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ABSTRACT

This report outlines the Hudson County Community College (HCCC) June 1998 Strategic Plan for Information Technology. After providing a list of planning committee members and an executive summary, the introduction provides background information concerning the creation of the information technology initiative. It also provides the objectives of HCCC's strategic plan, which include creating an information technology strategy that effectively enhances learning and teaching and will ultimately provide the school with financial benefits. The following section lists HCCC's institutional goals and information technology guiding principles as well as a situational analysis of external factors and the current technology environment. The next section discusses the institutional information technology improvement programand includes background information and a discussion of the program's strategic imperatives. These include a college-wide information network; desktop computing; a student information system; teaching and learning technology initiatives; an integrated computer-based library system; college technology oversight, planning, and policy; financial resources and budget processes; and information technology support structure and staff development. (YKH)

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ED 419 573

HUDSON COUNTY COMMUNITY COLLEGE

STRATEGIC PLAN

FOR

INFORMATION TECHNOLOGY

June 1998

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FOR

INFORMATION TECHNOLOGY

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ACKNOWLEDGMENTS

This Plan reflects the deliberations of the Information Technology Planning Committee and the input of other members of the College community. The minutes of the meetings of the Committee were recorded by Marcella Williams, Executive Secretary/President's Office, and Emma Lopez, Secretary to the Dean/Planning & Institutional Research. In addition, Emma Lopez made significant contributions to the preparation and design of the *Strategic Plan For Information Technology*.

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EXECUTIVE SUMMARY

The importance of an information technology plan was identified by the College community and appears as one of the recommendations (Executive Summary V.5. "The Information Technology Master Plan must be completed and implementation needs to begin") of the September 1997 self-study submitted to the Commission on Higher Education of the Middle States Association of Colleges and Schools.

The report of the Evaluation Team representing the Commission also identified the development of an information technology plan as a high priority item:

> *The college needs to develop a comprehensive, unified technology plan which includes an administrative computer component, an academic computing component, technical support needs, users support needs, alternative instruction needs, professional development training, and appropriate policies and procedures of operation for computing and other technologies (p.19).*

In September 1997, President Gabert appointed a fourteen member Collegewide planning committee. The Committee was chaired by the Dean for Planning and Institutional Research and included the HCCC Site Director for COLLEGIS. In addition, Bill Brennan, Director of Strategic Planning, COLLEGIS, served as an ex officio member. COLLEGIS provides onsite technology personnel and services to HCCC.

The President's charge to the Committee stated:

> *The HCCC Technology Planning Committee is charged to provide advice, counsel and input for the cooperative efforts of the College and Collegis/Office of Information Technology towards the preparation of a strategic and comprehensive information technology plan for HCCC (10/6/97).*

The Plan was to be prepared for presentation to the Board of Trustees no later than its regular June 1998 meeting.

Drafts of the Plan were shared with the College's Executive Council, and in May a final draft was circulated to faculty, staff, administrators, and Board members for their input and review.

The final version of the *Strategic Plan For Information Technology* was presented to the Board at its June 9, 1998 regular meeting.

In May of 1998, President Gabert held a luncheon for the members of the Information Technology Planning Committee and of the Office of Information Technology Steering Committee (a committee charged with ongoing information technology related issues). At that luncheon members of both committees were acknowledged for their contributions, and were informed that all technology-related concerns would become the responsibility of the newly created Information Technology Oversight, Planning, and Policy

Council.

The major objectives of the Plan are:

1. To articulate an information technology strategy that supports the College's Mission Statement.
2. To establish an information technology environment that enhances the processes of teaching and learning.
3. To establish an information technology environment which empowers faculty, staff, and administrators to function efficiently and effectively.
4. To identify technology objectives that will strengthen the College's competitive position.
5. To identify information technology opportunities that contribute to College revenue growth and/or will support cost containment or overhead reduction.

The Plan contains a number of strategic information technology imperatives that must be addressed "*in order to permit the institution to achieve its strategic institutional objectives and form the core of the College's information technology improvement program*" (p.15).

The Strategic Imperatives are:

1. Collegewide Information Network
2. Desktop Computing
3. Student Information System
4. Teaching and Learning Technology Initiatives
5. Integrated Computer-Based Library System
6. College Technology Oversight, Planning, and Policy
7. Financial Resources and Budget Processes
8. Information Technology Support Structure and Staff Development

Imperatives 1 - 5 are primarily, although not exclusively, concerned with the creation, distribution, and utilization of information. That is, they are concerned with the enhancement of the information technology systems. In contrast, imperatives 6 - 8 are concerned with the enhancement of the cultural, organizational, and human and intellectual capital or resources of the College. These imperatives will ensure that the implementation of the Plan is monitored and that the Plan is modified, when necessary; that required capital and operating funds are planned for and available when necessary; and that students, faculty, staff, and administrators understand, value and implement information technology in the teaching and learning processes and in other College activities. For instance, these imperatives must be coordinated with the plans of the College's Faculty and Staff Development Council and with the College's budget process.

The recently established Information Technology Oversight, Planning, and Policy Council is the central mechanism through which all College information technology activities (e.g., budgets, contracts, plans, policies, procedures) are identified, reviewed,

monitored, and ordered in a rational manner.

In May of 1998, President Gabert appointed the nine members of the Council. The Council is chaired by the Dean for Planning and Institutional Research and includes Executive Council representation from Academic Affairs, Student Affairs, North Hudson/Instructional Resources, and Administration and Finance. Two faculty members, the COLLEGIS Site Director, and the College's Assessment Analyst complete the Council membership . The Council is one of the five Councils that report to the President and the Executive Council.

Below are listed a number of the major information technology issues that have been identified in the Plan.

1. Year 2000 Problem
2. Upgrade (IA Plus) of Selected Applications of the Current Student Information System (SIS)
3. Collegewide Information Network
4. Decision Concerning a System to Replace SIS
5. Integration of Technology into the Social Organization and Culture of the College
6. Faculty and Staff Development Program to Integrate Technology into the Teaching/Learning, Research, and Counseling Processes
7. Sufficient Capital and Operating Funds, and the Adoption of "Life-Cycle Budgeting"

The Plan provides a framework that enables the Oversight Council to revisit each of these and other issues on an ongoing basis, and to formulate recommendations in a systematic and integrated manner.

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I. INTRODUCTION

The pace of evolution, integration, and use of information technologies within modern organizations has accelerated dramatically within the past decade, and is expected to continue unabated for the foreseeable future. This trend, while fostering significant enhancements, as well as significant changes, to the content and style of most intellectual activities has also introduced major challenges for most institutions. In particular, institutions of higher education are confronted with significant financial hurdles in continually upgrading and expanding information technology access, services, and support for their students, faculty, and staff.

Hudson County Community College, confronted by many of the cited challenges, has recognized two critical factors in its review and planning for its future. The first is that in order to remain competitive the College must embrace the task of continually improving its information technology infrastructure consistent with the needs and expectations of modern educational institutions. Second, the institution also recognizes the crucial importance of planning to the success of any such efforts it undertakes.

As a result of the above, Hudson County Community College engaged in the development of a *Strategic Plan For Information Technology* during the 1997-1998 academic year. This planning effort was designed to identify strengths and weaknesses within the existing College information technology infrastructure, and to identify information technology improvements and initiatives consistent with the needs and objectives outlined within the College's Mission Statement. Specifically, the objectives of the College's *Strategic Plan For Information Technology* are as follows:

- To articulate an information technology strategy that supports the vision contained within the College's Mission Statement.
- To establish an information technology environment, which supports, promotes, and enhances the processes of teaching and learning for its faculty and students.
- To establish an information technology environment to promote an accurate, reliable, flexible, and easy to use information management systems infrastructure which empowers faculty, staff, and administrators to function efficiently and effectively.
- To set forth information technology objectives that seek to strengthen the College's competitive position within its served marketplace(s).
- To identify information technology opportunities that contribute to College revenue growth and/or will support cost containment or overhead reduction.

The result of the strategic information technology planning effort contained within this document is the establishment of a series of specific information technology goals, objectives, and improvements. The resultant impact

of these goals, objectives, and improvements will be to strengthen the competitive position of Hudson County Community College within its served markets, as well as to enrich the quality and comprehensiveness of its academic and services offerings to its many constituencies.

II. INSTITUTIONAL GOALS

The College seeks to achieve the previously stated objectives through the establishment of a comprehensive, creative, ongoing technology improvement program which ensures wherever possible that information technology efforts contribute to the following institutional mission and goals.

- To provide liberal arts and science courses and associate degree programs that will prepare students to transfer to four-year colleges and universities.
- To provide courses, certificates and associate degree programs that will prepare students for immediate employment or provide for career enhancement.
- To provide general education courses to ensure that students can think critically and analytically, communicate effectively, solve mathematical problems, participate as informed citizens, appreciate cultural diversity and global interdependence, and are information and computer literate.
- To provide support services including counseling, job placement, aptitude and skills testing, financial aid, academic advisement, and basic skills development to help students succeed and benefit from academic programs.
- To provide programs and services appropriate to the linguistic diversity of the community.
- To provide educational and support services to businesses and industries to meet work force needs and to promote the economy of the County.
- To provide not-for-credit courses and programs including conferences, seminars, lectures, workshops and other activities to meet the continuing education, professional, and enrichment needs of residents of the County and of members of organizations within the County.
- To provide for collaborative relationships with local school districts; other colleges and universities; public and private agencies; and business, industrial, professional and labor associations to promote high quality and efficiency in all programs and services.

III. INFORMATION TECHNOLOGY GUIDING PRINCIPLES

As the College moves to implement its information technology plans, it will be important that institutional efforts be guided by a common set of principles. The following set of guiding principles specifies the manner in which information technology should contribute to the fulfillment of the College's Mission Statement and Institutional Goals.

1. Promote efficient and effective technology improvements that facilitate teaching, enhance student learning, and provide access to research material.

2. Use technology to improve services to students and to simplify their interactions with College administrative functions.

3. Provide an environment which promotes and supports faculty professional development in the use and application of technology to teaching, learning, and research.

4. Ensure the seamless integration of all student and institutional information.

5. Promote an accurate, reliable, flexible, and easy-to-use information management systems infrastructure.

6. Facilitate intra and inter departmental information sharing and support.

7. Adopt technologies based on industry standards and the College's present and future needs.

8. Ensure that adequate funding, training, and support resources are available to maintain College technological currency and effective service.

9. Be realistic, and emphasize multi-purpose and shared use when allocating resources and technology applications.

The principles stated above are designed to insure that all those involved in the improvement of, as well as those served by, technology at Hudson County Community College share a common understanding of the role and mission of technology in creating the institution's future. Additionally, as the College moves its technology improvement agenda forward during the months and years ahead, the principles specified above will provide that its efforts, and more important, its outcomes, are consistent with the College's chosen mission and goals.

IV. SITUATIONAL ANALYSIS

A. External Factors

As Hudson County Community College embarks upon a multi-year technology enhancement program, it is important to establish at the outset that numerous external factors will impact upon its efforts over the ensuing years. Many of these external factors, noted below, will be outside the institution's control. Also, while the issues specified will clearly affect the institution's efforts, it may also be difficult to anticipate additional trends which will emerge in future years which may affect College efforts as well. These issues include the following:

- The Year 2000:
  As a result of embedded hardware and software limitations, many computer systems infrastructures will be rendered inoperable on January 1, 2000. This situation will directly impact Hudson, as key administrative systems will become inoperable as a result of this problem. In addition, many of Hudson's instructional support systems will be impacted as well. The Year 2000 poses an implacable deadline that forces institutional change.

- Rising constituent service expectations:
  Nationally, the trend for students, faculty, staff, administrators, management, trustees, and the community at large to expect an ever improving return on their investment in higher education will most assuredly continue. As a public institution, with a strong community service mission, Hudson County Community College must continually improve service quality to maintain competitiveness and the confidence of its sponsors and stakeholders. A focus on outcome measures will be an ever-increasing constituent and sponsor expectation.

- The pace of technological change will continue to be rapid:
  Given the evolution of technology over the past twenty years it is reasonable to assume that technological change will continue unabated.

- Students and faculty will expect the "right" technology:
  Computers have become commonplace in the workplace and the home, as well as in elementary and high schools. As a result, more and more of Hudson's students will be familiar with computers and expect not only more in the way of computer integration in their education, but also technology which prepares them to compete effectively. Increasingly, faculties recognize that technologies are critical for them to provide quality instruction, as well as to provide access to information for

research to support their teaching and continued professional development.

- Developments in learning theory:
  Students learn best in a collaborative environment. Given that Hudson is a commuter college, the College must facilitate communication among students, and between students and faculty to ensure the development of a collaborative learning environment.

- Technology expansion has created a national user support crisis:
  All modern organizations are experiencing substantial pressure to provide current, as well as quality, end user support environments. Such support demands have placed particularly severe demands upon institutions of higher education due to the unique nature of their comprehensive missions and limited funding options.

- Time and location independent course delivery is emerging:
  Alternative methods of course delivery (more time and location independent) are emerging, providing viable alternatives to the traditional classroom instructional model.

- The Internet will continue to impact upon educational delivery and content:
  From network and desktop based software applications and research capabilities, to a vehicle for alternative course and instructional delivery, the future development of the Internet and other information technologies will impact upon higher education in meaningful and dramatic ways.

- The national, regional, and local economies are changing in fundamental ways:
  Downsizing, re-engineering, and job displacement generally produce at least one significant outcome; a loss of employment within an organization necessitating the need for continued retraining to develop new skill sets for varied segments of the workforce. Hudson must continually evaluate its position as a community leader in meeting the needs of its regional and local economies.

- The national, regional and local trends for tuition restraint will impact institutional revenue:
  The same forces which have driven for-profit institutions to seek improved methods of cost reduction and cost avoidance are buffeting educational institutions as well. Closely aligned with the issues of outcome and return on investment is the need to demonstrate restraint with regard to tuition increases. The

competition is too strong, and the scrutiny of consumers too intense, to allow institutions of higher education to utilize increased tuition as the major vehicle to achieve fiscal stability.

- The "de-regulation" of New Jersey higher education has created new opportunities, as well as unanticipated challenges:
  With the opportunity to compete for students and the freedom to create new programs, the potential is clear for an institution such as Hudson. However, while presented with these possibilities, Hudson must also confront the challenge of increased competition from here-to-fore non-competitors.

- The New Jersey Technology Bond Act offers a significant opportunity:
  The recent establishment by the State of New Jersey of a 55 million dollar Technology Bond program offers New Jersey institutions of higher education a one-time opportunity to apply competitively for funds to support major information technology infrastructure improvement. Receipt of these funds, however, is not guaranteed without a comprehensive, focused institutional strategic information technology plan.

The forces and trends discussed above currently shape, and will continue to shape, our economy, the development and use of technology, the quality and nature of academic instruction, the ways in which we administer our institutions, and the challenges to be confronted by our students. While we cannot expect to control these factors, we should be constantly vigilant with regard to their existence, as well as continually focused on their potential impact upon our institution.

B. Current Technology Environment

Hudson County Community College recognizes the crucial role information technology must play in the achievement of its institutional objectives. After an extensive review, Hudson County Community College has determined that its present technology infrastructure will not support the institution in the attainment of its institutional vision for the 21st Century.

Specifically, inadequacies are manifest in many key elements of the College's information technology and supporting infrastructure and include: an incomplete campus network; limitations in certain strategic administrative systems capabilities, particularly as they relate to student services; insufficient and uneven instructional technologies and support services; an aging desktop computer environment; as well as the absence of an institutional oversight and policy setting mechanism for technology. This planning effort has focused on the resulting impediments to current and future institutional performance, which arise from the previous conditions, and have necessitated the organization's critical review of its strategic information technology direction.

The following will provide an assessment of the impacts of the current technology environment at Hudson County Community College upon its students, faculty, staff and management.

- Educational and Instructional Capabilities:

  Inconsistencies in instructional technology currency, accessibility, standardization, resource availability, and support services are limiting the institution's ability to take full advantage of technology, and its faculty in support of its educational mission and goals. In many cases, prospective students of Hudson County Community College may actually have access to a higher quality of information technologies within their high schools and their work environments than they will experience if they choose the College to pursue future learning.

  Also, a significant impediment to further integration of technology and information resources within the curriculum is limited access to the Internet and the World Wide Web. Although a recent and rapidly developing resource, the Internet is vital for the support of instructional and curricular innovation.

- Student Services:

  The most significant impediment to improved student service is adequate and timely access to student information. Inefficiencies in the processes supporting student counseling, registration, financial aid, and billing and payment, contribute to uneven student service quality. The current student system shortcomings hamper the College in its attempts to schedule courses, project course availability, conduct prerequisite verification, streamline student billing and payment, and expedite the student counseling process. As a result, College staff and administration are restricted in their attempts to maintain high standards of quality service for all of Hudson's constituents.

- Information Access, Use and Decision-making:

  The limitations imposed by the present non-integrated, administrative systems platform severely restrict the College's ability to efficiently and effectively access, share, and utilize information. As a result, information is generally available within, rather than among, departments. The resultant lack of "collaborative capability" necessitates duplication of work across the institution, and restricts the institution's use of its greatest strength, its people, and the application of their intellectual capital to institutional problem solving.

  Limited by the lack of timely and accessible information, the institution's decision making processes are cumbersome and

time consuming. One critical impact of the these conditions is the limitations imposed upon institutional efforts to conduct meaningful outcome assessment.

- Institutional Competitiveness:

  The technological impediments discussed above affect the institution's ability to sustain educational excellence, maintain quality student service, and have easy access to information for institutional decision making.

  The lack of easy access to enrollment trends, demographics, course demand, historical student data, and modern tools for analysis and reporting limits the institution's ability to anticipate and react in a timely manner to changing student needs and future educational trends. The cited limitations, if not addressed, will combine to restrict the College's ability to maintain and strengthen its leadership position in the region.

V. INSTITUTIONAL INFORMATION TECHNOLOGY IMPROVEMENT PROGRAM

A. Background

In order for the College to achieve its information technology vision, the Information Technology Planning Committee has identified a series of information technology imperatives that must be addressed as core components of the College's overall information technology improvement program. Referred to as Strategic Imperatives, these issues represent information technology projects, programs, services, policy and procedural mechanisms which are required for the College to achieve its institutional objectives. Addressing these imperatives will provide the institutionwide capacity to pursue such critical programs as meeting Year 2000 requirements, establishing technology across the curriculum, developing an integrated computer-based library system, training workers of the future, and providing on-line access for students, administration, faculty and staff, etc.

The major technology project recommendations that follow represent a comprehensive series of strategic requirements and needed technological improvements. Underlying the strategic requirements are programs and projects that are driven by the College's need to address the unique requirements of the Year 2000. The balance of improvement recommendations represents either enabling technologies (e.g., College Network), or systems (e.g., Student Information System) required to maintain institutional excellence and/or competitiveness.

The Year 2000 poses severe operational issues for the vast majority of computer systems operating today. Since the design of these systems did not consider the affects of the leading "20" and the number of zeros "000" in the year, they will in effect be rendered inoperable as of January 1, 2000. As a result, the Year 2000 establishes a series of firm objectives, which must be accomplished to ensure the institution's ability to function in the post January 1, 2000 time frame. The implications for Hudson regarding the Year 2000 are significant and unambiguous.

Specifically, the following areas of information technology infrastructure, policy, and process must be addressed in order to permit the institution to achieve its strategic institutional objectives and form the core of the College's information technology improvement program.

B. Strategic Imperatives

1. Collegewide Information Network

The challenge for Hudson is to provide an appropriate communications network that ultimately serves all academic and administrative users in the institution. In some cases, this includes improving reliability and access to the

existing information network backbone. In other cases, it includes installing new equipment, connectivity devices and wiring, connecting separate networks, or providing connectivity to new areas within the College.

The campus wide network backbone will be extended to connect all College users. The basic network design will follow these guidelines:

- Network design based on proven technologies and industry standards.
- Scaleable network design capable of expansion and enhancement with little or no obsolescence.
- Network design providing for multiple protocols and multiple topologies.
- Design capable of implementation in phases without degrading overall performance.
- A wiring plan capable of delivering voice, data and video to any location.
- A common implementation theme across all servers while concurrently supporting specific needs of individual users and departments.

The Hudson County Community College network design will provide for an "umbrella" of services for faculty, students, and staff to include:

>Internet	>E-mail
>Print Share	>File Share
>Bulletin Boards	>Application Software Delivery/Control
>Fax Capability	>Instructional Software Delivery/Control
>Dial In/Out Modem Systems	>Student Systems
>Finance Systems	>Video Applications

Under this umbrella users can be provided with appropriate access to a variety of services such as Academic File Servers, Administrative Systems, Library Systems, Internet and other common functions such as E-mail, word processing, and spreadsheets. Individual users will be able to configure their desktop systems to meet their specific needs. Users will be able to access the network provided services and install additional applications on their desktop as required.

The network plan will ensure the achievement of the following goals:

- Dissemination of information to the student, academic, and administrative communities in an efficient and

routine manner.

- Creation of a communication capability which facilitates and supports the development of a community of learners.
- Provision of cost-effective administrative services that comply with current standards and are capable of utilizing future technological advances in their delivery.
- Utilization of contemporary proven technology that assures linkage and compatibility with worldwide information networks in an open communications and multiple user environment.
- Employment of technological advances that allow consistently high productivity, measurably enhances professional and academic creativity, and provides a clear competitive edge to the College in its recruitment of new students and placement of graduates.

2. Desktop Computing

The Hudson County Community College process of using technology in the classroom and office must expand to widespread access and use of PCs in instructional, research, and administrative activities. The College must establish minimum standards for all workstations and ubiquitous access to networks, so that by the Year 2000 all faculty and staff can communicate electronically with students and colleagues. A minimum configuration for a workstation should include Year 2000 compliance, and the capability to access voice, video, and data. It is also strongly recommended that a formal "fleet managed" approach be adopted which incorporates a life cycle budget model permitting replacement of the installed base of personal computer workstations on a scheduled basis.

3. Student Information System

A comprehensive and fully integrated Student Information System, supported by a new central hardware systems platform, is the essential component in establishing a new information technology environment capable of supporting major improvements to student/client services, as well as effectively managing all areas of student services. The basic functions in the student system would include recruiting and admissions, financial aid, class schedules, registration, student accounts receivable, grade processing, academic history, student academic progress, degree audit, and advising.

All of the functions provided in the Student Services areas need to be located within one integrated, relational, and client/server supported

application software system. The new system ultimately may include the following additional features that expand the usefulness of the system beyond those basic functions stated above:

- Touch-Tone (Remote) Registration and Student Payments
- Link to Library Information System for Student Fines and Registration Status
- Enrollment Management Processing
- Campus Kiosks that will support inquiries for:
  - > Student Grades & Billing
  - > Financial Aid
  - > Degree Audits
  - > Student Activities
  - > Campus Events and Maps
  - > Career Planning
- Internet Connection for:
  - > Recruiting
  - > Electronic Applications
  - > Course Registration
  - > Course Advising

The transition to a modern student system will enhance significantly the level of service to all constituents and offices that rely on the core administrative student information. Students will be better served by more timely information regarding admission, financial aid, registration, billing, grades, and advisement. All of the offices that provide these services will be able to present a well-coordinated and unified level of support for students, faculty, and staff. The integrated systems, flowing over the College network, will have an immediacy of access and accountability that will lift the level of support to meet the goals that have been set in student service by Hudson.

Additionally, choosing to implement the enhanced services such as student on-line review of grades, degree requirements, billings, and financial aid, as well as access through Internet, Touch-Tone Registration, and Kiosk Centers, will meet many of the challenges of the current student/client market place. Faculty access to student and course-related information, as well as the ability to effectively track student academic progress, would clearly enhance the academic mission of the College.

4. Teaching and Learning Technology Initiatives

Hudson County Community College recognizes that its most significant investment in information technology must be to ensure the continued evolution of a high quality teaching and learning environment for its students. As a result, the College has identified three overarching information technology objectives in support of its long-term academic/instructional mission. These objectives are derived from the College's mission statement and are as follows:

1. All Hudson County Community College students should achieve minimum information technology competencies

both across the curriculum, as well as within their specific academic discipline.

2. All Hudson County Community College faculty should be provided the information technology teaching and learning tools, along with adequate training and support, to integrate appropriately information technology objectives within the curriculum.

3. Hudson County Community College must provide an information technology environment that promotes, and supports, faculty experimentation with technologies that can enhance the teaching and learning process.

In order to achieve the above, several strategic initiatives will be necessary. One of the most important initiatives is the development and implementation of an appropriate teaching and learning information technology environment that provides for adequate introduction to, training in, and support for the use of information technologies by faculty and students. Specifically, four initiatives are recommended to provide a foundation for faculty to achieve the College objectives outlined above. These are:

1. The College must establish a focused, structured instructional technology awareness and development program for faculty, including adjunct faculty. This program must include all College academic disciplines, and must be designed to address the developmental needs of the faculty, taking into account the various levels at which faculty skills currently exist. The objective of the program must be to ensure over time that all College faculty have the opportunity to develop the capability to introduce technology within the curriculum at levels appropriate to their respective disciplines.

   In addition, it should be the objective of the College that a permanent vehicle for faculty development evolves from this initial program. In this regard, the College should consider the creation of a Teaching-Based Teaching Learning Center devoted to continued experimentation with, and maintenance of, information technology curricular improvements. Ideally, such a center should develop into a comprehensive faculty and staff teaching/learning development center where faculty and staff can go to address their individual training needs, as well as experiment with new information technologies. In order to achieve these objectives, the center must possess the requisite information

technology platform to support faculty needs, and the necessary trained staff to ensure proper support.

2. It is strongly recommended that a personal computer software and hardware bulk purchase program be provided for College faculty as a supplement to the above recommendation. There is no better way to ensure the experimentation with, and utilization of, information technologies than providing access to technology.

3. Provision of predictable, up-to-date classroom and computer laboratory facilities. In order to ensure that the work of the faculty can find its way into the classroom as well as the curriculum, two minimum requirements must be met. First, general purpose or departmental computer laboratory clusters must be networked, consistently serviceable, and properly monitored and supported for student use. Second, a specific number of teaching classrooms, where a computer resides upon each student desk, and each desk is networked to an instructor's computer, must be implemented and properly supported.

4. A structured, comprehensive program of student training and support must be established. In order for students to take full advantage of future technology based teaching approaches, four areas of student support will be necessary. First, students must have training and assistance in the use of College technology tools and programs. Second, students must be provided with discipline specific content support. Third, students should learn information seeking skills and how to evaluate critically electronic based information. Fourth, electronic teaching and support resources must be incorporated for the learning needs of students with disabilities.

If the above programs are implemented, it is anticipated that a high quality, information technology teaching and learning environment will emerge which will serve the needs of the College's students and faculty well into the 21st century. One additional element that will further enhance the academic experience for students is for the institution to provide a student bulk hardware and software purchase program in conjunction with the faculty. It is perceived that a high percentage of Hudson students do not possess home computers. Making personal computers affordable for students through a bulk purchase program will greatly enhance their educational experience and future success.

5. Integrated Computer-Based Library System

Student academic success depends on the availability, accessibility and relevance of library materials and information resources. The Library's role in the provision of those resources goes beyond acquiring, storing and cataloging materials for a permanent collection. The Library is also a gateway to resources beyond the walls and physical boundaries of the campus; thus, questions of availability, access and relevance are more important and more complex than in the recent past.

Connectivity is the key to the kind of library and the kind of information service that must be provided. If the Library is to grow from an online catalog to networked information resources, the College must have an electronic infrastructure that allows access to any information resource, including the Internet, on any College computer.

Remote access, which is also dependent on the electronic infrastructure, will mean that business is conducted differently. In addition to networked computers and databases, library users should be able to access any of the services and resources of the College from homes, businesses, or other libraries.

In order to provide maximum functionality, interconnectivity and access, the current mainframe-based library system must be replaced by a state-of-the-art web-based system that employs client/server technology.

A fully integrated library system should include modules for all library functions including: Online Public Access Catalog, cataloging, acquisitions, serials control, authority control, circulation, reserves, accounting, payment, interlibrary loan, media booking, management and statistical reports.

In addition, a new automated library system will provide Hudson County Community College with critically needed improvements to its teaching and learning environment. These minimally:

- Would provide a Collegewide integrated collection which could be accessed from both the North Hudson Center and the Main Library/LRC at Journal Square.
- Would facilitate resource sharing and connectivity with other institutions through countywide and statewide arrangements.
- Would provide library staff with a greater ability to track and update the College collection, as well as facilitate dramatically improved service to students, faculty and the community.

- Would permit the College to take a major step forward in becoming a full participant in a global learning community.

6. College Technology Oversight, Planning and Policy

One of the most important steps the College must take toward improving its information technology infrastructure is the establishment of a permanent oversight structure to provide guidance to, as well as monitor the progress of, Collegewide information technology initiatives. Such an oversight structure should be a standing committee of the College, would focus on both instructional and administrative functions, and would have membership representing the interests of faculty, students, staff, and administration.

Reporting to the President of Hudson County Community College and the Executive Council, this oversight body would be responsible for at least the following areas:

- Ensure adherence to, and when necessary, recommend modifications to, information technology priorities.
- Oversee the progress toward achievement of *Strategic Plan For Information Technology* objectives and from time and time recommend updates.
- Provide information, and when necessary, educate members of the Hudson community regarding all aspects of the College's information technology plans, policies, and objectives.
- Review, recommend, and mediate operational policy and procedures.
- Function as an executive and constituent sounding board for Collegewide information technology issues.
- Maintain a planning focus; being watchful for the need to adjust and initiate priorities and new planning activities when circumstances dictate.
- Monitor, with appropriate staff, the implementation of information technology contracts.
- Coordinate, with appropriate staff, the development of the College budget for technology.

One of the most important oversight requirements for the College is the need to establish rational policies and procedures governing the purchase, maintenance, support and upgrade of its entire technology infrastructure. An ongoing structure must be established to oversee such policy and procedural needs of the College on a long-term basis. At present, in order to eliminate duplicative functions and lead to increased effectiveness and efficiency in College operations, budget management, and the delivery of educational services, the implementation of the following minimum policies and procedures is necessary.

Establish ongoing planning and budget management structures and processes to ensure that current and future critical information technology requirements are addressed. Centrally coordinate software installations, hardware and software upgrades, and the maintenance of all campus computer hardware. Where feasible, standardize hardware and software for faculty and staff use, and purchase site licenses for all commonly used applications such as word processing, spreadsheet, database, graphics, and statistics. Establish an appropriate prioritization scheme for proceeding with the previous activities, based upon the most pressing institutional needs identified within this plan.

7. Financial Resources and Budget Processes

A. Capital and Operating Fund Requirements

Today, most organizations, whether for-profit or not-for-profit entities, have recognized the need to rethink their information technology funding strategies in light of "information age" requirements. In order to remain competitive, organizations have recognized the need to establish permanent funds for technology capital improvements, as well as operational budget mechanisms for ongoing needs. No longer can institutions adopt a "once and done" funding approach for technology enhancement. The pace of technology evolution will continue unabated, necessitating the need to establish capital and operating funding mechanisms to support ongoing technology currency and improvement.

At a minimum, the College must identify specific dollar amounts for technology upgrades, maintenance, and replacement for computer hardware, software, and other information technologies. Establishing an annual target of twenty five percent (25%) of initial acquisition costs for maintenance and support is prudent, and based upon current industry standards.

B. Life Cycle Budgeting

Life cycle budgeting is a strategy designed to address the routine replacement of computer hardware and software. It is typically a strategy employed to ensure that adequate capital funding will be available to replace a percentage of, or major portions of (e.g., student information system), the installed information technology infrastructure at the appropriate time. While no hard or fast rules apply, it is crucial that the College evaluate all of its existing mission critical systems (e.g., computer labs, central administrative systems, workstation software, etc.) to determine appropriate replacement time frames for each component. Once replacement schedules are established, budgeting can then be accomplished in a planned and predictable fashion.

8. Information Technology Support Structure and Staff Development

As has been suggested throughout this document, information technology is viewed as an "enabling mechanism" to assist Hudson County Community College in achieving numerous institutional goals and objectives. More specifically, technology will "enable" the faculty, administration, and staff of the College to craft the learning and services environment believed to be in the best long-term interests of the institution and its students.

In order to achieve the aforementioned, as well as maintain the necessary momentum for the future, it is crucial that the institution address two fundamental human resources issues regarding its newly envisioned technology environment. These issues include; first, an appropriate information technology support structure, and second, sufficient staff training and development.

A. Information Technology Support Structure

As was outlined in Chapter IV (Situational Analysis, B. Current Technology Environment), the present information technology support structure for Hudson will need to be strengthened to serve the expanded use of technology envisioned within this plan. While additional support will be required to ensure maximum utilization of the College's investment in its administrative systems and network environments, the current structure is not adequate to support the growth planned in academic and instructional applications.

The Committee recognizes that an appropriate service and support environment will play a crucial role in the achievement of the College's overall objectives for information technology. The following provides a functional description of the support and services structure that is recommended:

1. Executive Management and Administration – functionally provides for support and services leadership, planning, budgeting, and departmental administration.

2. Technical Services – functionally provides for the management and administration of the following technical service areas:
   (a) Network Services – technical support for installation and maintenance of the collegewide fiber optic back-bone and all associated network electronics, support for Wide Area and Local Area Networking, as well as Email, Internet and World Wide Web services.
   (b) Systems Operations – technical support for the main computer room, production scheduling, report and output distribution, and effective system controls.
   (c) System Software – support for the maintenance of the central administrative systems hardware infrastructure

which includes mainframe operating systems, UNIX support, mainframe connectivity and integrated computer-based library system support.

(d) Telephone Services – support for PBX management, telephone connections, modem lines, ISDN lines, FAX connections, Voice Mail, and operator services.

3. User Services – functionally provides for the management and administration of the following academic/instructional and administrative user services and support areas:
   (a) Academic Support – support services for courseware development, project planning, new instructional technology initiatives, instructional technical facilities (faculty), instructional and teaching laboratory services and support.
   (b) User Assistance – services in support of product acquisition, project coordination, site planning, training coordination, and provision of Help Desk for all end users.
   (c) Application Support for Administrative Systems – provides the maintenance, programming and user liaison functions for all administrative systems, as well as project planning, systems design, training, and new applications review and implementation.

B. Staff Training and Development

A crucial component that is required to ensure the long-term viability of the College's investment in information technology is the establishment of a comprehensive, consistent program of staff training and development. A well-conceived program of staff training will provide for one-time, as well as ongoing training needs in the following areas:

- All Collegewide and division specific administrative systems.
- Collegewide office productivity tools (e.g., Microsoft Office, etc.).
- Network, Email and other appropriate communications software.
- Policies, procedures and processes regarding information technology requirements appropriate to any specific College position.

As outlined in Section 8A. (Information Technology Support Structure), it is additionally recommended that staff training become a core service of the unified information technology support organization. It is envisioned, however, that staff and faculty training in collegewide information technology will be a coordinated effort among the College's Human Resources Department, The Faculty and Staff Development Council, and the central information technology support organization.

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