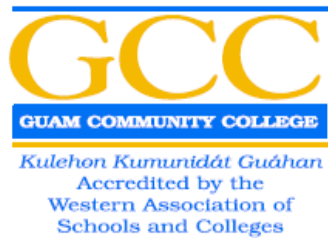


**GUAM COMMUNITY COLLEGE**



**INFORMATION  
TECHNOLOGY  
STRATEGIC PLAN  
(ITSP)**

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## **Guam Community College Information Technology Strategic Plan (ITSP)**

### **1. INTRODUCTION**

Guam Community College is a multi-faceted public vocational educational institution, created by Public Law 14-77 in 1977 to strengthen and consolidate vocational education on Guam. The college operates secondary and postsecondary vocational programs, adult and continuing education, community education, and short-term, specialized training. These programs are delivered both on and off-campus, in satellite programs and on-site at businesses as needed. The college also serves as the State Board of Control for vocational education under the United States Vocational Education Act of 1946, 1963, and subsequent amendments.

The college offers over 50 courses of study which are job related and prepares students for transfer to four-year colleges and universities with advanced standing in professional and technical degree programs. The college offers a variety of community service and special programs to prepare students for college experiences including English-as-a-Second Language, Adult Basic Education, General Education Development (GED) preparation and testing, an Adult High School Diploma program, External Diploma Program and Apprenticeship.

The administration and operation of the college are under the control of a nine-member Board of Trustees appointed by the Governor with the advice and consent of the Legislature. Law states the purposes of the college are to:

- Establish technical, vocational and other related occupational training and education courses of instruction aimed at developing educated and skilled workers on Guam
- Coordinate vocational-technical programs in all public schools on Guam
- Establish and maintain short-term extension and apprenticeship training programs on Guam

- Expand and maintain secondary and postsecondary educational programs in the vocational-technical fields
- Award appropriate certificates, degrees, and diplomas to qualified students
- Serve as the Board of Control for vocational education for purposes of the United States Vocational Education Act of 1946 and 1963 and subsequent amendments thereto

## **2. BACKGROUND**

For over 34 years, Guam Community College (GCC), like most other organizations, has acquired an assortment of technologies. Since 2006, GCC has had enterprise architecture or a technology strategic plan to guide its acquisition and implementation of emergent technologies and applications. Since the institution of their 2006 Enterprise Architecture document, GCC has established technology standards and has made forward progress in planning and expanding its network capacity to meet an ever-growing student population and trend toward providing student offerings through web-based applications such as Distance Education (DE).

A consequence of expanding and adding new technologies often involves incompatible or stovepipe technology, various components become obsolete, and a replacement strategy is often driven by funding availability, rather than business needs or architectural considerations.

The college is both a business enterprise and an educational institution. These two facets of the enterprise often have conflicting technological needs, expectations, and priorities. The business side wants stable, robust systems that have proven themselves over time and place. The educational side frequently wants ‘state-of-the-art’ tools and techniques that allow it to be at the forefront of the technological world. Yet both parts of the college must work together to establish a technology infrastructure that meets both sets of needs and delivers the college an effective, efficient, and responsive system.

To make maximum use of its limited technology resources and funding, GCC decided to develop an information technology strategic plan and enterprise architecture to guide its technology investments. The enterprise-wide strategic plan defines how technology will be used to achieve the college's educational and business goals, while the enterprise-wide target architecture establishes information technology (IT) standards and design guidelines. The Information Technology Strategic Plan (ITSP) and Enterprise Architecture (EA) are companion documents that detail what the IT environment of the future will be (the Enterprise Architecture) and how GCC will achieve this future environment (the ITSP). The architecture and strategic plan cover all areas of information, communication, building, and academic systems technology that have any effect on the operations of the college.

### **What is an ITSP?**

The ITSP is a top-down enterprise-wide strategic plan created to achieve GCC's strategic educational and business goals. The plan details how to:

1. Implement the Enterprise Architecture
2. Develop staff skills needed to manage GCC's IT resources
3. Establish processes and structures to manage information technology as an enterprise resource
4. Transition from the current environment to the desired future state

This future environment requires technology that can communicate, interoperate, and share data and resources while reducing the costs associated with training, maintenance, and support through the implementation of the Enterprise Architecture.

The ITSP is not intended to limit or constrain creativity among GCC users, but to provide a stable, robust, modern infrastructure and environment in which to solve business problems and allow departments to collaborate on significant cross-departmental efforts. The plan is built on an IT model of management which employs the best features of both centralized and decentralized IT management, support, and decision-making.

Created and adopted on 04/12/2006. Subsequent revisions on 09/01/2006, 12/14/2007, 3/18/2009, 11/1/2011 and 2/2/2012.

### **Why develop an ITSP?**

The ITSP provides a focus for GCC and its departments to discuss and come to agreement on the application of information technology to the college's business needs. It serves as a framework for budgeting, planning, and managing GCC's IT resources. The plan provides direction, establishes IT management processes, and documents the desired future state of IT in GCC.

### **What do we do with the ITSP?**

The ITSP is used to implement the Enterprise Architecture and achieve GCC's IT vision. By following the plans contained in the ITSP, GCC can develop the technical environment it needs, the human resource skills necessary to manage the new environment, and the oversight and leadership mechanisms for fulfilling its strategic goals.

### **The ITSP and the Enterprise Architecture (EA)**

The Enterprise Architecture and ITSP are complementary documents. The EA describes the current IT environment, the desired target architecture, and the actions needed to transition from the current to the target architecture. It focuses primarily on the technical issues involved in changing the IT environment. The ITSP takes a broader perspective on the transition process. It identifies the strategic goals that must be achieved for GCC to provide leadership and oversight of its IT resources. It addresses the management, budget, and governance challenges facing the transition and develops specific action plans to resolve the issues. Implementing the EA and ITSP together, GCC can provide both the technical and organizational leadership needed to fulfill its IT mission.

## **3. APPROACH TO DEVELOPING THE ITSP**

The development of the ITSP was a collaborative effort involving GCC faculty

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administrative staff, and executives. Participants in the development effort considered the needs, interests, and concerns of all departments and users throughout the process.

### **Scope**

The EA and ITSP apply exclusively to all components of GCC. The architectural principles and standards apply to all IT products, systems and projects. At this time, the ITSP addresses governance and staffing issues relevant to GCC.

### **Methodology**

Staff selected from GCC faculty and administration developed the ITSP with facilitation support from consultants in the private sector. GCC's College Technology Committee (CTC) provided oversight and direction to the development process. It then discussed guiding principles for the IT environment of the future and technological trends that will affect that environment. The ITSP is a living document and requires periodic updating and revising as required by GCC, or as major IT enterprise systems are deployed, and IT policies are affected which change the strategic direction of the college.

Building upon the April 2009 ITSP, the team described the current IT environment and envisioned the future IT environment for the college. The team then generated a list of goals which, if achieved, would fulfill the college's vision. These goals were consolidated and prioritized to produce the final strategic goals.

For each strategic goal, the ITSP team described the goal, the current situation, the desired future state, and how to reach the future state. They also developed performance measures to indicate whether the future state had been reached. Finally, the team prepared action plans to achieve each strategic goal.

## **4. ANALYSIS OF GCC's IT NEEDS**

In assessing GCC's needs for information technology, the ITSP team developed certain core principles to form the foundation for guiding the development of the Enterprise Architecture and desired future state of IT in the college. The team also analyzed trends

Created and adopted on 04/12/2006. Subsequent revisions on 09/01/2006, 12/14/2007, 3/18/2009, 11/1/2011 and 2/2/2012.

in technology to ensure its EA and desired IT future were consistent with and supportive of the direction of the industry and profession. Using this information as a start, the team described the current IT situation in GCC, the desired future state, and the migration path that leads the college from where it is to where it wants to be.

### **Guiding Principles**

The ITSP team articulated a set of overarching guiding principles that would drive both the architecture and the vision of GCC's desired future IT environment. These guiding principles, determine many of the characteristics of the EA and the IT future state. They affect decisions, or in some cases, determine decisions, at every level of the architecture and throughout the definition of the future IT state. These principles are:

- GCC will stay true to its mission
- GCC will keep the student first
- Information technology, IT staffing and the IT budget are enterprise resources
- Information exists to support the educational and business objectives of GCC
- Technology and technology investments must be viewed from an enterprise perspective
- The educational, business priorities, and functional requirements of the college will determine investments in information technology
- Information is an enterprise strategic resource
- GCC must provide electronic access to information and services while maintaining security and privacy
- GCC's data must be accurate and collected only once in a timely and efficient manner according to life-cycle standards
- GCC and its information technology must become an integrated enterprise

### **Trends in Technology**

Many trends in technology affect the decisions IT organizations make and determine the directions they take. It is difficult, if not impossible to fight the trends, but planning to

take advantage of them, makes the IT function vastly more effective while reducing costs. Some of the trends in technology that will affect GCC's IT future are:

- Rapid creation of emergent technologies may shorten technology life-cycles
- The growth of internet-based commerce and customer service will result in an increasing focus on security and privacy
- The Internet will drive technical standards for applications and network computing.
- The rapidly expanding use of Internet technology will be used to redesign and redefine business processes
- There will be a shortage of qualified IT staff
- The performance of computer hardware will continue to grow exponentially, while costs continue to decline
- The convergence of voice, data, and video has begun and will accelerate
- New ways to connect to the computing environment are emerging
- Application delivery will be increasingly component based
- Market forces will continue to dominate over superior technology
- Data warehousing applications and uses will experience high growth
- The drive for interconnectivity and interoperability will blur traditional boundaries
- Collaborative computing environments are enabling organizations to better marshal and focus their intellectual resources
- Enterprises are using new technologies to reduce administrative costs and establish a unified system management approach for corporate computing

### **Current State of Information Technology Resources in GCC**

GCC has a fully staffed MIS department of 10 people and has maintained this level since 2006. The GCC technology inventory includes more than 1500 personal (desktop and laptop) computers and nodes. These computers run everything from Macintosh Operating Systems, to Windows 98 up to Windows 7. There is a growing number of

MAC computers used primarily for instruction of digital media courses. The College also possesses lab spare computers, monitors, and other equipment on campus should the need arises to replace any down or malfunctioning equipment in the specific labs, which are mostly IBM PC compatible systems.

The campus has numerous servers, one AS400 and the rest primarily Dell and IBM Blade servers. Most servers are under MIS control and housed in a centralized server room. Most servers are also dedicated to a single application. The BANNER/LUMINIS Enterprise System or the Integrated Database Management System is now in a new DELL VMware-virtualized server environment. Incremental and full backups are performed on each server daily but there is no schedule for testing the restoring of a server, and are only conducted when the need arises or to restore specific file systems. This needs to be included in their SOP for daily, incremental and full back-up policy. This SOP will also include testing to test back-ups at all levels, daily, incremental and full. There is little if any redundant capability. If the Integrated Database Management System goes down, there is no immediate way to continue operations in another backup electronic environment. There are spare servers, however, they are not in use or serve in a backup capacity. By mutual arrangement, a few servers are in the faculty area outside of MIS' control. It's recommended to consolidate all servers under the MIS department except when and where restricted by either Program Agreements, grants' conditions and requirements, or if resources and the expertise to maintain them are unavailable in MIS.

All main campus computers are networked on the centralized LAN, with the exception of those on wireless connections, and can gain access to the internet via one 10 megabit per second line and a separate 20 megabit per second line provided by a partnership and paid services with MCV, a local cable TV company, and GTA, a local analog phone and digital cable company. There is a concern about the adequacy of the bandwidth available, particularly when new applications become a requirement for instruction or operations. Monitoring of bandwidth usage is a constant activity in order to determine if sufficient bandwidth is available to support current operations. Currently, MIS has stated they are running at 90-percent and with Wi-Fi coming online, they will reach

maximum capacity. This is not sufficient to run GCC's network and an upgrade to their network infrastructure is underway to meet projected bandwidth demands. There were also at least three DSL lines on campus, but each is separate from the LAN and is used to provide localized wireless access points. Early this year a change occurred with Internet Service Providers (ISP) that has since change the number to one DSL line with the other wireless access bridged into the wired network. The previous ISP was no longer able to provide the services and transferred GCC's accounts to the new ISP. As an update, there is now a campus wireless project pending bid award to the vendor and the project is scheduled for completion in Spring 2012.

The current Integrated Database Management System (IDMS) allows for a more efficient operation in Human Resources, Business and Finance, Registrar's and Development and Alumni Relations Offices, and the rest of the college.

GCC is becoming a 24x7 operation. More students are taking classes where tests and other materials are online. These students often work jobs during GCC's normal business hours and attempt to gain access to GCC servers outside normal business hours. Access to the College's servers are available except during IT maintenance activities that require downtime, which are usually done late at night and only when necessary. MIS runs two operational shifts and has staff available between 8am and 11pm on weekdays in an effort to reduce downtime and be more responsive to the demands of the College. MIS also has certain individuals accessible only for emergencies around the clock which include the Systems Administrator, a Teleprocessing Network Coordinator, and one Systems Programmer.

All PC computers are open use computers; no individual user-id and password are required to use a computer. There is no means of tracking user activities back to a specific user. This lack of user authentication is non-standard practice, especially since the rest of the controls on the network are so robust.

The current Integrated Database Management servers are protected from unauthorized

access through the use of firewalls, Secure Socket Layer (SSL) certificates from VeriSign, and through unique username and passwords.

### **Desired Future State of Information Technology Resources in GCC**

GCC will have a unified enterprise architecture and all IT resources will be compliant with this architecture. Standards will be established using industry best practices and adhered to for all IT resources. At a minimum, these standards will address security, data and data sharing, communications, compatibility, contingency plans and disaster recovery, and back-up/recovery. Systems will interface easily, seamlessly, effectively, and cost-efficiently. GCC-wide IT resources will be applied effectively and cost-efficiently. All IT resources will be current and life-cycle management schedules will be developed and funded. GCC will have sufficient qualified IT staff and resources. GCC's IT budget and annual spending plans will be developed and managed to maximize the value to the college overall.

GCC will create and operate services on-line that are accessible 24 hours a day, seven days a week. It will deliver integrated enterprise information systems and infrastructure that improve public access to GCC functions and information, streamline business processes to simplify college-public interactions and reduce costs, and meet the legal and business needs of the college. The technology will enable departments to continually improve their efficiency and effectiveness, while also allowing applications to be developed more rapidly, easily, and inexpensively as business needs change. Education will no longer be time and place dependent. All students will have laptops and classrooms will be fully equipped with multi-media, computers, and LAN access. GCC courses will teach the most up-to-date technology and offer certifications in the IT field. End users will be adequately computer literate and proficient. The educational community will communicate its needs to the technology community with sufficient lead time for them to provide the needed support/services. GCC will establish a model classroom with state-of-the-art technology

GCC technology will be ‘invisible’ to the user and always available when it is needed. The GCC campus will be completely wireless and secure, with no viruses, spam, or system breaches. All satellite sites will be connected. Users and their applications will not be impacted by limited bandwidth. Campus safety and security equipment (fire alarms, smoke alarms, security camera systems, etc.) will be fully integrated and the phone system will be significantly improved at a lower cost.

GCC will be a leader in the Pacific region in the application of technology. The college faculty and staff will anticipate the skills needs of the local business community and provide training and certification to deliver and develop skills needed in the work force. GCC will establish a technology center where new technology of any type can be prototyped and tested. GCC will provide a ‘computer store’ where students repair and upgrade systems for both work experience and income. GCC will develop cost-effective means for providing ‘niche’ training and services, and for providing training and education not in the college curriculum.

The college will establish formal, fully accepted processes for IT budgeting, decision-making, resource allocation, project sponsorship, and priority setting. GCC will also have an effective process for integrating and reconciling users’ needs with technology capabilities. GCC will have formally adopted a target enterprise architecture (EA) and standards that establishes a broad set of boundaries within which everyone agrees to stay, yet allows flexibility to safely experiment with new tools and technology (one size does not fit all). The target EA will support multiple operating systems.

### **Migration Path from Current State to Desired Future State**

GCCs environment is in constant state of planning for future growth and is almost never static. As demonstrated since the last EA in 2006, major infrastructure improvements have taken years to plan, approve, budget, and execute. Transitioning from the current state to the future state will involve constant minor infrastructure improvements, policy reviews, and managing and validating changing requirements. Major initiatives such as DE and VOIP will take years to implement. The migration path will involve periodic and

Created and adopted on 04/12/2006. Subsequent revisions on 09/01/2006, 12/14/2007, 3/18/2009, 11/1/2011 and 2/2/2012.

affordable minor improvements in accordance with the EA. Major IT capital improvements involves long-term tracking and forecasting as outdated infrastructure systems and end- of-cycle milestones approach and are planned and integrated into the college's capital improvement process plan to be selected and prioritized into the college's business and educational goals and objectives. Although major aspects of the transition can be planned, scheduled, and implemented according to planned milestones, many transition components occur as external events allow them. For instance, it's difficult to impose EA standards and design features on legacy systems that existed years prior to the EA. However, as these legacy systems are replaced or upgraded, they should be required to conform to the EA.

## 5. STRATEGIC GOALS

The CTC brainstormed an extensive list of initiatives needed to fulfill its technology vision. These initiatives were then combined, simplified, clarified, and rephrased as goal statements to produce CTC's strategic goals list. These goals in priority order are:

### **Strategic Goal 1: GCC will develop and implement a target Enterprise Architecture.**

This goal defines and implements the technical, business and educational environments GCC wants to have in five years. **Enterprise Architecture** is the practice of applying a comprehensive and rigorous method for describing a current or future structure for an organization's processes, information systems, personnel and organizational sub-units, so that they align with the organization's core goals and strategic direction. Although often associated strictly with information technology, it relates more broadly to the practice of business optimization in that it addresses business architecture, performance management and process architecture as well.

#### **Where are we now?**

GCC has made progress toward where we would like our technology to be. It has a topology (network) and an organizational chart and structure. It has an Integrated

Database Management System (IDMS) which integrates HRO, Business, Student, and Financial Aid, and Development and Alumni Relations Offices. Other databases exist that do not talk to each other and have restrictive and specialized functionality that are hard-coded and difficult to update. These are legacy systems that eventually will be planned for replacement or removed from the production environment as operational requirements change.

Some of the college's hardware, operating systems, and applications are obsolete. A minimal number of applications require old operating systems (Windows 98). System security is not where we would like it to be although we are moving toward compliance with all federal and local requirements such as the American Disabilities Act (ADA). The college is working with security consultants to conduct ethical hacking vulnerability assessment of our network environment. An enterprise anti-virus system is in place to address the large number of spam and to manage and reduce the number of legitimate messages that are either intentionally or inadvertently blocked.

The college has approved new computer standards to promote more user flexibility. There are charters detailing the level of support to be expected and provided; however, service and support expectations vary, often leading to dissatisfied users. Technical support is inadequate and users need to be more computer literate.

### **Where do we want to be?**

Since 2006, GCC will have successfully implemented its target Enterprise Architecture and the Information Technology Strategic Plan. The college will continue to improve on its integrated database and set of applications with the web portal, providing access to students, faculty, staff and the public at anytime from anywhere. Users will have access to the information they need, when they need it, and where they need it. The college will have approved standards for information, databases, hardware, software, security, access, networks, business processes, and all other aspects of the technical and educational environment.

College systems will be secure and comply with all federal and local requirements. There will be adequate bandwidth so that no users or applications are adversely affected by lack of bandwidth. GCC will be less reliant on vendors for changes and enhancements to its systems.

GCC will have defined processes and procedures that are understood and complied with by all its users. Faculty and MIS will have improved communications and negotiate service and support agreements to meet the needs of both constituencies. Standards will be developed, approved and adhered to by all users. All users will sign users' agreements after an initial training and familiarization program. Within the approved standards, EA, and support agreements, faculty will be able to 'experiment' with innovative technology and applications. An MIS help desk will be fully operational.

Faculty, staff and students will be trained on the technology and be proficient at a level appropriate for their job duties or educational needs. For each college position GCC will articulate the required technical skills and levels of proficiency. The college will establish minimum annual training standards and plans for staff for each department.

### **How do we get there?**

GCC will develop and implement an Enterprise Architecture and establish, implement, and enforce policies supporting the EA. The college will continuously assess its progress in implementing the EA. It will also procure a fully integrated information system to meet community, administrative, and educational needs. GCC will obtain additional bandwidth and monitor the need for additional for growth. The college and its users will make more effective use of its bandwidth.

How do we know we did it?

- Percentage of bandwidth used (AP 1.4, 1.5, 1.6)
- Number of stand-alone systems (AP 1.3)
- Number of servers (AP 1.3)
- Number of packets dropped (AP 1.4, 1.5, 1.6)

- Customer satisfaction survey (AP 1.1 – 1.6)
- Number of Work Orders (AP 1.1 – 1.6)
- Number of signed service/support agreements (AP 1.1 – 1.6)
- Number of requests for additional training outside “core” curriculum (AP 1.2)
- Cycle time for closing Work Orders (AP 1.2)

**Strategic Goal 2: GCC will develop policies, procedures, and processes to analyze and acquire the components (hardware, software, applications) of the Enterprise Architecture.**

GCC needs a formal, structured process for defining user requirements, assessing system capabilities against the requirements, and acquiring the technology that best meets the users’ needs. The process would use systems analysis tools and techniques to define needs and/or problems, research options for meeting the needs or solving the problem, develop alternative solutions, test the possible solutions, and select the best solution within budgetary or other constraints. Decisions about technology will be based on reviews of what works and why, and what does not work and why. The technology community will be constantly learning and growing based on its experiences, research, and testing. This approach to acquiring and using technology will ensure GCC makes the best use of its limited resources and technology.

**Where are we now?**

- Active College Technology Committee (CTC) body that meets regularly
- Bylaws updated and charters finalized
- Completed minimum computer standards to be reviewed every six months
- Integrated database in place
- Campus community is becoming more aware that technology issues and policies must be presented to the CTC
- Adequately trained personnel not in place to support current and future EA
- Highly externally trained MIS, however all skills set levels are outdated in all areas of networking, PC/Macintosh maintenance and repair, systems and network

security, database management systems, and on server-grade and server-based operating system tools and utilities (UNIX, Windows Servers, VMware, etc.)

- College-wide technology literacy proficiency levels need improvement
- Standards and policies in place for information technology products and tools
- Need updated technology user agreement

**Where do we want to be?**

- College community informed and aware of CTC's role and responsibility
- Standards and policies are in place to address technology products and tool use campus-wide
- Appropriate technology training relative to current and future EA
- Every department establish individual training plans based on institutional needs
- Sufficient personnel to support EA
- Annual technology user-agreement signed

**How do we get there?**

- Approved and updated charters
- Communicate to campus community via website of CTC's role, responsibilities and accomplishments
- Create and revise current standards and policies to address evolving technological needs
- Assess technology training needs
- Assess technology staffing needs
- Update current technology user agreement and establish annual signing date (post/secondary, employees)

**How do we know we did it?**

- Effective policies and procedures published (AP 2.1 & 2.4)
- Departmental technology training plan in place (AP 2.4 & 2.5)
- Standards and policies are adhered to (AP 1.2 & 2.4)
- CTC website is updated weekly (AP 2.3)

- Campus-wide technology survey indicates committee awareness (AP 2.3)

**Strategic Goal 3: GCC will acquire the funding needed to implement the Enterprise Architecture.**

Implementation of the target EA is a long-term effort requiring a significant amount of funding. Once the target EA is defined and approved by the governance process, the governance entity needs to develop a multi-year budget that matches funding needs to the technology needs of the migration path from the existing architecture to the target architecture. To fund these budget needs, GCC will explore all possibilities—lobby the GCC Foundation and Legislature for additional funds, use GCC’s 315 acres of land to generate revenue, apply for grants to fund technology enhancements and meet federal and local regulatory requirements, such as the Americans with a Disability Act, and create ‘pockets of entrepreneurship’ in which specific components of the college provide products and/or services to the public, businesses, and government agencies on a fee basis.

**Where are we now?**

- Continuous budget challenges
- Assigned resource for generating income to support college upgrades
- Pursuing funding from nontraditional sources for IT capital improvements through public/public partnerships and through grants and donations/contributions from public and private sources
- Funds generated out of CE, our largest pocket of entrepreneurship, go back to support departments needs or fall to the bottom line and help keep up with financial obligations
- We have the technology fee
- We have Memorandum of Understanding (MOU) and Memorandum of Agreement (MOA) with our ISP (reduced fees)
- Incorporating site licenses as opposed to individual licenses
- Develop partnerships with vendors such as Cisco and 3M

### **Where do we want to be?**

- Financially stable
- To be technology leaders with a secure infrastructure
- To plan IT upgrades proactively, not reactively
- To have a stable architecture
- To build trust and confidence with the needs of the “experts”
- Appropriately trained and staffed technology team
- Financially self-sufficient

### **How do we get there?**

- Request additional funding from the legislature
- Continue to aggressively pursue grants
- Build internal relationships that are win-win so trust can be established
- Cross-utilize internal resources for assistance since external consulting is cost-prohibitive
- Include limited IT roles and responsibilities with internal resources to assist with the overall EA
- Develop cost centers for certain programs (e.g., Electronics for repairs and installation, Business (Accounting) for taxes, Automotive for oil changes, tire replacement, Internet Café, Electronic games)
- Establish Kinko-like center
- Have vendors pay college for intern students
- Lobby for taxes to support education

### **How do we know we did it?**

- When users are able to download, install and access needs such as podcasts, movies and programs without interruption (AP 1.4, 1.5, 1.6)
- Through network traffic data collection used by MIS (AP 1.4, 1.5, 1.6)
- When users experience reduced latency with the internet or Banner (AP 1.4, 1.5, 1.6)

- When students, faculty and staff are able to access the system 22/7 as opposed to 24/7 to enable MIS to do backups and technical maintenance (AP 1.4, 1.5, 1.6)
- When upgrades can be made as planned and scheduled and are not delayed until events drive a forced replacement (AP 3.1, 3.5, 3.6)
- Reduce dependency on legislative appropriation (AP 3.2, 3.5, 3.6, 3.7)

**Strategic Goal 4: GCC will expand the use of technology in education by the College faculty.**

Technology is used in many ways in GCC's educational and business settings. The technology offers many more opportunities than are currently being used, however. GCC needs to challenge its faculty and staff to creatively design their work environments and practices to more fully take advantage of the power and flexibility of the technology. For this expansion of the use of technology to be successful, GCC employees need to be trained and fully proficient with the technology available to them and the educational and business practices that maximize the use of technological tools. GCC will also need to recruit more students to the college and into the technical fields at the College by increasing its marketing efforts, providing more training and certification programs, and offering additional services to local businesses and government agencies. To meet this anticipated demand to recruit more students, GCC is planning to deploy a robust Distance Education (DE) platform and complete a Three-Phase Network Infrastructure upgrade currently underway.

**Where are we now?**

The faculty is at widely varying levels of using technology in the educational process, they are 'all over the map'. Some instructors are heavily into using technology in the classroom, while others prefer a non-technical classroom environment. Instructors use a variety of products (much of it freeware) obtained on-line. There are no standards for these products or tools used in the classroom.

Many users, when needing assistance, don't know what questions to ask, to find new tools, or to discover what technology can do for them. No list of resources is available to

instructors, staff or administrators. This places the technology staff in a challenging position to balance their limited resources in supporting enterprise-wide, standard infrastructure systems and applications. Assigning limited MIS resources to assist non-standard, non-enterprise classroom applications with no training or familiarity with the functionality is difficult and discouraged.

In July 2010, GCC adopted a Distance Education policy to deliver educational services either through instruction or support services to students who are not physically co-located with the individuals providing the service. The platform GCC currently utilizes to support DE is the Moodle Course Management System, a course management system designed to help educators deliver quality online courses. Moodle is open-source software and is used all over the world by universities, schools, companies and independent teachers. The current technology used varies widely, from computers to multi-media.

### **Where do we want to be?**

Distance Education is a major endeavor and moves GCC into another dimension of providing off-campus student offerings and perhaps, inter-islands offerings. DE can be a convenient, flexible, and effective means of providing education since nearly half of all college students in the country are of the age group once thought of as nontraditional. They are working adults or adults seeking first educational credentials or retraining. Many working adult students with multiple demands on their time find DE to meet their needs better than campus-based education. GCC envisions expanding its current DE offerings and capturing this growing student market.

To support DE, all faculty will be able to put courses on-line with minimal constraints. The faculty will have the knowledge and skills necessary to use technology in the educational process. Instructors will be required to receive proactive 'technology certification'. 'Early adopters' will continue to test new technology and new applications of technology in the classroom. Faculty will be so skilled in using technology in the classroom that they will be able to showcase their application of technology in education at professional conferences and meetings.

The college infrastructure will support the faculty in applying technology in course work and will establish and adopt standards for applying technology in course work. To promote faculty innovation for introducing technology in course work, the college will work with the MIS staff to remove barriers and constraints such as funding, managing expectations for non-standard technology, and limited MIS staff.

### **How do we get there?**

Faculty will be encouraged to try technology in their courses in as many ways as possible. GCC needs to put professional training on technology into individual faculty plans and use it as a component of the performance appraisal process. The MIS staff can identify “power users” in each department to start applying technology in education and help other faculty try using technology in the classroom. GCC needs to provide more training and more “hands-on” support for faculty reluctant to try using technology in their instructional methodology. Each department can be requested to identify specific courses that can be available on-line. Similarly, each department can be asked to identify opportunities to use technology in its curriculum. To support these emerging technologies and provide the path for them to traverse, GCC has in place an existing Three-Phase Network Infrastructure Upgrade project to increase bandwidth. Additionally, to establish a roadmap to achieve a more robust DE offering, a Three-Phase approach is also recommended. The Three-Phase Network and DE strategies are complementary to each other. Any advancement in the Network Infrastructure Improvement project positions GCC to acquire and deploy a far-reaching DE infrastructure.

### **How do we know we did it?**

- Number and percentage of courses using technology (AP 4.1, 4.2, 4.3)
- Number of syllabi integrating technology into course (AP 4.2 & 4.5)
- Number of students enrolling in classes using technology (AP 4.2 & 4.5)
- Number of students enrolled exceeds number of students on campus (others are online)

- Number of instructors using technology in class (AP 4.5)
- Program assessments can be used to encourage use of technology (AP 4.2 & 4.5)
- Provide adequate technology and bandwidth for instructors and classrooms (AP 4.5)

**Strategic Goal 5: GCC will enhance the governance process to provide timely and efficient integration of users' needs into decisions on investments in technology.**

Governance is the set of rules, processes, and structures by which IT resources are managed. Studies have shown that an effective governance structure is the single most important factor in maximizing the value of IT investments. The governance process covers the creation and implementation of the target enterprise architecture, management of the Information Technology Strategic Plan (ITSP), and decision-making for IT budgets and investments. The governance structure also establishes processes for the entire life-cycle of integrated enterprise projects—project planning, project initiation, project management, configuration management, systems development, systems implementation, maintenance, ongoing enhancements, support, project monitoring and evaluation, project/system termination, and project accountability.

The governance process comprises the information sharing, data collection, stakeholder involvement, agency-wide communication, and decision making activities involved in creating and implementing the target enterprise architecture. The process includes configuration management of the current architecture as it evolves into the target architecture. It requires a continuous dialogue among technology users, GCC stakeholders, and the IT community regarding changes or upgrades in the technology environment. The governance process typically addresses budgeting to meet technology needs, assimilating users' needs, prioritizing needs within budget constraints, making decisions affecting the technology environment and the architecture, and providing oversight for project initiation and implementation.

**Where are we now?**

Created and adopted on 04/12/2006. Subsequent revisions on 09/01/2006, 12/14/2007, 3/18/2009, 11/1/2011 and 2/2/2012.

The College Technology Committee (CTC) is comprised of representatives from the faculty and the administration. The CTC is an advisory body responsible for making policy recommendations related to technology and technology issues. The CTC reports to the College Governing Council, which makes its recommendations to the College President.

The CTC makes policy recommendations, but the MIS function also has some influence in the decision making process. MIS can disapprove an acquisition by stating the selected technology does not meet the standards or support is not in place. In addition to the CTC, there are also working groups established to address functional and operational issues related to the integrated database management system and website.

### **Where do we want to be?**

The IT governance structure and processes are formalized, recognized, clearly defined, and actively used in the decision-making process for all IT issues. The governance structure manages and directs the Enterprise Architecture, the ITSP, and IT planning, budget, and funding processes. The governance structure also establishes and oversees the processes for the entire life-cycle of integrated enterprise projects—project planning, project initiation, project management, configuration management, systems development, systems implementation, maintenance, ongoing enhancements, support, project monitoring and evaluation, project/system termination, and project accountability. The governance process will be simplified, responsive, proactive, effective, timely, and results-oriented involving all stakeholders (or representatives of all stakeholders).

### **How do we get there?**

Since 2006, the governance process has continually evolved with organizational changes and policies which impact the IT technological environment. The current governance process is operational, active, systemic, and constantly monitors organizational dynamics for process improvement and decision-making. The various groups within GCC's governance structure have active charters, membership, and authority to execute their assigned roles and responsibilities. As the governance structure and process continually

matures, the college can respond and adjust as needed to transition and support to its desired future state. All paths to the desired future state converge and go through the CTC. The CTC will monitor and advise on the strategic direction and status of GCC's ITSP transition plans.

### **How do we know we did it?**

- Number of technical issues identified needing policies (AP 5.3)
- Percentage of these issues for which the CTC issues policies (AP 5.3)
- All department charters signed, approved (rules of engagement) (AP 5.2)
- CTC recommendations are perceived in high regard (AP 5.1)

### **Strategic Goal 6: GCC will build partnerships with external business and government organizations to expand business, educational, and funding opportunities.**

To expand its technology opportunities, GCC needs to build strong partnerships with business, government agencies, and the local community. As with all partnerships, these arrangements would provide benefits to both partners. GCC would benefit by obtaining additional technology, funding, students, teachers, and opportunities for its graduates. The business and government partners would receive well-trained and/or certified graduates as potential employees, access to the skills of the GCC faculty and staff, and facilities to prototype and test their technology before acquisition or implementation.

### **Where are we now?**

- Partnership with FAA for student interns leading to fulltime employment
- Partnerships with online testing organizations such as PAN, HOST, PROMETRIC, and Pearson Vue.
- Good relationship with employers, DOL, AHRD, and GCA Trades Academy
- Partnership with MCV for internet bandwidth resource
- Training activities with NCTAMS and Andersen AFB Communications Unit.
- Active Advisory Committees

- On-going direct relationships with construction companies with highly technical training requirements

**Where do we want to be?**

- Continue to improve current partnerships
- Number one training facility on Guam for Government of Guam, federal government, private, and military sectors
- Expand partnerships on Guam and in the regions
- Establish partnerships that will provide for research, development, and testing of new technology
- Increase more national certificate testing opportunities and certification courses

**How do we get there?**

- Utilize the Office of Development and Alumni Relations and Continuing Education to assist with outreach efforts
- Encourage Departments to become more entrepreneurial
- Encourage diverse memberships on advisory committees representative of local businesses and needs on Guam
- Increase publicity so the community is truly aware of what GCC is doing and is capable of doing

**How do we know we did it?**

- Increased number of partners
- Greater number of testing options
- Use advisory committee comments to generate course and/or program changes

## 6. Transition Plans

The Guam Community College Enterprise Architecture (GCC EA) is the highest level planning and objectives document. It communicates the current situation and also the desired vision of the future. The Information Technology Strategic Plan (ITSP) will address specific challenges and objectives spelled out in, or derived from, the GCC EA. It then assigns each approved initiative to a project manager who creates a project plan, acquires the necessary stakeholder support, resources, and establishes a time frame for completion.

What is needed at this point is to identify those parts of the current architecture which are the most critical to the college. These should be addressed first by the ITSP. In this way, from the GCC EA to ITSP, to individual project plans, GCC will integrate into its planning, funding, acquisition and implementation processes to transition its' IT environment from the present to the future.

The Transition Plans are presented in a rough order of priority. Those listed first have the highest probability of saving staff hours and/or improving GCC efficiency. The CTC will decide on the final disposition of each and make recommendations through the Faculty Senate to senior management.

### **Transition Plan 0 – CTC:**

1. CTC meets with the Faculty Senate to present its charter. Gains approval.
2. CTC updates and presents MIS, ED, Academic Technology Departments (CSD, Electronics, etc) and ADMIN charters to Faculty Senate for approval.
3. CTC presents an overview of the IT Strategic Plan and Enterprise Architecture to the Faculty Senate.
4. CTC gains approval from the Faculty Senate for the Transition Plans, as appropriate.

### **Transition Plan 1 – GENERAL:**

Created and adopted on 04/12/2006. Subsequent revisions on 09/01/2006, 12/14/2007, 3/18/2009, 11/1/2011 and 2/2/2012.

1. Identify all current projects.
2. Suspend work on those projects that are not yet financially obligated or committed.
3. Ascertain the goal of all the projects and the architecture and standards being used.
4. Re-instate all projects in alignment with the GCC EA.
5. Determine the best course of action for all projects in conflict with the GCC EA.
6. Review, validate, prioritize, and select desired projects in the GCC EA “One to Five Year Initiatives” section.
7. Submit selected projects into GCC’s out-year budgeting and funding process.
8. Develop DE implementation plan and targeted milestones.
9. Perform DE applications market analysis to select DE application best suited for GCC’s needs.
10. Develop DE hardware acquisition plan to support selected DE application.
11. Submit DE hardware acquisition costs into GCC’s out-year budgeting and funding process.
12. Develop DE functional training requirements based on selected DE application.
13. Submit training requirements into GCC’s out-year budgeting and funding process.

**Transition Plan 2 – SUNGARD: Done, but continuously patched and upgraded when de-supported or when required.**

1. Train the staff to be able to do this type of work.
2. Establish SUNGARD project team, project plan, quality plan and other documents.
3. Implement the SUNGARD system.
4. Determine the business functions each tool performed.
5. Determine whether SUNGARD provides this function automatically or the capability to add it to SUNGARD functionality.
6. Incorporate the business function into SUNGARD.

**Transition Plan 3 – NETWORK:**

Created and adopted on 04/12/2006. Subsequent revisions on 09/01/2006, 12/14/2007, 3/18/2009, 11/1/2011 and 2/2/2012.

1. Complete Phase 3 of the Network Improvement Project
2. Plan and integrate Distance Education network improvements with Phase 3
3. Train the staff to be able to do this type of work and/or contract for services.
4. CTC will review the policies, procedures, and practices surrounding the current network, its topology, traffic volumes, and monitoring capabilities.
5. MIS creates a new Network Requirements Definition document defining a double-ring topology with three high-speed internet connections and load balancing software, plus other pertinent design features.
6. Conduct a Technical Options Study on the feasibility and opportunities of implementing the new network.
7. Report findings to the CTC for further action.
8. CTC recommends to senior management the creation of a project to procure and implement the Network Requirements Definition.
9. CTC selects a project manager who creates a project team, project plan and schedule, quality plan, product selection criteria.

**Transition Plan 4 – IMAGING:**

1. Train the data staff to be able to do this type of work and/or contract for services.
2. CTC will review the policies, procedures, and practices surrounding PC imaging.
3. CTC creates a new PC Imaging Requirements Definition document.
4. Conduct a Technical Options Study on the feasibility and opportunities of automating any and all Imaging requirements and activities.
5. Report findings to the CTC for further action.
6. CTC recommends to senior management the creation of a project to implement the PC Imaging Requirements Definition.
7. CTC selects a project manager who creates a project team, project plan and schedule, quality plan, product selection criteria.

**Transition Plan 5 – EMAIL ADMIN: Done and ongoing.**

1. Train the data staff to be able to do this type of work and/or contract for services.

2. CTC will review the policies, procedures, and practices surrounding Email Administration.
3. CTC creates a new Email Admin Requirements Definition document.
4. Conduct a Technical Options Study on the feasibility and opportunities of automating any and all Email Admin requirements and activities.
5. Report findings to the CTC for further action.
6. CTC recommends to senior management the creation of a project to implement the Email Admin Requirements Definition.
7. CTC selects a project manager who creates a project team, project plan and schedule, quality plan, and product selection criteria.

**Transition Plan 6 – STUDENT LOGINS:**

1. Train the data staff to be able to do this type of work and/or contract for services.
2. CTC will review the policies, procedures, and practices surrounding Student Logins.
3. CTC creates a new Student Logins Requirements Definition document.
4. Conduct a Technical Options Study on the feasibility and opportunities of automating any and all Student Login requirements and activities.
5. Report findings to the CTC for further action.
6. CTC recommends to senior management the creation of a project to implement the Student Logins Requirements Definition.
7. CTC selects a project manager who creates a project team, project plan and schedule, quality plan, and product selection criteria.

**Transition Plan 7 – IT SKILLS TRAINING:**

1. CTC identifies the new or enhanced skills needed to implement the EA.
2. CTC reviews the current skills matrix against the new skills.
3. CTC tasks each organization to create individual training plans for the acquisition of these new skills.
4. CTC creates a master IT Skills Training Plan.

5. CTC recommends to senior management that training funds be provided in accordance with the master IT Skills Training Plan.
6. CTC administers and monitors each organization's compliance with the master IT Skills Training Plan.

**Transition Plan 8 – RECORDS MANAGEMENT:**

1. Train the data staff to be able to do this type of work and/or contract for services.
2. Identify all paper forms currently in use.
3. Identify all other documents received and stored.
4. Determine which paper forms could be replaced with an online data entry form within SUNGARD.
5. Report findings to the CTC for further action.
6. Establish a project to permanently replace these paper forms with online data entry forms.
7. Determine which documents must be stored in their original paper form for legal reasons.
8. Establish a project to design and build an electronic documents storing solution that will allow paper documents to be scanned into electronic format and stored on a computer.
9. Establish cataloging and storage requirements and procedures for those documents which are not allowed to be stored electronically.
10. Scan and store all documents.
11. Destroy all paper documents that are not legally required to be kept.

**7. Information Technology or Instructional Technology**

Although the title and the use of the word technology in this plan is referring to information technology (IT), it does not address the other type of IT which is instructional technology. The college must be made aware that there are primarily two main types of technology (IT) in use here at GCC and should be addressed and perhaps merge with this ITSP document and change the title to simply be called the Institutional Technology Strategic Plan (ITSP):

- 1) Information Technology (IT)

- a. The acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunications.

*Source: [http://en.wikipedia.org/wiki/Information\\_technology#cite\\_note-0](http://en.wikipedia.org/wiki/Information_technology#cite_note-0)*

- b. MIS is primarily in charge of Information Technology

## 2) Instructional Technology (IT)

- a. In education, instructional technology is "the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning," according to the Association for Educational Communications and Technology (AECT) Definitions and Terminology Committee.

*Source: [http://en.wikipedia.org/wiki/Instructional\\_technology#cite\\_note-0](http://en.wikipedia.org/wiki/Instructional_technology#cite_note-0)*

- b. Different departments or programs here at the college use different types of Instructional Technology (Examples: Automotive Technology, Office Technology, Construction Technology, Fire Science Technology, Civil Engineering Technology, Diesel Technology, Surveying Technology, Waterworks/Wastewater Technology, etc.)