support Technologies Planning

- The Student Services organization has invested in applications that provide increased self-service for students and easier navigation of administrative and academic processes. These include:
 - EAB Navigate for student on-boarding and program planning,
 - The Canvas Learning Management System,
 - Administrative Text Messaging (SMS) software,
 - Improved ease of access with a redesigned VVC mobile app, and

- An electronic VVC catalog to make catalog access search easier for students.
- VVC will continue to create infrastructure and an application environment that provides anytime, anywhere, any device access to student service applications.
- Application and database integration will continue to be improved to create greater data integrity and automated workflow.
- The Colleague Student Information System will continue to be updated to take advantage of the built-in application capabilities and promote improved process efficiency.
- Provide staff with training to enhance the effectiveness of our technology tools.

Strategic Priority 6: Business Systems Technology Planning

(supports: EMP Framework - Pursuit of Excellence)

A. Guiding Principles for Business Technologies

- Business systems, wherever possible, will provide a self-service environment to increase access and reduce the cost of services. Staff and faculty request processes will be paper-free and supported with automated workflow and online approval.
- Business systems must be integrated to assure data consistency from one system to another. Integration will eliminate manual intervention to share data or to keep subscribing systems up to date.
- Business systems data and analytic tools must be accessible with near real-time data to support informed decision-making.
- Technology must be accessible.
- VVC technological systems will continue to provide staff and faculty access to most applications anytime, anywhere with a single sign-on.

B. Standards for Business Technology

- Wherever possible, business applications will be intuitive to use. Systems will be accessible on campus and off campus, such that a temporary loss of access to VVC Main Campus would not result in interruption of all business services.
- Enterprise systems will be integrated in a way that data integrity is promoted throughout all business processes. This means that data will be entered one time in the system identified as the authoritative data source.
- Data integration will be supported by workflow that reduces the amount of effort needed to complete operational processes and that can keep all connected systems aligned.
- Long-term supportability of business technology will include minimizing the amount of effort needed to keep systems updated. System processes will be developed such that intervention by technology staff or business office staff is not necessary for recurring, definable processes.

C. Business Technology Planning

Current State of Business Technology

- VVC has technology in place for most business functions. Human Resources and Financial Systems are provided by San Bernardino County. Commercial systems provide support for Student Services, Reporting and Analysis, Scheduling, and Communications.
- Several of the current systems are not being used to their full potential. This is due to lack of training to key operational users, lack of data integration requiring additional steps to continue a process between systems, and lack of automated workflow that would reduce the amount of labor involved in a process, while also reducing the number of user-introduced errors.
- Data quality standards and improvement processes are not formally defined. There is not currently a program for continuous improvement in data quality and consistency. The authoritative system for key data has not been defined.

Business Technology Plans

- Increase the capability to access business processes that are available through the web, a portal, or from an application that can be remotely accessed.
- Continue to develop workflow that supports the use of electronically fillable and routable forms in order to reduce effort, improve timeliness, and improve data quality.
- Continue to develop data integration that uses a defined authoritative system as the originating record for key data. Create data handling processes that keep primary systems in alignment.
- Develop a data governance process that will work toward continuous improvement of data quality and access.
- Identify the user training needed to fill in knowledge gaps about current systems, such that the workflow and automation capabilities of these systems are used, rather than depending on more labor-intensive processes.

Strategic Priority 7: Infrastructure Technology Planning

(supports: EMP Framework - Pursuit of Excellence)

A. Guiding Principles for Technology Infrastructure

- Reliability of key systems will be high enough that system performance can be counted on by most users in most situations to be there when they need it. Performance standards must be established and measured.
- Information Technology Infrastructure will create an environment for anytime, anywhere, any device access teaching and learning systems. A similar level of connectivity to administrative systems is necessary for self-service applications for both students, staff and faculty.

- Infrastructure capacity includes processing, storage, and transmission. Demands in each of these areas is increasing. While recognizing the financial constraints involved, VVC investment choices will provide for the increased capacity dictated by instructional needs.
- Information Technology must be sustainable. Infrastructure planning will include both project costs and lifecycle costs (including staffing and training) in order to assure financial sustainability. Projects planned to close known gaps will spread over time to apply available funds to the highest priorities. Funding and priorities will be reviewed as part of each annual PRAISE cycle.
- Infrastructure investment decisions must be made with multi-year financial impact in mind.

B. VVC Infrastructure Standards

Availability

Simply put availability is a measure of the percentage of time the equipment is in an operable state. Infrastructure reliability is the foundation to be sure that all VVC systems and applications are available to users when they are needed. In collaboration with the Technology Committee, the Information Technology Services Department will establish measurable performance standards for core infrastructure availability. Performance against these standards will be part of regular updates provided to the Committee.

Affordability

New systems must be designed with an analysis of the “life cycle cost” of a proposed system. This analysis must include procurement costs, support resources, and long-term requirements. This analysis will be included with the proposal of any new initiative. Additionally, tracking of performance against anticipated costs will be reviewed as part of the PRAISE analysis.

Capacity

Systems capacity must be managed in a way to support processing and storage capabilities aligned to current needs, as well as enough capacity to provide for anticipated growth during a given investment period. This period will normally be considered two fiscal years.

Accessibility

The goal for VVC infrastructure investments is to provide anytime, anywhere access to essential systems and services. This will include on-campus access using direct network connections and Wi-Fi, as well as secure internet access for off-campus access.

Security

Threats to the security and integrity of VVC and student data are increasing. VVC technology infrastructure must include provisions for the protection and monitoring of all VVC systems. Regular audits of VVC’s security posture must be informed in order to keep pace with evolving threats.

C. VVC Infrastructure Planning

Capacity

- VVC storage capacity is good. A storage system was installed in 2016, and it is currently at about 85% capacity. This capacity is reaching a critical boundary. We need to develop retention rules to reduce the amount of data retained.
- Campus network bandwidth has recently been increased to 10 Gb/sec. This capacity should be sufficient for internet connections and performance of cloud connected applications for the near future.
- As mobile applications and devices have become more common, the existing wireless infrastructure has become stressed. Over the next few years, Wi-Fi will be increased in the areas where students and staff congregate.
- Existing server capacity supports current process requirements. New applications or extension of existing applications may require additional investment in processing capacity, but server capacity will be managed as part of on-going lifecycle maintenance. Due to COVID and expanding technology requirements for a remote workforce and distance learning, VVC needs to find additional server and processing capacity.

Availability

- Current availability depends upon the continued operation of existing equipment. Planning for failover and alternative configurations must be in place to maintain continuous operations.
- Most data and systems configurations are part of an integrated backup solution. VVC could recover from most data center failures. VVC must define the time to recovery and the allowable latency of the data.
- VVC shall develop procedures to support recovery following a complete loss of the data center.

Affordability

- Affordability of VVC technology is provided with a multi-year financial forecast to help manage changes in state apportionment or to assess what the lifecycle supportability of all systems will be.
- Lifecycle costs shall be included in decisions to invest in new systems.

Accessibility

- New systems are being installed to improve accessibility to VVC systems. These include migration to Office 365, Virtual Desktop Infrastructure, and SharePoint online.
- As new systems are purchased and integrated into the VVC Technology Infrastructure, accessibility must be included in the selection and deployment.

Security

- VVC continues to invest in new security monitoring and support services to improve the ability to respond to the changing environment.
- The condition of VVC's security infrastructure and the adequacy of its policies and practices must be part of the on-going review of information technology readiness, and security investments must be given appropriate priority in this process. Integrated View of Technology Infrastructure Plans

The following table identifies the enterprise-wide infrastructure initiatives and the areas of infrastructure performance improvement these efforts support.

Initiative	Description	Capacity	Reliability	Affordability	Accessibility	Security
Virtual Desktop Infrastructure	Move to centrally hosted virtual desktops rather than standalone PCs. This improves support and extends desktop lifecycles.		X	X	X	
Wi-Fi Expansion	Expand Wi-Fi bandwidth and coverage to areas where there are high concentrations of people on campus.	X	X	X	X	
Business Continuity Disaster Recovery	Develop and maintain systems and processes for fail-over in the event of a data center outage, where primary instructional and business systems remain operational.		X		X	X
Security Enhancements	Perform a thorough audit of network infrastructure, identify vulnerabilities, remediate vulnerabilities and create processes to ensure we maintain compliance with established standards.		X		X	X

Appendices

Appendix A: Technology Trends

In developing the VVC Technology Master Plan, technology trends were reviewed in the following domains, each of which is discussed in this section:

- General technology trends
- Classroom and academic technologies
- Higher Education business and administrative technologies

General Technology Trends

- Privacy-enhancing computation features technologies that protect data while it's being used. VVC should invest in tools and technologies to protect privacy.
- An anywhere operations model will be vital for Victor Valley College to emerge successfully from COVID-19. At its core, this operating model allows for the college to be accessed, delivered and enabled anywhere — where students, employees and business partners operate in physically remote environments.
- Cybersecurity mesh is a distributed architectural approach to scalable, flexible and reliable cybersecurity control. VVC should consider a Managed Security Provider as a long-term strategy.
- Automation has become an increasingly important tool in managing complex business processes and technology systems. As a cost containment measure, VVC ITS will pursue automation of recurring system support processes.
- Cloud services provide advantages of improved business continuity, external support for maintenance and upgrades, and remote access to certain systems. Cloud service options will be considered in VVC technology long-range plans.
- Integration of smaller applications using APIs are becoming the norm for data integration and application delivery. VVC must invest in the skill set development necessary to support these changes.
- Data-driven decision-making is an increasingly important management approach to college governance that values decisions that can be backed up with verifiable data. This approach depends upon the quality of the data. Thus, maintaining high standards of data quality will be required of ITS.
- Mobile apps are becoming an integral part of VVC's technology as students and other constituents use mobile devices to do business. VVC's technology strategies will be aligned with these trends.

Classroom and Academic Technologies

Technology changes offer opportunities to introduce new pedagogical approaches intended to connect with VVC's current student population. VVC will need to develop plans to introduce these kinds of technologies in an affordable way and that is aligned with the instructional needs identified by faculty. Some of the technologies available to VVC instructors include:

- Active learning classrooms
- Mobile learning
- Analysis of student learning
- Speech recognition in teaching and learning
- Use of virtual reality
- Increasing online learning and blended online – in class learning
- Flipped classrooms
- Flexible classroom arrangements such as studio classrooms
- More use of Wi-Fi and personal devices in the classroom
- Increased use of digital library services and research data
- Increasing use of Open Educational Resources

Higher Education Business and Administrative Technologies

Advances in business technology offer opportunities to improve the quality of operational support while reducing total expense:

- Business process redesign to promote greater automation and self-service
- Mobile access to business processes
- Strategic vendor relationships
- Increased application integration and use of workflow across applications
- Increasingly complex compliance environment
- On-demand analytic data
- Increasing regulation regarding data security for personal information
- Increasing emphasis on technologies that promote campus safety
- More use of data visualization tools to provide insight

Appendix B: Technology Road Map

Information Technology Blueprint

NEAR HORIZON 1-2 YEARS

- Complete, student-centric website redesign project to support mobile-first and student-first initiatives
- Implement Virtual Digital Maps for campus navigation
- Enter the testing phase for Live Chat
- Migrate all Webadvisor services to Colleague Student Self-Service
- Provide IT infrastructure to support implementation of Hyflex Smart Classrooms
- Implement Consolidated Student Self-Service including:
 - Student Registration
 - Class Schedule
 - Course Catalog
 - Registration Status
 - Plan Ahead
 - Action Item Processing
- Implement Self Service Printer Kiosk
- Expand Wifi connectivity

MEDIUM HORIZON 3-4 YEARS

- Design and implement a Student Life platform with features such as highlights of student communities, extra-curricular activities, and discounts in the local area
- Implement Auto Attendance Tracking solution
- Implement Wellness and Digital Therapeutic APPS
- Provide IT infrastructure to support expansion of Hyflex Smart Classrooms
- Expand Wifi connectivity

FURTHER HORIZON 5+ YEARS

- Establish mutually beneficial partnerships with businesses that also supports the co-creation of IT solutions and services
- Implement location-based systems to find lost textbooks and other personal items; using a digital device to pay for meals at a self-service cafeteria; or finding the time, location, and cost of various student activities
- Install networked video cameras, digitalized LED lighting systems, digital identification card readers, geofencing, and other technologies that are being employed on many academic campuses
- Expand Wifi connectivity

Appendix C: Resources

Technology Trends

There are many organizations, magazines, and websites that describe the change technology environment in higher education and in the broader environment. The following websites and organizations were used to develop the technology trends cited in this document:

- a. EDUCAUSE <https://www.educause.edu/>
- b. Info-Tech Research Group <https://www.infotech.com/>
- c. The Horizon Report <https://library.educause.edu/resources/2018/8/2018-nmc-horizon-report>
- d. Forbes Magazine <https://www.forbes.com/>
- e. Deloitte Consulting <https://www2.deloitte.com/insights/us/en/focus/tech-trends.html>
- f. EdTech Magazine <https://edtechmagazine.com/higher/>
- g. Campus Technology Magazine <https://campustechnology.com/Home.aspx>
- h. <https://www.gartner.com/smarterwithgartner/gartner-top-strategic-technology-trends-for-2021/>

Technology Management Frameworks

Technology Management Frameworks provide VVC Information Technology Services with a Library of best practices and proven practices. The following technology management frameworks are used in the development of this plan and in the overall governance of VVC information technology delivery.

- COBIT 5: <http://www.isaca.org/COBIT/>
- ITIL: <https://www.axelos.com/best-practice-solutions/itil>
- NIST 2.1: <https://www.nist.gov/cyberframework>
- Agile Project Management: <https://www.pmi.org>

General Resources

- BP 1200: <http://www.vvc.edu/offices/president/docs/bp/BP%201200.pdf>
- BP 4030: http://www.vvc.edu/offices/Board_of_Trustees/Board_Policy_Manual/BP%204030.pdf
- AP 1201: http://www.vvc.edu/offices/Board_of_Trustees/Board_Policy_Manual/AP%201201.pdf
- AP 3720: <http://www.vvc.edu/offices/president/docs/ap/AP%203720.pdf>
- AP 6200: <http://www.vvc.edu/offices/president/docs/ap/AP%206200.pdf>