



Information and Communication Technologies

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MEMORANDUM

To: Ricardo Jacquez, Dean of the College of Engineering
From: Shaun Cooper, Associate VP for Information Technology and CIO
Cc: Angela Throneberry, Senior Vice President for Administration and Finance
Subject: Assessment of IT infrastructure for the College of Engineering
Date: February 26, 2013

As per your request, I have conducted an assessment of IT infrastructure for the College of Engineering. Interviews with the three primary IT support staff along with each department head were performed. Additionally, resource data was examined with respect to number and age of computers available to the academic mission of the College of Engineering (COE). The following statements are made:

- The COE has approximately 120 academic faculty and staff
- The COE manages approximately 400 computers for its academic efforts
- The COE has no sustained computer replacement practice which will likely become a formal finding from a recent ABET accreditation
- Many of the COE academic computers are used both in a classroom setting and as homework/lab computers during non-instruction time
- Several of the COE academic computing needs require modern “high end” PCs
- The COE spends around \$70K annual for software renewal for its academic mission
- The COE provides a central server for file share and group management

Based on interviews with the academic department heads, they independently confirmed the following statements

- Computing requirements for their courses has increased within each course over the past 10 years; this includes more software packages
- Computer labs are now being dual purposed into teaching areas
- Industry is expecting COE graduates to have a substantial experience with modern engineering software packages

- Academic departments use PCs to interface with “bench experiments”; these computers cannot be used for general computation exercises.
- Departments heads felt that the number of computers was adequate, but the lack of replacement was the major issue
- Department heads felt that the software portfolio for their area was mature
- *Department heads have great concern about replacement of “lab bench” equipment that is not computing devices*

Higher efficiency in computer management and number of academic computer devices could be achieved if an engineering computer commons could be created where both academic classroom and computer lab space could be co-located. Such a location would house classrooms with proper computing devices noting that “bench experiment” computers would be located in the home department. The timing for such an area is at least 4 years in the future. There may also be efficiencies with staffing if all IT staff worked under one management structure, but it is difficult to know since the IT staff are currently addressing regular component failure on many of the academic computer devices.

Funding for replacement of computers along with support of academic software is the major challenge for the COE. It is clear that COE has been forced to invest computing replacement funds into software allowing for PCs to age to a point where they can no longer run the required academic software. The COE needs a regular replacement cycle of computing devices which is no greater than 5 years. In many cases replacing certain “high end” computers at 4 years is more desirable. The following figure outlines a general plan for replacement:

	Count	Replacement Cost	Total Cost	5 year replacement	5 year regular, 4 year high end	4 year replacement
Academic Computers	400					
Normal (15%)	60	\$850	\$51,000	\$10,200	\$10,200	\$12,750
High end	340	\$1,100	\$374,000	\$74,800	\$93,500	\$93,500
Lab Printers	12	\$1,200	\$14,400	\$2,880	\$3,600	\$3,600
Lab Plotters	4	\$4,000	\$16,000	\$3,200	\$4,000	\$4,000
Faculty and Staff	120	\$850	\$102,000	\$20,400	\$20,400	\$25,500
College Server			\$25,000	\$5,000	\$5,000	\$6,250
College Wide Software			\$70,000	\$70,000	\$70,000	\$70,000
Total Annual				\$186,480	\$206,700	\$215,600

An interesting note about funding is how the COE has had to respond to current NMSU's ERR allocation methodology. Since ERR funds are spread into replacement and new projects, and since the COE is not receiving sufficient funding for replacing computing devices, the COE elected to offline a teaching lab for one year. This allowed the COE to ask for "new project" ERR funding. It seems impractical to force an academic unit to offline valuable teaching space to get access to a special funding stream.

It is clear that the computational needs of the academic efforts by the COE are not being met. The root cause is the COE's inability to replace academic computing devices on a regular basis. Without regular replacement, the COE will not be able to provide adequate academic experiences to its graduates which affects the recruitment of students and faculty.

I recommend that the COE along with central budgeting identify sufficient sources of funds to be specifically applied to computer replacement and software support for the academic efforts of the COE. Additionally, the replacement and support of "bench lab" equipment needs to be addressed at the same time to address the complete issue; many of the COE academic experiences require a computer to attach to a bench experiment.

I recommend that NMSU seriously consider a course fee for each Engineering course hour taught. Assuming the COE generates 20,000 credit hours per semester, a fee of \$5/hour could generate around \$100K per semester and would create a sustainable computing environment for the COE.

If there is anything further you would like from me, please feel free to contact me.