

NSHE

**Strategic Plan  
for  
Information Technology  
2010 – 2015**

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## Introduction and Acknowledgement

Members of the SCS Advisory Group and the NSHE Campus Technology Officers are committed to working closely to ensure that NSHE's business priorities are guiding technology decisions and to ensure that technology is seen throughout NSHE as an asset, accountable for delivering value to the core mission of NSHE and its institutions, requiring ongoing investment and attention.

NSHE would like to acknowledge and thank the IT and business leaders throughout NSHE for their contributions to develop this strategic plan, and for their continued support of technology in Nevada.

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NSHE would also like to thank SCS for their contributions to this plan.

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## EXECUTIVE SUMMARY

Ensuring that technology supports the business strategies and priorities of NSHE becomes increasingly important for NSHE to achieve its core mission to students, research and its communities in today's challenging times.

Information Technology (IT) investments can be among the largest budget items for both institutions and central IT. But today, that investment decision is not always coordinated within or across institutions. Missing the integrated view of technology across NSHE can impact NSHE's ability to reach the vision for higher education in Nevada.

Information technology is now being recognized for its critical and strategic nature and the role it plays in the future of higher education.

The SCS Advisory Group is made up of leaders from all NSHE institutions. Their leadership is allowing NSHE to develop an agreed-upon comprehensive strategy for central IT, as well as understanding the technology priorities for NSHE as a whole. Through their efforts, SCS and NSHE's institutions are building stronger partnerships, improving communications and resolving past differences.

They now present the first coordinated NSHE Strategic Plan for Information Technology. With a common view of the purpose, vision and strategic priorities for SCS and central IT, an important milestone in NSHE-wide planning has been achieved.

Strategic planning for information technology can seem like an impossible undertaking. Constant and rapid changes in technology are the norm in today's world. Investments must show a quicker return, trends must be identified earlier and security and compliance risks and requirements are growing. Strategic 'agility' has become more important than the strategic plan itself.

NSHE's IT professionals, at SCS and the institutions, are meeting these challenges with a continued commitment to the role IT is required to play in delivering the services NSHE needs, quickly, effectively and efficiently.

This plan presents the strategies and actions that NSHE leadership has identified as their priorities for SCS and central IT leadership over the next three to five years.

Institutional oversight of information technology will continue to guide the attainment of the vision of central IT and this strategic plan. Governance processes are being strengthened to allow broader NSHE-wide participation in setting information technology direction, aligning it with the strategic directions and priorities of the NSHE community.

## BACKGROUND

In August, 2007, Executive Vice Chancellor Klaich established the NSHE System Computing Services (SCS) Advisory Group to assist SCS with systemwide information technology (IT) governance needs and to help set broad strategic priorities for technology.

In October, 2007, their purpose and charter, included in Appendix A, were approved:

The NSHE System Computing Services Advisory Group (SAG) fosters the highest level of performance and customer service by System Computing Services (SCS). These outcomes are achieved through (a) ensuring that the SCS master plan represents the evolving needs of the NSHE and its campuses; (b) ensuring the on-going, credible, bi-directional communication between SCS management and campus stakeholders; (c) reviewing a set of metrics developed by SCS to provide accurate assessment of SCS's ongoing functional and fiscal effectiveness; and (d) ensuring that sufficient information is provided to the NSHE and its stakeholders so that there is a clear understanding of SCS's mission, functions, and resource allocation.

Beginning in 2008, the committee undertook a journey to collaboratively identify needs, problems, priorities and challenges faced by SCS, as NSHE's central technology organization. During 2008, the group spent many months listening to the issues, from both institutions' and SCS's perspective. The group examined the things that were working well, as well as the things that were not meeting expectations. Anecdotal information about the history leading up to today and discussions about current needs were all part of gaining an understanding of information technology at NSHE, both at SCS and at the institutions. The awareness gained by this work, enabled the Advisory Group to better identify what information SCS needed to receive from NSHE institutions as well as what information the Advisory Group needed to understand in order to plan for NSHE-wide IT needs. A Strategic Planning Questionnaire was developed with the goal of gathering a concise set of information to help with that planning.

In December, 2008, the Vice Chancellor for Information Technology distributed this questionnaire to each NSHE President asking them to vet these questions with their campus community and provide responses.

Those responses were returned to the SCS Advisory Group in March, 2009 and were consolidated and presented to the group. The review of this important NSHE-wide input allowed the Advisory Group to work with SCS to initiate specific collaborative projects to address immediate needs, to evaluate additional metrics about critical SCS services, and to define and execute a strategic planning methodology to develop the first ever collaborative IT strategic plan for NSHE.

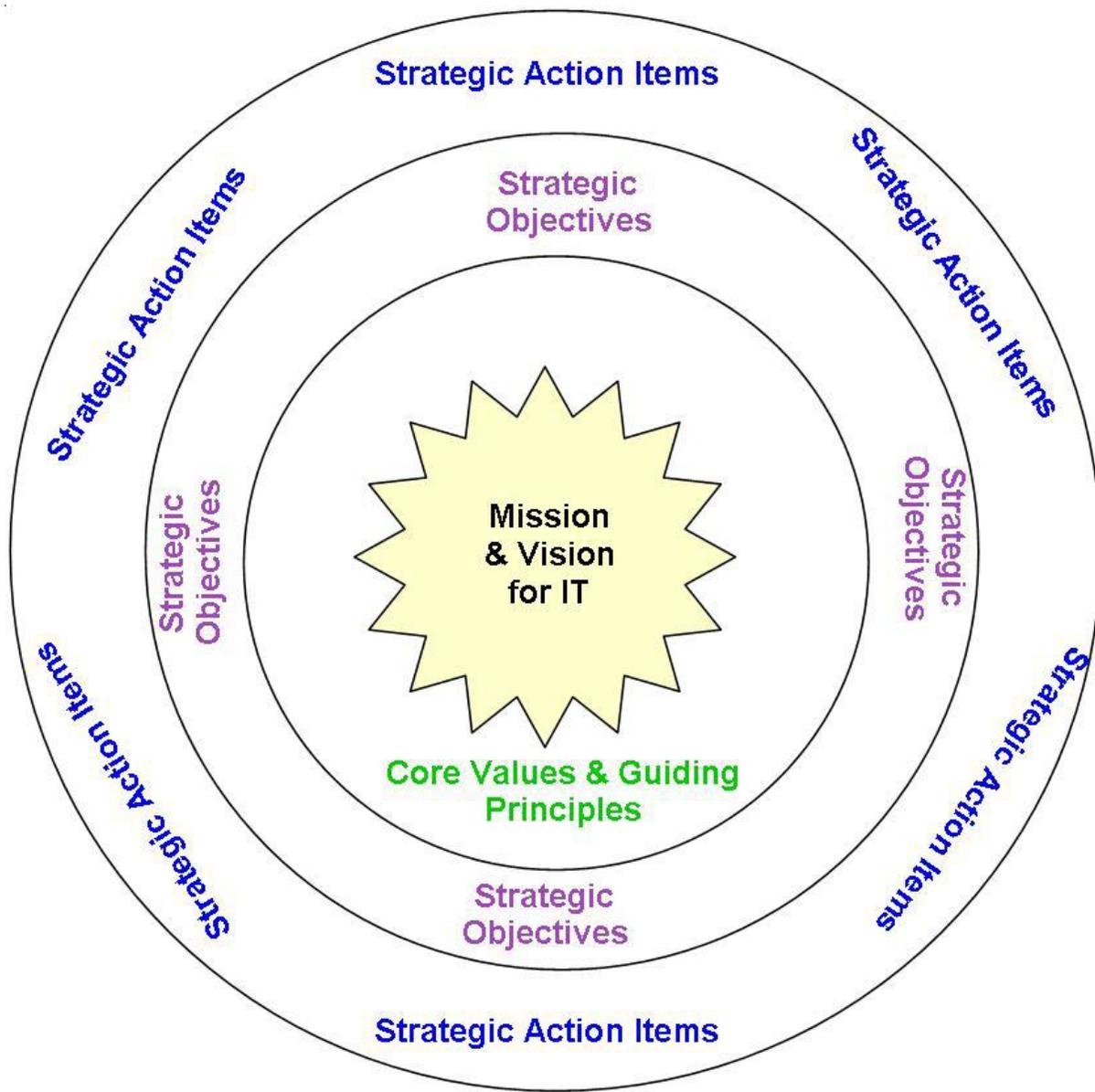
In December, 2009, the 2010 Strategic Planning Questionnaire was refined and the Vice Chancellor for IT once again asked each President to sponsor their institution's efforts to provide input as the first step in the Advisory Group's annual planning process.

The Strategic Planning Questionnaires and a summary of the responses can be found in Appendix B.

## THE PLANNING APPROACH

There are many proven approaches to strategic planning. Almost every approach includes the same foundational planning steps, but a successful planning process must support the culture of the organization.

NSHE planning began by reviewing the best and most widely known models utilized today in higher education. Components from a variety of these methodologies, models and process were chosen and customized to meet the needs of the NSHE planning team. The result is a planning approach that builds from a core mission outward to strategic actions in support of that core mission and vision.



The NSHE IT Strategic Plan represents a shared vision for achieving excellence in centralized IT services for the NSHE community, as they are defined by the community. The SCS Advisory Group and the NSHE Campus Technology Officers (CTOs) formed the planning team. SCS leadership was a resource to them during the planning process, providing recommendations and proposed activities directly related to SCS.

Although this plan is meant to drive and influence NSHE technology decisions and priorities, the focus of the plan is not about specific technologies. Rather, it is a look at what is needed from central information technology to support the shared needs of NSHE's institutions.

Early on in the planning process, the Advisory Group examined the strategic plans of each institution. Several common themes emerged:

- Student Success
- Institutional Excellence/Quality
- Community Diversity
- Partnerships
- Stewardship
- Serving Nevada

## ENVIRONMENTAL SCAN

A best practice in strategic planning is to begin the process with an environmental scan. Taking a wide look around at the environment both within NSHE as well as within the higher education community overall is an important first step to planning. It helps to identify the opportunities, issues and current thinking that may influence decisions, priorities and long range objectives.

The Advisory Group conducted a modified environmental scan to identify high level issues and trends facing higher education. The following four resources of information technology research and planning were used in that analysis:

1. **2010 Horizon Report**, Johnson, L., Levine, A., Smith, R., & Stone, S. (2010). *The 2010 Horizon Report*. Austin, Texas: The New Media Consortium.
2. **Campus Computing 2009**, Green, Kenneth C., *Campus Computing 2009: The 20<sup>th</sup> National Survey of Computing and Information Technology in American Higher Education*. Encino, CA: Campus Computing, December, 2009.
3. **Gartner - Hype Cycle for Education, 2009**, © Gartner, Inc. Publication Date: 27 July 2009/ID Number: G00168224
4. **Higher Education Core vs. Context**, Albert DeSimone, Jr., *Rethinking the IT Core*, EDUCAUSE Quarterly Magazine, Volume 32, Number 2, 2009

A summary of this research is included in Appendix C.

## THE MISSION AND THE VISION FOR CENTRAL INFORMATION TECHNOLOGY

In March, 2010, the SCS Advisory Group and the Campus Technology Officers (CTOs) from each institution approved a revised mission and vision statement for SCS, the primary central information technology organization serving NSHE.

### **MISSION**

Central IT facilitates collaborative technology partnerships throughout NSHE and select agencies of the state of Nevada, with an adaptable, reliable, robust and current infrastructure and core application, network and technical services to enable users to excel in their core academic, research, outreach and administrative missions.

### **VISION**

Central IT is the recognized leader and catalyst for technology change and innovation in the Nevada System of Higher Education.

### **CORE VALUES AND PRINCIPLES**

**Central IT is committed to:**

**Collaboration:** Fostering cooperation, inclusiveness, and interdependence between all members of the NSHE community (to reduce redundancies and provide shared IT resources)

**Customer Service:** Putting the customer's needs above all else (IT staff's convenience and interests)

**Open Communication:** Listening and responding openly and honestly with our customers

**Adaptability:** Having the ability to adjust readily to changing conditions

**Competency:** Possessing the technical skills to provide a positive contribution

**Accountability:** Taking ownership and responsibility for a course of action and an outcome

**Integrity:** Demonstrating the highest levels of personal and professional conduct in everything we do

**Innovation:** Supporting and promoting ideas to improve services, programs, processes and operations

**Alignment:** Making technology investments, decisions and plans based on achieving the strategic business requirements, goals and priorities defined by NSHE and its institutions.

**Stewardship:** Seeking technically sound, secure, reliable and financially responsible ways to deliver services

**Leadership:** Understanding the potential of technology to enable NSHE's academic, research and administrative goals and creating a direction and vision for effective use of that technology.

## STRATEGIC OBJECTIVES AND STRATEGIC ACTION ITEMS

The planning team identified five long range strategic objectives for NSHE Information Technology over the next three to five years. These strategic objectives represent the primary areas the planning team believes are critical for an enduring base of information technology at NSHE.

Further, the planning team identified a list of strategic action items necessary to enable each strategy. In order to gain focus, the planning team evaluated their recommended action items and developed a priority list for immediate focus. Those items identified as the priority actions are listed below. A list of all action items identified can be found in Appendix D.

Once the planning team identified NSHE's long range strategic objectives and action items, System Computing Services was asked to assist in the process and to identify recommended goals and activities to become central IT's responsibility over the next biennium in order to address each of the priority action items defined in the plan.

As central IT reaches these goals and the priority strategic actions are completed, the remaining action items will be evaluated and again prioritized by the SCS Advisory Group.

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### Strategic Objective 1: Sustaining a Current Infrastructure

Central IT must provide a robust and flexible infrastructure that reflects the most current technologies available. While the lack of capital challenges progress, a plan for prioritizing and implementing those most vital technologies must be developed and shared, to ensure the necessary support from the NSHE community. NSHE's central infrastructure must not only support existing core services, but must also anticipate the innovation and consumer demands the institutions and their students, faculty and staff will place on it and be ready to support those needs as they arise.

#### STRATEGIC ACTION #1:

##### **Address the current usage of SCS services and forecast trends and future capacity**

**SCS Goals – Action Plan:** SCS will support this strategy by ensuring broad collaboration with NSHE institutions to gather and validate their current and future needs. Processes and tools will be developed to gather and report on usage, trends and metrics to forecast future needs. Results and recommendations will be documented and distributed to all stakeholders. Plans for NSHE-approved initiatives will be developed and managed. SCS goals include:

- *Become a thought leader for emerging technologies within NSHE*
- *Develop processes and tools to understand NSHE's requirements for services and support*

- *Develop a governance process within SCS to manage resources and priorities strategically*
- *Develop and provide relevant performance and usage metrics, forecasts and trending information to NSHE institutions and advisory group*

## STRATEGIC ACTION #2:

### **Understand Campus Needs**

**SCS Goals – Action Plan:** SCS has begun development of a documented plan for improving its communication throughout NSHE. Improvements to the plan will continue, as well as further development of a liaison program designed to allow SCS to understand firsthand institution needs. SCS goals will include:

- *Develop consistent feedback mechanisms and processes between SCS and NSHE institutions for gathering and communicating needs and fostering collaboration*
- *Ensure focus/user groups are in place for all NSHE stakeholders*

## STRATEGIC ACTION #3:

### **Develop a funding plan**

**SCS Goals – Action Plan:** A methodology or model for evaluating IT investments will be devised. Sources of funding must be evaluated and ensuring cost effective delivery of IT services must be a continued focus. SCS goals will include:

- *Develop a strategy and a process for participating in available grant funding opportunities*
- *Continue to develop precision in reporting SCS's Cost of Services*

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## **Strategic Objective 2: Collaboration on Shared Services**

As technology becomes more pervasive, the innovation that often starts at NSHE institutions will require the standards, stability, capacity and cost effectiveness that are possible with centralized shared services. Areas of strategic value need to be identified with a strong plan for creating a culture of collaboration among NSHE institutions. Facilitating collaboration and partnerships between internal and external stakeholders can breed better solutions and is critical to effectiveness.

### STRATEGIC ACTION #1:

#### **Develop a cost/benefit model and analysis to look at collaborative vs. independent approaches to delivering services**

**SCS Goals – Action Plan:** IT investments, like all capital investments, will be considered against a return on investment business model. NSHE investments in central IT services will involve broad collaboration among institutions to determine whether services are better delivered centrally or distributed. SCS goals include:

- *Develop a project budgeting and cost reporting process*
  - *Continue to develop precision in reporting SCS's Cost of Services*
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### **Strategic Objective 3: Awareness of the Value of IT**

Information Technology is an NSHE strategic asset. The relationship between information technology investments and the contribution of business value is complex. While there is heavy reliance on technology and expectations of continued sophistication and availability of that technology, what is often lacking is a deep understanding of the value, benefit and opportunities it provides throughout NSHE. Leadership in continued awareness, communication and collaboration on the value technology is expected to fulfill today and tomorrow is a core focus.

### STRATEGIC ACTION #1:

#### **Quantify cost saving and benefits of SCS services and make them known to NSHE stakeholders**

**SCS Goals – Action Plan:** The SCS Service Catalog represents a best practice in IT service delivery processes. SCS's annual reporting of the cost to deliver those services provides a way to measure the efficiencies brought by central provisioning of IT services. More work needs to be done to help institutions identify their individual usage and benefits. SCS goals include:

- *Assist in the development methodology to relate the return on IT investments to the mission of NSHE institutions*
- *Transparent reporting of Central IT infrastructure and services*

## STRATEGIC ACTION #2:

### **Annual face-to-face meeting with System CIO/CTOs to stay abreast of change and innovation**

**SCS Goals – Action Plan:** NSHE’s Campus Technology Officers’ Advisory Group is an important committee in assisting central IT with direction and vision. SCS supports the development of an annual symposium for exploring innovations within NSHE and discussing emerging technologies within higher education. SCS goals include:

- *Facilitate and support event planning and agenda development*
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## **Strategic Objective 4: Services that Mirror Institution Priorities**

The vision for technology and the investments that support that vision must align with the needs and priorities for technology within the NSHE community it supports. Sustaining and enhancing an existing portfolio of centrally delivered services must be an ongoing effort. Accountability for cost effective delivery and continuous improvement of flexible services should continue to be part of evaluating the future demand on Central IT.

## STRATEGIC ACTION #1:

### **Continue to strengthen link between System and institution strategic planning**

**SCS Goals – Action Plan:** The SCS Advisory Group, the Campus Technology Officers, and SCS leadership are committed to developing opportunities for collaborative planning. Continued focus on developing best practices for that collaborative planning at NSHE will continue. SCS goals include:

- *Develop proposed calendar and activities to support continued development and progress reporting for the NSHE Strategic Plan for Information Technology*

## STRATEGIC ACTION #2:

### **Define future requirements for video conferencing technologies**

**SCS Goals – Action Plan:** Video conference technologies have played an important role in enabling collaboration for NSHE faculty, students and staff. Scheduled conferences have enabled participation in statewide meetings and initiatives without incurring travel costs. NSHE’s rural students have been able to be part of the classroom experience from a site in their local community. As user needs become more sophisticated, video services are being asked to enable new features such as on-demand meetings via the network; ad hoc meeting attendance from remote locations; mobile device support and much more. SCS goals include:

- *Form a steering committee of key campus business leaders, subject matter experts, and decision makers to identify and vet the functional requirements for future video technologies at NSHE*
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## **Strategic Objective 5: Information Security**

Safeguards related to information security, privacy and confidentiality are becoming increasingly important as reliance on technology increases, as cyber-threats increase, as information sharing across NSHE institutions continues to expand, and as the demand for access to data and services via the web and mobile devices grows. The NSHE Strategic Plan for Information Technology must include planning for the core information security requirements that must be in place to accomplish strategic initiatives efficiently, effectively and safely and securely.

### **STRATEGIC ACTION #1:**

#### **Collaboration and centralization of policy and procedures**

**SCS Goals – Action Plan:** As the NSHE Security Officers’ Council moves forward with their work, SCS will consult on ways technology can support their plans. SCS goals include:

- *Investigate technologies that may support a central document repository*

### **STRATEGIC ACTION #2:**

#### **Develop strategies to utilize campus best practices across the System**

**SCS Goals – Action Plan:** SCS will participate to contribute and to gain awareness about current security practices in place at NSHE today. SCS goals include:

- *Form NSHE wide team to gather and compile current practices*

### **STRATEGIC ACTION #3:**

#### **Federated Identity Management**

**SCS Goals – Action Plan:** Managing the complexities of providing secure access to data and systems between NSHE institutions must be understood. The NSHE Security Officers’ Council has been formed to enable the awareness and collaboration to develop standards and plans to protect NSHE’s assets. SCS goals include:

- *Advise and participate in the work of the NSHE Information Security Council*
- *Collaborate with NSHE institutions to develop an NSHE-wide identity management plan*

## Proposed SCS Initiatives for 2010-2012 Biennium

Achieving the strategic objectives and goals in this plan is the responsibility of all NSHE institutions. Much of the work that will be undertaken involves collaboration throughout NSHE. For many activities, however, SCS has primary responsibility. SCS has proposed six broad initiatives to address the plan's strategic action priorities and SCS's goals. The Advisory Group and SCS will agree upon a final slate of initiatives early in the 2010-2011 fiscal year.

As these initial undertakings are realized, SCS and the SCS Advisory Group will identify the next priority actions for focus.

Results and progress on the approved initiatives will be reported and reviewed with the SCS Advisory Group at least quarterly. Status reports will be available to all NSHE stakeholders, as well. These reports will help measure SCS's contribution to and progress on achieving the strategic objectives of the NSHE Strategic Plan for Information Technology.

The proposed initiatives are:

1. Infrastructure Capacity Plan - Develop a capacity plan and funding document for the next biennium to support NSHE-wide services and infrastructure requirements to delivery SCS services
2. Shared Services Costing Model - Develop a methodology and tools to examine cost and benefits of central IT services and to develop a cost/benefit model to analyze collaborative/shared versus independent approaches to delivering NSHE IT services
3. IT Metrics - Define and report on relevant IT service metrics for SCS Services and complete service level agreements for each service area.
4. Collaboration Plan - Evaluate and modify SCS user and advisory committees to ensure all NSHE stakeholders are represented and to improve communication and information dissemination with NSHE institutions
5. Continuous Planning Improvements – Strengthen IT and strategic planning between SCS and NSHE institutions and continue to improve relationships and communication and feedback channels
6. Information Security - Collaborative planning and implementation of NSHE-wide information security standards and practices

Additional information on these proposed initiatives can be found in Appendix E.

Appendix F contains the "NSHE Strategic Plan for Information Technology Matrix" which outlines the relationship and dependencies between the NSHE Strategic Objectives, the Strategic Actions, SCS's goals, and the proposed SCS Initiatives for 2010-2012. This tool will assist SCS and the SCS Advisory Group monitor progress for each component.

## GOVERNANCE

Governance is a term heard more and more in higher education, especially in challenging economic times. Information Technology investments are some of the largest items in the institutions' budgets. The implications of these investments, or often more importantly of inaction in making technology investments, must be understood. Governance is not new, but is receiving renewed focus. Governance may be simply defined as the processes by which decisions are made and the process by which decisions are implemented and are held accountable for the expected results. It is a complex task that involves time and knowledge gained from business needs and stakeholders' opinions.

The processes, both formal and informal, for governance must reflect and support the culture. Because of the broad and diverse constituencies within NSHE and all higher education institutions, a large number of steering committees, advisory groups, focus groups and other collaborative structures abound.

In March 2009, then Executive Vice Chancellor Klaich initiated a consulting engagement with Phil Goldstein to analyze and recommend actions NSHE should consider for address IT leadership in the system. Included in the scope of work was analysis of "what adaptations should be made to the system IT governance to promote effective IT decision make, improve the accountability of the IT leader to the system and promote trust between all parties?"<sup>1</sup>

Mr. Goldstein performed the analysis and identified four areas where NSHE faces challenges with IT governance.

The IT governance challenges NSHE faces include:

- While the SCS Advisory Group has been effective at raising concerns about SCS performance and advising the Executive Vice Chancellor on some short-term decisions, it does not have a clear charge or scope of authority.
- The campus CTO group is an underutilized forum and several of the campus IT leaders interviewed expressed regret that prior IT leaders did not use it as a sounding board to vet decisions that would impact the campuses before they were made.
- No structured mechanism exists for linking planning and priority setting discussions across the levels of the organization (e.g., Board, System and Campus Leaders, SCS Advisory Group and the SCS).
- There are also no agreed upon decision-making processes. Several interviewees expressed frustration that a one campus, one vote approach to all IT decisions is counterproductive. It obscures the differential levels of investment that campuses make in the SCS operations and it does not provide a means to recognize and place a greater emphasis on an initiative that is only important to a minority of the campuses but is strategically important to the System.

<sup>1</sup>Goldstein & Associates LLC. *NSHE IT Leadership Needs Analysis Summary Report, March 23, 2009.*

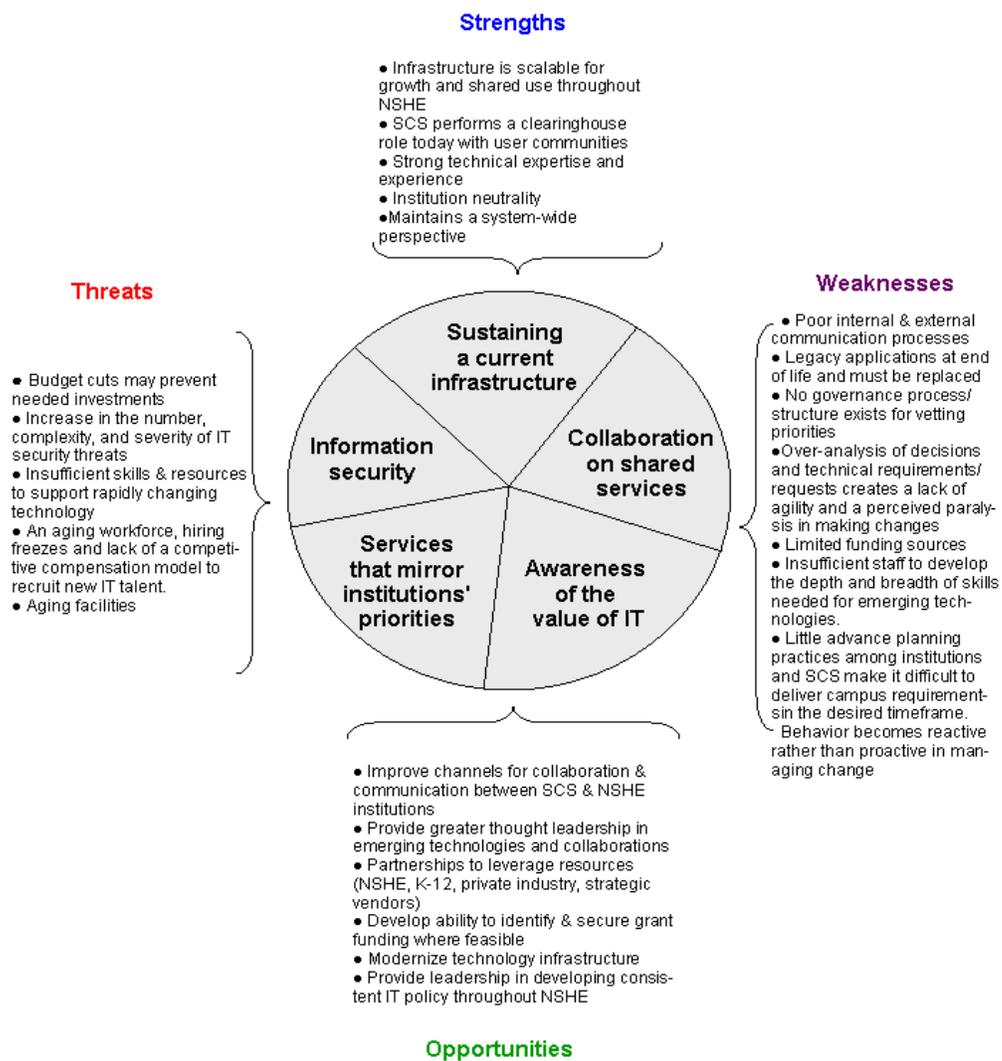
It seems fair to conclude that actions taken by the Vice Chancellor for IT in partnership with the SCS Advisory Group, have been adequately addressing the first two challenges. Specifically, this strategic planning process has affirmed the charge of the SCS Advisory Group and the agendas and participation of the CTO group have been greatly expanded in response to the report's recommendations. What remains are the need to link planning and priority setting across the levels of the organization and the development of an effective decision-making process.

NSHE has developed an initial governance and decision-making process for the implementation of iNtegrate, the system wide initiative to replace the aging ERP systems used by NSHE institutions. The initial effort is focused on the student systems but eventually, the financial and human resources legacy systems will be replaced. A governance structure approved by the Board of Regents and subsequent additional processes for decision-making, change management and technical resource allocations have been developed to support the project as it transitions from development to production. Many of the processes, procedures and tools used for iNtegrate could be adapted to more generic IT governance use. The report recommended building upon existing structures to improve IT governance within NSHE.

Acknowledging that NSHE has some of the building blocks of effective IT governance already in place has merit. NSHE could consider a model that leverages the Regents, the Presidents' Council, the SCS Advisory Group and the CTO group. These four main groups could comprise an interlocking set of governance pieces. Appendix H includes the description of each group's responsibilities as it relates to IT governance from the report. The Vice Chancellor will work closely with the existing structures to address the outstanding challenges to create a viable governance structure and process.

## SCS SELF ASSESSMENT - SWOT

In support of this strategic planning effort, SCS performed a self assessment of its current organization and their ability to achieve these NSHE Strategic Objectives. Using a SWOT Analysis tool, the SCS leadership team analyzed the organization's strengths, weaknesses, opportunities and threats to understand how to prioritize their efforts. The SWOT analysis is also included in Appendix G.



While all the Strategies and action items will be addressed in the 2011 fiscal year, SCS will focus on two specific Strategic Objectives in this plan: *Sustaining a Current Infrastructure* and *Services that Mirror Institution Priorities*. This will enable SCS to make the best use of limited resources.

Beyond these priorities and commitments, the SCS leadership identified major challenges and opportunities that are key components their organization in servicing the diverse NSHE community.

### **SCS's Role in Governance**

To achieve NSHE's strategic objectives, SCS believes an overall framework for decision-making, prioritizing, funding, and implementing Central IT projects must be in place. This governance model must establish the System's common priorities for implementation and collaboration.

Rules and processes must be clearly communicated and understood. They should facilitate an understanding of when campuses will collaborate and under what conditions independent action makes sense. The SCS Advisory Board is seen as the vehicle of this system wide steering group, providing a forum for discussion, analysis, decisions and, if necessary, arbitration, related to the priorities for Central IT to address.

This governance will enable Central IT to succeed in meeting NSHE's goals by keeping a focus on which of the many technology needs and desires of SCS's NSHE constituents should receive priority, and to ensure NSHE and institution missions are driving decisions.

Beyond the importance of NSHE-wide IT governance, the SCS focus should be to compliment that governance process with an internal process to prioritize the daily tactical and operational requests and changes to which SCS must respond. SCS's culture and ethic believes it wrong to say 'no' to anything that its IT professionals know is possible. But as human and financial resources become even scarcer, SCS must become more diligent at accepting and evaluating the many requests received each day. The decision as to what SCS will undertake must not be made on a first in-first out basis, but rather on a set of criteria that is based on the priorities the NSHE community defines.

SCS does not have the resources for the depth and breadth of the skills needed in today's world of rapidly changing technology. Nor does it have the necessary resources to develop skills in the emerging technologies SCS and the institutions should be paying attention to for the future.

One way NSHE institutions can help with these governance needs is to change their view of Central IT. Rather than consider SCS an operational IT resource, requesting specific technical tasks, NSHE constituents could include Central IT in their planning processes, approaching SCS with their requirements and problems and allowing SCS to collaborate the best solution. Changing the current perception and behavior will require SCS begin to interact, communicate and participate with campuses differently.

## **SCS's Role in Communication**

SCS and NSHE institutions have always struggled with communication. Undoubtedly, having a central governance model will help address many of these cross-communication struggles. However, there is more to be done.

One of the most effective communication mechanisms over the last several years is the role SCS has played in facilitating the formation and collaborations of a variety of user groups. Those groups operate at various levels of effectiveness today.

SCS recommends these committees be reevaluated to understand what committees make sense today. Some may be matched with SCS services, others are more cross-collaboration in nature. But NSHE-wide committees have been successful in the past and rejuvenation may prove to be just as successful.

A NSHE team should be formed to recommend and define appropriate committees, explicitly draft a charter for consideration and recommend a specific membership for each. Additionally, SCS is committed to evaluating whether technologies exist that can support the desire to share information about the actions and planning within each committee, to identify areas of common work for even more cross-committee collaboration.

Communication is bi-directional. SCS must not only focus on how to distribute information to the institutions, but also, and just as important, how campuses should be sharing information with Central IT. Committees, service request processes, project request processes, surveys, feedback mechanisms and participation at key institution forums are some ways to increase SCS's collaboration and communication effectiveness. All this is part of an overall improved process for capturing and documenting the requirements from NSHE customers and vetting them within SCS and most importantly with the institutions and Governance.

## **SCS's Role as a Central IT Clearinghouse**

One role that the SCS Advisory Group has expressed as an expectation of SCS is to act as a clearinghouse. A clearinghouse is an institution that coordinates information interchanges. It provides widespread access to information and is generally thought of as reaching or existing outside organizational boundaries.

As Central IT for NSHE, SCS has the potential to be able to gather, synthesize and communicate a variety of information throughout the NSHE community. Whether it is the institutions collaborating with one another on important research projects or academic programs, or whether it is the institutions campuses collaborating centrally with SCS, the role of Central IT is to ensure that information is shared and available throughout the NSHE community.

SCS is positioned to be the thought leader and a facilitator for collaboration on information technology in key areas. It is true that technology innovation happens first at the institution. But as that technology becomes stable and scalable, the opportunity to leverage it strategically throughout NSHE falls to SCS.

SCS needs to stay in touch with campus innovation in technology, but move from trying to build the same tactical and operational skills as IT at the institutions and begin to hone their role as technology advisors, looking at the strategic use of the technology, possibly for an even better solution.

Notwithstanding these challenges and opportunities, SCS is committed to continued focus on customer service and to a culture and practice of collaboration. All of NSHE will derive benefit from the common IT vision outlined in this plan.

# Appendix A

## NSHE System Computing Services Advisory Group Charge October, 2007

### **Statement of Purpose**

The NSHE System Computing Services Advisory Group (SAG) fosters the highest level of performance and customer service by System Computing Services (SCS). These outcomes are achieved through (a) ensuring that the SCS master plan represents the evolving needs of the NSHE and its campuses; (b) ensuring the on-going, credible, bi-directional communication between SCS management and campus stakeholders; (c) reviewing a set of metrics developed by SCS to provide accurate assessment of SCS's ongoing functional and fiscal effectiveness; and (d) ensuring that sufficient information is provided to the NSHE and its stakeholders so that there is a clear understanding of SCS's mission, functions, and resource allocation.

### **To discharge its responsibility and charge, the SAG will:**

Review the SCS Master Plan. SAG will provide the Executive Vice Chancellor with recommendations on the SCS master plan and ways in which to promote SCS's development of a planning methodology based around fundamental principles of (a) teaching and scholarship; (b) student life; (c) managerial efficiency and quality; and (d) support of system-wide initiatives.

Evaluate SCS planning and functionality from the user perspective. SAG will periodically gather input from NSHE stakeholders to ensure their views are expressed in SCS planning processes and to obtain an assessment of the effectiveness of communication by SCS.

Evaluate SCS Services. SAG will periodically evaluate the services rendered by SCS in terms of (a) cost effectiveness; (b) user satisfaction; and (c) performance.

### **Transition Planning**

The NSHE is, from time to time, involved in the planning and subsequent implementation of major new initiatives, recently including the iNtegrate project, the University of Nevada Health Sciences System, Nevada State College, and new campuses of existing institutions. SAG will advise SCS during its development of transition and implementation plans, and assist in the integration of these and other activities into the SCS Master Plan.

### **Membership**

The Executive Vice Chancellor shall determine the number of members and requirements for membership on the SAG.

# Appendix B

## SCS Advisory Group IT Strategic Planning Questions

Revised: 12/18/2009

Charge: Questions regarding strategic planning that the Advisory Group/NSHE needs to know and that will help SCS ensure integration with campus strategic plans and technology needs. What we need to find is a concise set of data that can be collected and analyzed with the results tied to budget and service priorities.

1. What new instructional, research, and administrative initiatives are currently underway or anticipated to be needed in the next 3 – 5 years? Which of these initiatives will require new construction?
2. What are your institution's strategic planning priorities and how do you view the role technology will play?
3. What are your institution's strategic priorities for technology over the next 3 – 5 years?
4. What opportunities do you see for additional common services, as well as opportunities for SCS and institutions to collaborate and leverage resources for shared services?
5. What types of services are you considering sourcing from off-campus providers? (Off-campus providers include 3<sup>rd</sup> party vendors or other NSHE institutions). What type of cross-institutional or external collaborations is your campus planning over the next 3 – 5 years?
6. What IT objectives for the next 3 -5 years may not be completed because of resource limitations?
7. Is the governance model of the current SCS Advisory Group an effective model for NSHE? Would you change the model? In what way and why would that be a benefit?
8. What other issues or activities do you expect to work with SCS on in the next 3 – 5 years?
9. What current SCS IT services does your campus not routinely use that you feel should be deemphasized or eliminated?
10. What current SCS IT services does your campus use that needs improvement/enhancements? What would you like to see and why?

## SCS Advisory Group IT Strategic Planning Question Responses - March 2010

SCS Planning Questions	CSN	DRI	GBC	NSC	TMCC	UNLV	UNR	WNC
1. What new instructional, research, and administrative initiatives are currently underway or anticipated to be needed in the next 3 – 5 years? Which of these initiatives will require new construction?	<ul style="list-style-type: none"> <li>· <b>Innovation to meet student &amp; faculty demand</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>High Performance Computing</b></li> <li>· Collaboration UNR/UNLV - <b>data, video, bandwidth</b></li> <li>· <b>Network growth</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Distance Education /LMS;</b></li> <li>· <b>Ely, Winn, Pahrump</b> - construction</li> </ul>	<p>Academic programs; increase retention, graduation; compete market; build community; technology literacy; <b>new Nursing &amp; Science building; campus master plan</b></p>	<p><b>Fast-Track</b> courses; <b>Leave accounting;</b> document <b>routing system;</b> no new construction</p>	<p>INSTRUCTION - <b>Lecture, podcasts, audio &amp; video streaming, IP video conferencing via DE, virtual desktop labs;</b></p> <p>RESEARCH - <b>visualization studio, video streaming,</b> collaborations with national research labs (<b>bandwidth</b>), large shared <b>data sets;</b></p> <p>ADMIN - <b>iNtegrate</b> student, <b>HR/Financial</b> replacement plan, campus <b>data warehouse, IP POS, CRM, mobile device</b> access, enhance <b>residence halls network</b> services, federated <b>ID mgmt,</b> athletic footage <b>digital/IP;</b></p> <p>BUILDING - <b>Midtown, Research Pk, Hospitality, Clinical Training,</b> expand <b>Shadow Lane</b></p>	<ul style="list-style-type: none"> <li>· Core curriculum - emphasis on <b>multimedia</b> content; · <b>Electronic Health Records;</b></li> <li>· <b>Multimedia</b> in instruction at <b>Med School/HSS;</b></li> <li>· <b>Journalism multimedia lab</b> (construction - Reynolds Foundation);</li> <li>· <b>collaboration</b> across institutions for <b>research data;</b></li> <li>· Increase <b>online instruction</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Online learning</b> - rapid growth;</li> <li>· <b>New Telephone System</b></li> </ul>

SCS Planning Questions	CSN	DRI	GBC	NSC	TMCC	UNLV	UNR	WNC
2. What are your institution's strategic planning priorities and how do you view the role technology will play?	<ul style="list-style-type: none"> <li>· <b>Quality, Access &amp; Diversity</b> - technology to support <b>emerging technologies for learning; remote learning/distance education</b> growth; <b>networks for access</b></li> </ul>	<ul style="list-style-type: none"> <li>· Research - <b>HPC, numeric modeling</b></li> <li>· <b>Beyond Research</b> - expand academic mission, mgmt of natural resources ;</li> <li>· Financial - increase resource base;</li> <li>· Administration - processes, org structure, diverse staff;</li> <li>· Facilities/Infrastructure - <b>research labs &amp; equipment;</b></li> <li>· Peer - <b>research &amp; environmental technology</b></li> </ul>	<ul style="list-style-type: none"> <li>· <b>Distance Education</b> - video; LMS courses; Internet</li> </ul>	<ul style="list-style-type: none"> <li>Online Task Force - <b>online courses/degree programs;</b> Technology Literacy - <b>access to IT resources, training, online knowledge base, online instruction, Technology Fellows Institute showcase technology;</b> Increase retention, ... - <b>Data Warehouse &amp; BI tools to be data driven; electronic communication with students; self-service tools for 24x7</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Student Success</b> - iNtegrate, LMS, course technology tools</li> <li>• <b>Diversity</b> - email, Google Apps, website</li> <li>• <b>Stewardship</b> - reduce power usage, data warehouse for decisions/reports</li> <li>• <b>Service - Wireless Consortium, iNtegrate Shared Instance</b></li> </ul>	<p>FOCUS: 50 to 100 -</p> <ol style="list-style-type: none"> <li>1. <b>EDUCATION - network bandwidth, streaming video services, mobile device access; classroom, library and computing technologies;</b></li> <li>2. <b>RESEARCH - network, authentication, data storage infrastructures; bandwidth for collaboration; ID mgmt; HPC, technologies for learning;</b></li> <li>3. <b>INFRASTRUCTURE - iNtegrate, data warehouse, CRM, leave keeping; sustainability; server &amp; application provisioning; data management</b></li> </ol>	<ul style="list-style-type: none"> <li>· Prepare students and industry for the <b>Knowledge Economy;</b> Role of IT -</li> <li>· <b>Degree programs</b> in IS, comp. sci., engineering;</li> <li>· <b>innovative instruction technologies;</b></li> <li>· 'smart' <b>classrooms; IR tools &amp; infrastructure</b> to support scholarly activities;</li> <li>· <b>Robust research infrastructure &amp; programs;</b></li> <li>· <b>Knowledge Center &amp; Libraries</b></li> </ul>	<ul style="list-style-type: none"> <li>· Student Success - <b>Network access; single sign on; technology resources for programs</b></li> <li>· Institutional Excellence - <b>stable infrastructure;</b></li> <li>· One College - <b>wireless, mobile, bandwidth</b></li> </ul>

SCS Planning Questions	CSN	DRI	GBC	NSC	TMCC	UNLV	UNR	WNC
3. What are your institution's strategic priorities for technology over the next 3 – 5 years?	<ul style="list-style-type: none"> <li>·iNtegrate - all modules</li> <li>·VOIP</li> <li>·Information Security - encryption, AD, wireless</li> <li>·CSN Intranet;</li> <li>·Virtualization;</li> <li>·Document Imaging;</li> <li>·managed print solutions;</li> <li>·student email;</li> <li>·technology governance</li> </ul>	<ul style="list-style-type: none"> <li>·New Time &amp; Attendance System</li> <li>·New Grant &amp; Contract application</li> <li>·improve DRI</li> <li>Website ·internal governance model</li> </ul>	<ul style="list-style-type: none"> <li>·Upgrade LMS (Blackboard);</li> <li>·Update Lecture Capture solution;</li> <li>·Update Video Streaming;</li> <li>·Video classes;</li> <li>·Increased bandwidth;</li> <li>·VOIP</li> <li>·Digital signage</li> </ul>	<ul style="list-style-type: none"> <li>desktop &amp; application virtualization;</li> <li>workflow; data security technology &amp; policy; develop online courses &amp; degree programs;</li> <li>user training; DW &amp; BI data driven;</li> <li>student communication</li> </ul>	<ul style="list-style-type: none"> <li>DR; new LMS;</li> <li>intranet; storage;</li> <li>emergency notification;</li> <li>campus police monitoring sys;</li> <li>leave accounting</li> </ul>	<ul style="list-style-type: none"> <li>Renovate campus data center; off-campus site;</li> <li>increase server &amp; storage support;</li> <li>desktop mgmt; security; ITIL;</li> <li>funding models; governance &amp; PPM;</li> <li>ID Mgmt; IPv6;</li> <li>Virtualization (desktop, servers)</li> </ul>	<ul style="list-style-type: none"> <li>Stability of IT enterprise; Support faculty &amp; students;</li> <li>iNtegrate; Network redundancy &amp; bandwidth;</li> <li>integrate telephone system into Microsoft unified comm.</li> <li>Infrastructure; UNSOM infrastructure;</li> <li>expand document imaging; security - single card</li> </ul>	<ul style="list-style-type: none"> <li>Novell to AD; upgrade servers &amp; routers;</li> <li>bandwidth; DR offsite; security (network, desktop, servers, storage);</li> <li>mobile computing; telephone system; HVAC; security card system;</li> <li>iNtegrate; LMS growth; SW licensing</li> </ul>
4. What opportunities do you see for additional common services, as well as opportunities for SCS and institutions to collaborate and leverage resources for shared services?	<ul style="list-style-type: none"> <li>·Software &amp; hardware purchasing</li> <li>·Shared Instance</li> </ul>	<ul style="list-style-type: none"> <li>·HR</li> <li>·Finance &amp; Purchasing</li> <li>·Library Services</li> </ul>	<ul style="list-style-type: none"> <li>·Sharing campus application/solutions</li> <li>·LMS</li> <li>·Video Streaming</li> <li>·Lecture Capture collaboration</li> </ul>	<ul style="list-style-type: none"> <li>·Course Mgmt</li> <li>·Authentication Svcs</li> <li>·Network monitoring</li> <li>·Media streaming</li> </ul>	<ul style="list-style-type: none"> <li>·Doc Imaging</li> <li>·Desktop video conf</li> <li>·HR/Finance (1 instance)</li> <li>·LMS</li> <li>·'cloud computing'</li> </ul>	<ul style="list-style-type: none"> <li>·Video Streaming svcs</li> <li>·Shared help desk knowledgebase</li> <li>·HSS collaboration (facilities, connectivity, authentication, access)</li> <li>·SWSW expand to hardware, maint, etc.</li> <li>·iNtegrate - share experience/knowledge</li> </ul>	<ul style="list-style-type: none"> <li>·Increased bandwidth</li> <li>·iNtegrate</li> <li>·VOIP beyond campus</li> <li>·Shibboleth</li> <li>·student storage alternative sources</li> <li>·Video conferencing</li> </ul>	<ul style="list-style-type: none"> <li>· Use PM tracking to find common activities underway</li> <li>·Security guidelines</li> <li>·Connectivity collaborations</li> </ul>

SCS Planning Questions	CSN	DRI	GBC	NSC	TMCC	UNLV	UNR	WNC
5. What types of services are you considering sourcing from off-campus providers? (Off-campus providers include 3 <sup>rd</sup> party vendors or other NSHE institutions). What type of cross-institutional or external collaborations is your campus planning over the next 3 – 5 years?	<ul style="list-style-type: none"> <li>·Managed Print - enterprise</li> <li>·Disaster Recovery - NSHE data center space</li> <li>·Knowledgebase/F AQ</li> </ul>	<ul style="list-style-type: none"> <li>·No services are being considered for outsourcing;</li> <li>·NREC consortium (DRI, UNLV, UNR)</li> </ul>	<ul style="list-style-type: none"> <li>·Website tools (SiteCheck.com)</li> <li>·ECHO 360</li> </ul>	<ul style="list-style-type: none"> <li>·Emergency Notif.</li> <li>·email</li> <li>·room scheduling</li> <li>·document mgmt</li> </ul>	<ul style="list-style-type: none"> <li>·LMS</li> <li>·email</li> <li>·Doc Imaging</li> <li>·iNtegrate (with SCS)</li> </ul>	<ul style="list-style-type: none"> <li>·Data Center svcs</li> <li>·Application Hosting services</li> <li>·Provision Data Center services for NSHE/govt agencies</li> <li>·printer &amp; desktop repair</li> </ul>	<ul style="list-style-type: none"> <li>·Data Center</li> <li>·Student data storage</li> <li>·all new application areas</li> </ul>	<ul style="list-style-type: none"> <li>·Bandwidth</li> <li>·email</li> <li>·offsite data storage</li> <li>·'telephone system</li> <li>·'cloud computing'</li> <li>·printer support</li> <li>·x-institutional - LMS, Doc Imaging (Hershey); iNtegrate; R25</li> </ul>
6. What IT objectives for the next 3 -5 years may not be completed because of resource limitations?	<ul style="list-style-type: none"> <li>·iNtegrate - all modules</li> <li>·VOIP</li> <li>·Information Security - encryption, AD, wireless</li> <li>·CSN Intranet;</li> <li>·Virtualization;</li> <li>·Document Imaging;</li> <li>·managed print solutions;</li> <li>·student email;</li> <li>·technology governance</li> </ul>	<ul style="list-style-type: none"> <li>·technology lifecycle replacements;</li> <li>·network upgrades to remote facilities;</li> <li>·no upgrade to HPC envir.</li> </ul>	<ul style="list-style-type: none"> <li>·Video sites;</li> <li>·Network access - Pahrump</li> <li>·VOIP</li> <li>·Kiosks (signage)</li> <li>·Wasp Mobile Asset Tracking</li> </ul>	<ul style="list-style-type: none"> <li>·Desktop virtualization</li> <li>·Data warehouse</li> <li>·NOC</li> <li>·LAN redundancy</li> <li>·online degree pgms</li> <li>·training</li> </ul>	<ul style="list-style-type: none"> <li>·Fiber connectivity - between campuses</li> <li>·Life Cycle replacement</li> </ul>	Everything in item 3	See item 3, above	<ul style="list-style-type: none"> <li>·Bandwidth upgrade</li> <li>·new network security mandates</li> <li>·generator</li> <li>·DR site</li> </ul>
7. Is the governance model of the current SCS Advisory Group an effective model for NSHE? Would you change the model? In what way and	Yes. Past year has been very effective.	Yes, would like annual meeting with CTOs	<ul style="list-style-type: none"> <li>·YES - commendable</li> <li>·Mix of technical and business leaders</li> <li>·(SCS should attend DE meetings)</li> </ul>	Yes	Include CTOs and BOs Facilitate shared campus development	Add NSHE Academic leadership; Understand relationship between Advisory Group & Council of Presidents	Ambivalent; excess meetings/requests; IT leader's time/involvement	Yes

SCS Planning Questions	CSN	DRI	GBC	NSC	TMCC	UNLV	UNR	WNC
why would that be a benefit?								
8. What other issues or activities do you expect to work with SCS on in the next 3 – 5 years?	<ul style="list-style-type: none"> <li>·iNtegrate</li> <li>- Shared Instance</li> <li>- HR &amp; Finance</li> </ul>	<ul style="list-style-type: none"> <li>·network connectivity to 10 gigabyte speeds</li> </ul>	<ul style="list-style-type: none"> <li>·VOIP</li> <li>·iNtegrate</li> <li>·Ely network hub</li> <li>·Video Conferencing</li> </ul>	<ul style="list-style-type: none"> <li>·Network Design</li> <li>·iNtegrate/UID/interfaces</li> <li>·security</li> </ul>	<ul style="list-style-type: none"> <li>·bandwidth to Internet;</li> <li>·HR/Fin Migration</li> <li>·Leave Accounting</li> <li>·Data Warehousing</li> </ul>	<ul style="list-style-type: none"> <li>·Information Security</li> <li>·iNtegrate</li> <li>·Network Enhancements</li> <li>·Video Conferencing</li> <li>·Leverage purchasing power</li> <li>·Collaboration</li> </ul>	<ul style="list-style-type: none"> <li>·UNSOM infrastructure</li> <li>·See item #4</li> </ul>	<ul style="list-style-type: none"> <li>·Document Imaging</li> <li>·Generator</li> <li>·Bandwidth</li> <li>·LMS</li> <li>·Security/Firewall</li> <li>·R25</li> </ul>
9. What current SCS IT services does your campus not routinely use that you feel should be deemphasized or eliminated?	Email	None	(All services we use are necessary)	Website hosting	Website hosting; Project mgmt office	Replace HRMS and Advantage	<ul style="list-style-type: none"> <li>·Project Mgmt Office;</li> <li>·Email (Lotus Notes)</li> <li>·Novell</li> </ul>	Nothing at this time
10. What current SCS IT services does your campus use that needs improvement/enhancements? What would you like to see and why?	<ul style="list-style-type: none"> <li>·Improved System Performance - during Registration peaks;</li> <li>·Video/tele conference improvements</li> <li>·Batch processing restrictions during peak</li> </ul>	<ul style="list-style-type: none"> <li>·Pleased with services</li> <li>·Leadership to explore offsite data storage strategy for NSHE and system-wide disaster recovery initiative</li> </ul>	<ul style="list-style-type: none"> <li>·24x7 for all services;</li> <li>·retrieving server backups</li> <li>·upgrade and expand video conferencing capacity and technology</li> </ul>	<ul style="list-style-type: none"> <li>•On-line ticketing system;</li> <li>UID/Authentication Svcs for faculty/staff - NSHE single method of authentication (e.g., AD)</li> </ul>	Network statistics; sharing application development (new)	<ul style="list-style-type: none"> <li>·24x7 service;</li> <li>·weekend staffing for support/problems (iNtegrate)</li> <li>·enhance video conferencing technology</li> </ul>	<ul style="list-style-type: none"> <li>·Video Conferencing;</li> <li>·Business Continuity - goals unclear</li> <li>·Offsite data backups</li> <li>·VOIP</li> <li>·Computer space charges</li> <li>·more agile environment</li> <li>·Use of resources</li> <li>·Rationale/model for campus billings</li> </ul>	<ul style="list-style-type: none"> <li>·SW purchase power (more collaboration)</li> <li>·More research for common solutions we all need (security, standards, tools); training</li> </ul>



# APPENDIX C

## Environmental Scan

### HORIZON REPORT 2010

The Horizon Report 2010 represents the 7<sup>th</sup> in a series of annual research reports representing the collaboration between New Media Consortium and the Educause Learning Initiative.

The New Media Consortium (NMC) is a consortium of learning-focused organizations dedicated to the exploration and use of new media and new technologies. Membership includes colleges, universities, community colleges, research centers, school districts, to name a few. It has been in existence for over 15 years and it is focused on exploring and developing potential applications of emerging technologies for learning, research, and creative inquiry. The University of Nevada, Reno and the Washoe County School District are members of NMC.

The EDUCAUSE Learning Initiative (ELI) is a community of higher education institutions and organizations committed to advancing learning through IT innovation. By understanding learners and learning principles--and how to use technology to appropriately support them--institutions can enable learning.

The report identified four trends as key drivers of technology from 2010 thru 2015.

1. The abundance of resources and relationships made easily accessible via the Internet is increasingly challenging higher education to revisit their roles as educators in sense-making, coaching, and credentialing. Through the Internet, students have access to programs and certifications beyond institution boundaries. The role in mentoring and preparing students must be re-evaluated.
2. People expect to be able to work, learn, and study whenever and wherever they want to. Today's learners balance time at home, work, school, and other venues, wanting easy and timely access to their information, the network and their social networking world. Implications around informal learning are becoming more profound and all learning must be timely and efficient.
3. Technologies are becoming increasingly cloud-based, and the notions of IT support are viewed as decentralized. It is transparent to students where work is stored. What matters is that information be accessible, no matter where they are or what device they choose to use.
4. The work of students is increasingly seen as collaborative by nature, and there is more cross campus collaboration between departments. Increasingly, both students and their professors see the challenges facing the world as multidisciplinary, and the need for collaboration great.

The Horizon Report 2010 identified key technologies they predict will have significant impact in education environments over their three planning horizons.

#### Near Term Horizon - within 12 months

- Mobile Computing – Increased use of network capable devices, such as smart phones, netbooks, laptops, iPads, and other devices, that students are already carrying. Access, privacy and network issues must be understood.
- Open content – A decade ago, MIT began to make their course content freely available. Today there is a tremendous variety of open content, affecting a shift in the way students study and learn. Open content is a response to rising cost of education and for access to learning and student choice about when and how to learn.

#### Mid-term horizon - within 2 to 3 years

- Electronic books – There has been a dramatic upswing in the past 12 months in the acceptance and use of this technology. Better devices and technologies for acquiring, storing, annotating and reading eBooks is on the rise. Electronic books promise to reduce costs, save students from carrying pounds of books and contribute to environmental efforts.
- Simple augmented reality – there is a rise in the development of applications for laptops and smart phones that overlay digital information into a physical world, without the use of specialized equipment. Cameras and screen technologies in smart phones and other mobile devices are already enabling GPS capability and other image recognition services. The future holds the possibilities of classroom uses in astronomy, architecture, history, and other disciplines.

#### Long-term horizon – within 4 to 5 years

- Gesture-based computing – Devices controlled by natural movements of finger, hand, arm and body will find its way into the classroom. Game companies are leading this development. How people interact with computers will change. Wii, iPhone, iPad, and other similar technologies have potential uses in training simulations for visual arts, medical and surgical applications, for example.
- Visual data analysis – Blending statistic, data mining and visualization technologies that allows complex data sets, concepts and relationships to be interpreted and displayed in ways not previously possible. Applications in astrophysics, fluid dynamics, and marine geology, for example, may benefit from this technology.

### **CAMPUS COMPUTING 2009**

The Campus Computing Survey is now in its 20<sup>th</sup> year. It is the largest continuing study of the role of computing and information technology in American Higher Education. Report represents data from over 500 public and private universities, four-year public and private colleges, and Community Colleges across America.

This IT benchmarking study has primarily focused on academic computing technology, but the line between academic and administrative computing is becoming less distinct so the survey also discusses ERP issues, network issues and other related IT resources and services.

The survey respondents are generally the senior academic or IT officers at their institutions -whoever is responsible for the direction of technology planning, policy and financing.

For 2009, the most important IT issues confronting institutions over the next 2 -3 years were:

- Network & Data Security - IT security continues to be a major challenge in Higher Education. Over 70% of respondents indicated they have some type of strategic plan for IT security. NSHE's recent security policy and the formation of the NSHE IT Security Council is an example of the importance of this issue in Nevada.
- IT Financing - An increasing number of university (public or private) and colleges (2 and 4 year) are experiencing central IT budget cuts greater than 5%. Where increases have been seen, it has been in the area of IT security. New P2P compliance requirements pose significant costs for institutions, draining resources from an already tight IT budget. Over 40% of respondents indicate they are reducing budgets for refreshing computer technology. And institutions are looking for more efficient and cost effective ways to deliver lab environments to students. Restructuring of both academic and administrative IT units is underway in many places.
- Instructional Integration of IT – There is an increase awareness of importance of Learning Management Solutions (LMS) as a CORE instructional resource. Respondents say that over 50% of all courses now have an LMS component. Over 60% of institutions responding have a strategic plan for LMS deployment. Responses suggest significant movement to Software-as-a Service or web-based ERP and/or LMS applications by 2014. Almost 75% of institutions responding report a strategic plan for IT, but no financial plan for replacing/upgrading core administrative ERP. Additionally, 75% report that they strongly agree that eBooks or digital books are emerging as an important technology for their institution over the next five years. CIO/CTOs report their support of efforts to assess and evaluate IT investments better and Cloud Computing is a new item appearing on many strategic plans.

### **GARTNER – HYPE CYCLE FOR EDUCATION, 2009**

Gartner, Inc. is a leading information technology research and advisory company, and NSHE has benefited from their research as well as advice and expertise from their analysts many times.

One of the methodologies they employ in their research process is called a 'Hype Cycle'. It is a summary of the maturity and adoption/adoptability of emerging technologies – and it is done within the context of the industries that could benefit from them. The annual Hype Cycle report for higher education provides their view, from research on the technology and its application in higher education, of the many technologies that could impact the higher education industry.

As part of that Hype Cycle, they also develop a Priority Matrix, highlighting those technologies they believe will provide the highest impact and benefit to higher education in the coming years. The information below is a summary from that matrix.

- High Impact Technologies (1 to 2 years)
  - Customer Relationship Management (CRM) for Enrollment Management
  - Open Source e-Learning technologies
  - Social Networking technologies
- High Impact Technologies (2 to 5 years)
  - Sourcing email in the cloud (web hosting)
  - Hosted virtual desktop solutions
  - Identity Access Management solutions
- Transformational Technologies (2 to 5 years)
  - High performance computing as a cloud service (on-demand delivery)
  - Computing-as-a- Service – (on-demand delivery)

### **RETHINKING THE IT CORE**

In 2009, an article entitled Rethinking the IT Core, by Albert, DeSimone, Jr., appeared in the Educause Quarterly magazine. In his article, Mr. DeSimone supports the thinking that IT departments should focus on supporting the CORE processes of teaching, learning, research, and public service.

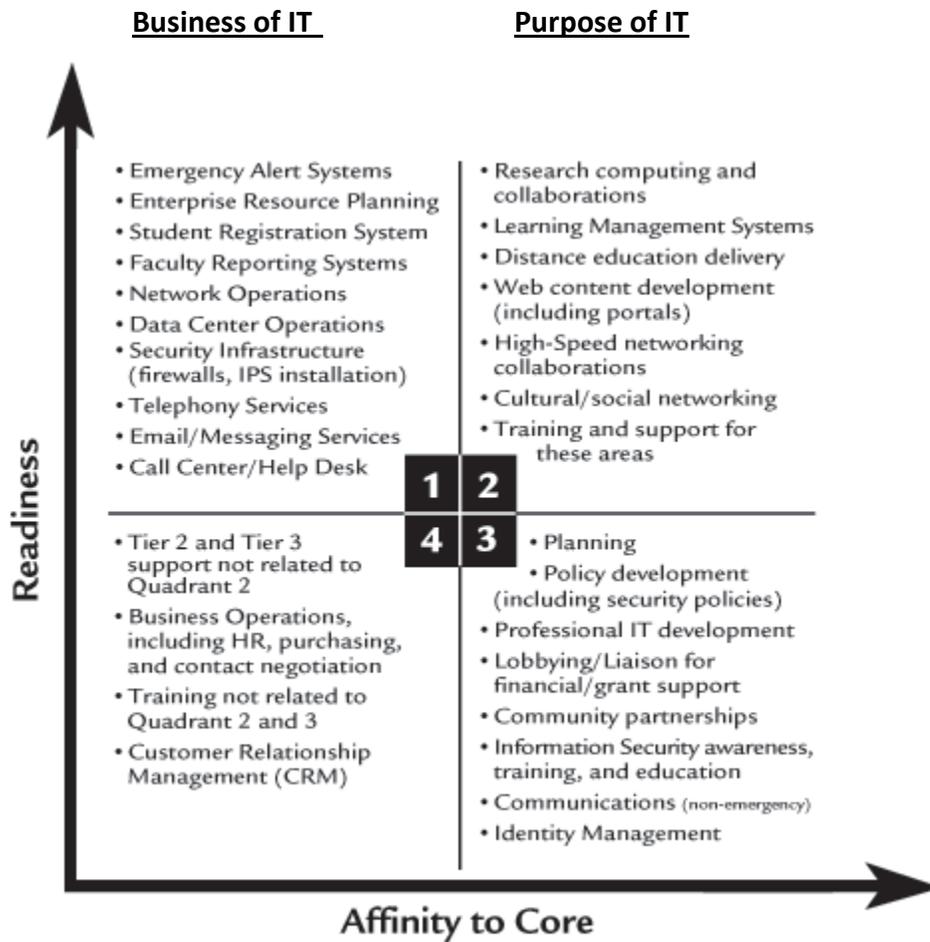
He mapped IT responsibilities into two categories: Those supporting the *business* of IT, and those supporting the *purpose* of IT.

Organizing IT along these lines, into its business and its purpose, allows serving the academic mission independently of business obligations. Mr. DeSimone believes that in these uncertain times the fundamental role of IT in the academic enterprise must be rethought.

From surveys, he began listing and categorizing specific responsibilities of IT in the academic enterprise. As he did this two major themes emerged and are depicted in the graphic below:

**Readiness** - an institution's expectation is that certain IT services will **always** be available, 24x7x365, with little or no disruption of service.

**Affinity to the core** – IT is expected to provide services that contribute directly to the core mission of teaching and learning



While the article suggests that higher education needs to focus more on the Purpose of IT, it cannot ignore the responsibilities that are the infrastructure delivered by the Business of IT.

## Appendix D

### STRATEGIC OBJECTIVES AND STRATEGIC ACTION ITEMS -- 2010 – 2015

<u>Strategic Objectives</u>	<u>Strategic Action Items</u>	<u>Priority</u>
Sustaining a Current Infrastructure	Assess current usage and forecast future needs & trends (continuous environmental scanning)	H
	Understand Campus Needs	H
	Develop funding plan	H
	SCS become clearinghouse for best practice discussions	M
	HR data integrity clean up	M
	Communicating the Plan	M
	Address Capacity	L
	Collaboration on Shared Services	Develop cost/benefit analyses of collaboration vs. independent activities
Purchasing power for hardware system-wide		M
Collaboration for on-line course development and CMS		M
Investigate shared VOIP		M
Collaboration on training (leadership to technical)		M
Review charter, role, membership of user groups		L
System-wide data storage needs (including cloud)		L
Collaboration on network security issues		L
Identify & investigate off-campus services (the cloud)		L
SCS act as clearinghouse to look at collaborative opportunities		L

<u>Strategic Objectives</u>	<u>Strategic Action Items</u>	<u>Priority</u>
Awareness of the Value of IT	Quantify costs saving and benefits and make them known to campuses	H
	Annual face to face CIO/CTO	H
	Spend more time on campus - exposure and participation	M
	Process improvement - SCS leadership to demonstrate how technology can improve processes	M
	Advertising - communicating and awareness	L
	Dialog and awareness for faculty	L
	Expand campus dialogs	L
	Understand how users actually use the IT solutions	L
Services that Mirror Institution's Priorities	Continue to strengthen link between system and campus strategic planning	H
	Define future requirements for video conferencing	H
	Enhance Campus Liaison Role	M
	Forums for sharing strategic plans	M
	Cloud services for HR & Finance	M
	Meetings with campus & academic leaders	L
	Student communication/participation	L
	Periodic AG/CTO meetings	L
SCS act as clearinghouse for Strategic and tactical priorities	L	

<u>Strategic Objectives</u>	<u>Strategic Action Items</u>	<u>Priority</u>
Information Security	Collaboration & centralization of policy and procedures	H
	Develop strategies to utilize campus best practices across the System	H
	Federated Identity Management	H
	Explore common institutional compliance & information security issues	M
	Creation of shared content for security education/issues (for students, faculty and staff)	L
	Proactive communication of legislative and regulatory issues	L
	Appropriate layered responsibility for security	L
	Security awareness education	L
	Central spam/virus control (in-house or cloud)	L

## Appendix E

### SCS Initiatives in Support of NSHE Strategic Plan for Information Technology 2010-2012

Ref #	Initiative	Start (End)	Description/Actions
1.	<b>Infrastructure Capacity Plan</b> SCS Owner: Ed Anderson	01/01/10 (02/01/11)	<b>Purpose: Develop a capacity plan to support NSHE-wide services and infrastructure requirements for the next biennium</b>  Develop Network Capacity Plan and funding requirements Investigate options for Data Center Growth Develop technology and funding plan for Server and Storage strategic architecture and growth Develop strategy and process for available grant opportunities NSHE Collaboration on future video requirements
2.	<b>Develop Shared Services Costing Model</b> SCS Owner: Ginger Holladay-Houston	07/01/10 (06/30/12)	<b>Purpose: Develop a methodology and tools to examine cost and benefits of central IT services and to develop a cost/benefit model to analyze collaborative versus independent approaches to delivering services</b>  Bring the SCS Services Catalog up to date Refine the Cost of Services model Develop a project budgeting and cost reporting process within SCS Examine costing models for shared services and ROI
3.	<b>IT Metrics</b> SCS Owner: Susan Bunyan	08/01/10 (06/30/11)	<b>Purpose: Define and report on relevant IT Service metrics</b>  Identify relevant business and IT metrics for SCS services Define and implement reporting requirements

Ref #	Initiative	Start (End)	Description/Actions
			<p>Transparent reporting of central IT investments/upgrades</p> <p>Complete Service Level Agreements for each service</p>
4.	<p><b>Collaboration Plan</b>  <b>SCS Owner:</b> Roberta Roth</p>	<p>7/1/10  (12/31/10)</p>	<p><b>Purpose: Evaluate and modify SCS user and advisory committees to ensure all NSHE stakeholders are represented</b></p> <p>Publish SCS IT Communication Plan for 2010</p> <p>Define, charter and build membership for SCS service/user groups' current needs</p> <p>Support technology symposium for CTOs</p> <p>Monitor and report on Strategic Plan progress</p>
5.	<p><b>Continuous Planning Improvements</b>  <b>SCS Owners:</b> Susan Bunyan  Roberta Roth</p>	<p>06/1/10  (06/31/11)</p>	<p><b>Purpose: Continuous improvement for communication and strategic planning activities</b></p> <p>Annual meetings with Campus Presidents</p> <p>SCS Advisory Group Strategic Planning Activities</p> <p>Development and reporting on Liaison Program</p> <p>Design and development and reporting on user satisfaction from feedback/survey mechanisms</p>
6.	<p><b>Information Security</b>  <b>SCS Owner:</b> Paul Mudgett</p>	<p>05/01/10  (12/31/12)</p>	<p><b>Purpose: Collaborative planning and implementation of NSHE-wide information security standards and practices</b></p> <p>Formation and charter of NSHE Information Security Council</p> <p>NSHE Security Policy, standards and practices documentation</p> <p>SCS Security Assessment</p>

SCS Goals and Initiatives Matrix

SCS Goals	SCS Initiatives 2010-2012					
	Infrastructure Capacity Plan	Shared Services Costing Model	IT Metrics	Collaboration Plan	Continuous Planning Improvements	Information Security
<i>Become a thought leader for emerging technologies within NSHE</i>				•		
<i>Develop processes and tools to understand NSHE's requirements for Services and Support</i>	•					
<i>Develop a governance process within SCS to manage resources and priorities strategically</i>		•	•		•	
<i>Develop and provide relevant performance and usage metrics, forecasts and trending information to NSHE institutions and advisory groups</i>			•			
<i>Develop consistent feedback mechanisms and processes between SCS and NSHE institutions for gathering and communicating needs and fostering collaboration</i>	•				•	
<i>Ensure focus/user groups are in place for all NSHE stakeholders</i>				•		
<i>Develop a strategy and a process for participating in available grant funding opportunities</i>	•					
<i>Continue to develop precision in reporting SCS's Cost of Services</i>		•				
<i>Develop a project budgeting and cost reporting process</i>		•				
<i>Assist in the development methodology to relate the return on IT investments to the mission of NSHE institutions.</i>		•				
<i>Transparent reporting of Central IT infrastructure &amp; services investments</i>			•			
<i>Facilitate and support event planning and agenda development</i>				•		
<i>Develop proposed calendar and activities to support continued development and progress reporting for the NSHE Strategic Plan for Information Technology</i>					•	
<i>Form a steering committee of key campus business leader, subject matter experts, and decision makers to identify and vet the functional requirements for future video technologies at NSHE</i>	•					
<i>Investigate technologies that may support a central document repository</i>				•		•
<i>Form NSHE wide team to gather and compile current practices</i>						•
<i>Advise and participate in the work of the NSHE Information Security Council</i>						•
<i>Collaborate with NSHE Institutions to develop an NSHE-wide identity management plan</i>						•

## **Appendix F**

### **NSHE Strategic Plan for Information Technology Matrix**

# NSHE Strategic Plan for Information Technology Matrix

<u>Strategic Objectives</u>	<u>Strategic Action Items</u>	<u>SCS Goals</u>	SCS Initiatives 2010-2012					
			Infrastructure Capacity Plan	Shared Services Costing Model	IT Metrics	Collaboration Plan	Continuous Planning Improvements	Information Security
<b>Sustaining a Current Infrastructure</b>	Address current usage and forecast future needs and trends	<i>Become a thought leader for emerging technologies within NSHE</i>				•		
		<i>Develop processes and tools to understand NSHE's requirements for services and support</i>	•					
		<i>Develop a governance process within SCS to manage resources and priorities strategically</i>		•	•		•	
		<i>Develop and provide relevant performance and usage metrics, forecasts and trending information to NSHE institutions and advisory groups</i>			•			
	Understand campus needs	<i>Develop consistent feedback mechanisms and processes between SCS and NSHE institutions for gathering and communicating needs and fostering collaboration</i>	•				•	
		<i>Ensure focus/user groups are in place for all NSHE stakeholders</i>				•		
	Develop a funding plan	<i>Develop a strategy and a process for</i>	•					

<u>Strategic Objectives</u>	<u>Strategic Action Items</u>	<u>SCS Goals</u>	<u>SCS Initiatives 2010-2012</u>					
			Infrastructure Capacity Plan	Shared Services Costing Model	IT Metrics	Collaboration Plan	Continuous Planning Improvements	Information Security
		<i>participating in available grant funding opportunities</i>						
		<i>Continue to develop precision in reporting SCS's Cost of Services</i>		•				
<b>Collaboration on Shared Services</b>	Develop a cost/benefit model/analysis to look at collaborative vs. independent approaches to delivering services	<i>Develop a project budgeting and cost reporting process</i>		•				
		<i>Continue to develop precision in reporting SCS's Cost of Services</i>		•				
<b>Awareness of the Value of IT</b>	Quantify cost saving and benefits of SCS services and make them known to NSHE stakeholders	<i>Assist in the development methodology to relate the return on IT investments to the mission of NSHE institutions</i>		•				
		<i>Transparent reporting of Central IT infrastructure &amp; services investments</i>			•			
	Annual face-to-face meeting with System CIO/CTOs to stay abreast of change and innovation	<i>Facilitate and support event planning and agenda development</i>				•		
<b>Services that Mirror Institution Priorities</b>	Continue to strengthen link between System and institution	<i>Develop proposed calendar and activities to support continued development and</i>					•	

<u>Strategic Objectives</u>	<u>Strategic Action Items</u>	<u>SCS Goals</u>	<u>SCS Initiatives 2010-2012</u>					
			Infrastructure Capacity Plan	Shared Services Costing Model	IT Metrics	Collaboration Plan	Continuous Planning Improvements	Information Security
	strategic planning	<i>progress reporting for the NSHE Strategic Plan for Information Technology</i>						
	Define future requirements for video conferencing technologies	<i>Form a steering committee of key campus business leader, subject matter experts, and decision makers to identify and vet the functional requirements for future video technologies at NSHE</i>	•					
<b>Information Security</b>	Collaboration and centralization of policy and procedures	<i>Investigate technologies that may support a central document repository</i>				•		•
	Develop strategies to utilize campus best practices across the System	<i>Form NSHE wide team to gather and compile current practices</i>						•
	Federated Identity Management	<i>Advise and participate in the work of the NSHE Information Security Council</i>						•
		<i>Collaborate with NSHE institutions to develop an NSHE-wide identity management plan</i>						•

# Appendix G

## SCS Internal Assessment – SWOT

### STRENGTHS

- Infrastructure is scalable for growth and shared use throughout NSHE
- SCS performs a clearinghouse role today with user communities
- Strong technical expertise and experience
- Institution neutrality
- Maintains a System-wide perspective

### WEAKNESSES

- Poor communication exist within SCS and between institutions and SCS
- Legacy systems are at end-of- life and must be replaced
- No governance process/structure exists for vetting priorities
- Over analysis of decisions and technical requirements/requests creates a lack of agility and a perceived paralysis in making changes
- Limited funding sources
- Insufficient staff to develop the depth and breadth of skills needed for emerging technologies
- Little advance planning practices among institutions and SCS make it difficult to deliver campus requirements in the desired timeframe. Behavior becomes reactive rather than proactive in managing change.

### THREATS

- Budget reductions may prevent needed investments
- Increase in the number, complexity, and severity of IT security threats
- Inadequate skills & resources to support rapidly changing technology

- An aging workforce, hiring freezes and absence of a competitive compensation model to attract new IT talent exposes us to the loss of key knowledge workers before successful succession planning.
- Aging facilities are unable to support growth

#### OPPORTUNITIES

- Improve channels for collaboration & communication between SCS & NSHE institutions
- Provide greater thought leadership in emerging technologies and collaborations
- Explore partnerships to leverage resources (NSHE, K-12, private industry, strategic vendors)
- Develop the ability to identify & secure grant funding where feasible
- Modernize the technology infrastructure
- Provide leadership in developing consistent IT policy throughout NSHE

# Appendix H

## IT Governance Roles

Group	Primary Responsibilities
Board of Regents Budget and Finance Committee (assuming responsibility for technology)	<ul style="list-style-type: none"> <li>• Receive and approve long-range technology plans</li> <li>• Receive recommendations for system-wide IT policies requiring Board approval and adoption</li> <li>• Endorse an annual set of criteria that should be used to prioritize IT investment opportunities</li> <li>• Approve (or recommend to the Board for approval) major technology projects and investments</li> <li>• Receive and discuss an annual report on the state of System technology and the performance of shared technology services (SCS) prepared by the System’s Chief Information Officer</li> </ul>
Presidents’ Council	<ul style="list-style-type: none"> <li>• Discuss and approve annual IT goals</li> <li>• Receive and approve recommended changes to SCS services or service levels that impact multiple campuses</li> <li>• Receive quarterly or semi-annual briefings on the status of annual IT goals and major initiatives provided by the System technology officer</li> <li>• Receive, discuss and endorse IT policy recommendations developed by the CIO and the SCS Advisory Group before their proposal to the Regents</li> <li>• Frame strategic issues and questions for consideration by the SCS Advisory Group</li> <li>• Receive and discuss an annual report on the state of System technology and the performance of shared technology services (SCS) prepared by the System’s Chief Information Officer</li> <li>• Provide the Executive Vice Chancellor with an annual evaluation of the performance of the CIO</li> </ul>
SCS Advisory Group	<ul style="list-style-type: none"> <li>• Advise the CIO on all major decisions</li> <li>• Participate in the development of long-range system technology plans and annual technology goals</li> <li>• Review and provide input to decisions to make major changes in SCS services</li> <li>• Identify and advise the CIO on the technology implications of system-wide IT strategies</li> </ul>

	<ul style="list-style-type: none"> <li>• Develop overall guidance for the relative priority for investment among major IT portfolios (e.g., infrastructure, administrative applications, etc.)</li> <li>• Advise the CIO on the development of guidelines that define shared vs. campus level IT decision-making</li> <li>• Receive and discuss an annual report on the state of System technology and the performance of shared technology services (SCS) prepared by the System’s Chief Information Officer</li> </ul>
<p>Campus CTO Group</p>	<ul style="list-style-type: none"> <li>• Advise the CIO and SCS management team on operational decisions that impact the campuses</li> <li>• Participate in the development of SCS service levels that impact all campuses</li> <li>• Develop system-wide policy recommendations and technology standards</li> <li>• Monitor emerging technologies and advise the CIO on their implications for NSHE</li> <li>• Support CIO efforts to develop annual IT goals and priorities for the system</li> <li>• Alert the CIO to emerging campus needs and issues and engage in discussions of the best way to meet them</li> <li>• Serve as a review team to analyze the pros and cons of the adoption of major new technologies of technology sourcing strategies that have an impact on the campuses</li> </ul>