College of Micronesia – FSM

Technology Plan

A Component of the College's Master Plan

February 2011

College of Micronesia – FSM
P.O. Box 159
Pohnpei, FM 96941
Federated States of Micronesia
Web site: www.comfsm.fm
Phone: (691) 320-2480 Fax: (691) 320-2479

Board of Regents

Name	Representing
Kasio E. Mida (Chair)	FSM National Government
Lyndon Cornelius (Vice Chair)	Kosrae State
Mary B. Figir (Secretary/Treasurer)	Yap State
Graceful Enlet	Chuuk State
Churchill Edward	Pohnpei State

President

Spensin James

For information contact:
Office of Institutional Research and Planning
rschplanning@comfsm.fm

President's Message

It is my pleasure to introduce the College of Micronesia–FSM's Technology Plan 2011. The COM-FSM Technology Plan provides the direction and priorities for improving student learning, student success and completion. The Technology Plan is a component of the overall Master Plan for the college. The Master Plan is currently composed of four integrated components: Instructional, Facilities and Campus Environment, Long Term Financial, and Technology. Additional components will be added in the near future. The Master Plan is intended to be reviewed and updated on a regular basis and will be periodically printed, but the most current version of the plan can be found on the college's website at http://www.comfsm.fm/irpo/plan.html along with the individual components of the plan.

The college is committed to the continuous improvement of its programs and services. The foundation for continuous improvement is the making of effective and efficient decisions about priority issues in student learning and the college's mission and implementing those decisions with quality. Fundamentally, we are committed to ensuring that students learn to do, know and think as specified in courses, programs and institutional student learning outcomes. Through student learning, we can prepare the students who will provide for the economic and social development needs of the Federated States of Micronesia.

Major internal and external issues addressed in the Master Plan:

- How to address external factors such as:
  - Stagnate FSM economy
  - Dependency on US funding for operation of the college
  - High outmigration of FSM citizens
  - Declining FSM Elementary and Secondary enrollments
  - College readiness of graduating high school students
- Continually improving the quality of student learning, student success and completion rates.
- Increasing stakeholder involvement and response to stakeholder concerns on planning and decision making at the college.
- Developing alternative schemes for financing higher education in the FSM beyond the termination of the economic provisions of the amended Compact of Free Association by 2023.
- Increasing rigor in decision making regarding facilities and programs through focus on total cost of ownership and cost benefit analysis.
- Firming up linkages between planning, assessment and resource allocation with emphasis on evidence (assessment & evaluation) based decision making.
- Enhancing quality of implementation through improved work planning and performance management/evaluation.

In the interest of transparency and improved communication, the college will be monitoring and reporting on the impact of the Master Plan on improving student learning, student success and completion rates.

The college is at a critical juncture in developing a sustainable system of higher education that supports economic and social development in the FSM. Only through working together can we ensure that FSM citizens continue to have the quality higher education system they need and deserve.

Spensin James
President

CONTENTS

INTRODUCTION

The College of Micronesia – FSM is a two year institution of higher education located in the Federated States of Micronesia (FSM), a small island developing state located in the western Pacific Ocean. COM-FSM is composed of a national campus located in Palikir, Pohnpei, state campuses in each of the FSM states (Chuuk, Kosrae, Pohnpei and Yap) and a fisheries maritime institute located in Yap State. The central administrative offices for the college are located at the National Campus. The college offers 40 degree and certificate programs including a Bachelor of Arts degree in Elementary Education degree in partnership with the University of Guam.

The College has six campuses on four islands in the FSM. All sites are connected to each-other via the Internet and are able to share specific resources and services on the college network.

The college is accredited by the Accrediting Commission for Community and Junior Colleges (ACCJC), of the Western Association of Schools and Colleges (WASC).

COLLEGE OF MICRONESIA – FSM VISION, MISSION, VALUES AND STRATEGIC GOALS

The college's Strategic Plan guides planning, implementation and reporting activities at the college and forms the basis for continuous improvement. The following are the college's vision, mission, values and strategic goals.

VISION STATEMENT

The College of Micronesia-FSM will assist the citizens of the Federated States of Micronesia to be well-educated, prosperous, globally-connected, accountable, healthy and able to live in harmony with the environment and the world community.

MISSION STATEMENT

Historically diverse, uniquely Micronesian and globally connected, the College of Micronesia-FSM is a continuously improving and student centered institute of higher education. The college is committed to assisting in the development of the Federated States of Micronesia by providing academic, career and technical educational opportunities for student learning.

COLLEGE'S VALUES

In order for us to achieve our vision, mission, and goals we agree to uphold the following core values and behaviors. We value:

Learner-centeredness
Learners are our primary focus and we provide quality instruction and services in a nurturing and safe environment.
Professional behavior
We are competent, service-oriented professionals with a commitment to life-long learning and a commitment to provide excellent and exemplary service to students, colleagues and the community.
Innovation

We provide a dynamic, creative, up-to-date, and innovative environment to allow the college community to function effectively in a global economy.

Honesty and Ethical Behavior
We are honest and abide by the COM-FSM Code of Ethics in all our personal and professional interactions to create and maintain trust and unity among ourselves and with our community.
Commitment and Hard Work
We commit and invest our time, energy and resources to create a rigorous, high quality-learning environment.
Teamwork
We live in a community where collaboration, open-mindedness, respect and support for each other help us achieve our mission.
Accountability
We are responsible for and accountable in our daily activities to our partners and the community we serve. We comply with all applicable regulations and use our resources efficiently and effectively to maintain a high level of trust and confidence.

STRATEGIC GOALS

The College of Micronesia-FSM, through a cycle of assessment and review, will continuously improve to meet or exceed current accreditation standards and will:

- Promote learning and teaching for knowledge, skills, creativity, intellect, and the abilities to seek and analyze information and to communicate effectively;
- Provide institutional support to foster student success and satisfaction;
- Create an adequate, healthy and functional learning and working environment;
- Foster effective communication;
- Invest in sufficient, qualified, and effective human resources;
- Ensure sufficient and well-managed fiscal resources that maintain financial stability;
- Build a partnering and service network for community, workforce and economic development;
- Promote the uniqueness of our community, cultivate respect for individual differences and champion diversity; and
- Provide for continuous improvement of programs, services and college environment.

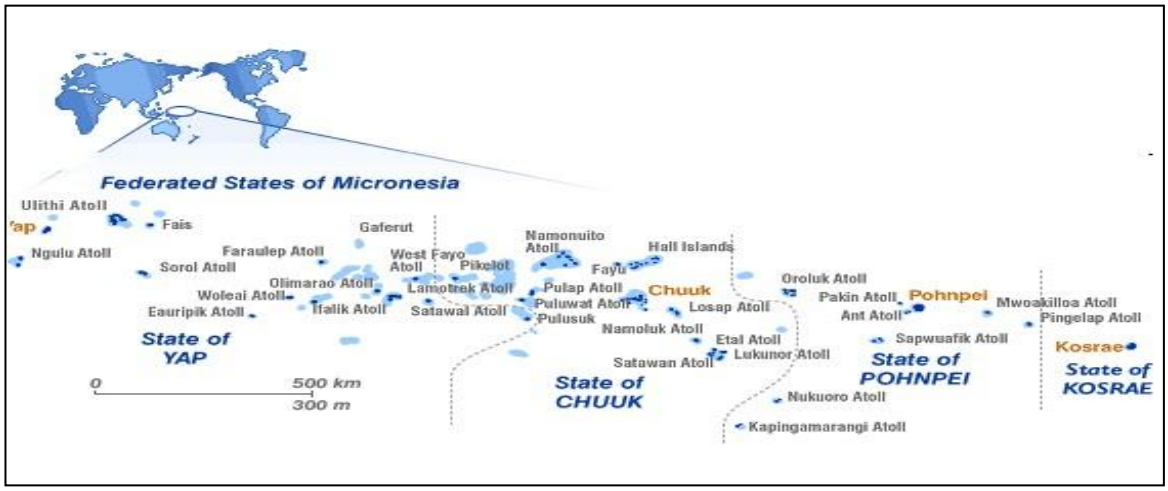


Figure 1 - Map of the Federated States of Micronesia

PURPOSE OF THE TECHNOLOGY PLAN

The Technology Plan is a sub plan of the COM-FSM Master Plan that identifies the technological needs of the institution and suggests strategies for aligning resources to meet those requirements.

The overall goal of this plan is to have a vision that identifies resources, defines the priorities, and organizes the plan to support the continual upgrading of the technology infrastructure and capabilities of college technology systems. Furthermore, the plan will result in the College of Micronesia-FSM community having access to a secure and reliable information technology infrastructure consisting of the technical tools, services and support that will enable them to effectively integrate information so that students, faculty and staff will be able to further the mission and goals of the college.

The Technology Plan supports the COM-FSM Academic Master Plan and also to supports and provides links to the facilities, finance, staff development, and all other plans of the college.

The plan implementation and impact will be evaluated using the college's Institutional Assessment Plan (IAP) process.

The Technology Plan guides the activities of the College's Information Communications and Technology Committee (ICT). The ICT is responsible for the following areas:

- Develop or revise policies and/or procedures assigned to or identified by the college community or by the committee itself;
- Act on request for usage of technology fee funds;
- Develop and maintain the technology plan for the entire college;
- Coordinate information and communications technology provision throughout the college to maximize its effectiveness;
- Recommend career development and training needs of ICT support personnel;
- Recommend the information communications technology resources required to implement the colleges strategic plan;
- Review and recommend a preferred vendor list for technology purchases for the college.
- Review assessments/evaluations of information technology services and make recommendations; and
- The diverse membership of ICTC and the openness to all college divisions and units to take part in the IT planning ensures the adherence to this standard.

FACTORS AFFECTING THE TECHNOLOGY PLAN

The college also shares a set of common factors that affect any technology-dependent environment with other entities. Besides these common factors, the college is also affected by its geographic and tropical positioning.

Common factors affecting any institution of higher education or IHE's technology planning and operations include:

- Rapidly changing technology environment means there is a constant need for monitoring and determining development trends in technology that fit the college's needs and situation;
- Ever evolving security threats to system equipments, networks and databases that require constant vigilance; and
- Common solutions sometimes do not fit the college's environment
    - Software that requires high bandwidth

    - Cloud-based computing is not currently feasible at many of our campuses
- Financial constraints that delimits the plan implementation

Local factors affecting the college's technology planning and operations:

- The FSM and therefore the college campuses are spread over 2,500,000 square kilometers of the Pacific Ocean;
- The college's tropical and ocean environment is hard on equipment and affects normal replacement schedules;
- Logistics is a problem especially in the shipping and transportation areas (a site visit to each campus requires a minimum of 3 weeks due to airline schedules);
- While Pohnpei is currently connected to submarine fiber optic cable, Chuuk, Kosrae and Yap connectivity is via satellite (due to the college's location, there are fewer available satellites that provide service but at relatively high cost). It is also noted that the cost of fiber optic connectivity in the FSM is high compared to US and other countries;
- Power operations are not always reliable at college campus locations and remote sites, and outer islands that could be served via distance education have to use alternative energy (primarily small generators or solar);
- While the college is a WASC accredited institution of higher education, the FSM is a small island developing state with a weak economy and pay scales that are substantially lower than U.S. norms. This impacts recruitment of high level competent IT professionals.
- A Technology Fee (currently at $100 per semester) is assessed for all students and may be used for purchase of computer and related technology that is used directly by students in classrooms, labs, or other student-accessible facilities at the COM-FSM campuses. Acceptable items include:
    - Computers;
    - Computer software;
    - Printers and printer supplies (ink or toner); paper and other output materials are not to be purchased using the Computer Use Fee;
    - Networking supplies such as hubs, switches, and wiring;
    - Hardware, such as uninterruptible power supplies, that supports or protects equipment purchased with the Computer Use Fee; and
    - All purchases made with the Computer Use Fee must be approved by the Information Communication Technology (ICT) Committee, which is also responsible for prioritizing these purchases.

TECHNOLOGY PLAN

The Technology Plan guides the ICT service strategy for the COM-FSM. Technology planning must not be treated as a separate exercise dealing primarily with networks and telecommunication infrastructure. As another major component of the college's master plan, this plan aims to establish the connections between the information technology, development strategies, curriculum initiatives, and information objectives that will lead to improved student learning at the COM-FSM for the next three years.

This plan will also improve the effectiveness and efficiency of technology services by continuously and consistently providing affordable, secure, relevant, up-to-date high quality technical services that are responsive to the needs of students, faculty and staff as well as assisting the institution in achieving its mission.

GOAL: PROVIDE A RELIABLE AND RELEVANT TECHNOLOGY INFRASTRUCTURE FOR THE COLLEGE

Outcomes/objectives	Strategies/Action Steps	Person Responsible (lead)	Resources	Timeline	Key Performance Indicator	SP Reference

TP1.1 To deliver effective technology services to support college services	TP1.1.1 Expansion and maintenance of systems to host and support core communication services; networks, central servers, systems software, web services of the college system
	
	• Leverage COM-FSM myShark portal and SIS to dynamically manage web site content, such as:
	  ○ Campus-managed alerts and news items, for display in myShark and other locations in the campus website
	  ○ HR job announcements managed with online form and dynamically presented in campus website.
	  ○ Local/regional news self updating through RSS feeds
	• Campus-specific student e-mail distribution for emergency alerts or other priority communications
	• Designate responsibility for web services to a Webmaster dedicated to website development
		IT Director, ICTC, VPAS, Director MSF, IT Staff (Webmaster and Systems Administrator), Campus Directors, DCR	IT budget, tech fee funds, grants, allocated funding by other departments/units.	Spring 2013
				
				Spring 2012 (HR job announcements and campus specific announcements)
					Hardware in place, working? Student and Faculty Satisfaction Surveys?	SPG4a
						
						AP8.5

Outcomes/objectives	Strategies/Action Steps	Person Responsible (lead)	Resources	Timeline	Key Performance Indicator	SP Reference
	TP1.1.2 distance learning initiatives as detailed in the distance learning plan: • Facility/infrastructure support • Staff support & staff capacity building • Distance learning plan to indicate number of students, number of courses, type of courses, delivery method, etc.	DL coordinator, IT Director, ICTC, VPAS, Director MSF, VPIA, VPCRE	Distance learning coordinator or consultant Distance learning plan. Technology solution possibilities.	January 2013	Student and Faculty Satisfaction Surveys? Programs successfully delivered.	SPG4a, SPG4b AP1.3
	TP1.1.3 instructional delivery: • In cooperation with faculty, establish a manual/directions/etc. that link best instructional practices to ICT technologies. Refer to AP3.3.6, AP3.3.7, AP3.3.9 • In cooperation with other program areas insure that ICT technologies are supported by human side training on making effective use of the technologies	VPIA, Director IT, VPAS, ICTC	Technology solution, assistance possibilities.		Establish baseline indicators for new programs	AP3.3.6, AP3.3.7, AP3.3.9

Outcomes/objectives	Strategies/Action Steps	Person Responsible (lead)	Resources	Timeline	Key Performance Indicator	SP Reference
	TP1.1.4 Monitor and track new technologies and evaluate relevance for use at the college Monitor relevant reports, solicit ideas from colleagues and publications for ideas on current and future ICT technologies and developments.	IT Director and IT Staff.		Continuous		AP8.4
	TP 1.1.5 Incorporate planning for ICT technologies into system design of all new programs and services college-wide; instructional, student services and administration. See checklist form	All office and project heads.		Summer 2011 (continues)		AP8.5
	TP1.1.6 Backup: (Reference COM-FSM Communications Plan)	IT Director, VPA,		Continuous	Backup Verifications	CP1.1.2
	TP1.1.7 Security: Monitor and maintain all network security apparatus employed by the COM-FSM and make response recommendations based on new threats, continue to develop policies on security for internal data systems such as student, financial, and HR databases, and continue to upgrade systems such as network gateways to improve monitoring capabilities. Continue daily scans of	IT Director, Facilities, VPA, ICT Committee	Security software, host and network monitoring, IT staff	Continuous	Functioning network and data systems.	SPG3c

Outcomes/objectives	Strategies/Action Steps	Person Responsible (lead)	Resources	Timeline	Key Performance Indicator	SP Reference
	known infected websites as well as automated scanning of e-mail.					
TP1.2 Enhance physical infrastructure to support communication and information services	TP1.2.1 Enhance capacity for storage of electronic information over short and long term through identification and development of a purchase plan of hardware and software for document storage and identification of facilities' needs for increased storage capacity	Director Information Technology	Facilities Plan	Identification of equipment needs, and purchase plan. Summer 2011		4a, 4b
	TP1.2.2 Maintenance and expansion of core infrastructure (servers, networks, Internet and Intranet software) in support of all offices and units regardless of location) • Rack and switch expansion and consolidation at National Campus • New gateway servers and switches for all campuses • Install and transition to fiber link from FSMTC to National Campus • Software and firmware upgrades • Creation of Virtual NOC (Network Operations Center) • Authenticated and secure college-wide wireless connectivity at all sites	Director Information Technology				
	TP1.2.3 Identify infrastructure	Director	Open source	Identification of		4a, 4b

Outcomes/objectives	Strategies/Action Steps	Person Responsible (lead)	Resources	Timeline	Key Performance Indicator	SP Reference
	requirements and purchase plan for enhanced communication based on student, library, instructional and administrative needs (teleconference, videoconference, servers, LRC automated software, interactive electronic white boards, etc.)	Information Technology and Vice Presidents	Integrated Library System, Electronic White Boards, Conference Hosting software and Course Hosting Software.	equipment needs and purchase plan. Summer 2012		AP8.1 AP8.2
	TP1.2.4 Establish alternative methods for posting and exchange of documents for standing committees and other units that may need the service.	Director Information Technology		Summer 2013		4a
	TP1.2.5 Continue to explore alternative options to connectivity via available satellite communications and other options as they become available.	Director Information Technology and VPAS		Formal update to be provided quarterly to ICTC & college community		4b, COM-FSM Communications Plan
TP1.3 Develop and implement an ICT training plan for faculty & staff as part of overall staff development for the college.	TP1.3.1 Identify areas of concern and potential trainers from faculty and staff and outside consultants to deliver short and longer term training designed for the effective implementation of ICT technologies. Create policy and train faculty at all sites on submitting grades via SIS Provide an ongoing ICT training program to improve effectiveness and efficiency at the college	Staff Development Committee, ICT Committee, Vice Presidents. IT,OAR	Staff development plan & funding for staff development and trainers.	Summer 2013	Indicators based on work performance of offices, programs etc.	COM-FSM HR plan
	TP1.3.2 As part of the orientation program for new hires, include	HRO Director	Human Resources Plan	Summer 2013	Baseline data established for	

Outcomes/objectives	Strategies/Action Steps	Person Responsible (lead)	Resources	Timeline	Key Performance Indicator	SP Reference
	introduction to college ICT systems and assessment of ICT capabilities				new hires	
TP1.4 Monitor impact of new ICT technologies on effectiveness and efficiency (productivity) against performance indicators	TP1.4.1 As part of first semester college 101 orientation course, include use of ICT systems	Instructional Affairs, Curriculum Committee. Student services dept.	Instructional Master Plan	Continuous	Increased student use of computers in courses	

IMPLEMENTATION AND ASSESSMENT

IMPLEMENTING THE PLAN – PLANNING MODEL

The college recognizes that to fulfill its mission and meet WASC standards for accreditation the college must create linkages between planning, evaluation, and resource allocation.

Assessment and evaluation are at the core of the college's implementation process. The college's institutional assessment plan sets forth the processes and procedures for assessment and evaluation of all the college's programs and services (academic, student support, administrative and sponsored/federal programs).

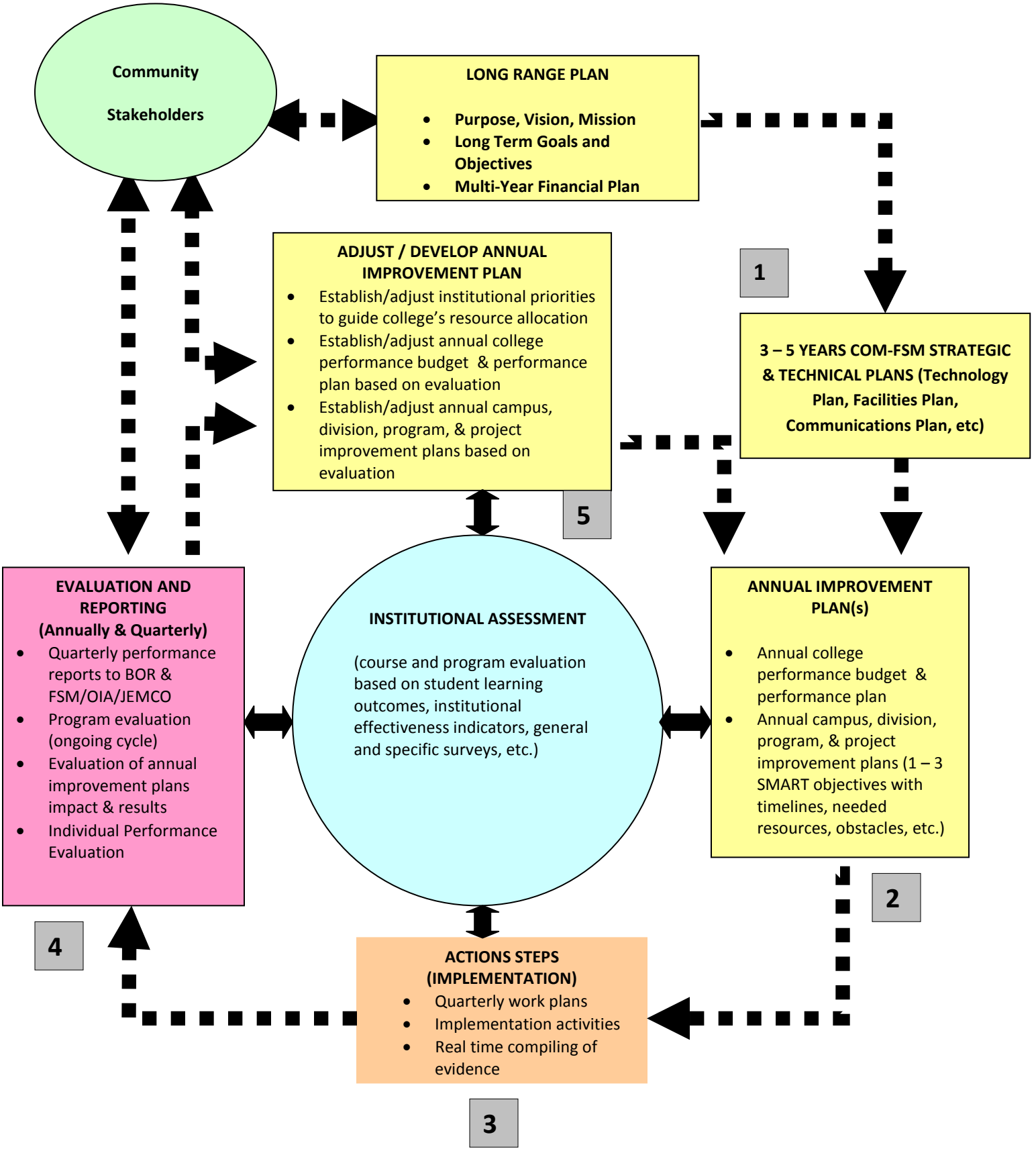
The college recognizes that the master plan must be implemented through a series of annual/quarterly action or improvement plans and that the action plans must have a sound basis in assessment and evaluation.

The college also recognizes that strategic planning and resource allocation is all about priorities. The college will establish and adjust yearly institutional priorities that area based on assessment and evaluation results. These institutional priorities will form the basis for allocating human and financial resources at the college and assist in determining the institutional effectiveness of the college.

The following planning model for the college shows in broad strokes the linkages between planning, evaluation and resource allocation. It also provides mechanisms that assist the college in focusing on continuous improvement and recognizes the need for true performance reporting of results.

The planning, assessment and resource allocation cycle is being strengthened through improved performance evaluation and development and monitoring of Key Performance Indicators and Results Indicators described in the next section.

COLLEGE OF MICRONESIA – FSM



LINKAGE TO FSM STRATEGIC DEVELOPMENT PLAN (SDP)

The college receives significant contributions to its operations and facilities development from the FSM government. As a requirement of the receipt of the funds, the college must link its activities to the FSM Strategic Development Plan (SDP). The college's activities and compact related expenditures are linked to the SDP through the strategic goal "To allow FSM students to complete postsecondary education to assist in the economic development of the FSM."[1] In the context of the SDP, the colleges' strategic goals are treated as activities under the broader FSM SDP strategic goal for postsecondary education and reported as such in the quarterly performance reporting by the FSM. The Fiscal Procedures Agreement (FPA) between the U.S. and the FSM sets forth the terms for funds use under the Compact. As the college is a major recipient of Compact funds, it must comply with the terms of the FPA.

IMPLEMENTING THE PLAN - PERFORMANCE EVALUATION

Implementation of the college master plan and its components will be based the concept of work planning and performance evaluation based on key performance indicators. Components of the master plan will be analyzed for what must occur in the upcoming year and work planning and key performance indicators will be established for Vice Presidents. The BOR will establish a similar set of key performance indicators for the President. Work plans and key performance indicators will be established against four criteria which will account for 70% of their overall performance evaluation (30% is reserved for evaluation against performance competencies):

1.0	**Managing Operations**	30% of total performance score
2.0	**Managing Finance**	15% of total performance score
3.0	**Managing People**	15% of total performance score
4.0	**Managing Information**	10% of total performance score

Each Vice President will have work plans and key performance indicators in the following format.

Key Performance Indicators (KPI's)

1.0	**Managing Operations**	30% of total performance score

		Quarterly Rating				
		1st	2nd	3rd	4th	Av.
1.1						
1.1.1						
1.1.2						
1.1.3						
1.1.4						

[1] FSM Strategic Development Plan, Volume II.

1.1.5						

Vice Presidents will follow the same procedure for direct reports down to the director level. Supervisors will conduct quarterly evaluation of performance based on the following rating scale.

Rating Scale	Descriptor
5	Significantly Exceeds Expectations / Outstanding
4	Exceeds Expectations / Above Satisfactory
3	Meets Expectations / Satisfactory
2	Inconsistently Meets Expectations / Marginal
1	Fails To Meet Expectations / Unsatisfactory
Note: a rating of either 5 or 1 requires qualification.	

PLAN EVALUATION USING INSTITUTIONAL ASSESSMENT PLAN (IAP) PROCESS

Overall master plan and components of the master plan will be assessment using the college Institutional Assessment plan (IAP) Process. Assessment plans developed from the annual work plans for supervisors will be developed and either formative or summative evaluations reports will be prepared and distributed to the college community and key stakeholders annually. Full details of the IAP and copies of the assessment plan and reporting worksheets along with directions is found at on the college Institutional Planning and Research web site at http://www.comfsm.fm/irpo/assessment.html as part of the over college handbook for Institutional assessment.

APPENDIX – MAJOR SOFTWARE AND HARDWARE

COM-FSM System Equipment

www.palikir
OS: CentOS release 5.5 (Final)
Services: httpd (web server)
Location: COM-Room, National site – Left rack

shark.palikir
OS: Red Hat Enterprise Linux Server release 5.6 (Tikanga)
Services: Squid, MailScanner, relaydelay, imapd, squidguard, sendmail, LDAP (mirror), NFS, and BIND (primary)
Location: COM-Room, National site – Left rack

blacktip.palikir
OS: Red Hat Enterprise Linux ES release 3 (Taroon Update 9)
Services: Asterisk, sendmail (secondary MX), MailScanner, relay delay, BIND (secondary)
Location: COM-Room, National site – Left rack

idb.palikir
OS: Red Hat Enterprise Linux Server release 5.6 (Tikanga)
Services: MySQL (database server), SIS, myShark, vanilla forum, moodle, limesurvey, LDAP and radius
Location: COM-Room, National site – left rack

rackmon.palikir
OS: CentOS release 5.5 (Final)
Services: apcupsd (power backup for core network equipment), cacti, nagios
Location: COM-Room, National site – right rack

nas.palikir
OS: Fedora release 8 (Werewolf)
Services: rsyncd (backups for all linux based servers in COM-Room), MySQL (online backup)
Location:

ltsp-standalone.palikir
OS: Ubuntu 10.04.1 LTS
Services: Linux Terminal Server
Location: COM-Room, National site – left rack

homer.palikir
OS: Windows 2008 server Standard
Services: Test 2008 server for future Windows terminal units – currently not in use
Location: COM-Room, National site – left rack

bobby.palikir
OS: CentOS release 5.5 (Final)

Services: Virtual space for bob.palikir
Location: COM-Room, National site – left rack

bob.palikir
OS: Windows 2008 Server Standard
Services: AVG Admin, WSUS, F-prot server, mandatory profiles for labs
Location: Virtual Partition on bobby.palikir

lrc1.palikir
OS: Windows 2000 server SP 4
Services: Follett Library OPAC software
Location: COM-Room, National site – right rack

warran.palikir
OS: Windows 2000 server SP 4
Services: MIP – NPS funding account software
Location: COM-Room, National site – right rack

fao.palikir
OS: Windows 2000 server SP 4
Services: ED Express (stored on hard drive E:)
Location: COM-Room, National site – right rack

yapgw.toraq
OS: CentOS release 5.5 (Final)
Main network server in Yap

kosraegw.tofol
OS: Fedora Core 5.5
Main network server in Kosrae

chuukgw.weno
OS: Fedora Core 5.5
Main network server in chuuk

pohnpeigw.kolonia
OS: Fedora Core 5.5
Main network server Pohnpei campus

Main Cicso Routers in Palikir, Pohnpei, Kosrae, Chuuk, Yap and FMI. 1700, 1800, 2600 and 3200 series.

Technical Environment

- The COM-FSM uses a Red Hat Enterprise Linux server as a gateway to the Internet; this provides email, an Apache web server, the Squid caching web proxy, and a variety of other critical network services.
- At most campuses, the COM-FSM purchases fractional T1 Internet service from FSM Telecom, the sole telecommunications company in the nation. Inter-campus communications are also carried on these T1

connections, secured as an intranet by deploying the entire apparatus across a Virtual Private Network (VPN).

- Except for campuses on Pohnpei, all of the telecommunications in the nation are based upon satellite communication, so network latency is often an issue.
- Computers at the COM-FSM are a mixture of Microsoft Windows XP (and what?). A few of the laboratories operate under Linux Fedora Core 5 or Ubuntu OS. Main network servers are primarily Linux based.
- Frequent difficulty (with what) stems from limited network capacity from the COM-FSM to the outside world, especially during working hours. Recently, smart switches and network deployable anti-virus software have been employed for the COM-FSM network to effectively monitor and regulate traffic with a very fine degree of control in order to identify outbreaks of Computer Viruses that can disrupt network services. Similar to any other college, both policy and systems implementation are beginning to account for these problems.

Technical Management

- Information technology is directly managed by the Director of Information Technology with assistance from a full time staff of 10 individuals.
- The Director is ultimately in charge of all information technology for the entirety of the COM-FSM.
- A Technology Advisory Committee, renamed the ICTC, advises and controls technology policy and is composed of high level administrators as well as the IT Director.
- All of the information technology staff at each campus report to the IT Director and the State Campus Director for their State Campus.
- Training of Information Technology staff occurs at the National Campus or through outside programs and seminars. When one of the States Campuses needs more assistance, since they each only have one staff member, a member of the National Campus staff is sent to assist them.
- All technology planning, purchasing and budgeting is centrally handled through the main IT office at the National Campus.

Internal and External Communications

- All COM-FSM faculty, staff, and students have COM-FSM email addresses for communication purposes within the COM-FSM. Email is often the easiest way for students, faculty, and staff to communicate and coordinate with one another in terms of internal communication.
- Due to the relatively small size of the COM-FSM, the dual authority structure imposed by the organizational chart and geographic distribution of the college does not hinder or impede operations. Most of the administrative departments are small enough to make decisions quickly, visiting within office

or simply leaving a voice mail if someone is not at their desk. This situation is impossible between the National Campus and the State Campuses, which gives rise to miscommunication issues therein.

- The organizational peculiarities of a dual authority structure do not adversely impact the COM-FSM as a result of its relatively small size. However, due to the expense of using telephone for conferences and the time delay in relying upon mail delivery, email is an inadequate tool for involving administrators at the State Campuses in committee, departmental, and divisional decisions undertaken by the National Campus. This is a frequent source of friction between the National Campus and the State Campuses, which the Department of Information Technology has attempted to alleviate by installing VoIP telephones through the COM-FSM. IT is striving to improve persistent bandwidth and latency problems to make the VoIP solution more viable.

IT Facilities Summary

- COM-FSM supports over 500 hard-wired PC's, servers and associated peripherals over a network connecting six campuses on four islands in the FSM.
- Network connections and internet access is being funded thru the IT division. At the national campus, student Internet access stations are available in five computer labs, the library and residence halls. A wide area network links the national campus and state campuses together. Currently, each state campus provides at least one computer lab with Internet access for all their students. Computer equipment for labs is funded by the technology fee generated by individual campuses. Local area networks in six campuses and wide area network connections through a Virtual Private Network have been active for several years now.
- Local area network (LAN) speeds vary depending on location from 10 megabits per second up to 1 gigabit per second in other places. LANs are a combination of category 5 or 6 twisted pair, fiber optic cable, and wireless.

Budget for ICT

- IT Division is funded by COM-FSM's regular budget at approximately $300,000 (U.S.) annually.
- Funding for all student-related technology is provided thru the ICTC by a fee charged to all enrolled individuals at the COM-FSM.
- Under the terms of its current connectivity for global and domestic connections lease line connections, the COM-FSM currently pays approximately $180,000 annually.
- Future plans are to expand on this level of bandwidth as the demand for more bandwidth intensive services and activities are being requested.

FUTURE

- The COM-FSM has contingency plans in place to move forward with video conferencing capabilities and greatly increase courses offered thru distance education methods. Testing in this area has taken place and additional planning has begun.

- Infrastructure and programming developments to allow for an integrated student information services (SIS) system accessible thru a web interface is currently being developed, this system is using a L.A.M.P. approach. (Linux, Apache, MysQl, PhP).Extended functionality of the SIS and web portal are planned for the foreseeable future.

- VOIP capabilities using open source software (asterisk) are currently in the works. Additional dedicated bandwidth as well as compression technology will be necessary for this project to succeed. Future plans for use of added bandwidth will involve improved shaping for dedicating bandwidth to specific services run between campuses.

- Wireless options are currently employed in the form of 802.11x access points and bridges. Advancement in WiFi, WiMax and other wireless capabilities are being observed for usage in the near future.