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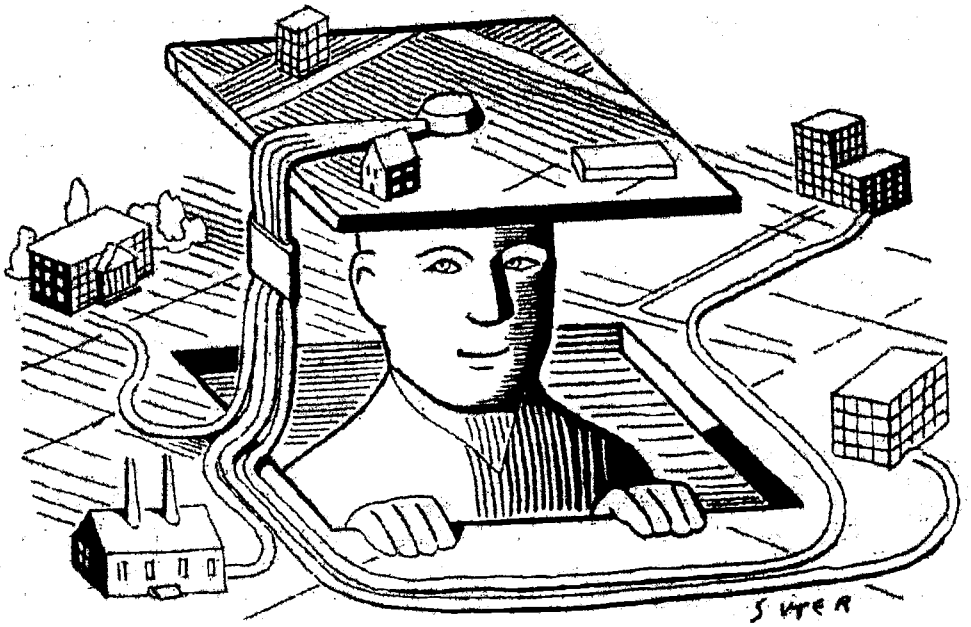
ABSTRACT

This monograph summarizes presentations and discussions that took place at a symposium organized in conjunction with the spring meeting of the Trans-Atlantic Technology and Training Alliance (TA3). TA3 is an international alliance dedicated to sharing practices that prepare workers for technical careers, providing opportunities for faculty development and student exchange, and building industry support and management skills. Some of the presentations summarized include: (1) Roland Sterling's overview of the reasons why Denmark recently reformed its vocational system and was recognized in 1999 as the best vocational education system in the world; (2) Osterlund's description of system reforms that will link students' workplace and classroom experiences more tightly through real world projects that benefit employers; (3) Keith Bird's description of Kentucky's Virtual University, through which 70% of the state's colleges and universities provide online classes; (4) Charlie Woods' explanation of Scotland's chief economic development organization is bringing together industry clusters and educational institutions to create training alliances that enhance clusters' growth potential; and (5) Mark Million's suggestion that community colleges adapt to a new education marketplace in which working "wired" adults are seeking new opportunities and in which colleges that don't establish an online brand will lose out. (NB)

Report from the Conference

Alliances That Work

An International Symposium



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Regional Technology Strategies, Inc.
+1 919 933 6699 Fax: +1 919 933 6688 www.rtsinc.org

Learning and Teaching Scotland
+44 141 337 5000 Fax: +44 141 337 5050 www.LTScotland.com

Alliances That Work

A Report from a Conference in Louisville, Kentucky, May 23, 2000

Supported by the John D. and Catherine T. MacArthur Foundation

TRANS-ATLANTIC
TECHNOLOGY and
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REGIONAL
TECHNOLOGY
STRATEGIES, INC.

Regional Technology Strategies, Inc.
205 Lloyd Street, Suite 210, Carrboro, North Carolina 27510
Info@rtsinc.org www.rtsinc.org 919-933-6699

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- Sylvia Lovely, Executive Director/CEO, Kentucky League of Cities
- Joe W. Mefford, Director, Economic Development, BellSouth Telecommunications
- G. Edward Hughes, President, Hazard Community College
- Richard Green, President, Jefferson Community College, Louisville
- Kris Kimel, President, Kentucky Science & Technology Council
- Keith Bird, Chancellor, Kentucky Community & Technical College System

Jefferson Community College staff members Jill Adams and Mary-Ann Hyland handled the event logistics and registration. Cynthia D. Liston, who directs the activities of the Trans-Atlantic Technology and Training Alliance, did much of planning for the events. Daniel S. Broun, Cynthia D. Liston and Sue Soltis assisted with the writing and editing of the publication. Lawrence S. Earley edited the document and Maxine Mills was responsible for its design and layout.

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Stuart Rosenfeld
December 2000

Foreword

This monograph summarizes presentations and discussions that took place in Louisville, Kentucky at a symposium organized in conjunction with the spring meeting of the Trans-Atlantic Technology and Training Alliance. The theme of alliances was chosen because of the collaborative foundation of the TA3 and to recognize the growing importance of community colleges to regional alliances throughout the industrialized world. The symposium was organized around keynote presentations to lay a framework followed by plenary sessions addressing three common types of alliances—with other educational institutions, community organizations, and regional development agencies. Finally, three parallel workshops presented examples of various successful alliances organized around three themes: urban, rural, and international.

By encouraging cooperation and learning from each other, the alliance spurs innovations and improvements that promote regional development in participating regions.

The host organization for the conference, the Trans-Atlantic Technology and Training Alliance (TA3), is itself an alliance that includes some of the leading post compulsory education and training institutions in the United States, Europe, and South Africa. Established in 1995 as an expansion of a unique southern states alliance of community colleges (the Consortium for Manufacturing Competitiveness), this international alliance is dedicated to sharing practices that prepare workers for technical careers, providing opportunities for faculty development and student exchange, and building industry support services and management skills. By encouraging cooperation and learning from each other, the alliance spurs innovations and improvements that promote regional development in participating regions. The success of the alliance is based on forming relationships that build trust and lead to in-depth understanding of each other's economies, cultures, and circumstances. Some examples of recent collaborative TA3 projects are:

- development and delivery of technical courses over the Internet as asynchronous learning networks.
- joint design, development, and implementation of virtual enterprises to teach information technology skills.
- joint design of means for embedding entrepreneurial skills in an electronics technician curriculum.
- exchange of faculty and/or students and handbook to expand such exchanges.
- regular Trans-Atlantic seminars and workshops that enable exchanges of views and practices across borders.
- an examination of industry sector/cluster-based education and business assistance programs located at technical colleges.

"The Friends We Keep" —Alliances That Work

Whether they are informal "handshake" working relationships or formal joint ventures with prescribed rules, alliances are increasingly recognized as the best way to do business in today's competitive environment. "The trend toward inter-organizational linkages in the form of partnerships and consortia," noted a recent article linking innovation to social capital, "has contributed to a strong resurgence of the U.S. economy."[1]

Companies are becoming increasingly networked through supply chains, joint ventures and marketing cooperatives to gain a competitive advantage over other companies in rival regions or to enter markets in rival regions. But educational institutions, too, are finding it functional as well as fashionable to join forces. Partnerships enable them to expand their ranges of services and become more specialized to achieve economies of scale or increase their effectiveness. Colleges, like businesses, are not independent entities, but interdependent cogs in regional systems that include the employers that drive local production systems, the community, trade, and professional organizations that weave the region's social fabric, and other institutions that comprise regions' lifelong learning systems.

These external factors and interdependencies become obvious to colleges when faced with accountability and performance measures. For example, enrollment, graduation, and retention rates depend on social and cultural norms and aspirations, as well as on the wealth of the community. Employment rates and incomes of those who complete their education depend on opportunities in a vital economy. Achievement scores are influenced by the level of resources allocated to the institutions by state and local governments and the quality of feeder schools. Thus, a community college's value to a community and region is measured as much by its external context and relationships as its internal competencies and capabilities.

This report highlights a small number of exemplary partnerships and alliances around the world and draws insights and lessons that can inform other community and technical colleges. They were presented at an international conference hosted by Jefferson Community College, the Kentucky Community and Technical College System and the Trans-Atlantic Technology and

1 Jane E. Fountain, "Social Capital: A Key Enabler of Innovation," in Lewis M. Branscomb and James H. Keller (Ed.) Investing in Innovation. Cambridge: MIT Press, 1998.

Training Alliance in Louisville, Kentucky, in May 2000. Some of the alliances link educational institutions; others include employers and/or their associations; and a growing number include community-based, technology, or economic-development organizations. Most, in fact, are hybrids, as all the players in a regional economy come to recognize the tight connections between skills, modernization, opportunity, and development.

The recent emphasis on business clusters as means to understand and influence regional economies has helped immensely to clarify the interdependent roles of community colleges within and outside their regions. Because educational institutions are such important sources of human capital formation, skill upgrading, special expertise, labor market information, and technologies, they are increasingly prominent in cluster maps. It might be as erroneous to depict Silicon Valley without noting Stanford's connections as it is to depict North Carolina's hosiery sector without considering the role of its technology center at Catawba Valley Community College. While technology can offset some of the things that caused companies to cluster in the past, such as proximity to suppliers and markets, access to semi-skilled and skilled labor and to casual information flow and tacit knowledge remains regional.

As these clustered systems become more apparent and transparent, more community colleges are recognizing the value of partnerships and alliances with other institutions and employers, and they are becoming more purposeful in their relationships. The colleges that build the strongest alliances and create the highest levels of trust among students and employers are the ones better able to react and respond quickly to market forces and individual needs. Presumably, colleges are more effective when they are closer to:

The colleges that build the strongest alliances and create the highest levels of trust among students and employers are the ones better able to react and respond quickly to market forces and individual needs.

- employers who offer relevant curriculum and teaching methods that better prepare students to succeed and be more productive workers;

- community-based organizations that reach populations at greater risk of failure or that require special support systems;

- economic development agencies, which strengthen local development efforts;

- technology extension organizations, which provide more of the skills needed to support modernization efforts; and

- other educational institutions, which can better articulate the flow of students out of secondary schools and into universities and can lead to economies of scale if the institutions share resources.

In short, the colleges that take advantage of their interdependence can contribute more to economic synergy and social equity. In part, these alliances are being driven by the success of the many business strategic alliances that already dominate the new economy. In part, they are being propelled by the realization that the needs of small and mid-sized enterprises are multi-dimensional and it is inefficient to address them separately. And in part, they are being driven by programmatic funding opportunities.

From the Exception to the Rule

Strategic and operational alliances are no longer novelties in the United States or in other industrialized nations. In 1995, the American Association of Community Colleges Press published *The Company We Keep: Collaboration in the Community College*[2], illustrating some of the most innovative and effective forms of collaboration in leading colleges across the nation. Although most of these collaborations have been around for a number of years, the majority were not a result of an intentional strategy or policy but of innovative actions to exploit an exceptional opportunity or solve a pressing and persistent problem. Over the past decade, alliances have become much more commonplace and many more colleges, including smaller, rural ones, have been forming alliances to fill gaps in programs or services, round them out, strengthen existing capabilities, or share scarce resources. National funding agencies have been factors in accelerating the trend. For example, the National Science Foundation and National Institute for Standards and Technology in the United States and the European Union encourage and, in some instances, require collaboration in some grant programs. Furthermore, many states and nations now expect their colleges to cooperate by sharing curricula and resources where appropriate.

The first wave of connections appeared in the 1950s when the term "community" began to replace "junior" in many institutions' names. The mission of community development rose to prominence as colleges became more aware of how their own successes intersected with community needs and resources. These institutions joined with local agencies and programs in coping with social problems, a need that has not lessened in importance. Presenters in the "Partnerships Among Educational Institutions" session focused on these community development relationships. In Glasgow, for example, Anniesland College hosts unemployment centers, youth groups and community education with local agencies in the low-income, high-unemployment area of Drumchapel.

2 John E. Roueche, Lynn Sullivan Taber, and Suanne D. Roueche (Ed.), *The Company We Keep: Collaboration in the Community College*. Washington, DC: Community College Press, 1995

College missions next embraced economic development, initially in support of local industrial recruitment efforts. Community colleges, which became full partners on economic development teams beginning in the South in the 1960s, were often the first stop for prospective industrial clients looking over a site. Colleges were expected to screen new workers, deliver highly customized training to new and expanding companies, and retrain workers if necessary. To deliver this training—some of which generated additional revenues—in a flexible format, colleges created business and industry institutes. These were often separate from the academic and credit programs and had their own budgets and staffs. Some recruitment efforts led to long-term alliances and jointly sponsored training centers to support the continued employment and training needs of large employers and their suppliers.[3] Beginning in the 1980s, a few colleges widened their economic development mission from entry-level training to meeting the higher skill needs of more technologically advanced firms and supporting and encouraging industrial modernization. Industry training centers upgraded to the latest computerized equipment and production techniques and called themselves advanced technology centers. The conference workshop titled "Partnerships with Economic and Technology Development Organizations" focused on alliances with economic and technology development agencies.

The willingness—and even eagerness—of colleges to partner along a variety of dimensions is perhaps the most interesting new development among two-year colleges today.

Economic and technology development led to another set of partnerships, featured in the session titled "Partnerships with Business and Industry." Faced with rapidly advancing technologies and an increasing demand for incumbent worker training, colleges needed closer ties to the employers to keep their curricula up to date. Businesses, meanwhile, needed the colleges to do the training they could not afford to do themselves. As a result, stronger and deeper alliances between employers and their associations began to develop. The hosiery association in North Carolina, for example, successfully lobbied the legislature for a center at a community college to meet its members' training needs.

Proliferating Purposes

The willingness—and even eagerness—of colleges to partner along a variety of dimensions is perhaps the most interesting new development among two-year colleges today. We do not claim that collaboration is anything new to community colleges, but we do believe that the nature and scope of relationships are changing, moving toward (1) more formal and reciprocal agreements, (2) more clearly defined expectations and roles, and (3) a much broader set of partners than previously. Community

3 Larry Johnson (Ed.), *Common Ground: Exemplary Community College and Corporate Partnerships*, Mission Viejo, CA: League for Innovation, 1996.

As new, federally supported state programs to modernize manufacturing emerged, they began to rely on community colleges and to blend their resources with some of these institutions.

colleges are becoming particularly adept at organizing and facilitating alliances and often at assuming lead responsibility.

Because of certain strengths and advantages, two-year colleges can establish real local working relationships in their communities, not just those that give the appearance of partnerships—for example, those with representative advisory committees. The effective college alliances take on many forms that reflect a wide variety of purposes and structures. The purposes include sharing resources, delivering services, expanding capabilities, achieving economies of scale, and sharing marketing programs and experiences. Few alliances, however, confine themselves to just a single purpose, and initial targeted goals often spin out other complementary outcomes.

Industrial recruitment: Local development agencies were one of the first economic development alliance targets in the United States and also in other countries that aggressively sought inward investment, such as Ireland and Scotland. This led to training centers formed in cooperation with local employers, such as the General Motors Automotive Service Center at Greenville Community College in South Carolina or the Okuma America Partnership at Central Piedmont Community College in North Carolina. Most of the dedicated centers created in partnership with large employers have since become multi-purpose centers, attracting other employers as formal partners/members and as customers. Aligning with economic development agencies has also led places such as Maryland's Hagerstown Community College to provide a home for a four-county, four-state economic development alliance called QUADTEC.

Technological change: In the 1980s, an emerging crisis in manufacturing competitiveness shifted policy toward industrial modernization. This sparked numerous alliances among colleges that took on the new and less familiar challenge of helping companies modernize. First, the National Alliance for Manufacturing Productivity was formed under leadership from AutoDesk in 1987. This alliance of about 25 community colleges across the country sought to introduce and expand the use of CAD/CAM by small and mid-sized enterprises (SMEs)—while at the same time promoting AutoDesk's products. In 1988, the Southern Growth Policies Board, an interstate compact representing the South's state governments, established the Consortium for Manufacturing Competitiveness (CMC), an alliance of 14 community colleges. This alliance evolved into the Trans-Atlantic Technology and Training Alliance, which hosted this event. The CMC's purpose was to develop the collective capacity of community colleges, especially in poorer and rural areas, to become catalysts and sources of skilled workers for industrial modernization, and later to become a catalyst and test bed for innovation. A short time later, CORD, a Texas-based

technical education curriculum development firm, formed the National Coalition of Advanced Technology Centers. As new, federally supported state programs to modernize manufacturing emerged, they began to rely on community colleges and to blend their resources with some of these institutions. The result was a plethora of new alliances among universities, state agencies, and community colleges to make SMEs more competitive.

Some examples:

- South Carolina's technical colleges are formal partners in the Southeast Manufacturing Technology Center.

- The Virginia Manufacturing Technology Center is a five-college alliance formed to support industry in rural southwest Virginia.

- The Southern New Jersey CIM Consortium is a five-college alliance that allows students to take advantage of the sophisticated manufacturing center at Camden County Community College.

- The Alabama Technology Network is an alliance of that state's community colleges and universities and serves as its federally funded Manufacturing Extension Partnership.

Other nations are also building partnerships around training for technological change. In collaboration with Intel and Hewlett-Packard corporations, the Institute of Technology-Tallaght in Ireland created a Technician Development Centre that is open to employees of all companies. A number of Ireland's technology institutes host regional technology centers that are under the national agency for science and technology but work hand in hand with the colleges.

Economies of scale: Some colleges that are limited by lack of resources and budgets to add the new curricula that their students and employers may need choose to form alliances with other schools in order to offer collectively more than they can provide individually. Cross-enrollment and shared technologies allow individual schools to be more specialized on site without limiting options. North Carolina's Haywood Community College formed an alliance with two nearby colleges to share technical programs. In Ireland, the Hibernia University Training Partnership provides a framework for cooperative initiatives between institutes of technology and businesses, giving any firm access to the full range of members' programs. In the Upper Peninsula of Michigan, colleges and universities joined together to offer coordinated programs that feature the best each institution has to offer. In Oregon, the state organized the community colleges into the Oregon Advanced Technology Consortium to coordinate the state's industry programs.

Cross-enrollment and shared technologies allow individual schools to be more specialized on site without limiting options.

Some alliances of colleges form with the explicit aim of facilitating learning, benchmarking, and sharing experiences.

Expanding capacities: Alliances also are driven by desires to expand their capacities to improve services or solve persistent problems. Pontypridd College in Wales is part of a regional five-college consortium that combines the capabilities of each to deliver workforce training. Anniesland College is part of a five-college urban consortium in Glasgow, Scotland, which formed to help revitalize the lagging economy of inner-city neighborhoods. Hazard, Southeast and Somerset Community Colleges, both located in a region of Kentucky that is one of the poorest in the United States, formed a cooperative regional development alliance that includes entrepreneurial training, job training, business consulting, business workshops, and networking.

Building social capital: Brokering alliances among groups of small to mid-sized firms is becoming a means by which colleges can get closer and be more responsive to their SME customer base, and, at the same time, stimulate greater investments in education and training. In Fort Walton Beach in Florida's panhandle, Okaloosa-Walton Community College and an economic development agency organized a group of 30 defense contract suppliers into the Technology Coast Manufacturing and Engineering Network to share information and collectively train employees, conduct research, and bid on contracts. Oklahoma State University's Technical Branch at Okmulgee organized more than 30 local manufacturers into the Northeast Oklahoma Manufacturers Council, which, with the college, set up internship programs, established a successful summer academy to acquaint youth with advanced manufacturing opportunities, and is adopting e-business methods.

Establishing pathways: Perhaps the most traditional forms of alliance are community colleges that partner with high schools to ease the transition from high school to college, and with four-year colleges to pave paths from community college to higher levels of education. Guilford Technical Community College in central North Carolina has an alliance with North Carolina A&T. Gadsden State Community College in Alabama, in an alliance with the University of Alabama and the city of Gadsden, established an independent advanced technology center for technical education that has become a statewide model. In some instances, particularly in Europe, alliances of colleges with universities enable credits earned in certain programs to count toward baccalaureate degrees; the alliances may even allow the two-year colleges to award four-year degrees.

Learning: Some alliances of colleges form with the explicit aim of facilitating learning, benchmarking, and sharing experiences. Perhaps the best known of these is the League for Innovation, a national alliance of leading colleges that associate in part to learn from each other. The Rural Community College Initiative, supported by the Ford Foundation is a consortium of colleges located in distressed regions and serving poor populations with

the goal of improving their local economies and economic opportunities. This consortium represents a mechanism to access collective resources and learn from shared experiences.

Entering the digital economy: The most recent reason for forming alliances is to meet the needs of employers and students for skills needed to work in information technology fields and to compete with the burgeoning Web-based educational offerings. Hundreds of colleges are entering into formal agreements with companies like Oracle, Cisco, and Microsoft to offer their special certification programs. Other colleges, such as those in Colorado's and Kentucky's state systems, are collectively developing Web-based education and training programs.

Inclusive Rather Than Exclusive

Although the examples above represent various types of partners, few alliances are simple two-way partnerships; most are complex and involve more members. The Northeast Oklahoma Manufacturers Council, for example, also includes the Oklahoma Alliance for Manufacturing Excellence. The Hagerstown Community College alliance with development agencies includes the University of Maryland's extension service, the Small Business Development Center, Maryland Regional Technology Council, an army depot, and a public utility. A College-Business Partnership in Wales, modeled on a successful university-based program, links Further Education Colleges with small businesses and assigns students to long-term projects in the firms. Okaloosa-Walton Community College's business alliance involves Gulf Power Company, the county's development agency, and local federal laboratories.

Alliance agreements can be as simple as a handshake and a series of meetings to work out collaborative activities on an as-needed basis, or involve formal contracts with specified roles signed by member chief executives.

Form and Formality

Alliances take on a multitude of forms and have varying levels of formality. The forms range from nearly complete autonomy from the educational system to no autonomy. The agreements can be as simple as a handshake and a series of meetings to work out collaborative activities on an as-needed basis, or involve formal contracts with specified roles signed by member chief executives. An example of the latter is the long-standing agreement between the technical colleges of South Carolina and the Southeast Manufacturing Technology Center (SMTC) by which they receive some of SMTC's federal funding and act as home sites for SMTC field staff. This form of collaboration is an increasingly popular model among federally funded manufacturing technology centers or extension services.

If the alliance involves the creation of a new entity, it can vary considerably in organization and governance. Levels of autonomy are linked to factors such as the degree of private-

sector influence and participation in forming the alliance, and the emphasis on non-credit versus credit programs. The Bevill Center in Alabama, the Advanced Manufacturing Technology Education Center in Lynchburg, Virginia, and Florida's TeCMEN are all freestanding organizations that are staffed outside of the community college system but in which the colleges are vital partners and certify the educational credentials.

Obstacles and Opportunities

Despite obstacles, most colleges find that the benefits of cooperation far outweigh any costs and are worth the trouble of working out the kinks.

Although successful alliances can multiply the impacts of any single college, the road can be arduous. For an alliance to become sustainable over time and meet its long-term goals, every member must realize and be able to measure the value that is added. Some of the issues that plague collaborative efforts and prevent alliances from attaining their full potential include the following:

- uneven distribution of or competition for earned income as more colleges feel pressure to generate revenues to continue their services—particularly when the customer is industry;
- salary ceilings that make it difficult to attract staff with business experience or, if exceptions are made, may cause conflict with faculty in other departments;
- inadequate recognition for each partner;
- inability to agree on operating procedures and principles among institutions with different missions, employment policies, standards, and reward systems;
- lack of support from top levels of agencies (particularly where the alliance is the result of an opportunity to obtain some short-term funding and management has not really "bought in"); and
- personality conflicts, where people simply are unable to get along.

Despite these obstacles, most colleges find that the benefits of cooperation far outweigh any costs and are worth the trouble of working out the kinks. Thus, alliances among educational institutions and agencies are becoming just as popular as strategic alliances and networks among businesses, and increasingly they are viewed as not just frosting on the cake but the cake itself.

Painting the Big Picture

Two common themes run through the conference keynote addresses. Not surprisingly, the first reflects the symposium theme—the importance of alliances and partnerships to meet the challenges of the new century's economic environment. All the speakers emphasized the importance of closer links between education and industry. For example, even in Denmark where cooperation between the two sectors has a long and rich history through apprenticeships, **Roland Østerlund** describes system reforms that will link students' workplace and classroom experiences more tightly through "real world" projects that benefit employers. **Matt Coffey** states that the only way to address worldwide skilled machinist labor shortages is through education/industry partnerships. And in Scotland, **Charlie Woods** explains that his country's chief economic development organization is bringing together industry clusters and educational institutions to create training alliances that enhance clusters' growth potential.

The second theme is the emphasis on understanding the way technology is changing how businesses operate and how we provide education, and meeting these challenges. **Keith Bird** described Kentucky's Virtual University through which 70 percent of the state's colleges and universities provide online courses. **Mark Milliron** suggests that community colleges should adapt to a new education marketplace in which working "wired" adults are seeking new educational opportunities and in which colleges that don't establish an online "brand," based on reputation and repeat business, will lose out.

Coffey brought these two themes together when he pointed out that because the economics of production using new technology is now global, alliances and partnerships should be global.

In Scotland, Charlie Woods explains that his country's chief economic development organization is bringing together industry clusters and educational institutions to create training alliances that enhance clusters' growth potential.

Summaries of the keynote addresses follow.

Keith Bird, Chancellor of Kentucky's Community and Technical College System, opened the meeting by welcoming the participants to the Commonwealth and reminding everyone that 2000 is a "dynamic time for two-year colleges" (see Appendix A for text). Bird only needed to point to his own Kentucky system as evidence that the playing field is changing dramatically for these institutions as they position themselves in the new century.

Since 1997, Kentucky has been in the process of consolidating community and technical colleges. "This was done very deliberately to meet the needs of education and the needs of industry," he said. "There is too much fragmentation in education."

It is also part of an initiative by Kentucky to dramatically increase the educational achievement of its citizens. The state created "Vision 2020," a comprehensive plan to raise the per capita income of the state's workers and to raise the state's lagging literacy rates. Community and technical colleges will play a vital role in meeting the ambitious goals of the programs. The program's vision statement—"Learning is the constant, time is the variable" —demonstrates the state's emphasis on flexibility in education.

According to Bird, it is equally important that this new emphasis on education should respond to industry's very real needs. Accordingly, schools are offering more on-line courses geared to meeting the time constraints of the workforce. In forming alliances with industry, the two-year colleges in Kentucky also have to embrace the vocabulary of their new partners.

"Being 'just-in-time' is important," he said. "But the concepts of 'just enough' (preparing students to move from career to career) and 'just for me' (offering tailored courses for industry) are equally valid." Ultimately, Bird wants colleges to offer the state's workers a portable portfolio of skills.

Matt Coffey asserted that there is a worldwide skills shortage and that developing innovative alliances between educational institutions and industry is necessary to address this problem.

Matt Coffey, CEO of the National Tooling and Machining Association (NTMA), spoke briefly before introducing the first keynote speaker. He asserted that there is a worldwide skills shortage and that developing innovative alliances between educational institutions and industry is necessary to address this problem. Accordingly, NTMA has formed 40 partnerships with community colleges. This cooperation is necessary to address the massive economic shift taking place across the globe.

"In the past, the industrial revolution encompassed science and math," he said. "Now it is science, math and information technology. Now the market for what we do is global. We have to form alliances because economies are now global."

Roland Østerlund, Director of Vocational/Technological Educational in Denmark, offered the conference an overview of the reasons why his country recently reformed its vocational system and was recognized in 1999 as the best vocational education in the world.[4] Østerlund walked the attendees through the substantial shifts in an already innovative vocational education system-shifts designed to meet the changing demands of the new economy. For over 400 years, Denmark, a nation of five million, has held onto the concept of apprenticeship as a guiding force in shaping vocational education strategy. In the last 50 years, however, the system has been adjusted to take into account contemporary industrial realities while keeping the core of the apprenticeship model.

4 Denmark received the Carl Bertelsmann prize in 1999 for the best vocational education system in an extensive international competition.

According to Østerlund, the Danish system of vocational education and training is based on three characteristics:

- Alternating periods of school education with periods of practical training in a company. In this manner students gain academic training while also gaining valuable work experience;

- Teachinging more general knowledge as well as vocational technical skills in the context of the workplace. Fully a third of a student's curriculum focuses on this more broad-based knowledge; and,

- A reliance on a network of social partners or alliances. These partners are involved at both the central level where vocational education policy is made, and at the local school level where it is put into place. Partners include companies and trade unions that have the majority say in shaping polices, but headmasters, students, and the municipalities in which the schools are located also have a voice in shaping the system.

The more static nature of the old vocational system is being revised to reflect the multi-task nature of work today.

However, Denmark is facing the same global pressures as elsewhere and technical education is held in lower esteem today than by previous generations. As a result, the country is pursuing two paradigm shifts, described by Østerlund.

First, there is a shift from student qualifications to student competencies. The curriculum offers a renewed emphasis on courses that will enable students to "use their qualifications in unforeseen environments." Thus the more static nature of the old vocational system is being revised to reflect the multi-task nature of work today.

Second, there is a shift from teaching to learning. The new vocational system in Denmark stresses much more self-directed learning based on the needs, capacities and goals of the individual learner. As the official document describing the paradigm shift states: "open pathways to learning in vocational education and training must be enhanced in the coming years."

The new vocational system in Denmark stresses much more self-directed learning based on the needs, capacities and goals of the individual learner.

"The shift sounds easy but it's not," cautioned Østerlund. "Combining this with the goal of education for all Danes is going to be a difficult task. But our social partners have a consensus on this. We have the right support on this. Consensus can affect change."

With the dropout rate in the vocational system falling from 16 percent to three percent, the Danes are already seeing results from this change.

Charlie Woods, Director of Strategy for Scottish Enterprise, offered the conference information about how a cluster-based strategy based on interdependencies can promote economic development. Like many of the speakers at the conference,

Woods talked about how the new global economy is influencing local development. However, he offered this caution:

"It is a real mistake to believe that traditional industries don't matter," he said. "We need to understand how all industries handle the new economy."

Clusters — geographic concentrations of related companies that share common outputs, inputs (including specialized education and training) or technologies—represent a natural approach to helping traditional industries prosper in a particular region, according to Woods. "Clusters are about creating a self-sustaining system," he said.

Milliron sees community and technical colleges' greatest challenge coming from their willingness to embrace new information technology.

Focusing on clusters allows economic development players to cover all aspects of an industry rather than individual parts. In Scotland, the cluster approach is concentrating on those industrial groupings that make the most sense for their growth potential and their ability to help the local economy. Woods said that before Scottish Enterprise, the managing agency of the cluster effort and Scotland's chief economic development authority, can add value, the clusters must meet two criteria: show that there is substantial potential for growth and that the industry is a willing partner.

Scottish Enterprise is emphasizing cluster-based learning alliances as part of its overall effort. In these alliances, educational institutions and industry leaders come together to develop solutions to meet the training and growth needs of industry. Key features of these alliances include strong industry involvement and ongoing commitment to staff development. Woods said that just getting companies and colleges to sit down together is an accomplishment in many cases because that's not typically taking place. Further, he knows an effort is succeeding when "the companies' hands are on the steering wheel."

Woods offered a few final words of caution to anyone or institution looking to use clusters as a development tool.

"Be adaptable in the cluster approach," he said. "Industries can change. Be flexible about where an industry begins and ends."

Mark Milliron, the President and CEO of the League for Innovation, gave the final keynote address of the conference. Like many of the event's speakers, Milliron sees community and technical colleges' greatest challenge coming from their willingness to embrace new information technology. Milliron outlined three steps that all colleges must take to become "powerful partners" with today's industry.

"Colleges must see trends, spot the challenges, and step in to serve," he said. Some of the trends that Milliron pointed to are

coming from the amazing speed in which information technology is accepted by the public. For instance, while it took an estimated 35 years for the telephone to be widely used, it has only taken four years for the public to see the Web as an indispensable part of how they do business.

"A third of 'wired' adults shop online," Milliron said. "Colleges not only need to attract students through the Internet but deliver workforce development services this way, too."

"Community colleges need to be the key community catalyst for learning about, with, and beyond technology," Milliron said.

In facing this shift, Milliron reminded the audience that education is evolutionary: books upset the tutorial method when they were introduced into the educational process; the industrial revolution led to a "factory" model for education. Today, the digital age is leading toward yet another educational paradigm.

There are definite challenges to using the new information technology in an educational environment, he admits. For instance, the existing "digital divide" in the United States means that whites are much more likely to have Internet access than people of color. Other challenges include the severe workforce shortages that many businesses face. Colleges must be able to use their understanding of the Internet and its implications to partner with companies and address these shortages.

Once the trends and challenges are understood, it is time for the institution to "step in and serve" the marketplace—in this case, industry.

"Community colleges need to be the key community catalyst for learning about, with, and beyond technology," Milliron said. You must speak the language of business or "you'll die a quick death," he added.

Some of the skills that colleges need to produce, according to Milliron, include technology, communication, and computation skills; critical thinking and problem solving skills; information management skills; and interpersonal skills.

As community colleges enter the 21st century, they must understand that while they are the deliverers of knowledge to the now widely defined marketplace, they must also always be seekers of new ideas. "The debate between teaching versus learning is a red herring," Milliron said. "Great teachers are great learners."

Partnerships Among Educational Institutions

In the first of three plenary sessions, three college representatives—two from the United States and one from Scotland—shared concrete examples of reaching beyond their boundaries to achieve important goals. One point that seemed to resonate with audience members and provoked discussion was the importance of reaching out to disadvantaged populations. Higher education is too often seen as an unattainable goal by poor families, most of which have little experience or familiarity with college campuses and mainstream educational offerings. Access (e.g., community-based centers open seven days a week) and gradual acclimation to learning (hobby courses are a starting point) are keys to reaching these individuals. Another lesson from this breakout session is that alliances are successful to the extent that there is a real, compelling reason to cooperate.

"Individuals at the program level who want to try something new need resources for experimentation." We at the state level have a lot to learn about how best to support innovation in our colleges.

For **Mary Crabbe Gershwin** and the Community Colleges of Colorado, "the focus is not on alliances." Rather, she said, "The focus is on the opportunities to participate. Alliances are the vehicle only to facilitate that participation."

Gershwin focused her presentation on an innovative e-commerce initiative in Colorado. This broad-based initiative offers employers access to workshops and consultation for specific needs. For instance, small-business operators can take classes on "e-marketing" and "Legal Issues in e-commerce." The initiative provides new opportunities for employees to try a career path in the computer industry and for high school students to start their careers in e-commerce. The Community Colleges of Colorado serves as the manager of the initiative working with its member institutions to quickly develop and offer curricula that best meet the needs of its wide constituency.

The success of the program has yielded important lessons not only for introducing a broad-based e-commerce initiative but also for crafting an alliance with an educational institution at the center. Gershwin said, "Alliances work when there's a real reason—a compelling reason to take action." E-commerce and its crucial role in the new economy clearly offered that reason.

Gershwin also stressed the importance of educational institutions listening to practitioners in crafting a curriculum. "The best new offerings came from work on the ground," she said. "Individuals at the program level who want to try something new need resources for experimentation." We at the state level have a lot to learn about how best to support innovation in our colleges, she said.

An overarching lesson is that there is power in an approach that combines the elements of local accountability with statewide innovations. A community college system such as Colorado's can attract resources, establish a broad vision and a process that supports learning and reflection. But, she cautioned, "Accountability to the local community should be satisfied before accountability to state or national audiences is expected. We have found real benefits in developing new products with very specific audiences and accountability in mind."

Jim Kreiger of Anniesland College in Scotland continued the discussion on how alliances can be built with the community. "Our vision is of Anniesland College acting as a learning hub, providing opportunities for all through access to learning, assessment, and qualifications," he said. Access is key, he added. "We can't wait for residents in poor neighborhoods to come to our campus—we must go to them."

One key to the success of the program is the establishment of a local identity for the program. Local residents staff the program, and partnerships with unemployment centers and community centers enable it to develop a real relationship with its constituency.

Anniesland, one of ten colleges in Glasgow, has developed a program called Reflex that sets up flexible learning centers to interact with poor communities and deliver learning services that they need. Reflex was initially funded by Scottish Enterprise and now receives funding from the European Social Fund. IT skills are in high demand by residents, and, interestingly, the college uses them as a "back door" to address students' basic literacy and numeracy skills.

One key to the success of the program is the establishment of a local identity for the program. Local residents staff the program, and partnerships with unemployment centers and community centers enable it to develop a real relationship with its constituency. A sense of ease is key because most of these students "don't feel comfortable in mainstream college facilities or programs," Krieger said.

Several issues still face Reflex. Funding—especially long-term sustainable monies—is difficult to secure, and it's a challenge to build confidence in learners who have succeeded in Reflex so that they can progress to higher learning levels at the college itself. Program administrators are trying to push more advanced levels of learning down to the learning centers to help students progress.

Kathy Baker Smith wrapped up session by discussing several partnership efforts by Guilford Technical Community College in North Carolina. In one, called the Teaching Assistant Project, graduate students at local universities are recruited as community college teaching assistants. The result is that graduate students attain professional experience and GTCC students receive high quality instruction.

A centerpiece of the college's partnerships is the Piedmont Triad

GTCC is cooperating with local business and government to address a shortage of information systems employees in the region.

Center for Advanced Manufacturing (PT-CAM), supported by GTCC, local universities, public schools, and employers. PT-CAM is the first metal-working teaching factory in the southeast United States and supports the region's large concentration of metal-working companies. It offers custom, advanced training for existing metal workers and basic training to new ones. The biggest role for GTCC is the Youth Apprenticeship Program. Working with 14 high schools in the area, PT-CAM enables students to progress from high school to GTCC seamlessly, securing academic credentials and work experience concurrently.

The college also is involved in other partnerships, including one focusing on information technology and another on community quality-of-life issues such as crime and safety, and fair and affordable housing. In the latter program, GTCC offers community meeting space and some neighborhood-based educational programs that help poor communities address crucial quality-of-life issues. GTCC reaches out to middle school children by sponsoring weekly activities on campus to familiarize them with the college experience.

In the program aimed at information technology, GTCC is cooperating with local business and government to address a shortage of information systems employees in the region. According to Smith, the effort is not only aimed at new entrants in the workforce, but also at those working in traditional industries.

"Employees in traditional job categories need training in information systems to maintain currency in their own jobs and to be trained for emerging job classifications," she said.

Partnerships with Business and Industry

Community colleges can and should do more than train the future employees of businesses and industries. The examples offered in the second plenary session illustrate that today's partnerships between education and industry cover the gamut of services, from specialized training and workforce development to brokering alliances among companies. A similar theme among these speakers was that to make significant strides in meeting industry needs, companies must be vested, active partners or members, not just advisors. It is through a sense of ownership in a project that industry becomes an integral contributor and beneficiary.

Bob Bailey, director of the Advanced Manufacturing Technology Association (AMTA), opened the session with a discussion of how industry, educational institutions and government have come together to promote economic development in central Virginia. AMTA serves "Region 2000," a four-county region with a

workforce of approximately 130,000. The region possesses a strong manufacturing sector with industrial clusters in metalworking and electronics and a growing service sector that is increasingly dependent on technology.

AMTA began in 1996 as an initiative of private companies facing labor shortages for machinists. Working with government and Central Virginia Community College, the employers formed a member association to promote manufacturing and technology as attractive career choices and improve educational and training opportunities in these sectors. The association established the technology center AMTEC in 1998, and it merged with the community college in January 2000, offering classes and training to both incumbent and prospective workers. Although the college now controls the center, Bailey said it is important that AMTA has remained on its own. "AMTA remains as an independent industry organization that allows it to serve as anentrepreneurial alternative to college bureaucracy," Bob Bailey said. AMTA now offers both credit and non-credit classes, serving almost 1,000 students.

Bailey points to several advantages of the alliance between the employer association and the college. All workforce dollars in the state of Virginia flow through the college which give the center the resources to offer the proper curriculum. This curriculum also enjoys enhanced credibility because it is offered through the community college system yet it is an industry-driven program.

The association established the technology center AMTEC in 1998, and it merged with the community college in January 2000.

Bailey admitted that there were some disadvantages to the alliance, primarily related to the different ways academia and businesses approach the "business" of training. "Business and academia do not view training the same way," he said. "Where business sees skills, the college sees education."

The key factors in the alliance's success are: (1) AMTA is clearly an industry initiative with the employers maintaining ownership of the project (not just an advisory board); (2) the alliance is part of an overall regional economic development partnership; (3) there is a positive environment for partnering in Region 2000. (As Bailey put it, "it's amazing what can happen when you don't care who gets the credit"); and, (4) the decision to devote full-time staff with proper backgrounds to the center.

The program does face challenges in the future including overcoming what Bailey perceives as a bureaucratic state community college system. The center must continue to secure funding and, most important, maintain the working balance between industry and educational partners.

Eamon Tuffy, who directs external programs at the Institute of Technology-Tallaght (IT-T) in Ireland, offered an international perspective on how business and education can foster effective

partnerships. IT-T is one of 14 publicly supported institutes of technology in Ireland. Established in the early 1990s, Tallaght serves the county of South Dublin which balances thriving business districts and public housing complexes and their attendant problems. All the institutes emphasize sub-degree associate work, but they differ from technical colleges in other nations in that some offer four-year and post-graduate degrees and many carry out R&D.

Tallaght's involvement in industry partnerships arose as educational policy in Ireland began to change away from an emphasis on dropout prevention. "We have realized that our continued economic development cannot be secured in terms of manpower by educating school leavers to advanced levels in science, engineering and information technology," Tuffy said. "We must also look to those in more mature age groups, including those already employed, to attain high level skills."

Accordingly, Tallaght is expanding its emphasis on continuing education by collaborating with local industry, particularly the large multi-national companies that drive Ireland's economic development. The institute has focused its collaborative work in four areas: (1) R&D, (2) the establishment of an innovation center, (3) continuing education and training, and (4) innovative training projects. Tuffy focused his presentation on the latter two efforts.

The institute has worked with Intel and a large chemical manufacturing company to offer national certificate courses in maintenance technology, electronics and mechanical engineering at the company site. Over 400 workers have participated in this continuing education effort.

"The most important point about this initiative was that the companies committed to having their workers participate in nationally accredited course modules, even though some of the more theoretical content may not have been a priority for the companies," Tuffy said.

The Institute of Technology has worked with industry on a number of innovative training and development projects funded by the European Union. These include a project aimed at encouraging women to enter the electronics industry and a project aimed at training a large group of long-term unemployed workers. In the latter project, the institute worked closely with Hewlett-Packard to help train workers so they could eventually work at the company; the eventual placement rate was more than 80 percent.

Tuffy said that the institute's success in these collaborative efforts is not without challenges. "All of the college-industry collaboration to which I have referred is with large multinational

companies," he said. "Many of these companies already had a culture of staff development, and company management was open to proposals for course delivery from the institute. We are determined to extend our work in staff development to working with smaller indigenous industry."

IT-T understands that these smaller companies do not have the same experience in promoting training in their workforce and may be reluctant to cooperate with educational institutions. To meet the challenge, staff from the institute is beginning to meet with company heads to explain how forming an alliance can help these companies promote and retain a qualified workforce.

The Northeast Oklahoma Manufacturers Council is a striking example of how a technical college can facilitate and maintain strong inter-firm collaboration. **Rick Allison**, the chair of Academic Innovation and Performance at Oklahoma State University-Okmulgee, spoke about NEOMC and its mission to "provide leadership to form partnerships to continuously improve manufacturing and employee development throughout Eastern Oklahoma." NEOMC began in 1993 when OSU-O (an associate degree-granting institution) brought together the CEOs of a group of small and medium-sized manufacturing companies. The council now has more than 80 active members, drawn from the small and medium-sized manufacturing firms that drive the region's economy.

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The network, according to Allison, gives member companies increased opportunities to jointly bid on projects and has increased local economic growth through cultivation of local vendors and suppliers. The alliance has also increased participation in Quality and Quality Assurance programs, thus enhancing productivity and efficiency. The network also has a significant impact on workforce development by sponsoring incumbent worker training and working closely with OSU to encourage manufacturing as a career for both college and high school students.

"We want to build an infrastructure and share capabilities," Allison said. "We also must build and share a resource matrix." This means that a great deal of emphasis is placed on one of the network's most important roles, securing contract opportunities. All members are required to have e-commerce capabilities. "Electronic infrastructure is a must," Allison said.

Allison points to several lessons learned in developing the network. The lead organization, in this case OSU-Okmulgee, may have to hand-hold in the beginning to make sure the network gets off the ground effectively. The network must meet face-to face regularly. According to Allison, relationships take time to form and personal contact is the medium in which they can develop. Finally, Allison encourages networks to develop

outcomes and measures of success. There must be a process evaluation plan that sets milestones for the organization and measures its progress.

Partnerships with Economic and Technology Development Organizations

According to Allison, relationships take time to form and personal contact is the medium in which they can develop.

The role of community colleges in their economies is broad and deep, particularly in rural areas where there often are fewer players to support economic development. A common theme among the speakers in the afternoon session was that community colleges are close to the ground in understanding what makes the regional economy tick and applying practical solutions to pressing problems. Because so much economic development rests upon education and workforce development, we can expect the need for community college/development partnerships to grow in the coming years.

The importance of a community college in a region's revitalization was demonstrated by the mayor of Madisonville, Kentucky, the **Honorable Karen Cunningham**. Located in the far western part of the state, Madisonville is an area coming to terms with the new economy. Long dependent on the coal embedded in the rolling hills of the region, the Madisonville area has faced a crucial juncture in its economic life. According to Mayor Cunningham, Madisonville Community College has been a key to helping the region grow and move beyond coal dependence. The community college is actively re-training many of the miners and other workers displaced by the slowdown in the coal industry. When a local technical college recently merged with the community college, even more resources were available for providing effective training to the region's workers. Madisonville Community College also played a role in shaping economic development policy. Faced with a vacancy in the economic development director's office, the county turned to the college for assistance. The college responded by "loaning" a faculty member to serve as an interim economic development director, helping the region through some critical development decisions.

If a community or technical college is to be effective, however, it must make the community aware of its expertise, according to Mayor Cunningham, who is a graduate herself of the college. "Community college faculty and staff need to make themselves known to the community," she said. "They need to do a good marketing job and let people know that services are available."

The theme of enhancing collaboration between local development and technology organizations was picked up by **Graham Morris** of England. Indeed, according to Morris, "Collaboration has replaced competition" as the catchword of

the new economy. Morris described a new effort in the United Kingdom to promote life-long learning through a collection of national and local learning skill councils (LSCs) and a series of locally run activities called learning partnerships. The LSCs, beginning in April 2001, will be responsible for the funding, planning, and quality assurance of the United Kingdom's further education colleges; sixth form of school; work-based training for young people; workforce development; adult and community learning; information, advice, and guidance for adults; and links between education and business.

LSCs thus will be set up to ensure that the needs of local communities and individuals are met. Again, collaboration will be the key; all 47 local LSCs will work closely with local development agencies. The councils will include representatives of local colleges and training providers ensuring that a broad range of opinions are represented.

The establishment of local learning partnerships in 1998 has been another key element in coordinating the delivery of training in the United Kingdom. Brokered nationally by the representative organizations of colleges, local government and training and enterprise councils, these partnerships brought together previously diverse—and quite often competing—agencies that were providing post-secondary education and training. Local partnerships include representatives from employers, community organizations, job-training agencies, and other crucial development organizations. These partnerships are charged with developing lifelong learning plans and are ultimately intended to raise educational standards and improve quality control.

The learning partnerships' relationship with the LSCs is critical in establishing a comprehensive approach to local development. The partnerships essentially identify what local people need in terms of learning opportunities, and they represent this information to the LSC. They also demonstrate the power of collaboration by encouraging local providers such as colleges to share planning practices, which help them avoid service duplication and fill in gaps in services. The partnerships, unlike the LSCs, continue to be voluntary and tend to be more locally focused. To date, despite some initial skepticism, local partnerships have succeeded tremendously; j32

their role as an advisory agency will likely increase, especially as the LSCs become a permanent fixture in the development of educational services in England.

According to Morris, the continued success of the local partnerships depends on several key elements: "Good partnerships must get a commitment from all members," he said. "They must have a clarified vision and an agreed-upon goal.

Morris described a new effort in the United Kingdom to promote life-long learning through a collection of national and local learning skill councils (LSCs) and a series of locally run activities called learning partnerships.

They must keep everyone involved." Finally, echoing the suggestion of Mayor Cunningham, Morris argued that the truly successful partnerships "must market themselves."

John Ahlen, the director of the Arkansas Science and Technology Agency, wrapped up the session by discussing how his organization brings together industry, government, and educational institutions. A change in the outlook of the agency occurred in the early 1990s with the establishment of the national Manufacturing Extension Partnership (MEP), a federal-state partnership to give small and medium-sized manufacturing companies production and business assistance services to help them remain or become globally competitive. With the establishment of the MEP, ASTA became more involved in workforce development, where previously the agency had only been operating at the "interface of universities and companies." ASTA began looking to work more closely with smaller companies, two-year colleges and some agencies. But ASTA made a critical mistake, according to Ahlen. "We took the partnership for granted," he said. "Soon our partners were asking 'Hey, what's in it for me!'"

As a result, ASTA began to listen more closely to its newest partner, the two-year college. "Two-year colleges are most closely in tune with what is going on in the marketplace," Ahlen said. "And they were the ones who were really seeing the value in the partnership. As ASTA began to work to develop programs with the colleges, a theory of effective partnerships effective began to emerge.

ASTA began to listen more closely to its newest partner, the two-year college. "Two-year colleges are most closely in tune with what is going on in the marketplace."

"There are three characteristics of alliances that work," Ahlen said. "There must be a shared mission, there must be a mutual benefit for all involved, and there must be trust.

"You must partner with the eager," Ahlen continued. "Two-year colleges are not naysayers; they make ideal partners."

Rural Innovations

Three concurrent workshop highlight alliances in three very different contexts. In the first, the speakers gave us three examples of community colleges breaking out of their traditional molds to support economic development in their rural communities. Each initiative—from a region-wide alliance for small-business training to advanced technology and business incubation centers—places the community college at the center of development activities. These colleges are working with community partners to meet the special needs of rural areas striving to find their economic niches in the global economy.

Jeff Cocks, of Pontypridd College in Wales, spoke about how the

South Wales Education for Industry Consortium (SWEFIC), a consortium of five college in Wales, has already achieved several substantial outcomes in just over two years of existence. SWEFIC works closely with small local companies to identify and solve training needs. One outcome was the creation of the Advanced Electronic Production Cell, which greatly enhanced the colleges' ability to meet the needs of the important electronics industry.

Cocks cautioned that the accomplishments of SWEFIC did not happen overnight. He suggested several important lessons to other institutions thinking about entering into such a joint partnership.

"Clearly one of the main problems in the early stages was trust between the principals who had the responsibility to ensure that their college had its fair share of the funding," he said. "Ground rules need to be set as early as possible." In the case of SWEFIC, the largest college made an important gesture when it proposed that the funding be split equally among the institutions rather than according to size.

Cocks also said that developing plans before approaching employers was critical in getting the respect of their industry partners. "Personal development plans showed employers that we were capable of producing something they recognized as useful," he said. "This was somewhat a change from knocking on doors asking for favors."

Above all, Cocks suggested, the alliance's success is the result of the project manager's competence. "To be successful the project manager must have vision, the ability to convey that vision to colleagues, the ability to implement the vision by breaking it down into practical actions, the ability to work with and through others," he said. "Luckily, we have had such a person."

The Appalachian region of the United States has long been considered an economic backwater, but with the support of the local community college, western Maryland is attempting to turn the region into a place where a high-skilled workforce can thrive. **Doug Leather**, the director of Hagerstown Community College's Advanced Technology Center, presented the story of the center (ATC) and its sister Technical Innovation Center (TIC), two efforts the college is undertaking to help businesses grow and prosper.

The ATC serves the business and industrial community of parts of four states (Maryland, West Virginia, Virginia and Pennsylvania) through programs offered through the college and technical assistance. According to Leather, the TIC complements this effort by "helping start-up manufacturers and technology-oriented firms survive and thrive during their critical first years.

"To be successful the project manager must have vision, the ability to convey that vision to colleagues, the ability to implement the vision by breaking it down into practical actions, and the ability to work with and through others."

The centers grew out of rapid economic change that had dire effects on the region. Several major industries had restructured their operations, including massive layoffs that led to double-digit unemployment.This happened at the same time as a geometric rate of change in technology. Something had to be done.

"It is imperative that economic development agencies be involved early in the planning process."

The college, cooperating with local development agencies, set several goals that they believed had to be met to transition the local economy: workforce development, increased technology transfer, an emphasis on shared technical resources, and a program of business incubation. The partners agreed on a multi-level strategy. Alliances were built between industry and funding sources. A physical location through which the services could be offered was identified. Finally, high-growth industries were targeted and the program focused on being flexible and responsive. In 1989, the ATC opened its doors, and it now includes four specialized centers and 14 specialized labs addressing a wide range of industrial needs.

The TIC was a natural next stop in the process, as the region's economy increasingly became dependent on the entrepreneurship of small manufacturing firms. The center opened in 1994 and became fully self-sufficient in 1998. The 30,000-square-foot facility features an open manufacturing floor that enables new businesses to create the products they need to launch them on the path to success. To date, the center has had 34 tenants and the space is fully occupied. Through the actions of the center, 171 jobs have been created or retained.

Leather pointed to several lessons learned in establishing both the centers. "It is imperative that economic development agencies be involved early in the planning process," he said. "These agencies can help identify target industry representatives."

That concept of targeted industries is crucial, according to Leather. It is also critical to design efforts to meet the future needs of the technologies that are emerging in the targeted industry.

But Leather said the most important advice he can offer any institution attempting to create these types of centers is to mirror the industries trying to be reached. "You must be entrepreneurial," he said.

G. Edward Hughes, the president of Hazard Community College in eastern Kentucky, stressed the importance of working in partnership with a local community to foster economic development. The college is participating in the Ford Foundation's Rural Community College Initiative (RCCI), a coalition of community colleges located in historically disadvantaged regions of the United States. In taking part in the initiative, the college set out several goals including: supporting activities leading to instructional transformation, creating a

network of rural commodity colleges, and affecting state and national policy environments. Hazard has taken that initial vision and transformed it to meet the needs of its Appalachian community, one that is struggling to move away from a coal-based economy.

Behind the college's approach to RCCI lay an emphasis on building capacity. "We have to build capacity within the community, the region, and the college," Hughes said.

The college designed several projects to reach these goals. Among them was the creation of an entrepreneurial education curriculum aimed at four local high schools and middle schools. This effort involved partnerships with local educational organizations as well as private industry.

Some of the positive results of the RCCI include the creation of a regional telecommunications consortium and a regional economic development alliance, a process aimed at promoting college advancement, and more attention to institutional planning and effectiveness.

"The RCCI approch builds capacity within the community, the region, and the college."

The RCCI process also revealed several important lessons. First, a community college must be established as an important leader in the community and must be actively involved. It is also critical that the institutions that are included in a planning team be committed to the process and involve all the major players in the community. Hughes also stressed communication. "You have to have written goals, objectives and a time table," he said.

Urban Innovations

Urban environments are often the most difficult places to form alliances and partnerships. Competing community groups, individual locales within a metropolitan area and diverse economic development needs can make collaboration a challenging process. In the second workshop, the conference brought together three speakers who, with the active participation of community colleges, are working to bring progressive economic development to cities, some of which have experienced significant distress.

Margaret Montgomery, the provost of Delgado Community College, led off the session by describing the innovative Metrovision Partnership. Established by support from the Annie E. Casey Foundation, Metrovision is working to bring economic development to inner city New Orleans, one of the most challenging economic environments in the entire United States.

Delgado serves the entire New Orleans region. With an enrollment of more than 20,000, the college offers technical

education to a significant percentage of the community's workforce. The college pays special attention to targeting the industries with the greatest opportunities for employment; it provides training for 13 of the 20 fastest-growing occupations in Louisiana. That sensitivity to training led the college to establish the Metropolitan Access Tech Prep Consortium in 1989. Building upon the strength of that effort, the Chamber of Commerce in New Orleans and the River Region established Metrovision. Metrovision, which brings together the region's major players in business, education, labor, government and the community, is charged with the mission of "marketing New Orleans region's competitive strengths and targeting those industries in which it has an advantage."

The area in which Delgado has had the most input is in workforce development. Delgado is continuing its strong presence in Tech Prep and supplementing that with an ambitious school-to-work and school-to-career approach. The way in which Metrovision and the college interact around workforce development issues is evidence of the power of partnerships. Research conducted under the auspices of Metrovision identified growth industries and growth occupations. These industry sectors were targeted for urgent workforce initiatives. In addition, the college worked to market its incumbent worker training to business and industry and conducted focus groups to identify industry trends, occupation demand, and core competencies. These focus groups were plugged into a five-year economic trends analysis. It is important to recognize that this effort is a regional plan, in this case calling for partnering with four local workforce investment boards.

The way in which Metrovision and the college interact around workforce development issues is evidence of the power of partnerships.

Montgomery recognizes that despite the initial success of Delgado Community College and the Metrovision partnership, tremendous challenges still exist. As in the case of many partnerships, one challenge is fostering effective communication between such a wide range of partner institutions. Another challenge is ensuring that the planning process is continuous. "Strategic planning must be fluid," Montgomery said. "The problem sometimes that plans can be too short term."

While the Metrovision partnership concentrates on working with a wide set of industries, the Metropolitan College program offered through Jefferson Community College (JCC) concentrates on working with one employer, albeit a very large one, United Parcel Service (UPS). **Richard Green**, the president of JCC, reported on this program which has been instrumental in keeping UPS in Louisville. In 1993, UPS threatened to leave Louisville primarily because of their inability to attract part-time workers. The night shift, in which much of the loading and unloading of packages for shipment around the nation occurs, was woefully understaffed.

Instead of offering massive tax incentives to keep UPS from moving, Louisville and Jefferson County designed a program that truly addressed the firm's needs for employees and that demonstrated how partnering is a key in economic development. The college established the Metropolitan College initiative which offers UPS workers free tuition to JCC (and other higher education institutions in Louisville), free books and a housing allowance. The college is also building a dormitory to house participants in the program. These students work at UPS for 15 to 20 hours a week, usually between midnight and 4 a.m. The college offers classes at non-traditional hours, usually in the evening, at a facility near UPS to allow the students to avoid morning classes. UPS has extended the benefits of the program by allowing students to borrow up to $8,000, loans that are forgiven if the student works a certain amount of time at the company.

Before, turnover was at 100 percent; among those participating in Metropolitan College, it now hovers around 20 percent, and the majority of the students are on track to receive their associate's degree.

The results of the program have been impressive for both the company and the students. The company has seen its turnover rate drop dramatically. Before, turnover was at 100 percent; among those participating in the college, it now hovers around 20 percent, and the majority of the students in the college are on track to receive their associate's degree.

Both the college and UPS recognize that there are limitations to the program, Green said. The UPS jobs are not meant to be career track. However, all the partners are investigating ways to expand the program perhaps to create more career-focused job opportunities at UPS.

Jim Masi reported on a program based at Springfield Technical Community College (STCC) in Massachusetts that is more career-focused. The goal of the Northeast Center for Telecommunications Technology (funded by the National Science Foundation) is "to develop a new competency-based, industry-driven, seamless curriculum" that educates workers in the rapidly growing field of telecommunications engineering technology. The center is administered by STCC but it brings together more than three-dozen educational and three-dozen industrial partners. Together, the partners plan to begin educating young people in Grade 11 about telecommunications technology. The curriculum will then take them through an associate's degree and a bachelor's degree in engineering and produce graduates with skills that can make an immediate impact on the industry. Thus the center is developing a "career pathways model" that works to meet the needs of the burgeoning telecommunications industry in New England.

Masi, who directs the program, said he has no illusions that such an ambitious project is an easy task. Indeed, he stated that a partnership between industry and education is very similar to a marriage. "You need a courtship," Masi said, pointing out that too

"You need a courtship," Masi said, pointing out that too often industry and colleges jump into an alliance without fully understanding each other's particular goals and concerns.

often industry and colleges jump into an alliance without fully understanding each other's particular goals and concerns. Much like a marriage, Masi continued, "there are no guarantees." Alliances are evolving entities. What may have been the original structure at the beginning of the process may look radically different at the end of the process. Perhaps most important, "partnerships demand your full attention," Masi argued. The success of the center is due in no small part to the fact that the college places a great deal of emphasis on ensuring that resources are directed toward the effort and that it is not left to languish on the outskirts of the college's overall goals.

The success of the center has not come without its headaches, Masi was quick to admit. It has been difficult to get full faculty cooperation in the project, and the challenge of offering credit versus non-credit curricula continues. One way that the center's program has been successful is adjusting to the different schedules of the business world. All the courses are offered through the Web, essentially allowing active employees to take portions of their academic study at their desk at work. But Masi argued that the most essential ingredient to the program's success is the acknowledgement that the center's structure is unique. "Every beast has its own character," Masi said. It is essential that any alliance develop a structure that reflects its particular set of circumstances.

International Innovations

Innovation in the international context was the focus of the third workshop. One example focused on creating an educational "brand" in Scotland to motivate lifelong learning, while the other speakers focused on cross-border endeavors—students from many nations interacting through virtual enterprises, and the creation of portable credentials in Europe to make qualifications more "transparent." The key message here was that innovation stems from partners and alliances. Forming true partnerships with joint action leads to better outcomes for students and regions.

Stephanie Young, the director of Lifelong Learning at Scottish Enterprise, reported on the success of The Real Partnership in that country. The massive partnership is aimed at creating a "learning city" in Glasgow, whereby citizens embrace lifelong learning. The Real Partnership is a partnership between Scottish Enterprise (Scotland's chief economic development authority), local schools, cultural and leisure programs, ten colleges, five universities and Learning and Teaching-Scotland. Citizens can participate in the program through any of the partners.

Explaining the rationale for the efforts, Young told audience members that "Lifelong learning drives economic development."

Indeed, the goal of the Real Partnership is to stress to local citizens that "it is never to late to learn." This is especially important as Glasgow works to orient its citizens toward high-tech careers and away from heavy industries that formerly dominated the economy.

The Real Partnership offers a unifying "brand" name to education that brings together the major education players in the region. It also brings together a network of high-quality learning centers that are inviting to local residents (some even have cafes). Learning options at these centers are diverse, including videos, computers, and CD-ROMS. The Real Partnership is pioneering virtual learning in the region where students can learn while participating in intensive on-line discussions with other classmates.

Among the resources at the centers are "Sharpen Up," a computer-based cartoon family that guides students through a process to help them understand their own learning preferences and become better learners. Another resource is "The Works," labor market information concerning employment opportunities that is presented in a manner enticing to 18- to 25-year-olds.

One reason for the early success of this initiative is that the participants don't see the alliance as just words on paper. "The partnership is real," Young said. "Partnership can be an overused word. This is real and based on joint action."

One reason for the early success of this initiative is that the participants don't see the alliance as just words on paper. "The partnership is real."

The goal over the next two years is to reach 300,000 learners through 50 centers. An encouraging development is that the private sector is seeking to be more heavily involved. "They took a wait-and-see approach at first, but now they are coming to the table offering to open centers and add to program content," Young said.

Stuart Schulman from Kingsborough College in New York City discussed a unique effort at his college that is using "virtual enterprises" operating in an international context as teaching devices. Kingsborough College is part of a city college system that features 18 institutions of higher learning. As a community college in the system, Kingsborough is charged with serving students who require a great deal of remedial work, often because they are recent immigrants with poor language skills. Because of this, it takes most students much longer than two years to receive a degree, both because they attend part time while also working and because they need so many remedial credits before they can start accumulating credits towards an associate's degree.

To meet the challenges of serving this population, Kingsborough is developing programs to help its students become better learners and better motivated to complete their degree programs. One such effort is the development of a "virtual

enterprise" program linked to EUROPEN, a large-scale international virtual-enterprise project that operates throughout Europe. Students assume different roles in simulated companies and take part in international transactions with simulated companies run by students in other countries. Schulman said that although the 11 businesses in operation now are just "simulations," they do accomplish important goals. "It helps with retention of students because they are excited, and it helps connect the learning and work worlds," he said.

Students average 110 hours per semester working in the business even though they are only required to work 38 hours. The program is also effective in reaching many students who are immigrants to the United States and it fosters face-to-face interaction between faculty and students.

Kingsborough has great plans for the program and may create a university institute to focus on the value of virtual enterprises as learning tools. With new resources, Schulman believes the program will be able to expand greatly.

Arthur Schneeberger, the director of Research at the Austrian Chamber of Commerce, spoke about a European-wide initiative that will allow greater movement in employment from country to country. The European Union cannot mandate funding for education within a particular country. The European Union, however, does stress labor market needs and encourage countries to address these shortages.

Europass is the European Union's attempt to meet labor market needs across the continent. The aim is to understand each country's educational systems so that workers may move more easily from one country to another. The process of implementing Europass has been laborious. Trust is a major barrier. Each country has to recognize other nations' systems of training and believe that their workers will be qualified. Other barriers are more concrete. Language barriers must be overcome to ensure that employers understand worker qualifications. At present there is a plan for a maximum of three languages to be used on a trainee's Europass: the language of the host employer, the language of the home institution, and the language of the passport holder if it is different from the others.

This program only formally began in 2000, Schneeberger told audience members. Yet many countries are already embracing it because it is the only recognized way to accept one another's educational qualification system for technical or vocational programs.

The Future of Alliances

It appears that alliances are not a passing fad but a smart way to foster economic growth. A Directorate of the European Union report claims that the "innovative capacity and the regional 'learning' ability associated with it is directly related to the density and quality of networking within the regional productive environment. Inter-firm and public-private co-operation and the institutional framework within which these relationships take place are the key sources of regional innovation."[1]

The report of the New Expeditions Initiative of the American Association of Community Colleges and Association of Community College Trustees last year focused its recommendations on connecting community, learners, and colleges.[2] This coincides with the growing interest among economic development agencies in becoming "learning regions." An environment that facilitates learning is increasingly essential to the high performance of almost any institution, community, or region. The learning region is, by definition, highly interdependent and inter-connected region, and the community college, as a source and broker of knowledge and with its regional focus and community development mission, is an essential factor.

The challenge for community colleges lies in creating and permitting the collaborative mechanisms and environments that allow interaction among various stakeholders and that encourage, support, and reward learning. Without sufficient opportunity and the resources to develop and maintain connections and alliances and without the means to import and exchange views and ideas, learning is substantially limited.

1 Landabaso, Mikel, C. Oughton, and Kevin Morgan. 1999. *Innovation Networks-Concepts and Challenges in the European Perspective*. Paper presented at the Fraunhofer Institute in Karlsruhe, Germany, November 18.

2 *New Expeditions, The Knowledge Net*, (Washington, DC: American Association of Community Colleges, 2000).

Appendix A

Agile, Inclusive, Functional: Kentucky's New Education-Business Alliance

In 1997, Governor Paul Patton and the Kentucky General Assembly created the Kentucky Community and Technical College System (KCTCS) as part of the state's Postsecondary Education Improvement Act. Their intent was to create a system that would help to develop a world-class workforce in Kentucky and raise the per capita income of its citizens to the national average or above by the year 2020.

As the ninth and largest entity of Kentucky's Public Postsecondary Education System, the Kentucky Community and Technical College System (KCTCS) serves the entire Commonwealth and adjoining states through its transfer and occupational/technical programs, along with customized training services for business and industry. With more than fifty main branch campuses and learning centers, as well as on-line associate degree programs, KCTCS offers "J-4" education: "just-in-time, just enough, just right, and just for you."

KCTCS comprises twenty-eight colleges organized into sixteen districts. Eleven of the districts consist of a community college and one or more technical colleges, and five districts have a single community or technical college. In 1999, more than 48,000 students participated in credit programs offered by schools within KCTCS and more than 160,000 students took part in continuing education and professional development programs.

The newly formed KCTCS joined thirteen community colleges and fifteen technical colleges into a single system with an expanded mission: responding more efficiently and effectively to the needs of business and industry, and serving as the primary trainer of Kentucky's workforce. This new system encompasses a range of programs providing associate degrees, transfer programs, baccalaureate degrees, and occupational/technical certificates and diplomas. KCTCS will play a larger role in supporting adult education and literacy in the state by expanding remedial and developmental programs for an increasingly diverse student population and making these programs more accessible to this population. This linkage between education and economic development is a fundamental principle of KCTCS expressed by the slogan "Education Pays," which was adopted by Kentucky for its education reform program.

Under the Council of Postsecondary Education's (CPE's) 2020 Vision, Kentucky's post- secondary institutions must enroll

80,000 new students by 2020. Since the number of new high school graduates alone cannot meet that goal, more than half of these new students will have to come from Kentucky's current workforce, approximately forty percent of which have low or marginal literacy skills. In addition, the CPE has established enrollment goals in counties with historically low participation rates in postsecondary education, particularly in Kentucky's rural and Appalachia counties. Another major goal is to retain more students throughout all institutions.

To meet these goals, KCTCS must develop strategic partnerships and collaborations with a wide variety of professional associations, government partners, private and public sector employers, and other educational institutions on the state, national, and international level. These strategic partnerships must be systematic, synergistic, scaleable, and sustainable. KCTCS has identified state and local providers of workforce training and services as strategic partners to maximize resources and provide seamless pathways for Kentucky citizens. By creating a "customer focused" system to serve business and industry, as well as the individual, Kentucky will be positioned to grow existing industries, attract new ones, and thus create a strong economy for the 21st century.

As learning alliances are established, "best practices" must become "best systems." One model collaboration and partnership is Metropolitan College in Louisville. The members of this partnership include the United Parcel Service, University of Louisville, Jefferson Community and Technical Colleges and the IT FASTTRACK Program, a system-wide center of excellence in information technology, which is providing short-term certifications, degree programs, and new faculty training. The IT FASTTRACK incorporates the system partnerships with Cisco Systems, Inc., Nortel Networks, Microsoft and Oracle corporations, and other industry leaders in information technology to provide on-going training for students and faculty. Programmatically, KCTCS has taken a leadership role in establishing seamless partnerships between secondary and post-secondary education, creating curriculum alignment through articulation agreements, and developing national and state skill standards and certifications and vendor-based certificates such as the Novell Networking Engineer.

Another sector-based approach is the development of a statewide network for the delivery of "Lean Manufacturing" programs. The lean approach to production, developed by Toyota and the University of Kentucky, is a philosophy of efficiency that shortens the time between customer order and factory shipment. Through this approach, more and more companies are successfully competing in today's global marketplace. With the development of the new "Lean Manufacturing Certificate" program, KCTCS will extend the

capacity to deliver this training statewide and integrate these components into existing technical degree programs. Utilizing CD and Web-based instruction, "Lean Manufacturing" will also be available anytime, anywhere.

Growing opportunities for dual enrollment have led to dramatic increases in postsecondary enrollment and the development of a "middle college" concept that allows secondary students to earn up to thirty college credits by the time they graduate from high school. To facilitate the continuing education of the workforce, KCTCS is eliminating the artificial distinction between credit and non-credit courses, particularly in customized training, by converting many of its non-credit courses into credit courses. KCTCS awards fractional credit to create portable skills credentials, which can be used to complete certificate and degree programs in its institutions. It is developing a process to award "career transcripts" for all programs. The modularization of courses and programs—the "chunking down" of the curriculum—will provide more open entry/open exit opportunities for students to acquire the skills they need for the first or better job but which may be applied later to certificate or degree programs for career success.

KCTCS is also developing new competency-driven associate degree programs with multiple entry and exit points. One of these programs is Information Technology, which has ten embedded certificate programs, with each certificate having formal industry recognition. Pre- and post-assessments are part of all occupational and technical programs. In addition, KCTCS's partnership with the America College Testing Program (ACT, Inc.) provides WorkKeys assessments and job profiling as parts of a comprehensive system of programs and targeted instruction to address gaps in a student's or employee's job preparation.

Through the WorkKeys system, KCTCS is the catalyst for creating a common language and a common measure to identify workplace skill levels for Kentucky's business community, educational systems, and individual citizens. To this end, KCTCS has partnered with the Kentucky Cabinet for Workforce Development to create an "employability certificate" that will align an individual's skills with those needed to be successful in the workplace.

Additionally, KCTCS has been a partner in the establishment and implementation of the Kentucky Manufacturing Skill Standards Initiative. The Kentucky Manufacturing Skill Standards (KMSS) is a test for the basic skills (academics, employability, and occupational) that workers need to enter the manufacturing industry. Manufacturing skill standards assess individuals who want to be certified and target instruction that will help them understand the "culture of manufacturing" and give them the ability to apply basic skills to manufacturing occupations.

Coupled with WorkKeys assessments, the KMSS certify that an individual possesses the skills needed to be successful in the manufacturing industry. Additionally, KCTCS works with 29 training consortia and the KMSS Super Consortium to deliver assessment services and customized training. This will allow employers to assess current or new workers and provide whatever additional training they need.

In creating an effective workforce development system, KCTCS has developed a joint appointment with the Kentucky Cabinet for Workforce Development to coordinate services provided through the Workforce Investment Act (WIA), secondary technical education, employment services, vocational rehabilitation, and adult education. This agreement includes overseeing a $12 million training incentive fund, Workforce Investment Network System (WINS), which will provide customized training for new jobs in existing industries or new companies seeking to locate in Kentucky. KY WINS incorporates a worker-centered approach to provide transferable skills, particularly those needed for the new knowledge-based economy that Kentucky intends to develop.

In addition, KCTCS is evaluating all potential training with business and industry through a statewide Alliance for Technical Training that consists of the CPE, Adult Education and Literacy, the Kentucky Cabinet for Workforce Development, the Kentucky Cabinet for Economic Development and the KY Louisville/ Jefferson County Workforce Investment Board. This Alliance also aligns funding and staff resources to achieve not only post-secondary enrollment goals but also the new adult education legislative mandate designed to dramatically increase literacy in the workplace. Kentucky's approach to innovation reflects the power of "accelerated learning alliances" promoted by the Trans-Atlantic Technology and Training Alliance (TA3). As an active participant in TA3, KCTCS is building the capacity to leverage additional resources through its network of colleges. With the two colleges and the system office involved in the alliance, KCTCS is promoting collaborations with TA3's international members in program development, and developing other opportunities for exchange of ideas, faculty, and students.

The organizational framework for the development of KCTCS as a system and network of agile community-based education and training colleges is based upon an inclusive team-based model. Utilizing both functional and cross-functional teams at the system and college level enables KCTCS to respond to its customers and stakeholders more efficiently and effectively. It also eliminates the silo thinking within the institutions by combining workforce and academic education and by identifying potential partners in the educational "ecosystem." Strong and meaningful partnerships are essential if KCTCS is to meet the challenges of the complex global marketplace and the

accelerating rate of change in the external environment. Strong partnerships are essential to create the capacity for continuous change, learning, and improvement.

Keith Bird, Chancellor,
Kentucky Community & Technical College System

Appendix B

Speakers and Moderators

Dr. John Ahlen is President of the Arkansas Science & Technology Authority.

Mr. Rick Allison is the Chair of Academic Innovation and Performance at Oklahoma State University-Technical Branch at Okmulgee.

Mr. Robert M. Bailey, Jr. is the Director for the Advanced Manufacturing Technology Association, Executive Director of the Advanced Manufacturing Technology Education and Director of Region 2000's Technology Council in Lynchburg, Virginia.

Dr. Keith W. Bird, Jr. is Chancellor of Kentucky's Community and Technical College System.

Mr. Jeff Cocks is the Principal of Pontypridd College in Wales.

Mr. Matthew B. Coffey is the President of the National Tooling and Machining Association (NTMA), a 2,700 member trade association.

Ms. Karen Cunningham is the Mayor of Madisonville, Kentucky.

Dr. Mary Crabbe Gershwin is the Director of System Innovations for the Colorado Community College and Occupational Education System CCCOES.

Dr. Richard Green is President of Jefferson Community College in Louisville, Kentucky, the largest of 20 institutions in the Kentucky Community and Technical College System.

Dr. George Edward Hughes is President and CEO of Hazard Community College, a multi-campus, rural community college in southeastern Kentucky.

Mr. Jim Krieger is Head of School (computing) at Anniesland College Engineering Department in Glasgow, Scotland.

Mr. Doug Leather is Director of the Advanced Technology Center, Technical Innovation Center, and Engineering Technology Programs at Hagerstown Community College in Maryland.

Ms. Sylvia Lovely is Executive Director/CEO of the Kentucky League of Cities.

Dr. James V. Masi is the Executive Director of the Northeast Center for Telecommunications Technologies.

Mr. Joe Mefford is State Economic Development Director for BellSouth.

Dr. Mark Milliron is President and Chief Executive Officer of the League for Innovation in the Community Colleges.

Dr. Margaret D. Montgomery-Richard is Executive Dean and Provost of Delgado Community College-City Park Campus in New Orleans, Louisiana.

Dr. Graham Morris is a former Further Education College principal in the United Kingdom.

Mr. Svend Aage Olsen is Principal of EUC-Syd, a large Danish technical college in Sønderborg and educational adviser to the Danish Directorate for Vocational Education.

Mr. Roland Østerlund is Director of Education at the Ministry of Education in Denmark and responsible for major reforms in Technical and Vocational Education in Denmark.

Mr. Richard Pietrasik was Chief Executive of Scottish Council for Educational Technology.

Dr. Stuart Rosenfeld is President of Regional Technology Strategies, Inc.

Dr. Arthur Schneeberger is Research Director of the Institute for Research on Qualification and Training of the Austrian Economy.

Dr. Stuart Schulman is Professor of Tourism and Hospitality at Kingsborough Community College of the City University of New York.

Dr. Jeffrey Schwartz is Education Specialist for the Appalachian Regional Commission.

Dr. Kathryn Baker Smith is Vice President for Institutional Effectiveness and Advancement at Guilford Technical Community College in Jamestown, North Carolina.

Mr. Eamon Tuffy is Head of Development & External Services at the Institute of Technology Tallaght, South Dublin County, Ireland.

Ms. Edie West is Executive Director of the National Skill Standards Board (NSSB) in Washington, D.C.

Mr. Charlie Woods is Director, Strategy and Planning for Scottish Enterprise in Glasgow.

Ms. Stephanie Young is currently the Director of Lifelong Learning at Scottish Enterprise Glasgow (formerly Glasgow Development Agency).

Appendix C

Symposium Agenda
May 23, 2000

8:00 am Coffee

8:30 am Opening, President, Keith Bird, Chancellor, Chancellor Community & Technical College System

9:20 am Introduction: Matthew Coffey, CEO, National Tooling & Machining Association

Keynote: Roland Østerlund, Director of Vocational/Technical Educational Denmark

10:10 am Break

10:40 am Introduction: Stuart Rosenfeld, Principal, RTS, Inc.

Keynote: Charlie Woods, Director of Strategy, Scottish Enterprise

11:30 am Lunch

1:00 pm Introduction: Tony Newberry, Chancellor, Chancellor Community & Technical College System

Keynote: Mark Milliron, President & CEO, League for Innovation

1:45 pm **Pragmatic Partnerships**

A: With educational institutions

Moderator: Edie West, Executive Director, National Skill Standards Board (DC)

Mary Gershwin, Director of System Planning, Colorado Community College System
Building a state network of information technology (CO)

Kathy Baker Smith, Vice President, Guilford Tech. & Comm. Coll. (NC)
Alliances with higher education and employers (NC)

Jim Kreiger, Department Head, Anniesland College (UK)
Opportunities for everyone: Scotland's Community Learning Network

B: With business and industry

Moderator: Joe Mefford, BellSouth Telecommunications, Inc.

Bob Bailey, Advanced Manufacturing Technology Educ. Center, (VA)
Building a partnership with the community college

Eamon Tuffy, Head of External Programs, Inst. of Tech-Tallaght (IR)
College/industry collaboration in a context of rapid growth

Rick Allison, OKU-Tech Branch (OK)
Organizing manufacturers to meet new challenges

C: With local development and technology organizations

Moderator: Sylvia Lovely, President, Kentucky League of Cities

Karen Cunningham, Mayor, Madisonville, (KY)
Community colleges as community partners

Graham Morris, Graham Morris Consultancy (UK)
Building community Learning Alliances (UK)

John Ahlen, President, Arkansas Science & Technology Authority
Colleges and technology diffusion

3:15 pm Break

3:45 pm **Innovations: Nuts and Bolts and Skeletons in the Closet**

A: Rural Innovations

Moderator: Jeffrey Schwartz, Education Specialist, Appalachian Regional Commission

Jeff Cocks, Principal, Pontypridd College, (UK)
Entrepreneurship and economic development in Wales

Doug Leather, Director, Hagerstown Community College, (MD)
A Skilled Workforce for Appalachia

G. Edward Hughes, President, Hazard Community College (KY)
The Rural Community College Initiative: placing rural community colleges in the middle of the community.

B: Urban Innovations

Moderator: Svend Aage Olsen, Director, EUC-Syd, (DK)

Richard Green, President, Jefferson Community College
Metropolitan College: college/industry/university working together

Jim Masi, Director, National Telecommunications Center (MA)

Creating a public-private partnership

Margaret Montgomery-Richard, Provost, Delgado Community College (LA)
The Metrovision Partnership (LA)

C. International Innovations

Moderator: Richard Pietrasik, CEO, Scottish Council for Educational Technology

Stephanie Young, Director of Lifelong Learning, Scottish Enterprise Glasgow (UK)
The Real Partnership

Stuart Schulman, Kingsborough College, CUNY (NY)
Virtual enterprises across borders as teaching devices

Arthur Schneeberger, Director of Research, ibw, Austrian Chamber of Commerce (AU)
Mobility in the European Union

5:15 pm Closing remarks

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RTS 205 Lloyd St., Suite 210, Carrboro, North Carolina USA 27510
Ph: +01 919 933-6699 Fax: +01 919-933-6688

Learning and Teaching Scotland 74 Victoria Crescent Rd.,
Glasgow G12 9JN Scotland UK Ph: +44 141 337 5001
Fax: +33 141 337 5006

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