

Campus Technology White Paper for NCA Accreditation Draft, 2/28/99

Introduction

CU Boulder Chancellor Richard Byyny, and CU System President John Buechner, have both made the effective use of technology one of their key goals for the University of Colorado. Chancellor Byyny has made this goal clear since the beginning of his term:

"At the University of Colorado, we clearly want to play the lead role in using technology efficiently and responsibly to help people do their work and improve learning. We should be one of the leading public universities in that area in the next five years and the leading university in that area within ten years."

[Silver and Gold Record, 12/3/97]

President Buechner has made the creation of a Total Learning Environment the cornerstone of his plans for CU, and one of the four TLE goals is:

- Using technology to improve teaching, learning, research and management

Technology also plays a key role in the other three TLE goals

- Supporting innovations in learning, including both undergraduate and graduate education
- Being more responsive to students and other constituents
- Enhancing the University's human, capital, financial and organizational infrastructure

The University of Colorado at Boulder has made the attainment of these goals a top priority. At the highest level, this is manifested in two ways:

- Overall planning and implementation of an Information Technology Strategic Plan that addresses the breadth of infrastructure, support and programmatic issues concerned with IT on the campus

- The Alliance for Technology, Learning and Society (ATLAS), the campus' principal academic initiative, aimed at developing and sustaining excellence in teaching, research and outreach related to information and communication technology

In this white paper we will summarize the campus' goals, programs and accomplishments in each of these two areas. While ATLAS is a portion of the overall IT vision, its significance merits a separate discussion. Finally we briefly describe the campus' Strengths, Weaknesses, Opportunities and Threats in attaining its technology goals.

The campus has developed the leadership and management structures needed to support its ambitious technology goals. The recently created position of associate vice chancellor for academic and campus technology has responsibility both for overall campus IT

planning and implementation and for the ATLAS initiative. This position reports dually to the Vice Chancellor for Academic Affairs and the Chancellor and participates in the Deans Council and the Chancellor's Executive Committee. An overall IT budget presentation by this associate vice chancellor is part of both the Vice Chancellor for Academic Affairs' and Chancellors' budget process. A campus Information Technology Council, consisting of high level representatives for the three campus divisions as well as faculty, students, and top IT management, meets bi-weekly to coordinate campus IT priorities. The ATLAS initiative is led by a steering committee that includes faculty representation from each school and college. These people and groups are the basis for leadership of the programs and plans described next.

Campus-Wide Information Technology Planning and Implementation

From February through July 1998, the campus conducted a comprehensive IT strategic planning process. A draft plan was completed and posted to <http://www.colorado.edu/ITplan> in early August. During the fall semester, the plan was discussed with all major student, staff, faculty and administrative leadership groups, and received wide support. At the same time, the campus had begun implementation of many of the plan's suggestions.

The key areas addressed by the plan are:

- Universal access to hardware and software needed to promote excellent teaching and learning
This includes access for students, staff and faculty, and provision of assistive technologies to assist persons with disabilities.
- Universal access to campus networks and computing resources
This includes maintenance and upgrade of the campus network, access from residence halls as well as offices, provision of access for students residing off-campus, phone service, and integration of data, voice and video.
- Facilities and programs to support learning, teaching and research through technology
Much of this area is embodied in the ATLAS initiative.
This area also includes digital library needs, and classroom and student laboratory infrastructure.
- Support at all points of IT access
This includes support through the central IT organization and at unit levels, and provision of training programs for students, faculty and staff.
- Administration and management using technology
This includes administrative services such as human resources and payroll, student services issues such as registration and financial aid, and addressing Y2K issues.

- Technology management and leadership
This includes addressing the overall cost of IT, campus IT leadership positions and structures, and integrating IT fully into campus planning and budgeting.

In the last year, the campus has made significant progress in implementing programs that address many of the key goals of the IT strategic plan, and in more detailed planning. Some of the key accomplishments in the areas mentioned above are:

Universal access to hardware and software needed to promote excellent teaching and learning

- A faculty computer program was started in summer 1998. Under this program, each faculty member receives funding to purchase a new computer once every three years. The most acute needs were addressed in the program's first year.
- A careful study about whether to impose a student computer ownership requirement is just being completed, and the campus is attempting to develop financial aid support for student computers.
- The campus is exploring assistive technology needs and technologies.

Universal access to campus networks and computing resources

- A program to provide 100MB access to each student in each dorm was initiated in spring 1998. 80% of the dorms now have this access and the remainder will by August 1999. CU Boulder now has among the best dormitory network access in the nation.
- The off-campus modem pool has been vastly increased, from 170 to 1110, with the addition of 940 56KB modems in Jan. 99. This now provides the campus with the industry target ratio of one modem for every 20 users. Funding came from an increase in the student computing fee and the students' decision to use the funds for this purpose.
- Trials of wireless technology are underway in Business and Law.
- A campus network task force, that will examine long-range needs and cost structures, is underway. The campus is also studying replacement of its current phone switch.
- The campus is working with the City of Boulder, NOAA and NCAR to establish a Boulder Research and Administrative Network that will establish high speed network connectivity between these sites and to the Internet.

Facilities and programs to support learning, teaching and research through technology

This is mainly addressed below under ATLAS. In addition:

- The Faculty Teaching Excellence Program has started an annual Summer Institute for Technology, Scholarship and New Media Pedagogy, and has established faculty technology liaisons in most academic departments.
- The increase in the student computing fee has also provided increased funding for student computing laboratories.
- Construction of the new Humanities Building, which will include several technological advanced classrooms, is underway.

Support at all points of IT access

- A distributed academic support program has been started.
- This program provides each school or college with a team of professionals and student for instructional technology support.
- A four tier model of IT support has been developed that includes self help, distributed support, an IT services center, and core experts. The IT Services Center, coordinating voice, data and video support, opened in Jan. 1999.

Administration and management using technology

- The system wide Academic Streamlining Project (ASP) is entirely revamping CU's financial management and human resources systems.
- A comprehensive Y2K assessment and remediation process was put in place in Sept. 1998 and is proceeding well and at the needed rate.
- Planning for the Student Odyssey project, which addresses student services, is proceeding.

Technology management and leadership

- A campus-wide IT cost study is nearly complete and will allow the campus to understand and prioritize its IT costs and needs.
- The campus' computing and telecommunications organizations have been reorganized and combined into one organization that integrates data, voice and video.
- Planning for a campus-wide Total Cost of Ownership program is well underway, and the IT reorganization has freed up a high-level manager to lead this program.

New ongoing resources devoted to IT programs in the last year include a \$1.5M/year increase in the student computing fee, \$500K/year each in campus funds for the faculty computer program and the distributed academic support program, and \$250K/year in campus and system support for the ATLAS initiative.

Academic Technology Planning and Implementation:

The Alliance for Technology, Learning and Society (ATLAS)

With the ATLAS initiative, CU Boulder is making a major campus-wide commitment that goes beyond what is happening at most universities. Like most universities, CU Boulder is using technology to improve how we teach and to widen access to our instruction. But through ATLAS we also are examining the integration of technology into what we teach, are conducting research that critically assesses the impacts of technology on education and on society, and are interacting with K-12 system to help affect many of the same transformations at that level. The campus-level commitment and coordinated faculty involvement also is singular.

One of the primary goals of ATLAS is to assure that all CU students, whether in technical or non-technical areas, acquire the skills, perspectives, and understanding about

technology that they will need to be productive citizens in the information age. Closely linked to this goal is the realization that the multimedia age is bringing together content, communications and information technology, and design and artistic areas as never before. The Technology, Arts and Media emphasis of ATLAS addresses this new combination and provides opportunities for all CU students to learn in this new, multidisciplinary way.

ATLAS was begun in summer 1997 with input from all of CU Boulder's deans, schools and colleges. In Fall 1997 nearly 100 of CU Boulder's 1200 faculty participated in strategic planning for ATLAS. Some of main accomplishments of the initiative in the intervening year are summarized below. Descriptions of many of these programs are found at <http://www.colorado.edu/ATLAS>.

Use of Technology in Education

- 14 course-level projects are underway that make innovative uses of technology in disciplines including English, Spanish, Dance, Fine Arts, History, Journalism, Business, Math, Speech, Biology, and Engineering.
- Two "Showcase" projects are underway that make innovative uses of technology that have wide ranging application. One of these is introducing web-based modules in introductory courses in six foreign languages, and the other is creating an Internet-based geographic information system for wide-spread instructional use.
- A program that will integrate technology into the delivery or content of a broad set of courses in several departments is beginning.
- A small research group on the effectiveness of the use of technology in education has been established and is working closely with several of the above projects and also beginning to work with K-12.

Technology, Arts and Media

- An undergraduate certificate program in Technology, Arts and Media, open to students in any discipline, is being designed for initial offering in Fall 1999. Four pilot courses for this certificate are being offered this semester, including two multidisciplinary projects courses. The certificate will help prepare a large variety of students for careers as well as lives in web-based industries and jobs.
- Multidisciplinary collaborative projects are underway with the Center of the American West and the Colorado Collections.

K-12 Outreach

- The campus is collaborating with K-12 teachers and school districts, the Colorado Department of Education, and other educational organizations in creating plans and proposals for the use of technology in K-12 education. The campus is interested in helping train teachers and students and in sharing its innovative curricular approaches.

Societal Impacts of Technology

- A series of meetings attended by 60 CU Boulder faculty have led to the development of pilot research ideas in three areas: Visual Culture; Globalization, Information Technology and Democracy; and Natural Resources.

ATLAS is successfully building on the campus' culture of multidisciplinary research cooperation to establish multidisciplinary cooperation in the broader realm of instructional, curricular, research and outreach programs. Planning is occurring through the steering committee and several enthusiastic faculty/student groups that are planning portions of the initiative such as the technology, arts and media certificate. The initiative also is interacting closely with the Faculty Teaching Excellence Program.

Beyond the programs mentioned above, important upcoming goals of ATLAS include:

- Beginning to work with all academic majors to examine the inclusion of technological skills and understanding in their curricula.
- Developing training programs to make sure that all incoming CU students are facile in the use of IT hardware and software from the start of their CU education.
- Extension of the technology, arts and media paradigm to the graduate level.

ATLAS also has a major fundraising component. This includes approaching foundations, corporations, individuals and appropriate federal programs for support of the programmatic innovations of ATLAS and for the technological infrastructure needs of our students and campus. A major fundraising effort is underway in conjunction with the CU Foundation.

Strengths, Weaknesses, Opportunities and Threats

Following are some of the key strengths, weakness, opportunities and threats for CU Boulder in accomplishing its campus and academic technology goals:

Strengths

- Very strong leadership and commitment from the Chancellor and President towards excellence in technological programs and infrastructure
- Strong, united support from academic and campus leaders
- Fairly good existing technological infrastructure
- Broad, strong faculty support for technology programs, especially from faculty in non-technical fields
- Excellent regional commercial environment in communications and information technology
- Strong programs in computer science, engineering and science
- Relatively good early base of faculty accomplishment and innovation in using technology in education
- Well-accomplished Faculty Teaching Excellence Program with commitment to effective use of technology in education
- Campus culture of multidisciplinary cooperation

Weaknesses

- State funding support for technology (and higher education in general) poor and threatened
- Moderate funding for campus IT organization, libraries, and some parts of campus IT infrastructure relative to leading institutions
- No well-developed instructional technology unit
- Little tradition of attracting private foundation or federal funding for technology in education activities
- Uneven strengths, and interests in technology, among the academic programs on campus

Opportunities

- Build upon multidisciplinary tradition and cooperation to build academic programs that meet modern needs, including multidisciplinary curriculum and research combining technology, arts and media, and multidisciplinary research on societal impacts of technology
- Become a leader in applying critical assessment of the effectiveness of technology in education to our own instructional uses of technology
- Forge new working and funding partnerships with many external partners: IT industry, private foundations, K-12, State of Colorado
- Build upon the very strong commitment of the Chancellor and President and the unusual establishment of a major, well-funded campus-wide initiative to become known as a leading university in the integration of technology throughout the campus and curriculum

Threats

- Poor state funding may hinder the ability to accomplish programmatic and infrastructure goals
- Poor funding may lead to difficult decisions about campus priorities including the relative importance of technology goals
- Faculty reward system may not sufficiently reward efforts on the improvement of teaching or multidisciplinary collaboration

Overall, the strengths and opportunities in this area are significant and provide optimism that they will outweigh the weaknesses and threats. The state funding situation is, however, a significant concern in this and other areas, and makes the establishment of other partnerships of paramount importance.