

# The Michigan Virtual Automotive College

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One of the more provocative approaches to higher education in the information age is the so-called *virtual university*. In cybertalk, “virtual” is an adjective that means existing in function but not in form. A virtual university exists only in cyberspace, without a campus or perhaps even a faculty. Sophisticated networks and software environments are used to break the learning loose from the constraints of space and time and make it available to anyone, anyplace, at any time.

Already college directories list over 700 virtual colleges, with over a million students enrolled in their programs. Yet most of these are simply Internet-based extensions of conventional distance learning, relying upon existing higher education organizations such as extension programs. However, there are also several rapidly emerging virtual organizations such as the Western Governor’s University and the California Virtual University that do represent radical departures from our traditional paradigms for colleges and universities. In this paper, we describe the design, formation, and rapid growth of one of the first of these new virtual colleges, the *Michigan Virtual Automotive College (MVAC)*.

To respond to the changing educational needs of a major industry in our state, the automobile industry, as well as to explore the possibility of new types of learning institutions based upon rapidly emerging digital technology, in 1996, the State of Michigan launched the Michigan Virtual Automotive College. This is a collaborative effort among the University of Michigan, Michigan State University, the State of Michigan, the state’s other colleges and universities, and the automobile industry. It was formed as a private, not-for-profit, 501(c) 3 corporation aimed at developing and delivering technology-enhanced courses and training programs for the automobile industry.

MVAC was designed as a system integrator, a broker, between colleges and universities, training providers, and the automotive industry. It works to integrate customer needs, available academic/training programs, and development of new materials. It is designed as a “green field” experiment where colleges and universities can come together to test capabilities to deliver their training and educational programs at a distance and asynchronously. It is also expected to serve eventually as a platform for the State of Michigan to build an education export industry.

MVAC is a college without walls. 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 learning technologies are rapidly evolving, MVAC currently brokers courses which utilize a wide array of technology platforms including satellite, interactive television, Internet, CD-ROM, videotape, and combinations of the above. MVAC will seek to develop common technology standards between and among providers and customers for the ongoing delivery of courses. 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.

MVAC has made considerable progress in its first year. After the negotiation of a governance structure and the development of a business plan in summer and fall of 1996, MVAC was formally incorporated in December 1996. Members of the partnership provide capitalization for MVAC: the State of Michigan (\$5 million), the universities (\$2 million), and an as-yet-to-be-determined contribution from the automobile industry. A staff was recruited and facilities were developed in Ann Arbor. Commitments to participate in the evolution of MVAC were obtained from all of the key clients and providers, including the leadership of the Big Three, the presidents of Michigan's colleges and universities, and key suppliers. Participation by the United Auto Workers (UAW) remains in the discussion stage. Extensive market studies were performed, both through the use of MVAC marketing staff and through the use of consultants (Coopers & Lybrand Consulting). Based on this market survey, a request for proposals was distributed to higher education institutions for the development of courses for fall of 1997. MVAC currently offers 110 courses and over 30 degree and certificate programs across a broad spectrum of disciplines and levels.

This paper is intended to describe the rationale behind MVAC, our strategic plan, our execution, and what we have learned.

## The Rationale

There were two issues that stimulated MVAC. First, a study commissioned by the State of Michigan's Automotive Partnership and performed by the University of Michigan's Office of Studies in Automotive Transportation concluded that the education and training needs of the automobile industry could no longer be met by conventional in-house training programs or established educational institutions. Both the combination of workforce turnover through retirements, coupled with the increasing skill and education levels required for future jobs in this industry, suggested that as many as 130,000 new employees would need to be hired by the Big 3 in Michigan alone over the next decade.

Existing higher education paradigms, based primarily on campus-based classroom learning, were limited in their capacity to respond to this need. Therefore, Michigan's Governor, John Engler challenged the state's universities to take advantage of emerging information technology to deliver educational services and training opportunities into the workplace of the state's automobile industry through a virtual university paradigm.

The University of Michigan, Michigan State University, and the Michigan Jobs Commission formed a partnership to design and build such a learning institution. Michigan State University, as the state's land-grant institution, had long experience in delivering distance-independent learning through its extension programs. The University of Michigan had considerable expertise in information technology. And the Michigan Jobs Commission could play a critical role both in providing the necessary startup funding and through its experience in providing assistance for training programs to the automobile industry.

Even as this highly specific venture was launched, there was also recognition that it might well serve as a template for new learning institutions focused on other Michigan-based industries. Each “virtual college,” working in concert with other virtual colleges and with existing colleges and universities, would result in a “system” more capable of responding to the rapidly changing educational needs of the state.

## The Changing Nature of the Higher Education Enterprise

Universities have long enjoyed a monopoly over advanced education because of geographical location and their monopoly on certification through the awarding of degrees. Yet this carefully regulated and controlled enterprise could be demolished by several factors. First, the great demand for advanced education and training simply cannot be met by such a carefully rationed and controlled enterprise. Second, the expanding marketplace will attract new competitors, exploiting new learning paradigms, and increasingly threatening traditional providers. Perhaps most important of all will be the impact of information technology, which will not only eliminate the constraints of space and time but will create open learning environments in which the learner has choice in the marketplace.

More specifically, tomorrow’s student will have access to a vast array of learning opportunities, far beyond the faculty-centered institutions characterizing higher education today. Some will provide formal credentials, others will provide simply knowledge, still others will provide educational programs and services wherever and whenever the student—more precisely, the learner—needs knowledge and skills. The evolution toward such a learner-centered educational environment is both evident and irresistible.

As a result, higher education is likely to evolve from a loosely federated system of colleges and universities serving traditional students from local communities into, in effect, a knowledge and learning industry. Since nations throughout the world recognize the importance of advanced education, this industry is global in extent. With the emergence of new competitive forces and the weakening influence of traditional regulations, higher education is evolving like other “deregulated” industries, e.g., health care or communications or energy. In contrast to these other industries, which have been restructured as government regulation has disappeared, the global knowledge industry will be unleashed by emerging information technology that release education from the constraints of space, time, and credentialing monopoly. As our society becomes ever more dependent upon new knowledge and educated people, upon knowledge workers, this global knowledge business must be viewed clearly as one of the most active growth industries of our times.

While many in the academy would undoubtedly view with derision or alarm the depiction of the higher education enterprise as an “industry” or “business”, this is nevertheless an important perspective that will require a new paradigm for how we think about post-secondary education. Operating in a highly competitive, increasingly de-regulated, global marketplace, it is clear that no one, no government, is in control of the higher-education industry. Instead it responds to forces of the marketplace.

Will this restructuring of the higher education enterprise really happen? If you doubt it, just consider the health care industry. While Washington debated federal programs to control health care costs and procrastinated taking action, the marketplace took over with new paradigms such as managed care and for-profit health centers. In less than a decade the health care industry was totally changed. Today, higher education is a \$180 billion a year enterprise. It will almost certainly be “corporatized” similarly to health care. By whom? By state or federal government? Not likely. By traditional institutions such as colleges and universities working through statewide systems or national alliances? Also unlikely. Or by the marketplace itself, as it did in health care, spawning new players such as virtual universities and for-profit educational organizations? Perhaps.

As we examine the experience of other restructured industries, one of the first trends we notice is unbundling, that is, the vulnerability of vertically integrated organizations to competition from new companies that focus on providing only few of the traditional services. The modern university has just such a vertically integrated structure. It provides courses at the undergraduate, graduate, and professional level; supports residential colleges, professional schools, lifelong learning, athletics, libraries, museums, and entertainment. The university has assumed responsibility for all manner of activities beyond simply education—housing and feeding students, providing police and other security protection, counseling and financial services . . . even power plants on many Midwestern campuses!

The most significant impact of a deregulated higher education “industry” will be to break apart this monolith, much as other industries have been broken apart through deregulation. As universities are forced to evolve from faculty-centered to learner-centered, they may well find it necessary to unbundle their many functions, ranging from admissions and counseling to instruction and certification. In fact, we might anticipate that each of the activities in the supply chain of educational services from providers to learners could be unbundled and conducted by separate organizations.

Already both conventional publishers and “edutainment” companies are moving into the production arena. In a sense, virtual universities” represent organizations that focus on marketing and delivery of educational services. Companies such as Sylvan Learning are moving aggressively into the assessment arena. And we may soon see the emergence of new organizations that focus on credentialing learning.

Universities, like other institutions in our society, will have to come to terms with what their true strengths are and how those strengths support their strategies—and then be willing to outsource needed capabilities in areas where they do not have a unique competitive advantage. Below, we describe just a few of the many existing and emerging virtual learning organizations.

Western Governors University ([www.westgov.org/smart/vu/vu.html](http://www.westgov.org/smart/vu/vu.html))

Perhaps the most publicized of the recent virtual university initiatives is the Western Governors University. Formed as a private, non-profit corporation in 1997 by the governors of the western United States, WGU is a competency-based and degree-

granting, virtual university. Twenty-one colleges and corporations from 16 western states and Guam will deliver courses through the Internet and other advanced telecommunications and networking technologies. WGU will not hire its own faculty, but will rely on faculty from the providing institutions and organizations. WGU also plans to act as a clearinghouse to electronically market distance learning courses and to deliver training to corporate employees.

California Virtual University ([www.california.edu](http://www.california.edu))

With California enrollments expected to grow by approximately 500,000 over the next ten years, the California Virtual University was developed to offer residents the education they need without adding additional students to its campuses. The CVU, launched by Governor Pete Wilson in April 1997, aims to bring together all distance independent education offerings of California's 301 accredited colleges and universities into an interactive online catalog. Currently, CVU is offering 500 courses and complete programs, from certificates through a Ph.D.

University of Phoenix ([www.uophx.edu](http://www.uophx.edu))

The University of Phoenix, a private, for-profit university, offers bachelors and masters degree programs to over 42,000 students, making it the 2nd largest private school based on total enrollment. Over 370,000 individuals from around the world have enrolled in UOP degree and certificate programs. Faculty members at UOP are working practitioners. Courses are made available at suitable times and places, generally meeting after traditional working hours at locations in or near the workplace. UOP continues to build its distance learning capability. Its Online Campus provides an online learning environment for classes of 8-13 students. The Center for Distance Education creates customized programs that allow students to gain individual mentoring and study at the time and place convenient to them.

Nova Southeastern University ([www.nova.edu](http://www.nova.edu))

Chartered by the State of Florida in 1964, Nova Southeastern University is the largest independent university in Florida. A not-for-profit institution, NOVA offers academic programs at times convenient to students and through innovative delivery. Nova Southeastern University awards bachelors, master's, educational specialist, doctoral, and first professional degrees.

UK Open University ([www.open.ac.uk](http://www.open.ac.uk))

The Open University of the United Kingdom originated through the grant of its Royal Charter in April 1969. The first 24,000 students were admitted in 1971. By the mid-70s there were more than 50,000 undergraduates and a wide range of courses for them to study. During the 1980s the University expanded into "continuing education" programs. In the 1990s there has been a rapid expansion of postgraduate study. New communications techniques are being used to bring Open University teaching to people all over the world. UK Open had 30,000 students studying online in 1997. OU courses are available to all residents of the European Union, and through educational partnerships with institutions in other countries.

## The Key Decisions in Forming MVAC

As the above examples illustrate, there are many different approaches to building virtual universities. Clearly, all depend upon information technology to free themselves from the constraints of campus-based instruction. But they can differ considerably in the way they are financed, their governance, their markets, and their academic objectives. As we examined a variety of different models for MVAC, we finally settled on the following characteristics:

First, we designed MVAC to be primarily a broker or system integrator, working with the industry to determine its education and training needs, and then, in turn, working with established educational institutions to respond to these needs through the use of information technology. In this sense, MVAC would have no campus, no faculty, and a very limited administrative staff. Its primary function would be to open up new channels for the delivery of educational services.

At the outset, we also decided that MVAC would not give degrees. Although there had been some early thought given to chartering MVAC as a state educational institution, in the end we decided against this. We wanted MVAC to be clearly perceived by Michigan's existing colleges and universities as value adding, not competitive. Rather than creating an independent degree-granting capability—and facing the rather considerable challenges of accreditation—we instead decided to rely upon the established degree programs and cooperative agreements of existing institutions.

Second, we initially focused MVAC on a brokering role between institutions. That is, we viewed our initial market as companies, not individual employees or citizens. Furthermore, we viewed our suppliers as academic institutions, not individual faculty or staff. We realized that at some future point, as we developed capacity to deliver high quality, cost-effective educational services beyond the workplace and onto the desktop and into the home, the possibility of offering programs to individual clients might become of interest. However at the outset, by confining our efforts to working with companies and academic institutions, we greatly simplified our marketing and support activities.

Third, we decided to form MVAC as a not-for-profit, independent corporation. While a for-profit organization would probably have been capable of faster growth because of access to capital markets, we believed that the not-for-profit character would better allow us to form relationships with colleges and universities. And while some state support was provided to capitalize and launch MVAC, it is our intent that the operation be self-supporting based on educational fees and contracts within three years.

Finally, we believed that the governance structure of MVAC should clearly reflect the three key participants: Michigan's colleges and universities, the automotive industry, and the State of Michigan. Although the University of Michigan, Michigan State University, and the State of Michigan were founding members of the 501(c) 3 membership corporation, we formed an executive committee structure containing

representatives from Michigan's other universities and community colleges, the Big Three, the supplier industry, and the UAW.

## The Learning Curve

As with any new organization, the first year of MVAC was a time of development – developing funding, developing strategies, developing capacity, developing relationships, and developing products. Several areas of development were particularly challenging. Some have been resolved to a greater extent than others have.

### Institutional agreements

Despite some initial hesitancy, most presidents moved quickly to a supportive position. By the end of 1997, presidents of all 15-state universities and nearly all-28 community colleges in Michigan had signed membership forms to serve on the MVAC Board. We postulate that the presidents' decision to join MVAC was based on several political and economic factors.

First and foremost, Governor Engler was highly supportive of the project and rather critical of higher education's lack of response to the needs of the auto industry. Second, high level administrators at General Motors, Ford and Chrysler had agreed that their companies would participate in MVAC. Third, we decided to eliminate any membership fees in the inaugural year. Lastly, the colleges knew that Western Governors University and California Virtual University were soon to be a reality and that other states were not far behind.

Getting colleges and universities to sign membership forms was only part of the equation. In addition, we asked the colleges and universities to propose existing courses for delivery through MVAC. Criteria for selection included relevancy of the content to the needs of the auto industry; availability of the course on a technology platform or available when and where the client requested; and some demonstration of quality and experience. We received over 200 course proposals in response to our first request, and we accepted 23 for possible use in pilot projects. In spring, 1997, we asked for resubmission of proposals and accepted 75 courses out of 100 proposed. We also accepted some 18-degree programs. In fall, 1997 we expanded the number of courses to 110 and the number of degree programs to 30. The courses were about evenly split between credit and non-credit. They covered a variety of subject areas and were available in a variety of technology platforms.

The Michigan Job Commission had indicated its preference that MVAC become financially self-sufficient over time and that participating colleges and universities contribute to the revenue stream. Internally, we debated about the kind of pricing strategy that would work best for the colleges and universities and that would be relatively transparent to the customer. We decided that colleges and universities would pay a membership fee of several thousand dollars each per year to become MVAC members and that 10 percent of tuition from course sales would be transferred to MVAC. The percentage would come off the top rather than added to the price of the



courses. Therefore, customers would not be expected to pay more for courses through MVAC than for the same courses delivered directly from the course providers.

Prices for courses were to be determined by the course providers. We felt that the market would determine which courses would be most highly used, with price as a component in customers' decisions. Student registration and payment for non-credit courses would occur through MVAC. Student services could be provided by course providers and in some cases by MVAC depending upon demand and institutional capacity. Student registration, payment and other services for credit courses were to be the responsibility of the course or program provider. MVAC would track all student inquiries about credit courses and degree programs listed in the MVAC catalog and send a list of prospective students quarterly to the respective institutions. The institutions would identify students from the MVAC list that enrolled in courses or degrees within one year and transfer 10% of their tuition to MVAC.

In return for the membership fee and 10 percent share to MVAC, course providers would receive the benefits of MVAC's marketing efforts and access to MVAC research on auto industry needs, pedagogy, and distance learning capability. MVAC would also develop industry contacts and communication channels directly with the auto industry. Michigan colleges and universities were given right of first refusal to offer courses, except when clients indicated a preference for other providers. To execute these guidelines and procedures, MVAC developed a contract signed by MVAC and each course provider.

### Market analysis

The education and training market in the auto industry is characterized by numerous competitors, without a major player, an industry-wide perspective, or a strategic proactive approach. The development of an industry-wide entity to coordinate training could result in better efficiencies by reducing duplication of effort, lowering costs, and developing an infrastructure that would support industry-wide training and services. Establishing industry-wide distance learning standards and serving as a consultant to companies for distance learning options would enhance the convenience, flexibility and cost-effectiveness of MVAC programs.

We contracted with a private consultant (Coopers and Lybrand Consulting) to conduct an education and training needs analysis of the auto industry and to identify best practices in distance learning initiatives across the country. We found a favorable response from the industry regarding the potential of employees to take advantage of MVAC's educational opportunities. Most survey respondents believed that MVAC would be an essential or useful addition in terms of potential training and education value. A number of upper level executives envisioned a future role for MVAC as a one-stop clearinghouse for automotive training. Convenience was noted as the most important potential MVAC feature followed by content and cost. Distance learning technology was not viewed as a vital element for effective training. However, the benefits which distance learning can provide such as convenience and flexibility were frequently mentioned as needs.

Perceived training needs differed by employee type and skill area: technical or general. There was general consensus about the urgency to gain industry-wide agreement concerning skills and knowledge required of employees to perform the specific jobs necessary to meet performance objectives.

The initial marketing plan relied on endorsement of the MVAC vision and concept by state, education and industry leaders. Recognizing the business leadership role of the Big 3 in the auto industry, MVAC personnel met with executives of the Big 3 and the United Auto Workers to obtain their commitments. These executives along with presidents of several colleges and universities were asked to participate as members of the MVAC Executive Committee. Other representatives were sought for participation on “thought leadership teams.” Information meetings were held with education providers and an Auto Summit was convened with industry representatives. Involvement of these constituents was critical to the early recognition that MVAC received as a viable entity in auto industry education and training.

### Business model

MVAC designed and constructed its basic initial infrastructure to support start-up activities aligned with intended products and services (Fig. 1). The internal process model was designed to reflect a relatively, flat and lean organization that could learn and grow through symbiotic relations with course providers and client constituents. It consisted of four areas:

- Educational Programs and Services include the instructional design, student assessment, course delivery, and inventory management. Successful development of this process will lead to the creation of the “brokering” role and delivering of courses.
- The Research process includes needs assessment; outcomes or effectiveness research, distance learning research, instructional design/pedagogy research, and skill set development. Through these research functions, MVAC would create the capability for its thought-leadership role in automotive education and training.
- The Client Relations process includes industry relationship building and services, information management, and ongoing marketing and communication. Successful development of this process will yield the design for and implementation of the necessary infrastructures.
- The Planning and Integration process will yield the design for and implementation of these processes and provide overall strategic direction and leadership.

## Capitalization

In order to create a self-sustaining organization, it was anticipated that about \$8 million would be required for start-up operations. The State of Michigan pledged \$675,000 for development of the business and implementation plan and initial research on best practices, course inventory and needs assessment. In addition, a \$2.5 million grant from the State of Michigan was designated for a small staff to carry out the implementation plan. As discussed below, vendors and others outside the organization would be contracted to implement certain activities.

Michigan State University and the University of Michigan agreed to commit \$1,000,000 each over three years. The State of Michigan committed an additional \$2.5 million that would be matched with revenues that MVAC procured from course sales, membership fees, and contributions. Other sources of revenue would include auto industry contributions, grants from foundations, and interest earnings. By year 5, it was projected that program sales would account for the largest portion of MVAC revenue.

Revenue projections were based on grant commitments from the State of Michigan, the University of Michigan and Michigan State University. Pursuit of grants from the auto industry and other organizations would begin in the second year of operations. MVAC program sales and membership fee revenues would also begin in year two. Accurate estimates of revenue were difficult to project and were therefore based on very conservative returns from sales and fees. Major cost components were staff and further research and development, much of which would be contracted to outside groups.

## Outsourcing

MVAC identified several areas in which it would need outside assistance to develop and complete projects. We enlisted the services of public and private vendors through a request for proposal process. In the technology arena we contracted with a company to repurpose courses from one delivery format to another, often web-based. The company we selected, Strategic Interactive of East Lansing, MI, had two years of experience in online course development and excellent references from major companies, including General Motors and Ford. We contracted with a consortium of colleges and universities, led by Michigan State University, to provide expertise and advice on technology standards and protocols.

We continued our relationship with Coopers and Lybrand Consulting, by contracting with them for research on autoworker competency and skill requirements. A private company, Distance Learning Dynamics of Grand Rapids, MI, and Northwestern Michigan College of Traverse City, MI, received contracts to develop workshops for faculty training in technology mediated course repurposing. Argus Associates Inc. of Ann Arbor, MI developed the initial MVAC web site and is currently renovating the site. Stone August Medrich of Troy, MI, works with MVAC on the design and production of the course catalog, brochures, displays for exhibits, news releases, and other marketing activities.

Michigan colleges have also been contracted to conduct surveys on technological capacity of the auto industry and to facilitate focus groups to help us learn more about

the education and training needs of the industry. Graduate students from the University of Michigan and Wayne State University have conducted research for MVAC on student services, international training opportunities, and private training providers. MVAC has depended on outside expertise to fulfill its initial objectives.

### Particular challenges

1. Existing education and training providers. The Big 3 alone may be spending as much as \$4 billion dollars each year on education and training of their employees. These auto companies have a long history of supporting employee education and training with in-house trainers, private vendors, and various arrays of colleges and universities. Companies that supply parts to the Big 3 have variable levels of experience with and commitment to employee education and training. Each auto company had developed relationships with highly competitive private and public course providers. Although industry representatives indicated a need for better coordination between education and training providers, the MVAC challenge would be to engage the trust and confidence of the industry in terms of common courses and standards across the industry.
2. Customers' expectations. Industry representatives indicated little interest in utilizing what they termed off-the-shelf courses designed in standard blocks of time. They commented that these kinds of courses were too "academic" -- out of touch with their immediate needs and consisting of too much "fluff." Companies were looking for education and training courses that could be tailored to special time frames, delivery platforms, and pricing options. We found that most automotive supplier companies were interested in courses from MVAC that could respond to immediate information and learning needs. The Big 3 were interested in customized programs from MVAC that could compliment existing in-house programs designed for long term human resource development. The Big 3 also indicated an interest in making their MVAC courses available to their suppliers.
3. Issues of Quality. Selecting the providers of courses presented another challenge. Our stance was to work first with providers that were preferred by the Auto Company (the client). If companies did not express a preference for a course provider, then we opened the process up to the Michigan colleges and universities through a request for proposal process. This open process created a challenge in that certain institutions felt that the quality of MVAC would be diminished if we did not select the more elite schools. Often, however, the companies wanted the course customized and delivered in 30 days or less. The structure of large institutions did not always allow for rapid response to industry demands. We, therefore, selected providers on the basis of their capacity to deliver what the company requested, when and where they requested it, and within MVAC quality standards.
4. Technology standards and compatibility. Another less political but more practical challenge was the lack of technology standards within and between education and industry. Early MVAC research indicated that companies were not readily equipped to receive distance learning, even the larger companies. Some companies' computers did not have video or sound cards or had older versions of browsers or software packages. Few companies had capacity for receiving two-way interactive television

courses – a primary medium used in Michigan higher education for transmitting courses between campuses. Some companies had satellite downlink capabilities, but usually only the larger companies. The technology challenge was directed to the MVAC thought leadership team on Learning Technologies.

5. Private information. Proprietary content also provided a challenge to MVAC's role as an integrator of content across an industry. When MVAC worked with companies, we would maintain privacy to that content indicated as proprietary by the customer. But we also encouraged companies' decision-makers to consider the potential efficiencies of sharing common parts of courses with other companies and particularly with their suppliers, both in Michigan, the U.S. and the world. We have observed that this kind of sharing across the industry has become more acceptable.
6. Globalization of courses. Another challenge to this project but not necessarily unique to MVAC is globalization of courseware. This would require ensuring that countries or regions' learning styles, technologies and social/economic customs were understood and respected in MVAC programs and services. Although other countries are not yet a primary audience of MVAC courses, we are beginning to study the standards and specifications needed for delivering courses to different parts of the world.
7. Commitment to the MVAC concept. Participation by certain provider and client groups was sometimes slow in coming. There may be several political reasons for this cautious approach, but the strongest reason may be that the institution simply has an abundance of opportunities to participate with industry with or without an entity such as MVAC. Although we hope for participation in the project from all key constituents, we also realize that a variety of unrelated factors can influence institutions and companies' decisions to participate with MVAC.
8. Founders' expectations. Perhaps the biggest challenge to MVAC to date has been to manage expectations for high numbers of students and industry participants. Given the complex array of challenges from multiple industry, government, and education constituents, MVAC believes that students and other customers will participate in MVAC if we utilize high quality business practices. In this spirit, MVAC is spending a lot of effort early in its development, listening to its clients, understanding their needs, and packaging courses and learning products in response to these needs. We believe in the long run, that quality products and quality partnerships will be key to meeting the expectations of our constituents.

## Next Steps

Even though MVAC has been in operation for only a year, there are already strong pressures within the state to establish similar industry-specific virtual colleges to respond to the needs of the states other economic sectors. The MVAC model is being considered as the template for virtual colleges focused on industries such as health-care products, furniture, tourism, and plastics. These are envisioned as "mirror sites", making extensive use of experience of MVAC, including administration, contracting, technology platforms, and academic services.

There has also been considerable interest expressed in extending the concept to include the delivery of educational services directly to individuals. Clearly with digital convergence—the merging of the television and the network computer—it will soon be possible to deliver sophisticated educational services directly into the home. The goal of making the vast resources of Michigan’s educational infrastructure, its colleges and universities and cultural organizations, available to all of the state’s citizens, wherever they are and whenever they desire them, at high quality, and at a cost they can afford, is a dream that may soon be within reach. To this end, Governor Engler has already proposed forming a new state university—a “Michigan Virtual University”—that would not only coordinate the various industry-specific virtual colleges such as MVAC, but would assist the state’s colleges and universities in providing a broader array of educational services based on information technology.

As for MVAC, look for us to begin offering a full compliment of services for learners. Adult students are seeking quality and convenience in educational products. Given the growing number of education and training providers on the Internet, our challenge will be to create an environment that attracts and retains students. We believe that there are at least five keys to getting and keeping students connected online to MVAC.

Obviously, a solid marketing strategy is important to ensure that prospective students at least visit our site. Once students reach our site, we will be adding a career guidance system that will allow students to learn online about jobs and careers in the auto industry. A third ingredient to a successful program will be visitor access to job profiles to learn about the skills and competencies needed to qualify for different jobs and careers. Another service that we will be developing in the future will be a series of competency and skills assessment tools. Lastly, we will be repackaging the mix of courses into curricula that help students acquire the skills and competencies to reach their goals.

Of course, beyond structural and program issues, there are important pedagogical issues to consider. As a broker of courses, MVAC will be expected by the auto industry to have established certain quality controls that guarantee learners access to the best learning packages. Gone are the days when utilizing passive telecommunications technology is acceptable. Learners will gravitate to more interesting teaching formats in which the subject matter fits the delivery medium and the medium fits the learner. A well-planned evaluation program will also be used by MVAC to assess which learning packages and strategies work best for different groups of learners under different circumstances.

Distance learning based on computer-network-mediation will allow MVAC to help universities push their campus boundaries out to serve learners anywhere, anytime. Those institutions willing and capable of building such learning networks will see their learning communities expand by an order of magnitude. In this sense, the traditional paradigm of “time-out-for-education” can be more easily replaced by the “just-in-time” learning paradigms, more appropriate for a knowledge-driven society in which work and learning fuse together. Through a strong partnership with Michigan’s leading industry, MVAC will be able to recruit the best technology mediated courseware from a variety of providers for cost effective delivery around the world.

## Concluding Remarks

The forces driving change in our society and its institutions are stronger and more profound than many educators realize. The future is becoming less certain as the range of possibilities expands to include more radical options. We believe that in a world of such rapid and profound change, facing a future of such uncertainty, the most realistic near-term approach is to explore possible futures of the university through experimentation and discovery. Rather than continue to contemplate possibilities for the future through abstract study and debate, it seems a more productive course to actually build prototypes of future learning institutions as working experiments. In this way we can actively explore possible paths to the future.

The Michigan Virtual Automotive College is one of these early experiments designed to better understand the future of higher education.