Notes on Moving Computing and Information Sciences to Engineering

1. Advantages to CIS

a. better industrial connections
b. better fund-raising through Eng. Dean's office
c. improved undergraduate students
d. more scholarships for undergraduate students
e. Engineering listed as high priority for KSU
f. more direct application of computing technology in engineering research
g. better cooperation between CIS and Engineering faculty on grant proposals
h. support for maintenance and upgrade of computing labs through engineering fee CIS $60K \rightarrow 70K$
i. better opportunity for CIS's involvement in economic development - opportunity for CIS's contribution to be recognized
j. support for accreditation of undergraduate programs

2. Concerns for CIS

a. CIS faculty must maintain curricular control.
   1) retain BS, BA in both Computer Science and Informations Systems
   2) no imposition of traditional engineering courses
b. Promotion and tenure decisions must be based on quality research and good teaching, not principally on extramural funding.
c. CIS must teach computing courses for entire university. Funding for this activity is a university-level responsibility.
d. Theory, engineering, and experimental research paradigms must be recognized as essential to the maturation of the computing sciences discipline.
e. Computational science and engineering must be viewed as an area for expansion in CIS.
f. CIS must be supported to build a critical mass of computer science research faculty, an additional eight faculty positions. CIS intends to become a Top 45 department in Computing Sciences in the US.
g. Instructional computing laboratories must be supported adequately.
h. Research computing laboratories must be supported.
i. Differential teaching loads must be possible to capitalize on the talents of those faculty who are better researchers and those who are better teachers.
j. Teaching loads averaging 3 courses per academic year (an accepted standard in computer science departments nationwide) must be retained.
k. Release time for grants. l. travel funds m. Nichols basement n. gen. Eng & Computing Labs

3. Advantages for Engineering

a. many industries view CIS in Engineering as a positive move
b. improvement of engineering research and development through integration of computing research and technology into many interdisciplinary research programs in Engineering
c. support for economic development because of the need for software in many high tech industries
d. strong basic computing research program
e. 12,000+ student credit hours - Eng. has wrong Fee
f. strengthen graduate programs needing computing and computer-based instrumentation expertise
g. outstanding Master's degree program with industrial support
h. new Master's of Software Engineering program is planned
i. automatic audience for NTU programs through AT&T program
j. strong PhD program, with connections to PhD student pipeline to Europe
k. strong undergraduate programs in Computer Science and in Information Systems
l. large potential for extramural grant funding through additional emphasis on computing in research
m. strong CIS research and teaching faculty

n. demand for CIS degrees at all levels (BS, MS, PhD) is strong and growing

4. Concerns for Engineering

a. CIS has a temporary budget of over $250,000 for service courses
b. CIS has a need for maintenance of computing laboratories of at least $200,000/year and no budget.
c. CIS has a need for 8 new faculty positions at competitive salaries, many higher than Engineering faculty.
d. Associate and Full Professor salaries must be raised.
e. The teaching load average in CIS may be lower than in Engineering.
f. CIS uses GTAs to teach most service course commitments.

$160K ISU/CSU
$300 + NCSU

5. Research areas for CIS at KSU with example connections to Engineering disciplines

a. Programming languages is our strongest research area. Strength in this fundamental area, essential to all computing, must continue to improve. Additionally, many engineering applications of computers require new languages in which engineers pose problems to the computer in a language closer to their problem, rather than close to the machine architecture. This is one of our goals.
b. The area of distributed and parallel computing systems is also emphasized in this department. It provides the platform for solving computationally intensive research problems which may well be unsolvable on single, sequential computers. Problems in engineering control, such as robotics, need operating system, networking, and concurrent language expertise. Problems in engineering design can benefit from parallel and/or distributed simulation technologies.
c. Data base activity is also strong, both in data base integrity and security and in deductive data bases. This area is essential for many control problems in engineering such as manufacturing.
d. Software engineering is another area of strength. This area deals with the programming methodology, testing, maintenance, and development of large software systems. Correct software is the cornerstone of a substantial portion of manufactured products.
e. Knowledge engineering (expert systems) is a fundamental discipline (including neural networks) which has applications in a wide variety of engineering applications.
f. Computational Engineering & Science

M.S. Computer Engineering
Emphasis on graduate.
Cross-listed courses
Institute for Interdisciplinary Research - CES