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Technology Plan

2018 – 2023

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Western Wyoming Community College's Information Technology Services (ITS) department maintains a technology plan with major revisions every 5 years and iterative versions every year. The 5-year plan is developed with assistance from the Technology Advisory Committee, Western Leadership Council, and the members of the ITS department.

MISSION AND VISION

MISSION: The mission of Western's ITS department is to provide responsive, high-quality, technology-based solutions and services that facilitate Western's mission as it applies to educational, technical, administrative, and community needs. The ITS Department is committed to providing the highest level of technical expertise and guidance while maintaining excellent customer service and integrity through research, collaboration, and communication.

VISION: Empower employees with the tools they need to perform their jobs at the highest level. Every student receives high quality technology support and digitally rich and relevant experiences. Promote productivity, efficiency, and create opportunities to transform the learning environment.

PURPOSE

The Western Wyoming Community College Information Technology Services (ITS) department provides technology support, security, related services, and equipment to all audiences of the College including students, faculty, staff, outreach, and community members while working within the rules and regulations established by the Federal Government and the State of Wyoming. The ITS department serves all education programs through: provision of equipment both permanent and temporary; technology direction and support; and numerous types of collaboration opportunities.

- **Equipment provisioning** – New Faculty members are provided with new or cleaned machines that are setup with their respective profiles and software to effectively work at Western. Classrooms and labs are also provided these standard machines and software with some labs receiving unique software licenses depending on the purpose of the lab (e.g. AutoCAD in an Engineering lab). All machines report anonymized data to the ITS department which is used to determine the optimal time for replacement of these machines (collectively referred to as the computer rotation process). Temporary computers are also available to staff and Faculty for use in a classroom or special needs. Laptops, desktops, projectors, peripherals, and mobile computer labs can be checked out from the ITS department as needs arise. This pool of equipment provides an efficient way of supplementing classrooms, staff, and Faculty with technology while sharing resources and saving capital.
- **Technology Support** – Requests for support are made through the ITS helpdesk which is available by phone, email, website, or physical office. The ITS department also performs regular checkups on equipment by scheduling downtime in labs and classrooms. These maintenance intervals include a full test of all software and equipment as well as software and hardware updates when necessary. These checkups are scheduled once per semester to reduce the impact on the student learning environment. In addition to classroom, staff, and faculty support, the ITS department maintains numerous servers and network infrastructure devices that provide the College with an enterprise-level communication and data processing platform. Proactive support for enterprise infrastructure is provided through the regular notification of technology events using the College's official form of email communication as well as the official ITS Change Control form website.
- **Collaboration opportunities** – To ensure that the needs of the College constituents are met and that the ITS department maintains the proper direction, numerous collaboration efforts have been established to improve communication and shared decision-making opportunities.
    - **Software requests** – Requests for new and existing software packages are made through the ITS helpdesk. These requests can include new software identified as part of a classroom requirement or the installation of existing software licenses from a previously identified opportunity. The software request is vetted through a series of tests to ensure that the software is compatible with the existing system as well as to identify any potential savings that may be presented to the College either through the elimination of existing software (replacing two or more software applications with a single application) or by the elimination or automation of work performed manually by staff members. The software is then documented to comply with any applicable rules, regulations, and licensing requirements.

- **Equipment requests** – Hardware requests are made through the ITS helpdesk to ensure that existing efforts are not duplicated. Hardware is evaluated to make sure it works with the existing infrastructure and does not bring the College out of any legal compliance currently withstanding. Currently, new hardware is granted only under special circumstances or through the regular rotation cycle. This limitation is created by budgetary and staff constraints; which is discussed further in the Strengths and Limitations section.
- **Technology Advisory Committee (TAC)** – The TAC is comprised of representatives from all areas of the College led by the ITS Director. The TAC investigates the impact of technology on education, employees, and students and makes recommendations to the ITS department about the direction and priorities for existing and new technologies. The TAC meets twice per month during the fall and spring semesters while Faculty are present to participate. Through proper representation, the TAC is able to identify important technology issues and help create a plan of action. The TAC operates under the following purpose statement:
    1. Strategically plan the use of technology as a tool to enable and support student learning and employee productivity.
    2. Identify opportunities for improvement in technology systems, processes, policies, and communication.
    3. Create a culture of technology adoption and innovation to evolve the campus community.

- **Director assessment** – The ITS Director coordinates and meets with other directors and Faculty leaders on the campus to ensure that needs are being met in each area. These meetings typically happen twice per year, or once per full semester. The purpose and scope of these meetings includes project management, needs assessment, and support service satisfaction.

PROGRAM ASSESSMENT

Assessment Planning

The ITS department regularly reviews its assessment methodology both internally using the Technology Advisory Committee (TAC) and members of the ITS department as well as externally using best-practices established by the Information Technology Infrastructure Library (ITIL) for IT Service Management (ITSM) and IT Asset Management (ITAM). The methodology is derived from a support perspective where Key Performance Indicators (KPIs) are created and regularly reviewed by representative members of the campus. Most of these indicators and benchmarks are set by the institution as a result of required performance from ITS to meet the needs of the institution. As such, the assessment gathers both qualitative and quantitative data with four specific goals:

1. The ability of the department to meet the technology support need of the institution. The KPIs set for this goal include the average response time for tickets opened with the helpdesk and the average time for ticket resolution. The average ticket response benchmark was established by the TAC using feedback from all areas of the campus; the benchmark is 2 business days. The average time for ticket resolution benchmark was also established by the TAC and includes targets based on the overall priority and criticality of the issue, according to the ITS Priority Map (Urgency vs. Impact):
    a. Level 1 – Extensive disruption to the campus – benchmark = 1 business day
    b. Level 2 – Significant disruption to the campus – benchmark = 2 business days
    c. Level 3 – Moderate disruption to the campus – benchmark = 5 business days
    d. Level 4 – Minor or low disruption to the campus – benchmark = 10 business days
2. The ability of the department to collect, store, and protect data is determined using the following KPIs:
    a. A qualitative review and audit of the enterprise infrastructure by a third-party company. The benchmark in this category is to have a complete report with no issues classified above “Minor”.
    b. Reports that display the performance of the data collection system or System of Record, known as Ellucian Colleague. These performance records track utilization trends over specific periods of time and include information on both a software and hardware level using monitoring software called Solarwinds as well as the usage monitors available in the Azure cloud. The benchmarks for this category are based on hardware and application response times as follows:
        i. Average CPU utilization: <15%
        ii. Average RAM utilization: <70%
        iii. Average Network utilization: <50%
        iv. Average application response time: <50ms
    c. Data Loss Prevention KPIs are measured through the ITS department’s backup and disaster recovery system and include average backup availability records and Disaster Recovery (DR) tests available through the Azure cloud infrastructure. Backup and DR benchmarks use a time-sensitive scale, known as Recovery Point Objective (RPO) and Recovery Time Objective (RTO) as follows:
        i. Backup minimum retention period (RPO): 15 days

ii. Backup maximum retention period (RPO): 45 days
iii. Backup maximum time to restore (RTO): 5 hours
iv. DR maximum recovery point time(RPO): 15 minutes
v. DR maximum time to restore (RTO): 5 hours
vi. DR maximum time between automated testing (RPO): 30 days

3. The ability of the department to comply with all established rules and regulations to which the institution must adhere. One KPI set for this goal includes detailed policies and procedures that document the ITS department's adherence to all Federal and State regulations; the benchmark includes listing all policies such that every requirement has an associated policy and the qualitative review by the entire institution and the College Board of Trustees must be documented. The audit and review report identified in item #1 is also used to assess this measure since it is a comprehensive report that covers many areas of the ITS infrastructure, the benchmark KPIs include a report with no issues classified above "Minor".
4. Provide a robust and dependable enterprise-level infrastructure. Dependability and robustness are tracked using both qualitative and quantitative means. The qualitative process includes an ITS survey sent to staff and some questions about ITS services in existing student surveys, particularly for students that live on campus with a benchmark satisfaction rate greater than 70%. System usage and uptime is tracked using software from Solarwinds while individual machine statistics are collected using software called LabStats. The total system uptime average benchmark is 99.98% uptime not counting regularly scheduled maintenance that occurs after business hours. Average system utilization is broken into two parts, enterprise infrastructure and individual machine statistics:
    a. Enterprise CPU utilization: <50%
    b. Enterprise RAM utilization: <70%
    c. Enterprise Network utilization: <70%
    d. Average application response time: <50ms
    e. End user machine CPU utilization: <90%
    f. End user machine RAM utilization: <90%
    g. End user machine Network utilization: <%100
    h. End user application response time: <1s

Assessment Reporting

The ITS department collects information from reports at least once per year to annually evaluate the metrics, consistency, and direction of the ITS department. The procedures and findings are as follows:

1. The ability of the department to meet the technology support need of the institution. These results are collected and compiled through the Solarwinds Web Helpdesk platform using custom reports.
    a. Attachment (PNG): Average Response Time for tickets in 18/19.
    b. Attachment (PNG): Average Response Time for tickets in 17/18.
    c. Attachment (PNG): Average Resolution Time (open time) for tickets in 18/19.
    d. Attachment (PNG): Average Resolution Time (open time) for tickets in 17/18.
2. The ability of the department to collect, store, and protect data.
    a. A third party is hired to conduct a qualitative review and audit of the enterprise infrastructure. This report has only been generated once in the last 5 years due to

budgetary constraints. Attachment (PDF): 2018-06-22 WWCC Datamart Penetration Test Report from Online Business Systems.

b. Reports that display the performance of the data collection system or System of Record, known as Ellucian Colleague. Unfortunately, the data collected for this metric is only available for the period of July 21st through August 11th, 2019, due to the migration from an on-premise environment to the Azure cloud. Previous metrics were deleted when the on-premise server was decommissioned. Attachment (PNG): Average Performance for System of Record 18/19.

c. Data Loss Prevention KPIs are measured through the ITS department's backup and disaster recovery system and include average backup availability records and Disaster Recovery (DR) tests available through the Azure cloud infrastructure. Information is also secured on the local Veeam server on the campus. The Azure reports will not be available until January 2020. Veeam reports are sent nightly via email to report issues. While long-term reporting is not available, attached is an example of the email reports that are generated (attachment: Veeam-Nightly-Backup-Report.PNG).

3. The ability of the department to comply with all established rules and regulations.
    a. Official policies and procedures are posted in the "Consumer Information" section of the public website: https://www.westernwyoming.edu/consumer-information/policies-procedures/index.php
    b. Rules, regulations, policies and procedures are posted in the MyWestern ITS portal with an "interactive" format to aid training during employee onboarding. This format is a less formal approach to posting policies such that employees clearly understand the requirements and their responsibilities. The employee portal is available to all students and staff (login required): https://mywestern.westernwyoming.edu/informationtechnology/
    c. The email system currently used by Western employs a reporting mechanism that alerts administrators when sensitive data enters or leaves the network infrastructure via email. These breaches can take the form of phishing emails, employees trying to send transcripts or enrollment data via email, or departments and employees trying to email credit card information. Due to the nature of this sensitive information, a sample report example cannot be posted.
4. Provide a robust and dependable enterprise-level infrastructure.
    a. Data for application availability is attached (Availability-2019.pdf). However, there are a few anomalies due to the server-wide cloud migration project. During this initiative, physical hosts are shut off and migrated into the Azure environment. After which, Solarwinds polled the old device and reported it as "down" which is the correct state of the old machine, but it also skews the uptime calculation.

Use of Assessment Results

Using the security report findings, the ITS department was able to adjust the firewall rules and apply patches to the production ERP environment to address the security concerns. A follow-up penetration test showed that these items were resolved. The uptime report showed that there were three Internet connectivity outages throughout the year. The ITS department was able to use this supporting data to purchase a secondary Internet connection for the College which acts as both a failover connection and a load balancing connection. The sensitive data reports from the email system

showed that numerous users were responding to phishing attempts, clicking on dangerous attachments, or visiting unsafe website links. Using this data, the ITS department developed a six-point plan to address the issue. Since the problem was overly complex, including professional development of the College's staff, the full problem and solution document was made available online for all staff (available here: https://mywestern.westernwyoming.edu/informationtechnology/Pages/default.aspx). A thorough review of the ITS policies and procedures by the Technology Advisory Committee (TAC) determined several policies that needed to be adjusted or developed to bring the organization into compliance with State and Federal requirements. These policies were drafted and made available on the TAC website and were opened to the College staff for commenting. They follow the same flow that every policy does and are currently with the Policy and Procedures committee.

Assessment Reflection

To improve future assessments, some KPIs should be added to track the effectiveness of the ITS department. The first of which is licensing data on each machine in the College network to ensure that legal requirements are met and that the College is not overspending on unused licenses throughout the network. Total licenses used per software application should show license usage efficiency above 90%. The data for this KPI can be collected from LabStats; software previously purchased by the ITS department to aid in the computer rotation process.

Customer satisfaction level is another area that should be targeted for data collection. Automated reports from the ticketing system "Web Help Desk" can send out automated surveys directly to the person that submitted a ticket to the Help Desk. This would allow the customer to communicate satisfaction information directly related to their experience. Previously, a general survey was sent by the institution, but the subjective responses were too vague and did not provide a good foundation on which to base decisions. The American Customer Satisfaction Index (ACSI) is a leading provider of benchmarks by industry and is the basis of this new targeted KPI; the goal for ITS is an ACSI rating of 77% based on the benchmarks of all technology support categories. These categories can be found on the ACSI website with 25 years of previous data: https://www.theacsi.org/index.php?option=com_content&view=article&id=148&Itemid=213

Project management resource tracking, planning, communication, and coordination has also been identified as a high-value target for improvement. KPIs for this item should be added to track project effectiveness and coordination and include measures such as Return on Investment, Cost Performance Index, Schedule Performance Index, and Resource Capacity. The ITS Director is currently working with senior management to improve project management for the ITS department and incorporate these KPIs in an effective manner.

PLANNING & DIRECTION

The planning philosophy of the ITS department uses a collaborative approach in which each member of the department brings their individual expertise and experiences to a common communication platform for all members to be engaged. The ITS Director meets with other directors on campus as well as students to gain an outside perspective from the department itself.

General guidance of ITS direction includes the publication of trends, common issues, and discussion amongst colleagues in reputable online environments such as EDUCAUSE, AVOA, and the Chronicle of Higher Education. Another source of collaboration and guidance includes the Wyoming Community College Commission (WCCC) Chief Information Officer Council (CIOC) and all participating Community Colleges. The ITS director participates in bi-monthly conference calls with the WCCC and acts as the College's Chief Information Officer on this council to provide critical updates to all constituents across the campus. Subjects of these meetings normally include collaboration projects with the purpose of saving resources on a State-wide level, or to meet new Federal and State technology requirements. More information about the structure, concepts, and purpose of the WCCC is available here: https://communitycolleges.wy.edu/

The ITS director also subscribes to the Chronical of Higher Education, AVOA, and EDUCAUSE to obtain relevant information about the current issues faced by CIOs and directors across the Nation. In one such publication from AVOA, the top 10 CIO Trends for 2019 include many of the same goals and priorities currently placed on the ITS department including organization and soft skills, regulatory compliance, transformation to Cloud, Machine Learning, and cybersecurity. More information about this article is available here: https://avoa.com/2018/12/17/top-10-cio-trends-for-2019/

Other members of the College provide input for the guidance of the ITS department as well including the following groups and councils:

- Wyoming Community College Commission (WCCC) – The Data Governance and Institutional Research Council (DGIRC) provides valuable feedback and direction for data governance by collaborating with select members of other councils from the Colleges.
- The President of the college provides feedback and direction from the Executive Council at a State-wide level. The President also provides feedback and direction through the College's Strategic Plan.
- Vice Presidents provide feedback from the State-wide Academic Council, Administration Council, and the Student Services Council.
- The Technology Advisory Committee provides feedback through regular scheduled meetings comprised of representatives from all areas of the College to ensure that differing opinions and perspectives are considered.
- The ITS department provides a considerable amount of guidance and direction through the needs of supporting the institution and identifying gaps in processes, software, or hardware.

DECISION MAKING

Using the information collected from Key Performance Indicators, Surveys, and the constituents and sources outlined in the "Planning and Direction" section of the Technology Plan, decisions are made that guide the activities for the year with larger activities and goals defined in a three-year and five-year stretch. The one-year technology plan is highly detailed with timelines and resources while the three-year and five-year plans are vague and often do not include budgetary information.

Each year, the ITS department holds a special staff meeting to review the planning philosophy, align its goals with the institution, and create a high-level direction. These are often held in January due to the unique offset schedule that the ITS department uses. The ITS Director also creates meeting invitations during the fall semester with each director on campus to gather information in anticipation of this staff planning event.

After the plan has been developed and authorized by President's Cabinet, a formal executive summary presentation is made to the Board of Trustees. These reports contain the accomplishments from the prior year's plan as well as the goals for the upcoming year. Once the Board of Trustees have had a chance to review the plan, it is posted publicly on the MyWestern Student and Employee Portal.

STRENGTHS AND LIMITATIONS

Strengths

The ITS department's staff composition lends itself to unique areas of expertise and talent that provide a robust level of support. This level of organizational knowledge continues to grow as members attend seminars, training events, and conferences. Employees also share their knowledge with other members of the department through hands-on activities that continuously grow their colleagues.

The ITS department strives to make responsiveness a top priority to highlight its dedication to the customers. Recently, the ITS department implemented a priority matrix to aid in the response time reduction of critical issues across campus. This strength allows the department to actively respond to the issues that directly impact the most critical areas of the College.

The ITS department is a constant source of innovation and collaboration for new technology resources in the College. This is evident by the number of ongoing projects where the primary beneficiary is other critical departments and activities on campus or the students. The department utilizes other communication bodies such as the Technology Advisory Committee and the Colleague Users Group to continuously improve services and introduce new features that keep the College on the cutting edge of technology.

Limitations

The ITS department does not serve all audiences equally. Currently, the department is limited to an 8x5 work schedule which means that programs and activities that happen after-hours are not fully supported. Over the years, the department has tried to adjust schedules for specific members in various ways such as working on weekends but not on Thursday or Friday. However, meeting requests and support demands from other departments is too great to support an offset schedule. Further study is needed to gauge an effective support strategy.

The ITS department constantly faces staffing issues with the issue being two-fold. It is hard to find qualified and technically experienced staff in the area for the wages paid by the College. There are highly competitive organizations that provide much higher compensations. The number of devices or users supported by each person in the department exceeds the national average by nearly double. That is, each person in the ITS department supports almost twice the number of computers and users than the national average.

The ITS department recently completed a renovation project to group more people together, but the department is still physically separated on either side of a large hallway. This creates communication barriers and impedes the ability for members in the department to collaborate on important issues.

Opportunities

Given the budget constraints currently placed on the department and College, the opportunities available are much lower than normal. Seizing new opportunities within the ITS department generally requires a sizable budget because it means adjusting or implementing technology. However, there are opportunities that can be realized through an investment of time rather than money. Here are some of the readily available opportunities identified by the department that will improve every aspect of the department's mission and vision statement:

- Increase communication outside of the department. The ITS department should focus on a few key groups, such as the Technology Advisory Council or Colleague Users Group to convey important information about upcoming events or important tasks.
- Provide a knowledge base to train or assist students and employees. The ITS department currently owns software that is capable of making a knowledge portal whereby users can access a self-help category to resolve issues on their own. This same platform can be used to train new and existing employees and can be made available on demand to assist with scheduling conflicts and time constraints.
- Review all policies and procedures published by the ITS department. Compare these items to industry standards including the ITIL and SANS institute as well as other educational institutions to ensure that the College is providing the best technology environment possible.
- Implement a project management system to more accurately keep track of resources for the department and set expectations for other projects or repairs as necessary. After meeting with Kon, this solution should be a “low hanging fruit” that the department can build out in the existing SharePoint environment. Improved project management is the single largest substantive change that the ITS department and College can make that would improve and enhance the success of the institution. Currently, the College is engaged in too many projects that all rely on the ITS department for completion. This requires an unrealistic burden of resources on the department causing high burnout, lack of deadline completion, and lack of communication.

GOALS AND OBJECTIVES

Long term goals are established in 1, 3, and 5-year bands to allow for the necessary budget planning periods and alignment with shifting institutional priorities.

Year 1 Goals & Objectives

Through the course of the current year (June 2020 – June 2021), the ITS department plans to accomplish the following major tasks:

- Implement Virtual Desktop Infrastructure
- Revise and submit necessary IT policies and procedures
- Implement Acalog as a Course Catalog solution from the WCCC
- Implement Ellucian Integrated Learning Platform to automate the interface between Colleague and Canvas
- Implement technology checkout and management system to enable remote learning and working
- Implement a campus-wide knowledge base

Year 2 Goals & Objectives

Longer term projects require budgetary approval and planning from the President's cabinet, however these projects have been identified as priority needs of the institution.

- Online registration programs to accommodate Workforce, CE, and programs externally available such as Swimming lessons.
- Communication platform and infrastructure to support instant and constant communication with students and employees.
- Implement Project Management and Service Management controls
- Colleague "overhaul" with professional consultation and discovery session. Exploratory review.

Year 5 Goals & Objectives

- Investigate Recruitment and Admissions platform
- IoT Infrastructure upgrades
- Phone system investigation with a focus on reporting and integration with other components
- Reporting software investigation, including SQL services, Colleague, CROA, and SAP
- Wireless coverage and accessibility
- IT Audit – hire an external penetration tester, PCI-DSS compliance audit, Colleague Security