

Appendix A

CEHS Technology Committee Strategic Plan

FY 2013/2014

CEHS Technology Committee Strategic Plan 2013-14

March 1, 2013

Reece Petersen – Special Education and Communication Disorders	Paul Erickson - Information Services
Cody Hollist - Child Youth and Family Studies	Richard Hoover - Educational Administration
Michael James - Textiles, Clothing and Design	Douglas Kauffman - Educational Psychology
Valerie Crook - Design Center	Guy Trainin, Teaching - Learning, and Teacher Education
Gina Causin – Nutrition and Health Sciences	Mary Sutton – Technology Services
Jessica Hustad – Staff Council	Thomas Carrell – Special Education and Communication Disorders
Al Steckelberg - CEHS Technology Committee Chair	

Mission Statement

Knowledge is the business of a university—creating it, studying it, analyzing it, and disseminating it—and the storage, transfer, and construction of knowledge as information relies increasingly on digital technology. Technology promotes and supports the excellence and innovation of faculty members, students, and staff in the College, stimulating their creativity, productivity, and efficiency. In order to support and advance the work of faculty members, students, and staff, it is important that the technology equipment, systems, and processes be robust, accessible, secure, and timely. The mission of the College is to address these needs for the benefit of all of its constituents. This is best done through the development and implementation of an efficient, comprehensive, and equitable technology plan.

Values

The following values have influenced the technology plan.

- 1. Technology is an important and compelling contributor to excellence and innovation in the work of faculty, staff and students.*
- 2. The study of how and where technology impacts education and human sciences contributes important new knowledge.*
- 3. Individual and diverse applications of technology are important to advancing ideas.*
- 4. Technology enhances the productivity and efficiency of faculty, staff, and students.*
- 5. Technology extends the reach and impact of the College.*
- 6. Program graduates should possess knowledge, skills, and attitudes that allow them to apply technology to meet professional goals.*
- 7. Technology has become the medium and repository for much of faculty, staff, and student work. The access to and the security of these resources is essential.*
- 8. Excellence in the area of technology means continuous learning and application of new technologies.*
- 9. The adoption of technology represents a challenge and an effort on the part of the College and on individual faculty and staff. This effort moves both the College and individuals forward and has a substantial payoff in productivity, quality and impact and as such should be recognized as an important contribution critical to the mission of the College.*
- 10. Systems and processes that make the use of technology more creative, reliable, efficient and effective support these values.*

General Technology Goals

1. *Provide a climate where technology is recognized and valued including support for CEHS faculty, staff and students to develop expertise and leadership roles in educational technology.*
2. *Provide high quality teaching and learning opportunities for distance education, on-campus students and life-long learners through a technology-rich environment.*
3. *Provide all faculty and staff with modern software and equipment tailored to meet their specific interests and responsibilities, including support for research, teaching, and service.*
4. *Provide reliable and secure access to data and networks and protection of data from damage, attack or loss for all CEHS faculty, staff and students.*
5. *Provide the necessary support to faculty, staff, and students in the College to maintain their software and computer hardware.*
6. *Provide technology support to CEHS faculty and staff who are interested in software development.*
7. *Provide access to graphic design services and technology to enhance productivity and innovation for teaching, research, and outreach for all CEHS faculty, staff and students.*
8. *Provide adequate financial and human resources to allow consistent and systematic development of technology in the College.*

Part I - Progress Toward Specific Goals for 2012-13

I. Establish CEHS as a leader in providing innovative approaches to enhancing knowledge and delivering instruction locally and globally.

A. Maintain a high quality technology infrastructure that supports the work of faculty and staff. Support for infrastructure is basic and foundational to other efforts. The most fundamental priority is access to quality technology.

Hardware

1. Completed annual upgrade of 43 faculty and staff computers. The current average age of computers among faculty and staff is (2012 - 2.48 years / 2013 – 2.42 years).
2. Completed upgrade of equipment in HECO 142 (35 PCs)
3. Upgraded equipment in HENZ 103 including an LCD screen, Mac Mini, & laptop computer
4. Upgraded computers in Teachers College conference rooms (TEAC 114,138,204,249)
5. Upgraded computers in HECO 11 and 31 and in RLH 204.
6. Provided new resources for video conferencing in Barkley 328, HENZ 16, TEAC 140, and TEAC 201. Additions include cameras, microphones, computers, LCD panels and speakers as needed to support both instruction and video conferencing.
7. Upgraded presentation system in Barkley 325.
8. Committed support for updated equipment and video conferencing capabilities in Mabel Lee 144.
9. Purchase three portable kits for providing video conferencing in conference or classrooms. Kits include camera/microphone, tripod, and cables.
10. Purchased 30 new Mac laptops and a new laptop cart. Housed in Henzlik Hall.
11. Purchased media and equipment to support instruction including 12 new cameras and tripods.

Software

1. Purchased or obtained software licenses for student use including SPSS (144 licenses for labs, classrooms, and faculty/staff machines), SAS (48 licenses), Qualtrics (college-wide license), Lectra, mPlus and MaxQDA.

Technical Support/Development

1. Provided ongoing technical support to faculty and staff.
2. Supported migration of all faculty and staff to Office 365. This was a major task.

3. Provided and supported College servers for file and web services.
4. Provided technical support for Buros including managed services, programming and web development. Support includes maintaining Oscar.unl.edu and managing accounts and backups, maintaining SFTP site for client work (cehs15.unl.edu) including creating accounts, managing a shared Filemaker Server (cehs13.unl.edu) including transfer of files to UComm project and managing backup.
5. Provide support for IQSC including software updates for two servers, quilt1.unl.edu and quilt2.edu and configuration changes when necessary.
6. Deployed and supported six digital signs in Henzlik, Home Economics, and Barkley Center. Convened regular meetings with tech support, the Design Center and the Deb Mullen's office to develop workflow and manage the process.
7. Developed web-based application (Merriman) for management and scheduling of images and content for digital signs.
8. Provided student technology fee support for installation of video observation and recording equipment in CYAF clinic.
9. With the assistance of Doug Kauffman, conducted a survey regarding technology services that was administered during January 2012. Results were presented to the Technology Committee and the Dean's Advisory Committee in November, 2012.
10. Provided web and application development supporting research, instruction, and outreach. Projects included conference registration, Department web site redesign, and practicum evaluation for Elementary Education.
11. Provide support for international efforts with the creation of blogs for travel events to Costa Rica and China.
12. Technical or equipment support for College sponsored conferences including Tech Edge, Student Research Conference, Ali Moeller's summer institutes. International Conference at the Cornhusker (Ed Psych). Women's Leadership Conference.
13. Research and evaluation of the use of virtual servers as replacement for current college servers being conducted by Stephen Panarelli.

Other

1. Participated in UNL Operations Analysis IT Audit of the College. This audit addressed security and operations and resulted in a plan for updating procedures.
2. Initiated planning for external Technology Services review. Worked with GA to gather relevant data and construct questions for the review.

B. Support innovation in teaching.

1. Solicited and made four awards for Technology Innovation Projects. Project included:
 - a. Supporting iPad Rollout in Elementary Education (Guy Trainin)
 - b. UNL Video Tutorial Vault (Michael Burton)
 - c. Developing Media Capacity (Guy Trainin)
 - d. Mobile Technology Applications for Communication Support (David Beukelman)
2. Ongoing discussion of policies and priorities related to technology including issues such as establishing principles and procedures for making decisions on the use of student technology fees.
3. Elementary education is moving forward with the use of iPads as part of the instructional and practicum programs.

C. Identify and implement strategies to facilitate and enhance the international efforts of the College

1. The committee has targeted enhanced video conferencing capabilities that will support access to our programs. New video conferencing capabilities are established BKC 328, TC 201, HENZ 16 and the TC 140. In addition we are piloting lower cost options in other TC conference rooms.
2. Utilized technology to enhance the impact of and connection to international activities. Provided support for blogging for students who participate in trips.
3. Video conference externship with Speech Language Pathology students in Costa Rica (Rickett's Classroom – Alicia Davis)

Part II - Contributions to CEHS Spires of Excellence

Technology is so integral to the work that we do that it contributes to excellence in almost all areas. The following provide selected examples under CEHS Spires of Excellence

1. International Education
 - Technology has allowed students to remain connected with faculty, peers and their families while participating in international study opportunities. The observers see the excitement in students and provide support while they are out of the country. This has been an interesting phenomenon that has enriched the international experience in ways we might not have anticipated.
 - Video and conferencing technology has and is being used to include international students in courses and research.
2. 21st Century Teaching and Learning
 - CEHS is a leader on campus in providing online and distance programs. We are developing greater capacity to deliver distance and hybrid courses via video conferencing.

- Student tech fees are being utilized to make technology available to faculty and students on a check out basis. The number of faculty and staff taking advantage of this service is steadily increasing.
 - Student tech fees are used to support instructional technology in CEHS classrooms and conference rooms.
 - Student tech fees are used to provide student access to software and specialized equipment that is integral to instructional programs. This includes five classrooms/labs used for teaching technology centric courses. It also included laptops, cameras, iPads, and microphones for student and instructor use. Software includes statistical packages, productivity and multimedia software, educational iPad applications, Lectra and other specialized software.
 - Under the leadership of Guy Trainin, the College has initiated the Technology Edge Conference and a summer workshop course on technology integration for teachers.
 - Enhancement of observation, recording and storage capabilities in the Family Resource Center and Barkley Center.
3. Innovative Approaches to Inquiry and Creative Work
- The College has provided support for research tools such as Qualtrics, SPSS, and SAS. Qualtrics, in particular, has been a critical resource across the College this year. We have 151 user accounts that have generated 130 surveys. These surveys have solicited nearly 35,000 auditable responses.
 - Technology plays key roles in gathering and analyzing data, support collaboration on research, and provides important mediums for communicating findings to colleagues and constituents. One example of this is the work being done by Doug Kauffman and his students doing research on writing in Turkey.
 - Availability of software including SimVenture, Lectra, and Visual Retailing.
 - Installation of Tobii eye-tracking software in HECO 208.
 - Faculty collaborations of UNL Developmental Brain Laboratory.

Part III - Contributions to CEHS Priorities for 2011

- a. Innovative programs
- b. Facilities, technology, data management
- c. Increased research/creative activity
- d. Documentation of student learning (Progress in PEARL)
- e. Intercultural competence/global perspectives
- f. Expand diversity
- g. Distinctive graduates (ways in which our graduates look different from grads in other schools – this is not a synonym for excellence)
- h. Enrollment management/grad and undergrad (areas of underutilized capacity as well as areas in which capacity is stretched – how we are addressing both)
- i. TEAC accreditation

Please see items highlighted in Parts I and II. While the focus is primarily on facilities, technology, and data management the work of the committee widely impacts innovative programs, research and creative activities and assessment and other College priorities.

Part IV - New Goals and Strategies

I. Establish CEHS as a leader in providing innovative approaches to enhancing knowledge and delivering instruction locally and globally.

A. Maintain a high quality technology infrastructure that supports the work of faculty and staff. Support for infrastructure is basic and foundational to other efforts. The most fundamental priority is access to quality technology.

- a. Provide faculty and staff with regular computer upgrades and maintenance
- b. Provide technology in classrooms, seminar rooms and conference rooms.
- c. Identify and support ways that infrastructure can be used to encourage innovation.
- d. Follow up Operations Analysis information technology audit and address issues related to control and security.
- e. Conduct a unit review of technology services in the College for the purpose of understanding and improving how these services are provided.
- f. Investigate services to improve communication and management including use of digital signs and room scheduling/event management.

B. Support innovation in teaching.

- a. Investigate the impact of MOOCs (Massively Online Open Courses) on the college. How are we prepared to address this issue? What resources do faculty need to have to be successful teaching in this format? Identify important issues related to MOOCs.
- b. Provide instruction and support to faculty in improving the production value of online and teaching materials including professional presentation and production. For example, access to NPR info on producing quality podcasts.
- c. Outline a strategy for how the College should address the transition to student use of personal devices. Identify implications for services, support, and resources. Examine efficacy and issues related to requiring student purchases of personal devices. Examine implications for student support.
- d. Encourage, support and showcase innovative projects by faculty and staff.
- e. Identify and provide resources for supporting faculty and staff use of technology. As part of this effort address issues in dealing with and supporting the faculty and staff who are least proficient with technology.

- f. Continue enhancing video conferencing capability to support distance and hybrid teaching and advising. Provide support/resources that allows faculty to effectively use the technology.
- g. Identify ways to provide and support innovative learning spaces.
- h. Support the development of Web, iPad/iPhone, and/or other applications that are used to manage and enhance teaching.
- i. Support the development of technology that enables or enhances assessment of program outcomes.
- j. Explore strategies for systematic evaluation of the impact of College technology initiatives.

C. Support innovative approaches to inquiry and creative work.

- a. Identify and provide technology tools that support inquiry and creative work. Examples include software such as Qualtrics, SPSS and SAS.
- b. Web and application development in support of research.
- c. Investigate the creation of server space where data could be stored and access by faculty for research purposes.
- d. Engage Jon Pedersen in a discussion with the committee of strategies for supporting research with or related to technology. Identify issues and potential efforts that might be undertaken.
- e. Address the issue of support for specialized software or technology that supports research.
- f. Investigate opportunities and benefits of collaborating outside the College with technology. The UNL Developmental Brain Lab was identified as one example where collaborations with Child Youth and Family Studies and Barkley are occurring. We also may take a greater role in providing expertise across the University.
- g. Contribute to the university discussion relative to a common good approach to funding and managing research software such as SPSS and other creative software.

D. Identify and implement strategies to facilitate and enhance the international efforts of the College.

- a. Enhance distance and international capability through video conferencing.
- b. Investigate new and innovative technology that has potential to support and expand international efforts.
- c. Discuss and develop strategies for effective use of videoconferencing capacity in international efforts.

Part V – Contributions to Chancellors Goals

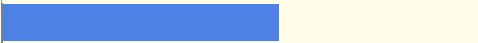



Creating engaging and effective instruction supports both attracting and retaining students in our programs. We expect that technology and media will play a significant role in this effort. A key element is the production quality of the instructional materials being provided as part of our interaction with students and potential students. It is critical that we support faculty in developing this capacity.

Appendix B










CEHS Tech Services Survey Results

Faculty/Staff Technology Report

1. What is your position in the College of Education and Human Services (CEHS)?

#	Answer		Response	%
1	Faculty		69	58%
2	Staff		47	39%
3	Graduate Student		3	3%
4	Undergraduate Student		0	0%
	Total		119	100%

2. What department are you associated with?

#	Answer		Response	%
1	Child, Youth and Family Studies		12	10%
2	Educational Administration		8	7%
3	Educational Psychology		16	14%
4	Nutrition and Health Sciences		11	9%
5	Special Education and Communication Disorders		21	18%
6	Teaching, Learning and Teacher Education		14	12%
7	Textiles Clothing and Design		9	8%
8	Dean's office		13	11%
9	Other		12	10%
	Total		116	100%

Other

Instructional Design Center

Buros

CYFS

Student Services Center

SSC

Recruitment

3. How long have you been employed by UNL?

#	Answer		Response	%
1	Less than 1 year		11	9%
2	1 to 5 years		28	24%
3	6 to 10 years		22	19%
4	11 to 20 years		30	25%
5	21 to 30 years		18	15%
6	More than 30 years		9	8%
	Total		118	100%
			M = 3.36	SD = 1.43

6. What is your gender? (This question is optional. you do not need to answer it)

#	Answer		Response	%
1	Male		26	24%
2	Female		83	76%
	Total		109	100%

8. How aware are you of the CEHS computer labs and their resources?

#	Answer		Response	%
1	Completely unaware		13	11%
2	Somewhat unaware		25	21%
3	Somewhat aware		48	40%
4	Very aware		24	20%
5	Extremely aware		10	8%
	Total		120	100%
		MM	M= 2.94	SD= 1.09






9. How important is it that the CEHS computer labs are available

#	Question	Extremely unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Extremely important	N=	Mean	SD
1	for you personally?	27	22	21	31	10	111	2.77	1.33
2	for students within CEHS?	7	6	6	28	65	112	4.23	1.17
3	for students within your department?	8	8	9	29	57	111	4.07	1.24
4	for other faculty/staff within your department?	10	18	17	38	14	97	3.29	1.22






10. How valuable are CEHS computer labs

#	Question	Not at all valuable	Not very valuable	No opinion	Somewhat valuable	Extremely valuable	N=	Mean	SD
1	for you personally?	24	14	23	38	12	111	3.00	1.33
2	for students within CEHS?	2	4	14	24	68	112	4.36	.096
3	for students within your department?	4	6	9	37	57	113	4.21	1.04
4	for other faculty/staff within your department?	8	15	22	38	20	103	3.46	1.19

11. How often do you use the CEHS computer labs?

#	Answer		Response	%
1	Never		51	43%
2	Rarely (less than once a month)		46	38%
3	Occasionally (a few times per month)		13	11%
4	Often (2-3 times per week)		2	2%
5	Very Often (more than 4 times per week)		8	7%
	Total		120	100%
			M= 1.92	SD= 1.20

12. How aware are you of the CEHS check-out services?

#	Answer		Response	%
1	Completely unaware		23	19%
2	Somewhat unaware		22	18%
3	Somewhat aware		40	33%
4	Very aware		20	17%
5	Extremely aware		15	13%
	Total		120	100%
			M=2.85	SD=1.27

13. How important is it that the CEHS equipment check-out services are available

#	Question	Extremely unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Extremely important	N	Mean	SD
1	for you personally?	13	10	15	52	21	111	3.52	1.23
2	for students within CEHS?	3	2	13	35	48	101	4.22	0.96
3	for students within your department?	4	7	10	40	43	104	4.07	1.06
4	for other faculty/staff within your department?	2	8	14	45	25	94	3.88	0.97

14. How valuable are the CEHS equipment check-out services

#	Question	Not at all valuable	Not very valuable	No opinion	Somewhat valuable	Extremely valuable	N	Mean	SD
1	for you personally?	13	8	20	42	27	110	3.56	1.27
2	for students within CEHS?	3	0	16	32	51	102	4.25	0.93
3	for students within your department?	3	3	13	39	44	102	4.16	0.96
4	for other faculty/staff within your department?	2	6	22	39	27	96	3.86	0.97

15. How often do you use the CEHS equipment check-out services?

#	Answer		Response	%
1	Never		45	38%
2	Rarely (less than once a month)		49	41%
3	Occasionally (a few times per month)		22	18%
4	Often (2-3 times per week)		1	1%
5	Very Often (more than 4 times per week)		3	3%
	Total		120	100%
			M = 1.90	SD = 0.90

16. How aware are you of the technical support and troubleshooting services provided by CEHS technology services for software?

#	Answer		Response	%
1	Completely unaware		7	6%
2	Somewhat unaware		10	8%
3	Somewhat aware		31	26%
4	Very aware		38	32%
5	Extremely aware		34	28%
	Total		120	100%
			M = 3.68	SD = 1.31

17. How important is it that CEHS technical support services for software are available

#	Question	Extremely unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Extremely important	N	Mean	SD
1	for you personally?	7	6	5	16	82	116	4.38	1.17
2	for students within CEHS?	5	6	10	22	66	109	4.27	1.13
3	for students within your department?	7	6	7	26	62	108	4.20	1.19
4	for other faculty/staff within your department?	5	6	5	14	76	106	4.42	1.12

18. How valuable are CEHS technical support services for software

#	Question	Not at all valuable	Not very valuable	No opinion	Somewhat valuable	Extremely valuable	N	Mean	SD
1	for you personally?	4	10	4	21	77	116	4.35	1.11
2	for students within CEHS?	3	7	7	24	64	105	4.32	1.05
3	for students within your department?	4	8	6	25	64	107	4.28	1.11
4	for other faculty/staff within your department?	3	7	8	15	73	106	4.40	1.07

19. How often do you use CEHS technical support services for software?

#	Answer		Response	%
1	Never		15	13%
2	Rarely (less than once a month)		38	32%
3	Occasionally (a few times per month)		54	45%
4	Often (2-3 times per week)		6	5%
5	Very Often (more than 4 times per week)		7	6%
	Total		120	100%
			M=2.60	.097

20. How aware are you of CEHS technical support and troubleshooting services for hardware?

#	Answer		Response	%
1	Completely unaware		5	4%
2	Somewhat unaware		8	7%
3	Somewhat aware		28	23%
4	Very aware		44	37%
5	Extremely aware		35	29%
	Total		120	100%
			M= 3.80	SD = 1.07

21. How important is it that CEHS technical support services for hardware are available

#	Question	Extremely unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Extremely important	N	Mean	SD
1	For you personally	5	2	2	16	91	116	4.60	0.95
2	For students	3	4	7	24	65	103	4.40	0.98
3	For your department	6	3	3	7	93	112	4.59	1.05

22. How valuable are CEHS technical support services for hardware

#	Question	Not at all valuable	Not very valuable	No opinion	Somewhat valuable	Extremely valuable	N	Mean	SD
1	for you personally?	5	3	6	19	85	118	4.49	1.01
2	for students within CEHS?	4	2	16	22	60	104	4.27	1.04
3	for students within your department?	3	4	14	23	66	110	4.32	1.01
4	for other faculty/staff within your department?	3	2	11	14	81	111	4.51	0.94

23. How often do you use CEHS technical support services for hardware?

#	Answer	Response	%
1	Never	10	8%
2	Rarely (less than once a month)	48	40%
3	Occasionally (a few times per month)	49	41%
4	Often (2-3 times per week)	7	6%
5	Very Often (more than 4 times per week)	6	5%
	Total	120	100%
		M= 2.59	SD= 0.83

24. How aware are you of CEHS web development services?

#	Answer		Response	%
1	Completely unaware		36	30%
2	Somewhat unaware		23	19%
3	Somewhat aware		31	26%
4	Very aware		17	14%
5	Extremely aware		13	11%
	Total		120	100%
			M = 2.57	SD = 1.34

25. How important is it that CEHS web development services are available

#	Question	Extremely unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Extremely important	N	Mean	SD
1	for you personally?	7	10	21	30	39	107	3.79	1.22
2	for students within CEHS?	7	5	20	27	33	92	3.80	1.21
3	for students within your department?	8	6	21	26	33	94	3.74	1.24
4	for other faculty/staff within your department?	5	5	8	30	46	94	4.14	1.12

26. How valuable are CEHS web development services

#	Question	Not at all valuable	Not very valuable	No opinion	Somewhat valuable	Extremely valuable	N	Mean	SD
1	for you personally?	8	10	19	33	35	105	3.73	1.23
2	for students within CEHS?	4	5	25	32	29	95	3.81	1.06
3	for students within your department?	4	7	25	33	29	98	3.78	1.08
4	for other faculty/staff within your department?	3	6	17	30	42	98	4.04	1.06

27. How often do you use CEHS web development services?

#	Answer		Response	%
1	Never		59	49%
2	Rarely (less than once a month)		32	27%
3	Occasionally (a few times per month)		20	17%
4	Often (2-3 times per week)		4	3%
5	Very Often (more than 4 times per week)		5	4%
	Total		120	100%
			M = 1.87	SD = 1.08

28. How aware are you of CEHS technology project consultation and planning services?

#	Answer		Response	%
1	Completely unaware		62	52%
2	Somewhat unaware		24	20%
3	Somewhat aware		20	17%
4	Very aware		7	6%
5	Extremely aware		7	6%
	Total		120	100%
			M = 1.94	SD = 1.20

29. How important is it that CEHS technology project consultation and planning services are available

#	Question	Extremely unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Extremely important	N	Mean	SD
1	for you personally?	7	11	21	31	26	96	3.60	1.21
2	for students within CEHS?	8	11	21	26	18	84	3.42	1.23
3	for students within your department?	9	11	21	27	18	86	3.40	1.25
4	for other faculty/staff within your department?	8	3	13	29	36	89	3.92	1.23






30. How valuable are CEHS technology project consultation and planning services

#	Question	Not at all valuable	Not very valuable	No opinion	Somewhat valuable	Extremely valuable	N	Mean	SD
1	for you personally?	10	10	27	30	20	97	3.41	1.22
2	for students within CEHS?	6	4	33	26	18	87	3.53	1.09
3	for students within your department?	7	4	33	27	19	90	3.52	1.11
4	for other faculty/staff within your department?	5	3	25	25	33	91	3.86	1.12







31. How often do you use CEHS technology project consultation and planning services?

#	Answer	Response	%
1	Never	83	69%
2	Rarely (less than once a month)	26	22%
3	Occasionally (a few times per month)	8	7%
4	Often (2-3 times per week)	2	2%
5	Very Often (more than 4 times per week)	1	1%
	Total	120	100%
		M = 1.43	SD = 0.76




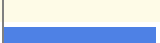

32. When I am in my office and encounter a technology problem, I know who to contact to get it fixed.

#	Answer		Response	%
1	Strongly Disagree		5	4%
2	Disagree		8	7%
3	Neither Agree nor Disagree		4	3%
4	Agree		43	36%
5	Strongly Agree		59	50%
	Total		119	100%
			M = 4.20	SD = 1.07




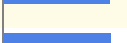

33. When I am in a conference room and encounter a technology problem, I know who to contact to get it fixed.

#	Answer		Response	%
1	Strongly Disagree		10	8%
2	Disagree		21	18%
3	Neither Agree nor Disagree		9	8%
4	Agree		43	36%
5	Strongly Agree		32	27%
6	N/A		5	4%
	Total		120	100%
			M = 3.68	SD = 1.37






34. When I am in a classroom and encounter a technology problem, I know who to contact to get it fixed.

#	Answer		Response	%
1	Strongly Disagree		8	8%
2	Disagree		15	15%
3	Neither Agree nor Disagree		9	9%
4	Agree		44	43%
5	Strongly Agree		27	26%
	Total		103	100%
			M = 3.65	SD = 1.23






35. When I encounter a technology problem, I know where to find solutions on my own.

#	Answer		Response	%
1	Strongly Disagree		11	9%
2	Disagree		25	21%
3	Neither Agree nor Disagree		36	30%
4	Agree		36	30%
5	Strongly Agree		12	10%
	Total		120	100%
			M = 3.11	SD = 1.13






36. When I have a technology problem, I would prefer to always contact a single person who can direct me to someone who can help.

#	Answer		Response	%
1	Strongly Disagree		5	4%
2	Disagree		8	7%
3	Neither Agree nor Disagree		25	21%
4	Agree		50	42%
5	Strongly Agree		32	27%
	Total		120	100%
			M = 3.80	SD = 1.04








37. I understand which technology services are provided by CEHS and which are provided by Campus Information Services

#	Answer		Response	%
1	Strongly Disagree		25	21%
2	Disagree		40	33%
3	Neither Agree nor Disagree		21	18%
4	Agree		27	23%
5	Strongly Agree		7	6%
	Total		120	100%
			M = 2.59	SD = 1.21






38. I feel confident using the technology I have access to.

#	Answer		Response	%
1	Strongly Disagree		7	6%
2	Disagree		6	5%
3	Neither Agree nor Disagree		16	13%
4	Agree		66	55%
5	Strongly Agree		25	21%
	Total		120	100%
			M = 3.80	SD = 1.02






39. I would benefit from more information about using the technology I have access to.

#	Answer		Response	%
1	Very Unlikely		2	2%
2	Unlikely		8	7%
3	Somewhat Unlikely		5	4%
4	Undecided		11	9%
5	Somewhat Likely		29	24%
6	Likely		40	33%
7	Very Likely		25	21%
	Total		120	100%
			M= 5.31	SD = 1.49

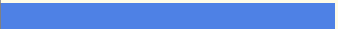

40. I feel confident learning new technology on my own.

#	Answer		Response	%
1	Strongly Disagree		10	8%
2	Disagree		22	18%
3	Neither Agree nor Disagree		21	18%
4	Agree		45	38%
5	Strongly Agree		22	18%
	Total		120	100%
			M = 3.39	SD = 1.22

41. I would attend instructional seminars about using new technology if they were offered.

#	Answer		Response	%
1	Very Unlikely		8	7%
2	Unlikely		9	8%
3	Undecided		27	23%
4	Likely		49	41%
5	Very Likely		27	23%
	Total		120	100%
			M = 3.65	SD = 1.11

42. I have all of the hardware and software I need to do my job effectively.

#	Answer		Response	%
1	Yes		84	70%
2	No		36	30%
	Total		120	100%

43. If no, please list any additional hardware or software that you need to do your job effectively:

Text Response
1. Id like some server space
2. Multiple screens, classroom technology that includes the ability to project from multiple mobile devices, support for multiple mobile devices and wireless projection. Airprint from mobile devices.
3. I'm unsure what else I'd need.
4. iPads with certain apps for students in my methods course.
5. i would like a copy of adobe audition 3
6. I need to order upgrades to the technology I have, but am confident I can do so with my current resources.
7. Up-to-date conference rooms for interfacing with distance education students for committee meetings, classes, group projects, etc.
8. Math Type (improved Equation Editor)
9. There are times when I wished I could have a third monitor to look at because of the number of Excell files I look at while doing one task. Sounds kinda crazy but it actually would be helpful or at least bigger screens. It would also be helpful to have a second monitor at the student's desk on East Campus.
10. Supporting more seamless and effective connections with students off campus would be helpful.
11. Ability to be able to see and talk with a class of students easily and simultaneously while they are at their choice of location and all can hear.
12. It is more a matter of dependability rather than possession. Lately, there have been a large number of technology related glitches and unclear accountability (i.e., who will solve it for me/us).
13. The Buros Center for Testing is trying to get a new Web site created and restructure our database, but we are getting help from a different department on that.
14. I do have all of the hardware and software I can use at work. However, since I also do a lot of work at home, it will be great if I can get additional licenses for statistical software (SAS and SPSS mostly) I can install on my personal laptop or home desktop. It seems that I can't purchase license if I don't have grant set aside for the specific purpose.
15. SPSS, Keynote, Pages
16. Updated computer with updated software for distance courses
17. iPads would be EXTREMELY helpful for all faculty to have. As well as desktop, laptop, large monitor and printer.
18. Access to SAS and/or SPSS
19. Assistance in getting UNL records at home on lap top. Will be exploring this in the next month
20. We all need hardware and software that would support audio/video interaction with distance students. Adobe connect just does not work consistently. If CEHS and the university is committed to providing quality distance education offerings this is essential.
21. I do not have electronic presentation tools in my classrooms (216 HECO and 21/22 HECO). I need to shift the students to the computer lab or another classroom to use the internet or power point. I have yet to test out the dept. projector and the dean's office lap top to see if I can make them work in room 22 HECO. It seems easier to move the students to a high functioning system than to check out the equipment, set it up, and so on.
22. My CD Rom on my computer runs intermittently but I am too busy to send it out and be left without my information.
23. software: biostatistical analysis, graph creation
24. Need Adobe CS5, so my computer has same version as what is in computer lab.



25. Doc cameras in teaching rooms, wireless link to projection devices, better wifi support,
26. classroom still is mixed with ancient equipment to new.... computers are not powerful enough to operate all facets of needs.
27. I would like to have the ability to record my lectures for on-line course development...it is an adobe program...I think....
28. I have had problems with both computers in my office for years and people have come repeatedly but no one seems to be able to fix them. Very frustrating. I have worked at a number of universities and find help here less available than at other universities.
29. adobe audition 5.5, photoshop

44. Please list any additional hardware or software that you would LIKE to have:

Text Response

1. A larger computer monitor or two monitors.
2. OS X Lion, a better phone system
3. sets of iPads
4. i would like to have subscription to a couple journals, one being "acoustics today".
5. iPad
6. Math Type (improved Equation Editor)
7. Nothing I can think of but it is extremely important that Melanie Kellogg and I have the same updated programs since we both need into the M & S drive to work collaboratively on Scholarships.
8. Computers in conference rooms with cameras and speakers that allow for committee meetings over skype, etc with consistency so distance students can be in a room with their doctoral committees virtually.
9. Specialized statistical, analytical, and research software/hardware.
10. I would like the latest update of Adobe Connect Pro. I have heard that the update is available but that the UNL technicians are not installing it.
11. Photoshop, InDesign
12. None
13. SPSS, Keynote, Pages, endnote
14. More capacity for interactive synchronous classes
15. I would very much like an iPad, an updated desktop, and statistical and other software I don't have the budget to pay for myself.
16. Scanner and how to use it
17. I need to update the weaving software for my electronic looms. When I do that, I will most likely need to update the hardware. The question remains, will I need to update the hardware on the looms. It is a sticky wicket and perhaps out of range of the IT people?
18. adobe pro
19. printer/copier network; chemical structure drawing software
20. I would like to have additional patternmaking software that was more intuitive and easier to learn and teach.
21. Camtasia
22. More specialized quant and qual analysis software. Multi projector rooms for teaching and development, access to more educational technology software for k12 integration.
23. Computer in Henzlik 205 that works with the projection board. It is a hit and miss deal.
24. I know we are behind so fast.... that I probably do not even know what the best direction is. I know that when I am in schools that they have more equipment than we do..
25. desk top doc scanner
26. Scanner
27. I am not sure if I would benefit from have an IPAD . . .
28. Color printer

45. Are you willing to participate in a short follow-up interview about technology needs in your department?

#	Answer		Response	%
1	Yes		38	32%
2	No		82	68%
	Total		120	100%

Appendix C

Technology-Enhanced Facilities

Location	Type	College or Dept	Description
▼ Barkley Center			
BKC 101	Classroom	SECD	iMac, Ceiling Projector, Touch Panel, Document Camera
BKC 107	Audiology Clinic	SECD	7 Computers, 6 Printers, Audiology Equipment
BKC 124	Resource Room & Tech Row	SECD	17 iMacs, Printer & 3 iMacs, 1 Scanner
BKC 124	Tech Row	SECD	3 iMacs, 1 Scanner
BKC 127	Classroom	SECD	iMac, Ceiling Projector, Touch Panel, Document Camera
BKC 130	Classroom	SECD	iMac, Ceiling Projector, Touch Panel, Document Camera
BKC 131	Classroom	SECD	iMac, Ceiling Projector, Touch Panel, Video Conference Equipment, Document Camera
BKC 252	Clinic Observation System	SECD	25 Remote Cameras, 10 Mac Minis, 5 iMacs, Video Matrix Switcher
BKC 253	HIPAA Lab	SECD	13 iMacs
BKC 302	Conference Room	SECD	TV, VCR

Location	Type	College or Dept	Description
BKC 313	Classroom	SECD	iMac, Ceiling Projector, Touch Panel, Document Camera
BKC 315	Tech Row	SECD	3 iMacs, 1 Scanner
BKC 317	Classroom	SECD	25 iMacs, Ceiling Projector, Document Camera
BKC 321	Classroom	SECD	iMac, Ceiling Projector, Touch Panel, Document Camera
BKC 325	Conference Room	SECD	Mac Mini, Ceiling Projector, Touch Panel, Video Conference Equipment
BKC 326	Conference Room	SECD	Mobile Projection Unit
BKC 327	Conference Room	SECD	Mobile Projection Unit
BKC 328	Conference Room	SECD	Mac Mini, Flatscreen Display
BKC 328	Conference Room	SECD	Mobile Polycom Cart with Flatscreen Display

Location	Type	College or Dept	Description
▼ Home Economics			
HECO 11	Classroom	College	1 PC, 1 Mac, 3 Projectors, DVD/VCR, Touch Panel, Document Camera
HECO 31	Classroom	College	PC, Projector, DVD/VCR, Touch Panel, Document Camera
HECO 121	Classroom	College	PC, Projector, Touch Button Control Panel, Document Camera
HECO 129	Classroom	College	PC, Projector
HECO 137	Computer Lab	College	22 PCs, 2 Projectors, SMART Board, Printer
HECO 142	Computer Lab	College	35 PCs, 2 Projectors, Touch Button Control Panel, Printer
HECO 207	Classroom	TFMD	2 PCs, Digitizer, Pattern Printer / Cutter
HECO 208 (Summer 2013)	Classroom		PC, 2 LCD Displays, Video Conferencing Equipment, iPad Control Panel, Document Camera
HECO 220	Classroom	TFMD	PC, Mac, Large Scale Scanner, Wacom Tablet, Touch Button Control Panel, Ceiling Projector
HECO 222	Classroom	TFMD	PC, Ceiling Projector

Location	Type	College or Dept	Description
HECO 227	Classroom	TFMD	PC, Large Scale Fabric Printer
HECO 228	Conference Room	TFMD	PC, 2 LCD Displays, Video Conferencing Equipment, iPad Control Panel, Document Camera
HECO 229	Classroom	TFMD	PC, 2 LCD Displays, Video Conferencing Equipment, iPad Control Panel, Document Camera
HECO 231	Hillestead Gallery	TFMD	Pc, Digital Display

Location	Type	College or Dept	Description
Family Resource Center			
FRC	Clinic Observation System	CYAF	

Location	Type	College or Dept	Description
▼ HENZLIK Hall			
HENZ 16	Conference Room	TLTE	Mac Mini, 2 Flatscreen Displays, iPad Control Panel, Video Conference Equipment
HENZ 103	Conference Room	Recruitment	Mac Mini, Flatscreen Display
HENZ 205	Classroom	TLTE	Mobile Projector
HENZ 207	Classroom	TLTE	Mobile Projector
HENZ 45	Mobile Classroom Cart	College	24 MacBook Pros
HENZ 216	Mobile Classroom Cart	College	30 MacBook Pros

Location	Type	College or Dept	Description
▼ Ruth Leverton Hall			
LEV 115	Classroom	College	PC, DVD/VHS, Ceiling Projector
LEV 204	Classroom	College	PC, Ceiling Projector, Smart Podium
LEV 304	Classroom	NHS	PC, Ceiling Projector

Location	Type	College or Dept	Description
▼ Mabel Lee Hall			
MABL 120	Computer Lab	College	38 iMacs, 2 Ceiling Projectors, Smartboard, Printer
MABL 163	Computer Lab	College	25 PCs, 2 Ceiling Projectors, Smartboard
MABL 144	Classroom	CYAF	PC, 2 Short Throw Projectors, iPad Touch Panel, Video Conf Equipment

Location	Type	College or Dept	Description
▼ Teachers College Hall			
TEAC 49	Counseling Clinic	EDPS	10 Video Cameras, 3 Security Grade Video Recorders, 1 PC
TEAC 113	Conference Room	College	PC, Ceiling Projector, DVD/VCR
TEAC 138	Conference Room	College	PC, Ceiling Projector, DVD/VCR
TEAC 140	Conference Room	EDAD	Mac Mini, Flatscreen Display, Video Conference Equipment
TEAC 201	Conference Room	College	Collaborate One (all-in-one video conference system)
TEAC 204	Conference Room	College	PC, Ceiling Projector, DVD/VCR
TEAC 249	Conference Room	College	PC, Ceiling Projector, DVD/VCR

Appendix D

Student Technology Fees Reports

Student Technology Fees Report

College of Education & Human Sciences

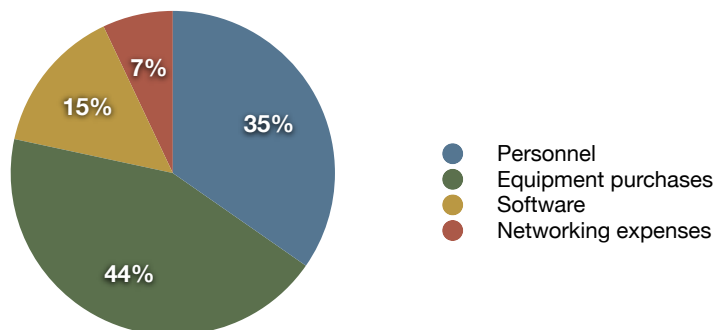
FY 2009-2010

The College of Education and Human Sciences received \$158,386.48 in UNL and UNO student technology fees for the fiscal year 2009-10. The expenditures for the year were \$91,944.32. You will find the breakdown of costs by category in the table below.

Summary

Description	Total Cost
Beginning-year balance	87,305.70
Fees received	158,386.48
Personnel	31,902.13
Equipment purchases	40,186.03
Software	13,438.44
Networking expenses	6,467.72
Total Expenditures	\$91,994.32
End-of-year balance	\$153,697.86

Budget Overview



Equipment Purchases

Description	Cost
Rickett's Lab in Barkley Center	10,000.00
Digital Camcorders & Accessories	4,731.94
HECO 137 PC Lab	2,693.00
4 DVR's + 8 camcorders for clinic &	5,062.15
2 Laptops for LEV smart carts	1,841.98
2 Promethean boards	9,204.72
Projectors, mounts, installations	4,825.00
Computer for HECO 228.1	1,694.00
Misc (cables, , etc)	133.24
	\$40,186.03

Software Purchases

Description	Cost
MS Campus Agreement	3,380.00
SPSS	2,408.00
Systat	537.30
SAS	1,437.80
mPlus	443.00
Lectra Software License	780.00
TCD Business Software	4,079.00
Visual Retailing Software	373.34
	\$13,438.44

Student Technology Fees Report

College of Education & Human Sciences

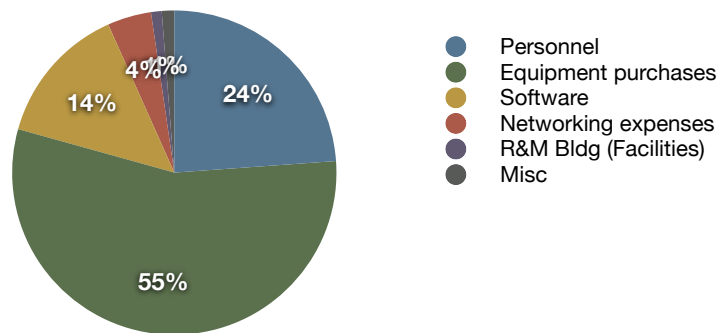
FY 2010-2011

The College of Education and Human Sciences received \$164,886.46 in UNL and UNO student technology fees for the fiscal year 2010-2011. The expenditures for the year were \$150,757.60. You will find the breakdown of costs by category in the table below.

Summary

Description	Total Cost
Beginning-year balance	153,697.86
Fees received	164,886.46
Personnel	35,976.09
Equipment purchases	83,601.74
Software	21,110.14
Networking expenses	6,595.70
R&M Bldg (Facilities)	1,603.94
Misc	1,869.99
Total Expenditures	\$150,757.60
End-of-year balance	\$167,826.72

Budget Overview



Equipment Purchases

Description	Cost
Digital signs - purchase & installation (3)	10,254.92
Projectors, cables, and such (7)	5,916.18
Video cameras and misc (21)	4,953.57
iPads, cases, and cables	16,110.00
PCs for HECO 137 computer lab (23)	35,230.48
Server	3,960.60
Laptops for Smart carts (3)	2,298.00
Laptop batteries, cables, mics, headsets	1,852.35
iMacs for classrooms (2)	2,298.00
Misc	727.64
Total	\$83,601.74

Software Purchases

Description	Cost
MS Campus Agreement	1,020.00
SPSS	1,375.00
SAS	1,603.70
Qualtrics	3,500.00
iPad software	1,100.00
CS 5 lic & maintenance	12,201.98
Server software	206.86
Deep Freeze lic	102.60
Total	\$21,110.14

Student Technology Fees Report

College of Education & Human Sciences

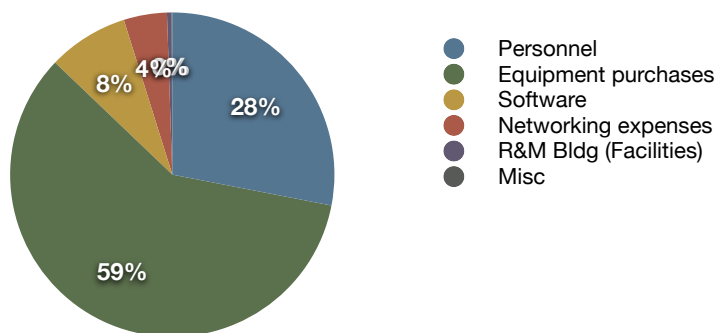
FY 2011-2012

The College of Education and Human Sciences received \$154,654.99 in UNL and UNO student technology fees for the fiscal year 2011-2012. The expenditures for the year were \$168,783.26. You will find the breakdown of costs by category in the table below.

Summary

Description	Total Cost
Beginning-year balance	167,826.72
Fees received	154,654.99
Personnel	47,348.88
Equipment purchases	99,719.87
Software	13,558.00
Networking expenses	7,269.79
R&M Bldg (Facilities)	773.34
Misc	113.38
Total Expenditures	\$168,783.26
End-of-year balance	\$153,698.45

Budget Overview



Equipment Purchases

Description	Cost
35 PCs for HECO 142	37,036.65
CYAF Family Resource Video System	18,513.76
Classroom / Conference Rooms Equip	17,769.00
Video Conf Systems	7,248.00
20 Zoom Q3 Video Cameras	3,357.00
Repairs / Replacements	3,738.24
Technology Mini Grants	12,057.22
	\$99,719.87

Software Purchases

Description	Cost
MS Campus Agreement	5100
SPSS	2760
Qualtrics	5000
iPad software	500
VoiceThread	198
	\$13,558.00

Appendix E

Assets by CEHS IT Support Area

Assets by CEHS IT Support Areas

March 2013

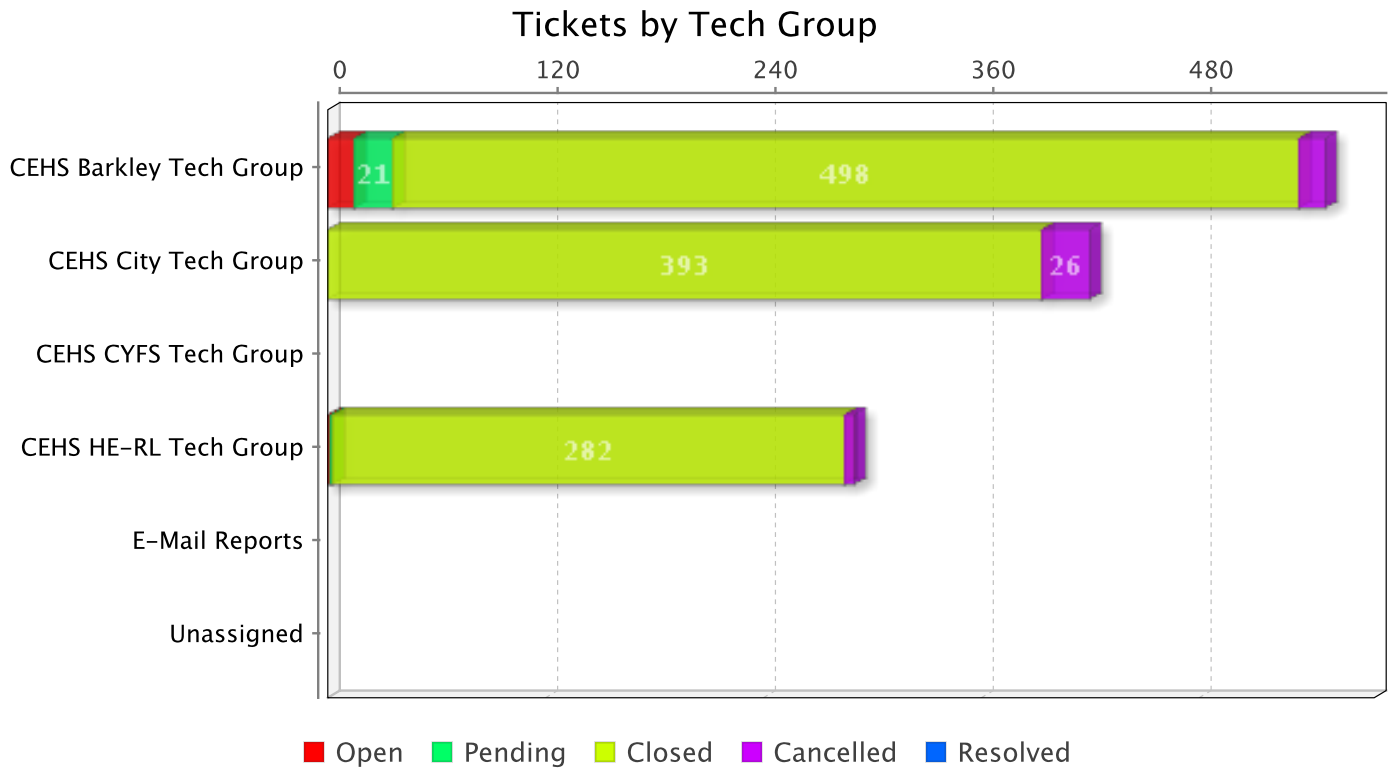
Equipment Type	Barkley Center	City Campus Complex	HECO_LEV Complex	CEHS Total
Desktops:				
- Macs	192	207	17	416
- PCs	55	156	205	416
Desktop Total	247	363	222	832
Laptops				
- Macs	44	185	12	241
- PCs	33	76	55	164
Laptop Total	77	261	67	405
Servers				
	4	18	6	28
Server Total	4	18	6	28
Printers - Inkjet				
	1	13	36	50
Printers - Laser BW				
	15	132	66	213
Printers - Laser Color				
	8	10	15	33
Printer Total	24	155	117	296
Tablets				
	28	127	33	188
Tablet Total	28	127	33	188

NOTES: The equipment included in this table have the status "Deployed" or "Deployed - Grant". This table does not include any CYFS equipment. The table includes equipment found in CEHS offices, classrooms, conference rooms, computer labs, mobile labs, etc.

Appendix F

Web Help Desk Reports

College of Education and Human Science 2012
Tickets opened between 01/01/12 12:00 am and 12/31/12 12:00 am



Tickets

	Open	Pending	Closed	Cancelled	Resolved	Total
CEHS Barkley Tech Group	15	21	498	15	0	549
CEHS City Tech Group	0	0	393	26	0	419
CEHS CYFS Tech Group	0	0	0	0	0	0
CEHS HE-RL Tech Group	2	1	282	5	0	290
E-Mail Reports	0	0	0	0	0	0
Unassigned	0	0	0	0	0	0
Total	17	22	1,173	46	0	1,258

Appendix G

**Types of Technology
Owned by CEHS Students**







CEHS Online Course Evaluations Survey April 2012

Types of Technology owned by CEHS Students

Students were asked in Spring 2012 to complete a survey regarding online course evaluations. 390 participants responded to the survey. 80% were female and 20% male. 91% were undergraduates. 98% were on-campus students. 72% of the participants were students in the College of Education and Human Sciences. Of these 284 participants, 59% were in the Nutrition and Health Sciences major. The remaining 41% of the participants were from the other six academic departments in CEHS.

The results to question 9 reflect the type of technology our students own.

Q9. Do you own a desktop, laptop, iPad, or other mobile device? (Mark all that apply.)

#	Answer		Response	%
1	Desktop		47	12%
2	Laptop		382	98%
3	iPad		41	11%
4	Smart phone		252	65%
5	Other		22	6%
6	None		1	0%

Other	
Kindle / Kindle Fire	9
Tablet	2
iPod / iPod touch	7
Nook	2
Netbook	1
Basic Phone	1

Appendix H

Operations Analysis IT Audit Report

TO: Mary Sutton
ALTC Manager – College of Education and Human Sciences

Allen Steckelberg
Associate Professor – College of Education and Human Sciences

FROM: Deb Dahlke
Director – Operations Analysis

Rene Mayo-Rejai
IT Auditor – Operations Analysis

DATE: November 1, 2012

SUBJECT: College of Education and Human Sciences Information Systems
Review

Operations Analysis performed an information systems assessment in the College of Education and Human Sciences (CEHS). This review was to assess CEHS's Information Technology (IT) practices and procedures and make recommendations. At the start of the review, it was discovered CEHS had three functionally independent IT areas, the Barkley Center, Home Economics, and City Campus Complex.

OBJECTIVES & SCOPE

The scope of this review included IT practices and controls within CEHS. Operations Analysis utilized the National Institute of Standards and Technology (NIST) Security Audit and Controls as a reference for this review. At a high level this review focused on the following areas:

1. Review current processes CEHS has implemented to assure data and information system security.
2. Assess the CEHS IT system and processes for compliance with federal and state regulatory requirements and UNL policies.
3. Examine IT general controls implemented for appropriateness and consistent application.

From the above objectives, the scope of this assessment included the current IT system processes for CEHS's:

- Operational security controls,
- Management security controls, and
- Technical security controls.

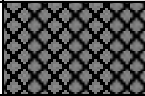
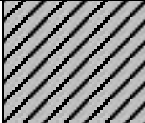
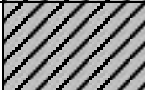
An understanding of the areas and the related risk was accomplished through interviews, detailed testing, server identification and examination of the physical server locations.

SUMMARY

CEHS has taken on the responsibility of merging multiple IT areas with differing IT practices into a cohesive, single IT organization with a common set of policies and procedures. This is the first IT review for CEHS for which they were measured against NIST Standards and Controls. While improvements have been identified for CEHS, there are areas of strong IT controls already in place. These controls are identified in the Observation sections of Appendix A and are noted in green front. With the exception of one control, the smaller IT areas of Barkley Center and Home Economics currently have processes and controls in place that address the higher risk NIST controls applicable to their environment.

For all three CEHS IT areas, we have identified ten functional security areas that contained one or more security risks. Each area represents inter-related risks where a single action plan may address all risks. Each issue is identified in Appendix A with additional detail information.

The following table identifies the Functional Security Areas that contains security issues and the associated risk to CEHS. The darker shade on the bar is indicative of a higher probability of a negative security failure occurring within CEHS.

CEHS Departmental Impacting Security Areas		Impact to Probability of Security Controls			
	Brief Description	Urgent Impact	High Impact	Medium Impact	Page #
Server Network Security	Servers not maintained behind firewalls. Immediately Resolved				A-1
User Server & Application Accounts	Active ADMIN accounts, shared passwords, and active accounts for termed employees.				A-2
Remote Access (VPN)	Outside server access allowed without going through VPN.				A-4

CEHS Departmental Impacting Security Areas		Impact to Probability of Security Controls			
	Brief Description	Urgent Impact	High Impact	Medium Impact	Page #
Server Backup	Non-conforming equipment used as backup servers, backups not tested, and some servers not fully backup.				A-5
Physical Assessment	Sub-master key used for server room security locks and HVAC controls risk equipment.				A-6
Change Management	Inconsistent audit trail of changes to server access.				A-7
Computer Use Guidelines	Appropriate Computer Use Guidelines inconsistently communicated to employees.				A-8
Monitoring	Scans not performed regularly.				A-9
IT Organizational Structure	Incomplete communication dissemination and inconsistent policies and procedures due to multiple reporting lines.				A-10
Hardware-Software Inventory	Inventory does not exist for use in Financial Planning, Risk and Strategic Assessment, Inventory Management, and Disaster Recovery.				A-11

All urgent security items have been noted in red within Appendix A. In addition, security risks identified within CEHS and noted in two previous departmental Information Security Program assessments have been identified by blue font in Appendix A. Given this commonality of risk, an administrative review of these areas would identify a universal response for all departments within the UNL campus. In July, 2012, UNL introduced the KACE Desktop Management tool as the campus tool of choice that would address the software and hardware inventory management issues that currently exist within CEHS. There is also an initiative to classify data and to secure it according to confidentiality of the data. Identity management and network security are areas on campus working to better establish de-provisioning for automated access when an employee separates from a department or UNL. These universal responses assist in minimalizing the risks identified.

CEHS has already implemented changes within their server environment to address one of the urgent security issues identified during this review. The attached CEHS action plan identifies all of the recommendations and management action plans in response to the recommendations.

Additional Sections:

Management Action Plan
Appendix A

Report Distribution List

M. Kostelnik – Dean, College of Education and Human Sciences
B. Sheriff – Assistant Vice Chancellor, Academic Affairs
C. Jackson – Vice Chancellor, Business and Finance
M. Askren – Chief Information Officer, Information Services
H. Perlman - Chancellor
M. Justus – NU Assistant Vice President and Director of Audit & Advisory
Services

To maintain operational consistency, this report should not be distributed in any manner outside the persons to whom it is addressed. If you are not the intended recipient, or a person responsible for delivery to the named recipient, any review, distribution, dissemination or copying by you is prohibited. If you have received this report in error, you should immediately notify Operations Analysis at UNL and delete the message from your computer system and destroy any copies in any form.

Functional Area		Recommendation	Action	Due Date	Responsible Person
I. Server Network Security Urgent					
	1	Complete the implementation of the <u>City Campus Complex</u> firewall.	This action has been completed. CEHS 20 resides in Walter Scott behind a hardware firewall.	Completed	City Campus IT
	2	Perform a Data Classification on information stored on Barkley Center, Home Economics, and City Campus Complex servers to determine if additional server network controls need to be implemented.	a) Initial planning to accomplish data classification. Investigate the expansion of SRI database to include servers across the college and data classification information for each server. (Note: SRI database was developed by Dave Merriman to keep track of servers, roles, and instances.) b) Completion of data classification.	a) Dec 2012 b) July 1, 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
II. User Server/Application Accounts Urgent					
	1	Disable named "Admin" account on all servers within CEHS.	a) Investigate and evaluate alternative strategies for naming server administration accounts. b) Implement appropriate naming strategies.	a) April 2013 b) July 1, 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
	2	Change conference room computers to require a logon id for access and remove administrator capabilities.	a) Investigate and evaluate alternative strategies for conference room computer access. b) Implement appropriate strategies.	a) April 2013 b) July 1, 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
	3	Establish a procedure that outlines how and when the various IT areas are notified of de-provisioned employees and a control in place to ensure employee access is removed from departmental servers when notified.	Discuss development of a procedure with CEHS business office for providing notification to server administrators when faculty or staff leave the University.	April 2013	CFO, CEHS Business Office, ALTC Manager
	4	Establish a profile for Emeriti faculty to ensure access adheres to responsibilities.	We consider this a low risk. The benefits of the profile are limited in relation to the cost of creating and implementing it.	-	-
	5	Establish procedures that require supervisor approval for all account access changes as applicable.	Because these accounts are primarily for file services we also see this as relatively low risk. Since we provide these services to all verified faculty and staff as needed we do not limit the service by specific supervisor approval. If a situation arises where this is needed we have the capability to limit access to the account. When students have accounts we do require supervisor approval.	-	-
	6	Review the use of shared accounts and determine access levels associated with shared accounts are appropriate and determine password change frequency.	a) Investigate and evaluate alternative strategies for shared accounts. b) Implement new strategy for shared accounts where appropriate.	a) April 2013 b) July 1, 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
	7	Investigate ways to make management of server accounts more efficient and consistent.	a) Investigate and evaluate ways to improve the efficiency and consistency of account management. b) Implement appropriate strategies.	a) April 2013 b) July 1, 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
III. Remote Access (VPN) Urgent					
	1	Remove the Road Runner IP from the allowed Internet Protocol (IP) addresses within CEHS LDAP authentication server for the System Administrator named account.	SFTP access is allowed for a limited number of IP addresses outside the University on a specific server. This server hosts the college web server and does not contain sensitive information. This access is a necessary part of doing business. Other services such as remote desktop access are limited by the firewall to on campus access only and require the use of VPN from off campus. <i>Auditor's comment:</i> University VPN policy is located at http://is.unl.edu/vpn	-	City Campus IT
	2	Utilize University VPN to restrict off-campus access to CEHS servers with sensitive information.	Servers with sensitive information are behind a hardware firewall which limits all access and requires UNL VPN from off campus. <i>Auditor's comment:</i> University VPN policy is located at http://is.unl.edu/vpn	Completed	City Campus IT
IV. Server Backup High					
	1	Move the backups for the HIPAA information from the <u>Barkley Center</u> to Scott Center. Additional storage has been ordered.	An additional RAID has been installed in the Walter Scott for HIPAA backup. Waiting for RMA replacement to begin the backup schedule.	Completed	Barkley Center IT

Functional Area		Recommendation	Action	Due Date	Responsible Person
	2	Establish a retention policy for the tapes at <u>Home Economics</u> to ensure tapes are not retained past University guidelines.	Discuss the need for a plan/policy for retaining backup tapes. Identify backup needs and impact on retention of backups.	April 2013	Home Ec IT
	3	Move backup hard drive for the <u>City Campus Complex</u> server containing social security numbers out of the same server and into a server or device that is offsite or change how backups are performed on this server.	We would not implement this recommendation for security reasons. We feel it would create additional vulnerability on a server containing sensitive information.	-	City Campus IT
	4	Move the mirror backup of the main College Web presence located in <u>City Campus Complex</u> to a production level server to minimize disruption of main College Web presence.	We currently have multiple redundant backups that are done on a scheduled basis. Current backup strategy is adequate. <i>Auditor's comment:</i> IS Security recommends a more hardened environment to support production services and hosts.	-	City Campus IT
	5	Evaluate <u>City Campus Complex</u> backup schedule and methods to ensure backups are performed consistently and within the minimum standards as required for the data classification.	Document backup schedule and methods for all CEHS servers. Identify backup procedures that need to be modified.	April 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
V. Physical Assessment High					
	1	Perform Data Classification for information that is resident on each IT area's servers to determine if the risk of unauthorized access warrants changes in physical security.	a) Investigate and evaluate physical security needs. b) Barkley 137 where servers are housed has been re-keyed.	a) April 2013 b) Completed	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
	2	Determine if the risk of losing information in <u>City Campus Complex</u> computer rooms due to excessive heat and humidity warrant changes to HVAC or relocation of equipment.	a) Investigate and evaluate physical security needs. b) Reduce # of servers located in these two rooms.	a) April 2013 b) Completed	City Campus IT
VI. Change Management High					
	1	Establish a repeating procedure with an audit trail, such as Help Desk ticket system, where written authorization of server access change requests is maintained.	On East Campus we currently use Web Help Desk to manage requests for changes in server accounts. On City Campus the process is managed through requests to Stephen Panarelli who verifies status prior to creating accounts. <i>Auditor's Comment:</i> City Campus changes and who requested/authorized are not documented.	On-going	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
VII. Computer Use Guidelines Medium					
	1	Create and distribute to all employees a policy that addresses all areas of security similar to the Computer Policies Best Practice that is currently under draft from IS.	Computer use policies are provided at the university level.	-	-
	2	Include Computer Use policy as part of all new employee paperwork that must be acknowledged with signature as part of new employee paperwork.	Computer use policies are provided at the university level.	-	-
	3	Evaluate use of mobile storage devices and promote security awareness throughout the college.	Investigate how we might promote awareness and resources for securing mobile devices.	April 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
VIII. Monitoring Medium					
	1	Schedule regular Identity Finder scans of servers and specific workstations to ensure unauthorized confidential information has not been stored on servers or workstations.	Identify machines, create schedule, and implement.	Dec 2012	Barkley Center IT, Home Ec IT, and City Campus IT
	2	Identify specific logs to monitor on a pre-determined basis including responsible person for monitoring.	Review procedures for server admins to identify specific logs or log synopses to spot check on a regular basis to look for suspicious activity. Complete monitoring is not cost effective or practical.	April 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
	3	Determine a regular schedule to check and install server operating system upgrades to ensure server operating systems are up to date.	Review procedures for server admins to make sure servers are regularly checked for available updates, and to install updates as soon as practically possible.	April 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager

Functional Area		Recommendation	Action	Due Date	Responsible Person
	4	Install Symantec console to ensure all workstations and servers are current on anti-virus and anti-virus definitions.	Investigate and evaluate strategies for deploying Symantec anti-virus software.	April 2013	Barkley Center IT, Home Ec IT, and City Campus IT
IX. IT Organizational Structure					
	Medium				
	1	Establish a process to ensure procedures are created and implemented that include monitoring expectations, server security expectations and naming standards, a single user account provision/de-provision procedure, and communication channel.	a) Currently, discussion, development, and dissemination of policies and procedures occur via email and through regular meetings with many of the CEHS Tech Services personnel. b) Investigate appropriate avenues to increase discussions, development, and dissemination with all CEHS IT personnel.	a) Ongoing b) April 2013	ALTC Manager
X. Hardware/Software Inventory					
	Medium				
	1	Create a comprehensive hardware inventory that includes all aspects of the hardware including critical hardware elements, location, data classification for server, and backup information.	a) We currently have a comprehensive hardware inventory. The inventory is contained in the college implementation of Web Help Desk. This inventory contains servers, workstations and laptops. b) As for data classification and backup information for servers, we will investigate expanding the use of an existing database we developed regarding servers.	a) Ongoing b) April 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
	2	Determine risk of data stored on laptops and offer encryption as a means of securing if sensitive data is involved.	Investigate and develop a plan for providing assistance to faculty and staff who wish to evaluate risks and potentially encrypt data on their laptops.	April 2013	Barkley Center IT, Home Ec IT, City Campus IT, and ALTC Manager
	3	Coordinate with e-Shop to manage software licenses purchased and installed.	Work with CEHS IT, CEHS Business Team and e-SHOP personnel to identify best practices in managing software licenses.	April 2013	ALTC Manager, CEHS Business Office
	4	Perform scans of workstations for non-University software to ensure compliance with software licensing.	This is a issue which is best addressed at a university level rather than at the college level. This should not be considered or implemented without substantial input and buy-in from faculty. <i>Auditor's Comment:</i> As of July 30, 2012 UNL recommends the use of the KACE tool for software management.	-	-

CEHS - Appendix A

SERVER NETWORK SECURITY

Risk - Urgent

Conclusion:

City Campus Complex network security is an immediate security risk to CEHS due to the vulnerability of social security numbers. Immediate notification to Information Systems did occur and a resolution is in progress. Current network security for other IT areas provides a level of security appropriate for the identified data stored.

Observations:

- Barkley Center has implemented an additional firewall and server firewall which should be sufficient to protect their HIPAA information.
- Home Economics utilize Active Directory and UNL perimeter security should be sufficient if no confidential data resides on servers.
- City Campus Complex has two servers that contained social security numbers with no firewall or any other perimeter protection in place. In addition, these two servers were visible to outside port scans. Both servers also had home access via remote desktop capabilities enabled for the named Administrator account.

Recommendation(s):

1. Complete the implementation of the City Campus Complex firewall.
2. Perform a Data Classification on information stored on Barkley Center, Home Economics, and City Campus Complex servers to determine if additional server network controls need to be implemented.

Management Response:

Immediately resolved: A hardware firewall has been completed.

We intend to implement a plan for performing a data classification on servers.

USER SERVER/APPLICATION ACCOUNTS

Risk - **Urgent**

Conclusion:

CEHS server and user accounts are maintained inconsistently and do not adhere to Executive Memorandum 16 and Information Systems Best Practices creating security risks.

Departmental CEHS servers, not using UNL's LDAP, CEHS has not created departmental de-provisioning procedures. This has resulted in active network and application accounts within all parts of their infrastructure for employees that have transferred out of CEHS or separated from the University.

City Campus Complex IT area utilizes a single shared named ADMIN id for administrative access to all servers.

City Campus Complex IT procedures and controls are insufficient for the creation and modification of user accounts to ensure proper approvals have been obtained.

City Campus Complex conference room computers pose a security risk to the entire college for hacking, virus, and Trojan infiltration due to lack of sign on requirements.

Observations:

- At a college level, CEHS lacks de-provisioning procedures that includes notification to all three CEHS IT areas. All areas have active accounts for separated employees that are in excess of five working days old.
- Barkley Center has implemented automated LDAP controls to de-provision any account with no activity within last six months. Admin and Guest accounts disabled. All account changes require Help Desk ticket. No process for de-provisioning of accounts.
- Home Economics utilizes Active Directory for all access but has no additional controls for unused accounts. Admin and Guest accounts disabled. All account changes require Help Desk ticket. No process for de-provisioning of accounts.
- City Campus Complex utilizes a single named Admin account on servers with a shared password instead of uniquely named administrative accounts for administrators. Conference rooms maintained by City Campus Complex allow computers to boot with no sign on required and full administrative access. Application accounts remain active for separated employees. A single application ID with access to SSN's is shared by student workers with a single unprotected password. University Active Directory accounts are still active for separated employees. LDAP accounts on each server not synchronized. Emeriti staff retained full access to all network folders and applications. User and application account modified over the phone with no evidence of authorization or paper trail. Account access can be modified without supervisor approval.

Recommendation(s):

1. Disable named Server Admin account on all servers within CEHS.
2. Change conference room computers to require a logon id for access and remove administrator capabilities.
3. Establish a procedure that outlines how and when the various IT areas are notified of de-provisioned employees and a control in place to ensure employee access is removed from departmental servers when notified.

4. Establish a profile for Emeriti faculty to ensure access adheres to responsibilities.
5. Establish procedures that require supervisor approval for all account access changes as applicable.
6. Review the use of shared accounts and determine access levels associated with shared accounts are appropriate and determine password change frequency.
7. Investigate ways to make management of server accounts more efficient and consistent.

Management Response:

We consider Emeriti faculty to have the potential for continuing active roles in the College and they retain faculty privileges. The accounts they have access to contain information that they have generated themselves as part of their work. We consider this a low risk particularly in relation to the costs of establishing a separate policy for emeriti faculty.

Because user accounts on servers are primarily for file services we also see this as relatively low risk. Since we provide these services to all faculty and staff as needed we see no reason to limit the service or require supervisor approval. If a situation arises where this is needed we have the capability to limit access to the account. We do have ongoing records of all accounts and persons responsible for those accounts. When we create accounts for students we do verify with a supervisor prior to creating the account.

REMOTE ACCESS (VPN)

Risk - **Urgent**

Conclusion:

CEHS allows for remote desktop access to servers from outside of the University network through means other than the University mandated Virtual Private Network (VPN) authentication. This creates the opportunity of unauthorized access to College servers.

Observations:

- Barkley Center has a rigid firewall in place that does not allow for any outside access except for predetermined University designated IPs including UNL VPN.
- Home Economics servers all utilized Active Directory for all access. This requires VPN authentication before access is granted to the servers.
- City Campus Complex has included a Road Runner IP within its allowed list of IP to the authenticating LDAP server for their Macs bypassing all VPN requirements.

Recommendation(s):

1. Remove the Road Runner IP from the allowed Internet Protocol (IP) addresses within CEHS LDAP authentication server for the System Administrator named account.
2. Utilize University VPN to restrict off-campus access to CEHS servers with sensitive information.

Management Response:

The Road Runner IP that is referred to in the observations is for port 22, which is SFTP. This is on a Web server that does not contain sensitive information. The account still requires a username and password for access to a limited set of files. While this does create opportunities for access it is an important and necessary part of managing servers. Faculty and staff and others outside the University have legitimate reasons to access files from off campus. This is an example of an area where a balance between access and security is required.

SERVER BACKUP

Risk - High

Conclusion:

Server backups are performed throughout the college with each IT area utilizing a different set of backup tools and procedures within each area. Some backup procedures do not meet the minimum standards required to recover data in the event of a disaster. In addition, tape backups are retained longer than guidelines set forth by University Records Retention Schedules.

Observations:

- Barkley Center performs full backups of servers in a consistent and appropriate manner required for HIPAA information, with the exception of having the backup located offsite. Offsite backups are required for the recovery of HIPAA information as defined in the Department of Health and Human Services, 45 CFR Parts 160, 162, and 164, Health Insurance Reform: Security Standards; Final Rule.
- Home Economics performs tape backup of each server in a consistent and appropriate manner for disaster recovery, which includes having the most current backup stored offsite. Backups are retained indefinitely.
- City Campus Complex backup process is a mixture of hard drive backups and the copying of key databases and folders to other servers. The server that contains social security numbers is backed up to a hard drive located within the same physical server. This does not allow for recovery in the event of physical destruction or a hardware failure within the server. The mirror backup for the main college Web server is a collection salvaged pieces of hardware mounted on wood, and this server does not meet the minimum standards for a production server. Data from a single server may be backed up to two or more servers which could create confusion and increase recovery time in the event of hardware failure or physical destruction. Some files that are resident on servers are not part of any backup.

Recommendation(s):

1. Move the backups for the HIPAA information from the Barkley Center to the Scott Center. **Additional storage has been ordered.**
2. Establish a retention policy for the tapes at Home Economics to ensure tapes are not retained past University guidelines.
3. Move backup hard drive for the City Campus Complex server containing social security numbers out of the same server and into a server or device that is offsite or change how backups are performed on this server.
4. Move the mirror backup of the main College Web presence located in City Campus Complex to a production level server to minimize disruption of main College Web presence.
5. Evaluate City Campus Complex backup schedule and methods to ensure backups are performed consistently and within the minimum standards as required for the data classification.

Management Response:

We currently have regularly scheduled redundant backups of college servers. We will update documentation of backup schedule and methods for all CEHS servers in SRI database. As well as identify any backup procedures that need to be modified.

PHYSICAL ASSESSMENT

Risk - High

Conclusion:

CEHS has three physical departmental server locations as well as Walter Scott Engineering Center (WSEC). Servers located in WSEC have adequate HVAC controls. Depending on the level of security required for the data stored on the equipment within the departmental locations, changes are recommended in both physical access and HVAC capabilities to ensure equipment is maintained in an environment that will reduce risk of unauthorized physical access and environment damage.

Observations:

- Barkley Center has HIPAA information stored on their servers. **The computer room has separate HVAC controls to ensure a proper operating environment.** Access to the room is on building sub-master key of which historical records of distribution do not exist.
- Home Economics server room is on the building sub-master key for which historical records of distribution do not exist. **Room appears to have sufficient venting.**
- City Campus Complex servers are located in two adjacent rooms within City Campus Complex as well as WSEC. The two adjacent rooms within City Campus Complex are on building sub-master for which historical records do not exist. Both rooms had ventilation issues of heat and humidity during review that has resulted in prior hardware failures and increases risk of future hardware failures.

Recommendation(s):

1. Perform Data Classification for information that is resident on each IT area's servers to determine if the risk of unauthorized access warrants changes in physical security.
2. Determine if the risk of losing information in City Campus Complex computer rooms due to excessive heat and humidity warrant changes to HVAC or relocation of equipment.

Management Response:

We do intend to re-investigate and further evaluate physical access and HVAC controls in light of data classification and assessment of physical and security risks.

CHANGE MANAGEMENT

Risk - High

Conclusion:

CEHS has the tools necessary to implement a robust access request system that would include proper authorization, historical records, and an audit trail. Two areas of CEHS follow an established procedure in which Help Desk tickets are required for changes, while the third area does not maintain an audit trail of changes or the authorizations of requested changes.

Observations:

- Barkley Center requires a Help Desk ticket to be submitted for any changes of server access.
- Home Economics requires a Help Desk ticket to be submitted for any changes of server access.
- City Campus Complex will perform server access change over the phone for faculty and staff without written authorization.

Recommendation(s):

1. Establish a repeating procedure with an audit trail, such as Help Desk ticket system, where written authorization of server access change requests is maintained.

Management Response:

On East Campus we encourage use of Web Help Desk to manage requests for changes in server accounts. On City Campus the process is managed through requests to Stephen Panarelli who verifies status prior to creating accounts. By the nature of how accounts are stored we do currently have ongoing access to account information.

COMPUTER USE GUIDELINES

Risk - Medium

Conclusion:

CEHS has developed a college level policy for securing sensitive and critical data that does a very good job explaining legal requirements for protecting confidential data. This document does not include other IT related guidelines that are encountered in the everyday operations of CEHS. Possible areas to include are password usage, software installation, and mobile storage devices that can open CEHS to legal liability.

Observations:

- Barkley Center provides HIPAA training to all employees that worked directly with patients and tighter controls on workstations due to HIPAA information. USB ports have been disabled on all open workstations limiting the use of mobile storage devices. Classrooms that utilize shared user ids and passwords have limited capabilities and passwords are changed each semester. Due to network restrictions and informal procedures, personal software installations are minimized.
- Home Economics has informal procedures that have minimized personal software installations.
- City Campus Complex utilizes shared passwords for the named ADMIN id on the servers. This results in student workers with administrative capabilities.

Recommendation(s):

1. Create and distribute to all employees a policy that addresses all areas of security similar to the Computer Policies Best Practice that is currently under draft from IS.
2. Include Computer Use policy as part of all new employee paperwork that must be acknowledged with signature as part of new employee paperwork.
3. Evaluate use of mobile storage devices and promote security awareness throughout the college.

Management Response:

The University now provides computer use and other guidelines. We believe the issues address in this part of the audit should be dealt with at the university level rather than at the college level.

MONITORING

Risk - Medium

Conclusion:

Monitoring of IT servers and workstations within CEHS does occur but is performed inconsistently and not all areas utilize the same tools. Repeated attacks could occur without detection for an extended time period or untimely unpatched applications could subject data to exposure without detection.

Observations:

- Barkley Center regularly monitors firewall intrusion logs and activity logs for anomalies and takes appropriate action. Symantec monitoring occurs on a regular basis.
- Home Economics performs weekly monitoring of server logs for anomalies and reviews logs provided by Information Systems. Symantec monitoring occurs on a regular basis. No monitoring for confidential information (social security numbers) occurs at time of testing.
- City Campus Complex reviews logs provided by Information Systems but does not have evidence of any other type of monitoring that may occur on a regular basis. No monitoring of confidential information occurs at the time of testing.

Recommendation(s):

1. Schedule regular Identity Finder scans of servers and specific workstations to ensure unauthorized confidential information has not been stored on servers or workstations.
2. Identify specific logs to monitor on a pre-determined basis and identify the responsible person for monitoring.
3. Determine a regular schedule to check and install server operating system upgrades to ensure server operating systems are up to date.
4. Install Symantec console to ensure all workstations and servers are current on anti-virus on anti-virus definitions.

Management Response:

While monitoring individual server logs in Barkley and Home Economics might be feasible, monitoring of security logs on 16 college servers is not a practical solution and would not be cost effective. Information Services monitors servers for unusual activity or network traffic that might indicate that a daemon is running or server has been compromised. When there is an indication that there is a problem server logs are reviewed. In addition we will review procedures to identify specific logs or log synopsis to spot check on a regular basis to look for suspicious activity. Complete monitoring is not cost effective or practical.

IT ORGANIZATIONAL STRUCTURE

Risk - Medium

Conclusion:

CEHS IT staff members do not report up to a single authority. CEHS has IT staff with strong skills in specific areas but consistent, shared communication between the IT areas is not evident. Additional meetings which bring all IT areas together and utilize the strengths of each area to standardize IT common policies and procedures within the college, such as user administration, disaster recover, security breach guidelines, and consistent security protocols.

Observations:

- Inconsistent practices have been implemented, such as procedures for user change/add request, server backup procedures, server authentication, and CEHS Help Desk procedures. In addition, two of the three IT areas were not aware of the existence of CEHS's policy for handling sensitive data and University wide communication concerning the implementation of Office 365 email.
- Barkley Center IT staff reports directly to the Director of Special Education and Communication. Communication from the City Campus Complex IT area is sporadic and there are no regularly scheduled meetings. During this review, all questions about data on servers and IT procedures for Barkley Center were deferred to Barkley IT.
- Home Economics utilizes Active Directory for authentication while City Campus Complex and Barkley Center utilize LDAP for the Mac, which results in a different set of operational issues and expertise.
- City Campus Complex has segregated their campus day-to-day IT into functional areas. These areas operate somewhat independent, but all report to an IT Manager. This IT Manager reports directly to the Dean. Discussions of Active Directory accounts between the faculty member and a web developer and did not include the IT Manager or main IT supervisor.

Recommendation(s):

1. Establish a process to ensure procedures are created and consistently implemented to include monitoring expectations, server security expectations and naming standards, a single user account provision/de-provision procedure, and communication channel.

Management Response:

We do have differing needs and differing expertise across units in the College. These are based on historical, cultural, and operational differences. We do think it is valuable to examine ways that we might be more effective as a unit and at the same time maintain the strengths that are provide by the diversity and localization of services.

HARDWARE/SOFTWARE INVENTORY

Risk - Medium

Conclusion:

CEHS maintains an inventory database that contains some information about servers in terms of name, operating system, and application. Servers from all IT areas were missing from the inventory and the inventory does not include information about the hardware, OS level, location of the servers, target backup and security requirements. Laptops are not part of inventory. Complete software inventory does not exist.

Observations:

- All areas acknowledged individual University workstations may have non-University software loaded. Monitoring of installed software loaded on University equipment has not been required in procedures for the IT areas within CEHS. Laptops are used extensively with no understanding of data stored on laptops or drive encryption.
- Barkley Center has a spreadsheet of hardware and any software that has been purchased through IT. Due to HIPAA requirements, procedures exist that help minimize non-university software installations on university equipment. Laptops do not have encrypted hard drives.
- Home Economics maintains a spreadsheet of server hardware and software but not of workstation software. License verification is required before any software is installed by IT to a workstation, but there are no controls to prevent the user from installing outside software. Laptops do not have encrypted hard drives.
- City Campus Complex does not have a complete inventory of servers or software. Controls do not exist to ensure appropriate equipment are placed on the University network or put into production. Laptops do not have encrypted hard drives. Software is installed on workstations without ensuring appropriate licensing limits are followed. Outside software will be installed on workstations without ensuring there is no copyright infringement.

Recommendation(s):

1. Create a comprehensive hardware inventory that includes all aspects of the hardware including critical hardware elements, location, data classification for server, and backup information.
2. Determine risk of data stored on laptops and offer encryption as a means of securing if sensitive data is involved.
3. Coordinate with e-Shop to manage software licenses purchased and installed.
4. Perform scans of workstations for non-University software to ensure compliance with software licensing.

Management Response:

All of our equipment, including workstations, servers and laptops, are tagged with an asset number and entered into our Web Help Desk inventory system. This inventory system includes such things as OS level, location of the servers and so on.

Appendix I

**UNL Information Technology
Cost Reducing Task Force Report**



UNL INFORMATION TECHNOLOGY COST REDUCING TASK FORCE REPORT

UNIVERSITY OF NEBRASKA-LINCOLN
MAY 31, 2011

EXECUTIVE SUMMARY

In the State of the University address Chancellor Perlman indicated the need for all of us to find creative ways to advance the mission of the University with fewer resources, or to offer ideas for generating more revenue. IT is one broad category of spending at UNL that has historically been dispersed throughout the institution. It is also part of an industry that has seen rapid change and restructuring. It seemed reasonable that some in-depth analysis of IT expenses and campus needs might yield potential efficiencies.

UNL spends less on Information Technology than most of its peer institutions, especially in the CIC when adjusted for enrollment, number of faculty, or other appropriate metrics. This is largely due to the productivity of talented IT staff within all areas of UNL, and the campus expectation of providing high value with constrained resources.

However, even with relatively low resource allocations and ever increasing demand for IT services, there are still significant efficiency opportunities for cost reductions. These are possible through sharpened strategic investments, increased campus and peer collaborations, and economies of scale that will result both in increased productivity and savings.

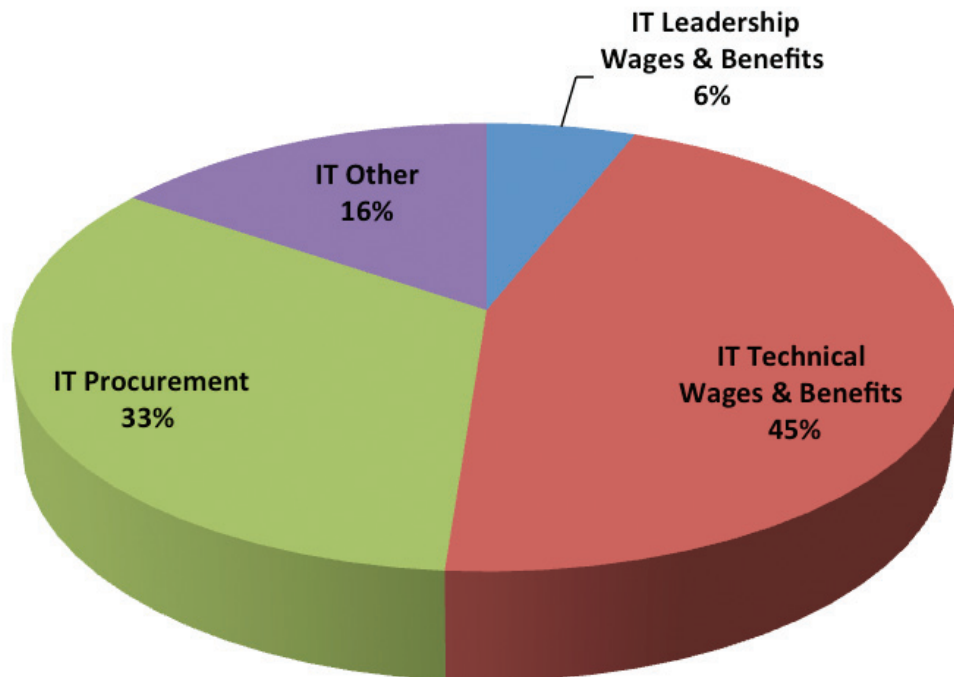
The cost reduction recommendations in this report are based on a broad range of research conducted by this committee including interviews with CIOs at peer institutions as well as survey and interview data from academic and administrative units on UNL's campus. The recommendations herein are focused on saving resources while also providing innovative and reliable IT services for faculty, staff, and students.

INTRODUCTION

The Information Technology Cost Reducing Task Force was formed in the fall of 2010. The University is currently spending approximately 42 million dollars on an annual basis for Information Technology related services (see Fig 1 below). This figure encompasses all sources of funding and includes expenditures for technical staff, management, procurement and maintenance, service contracts, student employees, and related administrative staff including those involved with processing user service fees.

The central goal of the Task Force is to identify reductions resulting in the highest campus benefit with the least campus impact. The specific charge is to identify a series of ongoing IT costs savings initiatives for the fiscal year beginning July 1, 2011, and additional recommendations starting July 1, 2012. The Task Force is also providing reallocation or restructuring recommendations that support increased efficiencies going forward that will improve support for the core mission of the University.

Fig. 1 UNL Estimated IT Spend FY2010



IT Technical Staff Wages & Benefits	\$ 19,000,000
IT Procurement.	\$ 14,000,000
IT Other.	\$ 6,500,000
IT Leadership Wages & Benefits	\$ 2,500,000
Total.	\$ 42,000,000

METHODOLOGY

The Task Force engaged UNL executive leaders, faculty, staff, students, and central and decentralized IT managers. We also spoke with higher education peers and industry experts who have implemented significant cost reductions and efficiencies.

The resulting interviews and discussions provided insights into objectives, concerns, and definitions of success both on a campus-wide and organization specific basis. The lessons learned from peer institutions follow a broad pattern, as research universities have very similar IT opportunities and risks. External interviews were handled via teleconferencing as well as a review of institutional documents. It is worth noting that a number of the CIC institutions and other research universities are conducting similar assessments. Several of these studies are referenced in Appendix B.

Twenty-five UNL IT Managers were asked to complete surveys summarizing their respective IT services, related operating expenses, funding sources, and clients served. As a follow up to the survey, personal interviews were conducted by members of the Task Force as these IT leaders were asked for ideas and feedback related to additional core services that would be helpful, and also asked to outline planned cost reductions in their areas and for recommendations for university-wide savings.

This series of internal and external interviews and surveys helped inform our understanding of higher education IT best practices along with identifying specific challenges and opportunities at UNL. The Task Force held a series of meetings to discuss the current landscape of IT at UNL, and at peer institutions, and to deliberate on prioritization, mission, goals, and key findings throughout the process.

The resulting recommendations reflect cost reductions and efficiencies that will produce near term results while also better positioning UNL to meet increased research, instruction, and outreach activities in the years ahead.

KEY POINTS FROM UNL INTERVIEWS

1. Trust is a Major Issue

The question of whether services, systems, and infrastructure can really be improved while costs are being reduced came up in several areas. The assumption that this can in fact be accomplished requires an acceptance that the current IT model and implementation is not efficient. Significant transformation will require much greater cooperation based on a shared vision than has been demonstrated in the past.

There must be trust that the IS organization or other central organizations will provide quality services, and that they will listen to what the faculty and staff need in the colleges and departments.

2. “Good Enough” Commodity Services can Produce Savings for Strategic Needs

Cost savings will result in reduced services in some cases, but “good enough” support based on service level agreements is a reasonable goal. If the University is providing outstanding services for non-strategic issues we are likely overspending in those areas. The point is to reallocate those funds to be used more effectively for the core mission.

There is excess computing capacity in some areas where multiple IT organizations are investing in similar services and infrastructures without coordination. Identifying and addressing these inefficiencies will help demonstrate the value of a more standardized approach.

The Information Services department and other IT providers at UNL should focus first on the services they provide, rather than the underlying technology.

UNL does not necessarily need to be the provider of commodity IT services. There are cost effective Cloud services and other sourcing options for email, Web site hosting, and additional commodity services.

3. Focus on Strategic Needs and Leverage Collaboration

IT transformation and efficiencies should focus on where we want to be as an institution in the next three to five years, and not based on where we are now.

Implementing distributed computing can provide more effective value than simply moving within the centralization/decentralization continuum. A key advantage of distributed computing is that service resources are located in close proximity to the clients, and the model supports both greater standardization while also enabling staff in the distributed locations to gain local process knowledge.

We need to invest further in collaboration technologies and related training for our faculty. This will also strengthen our ability to develop partnerships on joint research projects across institutions including the CIC.

4. Communication is Essential in Working with the Campus

We need to outline any issues related to IT cost efficiencies in non-technical terms. And we need to communicate them constantly. And there needs to be a well understood plan.

It’s important that we collectively “make it easy for people to do the right thing”. If there are unnecessary barriers or complexities it will make transformative change even more difficult to achieve.

Reducing IT costs and improving efficiencies will be most successful if the process begins with the “low hanging fruit”. And it’s important to visibly and collaboratively celebrate successes. Don’t be humble.

5. Cost Savings Often Require Transition Investments

It often costs more in the beginning to implement new technologies and services. This implementation or migration expense needs to be accounted for in the planning process, as well as ensuring that there adequate funds to maintain or enhance new services going forward.

6. The Capability to Recognize and Respond to Change is Essential

Strategic Planning for IT needs to be highly flexible and measured in months, rather than years.

We need to leverage mobile IT resources that students bring to campus in order to make better use of university resources to ensure that learning, research, and the student experience are maximized.

KEY POINTS FROM EXTERNAL INTERVIEWS

1. IT Consolidation is a Pervasive and Effective Cost Reduction Strategy

IT consolidation to reduce costs and increase efficiencies is happening everywhere...within universities, K-12, and state and local governments according to external experts. It has already been done with proven results in corporations over the past decade.

2. Leveraging Sourcing Options is Essential

Software as a Service (hosted off site programs that are in use by many institutions) should be considered as the default solution rather than creating local University application programs in most cases.

Cloud computing is a sourcing option, rather than a strategy, according to IT thought leaders that we spoke with. It is not necessarily the best option, but one that is now viable in many cases. Both Cloud Computing, and Software as a Service, solutions offer the potential for significant cost savings.

Improved IT procurement is recommended as a top priority in practically every study of IT cost efficiencies. To implement best practices in strategic sourcing requires investing in dedicated staff. Peer universities have indicated that it will not happen with people taking this responsibility on in addition to their other job duties.

3. Communicating and Collaborating Effectively on Campus and with Peers is Essential

Peers and industry experts state there is value in communicating what you are doing to support colleges and departments with IT including the amount of resources that have been invested even if you do not charge for cost recovery (“showback” as opposed to “chargeback”).

It is by definition expensive to invent IT solutions for problems that have already been solved. We are all in the same industry of higher education. It is possible to collaboratively develop solutions across campuses and significantly reduce costs as a result. The community source work of the past decade is an example of IT cost efficiency on a large scale.

One of the key lessons learned from other universities is that “coalitions of the willing” within higher education are essential in implementing cultural and process change, including in the IT space.

4. Implementing IT Cost Efficiencies Continues to be Challenging

Cost reductions are never popular, and this includes IT related initiatives. Over communicating is a key success factor from the institutions we spoke with. Explaining the why and how of what you’re doing needs to be done repeatedly.

As one CIO stated, “it’s important that IT cost savings analyses not be structured as primarily an exercise to determine where to cut positions.” There are many additional cost savings areas to examine, and fear of layoffs can undermine the ability to make transformative changes.

Some pitfalls outlined in the interviews: too much focus on organizational change (that creates resistance that slows down transformation); lack of transparent governance; and institutional inability to take decisive action.

RECOMMENDATIONS FOR COST REDUCTIONS

Index	Recommended Actions	Major Objectives	Page
REDUCE CORE IT SERVICES COSTS			
A	Implement new core computing model for enterprise-wide services including desktop and mobile support, help center, physical and virtual systems administration, security, Web site hosting, data storage and backup services.	Decrease support costs for participating colleges and departments. Recent investments in updated technology and related best practices will scale up services and reduce resources required.	9
B	Consolidate and reduce UNL IT Leadership Costs.	Develop partnerships with departments with strong internal IT units. Create joint appointments between the unit and IS with leaders that are knowledgeable of both units and are able to bridge cultures, promote collaborations between the units, and thus contribute to the efficiency and effectiveness of both units.	9
C	Transform IT support practices in both general and college managed lab, classroom, and other instructional facilities.	Reduce ongoing operations costs through increased use of virtual technologies. Reduce procurement and vendor maintenance expenditures.	10
D	Leverage collaborative software applications from within the NU system, CIC, and elsewhere in higher education.	Reduce amount spent on creating unique UNL solutions for common university needs.	10
E	Migrate faculty and staff email, calendaring, and messaging software to the Cloud.	Improve functionality, reduce annual operating expenses.	11
F	Strengthen Content Management System (CMS) services as the default for creating and maintaining UNL related Web sites.	Implement standards and provide training so that subject matter experts can create and update content with reduced technical support.	11
REDUCE VENDOR PROCUREMENT AND MAINTENANCE CONTRACT COSTS			
G	Implement IT strategic sourcing and other procurement best practices.	Reduce procurement and vendor maintenance expenditures and software licensing expenses.	12
H	Implement university IT enterprise architecture and development standards.	Reduce application and database development costs. Also reduce maintenance and staff training costs.	12
I	Implement print management program.	Consolidate to more efficient networked printers to reduce printing costs.	12
TRANSFORM IT FUNDING STRATEGY			
J	Shift to hybrid model for funding 'common good' IT services.	Reduce resources dedicated to processing chargebacks. Eliminate efficiency disincentives such as current wireless charges to faculty and staff.	13
REDUCE IT RELATED ENERGY COSTS			
K	Further consolidate data centers on-premise and by using Cloud services.	Reduce energy and operational expenses. Make space available for reuse.	13

PRINCIPLES

The task force has outlined the following guiding principles in reviewing IT investment and operations:

The highest priorities identified for the University continue to be undergraduate education and research. It is essential that IT infrastructure services be aligned with those priorities, and that they serve to provide highly effective and efficient support for these areas and also enable innovation opportunities.

IT infrastructure and services should enhance the classroom and learning environments, and include technologies that promote student and faculty collaboration, community, and inquiry.

Support for the student experience is essential. This requires ongoing assessment and implementation of changes to meet student needs related to collaborative learning spaces, connectivity, and systems.

There is continued need for distributed IT resources throughout the University. This organizational model is most effective in supporting the strategic and specific missions of the respective colleges and other units.

There is significant value in the higher education movement to drive down the cost of core enterprise systems and services in order to make more resources available for instruction, research, and outreach.

IT COST REDUCING TASK FORCE

Membership consisted of faculty, staff and student representation from academic and administrative units to provide a campus-wide perspective:

DeeAnn Allison	<i>Professor & Director, University Libraries</i>
Mark Askren	<i>IT Task Force Co-chair, Chief Information Officer</i>
David DeFruiter	<i>Director, College of Business Administration</i>
Elbert Dickey	<i>IT Task Force Co-chair, Dean, Cooperative Extension Division</i>
Gary Kebbel	<i>IT Task Force Co-chair, Dean, College of Journalism & Mass Communications</i>
Meg Lauerman	<i>Director, Office of University Communications</i>
Deborah Minter	<i>Associate Professor, Department of English</i>
Brian Moore	<i>Associate Professor, School of Music</i>
Craig Munier	<i>Director, Scholarship & Financial Aid</i>
Reanna Nichol森	<i>Student Representative</i>
Kim Phelps	<i>Associate Vice Chancellor Business & Finance</i>
David Swanson	<i>Research Associate Professor, Computer Science & Engineering</i>
Will Thomas	<i>Chairperson, Department of History</i>

APPENDIX A - COST REDUCTION DESCRIPTIONS

RECOMMENDATION A

Implement new core computing model for enterprise-wide services including desktop and mobile support, help center, physical and virtual systems administration, security, Web site hosting, data storage and backup services.

Major Objectives:

Decrease support costs for participating colleges and departments. Recent investments in updated technology and related best practices will scale for increased services and reduce resources required.

Changes Required:

Staff reallocation and staff reductions over time in the core support areas. The intent is not to reduce the number of distributed IT organizations, but to instead focus those units on adding strategic value to their respective colleges and other units. This transformation will be largely accomplished by identifying core commodity IT services and providing a more cost efficient consolidated model. Retaining local expert resources can still result in significant cost reductions when combined with the recognition for the value in collaborating and centralizing on enterprise services that scale. Cloud and other third party services can also be used to reduce commodity IT costs.

Impact:

Moving to this model will result in a more consistent set of IT core services across UNL. In some cases it will result in a reduction of services, as the standard will most often be based on what is collaboratively negotiated as “good enough”. The strategy is to not overspend on basic services, and to instead reallocate funds to more strategic needs within colleges and departments.

Timeframe:

New or restructured core IT services will be available by July 1, 2011.

RECOMMENDATION B

Consolidate and reduce UNL IT Leadership Costs.

Major Objectives:

Develop partnerships with departments with strong internal IT units. Create joint appointments between the unit and IS with leaders that are knowledgeable of both units and are able to bridge cultures, promote collaborations between the units, and thus contribute to the efficiency and effectiveness of both units.

Changes Required:

Convert two open IS Director positions to joint appointments with colleges or departments, assess additional distributed leadership opportunities with Deans, Directors and campus IT leaders. Salary adjustments will be needed in some cases due to increased UNL-wide responsibilities.

Impact:

The workload will increase for those IT leaders who have taken on more responsibility through joint appointments or other changes. There will also likely be increased career path opportunities for those individuals.

Timeframe:

The first round of consolidation involving the IS Director positions will be completed by July 1 of this year.

RECOMMENDATION C

Transform IT support practices in both general and college managed lab, classroom, and other instructional facilities.

Major Objectives:

Reduce ongoing operations costs through increased use of virtual technologies. Reduce procurement and vendor maintenance expenditures.

Changes Required:

Additional infrastructure investment will be needed to continue to transform these learning spaces to expanding our virtual and other large scale enterprise management tools. This recommendation also assumes that the trend of decreased demand for general computing lab capacity will continue.

Impact:

Decrease in general lab stations and support staff in the labs over time. More focus on creating collaborative learning spaces and wireless and cellular connectivity.

Timeframe:

Assess and standardize on successful practices from areas at UNL and our peer institutions this summer. Also collaborate with distributed college IT staff to implement technology and best practices over the next 12 months.

RECOMMENDATION D

Leverage collaborative software applications from within the NU system, CIC, and elsewhere within higher education.

Major Objectives:

Reduce amount spent on creating unique UNL solutions for common university needs.

Changes Required:

This is a largely a cultural issue. The strategy change is to focus local development on strategic differentiators related to research, instruction, and outreach. Open source, or higher education community solutions generally provide more cost effective solutions for the majority of core IT needs.

Impact:

Additional IT leadership and technical staff time will be needed to identify and assess collaborative solutions. This time investment will be more than offset by the reducing the time that is currently spent creating unique solutions at UNL for problems that have been solved effectively by other peer institutions.

Timeframe:

Implement a best practices standard by July 2011 for sponsoring offices and IT leaders to review similar software applications in use within our system, the CIC, or other peer higher ed institutions before creating a local application. This applies most specifically to areas that are not strategic or unique as related to the UNL research, instruction, and outreach mission and related practices.

RECOMMENDATION E

Migrate faculty and staff email, calendaring, and messaging software to the Cloud.

Major Objectives:

Improve functionality, reduce annual operating expenses.

Changes Required:

This recommendation is based on UNL's participation in the system-wide effort to identify and implement a replacement for Lotus Notes.

Impact:

There will be some time needed by faculty and staff to learn the new system. Local Help Center and other IT staff will also spend time learning the new programs and support process.

Timeframe:

A decision on this RFP is expected to be announced this month. IS staff time will likely be required to start planning migration off of Lotus Notes with extensive work needed throughout FY 2012.

RECOMMENDATION F

Strengthen Content Management System (CMS) services as the default for creating and maintaining UNL related Web sites.

Major Objectives:

Implement standards and provide training so that subject matter experts can create and update content with reduced technical support.

Changes Required:

Increase the priority on current joint effort that includes IS, University Communications, and other campus partners to implement the new CMS environment and provide training and support.

Impact:

The implementation of the CMS will require training of the subject matter experts on campus, and their involvement in using an online program for creating and updating the standard text of the documents for their areas. This is a significant cultural change, and provides real time direct access to non-technical subject matter experts for Web document creation.

Timeframe:

Convert initial sites to new CMS and related practices by September 2011. Implement additional migration phases through the academic year, and establish the CMS as the standard tool for the majority of Web sites at UNL by July 2012.

RECOMMENDATION G

Implement IT strategic sourcing and other procurement best practices.

Major Objectives:

Reduce procurement and vendor maintenance expenditures and software licensing expenses.

Changes Required:

Strategic sourcing and procurement is universally recognized as one of the major components of IT best practices and successful cost savings efforts. This initiative will be based on a partnership with the UNL CIO working with Nebraska system-wide colleagues, and also in leading new initiatives with CIC CIO peers to significantly increase the number of IT related joint purchasing agreements. The increased focus on strategic sourcing will require an additional full-time IT procurement expert.

Impact:

Implementing a best practices strategic sourcing operation will require a culture change, specifically in focusing the majority of hardware and software purchases through a set of negotiated configurations and standards. Exceptions will be granted for specialized needs, especially in the areas of research and faculty instructional requirements.

Timeframe:

The search for additional strategic sourcing expertise and restructuring of UNL IT procurement practices will need to start as soon as possible. A first round of renegotiated contracts and IT commodity procurement practices should be in place by January 2012.

RECOMMENDATION H

Implement university IT enterprise architecture and development standards.

Major Objectives:

Establish best practices approach to setting standards for core sets of technologies to reduce procurement costs and improve efficiency. This initiative will also reduce maintenance and staff training costs.

Changes Required:

Establishing a set of enterprise architecture and related development standards for UNL will require strong collaboration by the UNL IT leaders as part of a cultural change to a best practices model.

Impact:

The positive result of working together in this area is a deeper investment in a common set of advanced technology tools. This requires the 25 plus IT leaders on campus to collaborate with the CIO on a common set of technology standards for most needs, which means less independence in selecting individual standards or practices.

Timeframe:

An enterprise architecture planning group would be formed this summer as a subset of the UNL IT Leadership group. The goal is for the first comprehensive set of standards and planning documents to be published by January 1, 2012.

RECOMMENDATION I

Implement print management program.

Major Objectives:

Consolidate to more efficient networked printers to reduce printing costs.

Changes Required:

The number of individual desktop printers would be reduced through increased use and deployment of network based printers.

Impact:

Many individuals on campus that currently have personal printers would need to transition to using locally shared departmental copiers/printers. The cost per page is typically cut by at least 50% by using the higher volume printers.

Timeframe:

This initiative would be done in partnership with the copier program managed by Business & Finance. That organization is currently doing a study to further identify and reduce current print costs. The results of this initial effort and similar efforts by peer organizations would be used in the planning for a broader implementation.

RECOMMENDATION J

Shift to hybrid model for funding 'common good' IT services.

Major Objectives:

Reduce resources dedicated to processing chargebacks. Eliminate efficiency disincentives such as current wireless charges to faculty and staff.

Having an efficient IT funding model is particularly important when resources are significantly constrained or even reduced. Fee based technology services provide value if they add greater efficiency in resource allocation by influencing consumption behaviors in a positive and efficient way. But the costs of administering user fees is non-trivial, and can provide barriers to innovation, or add expenses without value, when used for faculty or staff related services that are a standard cost of doing business. Many of our CIC peer institutions have realized significant efficiencies from moving toward a hybrid model of funding basic core services while continuing to charge user fees for additional features, or higher than base level services.

Changes Required:

The current culture of charging users for basic IT services would change to a larger portion being funded off the top. This will require a collaborative partnership between the Vice Chancellors, CIO, Deans, Directors, and Business & Finance managers to periodically review the funding model and quality and cost effectiveness of related services.

Impact:

There will be a positive impact for faculty and staff in areas in terms of technology adoption when 'common good' services such as network access are shifted off of the current chargeback model. This effort will also more closely align service funding with actual costs. As an example the network will directly require higher funding and the costs of providing land-line phone service for the campus will be adjusted downward as it would no longer be used to offset the network costs.

Timeframe:

This type of change to the network funding model is currently being discussed. Telecom related charges and additional IS services will be reviewed and possibly restructured over the next 12 months.

RECOMMENDATION K

Further consolidate data centers on-premise and by using Cloud services.

Major Objectives:

Reduce energy and operational expenses. Make space available for reuse.

Changes Required:

Analysis and continued consolidation of the majority of the twenty plus remaining decentralized data centers.

Impact:

Physical servers would be primarily located in Scott Engineering Center. The majority of systems administration and other maintenance activities can be handled remotely, or by IS staff on site. There will be some extra time required in terms of occasional travel to the consolidated data center for decentralized IT staff.

Timeframe:

Additional on-premise data center migrations would begin this summer and continue over the next 12-18 months. There is one significant Cloud services contract in place within the IS department, and it will be assessed in the fall of 2010 as a precursor to possibly moving additional data center services off-site.

APPENDIX B - INTERVIEWS AND RESOURCES

UNL Campus Leadership Interviews:

Harvey Perlman	<i>Chancellor</i>
Juan Franco	<i>Vice Chancellor Student Affairs</i>
Perm Paul	<i>Vice Chancellor for Research and Economic Development</i>
Christine Jackson	<i>Vice Chancellor Business & Finance</i>
Ellen Weissinger	<i>Senior Vice Chancellor for Academic Affairs</i>
Ronnie Green	<i>NU Vice President and IANR Harlan Vice Chancellor</i>
David Brooks	<i>Chair of Faculty Senate Computational Services and Facilities Committee</i>
Council of Deans	
Faculty Senate Executive Committee	
Faculty Senate Computational Services and Facilities Committee	
ASUN Academic Fees Committee	
College of Arts and Sciences Deans, Chairs, and Directors Meeting	
Hixson-Lied College of Fine and Performing Arts Deans Meeting	

UNL IT Leaders Participating in Task Force Survey:

Gary Aerts	<i>Information Services</i>
DeeAnn Allison	<i>University Libraries</i>
David Bagby	<i>Hixson-Lied College of Fine and Performing Arts</i>
Keith Bartels	<i>Extended Education & Outreach</i>
Bob Crisler	<i>University Communications</i>
David DeFruiter	<i>College of Business Administration</i>
Dan Floyd	<i>Athletics</i>
Gregg Frey	<i>College of Arts & Sciences</i>
Luther Hinrichs	<i>College of Journalism & Mass Communications</i>
Mark Hoistad	<i>College of Architecture</i>
Pam Holley-Wilcox	<i>Information Services</i>
Richard Leiter	<i>College of Law</i>
Paul Menter	<i>Housing</i>
James Nau	<i>College of Engineering</i>
Kathy Notter	<i>Shared Services</i>
Deanna Reynolds	<i>Admissions (Undergraduate)</i>
Ron Roeber	<i>Information Services</i>
Michael Rurhdanz	<i>Information Services</i>
Tim Savage	<i>Office of Research</i>
Al Steckelberg	<i>College of Education and Human Sciences</i>
David Swanson	<i>Holland Computing Center</i>
Roger Terry	<i>EdMedia</i>
Jim Yankech	<i>University Health Center</i>
Owen Yardley	<i>University Police</i>

University of Nebraska IT Cost Efficiency Group:

Mark Askren	<i>CIO, UNL</i>
Loren Blinde	<i>Director, Computing Services Network</i>
Bill Conley	<i>Vice Chancellor Business and Finance, UNO</i>
John Fiene	<i>CIO and Associate Vice Chancellor, UNO</i>
Yvette Holly	<i>CIO and Assistant Vice Chancellor, UNMC</i>
Deb Schroeder	<i>CIO and Assistant Vice Chancellor, UNK</i>
Walter Weir	<i>CIO, Computing Services Network and University of Nebraska System</i>

External Interviews Conducted:

Stephen Benedict	<i>IT Procurement Director, UC Office of the President</i>
Steve High	<i>Executive Partner, Gartner Education</i>
Sally Jackson	<i>CIO and Associate Provost, Illinois</i>
Mark Cianca	<i>IT Director, UC Santa Cruz</i>
Gerry McCartney	<i>Vice President for Information Technology, Purdue</i>

Peer Institution IT Efficiency Studies and Vision Documents:

Cornell University - www.cornell.edu/reimagining/docs/20100512_info_tech_vision.pdf
Purdue University - www.purdue.edu/sustaining/initiatives/infotech/finalCITPreport.pdf
University of California Santa Cruz - <http://its.ucsc.edu/transformation/>
University of Illinois - <http://www.uillinois.edu/arr/documents/ARR-IT-Final-06-14-2010.pdf>
University of Michigan- <http://nextgen.umich.edu/rationalization/its-recommendations.php>



It is the policy of the University of Nebraska-Lincoln not to discriminate based upon age, race, ethnicity, color, national origin, gender, sex, pregnancy, disability, sexual orientation, genetic information, veteran's status, marital status, religion or political affiliation. ©2011, The Board of Regents of the University of Nebraska. All rights reserved.

Appendix J

**Review of IT Services in Comparable Colleges
within Big 10 Schools**

Review of Big Ten Programs

Typical areas where technology services are provided.

Spring 2011

In the spring of 2011, a graduate student developed this review of technology services provided by comparable colleges (education and/or human sciences) in the Big 10.

Illinois

<http://education.illinois.edu/cio/>

Goals:

- 1) Provide faculty, staff and students with easy, reliable, well-supported access to core technology services.
- 2) Pedagogical and technical support for classroom integration of technology
- 3) Build and/or host solutions intended to support or to enhance academic or administrative endeavors
- 4) Facilitate opportunities for outreach and professional development for staff, students, and K-12 educators to help bridge the gap between theory and practice.
- 5) Promote and support the use of new media and digital technologies in teaching and learning.
- 6) Explore current educational and informational technology trends and advise on effective and appropriate technologies.

Illinois – three unites 1) communications, 2) learning technologies, 3) Information technologies

Some listed services include:

Support for Teaching and Learning

Mobile learning initiative
Computer labs and classrooms
Equipment checkout
Online course management
Technology Integration
Digital media

Support for Working

Tech support
Email and calendaring
Accounts and passwords
Accessing files and network
Web services
Data management
Consulting and project management
Communications group

Indiana

<http://education.indiana.edu/strongETSstrong/tabid/12719/Default.aspx>

- 1) Purchases and maintains technology
- 2) Provides access and security for data network
- 3) Develops custom applications
- 4) Standardizes best business practices
- 5) Delivers marketing communications via the web.

Indiana – three groups: 1) information systems, 2) systems administration, 3) web services.

Iowa

<http://www.education.uiowa.edu/services/edtech/default.aspx>

- 1) Equipment checkout
- 2) Room resources for scheduling
- 3) Technical assistance for faculty and staff
- 4) ePortfolio support for students.

Michigan

http://www.soe.umich.edu/departments_services/offices/technology_services/

- 1) Ensure information technology, audio-visual, and network equipment, installed and desktop, are in optimal condition, are secure, and meet the needs of the faculty, staff, and students in the school.
- 2) The office provides network/security; hardware; software; instructional support; audio-visual resources; web, video, & audio conferencing; and web presence support for the SoE.
- 3) Design, writing, editing and photography requests (The Office of Development, Communications, and Alumni Relations offers graphic design, writing, editing, and photography services to School of Education faculty and staff).
- 4) Computing and network help requests
- 5) A-V requests
- 6) Website requests
- 7) Meeting & classroom reservation requests

Michigan State

<http://ctt.educ.msu.edu/>

- 1) The Center provides support for faculty, staff and students in their effort to use technology to enhance their teaching and learning, and conducts research about the use of technology in education.
- 2) CTT offers technology programs and workshops, consulting, equipment and software, classroom support, Echo360 Classroom Capture, and people. CTT maintains a Wiki page for MSU technology resources: <http://ctt.wiki.educ.msu.edu/>
- 3) Help using technology software or equipment and learning software in the 133 Demonstration Lab. Assistance with technology problems while teaching in any of the technology classrooms on the first floor of Erickson Hall.
- 4) Individualized work with faculty for technology integration, online course content development digital video and audio technology integration into online courses.
- 5) Technology software support (screen capture, video editing, recording and editing, web conferencing, media file storage management, equipment checkout.)

Minnesota

<http://www.cehd.umn.edu/academics/technology/default.html>

- 1) Academic Technology Services (ATS) is dedicated to facilitating and increasing the use of technology for academic and instructional purposes in the College of Education and Human Development (CEHD) at the University of Minnesota.
- 2) Academic Technology Services (ATS) works with CEHD faculty to design high quality "media rich" learning resources to diversify teaching practices, enhance student experiences, and improve learning outcomes.
- 3) online course development, video production, instructional design consulting, and new media development
- 4) Instructor Support Services: project brainstorming, instructional design consulting, online course, module and tutorial development, video production, new media and web development, project management services.
- 5) Provides online tools and tutorials
- 6) Equipment checkout
- 7) Technical support for students

Northwestern

- 1) Northwestern's School of Education and Social Policy (SESP) offers IT Resources including helpdesks, knowledge trees, course management, room reservations, IT support, documentation/wikis, and iOS device configuration services.

Ohio State

<http://ehe.osu.edu/otel/>

- 1) The Office of Technology and Enhanced Learning (OTEL) is responsible for developing, maintaining, and supporting a wide array of technology services for faculty, staff, and students of OSU's College of Education and Human Ecology (CEHE). OTELL has three service teams: Educational Technology, Service Delivery, and Web Services. OTEL offers a variety of services including website development, educational technology, network infrastructure maintenance, and desktop support. Their mission is to deliver robust information technology services that support and advance the mission and goals of the college. (<http://ehe.osu.edu/otel/>)
- 2) Services: web services, video conference support, educational technology, technology support services, network infrastructure and security services.
- 3) OTEL also offers fee-based web and networking services for project needs that extend beyond the scope of the general services.
- 4) Provide funded services for web application development, web site development, database design and management, advanced survey development.
- 5) EHE Educational Technology Services offers a wide variety of online and classroom based eLearning support services. Basic support services are available to all EHE faculty and staff. Some of the current basic support services include access to tools, online tutorials, implementation consultation, and workshops.
- 6) Networking offers: EHE email/calendaring collaboration service; Information / data file storage services; Network printing; Firewalls/LAN; Computer & network security; Security education & outreach; Data backups; Centralized management including ePO, WSUS, MCM, and Group Policy.
- 7) Web Services offers: Maintain the Education and Human Ecology website; post updates to the EHE website sent via established web contacts; maintain People.EHE faculty & group

- websites and provide training for users; facilitate EHE Communications (EHE News, Dean's Message, etc.); maintain Survey System & provide basic user support.
- 8) Technology support includes: Service desk (phone, e-mail, www) incident reporting & tracking; technical support for Windows XP & Mac OS X operating systems; EHE printers; PDA/Smartphones, Microsoft Activesync; desktop software Microsoft Office suite (Word, Excel, PPT, Outlook); provide anti-Malware, anti-spamware, VPN client, and eReports/Hyperion client installs.

Penn State

<http://www.ed.psu.edu/educ/for-current-faculty-and-staff/outreach-office/technology/etc>

- 1) Penn State's College of Education manages IT through the Education Technology Center (ETC). The ETC exists for the purpose of ensuring that information technology (IT) goals and strategic plans complement those of the College of Education, University, fostering collaborations, and facilitating the delivery of services that meet the academic and administrative needs of the College and University.
- 2) ETC provides several services for the College of Education including network support, computer support, application support, graphic design, multimedia development, web design and development, information sessions, printer recommendations, installation, configuration, and troubleshooting, security and virus protection, and training (<http://www.ed.psu.edu/educ/etc/what-we-do>).
- 3) Listed services include network support, computer support, application support, graphic design, multimedia development, web design and development, information sessions, printers, security and virus protection, and training.

Purdue

<http://social.education.purdue.edu/edit/it/about/>

The College of Education has an Education Information Technology (EdIT) department, which provides the College of Education faculty, staff, and students with a variety of IT services.

<http://social.education.purdue.edu/edit/it/about/>

From the ETC Web site:

Overview: Our functions are diverse. We are technical and creative consultants, facilitators, implementers, troubleshooters, presenters, one-on-one trainers, server administrators, and data stewards. We support more than 500 computers, numerous servers, instructional computing facilities, distance education technologies, web sites, administrative databases, e-Portfolio technologies, and all users in the College of Education @ Purdue University. We work closely with faculty and staff members as creative consultants to provide ideas and information about new technology opportunities in education. We continually acquire and evaluate new computers, software, and handheld and videoconferencing devices that can be integrated into teaching and learning environments.

Education IT provides webmaster and technical support for the College of Education web presence, working with departments, programs and offices to ensure that they and their audience have a successful web experience. We also maintain the COE faculty and staff web listings, photographs, and streaming video profiles.

Our E-Portfolio Coordinator provides assistance to the entire Purdue Teacher Education Program, including: account maintenance, training, assignment and rubric maintenance, reporting, and program convener support.

Our team provides hardware support for all College of Education computers including: specifications for new equipment, repair of defective equipment, and upgrading of existing equipment.

Education IT develops and maintains administrative databases for the College of Education Academic Services area. An example of our work is the online Student Teacher Application, which students submit via the web. We maintain databases and web interfaces for the Office of Field Experiences, the Office of Professional Preparation and Licensure, Graduate Studies Office, Technology Resources Center, as well as our own Education IT online help desk and support systems.

We provide full support for several College of Education learning and research labs including a Windows, the Educational Technology Research lab, the Science Education lab, the Technology Resources Center, and more.

Education IT also maintains College of Education videoconferencing facilities and equipment on 3rd floor of the Beering Hall of Liberal Arts and Education. We support numerous flavors of videoconferencing throughout the College, including desktop and group H.323 video conferencing and collaboration. We encourage and support many research initiatives in distance education contexts.

We serve as liaisons with the Purdue IT infrastructure, as well as other IT offices, departments, and teams on and off campus.

Webmaster and technical support for college web presences

In addition, the College of Education and EdIT manages the Technology Resources Center (TRC), which is a multifaceted initiative of the College of Education. It encompasses several functions where faculty, students, and staff can explore, discover, and use technology in teaching and learning. The TRC is :

- A physical space, located in room 3287 of the Beering hall of Liberal Arts and Education, where a variety of information resources and teaching/learning technologies are housed;
- A place for Purdue Teacher Education Students to study, review educational books and materials, create electronic portfolio artifacts, and engage in computer-based learning activities.
- A faculty, student, and staff support and training operation that helps individuals to learn about and effectively utilize educational technology; A cutting edge demonstration center that showcases the latest applications of technology in teaching, learning, and information retrieval.

Wisconsin

<http://merit.education.wisc.edu/Home.aspx>

1) **Computing:** MERIT provides consulting and support to School of Education faculty, staff and students on a wide range of computing issues including:

- network connectivity
- security
- accounts
- network storage
- computer specifications, setup and maintenance
- printer and peripherals specifications and setup
- software licensing, installation and maintenance

2) **Equipment:** Circulating and non-circulating equipment is available for use or check out from the MERIT Library Circulation Desk.

3) **Instructional Support:** MERIT instructional services are designed to support the attainment of course goals through technology integration. MERIT staff provide faculty consulting and instruction for the adoption of new tools across program areas in the SoE. Special areas of focus include:

- instruction in digital media tools
- help evaluating, learning and adopting e-learning tools including Learn@UW and Moodle
- library course pages (e-reserves and links to library resources)
- help in design of new courses; help framing and posting content online
- help with strategies to approach new and innovative uses of technology
- development of course enhancements including animations, graphics and video*

*Media production services are available at no cost for SoE users. Campus users, see current MERIT rates.

4) **Library:** The MERIT Library provides services and resources to the faculty, staff and students of the School of Education, UW-Madison as well as to the Wisconsin education community and beyond.

5) **Media Development:** Our award winning producers will help you move from design to a distributed product. Our developers excel in the design and development of instructional materials and learning activities to meet learning needs.

Media Development usually starts with a discovery meeting to learn about your project goals. If requested, we can provide you with a written estimate for a grant proposal or funding request. Projects are placed on our production calendar and, if warranted, project teams are assigned and away we go.

6) **Spaces and Places:** MERIT offers classrooms, teaching and open labs, study spaces, and meeting rooms. Faculty and staff are encouraged to consult with MERIT staff, tour technology-enhanced spaces, and share special requests for staff support, equipment and software. SoE technology-enhanced spaces accommodate students with special needs.

7) **Web:** The MERIT Web Applications and Development team provide a wide range of services to assist SoE affiliates and external clients with their Web presence needs. Coders, system administrators, a graphic artist and a project coordinator are available to consult on project

needs. Depending on the type of project, services may be part of an entitlement to SoE affiliates or done as a charge-back. MERIT's Web Applications Development team usually starts with a discovery meeting to learn about your web project goals, and to review and clarify funding, scope and timelines.

Services include:

- Development (including visual design, coding, application development and database design)
- Hosting (web sites & databases)
- Streaming

8) **Workshops:** School of Education faculty, staff and students, and area teachers are invited to participate in MERIT's workshop program. In addition to scheduled workshops, sessions can be designed or adapted as course-integrated instruction for specific classes, or scheduled as consultation for individuals, meetings, or groups.