



*The Millennium Project  
is a laboratory where new  
paradigms of learning  
institutions can be  
designed,  
constructed,  
and studied.*

## THE MILLENNIUM PROJECT



The challenges and opportunities facing higher education are numerous, diverse, and complex. We live in an age in which knowledge—educated people and their ideas—has become a key strategic commodity, necessary for prosperity and social well being. As a result, education has become the most critical infrastructure for modern society. The best people, the most resources, are attracted to the best education systems. They in turn produce the educated people and new knowledge necessary for economic growth. These facts of life are now recognized by all nations, industrialized and developing, throughout the world. This is leading to the rapid emergence of an intensely competitive global knowledge/education enterprise.

The forces driving change in higher education, both from within and without, are formidable. It seems likely that the pace and nature of change characterizing the higher education enterprise both in America and worldwide will be considerably beyond that which can be accommodated by business-as-usual evolution. While some colleges and universities may be able to maintain their current form and market niche, others will change beyond recognition. Still others will disappear entirely. New types

of institutions—perhaps even entirely new social structures for learning—will evolve to meet educational needs. During the last several decades colleges and universities have attempted to become more similar. In contrast, the years ahead will demand greater differentiation. There will be many paths to the future.

In a world of such rapid and profound change, facing a future of such uncertainty, the most realistic near-term approach maybe to explore possible futures of the university through experimentation and discovery. Rather than simply contemplating possibilities for the future through abstract study and debate, a more productive course may be to explore actively possible paths to the future by building prototypes of future learning institutions as working experiments.

This is the mission of the Millennium Project, to provide an environment in which creative students and faculty can join with colleagues from beyond the campus to develop and test new paradigms of the university. In some ways, the Millennium Project is the analogue to a corporate R&D laboratory, an incubation center, where new paradigms concerning the fundamental missions of the university—teaching, research, service, extension—

can be developed and tested. Rather than being simply a “think-tank” where ideas are generated and studied, the Millennium Project is a “do-tank” where ideas lead to the actual creation of working models or prototypes to explore possible futures of the university. Like the famous Lockheed Skunkworks, every so often the hanger doors of the Millennium Project open, and something strange and provocative is wheeled out and flown away.

## A GLIMPSE OF THE FUTURE



As both knowledge and educated people become key to prosperity, security, and social well-being, the university, in all its myriad and rapidly changing forms, has become one of the most important social institutions of our times. Yet many questions remain unanswered. Who will be the learners served by these institutions? Who will teach

them? Who will administer and govern these institutions? Who will pay for them? What will be the character of our universities? How will they function? When will they appear?

The great and ever-increasing diversity characterizing higher education makes it clear that there will be many forms, many types of institutions serving our society. But there are a number of themes which will almost certainly factor into at least some part of the higher education enterprise.

- Just as other social institutions, our universities must become more focused on those we serve. We must transform ourselves from faculty-centered to learner-centered institutions.
- Society will demand that we become far more affordable, providing educational opportunities within the resources of all citizens. This may occur through greater public subsidy or through dramatic restructuring of our institutions. But it is increasingly clear that our society—not to mention the world—will no longer tolerate the high-cost, low productivity paradigm that characterizes much of higher education in America today.
- In an age of knowledge, the need for advanced education and skills will require both a willingness to continue to learn throughout people's lives and a commitment on the part of our institutions to provide opportunities for lifelong learning. The concept of student and alumnus will merge.

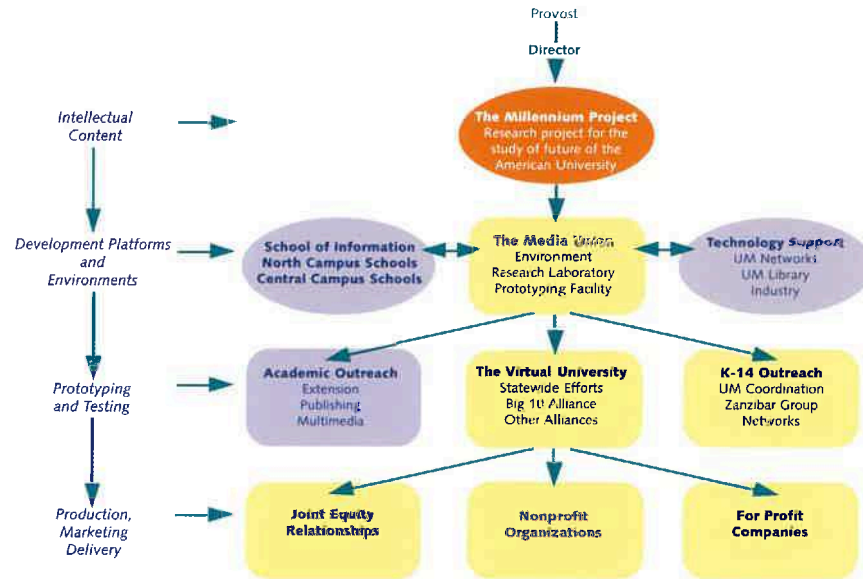
- Our highly partitioned system of education will blend increasingly into a seamless web in which primary and secondary education; undergraduate, graduate, and professional education; on-the-job training and continuing education; and lifelong enrichment become a continuum.
- We already see new forms of pedagogy: Asynchronous (anytime, anyplace) learning utilizes emerging information technology to break the constraints of time and space, making learning opportunities more compatible with lifestyles and career needs, and interactive and collaborative learning that is appropriate for the digital age, the plug-and-play generation.
- Finally, the great diversity characterizing higher education will continue, as it must to serve an increasingly diverse population with diverse needs and goals.

The Millennium Project has taken an active approach toward understanding how these characteristics will transform higher education. For example, rather than simply studying the various issues characterizing computer-mediated distance learning, the Millennium Project has instead participated in the development of a virtual or cyberspace university, the Michigan Virtual Auto College. Rather than examining various elements of international education, the Millennium Project has joined others in an effort to build a truly global university. And rather than simply studying the various social, political, and economic issues swirling about the increasingly pervasive use of information technology in our society, the Millennium Project is working with the State of Michigan to design several new types of learning communities in which information technology provides people and their institutions with ubiquitous and robust access to rich knowledge resources and powerful learning opportunities.

# THE ENVIRONMENT

The activities of the Millennium Project span the full range from fundamental research to development to prototyping to actual production and delivery.

To facilitate such a broad range of activities, the Project has developed strong relationships with



an array of academic schools and colleges, as well as with other closely related activities such as the rapidly evolving School of Information, the University's Division of Academic Outreach, and the University Library system. There is extensive interaction with other ongoing efforts such as academic outreach, K-14 education, UMTV, and new

initiatives such as virtual universities. Finally, new organizations have been formed to take successful paradigms beyond the prototyping and testing stage, such as nonprofit corporations and alliances with for-profit companies.

The Millennium Project is located in the Media Union, a major new academic complex recently completed on the University of Michigan's North Campus. This exciting new center is designed both to explore and test many of the exciting innovations that may well determine the character of the university in the years to come. These include the use of information technology

to provide students and faculty with access to the world, collective and interactive learning, and immersion in the cultural artifacts—the original sources—characterizing our civilization. This 250,000 square foot facility contains over

700 workstations along with thousands more network jacks for students. The facility contains a 1,000,000-volume science and engineering library, but perhaps more significantly,

sophisticated teleconferencing facilities, design studios, visualization laboratories, and a major virtual reality complex including a CAVE. Since art, architecture, and music students work side-by-side with engineering students, the Media Union contains sophisticated recording studios and electronic music studios. It has a state-of-the-art sound stage for

“digitizing” performances as well as numerous galleries for displaying the results of student creative efforts. The Media Union operates twenty-four hours a day, seven days a week.



photo by Gary Quesada

it is the site of our major digital library projects. There are so-

## EARLY PROJECTS

### **The Michigan Virtual Automotive College**

The Millennium Project assisted in launching the Michigan Virtual Automotive College (MVAC) as a private, not-for-profit, 501(c)3 corporation for the development and delivery of technology-enhanced courses and training programs to the automobile industry. The MVAC is a college without walls that serves as an interface between higher education institutions, training providers, and the automotive industry. Courses and programs can be offered from literally any site in the state to any other technologically connected site within the state, the United States, or the world. Although technologies are rapidly emerging, it is expected that during the pilot phase MVAC will broker courses which utilize a wide array of technology platforms including satellite, interactive television, Internet, CD-ROM, videotape, and combinations of the above. MVAC offers courses and training programs ranging from the advanced post-graduate education in engineering, computer technology, and business administration to entry-level instruction in communications, mathematics, and computers. As of late 1997, MVAC lists over one-hundred courses, twenty degree

programs, and the services of forty-one educational institutions to over 3,000 students in the automobile industry.

### **The Michigan Virtual University**

Based on the early success of the Michigan Virtual Automotive College, we are working with the State of Michigan to develop a broader framework for the development of other market-targeted virtual universities. Already other Michigan industries (agriculture, health care products, furniture, tourism, software) are coming forward with requests to establish colleges similar to MVAC. Colleges and universities are also exploring the launch of such ventures either individually or by groups. To this end, we are working with state government to see if the organization and governance structure developed for MVAC can be extended to include other colleges focused on particular markets, including the possibility of delivery of educational services directly into the home.

### **K-12 Education Projects**

The Millennium Project is participating in several initiatives exploring computer-network based education at the K-12 level. It has assisted faculty members in a wide range of fields who are already active in a number of well-known na-

tional and international projects, including the Weather Underground, Project Green, and Windows to the Universe. They are working both with commercial Internet organizations such as WebTV and federal agencies such as the National Science Foundation to place a broad array of primary and secondary level science education programs directly into the home via the Internet. The Millennium Project is also sponsoring an effort to develop a "Cybercamp" to provide Internet-based instruction in website design into various secondary schools in Michigan.

### **The State Technology Plan**

Working closely with the Michigan Jobs Commission and various consultants, the Millennium Project has been a major participant in the development of a technology plan for the state of Michigan. This is an effort to establish the critical resources necessary to reap the economic benefits of Michigan's considerable research and development activity and to invest in further infrastructure to support technology-based businesses. Specifically, the plan seeks to utilize information technology to extend Michigan's excellence in K-12 and higher education to meet the rapidly changing needs of all Michigan industries. It has set an objective of establishing Michigan as a



national leader in the application of advanced information technologies. Finally, it seeks to catalyze the development of a technology culture characterized by active, widespread and spontaneous collaboration between industry and university faculty and students.

### **The Michigan Knowledge and Learning Network**

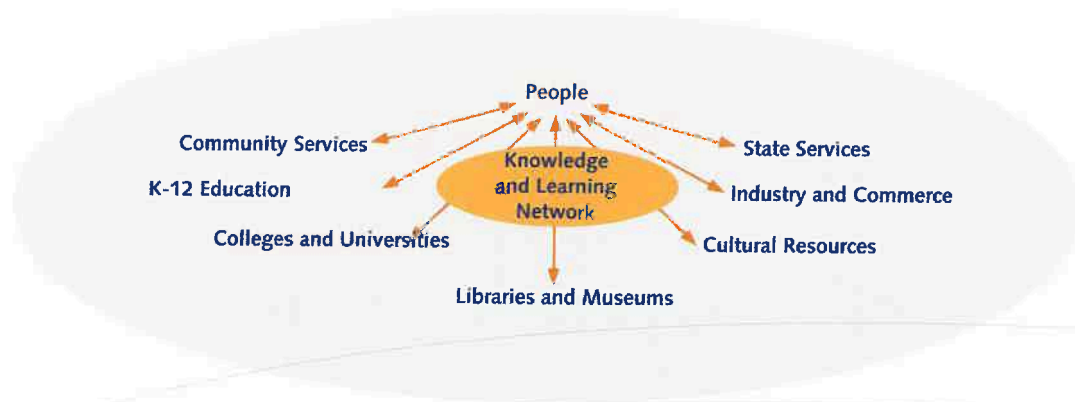
The Millennium Project is working with state leaders to design the infrastructure necessary for leadership in the emerging knowledge industry. This infrastructure, comprised not only of technological but also organizational and social components, will link together the people of the state and their social institutions with Michigan's very considerable knowledge and learning resources.

It is important to realize that infrastructures such as the Internet are not just technology. They are profoundly human constructs, facilitating the formation and growth of networks of people who interact, share information, learn together, and create virtual communities online based upon their shared interests rather than any shared geography. In this sense, we propose that Michigan build both the physical and human infrastructure that will allow us to form learning communities of people, collaborating and engaging with the rich knowledge resources of the state and the world.

### **The Global University**

The Millennium Project is participating in projects to explore the possibility of delivering higher education services on

a global scale. It has played a role in hosting and facilitating a series of discussions to consider the possibility of building an Open University for the Jewish People, a virtual university which would provide a broad range of educational and cultural opportunities to Jewish communities throughout the world. It is also exploring relationships with a new organization formed by the Big Ten universities, MUCIA Global, a for-profit spinoff of the Midwestern Universities Consortium on International Activities, designed to facilitate the delivery of computer-mediated distance education on a global scale. The use of broadband broadcast technologies for transmission and Internet chat-room feedback is of particular interest to the Millennium Project.





## FUTURE PROJECTS

From the experience of the past year and the plan for the year ahead, it is clear that the activities of the Millennium Project are evolving rapidly.

This time of great change, of shifting paradigms, provides the context in which we must consider the changing nature of the academic research enterprise itself. We must take great care not simply to extrapolate the past but to examine the full range of possibilities of the future. From this perspective, it is important to understand that the most critical challenge facing most institutions will be to develop the capacity for change; to remove the constraints that prevent institutions from responding to needs of

rapidly changing societies; to remove unnecessary processes and administrative structures; to question existing premises and arrangements; and to challenge, excite, and embolden all members of the university to embark on a great adventure.

There is no question that the need for learning institutions such as the university will become increasingly important in a knowledge-driven future. The real question is not whether higher education will be transformed, but rather *how* . . . and by *whom*. The challenge of change should be viewed not as a threat, but as an opportunity for a renewal, perhaps even a renaissance in higher education. Put another way, the challenge is to provide an environment in which such change is regarded not as threatening but rather as an exhilarating opportunity to engage in learning, in all its many forms, to better serve our world. The Millennium Project is intended to provide just such an environment.

*Projects of particular interest include the development of new civic "life-forms" which integrate a variety of social services, a broader examination of the emerging global knowledge/learning industry, and the concept of the "ubiquitous" university.*





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