

# **An Economy that Works for Everyone**

Why the New Economy is Important to Arizona's Future  
and How Arizona Can Position Itself as a Leader

ARIZONA PARTNERSHIP FOR THE NEW ECONOMY

FINAL REPORT

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## **Arizona Partnership for the New Economy**

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# Executive Summary

In November 1999, Governor Jane Dee Hull appointed the *Arizona Partnership for the New Economy* (APNE), a 36-member steering committee. The Partnership was tasked with examining ways in which the state could become more competitive in the so-called "new economy." Specifically, the group was asked to:

- ❖ Define the new economy and its importance to Arizona;
- ❖ Assess Arizona's current readiness and establish benchmarks for measuring progress; and
- ❖ Develop strategies for correcting any perceived deficiencies in responding to the opportunities presented by the new economy.

*"An Economy that Works for Everyone"* outlines the findings and recommendations set forth by the Partnership. It details not only what the state must do to become more competitive given the dramatic technological changes that are affecting the way people, businesses, and government operate, but also describes a framework to address these needs.

Each region in Arizona has a unique set of resources and specific goals for its future economic development. *"An Economy that Works for Everyone,"* seeks to build a framework through which each region can become more competitive in the new economy. Together with this framework and given their particular circumstances, each region can work in partnership with the state to develop their own plans for action.

## ***Basic Premise***

The work of the Partnership is based on the assumption that the new economy is not simply about high-tech industries. It is about how that technology is applied to everything we do. While it is important to have industries that produce technology and continually improve it, the real impact of this economic transition will be felt by the application of technology across a wide range of industries and activities.

As such, the new economy holds the promise of growing prosperity and a better quality of life. Everyone in Arizona can benefit from the transition through growing economic opportunities—companies will expand and create more and better jobs; communities will thrive and become stronger as

economic growth increases public revenues and community investment; and citizens will enjoy a better quality of life as new technologies expand access to information, products, and services to improve daily living.

## ***Making the New Economy Work for Arizona***

To make the new economy a reality for all of Arizona, however, the state must continue to work to "get the basics right." A foundation of high quality K-12 and higher education is essential. A strong commitment to research and development (R&D) and entrepreneurship is necessary. Effective and efficient government is also important.

In November 2000, the voters of Arizona took a huge step in showing the state's commitment to addressing these basics when they passed Proposition 301, a ballot initiative that mandated a 0.6 percent statewide education sales tax increase. But, given the pace of change in technology and competition from other states that are also striving to make themselves contenders in the new economy, Arizona will fall behind if it makes only incremental improvements to its status quo.

In addition to "getting the basics right," Arizona must also look to position itself as a model for leadership and visionary thinking in the new economy. Entrepreneurial companies and talented people—the engines of economic growth and prosperity in the coming century—will set down roots in states and communities that provide a rich and supportive environment for their endeavors. In a world where people are the most important resource and where those people can live and work from anywhere, only those places that have the entire array of amenities desired by such talent (for example, an attractive climate, an efficient government, or well-funded universities) and those that have worked to connect and continually strengthen those resources will succeed.

## ***Arizona's Four L's***

Mindful of this reality, APNE endorses efforts underway to improve the basics and recommends initiatives that will vault Arizona ahead in the technology, knowledge, and services. These initiatives will enable Arizona to lead in new economy-driven industries and activities and will allow it increase prosperity and improve the quality of life throughout the state.

Rather than mapping out an exact blueprint to be followed by each community in the state, APNE offers a framework through which different communities and regions can plan their own strategies. The framework is built upon broadening and deepening four elements necessary for success in the new economy:

- I. **LEARNING:** To excel in the 21<sup>st</sup> century, all citizens of Arizona must be able to employ the tools of the new economy to increase their knowledge base and continually improve upon it.
- II. **LINKING:** So that all citizens of Arizona can take part actively in the new economy, the expansion of a telecommunications infrastructure to link all to the Internet and other communications tools is critical.
- III. **LEADING:** Leadership in the new economy requires investments that stimulate R&D and entrepreneurship and promote the type of creativity and forward thinking to grow and attract the talent and cutting-edge businesses that fuel fast, quality growth.
- IV. **LIVING:** To attract, retain and grow the type of talent and cutting-edge businesses that fuel success in the new economy, Arizona should support and build communities with vibrant economies and a high quality of life.

More specifically, APNE proposes:

- ❖ ***Broadening Connections to New Communications Tools***—For some in Arizona, basic connections to the Internet and access to communications technologies are the first step to benefiting from the new economy. APNE proposes supporting community-based efforts to assess and improve local telecommunications infrastructures and building upon existing initiatives to develop a statewide telecommunications strategy. APNE also proposes the creation of a statewide network of technology assistance centers to help residents and small and medium-size businesses apply new technologies to everyday needs.
- ❖ ***Broadening Connections to Knowledge***—For many in Arizona, gaining access to new sources of knowledge, education, and training are the means to participate directly in new economy jobs, careers, and companies. APNE proposes the creation of a new intermediary—Arizona Learning Online (AZLO). AZLO would work to support the state's ongoing activities to improve the educational system, by providing Arizona's citizens, workforce, and companies easy access to the growing universe of learning resources that are now available through the Internet.

- ❖ **Broadening Connections to New Economy Jobs**—Better access to employers will help many in Arizona benefit directly from the new economy. APNE proposes exploring the possible creation of an online, uniform database and resource website that connects new economy workforce resources and opportunities.
- ❖ **Broadening Connections to Government Information and Services**—Having better, more convenient access to government information and services will help all citizens in Arizona realize the benefits of the new economy. APNE proposes the creation of an E-Government Leadership Council to guide the state's efforts to make more services and information available on the Internet. An E-Government Institute would be created as the Council's implementation arm and would share best practices across all jurisdictions and help them integrate new economy principles into their planning process.

In addition, APNE recognizes the need for deepening commitments to make Arizona a leading location for the new economy and proposes:

- ❖ **Deepening Commitments to R&D, Entrepreneurship, and Capital**—Many in Arizona will benefit from the integration of the resources necessary to fuel the prosperity of new economy firms. APNE proposes the creation of a venture capital fund for angel, seed, and early-stage financing. APNE also suggests working in cooperation with the Arizona Board of Regents, the Arizona Department of Commerce, and other relevant organizations to provide monies to develop a long-term model to improve technology transfer, commercial incubation, and pre-seed investment. The model should ensure linkages with university research priorities and encourage the establishment of new, cutting-edge enterprises in the state.

- ❖ **Deepening Commitment to Marketing Arizona as a New Economy "Hot Spot"**—Marketing Arizona as a new economy "hot spot" will help attract the talented people, R&D, investment, and business financing to fuel prosperity and quality of life improvements in the future. APNE proposes the development of a state marketing strategy, leveraging and building upon existing efforts and ensuring a consistent message about Arizona and the new economy.
- ❖ **Deepening Commitments to Building Creative Communities**—Specific improvements to community quality of life that help attract and retain new economy talent and companies will also benefit all of Arizona. APNE proposes the creation of a Creative Communities Consortium to help communities define their assets and take steps to build on them.

Together, these APNE initiatives map pathways to new economy opportunities for all of Arizona. They focus the state's economic development strategy on creating connections, forging partnerships, making investments, and embracing an identity that makes clear the state's intention to be a leader in the new economy. Most importantly, they harness the power of technology and the resulting prosperity to improve the quality of life for all of Arizona.

The APNE framework and resulting recommendations will be shared through regional town hall meetings across the state during the first quarter of 2001. The feedback and ideas garnered from these meetings will be used to shape regional implementation plans during the next phase of the project.

## **Table 1: Summary of APNE Recommendations**

The following table summarizes the integrated approach recommended by the Partnership to give everyone in Arizona the opportunity to benefit from the new economy.

The approach is based on the assumption that Arizona must continue to work to "get the basics right." A foundation of high quality K-12 and higher education is essential. A strong commitment to R&D and entrepreneurship is necessary. Effective and efficient government is also important. Arizona has a strong foundation upon which it can build.

In addition, Arizona must take a leadership role to distinguish itself in the new economy. Cutting-edge companies and talented people—the engines of economic growth and prosperity in the coming century—will settle in places that provide a supportive environment for their endeavors. Arizona can build upon its "basics" to vault itself into such a leadership position.

### **Learning**

To excel in the 21<sup>st</sup> century, all citizens of Arizona must be able to employ the tools of the new economy to increase their knowledge base and continually improve upon it.

### **Linking**

So that all citizens of Arizona can take part actively in the new economy, the expansion of a telecommunications infrastructure to link everyone to the Internet and other communications tools is critical.

### **Leading**

Leadership in the new economy requires investments that stimulate R&D and entrepreneurship and promote the type of creativity and forward thinking to grow and attract the talent and cutting-edge businesses that fuel fast, quality growth.

### **Living**

To attract, retain and grow the type of talent and cutting-edge businesses that fuel success in the new economy, Arizona should support and build communities with vibrant economies and a high quality of life.

Focus on the basics:	Take a leadership role:
<ul style="list-style-type: none"> <li>- Thanks to the passage of Proposition 301, Arizona will have \$460 million annually for the next 20 years to improve the state's education system.</li> <li>- In 1998, Arizona began the <i>Students FIRST</i> program which establishes quality standards for school capital facilities, provides sufficient funding to bring existing facilities up to state standards, and increases funding for soft-capital items such as computers, textbooks and teaching supplies</li> <li>- Given recommendations from the Governor's Higher Education Task force, the Arizona Board of Regents will establish the <i>Arizona Regents University</i> and <i>Arizona Learning System</i> that will make distance learning courses from the state's universities and community colleges accessible via one web site.</li> <li>- Approximately \$14 million annually is available for new and existing employees training, thanks to a 0.1 percent job-training tax. In addition, a \$5 million Information Technology Training Tax Credit is available to businesses to expand employee skills in computer-based information systems, particularly software applications and computer hardware</li> </ul>	<p>APNE proposes that the state:</p> <ul style="list-style-type: none"> <li>- Provide \$250,000 as seed-funding to develop a business plan for <i>Arizona Learning Online</i>—a lifetime learning vehicle that would aggregate available E-learning courses and other resources and provide a collection of web pages, databases, and links through which Arizona learners and companies could find and make use of worldwide E-learning offerings</li> </ul>
<ul style="list-style-type: none"> <li>- The Telecommunications Open Partnerships for Arizona (TOPAZ) will enable the new economy to reach into every corner of Arizona. Partnering with telecommunications providers to build a high-speed telecommunications network, TOPAZ seeks to consolidate state government buying power to leverage resources to bring broadband access to the rural communities of 500 people or more.</li> <li>- Federal E-Rate funds should be used to reimburse schools and libraries for a significant portion of their Internet connectivity, internal computer network connections, and equipment</li> <li>- The Computer Systems Policy Project (CSPP) has developed a survey that shows communities where they fall along the "connectedness" spectrum. Arizona communities should be encouraged and assisted in completing this survey to get a better sense of where they stand and what they need to do if they want to expand their telecommunication connections</li> </ul>	<p>APNE proposes:</p> <ul style="list-style-type: none"> <li>- \$1 million allocated over a two-year period to assess and plan for building-out the telecommunications infrastructure in Arizona's communities, with the goal of completing at least half of the assessments by EOY 2001.</li> <li>- The Greater Arizona Development Authority fund a template (building upon the existing CSPP model) that would provide communities assistance in assessing their telecommunications needs.</li> <li>- Support for TOPAZ and greater private-sector providers' participation in the program.</li> <li>- Developing guidelines for technology-training centers for citizens and businesses to increase their comfort level in using the Internet and technology for business and other activities.</li> </ul>
<ul style="list-style-type: none"> <li>- Of the monies raised by the passage of Proposition 301, 12 percent of the education sales tax or roughly \$47 million annually for the next 20 years will be specifically earmarked for university R&amp;D and technology transfer.</li> <li>- Through the Arizona Board of Regents, Arizona's three state universities have identified priority research areas that will set them apart as national leaders in the areas of bioscience and biotechnology and information science and technology. Two of the universities are ranked as Research I, a classification denoting top-tier status in garnering research funding and educating future scientists. There are only 88 Research I universities nationally.</li> <li>- The state and the Phoenix metropolitan region, in particular, have long been touted as entrepreneurial hot spots. <i>Inc. Magazine</i> named Phoenix the best large metropolitan area to start and grow a company, citing its large workforce and customer base (particularly for high-tech companies), sunny climate and cultural amenities</li> </ul>	<p>APNE proposes:</p> <ul style="list-style-type: none"> <li>- The Arizona Board of Regents, the Arizona Department of Commerce, and other relevant organizations provide \$5 million and cooperate to develop a long-term model to improve technology transfer, business incubation (hands-on help to new businesses by providing mentors, technical experts, and lab and office space), and pre-seed investment to ensure close linkages with university research priorities and the establishment of new cutting-edge enterprises in the state.</li> <li>- A \$200 million venture capital fund for angel, seed, and early-stage financing</li> </ul>
<p><i>Arizona must build desirable places to live</i></p> <ul style="list-style-type: none"> <li>- The Government Information Technology Agency's effort to build <i>Arizona@Your Service</i>—a one-stop website to access Arizona's E-Government offerings—is a first step towards streamlining and enhancing government services. APNE supports the use and development of this website as a way to improve government operations and provide more efficient mechanisms for interacting with government</li> <li>- The wealth of diversity and culture in Arizona's communities and the state's environmental amenities and high quality of life should be promoted. To capitalize on this energy, APNE proposes working with the Arizona League of Cities and Towns and the Chambers of Commerce within the state to form a Creative Communities Consortium to share "best practices" gained from the more advanced communities to cultivate vital metro and non-metro communities across the state</li> </ul>	<p>APNE proposes that the state:</p> <ul style="list-style-type: none"> <li>- Redirect sufficient state funds to create an Arizona Economic Partnership that would provide a single state office to oversee the implementation of the state's new economy initiatives and that would institutionally support the new economy foundations and clusters.</li> <li>- Redirect sufficient state funds and work with appropriate agencies and organizations to create an E-government Leadership Council and an E-Government Institute that would share best practices among and across various levels of government and encourage excellence in E-government services</li> <li>- Provide \$25 million annually to market Arizona and its regions as a new economy "Hot Spot" to help attract the talented people, R&amp;D, investment, and business financing to fuel prosperity and quality of life in the future.</li> </ul>



# Arizona and the New Economy

Advances in computing, telecommunications, and information networking have reduced production and transportation costs and have created new markets. Along with wider use of the Internet, these changes are influencing the way individuals and organizations communicate and manage information. According to the U.S. Department of Commerce, in 1994, only 24 percent of U.S. households owned personal computers, by 1998 that number had risen to 42 percent with 26 percent of those connected to the nascent Internet. Today, nearly 51 percent of U.S. households own personal computers, with 42 percent of those connected to the Internet. This year over 50 percent of U.S. businesses will sell products online.

Not coincidentally, productivity has also increased. Growing from about 1½ percent per year from 1973 to 1995 increases in productivity accelerated to about 3 percent per year from 1995 to 1999. This acceleration was heavily related to technology—both the investment in information technology hardware and software and the extraordinary increase in productivity of industries using new technology.

The economic transformation and the resulting increases in prosperity and job growth have been called the "new economy." But, this new economy is not simply about high tech. It is about applying technology to everything we do. Whereas past success was measured on how cheaply and efficiently goods could be produced, what matters now is how well knowledge can be applied to processes not only to improve what is produced, but to do so faster and in a way that is efficient and customer-oriented. While it is important to have industries that produce technology, the real impact of the changes as we transition to the new economy will be felt by the application of technology across a wide range of industries. The resulting productivity gain and added value will create increased prosperity across the entire economic spectrum—just as electricity changed the face of the economy over 100 years ago.

These changes are forcing places to re-evaluate how they grow and serve the people that are part of them. The advances make it possible for people to live, work, and play from anywhere. This phenomena means that places must build the types of communities where the companies and talent that drive the new economy want to live. This includes not only supplying transportation networks, physical infrastructure, low production costs, and access to land and other natural resources, but also providing intangible elements such as clusters of like industries, vibrant communities, outdoor and geographic amenities, and a high quality of life.

## ***Electricity and Cappuccino***

Two analogies are helpful in putting the "new economy" into perspective.

***The Internet and Electricity.*** The introduction of electricity in factories and homes in the 1880s transformed how we made things and how we lived. It took thirty years for the full impact of electricity to be widely adopted. But once it became pervasive, the result was a dramatic increase in productivity in all aspects of society. Moreover, the introduction of electricity spawned countless applications and encouraged the development of various appliances that forever changed how we operate.

Similarly the Internet is transforming the way we function in this century. The full impact of the Internet and the accompanying advances in computing, telecommunications and networking will be felt when they are adopted by all industries and across all sectors—business, government, education and community. As Lou Gerstner, CEO of IBM so aptly described:

The new "dot-com" companies are "fireflies before the storm"—all stirred up, throwing off sparks. The storm that's arriving—the real disturbance in the force—is when the thousands and thousands of institutions that exist today seize the power of this global computing and communications infrastructure and use it to transform themselves. That's the real revolution.

***The Cappuccino Economy.*** Although the "revolution" is definitely upon us, it is not yet pervasive. As Eileen Shapiro of the Hill Crest Group describes in *The Seven Deadly Sins of Business*, the current economy is like a cappuccino with two distinct layers—the top layer slowly mixing with and infiltrating the one below it. Both layers are in transition and each affects how the other is changed. High-growth, fast-moving companies represent the swirling milk/foam layer on top; slow-moving, traditional companies represent the coffee layer on bottom. Eventually the two will combine and will be inseparable.

## ***What is at Stake?***

At a time of prosperity, why should Arizona, one of the fastest growing states care about the new economy? To put it simply, the changes brought about by the new economic transformation are here to stay and those who do not adapt to the changes will be left behind.

Computers, high-tech machines, and communications appliances are the tools through which people interact and get things done. In today's economy, rapid changes in technology, market fragmentation, and global competition have placed a premium on the ability to improvise, adapt, and create. Termed "adaptive efficiency," by Nobel Laureate economist Douglas North, the ability of people and institutions to continuously learn and constructively change is now the source of greatest competitive advantage. People and places that successfully apply these tools to all activities will create higher quality jobs and a better quality of life for themselves. Those that choose only to maintain the status quo will fall behind.

## ***What to Do?***

For the people of Arizona, being competitive in the new economy will mean building upon strengths and addressing weaknesses to acquire the knowledge and skills needed to make the most of the technological advances either to enrich their lives, be more competitive in the job market, or both. For companies it means possessing the tools needed to be agile in a fast-paced business climate and meeting the needs of increasingly demanding customers in an increasingly competitive market. For places, it means re-evaluating current policies so that they build communities that grow and attract skilled workers and providing access to the communications appliances and information resources that are the foundation of economic success.

But to be truly successful in the new economy, all parts of the economy must work together. This means not only ensuring that a place has the "basics" right—a strong educational system, efficient and easy access to government services, or sufficient connections to communications tools, but also that its assets support and are integrated with one another. If children lack sufficient education, they will be unable to compete for high-quality jobs, skills shortages

will grow, and productivity will slow. Without a solid knowledge base from which ideas can be developed and brought to commercialization, the ability to apply and share such knowledge decreases. Unless companies are flexible and able to meet the standards set forth by the technological advances, skilled workers will look for other employers, companies will look to locate in areas where there is a critical mass of similar industries and where synergies are able to grow, and the capital and resources needed to support such activity will likely decline. Without a strong telecommunications infrastructure, the connections necessary to communicate and link to various sources of information will not exist. Moreover, without responsive government and vibrant communities to support entrepreneurship, talent will be lured away.

## ***Arizona Partnership for the New Economy***

To begin finding specific ways that the state could take such a leadership role in this new economy, Governor Jane Dee Hull appointed the Arizona Partnership for the New Economy (APNE), a 36-member task force in November 1999. Specifically, the group was asked to:

- Define the new economy and its importance to Arizona,
- Assess Arizona's current readiness and establish benchmarks for measuring progress, and
- Develop strategies for correcting any perceived deficiencies in responding to the opportunities presented by the new economy.

APNE enlisted the assistance of a consulting team composed of Palo Alto-based *Collaborative Economics* and Arizona State University's *Morrison Institute for Public Policy*. The team assisted APNE in meeting the three objectives by setting out the best practices of states and other regions, identifying key areas where Arizona could be a leader in the new economy, and assembling "hot teams" or subgroups to develop strategies for accomplishing this goal. Table 2 (see page 10) provides an overview of the APNE process and critical points. The APNE recommendations are described in Chapter Three.

## ***GSPED: A Strong Foundation***

As noted above, to truly be successful in the new economy, all parts of the economy must work together to form a comprehensive economic development strategy. Arizona built a strong foundation in doing such when it embarked

### ***Clusters and Foundations***

***What are clusters?*** An economic cluster is a geographic concentration of interdependent competitive firms in related industries that do business with each other. Each cluster includes companies that sell inside and outside of the region and support firms that supply raw materials, components and business services. Clusters develop and change over time. Clusters are powerful magnets for businesses to locate in an area and create a spawning ground for start-up companies. They create large, diverse pools of experienced workers; attract suppliers who tend to congregate in their vicinity for increased efficiency; and foster a competitive spirit that stimulates growth and innovative strategic alliances.

Arizona has eleven cluster industries: Bio-industry, Environmental technology, Food, fiber and natural products, High-technology, Minerals and mining, Optics, Plastics and advanced composite materials, Senior industries, Software and information, Tourism, and Transportation and distribution.

***What are Foundations?*** Foundations are resources that help clusters become more competitive. As a result, businesses within the clusters grow, creating wealth for the community through new jobs, taxes, purchases, volunteers and contributions. Community reinvestment in its foundation helps clusters to become even more competitive, sustaining a healthy and thriving economic cycle.

Arizona has traditionally focused on seven foundations: Capital, Human resources, Information and communications infrastructure, Physical infrastructure, Quality of life, Tax and regulation, and Technology.

As economic activity becomes more regionally based and more dependent on new foundations, new thinking is required to ensure that these economic development efforts take into account the changing situation. As such, the framework needs to be updated to ensure that existing foundations and clusters are able to adapt to the demands of the new economy and that they continue to be connected and supported by the new foundations.

upon the Arizona Strategic Partnership for Economic Development (ASPED), which created a framework to prioritize the state's economic development efforts. Under ASPED and the resulting implementation process known as the Governor's Strategic Partnership for Economic Development (GSPED), Arizona identified state-wide, specific industries or "clusters" in which the state already possessed expertise and in which there was a critical mass of companies and talent to garner success. The clusters were chosen because they had long-term potential and provided export and job-growth opportunities. Resources or "foundations" were identified to support the clusters. The

GSPEP process created priorities and strategies that guided economic development in the state during the 1990s. With the changes brought about by technological and telecommunications advances, the priorities and strategies need to be updated.

## ***Where Arizona Stands***

Before launching into APNE's proposed strategies for updating and augmenting the GSPEP framework, it would be helpful to set a baseline of where Arizona stands now. Arizona gains high marks for entrepreneurship and economic dynamism, but scores poorly in terms of K-12 education and research and development.

On a national level, Arizona ranks 10<sup>th</sup> according to the Progressive Policy Institute's 1999 *State New Economy Index*. The Index ranked states against a common set of indicators, including the level of economic dynamism, the percent of the economy devoted to the knowledge industry (i.e., R&D and patent creation), and the percent of the population that had access to the Internet. Arizona's number 10 ranking suggests that the state has a strong foundation upon which to build. However, when looking closer at individual categories and the foundations that support those categories, it is clear that Arizona has both strengths and weaknesses.

For example, although Arizona ranks 3<sup>rd</sup> in jobs in "gazelles" (fast growing companies) and 12<sup>th</sup> in high-technology jobs, it only ranks 23<sup>rd</sup> in industry R&D investment as a percent of gross state product and 30<sup>th</sup> in scientists and engineers as a percent of total jobs. This means that while Arizona has fast growth and relatively a high ranking in high-tech jobs, the low level of R&D investment and paucity of scientists and engineers could pose problems. Coupled with the state's troubled educational system, the state will be hard pressed to increase R&D and the technical workforce needed to stimulate

entrepreneurship further in the new economy. Also, while the state ranks high in various measures of high-tech jobs, the breadth of such expertise is narrow at best. Arizona ranks high in only 4 of 15 high-tech areas. This suggests a narrow base of knowledge-based industries in the state and is further evidenced by a concentration of manufacturing (albeit high-tech) versus R&D activities.

More troubling, however, is the state's low ranking in terms of K-12 education—the foundation upon which Arizona's new economy will be built. According to the National School Board Association, Arizona ranked 49<sup>th</sup> in the level of expenditures per student in the 1999-2000 school year, spending an average of \$4,754 per pupil compared to a national average of \$6,585. Arizona also ranked 49<sup>th</sup> in the percent of students completing high school, averaging 77 percent compared to a national average of 86 percent. Furthermore, according to a November 2000 report issued by the Council on Higher Education, Arizona received only a "C" grading for preparing its students for college-level education and training.

Arizona's residents recognized the importance of improving the situation by passing Proposition 301 in the November 2000 election. Proposition 301 will institute a 0.6 percent increase in the state's sales tax to provide education funds of more than \$460 million annually in the first years and growing to more than \$780 million by year ten. The tax will remain in effect until the year 2021. It is estimated that the tax increase will provide more than \$350 per pupil annually in the first years. The monies are earmarked to increase the base pay for teachers (with allocations to provide funding for performance-based increases), reduce class size, encourage completion, and increase the school year from 175 to 180 days over 5 years. In addition 12 percent of the Proposition 301 revenues are set aside for higher education and the state's R&D needs.

## ***Morrison Institute's Eight Characteristics of the New Economy and Possible Policy Choices***

To provide a more individualized assessment of where the state stands and to provide recommendations on what the state needs to do to be more competitive, the Morrison Institute for Public Policy of Arizona State University published, *"The New Economy: A Guide for Arizona"* in October 1999. The Guide suggests that there are eight characteristics of the new economy by which the state can gauge its success in transforming itself to meet current and future economic trends. In a January 2000 follow-up to the report, *"The New Economy: Policy Choices for Arizona,"* the Institute suggested six actions for the state. These include more public-funding of R&D focusing on academic centers of excellence and new economy start-ups; state support of venture capital; strengthening education and workforce training; support for cluster organizations and reinforcing regional alliances; fostering access and technology use; and protecting the state's quality of life.

### **Technology is a given**

As Harvard professor Michael Porter notes, today there is no such thing as a low-tech industry. There are only low-tech companies—that is, companies that fail to use world-class technology and practices to enhance productivity and innovation.

### **Globalism is here to stay**

Technological advances have made communication and transportation easier, cheaper, and more available. As a result globalism is a deeply embedded characteristic of the new economy. Whereas places formerly looked within their countries for talent and business, today, the search is international.

### **Knowledge builds wealth**

"Brawn earns little and brains much." Knowledge and the application of it have become the most important resource for economic competitiveness. How one does something is now more important than what one makes.

### **People are the most important raw material**

Given that knowledge and application of it has become the most important resource for economic competitiveness, the people who possess that knowledge are now the most sought-after resource.

### **There's no such thing as a smooth ride**

According to economist Joseph Schumpeter, progress requires the destruction of the old as well as the creation of the new. He termed this process "creative destruction." The speed of change and increased competition means that people, companies, and government must re-evaluate what they do and how they do it and be ready to adapt quickly.

### **Competition is relentless**

Globalization, deregulation, and information technology have stripped economic security from virtually every sector of the economy. The newest and most aggressive competitors are usually companies that were not in the same business as just a few years ago. In competing with each other, companies increasingly find they are racing against the clock and even competing with themselves.

### **Alliances are the way to get things done**

Business is learning that if it wants to compete aggressively it has to collaborate generously. As speed and adaptability become more important, alliances will give companies and governments the flexibility needed. By leveraging existing resources and finding synergies, companies and governments can be more efficient.

### **Place still matters—but for different reasons**

The enduring competitive advantages in a global economy are often heavily local, arising from concentrations of highly specialized skills and knowledge, institutions, rivals, related businesses, and sophisticated customers. People can locate anywhere; places must compete for them.

**Table 2: APNE Process**

<i>Emergence of the New Economy in Arizona</i>	<i>Governor's Taskforce</i>	<i>Background/Best Practices</i>	<i>Hot Teams</i>	<i>Communications/ Outreach</i>	<i>Public Forums</i>
<ul style="list-style-type: none"> <li>• In 1999, the <i>State New Economy Index</i> ranked Arizona 10th nationally as states prepared for the new economy.</li> <li>• Governor Hull appointed a Higher Education Task Force in September 1999 to examine ways in which the state's institutes of higher education can better prepare Arizona's students.</li> <li>• Arizona State University's Morrison Institute of Public Policy releases "<i>The New Economy: A Guide for Arizona</i>" in October 1999, outlining the changes that are taking place in the economy.</li> <li>• Following the release of the report, the Greater Phoenix Economic Council hosted <i>Global 2000</i> to examine further how Arizona could prepare itself for the economic transformation underway and its implications for Arizona.</li> <li>• Morrison Institute issued a follow-up report listing policy approaches to be considered by the state.</li> </ul>	<p>Governor Jane Dee Hull formed the Arizona Partnership for the New Economy (APNE) in November 1999 to sustain the strength of Arizona's economy and global competitiveness.</p> <p>The 36-member steering committee is charged with:</p> <ul style="list-style-type: none"> <li>- Defining the New Economy and its importance to Arizona,</li> <li>- Assessing Arizona's current readiness and establish benchmarks for measuring progress, and</li> <li>- Developing strategies for correcting any perceived deficiencies in responding to the opportunities presented by the new economy.</li> </ul>	<p>The APNE Consulting Team— Collaborative Economics and ASU's Morrison Institute— prepared background material on where Arizona stands in the new economy and assisted the Partnership in identifying five areas of focus</p> <p>White papers were prepared to detail how Arizona ranks in those give areas</p>	<p>Five "hot teams" or groups were formed along the priority areas to bring together a cross-disciplinary group of individuals drawn from clusters, private companies, the public and non-profit sectors, and key members of the Partnership to contribute a unique perspective to each hot team.</p> <p>The teams were chaired by private-sector representatives and developed goals and suggested implementation steps for achieving breakthrough outcomes that would vault Arizona ahead in selected strategic areas.</p> <p>The groups met three times to develop recommendations of what can be done to make Arizona a leader in the given field. An online forum was provided by Advantiv and allowed members to exchange ideas between meetings.</p> <p>The recommendations were delivered to APNE in November 2000. APNE refined the recommendations given the overall framework it constructed and used the recommendations as the basis for this report</p>	<ul style="list-style-type: none"> <li>• Articles by <i>Washington Post</i> syndicated writers Neal Peirce and Curtis Johnson were commissioned to provide a snapshot of what the new economy means to the people of Arizona from different walks of life</li> <li>• The Communications Team (led by Reister-Robb) was formed to begin designing ways in which the APNE messages could be conveyed to the larger public.</li> <li>• Questions on the new economy were included in a West Group survey to ascertain the level of interest and knowledge about the new economy in the state.</li> <li>• APNE also designed an online <i>New Economy Readiness Survey</i> to help organizations assess their use of new economy practices</li> </ul> <p><a href="http://www.azcommerce.com/neweconomy/APNE%20survey/APNE_Intro.htm">http://www.azcommerce.com/neweconomy/APNE%20survey/APNE_Intro.htm</a></p>	<p>Town-halls and open forums were held in Douglas, Tucson, Flagstaff, Phoenix, Yuma and over the Northern Arizona University (NAU) Net to brief residents about the APNE process and to gain feedback on its various initiatives.</p> <p>Each forum attracted 60-85 people, with the NAU Net event including more than 200 residents from rural Arizona.</p> <p>During the first quarter of 2001, the APNE framework and resulting recommendations will be shared through regional town hall meetings across the state. The feedback and ideas garnered from these meetings will be used to shape regional implementation plans during the next phase of the project.</p>

## A Call to Action

As the previous chapter suggests, success in the new economy is not simply about access to the Internet, investment in university research, or any single element. It is the product of a strong web of interactions that support and strengthen one another. It is about applying technology to a broad range of industries and activities and harnessing the increased productivity that results to promote fast, quality growth.

In the beginning of the transition to the new economy, not all regions recognized the need for such inclusiveness. The result was a growing divide where labor shortages grew because not all workers had the level of skills needed and where companies found that their regions did not possess the quality of life amenities to attract or retain more talent.

Many states have since learned from these early mistakes and have embarked upon initiatives to transform themselves into new economy states and increase their residents' quality of life. They have adopted broad statewide strategies for increasing their knowledge base and attracting the entrepreneurship that has led the movement toward a new economy. Their strategies work to harness technology to vault their economies into the next century. For example:

- ❖ Under the *Virginia Strategy*, the Commonwealth of Virginia has established a cabinet level position of Secretary of Technology to guide Virginia's new economy programs. In his 2000 State of the Commonwealth Address, Governor Gilmore proposed a number of initiatives to boost the Commonwealth's standing, including the acceptance of the nation's first statewide Internet policy to address legislation to support E-government, privacy, security and the protection of children; the establishment of the *Virginia Investment Partnership* to encourage Virginia manufacturers to add production capacity, utilize state-of-the-art technology, modernize assembly processes, and hire more workers; and the creation of a *Virginia Tourism Corporation* to tout the commonwealth's new economy assets and to boost its hospitality industry.
- ❖ The State of New Jersey has taken steps to wire every school for the Internet and to train its teachers to make the most of new technologies. It is also allocating \$50 million a year to high-tech industries through R&D tax credits and has established the *Edison Partnership*, a high-tech think tank that combines the best ideas of business, academia, and government. In her 2000 State of the State address, Governor Whitman proposed the establishment of a \$165 million economic package called *New Jersey Jobs for a New Economy* to promote high-tech jobs. She

also called for \$15 million in grants to encourage the state's colleges and universities to strengthen their math and science curricula.

- ❖ The State of North Dakota has taken steps to create a high-speed, high-capacity telecommunications backbone that will provide voice, data, and video capacity throughout the state at a low cost by negotiating with service providers to connect as many of the state's 361 communities as possible. In 1999, Governor Schafer appointed the state's first Chief Information Officer to oversee its creation. In addition, Governor Schafer has given priority to teacher training to ensure that the teachers in the state are able to apply the technological advances in their classrooms. The state's Quality Schools Committee has been tasked to develop E-Learning initiatives, and the university system has been directed to make North Dakota institutions leaders in modernizing teacher-training programs.

## ***Building an Arizona Package***

One way in which Arizona can avoid falling behind other states and distinguish itself internationally will be to ensure that the advances in computing, telecommunications, and networking work for everyone. Arizona can find new ways to apply Internet tools to all industries and all aspects of society—education, government and community—to create a better quality of life and opportunity for all. But if Arizona is to be a leader in the new economy, it must be bold and strategic and move quickly.

Given this premise, the Partnership has focused on two principles to guide Arizona's success in the new economy:

1. Broadening participation of Arizona businesses and citizens by connecting and preparing people for the new economy across all sectors: industry, government, education, and community; and
2. Deepening Arizona businesses' and citizens' involvement in the new economy by investing in knowledge and learning to increase the competitiveness of industry and people.

By broadening the state's participation in the new economy, Arizona can strengthen its educational base, ensure that none of its people get left behind, and can avoid the social and economic divides appearing in other regions. By deepening its knowledge resources, Arizona can better prepare its companies and citizens to be at the leading edge of technical and economic change. In

addition, such a base will instill the entrepreneurship and creativity needed for success in the new economy.

## ***Getting the Basics Right***

Arizona's first step in becoming a leader is to get the basics right. In the new economy, knowledge is the most prized resource. To ensure that it has an adequate supply of this vital resource, communities must focus on building a strong grounding in education—not only K-12 but also secondary and life-long learning. The state of Arizona already has several existing programs and initiatives upon which to build, including Schools First, the *Arizona Regents University* and *Arizona Learning System*, and 0.1 percent job-training tax that seek to increase the level of resources available at all levels of learning. With the passage of Proposition 301, Arizona will have the funds available to integrate these initiatives and build upon their success.

In addition, to its educational base, Arizona also has a strong base upon which to improve the state's telecommunication infrastructure. The Telecommunications Open Partnerships for Arizona (TOPAZ) will enable the new economy to reach into every corner of Arizona. Partnering with telecommunications providers, TOPAZ seeks to consolidate state government buying power (approximately \$100 million) to leverage resources and encourage the expansion of a high-speed telecommunications network to the rural communities. Federal E-Rate funds are also available to reimburse schools and libraries for a significant portion of their Internet connectivity, internal computer network connections, and equipment. Arizona's public libraries already provide Internet access at 112 branches across the state.

## ***Strengthening New Foundations***

But, as the above examples of state initiatives suggest, getting the basics right is not enough. If Arizona wants to be a leader in the new economy, it must do more. The first step for Arizona could be a focus on increasing knowledge through quality education, R&D, technology transfer, incubation, and entrepreneurship and ensuring that the tools are applied broadly. Together, these initiatives will produce a "knowledge-based" economy with higher paying jobs, quality economic growth, and a higher quality of life.

According to the National Governors' Association, the Milken Institute, and a host of other thoughtful organizations, such an economy has several elements (see Table 3). Physical investments should focus on meeting traditional needs as well as encouraging the development of telecommunications networks that are sufficient to support growth. "People" investments should be geared toward education and lifelong learning to ensure that the population possesses the requisite knowledge and skills for the coming decades. In the same vein, business should be supported through commercialization (incubation) centers and methods to promote technology transfer and by finding ways to realign the regulatory system to reflect the new types of businesses and trends.

In creating such a knowledge-based economy, Arizona need not build from scratch. Rather, with the firm foundation set forth by GSPED, Arizona has the essential elements in place. It needs only to integrate the various elements and to strengthen them.

**Table 3: Foundations of a Knowledge-based Economy**

**5 tangible elements**

- A strong intellectual infrastructure (universities and firms generating new knowledge and discoveries)
- Excellent physical infrastructure (high-speed Internet access and other telecommunication connections)
- Good sources of capital
- Mechanisms through which knowledge is transferred from person-to-person / firm-to-firm
- A highly skilled technical workforce

**2 intangible elements**

- Entrepreneurial culture
- Quality of life

Source: National Governors' Association

## ***A Framework for Action***

With the above elements in mind, APNE formed five sub-groups or "hot teams" to examine ways in which Arizona could build a knowledge-based economy (see Table 4). Common trends that emerged from the discussions suggest that such an economy would rest in four areas:

- I. LEARNING:** To excel in the 21<sup>st</sup> century, all citizens of Arizona must be able to employ the tools of the new economy to increase their knowledge base and continually improve upon it.
- II. LINKING:** So that all citizens of Arizona can take part actively in the new economy, the expansion of a telecommunications infrastructure to link all to the Internet and other communications tools is critical.
- III. LEADING:** Leadership in the new economy requires investments that stimulate R&D and entrepreneurship and promote the type of creativity and forward thinking to grow and attract the talent and cutting-edge businesses that fuel fast, quality growth.
- IV. LIVING:** To attract, retain and grow the type of talent and cutting-edge businesses that fuel success in the new economy, Arizona should support and build communities with vibrant economies and a high quality of life.

The APNE initiatives are grouped along these four areas. They encourage fundamental changes in the way the state is organized (both in the public and private sectors) and the way in which different elements of the state approach the challenge of economic development and improving the lives of its constituents. They emphasize the need to focus first on getting the basics right and then broadening participation in the new economy through long-term and sustained investments.

**Table 4: APNE Hot Teams**

<i>Building Connections</i>	<i>E-Government</i>	<i>E-Learning</i>	<i>Knowledge Leaders, Entrepreneurs &amp; Capital</i>	<i>Creative Communities</i>
<p style="text-align: center;"><i>Co-Chairs</i></p> <p><b>Mary Upchurch, AT&amp;T</b> <b>Sergio Carlos, Hispanic Chamber of Commerce</b></p> <p><b>Representation</b> Attendance range of 20-40. Public sector representatives from state and local agencies including the Arizona Corporation Commission, the Arizona Department of Commerce, the Arizona League of Cities and Towns, Government Information Technology Agency, and various municipalities and library districts. Private-sector involvement from companies representing utilities, community involvement, academia, and economic development organizations</p> <p><b>Major initiative areas</b> Assist communities in determining the extent of their current telecommunications infrastructure and help them to identify market-driven enticements for providers to expand that infrastructure; Develop a statewide telecommunications strategy that leverages existing resources to expand market size and to direct resources towards areas that need technical assistance; and put mechanisms in place to make citizens and business more comfortable in using technology to improve their skills, productivity, and quality of life</p>	<p style="text-align: center;"><i>Co-Chairs</i></p> <p><b>The Hon. Betsey Bayless, Secretary of State</b> <b>Frank Fairbanks, City of Phoenix</b></p> <p><b>Representation</b> Attendance range of 20-35. Public sector representatives from state and local agencies including the Arizona department of Transportation, Commerce, and Revenue, the Arizona League of Cities and Towns, Government Information Technology Agency, and various municipalities and library districts. Private-sector involvement from companies representing community involvement, academia, and economic development organizations</p> <p><b>Major initiative areas</b> Develop an E-Government Leadership Council to guide the state's E-Government activities. An E-Government Institute will be the implementing arm of the Council tasked with sharing best practices and providing practical assistance to all levels of government wanting to improve government services and "go online." Best practices will include ways to improve government operations to be more responsive to new economy business needs</p>	<p style="text-align: center;"><i>Co-Chairs</i></p> <p><b>Gregg Holmes, The Box Seat Advertising Company</b> <b>Roy Herberger, Thunderbird, American Graduate School of International Management</b></p> <p><b>Representation</b> Attendance range of 50-65. Public sector representatives from state and local agencies including the three state universities and various community colleges. Private-sector involvement from companies representing content providers, corporate training, and economic development organizations.</p> <p><b>Major initiative areas</b> Develop a single portal to provide worldwide E-learning resources in one place. A public-private partnership will be created to execute the project. The resulting site is envisioned to complement ongoing efforts to strengthen education throughout the state and will act as an aggregator of content, not a producer of it.</p>	<p style="text-align: center;"><i>Co-Chairs</i></p> <p><b>Linda Capuano, Honeywell</b> <b>Bill Lowe, The Lowe Group</b></p> <p><b>Representation</b> Attendance range of 40-60. Public sector representatives from state and local agencies including the Arizona Department of Commerce, the Arizona League of Cities and Towns, Governor's Strategic Plan for Economic Development cluster representatives, and various municipalities and library districts. Private-sector involvement from companies representing venture capital, community involvement, academia, business incubation, and economic development organizations</p> <p><b>Major initiative areas</b> Support the development of ideas that can be translated or applied commercially to create economic impact through better R&amp;D and technology transfer mechanisms at universities; through state support of capital formation and venture capital funds; and through technology commercialization resources and an infrastructure that helps new companies become established</p>	<p style="text-align: center;"><i>Co-Chairs</i></p> <p><b>Sam Campana, former Mayor of Scottsdale</b> <b>Drew Cohen, NeoPlanet</b></p> <p><b>Representation</b> Attendance range of 20-45. Public sector representatives from state and local agencies including the Arizona Department of Commerce, the Arizona League of Cities and Towns, and various municipalities and library districts. Private-sector involvement from companies representing utilities, community involvement, arts and culture, academia, and economic development organizations</p> <p><b>Major initiative areas</b> Assist communities in defining their strengths and weaknesses in connecting assets and promoting quality of life and other amenities demanded in the new economy. A consortium will be established to determine ways to market the regions of Arizona as new economy places; provide guidance to the E-Government Institute on educating public leaders of the demands and changes of the new economy; and suggest tax principles that reflect the needs of the new economy.</p>
<p><b>Advantiv Forum</b></p> <p>Provided an online venue for hot team participants to exchange ideas about brainstorming results and strategy development</p>				

# APNE

## Recommendations

The goal of APNE's five hot teams was to craft strategies that would make the state a leader in the new economy. Importantly, they built upon existing foundations to harness the power of technology to improve the quality of life for all of Arizona.

However, the recommendations do not attempt to make Arizona a leader in one over-arching step. Rather, the recommendations recognize that the road to leadership in the new economy requires forward-thinking and sustained investment. *Just as the state's water needs were met with the bold, multi-phased strategy of the Central Arizona Project, Arizona's new economy needs will be met by initiatives that are long-term and build upon existing strengths.*

The individual hot teams were chosen because they address the elements needed in a knowledge-based economy. They are also areas in which Arizona has some level of expertise that could be extended to vault the state into a leadership position in that area.

Each team was chaired by representatives from the private sector and met three times in a four-month period. The first meeting of each team was devoted to defining the challenge and determining the optimal outcome for Arizona. The second meeting focused on refining strategies. The goal of the third meeting was to draft ideas for implementing the strategies.

The Partnership took the original recommendations set forth by the hot teams and refined them to work within the four-pronged framework. The framework and the resulting recommendations will be shared in regional town hall meetings during the first quarter of 2001. The feedback and ideas garnered from the process will be used in the implementation phase.

Summaries of the final APNE recommendations follow.

# BUILDING CONNECTIONS TO OPPORTUNITY

"The future is already here. It's just not very evenly distributed."

— William Gibson, novelist and originator of the term "cyber space"

## What's at Stake?

If the new economy is to be truly inclusive, the technological tools that have emerged in the digital era must be accessible to all. Just as electricity transformed how we made things and how we lived at the turn of the last century, the Internet is transforming the way we function in this century.

By helping all of Arizona become "connected," the state can make businesses more competitive, increase the size and productivity of its workforce, strengthen the quality of the educational system, reduce the cost of transactions between businesses and public agencies, make many services like healthcare more convenient, and give people more control over their daily lives. If it does not, the people and companies who are not connected will be left behind.

## Where We Stand

Arizona is above the national average in connecting to the Internet with 43 percent of households connected versus the national average at 42 percent. However, access in the state is uneven across income, ethnicity, and geography, thus perpetuating the accessibility 'digital divide'. Further, the existing communications infrastructure is inadequate to support many communities' needs, and physical build-out of facilities will be required not only to support breakthrough goals but also to meet current needs of Arizona citizens.

Luckily, there is a solid base upon which to build this infrastructure. Under the Government Information Technology Agency (GITA), the Telecommunications Open Partnerships for Arizona (TOPAZ) will enable the new economy to reach into every corner of Arizona. Partnering with telecommunications providers to expand telecommunications networks, TOPAZ seeks to consolidate state government buying power to leverage resources to bring Internet access to rural communities. In addition federal E-Rate funds are available that could be used to reimburse schools and libraries for a significant portion of their Internet connectivity, internal computer network connections and equipment. Finally, to make such technology more approachable, Arizona's public libraries have made several inroads in providing an environment for citizens to make use of the technology. One hundred and twelve of Arizona's public libraries offer Internet access.

The Computer Systems Policy Project (CSPP) has developed a survey that shows communities where they fall along the "connectedness" spectrum. Arizona

communities should be encouraged and assisted in completing this survey to get a better sense of where they stand and what they need to do if they want to expand their telecommunication connections.

## Strategic Premise

Who should provide or expand the telecommunications infrastructure to allow people to connect to the Internet and the other modes of communication is a topic of debate. There are two poles of thought: The telecommunications infrastructure could be expanded through state and regulatory requirements imposed on communications providers in the same way that telephone service was universally mandated, or the expansion could be left to market forces, with providers deciding where to expand service based on supply and demand. The recommendations of the hot team cluster near a mid-point of the spectrum: Infrastructure expansion should be market-demand driven, not mandated universal service, with municipalities deciding to what extent they seek to expand coverage given their economic development goals.

For its part the state of Arizona will be a supporter, advisor and enabler of communities' new economy participation and will provide technical assistance to communities in developing their expansion strategies

In addition, the team recommended that steps be taken to make technology more approachable. This can be accomplished by making technology accessible in public places such as libraries and schools, as well as by providing training to show people and companies how to use the technology in their everyday lives.

## Who's Doing What?

Government Information Technology Agency (GITA)	Responsible for statewide information technology planning, coordinating and consulting. Developed the Telecommunications Open Partnership of Arizona (TOPAZ) framework to leverage state buying needs to build a larger market-base for communities.
Greater Arizona Development Authority (GADA)	Provides technical assistance for infrastructure assessment needs
Arizona Corporation Commission (ACC)	Has regulatory responsibility for incorporating, securities, railroad and pipeline safety, and utilities
Arizona Public Libraries	Provide a technology infrastructure, access to the Internet and other communications technology and provide information support to train customers how to use the appliances for everyday tasks
School Facilities Board (SFB)	Will provide computers to schools throughout Arizona in a ratio of 8 students to 1 computer.
Computer Systems Policy Project (CSPP)	Developed a self-assessment tool to help communities determine the extent of their telecommunications infrastructure relative to other communities.

## ***Initiative: Building Connections to Opportunity***

### ***Targeted Outcome***

The State of Arizona will take a leadership role and be a supporting partner of communities in identifying and implementing strategies for providing advanced telecommunications services to support business, education, economic, and community development.

### ***Rationale***

For widespread participation in the new economy, the technological tools that have emerged in the digital era must be accessible to all. However, who should provide the telecommunications infrastructure to connect to those tools is a subject of debate. The hot team believes that such telecommunications infrastructure expansion should be market driven and not universally mandated. For communities that do not possess the types of markets that would attract such expansion, the state will provide technical assistance to identify alternate strategies.

### ***Strategy and Suggested Implementation Steps***

As a first step in meeting the challenge and outcome outlined above, each community in the state will be encouraged to assess its current telecommunications infrastructure and identify market-driven reasons for providers to expand coverage. An already developed list of questions produced by the Computer Systems Policy Project (CSPP) will be used as the common template. For situations where market-share is not large enough to entice providers to enter or expand, the state will help communities find alternate solutions through technical assistance. Technical assistance will also be available for communities needing help completing the assessment.

On a statewide level, a telecommunications strategy will be developed to ensure that existing resources are properly leveraged and that the state's telecommunications infrastructure is rational and adequate. It will include examining legislative and regulatory obstacles to expanding services and will focus on expanding already existing resources such as the audio-visual NAU Net and the Schools First program that is working to provide adequate hardware and connections to Arizona's K-12 school system.

Finally, the state and individual communities will look for ways to make existing information appliances accessible to larger portions of the population either through schools and libraries or technical assistance centers at which individuals and businesses can learn how to use the technology for their daily needs.

### ***Benchmarks***

- Completion of 50 percent of community assessments by EOY 2001
- Development of a statewide telecommunications strategy by the 2Q of 2002
- Connection of school computers to the Internet at levels of at least 100 Kbs per computer by 2001 in conjunction with the Arizona School Facilities Board timeline and upgraded as required

### ***Actions needed to launch***

- ❖ Use the CSPP survey to develop a common template for assessment throughout the state.
- ❖ For communities needing assistance completing the assessment, provide technical assistance funding (possibly through the Department of Commerce or the Greater Arizona Development Authority. Funding would be \$1 million allocated over a two-year period).
- ❖ Create a list of existing and on-going efforts that communities could access to support the infrastructure build-out.
- ❖ Support ongoing efforts by GITA and the Arizona Telecommunication Industry Council to map the state's telecommunications assets.
- ❖ Convene a summit at which information from the above exercises and the community assessments can be used to craft a statewide strategy.
- ❖ Within the statewide summit, develop a set of guidelines for communities to increase citizens' and businesses' comfort-level in using of the Internet and technology. This will allow each community to tailor the centers to their specific needs.

## E-GOVERNMENT EDGE

"Only two entities in our society are basically still operating as they were 100 years ago. One is education; the other is government. Everything else in the world has changed with the advance of technology, the triumph of Capitalism. These two things kind of grind along in 19th century form."

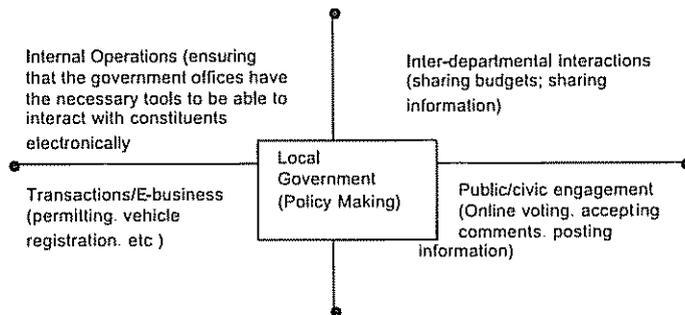
— Craig Barrett, CEO, Intel Corporation

### What's at Stake?

Citizens and business owners—having had increasing exposure to the offerings of the Internet and other digital tools such as wireless telephony—now expect the same immediacy from one of their most important and often challenging relationships—with their government. The responsiveness of government to the citizens and businesses it serves can either be an impediment or attraction to industry and economic development. Moreover, as the government constitutes a sizable share of the total economy, increases in efficiency in government operations will be felt throughout the economy. Finally, for those who have not yet assimilated the Internet and other communication tools into their daily activities, online interaction with government can help them become more comfortable in using such technology

### Where We Stand

The state and several of its municipalities have been recipients of national and international rewards for E-Government excellence. Currently 53 of Arizona 87 incorporated communities maintain a website (see Appendix). However, the level of service and available interaction is uneven. To bring uniformity to these services, the state is in the process of building *Arizona@Your Service* a one-



stop E-Government website or through which citizens can access government information and services.

A web survey of Arizona businesses and citizens conducted by APNE confirms a strong desire for E-government services. The most useful service cited by both businesses and citizens is the ability to apply for a license or permit, online. Sixty-three percent of businesses and 57 percent of citizens rank this service as the most useful E-Government service. Together with the work already undertaken by the Government Information Technology Agency's Digital Government Working Group, these provide a strong base upon which to begin making more government operations electronically accessible and to better address constituent expectations

### Strategic Premise

As the diagram below suggests, there are four elements to government, all of which are important whether the interaction is in person or online. E-Government will only be effective if the operations that support those services are effective and efficient; otherwise, E-Government will merely make outdated and unhelpful services accessible on the Internet.

The state is already a leader in E-Government, but can set itself apart by re-engineering its operations (the top half of the diagram) to better meet the needs of the new economy and by providing standardized and seamless online access to the state's E-Government offerings. By sharing best practices, all levels of government will be better able to meet the needs of the rapid changes in technology and the increased demands of citizens.

### Who's Doing What?

Government Information Technology Agency (GITA)	Responsible for statewide information technology planning, coordinating and consulting. Maintains a Digital Government Working Group that identifies the types of government transactions that can be moved to the Internet and potential inhibitors to electronic transactions; Released an RFP to develop "Arizona @ Your Service."
Arizona League of Cities and Towns	Represents the collective interests of Arizona's 87 incorporated cities and towns at the state and federal levels of government
ASU/ AZ League of Cities and Towns Elected Officials Training Program	Offers a two-day program for new city council members and mayors on basic AZ government, raising revenue, ethics, and other practical topics. More than 150 newly elected municipal officials from around the state have completed the program.

## **Initiative: E-Government Edge**

### **Targeted Outcome**

Build upon Arizona's role as a national leader in E-Government by using innovative tools to become an international leader in providing efficient and timely services to citizens and businesses on their terms.

### **Rationale**

Knowing how technology and the Internet have altered their daily operations, citizens and business owners now expect the same immediacy and interaction from their government. Governments—at the state and local levels—are racing to respond to citizens and business owners by adopting a whole range of strategies to make their services accessible online. Increasingly, businesses are judging governments on their ability to respond in such ways.

### **Strategy and Suggested Implementation Steps**

Arizona will be a world leader in E-Government services to citizens and business by developing easily accessible, seamless services that provide customer satisfaction as a top priority. The first step is to establish a single access website—"Arizona @ Your Service." The Government Information Technology Agency (GITA) has issued an RFP for its development. "Arizona @ Your Service" would allow constituents to go to one website to access the various levels of government services in the state in a seamless and user-friendly fashion.

To be capable of providing seamless and customer-oriented services, government operations must also be refined. An E-Government Leadership Council would be appointed to lead the state's E-Government activities. An E-Government Institute will be created as the implementation arm of the Council. The purpose of the Institute will be to share best practices among and across various levels of government and encourage excellence in E-Government services.

### **Benchmarks**

- Increased access to government services online
- Increased proficiency among all levels of government (state, county, municipal) in adapting operations to use technology and increased productivity as a result
- Creation and widespread use of *Arizona@Your Service* by government agencies at all levels and use of the website by Arizona citizens

### **Actions needed to launch**

- ❖ Proclamation by the Governor to endorse agency use of *Arizona@Your Service*
- ❖ Determine the appropriate agency to house the Council and appropriate funding sources
- ❖ Appoint a cross-jurisdictional group to sit on the Council and to determine its priorities
- ❖ Develop a website for the Council/Institute
- ❖ Allocate resources needed by the Institute depending on the priorities set forth by the Council

## E-LEARNING

*"Online contemporary education is creating a new and distinct educational realm, and it is the future of education"*

— Peter Drucker. Harvard Business School

### What's at Stake?

People are the ultimate resource in the new economy. The effectiveness with which people acquire, use, and renew their knowledge base is critically important for their success in the new economy. To be competitive in the new economy Arizona learners at all levels, including teachers, will need to employ various methods to absorb and apply the increasing volumes of information available to them. If they do not, they will fall behind.

### Where We Stand

Arizona currently ranks low nationally in various measures of K-12 education performance. Teacher preparation and access to alternate forms of learning would greatly improve the situation, as would online resources for parents and other non-traditional teachers to support and monitor a student's progress. In addition, the state maintains a number of quality community colleges and institutions of higher learning, which are already providing a portion of their curriculum online, as well as courses tailored to address the needs of certain segments of the workforce.

### Strategic Premise

E-Learning is only one of many tools that can be tapped to strengthen the educational base of the state. The fundamentals of in-class learning must also be in place. As the diagram in the Appendix shows (see page 35), the goal of AZ Learning Online (AZLO) will be to act as an aggregator of the best learning resources available on the Internet for Arizona's learners.

One priority of AZLO will be to support workforce development—the continuing education of people already working, especially in Arizona's industry clusters, which must keep up with the rapidly changing demands of the new economy. On their own or through their employers, workers will have a new resource in AZLO that helps them identify and participate in education, training, and other knowledge acquisition critical to success in the new economy.

However, AZLO's first priority will be to focus special attention on Arizona's K-12 teaching workforce, which must adapt rapidly to new demands for preparing

the state's youth for success in the new economy. On their own or through their schools, teachers will have a new resource in AZLO that helps them scan, locate, and integrate new curriculum and other resources into their work.

The hot team suggests that AZLO be established by a public-private partnership that appoints a CEO and board to advise the development of the project and set standards for which content is recruited and included. The public-private partnership will also provide design specifications to make AZLO compatible with most forms of content and to the maximum extent of appropriate online courses that can be included.

### Who's Doing What?

Governor's Taskforce on Higher Education	Charged with forecasting the state's higher education until 2020; identifying ways to structure higher education to maximize Arizona's economic development potential; and identifying ways to better use technology in education
School Facilities Board (SFB)	Will provide computers to schools throughout Arizona in a ratio of 8 students to 1 computer
Arizona Regents University (ARU)	ARU is an internet based E-learning entity sponsored by the Arizona Board of Regents and is intended to enhance access to Arizona public universities by lowering barriers faced by time and place bound students. The use of the internet for delivery frees ARU to concentrate on content, which is derived primarily from the E-learning activities at ASU, U of A and NAU.
Arizona Learning Systems (ALS)	ALS is a consortium of the Arizona community college districts created to promote statewide distance learning through the use of Internet and interactive video conferencing. ALS has a major emphasis on connectivity and proposes to extend a statewide educational network to all Arizona's universities, community colleges, and K-12 schools. ALS will begin offering classes in 2001.
Individual learning institutions and other content providers	Based in the state and worldwide, provide access to distance learning curriculum.
Other learning institutions	For example, the Arizona Museum of Science and Technology is actively positioned to be a resource for teachers and classroom education.
Arizona State Board of Education	Has placed the Arizona Teacher Standards and Teacher Certification online; is implementing a new assessment process for teachers; and is recruiting and approving alternative teacher preparation programs through non-traditional delivery methods such as distance learning.

## **INITIATIVE: E-LEARNING**

<b>Targeted Outcome</b>	E-Learning becomes pervasive in all segments of Arizona society as a tool for teaching, learning, and conducting business. As a result, E-Learning helps Arizona residents and companies become and remain internationally competitive in the new economy.
<b>Rationale</b>	In a knowledge-based economy, people are the ultimate resource. The state needs to increase the effectiveness with which the people and workforce of Arizona acquire, use, and renew their knowledge base. With breakthroughs in communications and information technologies, vast resources to support such a goal are available.
<b>Strategy and Suggested Implementation Steps</b>	<p>Create a web-based intermediary called Arizona Learning Online (AZLO) that would provide a single point of online access to E-learning for Arizona residents and companies. It would aggregate available E-learning courses and other resources and provide an interoperable "super portal" through which Arizona learners and companies could find and make use of worldwide E-learning offerings. AZLO would simplify the process of accessing and evaluating such information for all learners—from early childhood to lifelong students.</p> <p>The first priority of AZLO will be to use electronic tools and Internet resources to strengthen K-12 teacher preparation in the state by making resources available online and by providing technical training to use and better apply electronic tools and Internet resources in the classroom. AZLO would also support the appropriate telecommunications and computer hardware infrastructure needed to facilitate online access to learning resources (see Building Connections/School Facilities Board requirements)</p>
<b>Benchmarks</b>	<ul style="list-style-type: none"><li>• Positive impacts on learners, including:<ul style="list-style-type: none"><li>- K-12: improvement in fundamental reading, writing, math skills</li><li>- Post Secondary: increase in degrees and certifications, occupational skill attainment</li><li>- Lifelong: increase in degrees and certifications, job promotions, etc.</li></ul></li><li>• Positive impacts on teachers, including:<ul style="list-style-type: none"><li>- Frequent and effective use of E-learning resources with learners</li><li>- Equal access to E-learning resources made available through the system</li><li>- Growing demand from teachers for E-learning resources</li><li>- Evidence that teachers are becoming more learning facilitators, than lecturers</li><li>- Clear definitions of the characteristics of successful "E-learning teachers" of all kinds and levels</li><li>- Increasing levels of E-learning "exports" AZLO has value and is used by teachers and learners outside Arizona.</li></ul></li></ul>
<b>Actions needed to launch</b>	<ul style="list-style-type: none"><li>❖ Identify existing organizations and key players to assemble a team to design the managing organization and business plan for AZLO.</li><li>❖ Obtain seed-funding to facilitate the completion of a formal business plan (Estimated seed funding needed to develop the business plan and technical specifications is \$250,000).</li><li>❖ Create a board composed of private- and public sector leaders, including private-sector investors and mission-driven stakeholders, to set the overall direction, approve specific implementation objectives, and assess progress over time.</li></ul>

## KNOWLEDGE LEADERS, ENTREPRENEURS & CAPITAL

*"Brawn earns little, brains earn much."*

—Lester Thurow

*"If we build great technology, that's only because we were able to hire great engineers"*

— Silicon Valley CEO

### What's at Stake?

Knowledge embodied in people is the leading source of comparative advantage in the new economy. Successful enterprises access, create, and use knowledge. The effort includes research activities that create formal, explicit knowledge as well as "tacit" knowledge gained by interaction with others. Places that are able to build a "knowledge cycle" can turn R&D and good ideas into products and services that create economic impact (e.g., increased wealth and jobs). A powerful knowledge cycle creates a multiplier effect, attracting talent, knowledge industries and infrastructure, and creating a larger corporate and personal income tax base.

### Where We Stand

Currently, Arizona's knowledge assets are not well understood either within the state or outside. Most do not associate Arizona with the knowledge economy; they are more likely to think real estate, golf, and retirement. The state currently lags behind the national average in the amount of public money dedicated to R&D. In addition, the state is hindered by a reputation for a weak K-12 education system and has a low level of patent production.

Nevertheless, Arizona has key knowledge assets on which to build, including two Research I universities. It also possesses a well-established and forward thinking framework for connecting indigenous resources with industry strengths under the Governor's Strategic Partnership for Economic Development (GSPED), a cluster-based economic development strategy.

### Strategic Premise

While Arizona does possess a large number of knowledge resources, a coordinated effort is needed to connect those resources and promote a knowledge-based economy. The goal is to take good ideas and successfully commercialize them. This requires building stronger alliances between university research and the private sector.

The resulting knowledge cycle will have multiplier effect, building a critical mass of similar industries and supporting infrastructure that attracts more talent and creates a larger corporate and personal income tax base.

Encouraging such a cycle requires a four-pronged approach to strengthen the state's knowledge assets and to connect them. This strategy includes supporting R&D and technology transfer that generates new and improved technologies and applies them for commercial use and benefit; capital formation that provides angel, seed, and early-stage financing for entrepreneurs allowing them to become viable and profitable projects that attract external investment; building a commercialization infrastructure (physical and virtual incubation) that fosters an entrepreneurial environment for new business growth; and alignment among the various institutions and organizations involved to ensure the establishment of new, cutting-edge enterprises.

### Who's Doing What?

GSPED Clusters	Priority industries of the state; organize economic activity along those industries
University Research Parks	ASU and UofA both established research parks to enhance high value research by facilitating collaborative educational opportunities, use of university expertise and equipment by research park corporations, and joint research projects that brings about by new product development.
Ongoing University Research	Have identified priority research areas that will set the universities apart as national leaders in the areas of bioscience and biotechnology and information science and technology. The individual universities have initiatives to create national expertise in manufacturing, environmental engineering, environmental science, water sustainability, and optics (see Appendix).
Commercialization centers/ Incubators	Three within the state; based at or near research parks to supply hands-on help to new businesses by providing them with mentors, technical experts, and lab and office space.

## ***Initiative: Knowledge Leaders, Entrepreneurs and Capital***

<b><i>Targeted Outcome</i></b>	Make Arizona a recognized new economy leader and entrepreneurial hot spot through support for R&D, technology transfer, capital formation, and incubation sustained by a knowledge infrastructure
<b><i>Rationale</i></b>	R&D and technology transfer, commercialization, and capital formation are all part of a knowledge cycle driving new economy success. This cycle begins with the development of an idea and ends with commercialization and the creation of economic impact (e.g., increased wealth and jobs). Places with powerful knowledge cycles are able to build a critical mass of knowledge industries and infrastructure, attract talent, and create a larger corporate and personal income tax base. For Arizona to build such a knowledge base will require connecting and strengthening the knowledge resources already available and supporting sources of capital for emerging companies.
<b><i>Strategy and Suggested Implementation Steps</i></b>	<p>To promote such a knowledge cycle, a four-pronged approach is recommended which includes:</p> <ul style="list-style-type: none"><li>- R&amp;D and technology transfer that generates new and improved technologies and makes them available for commercialization;</li><li>- Capital formation that provides angel, seed, and early stage financing for entrepreneurs that makes them financially viable and attractive to external investment (including providing a profit participation mechanism for the state; developing criteria to define "qualified investment," and supporting legislation that will increase the availability of local seed and venture capital and that will enhance the seed and venture industry in Arizona);</li><li>- Strengthening of a commercialization infrastructure (physical and virtual incubation) that fosters an entrepreneurial environment for new business growth; and</li><li>- Alignment among existing and future stakeholder institutions that ensures an integrated approach</li></ul>
<b><i>Benchmarks</i></b>	<ul style="list-style-type: none"><li>• Increase in R&amp;D expenditures by universities, research institutions, and corporations</li><li>• Increase in the number and value of technology licenses issued by research institutions to local companies</li><li>• Increase in the size and number of venture capital deals</li><li>• Decreased residence time of start-ups in commercialization/incubation centers</li><li>• Increase in the success rates of companies using commercialization infrastructure and resources</li></ul>
<b><i>Actions needed to launch</i></b>	<ul style="list-style-type: none"><li>❖ Collaborate with the Arizona Board of Regents to determine allocation of Proposition 301 funding for R&amp;D and technology transfer programs at state universities.</li><li>❖ Suggest legislation to build a venture capital fund for capital formation (Suggested funding is \$200 million).</li><li>❖ The Arizona Board of Regents, the Arizona Department of Commerce, and other relevant organizations should provide \$5 million and cooperate to develop a long-term model to improve technology transfer, business incubation (hands-on help to new businesses by providing mentors, technical experts, and lab and office space), and pre-seed investment to ensure close linkages with university research priorities and the establishment of new cutting-edge enterprises in the state.</li></ul>

## CREATIVE COMMUNITIES

"Wherever knowledge workers cluster, whether in small towns or in big cities, that is where wealth will accumulate."

—Joel Kotkin. *The New Geography. How the Digital Revolution is Reshaping the American Landscape*

### What's at Stake?

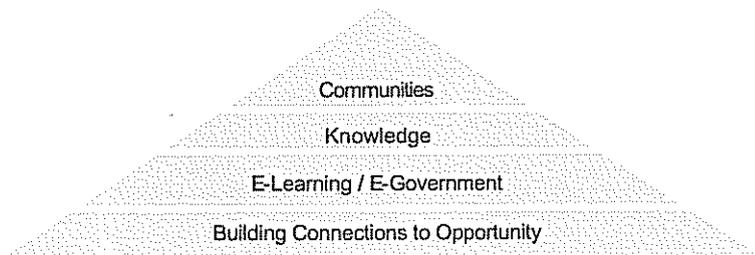
Technological advances and the age of the Internet have changed the way people and companies function. It is now possible for people to live, work, and play anywhere. The challenge for Arizona will be to nurture the types of communities with vibrant economies, rich cultural amenities, good schools, access to higher education, housing choices, cultural amenities, mixed-use development, and entertainment that attract, retain and grow the talent necessary to be competitive in the new economy. Equally important, the state must do so while maintaining its strong quality of life.

### Where We Stand

Arizona has all of the ingredients necessary to build the types of communities that will attract and grow talent and cutting-edge businesses. However it is not yet thought of as a new economy "Hot Spot." Communities in the state are beginning to define their goals for participation in the new economy. For some, the goal is simply to offer its residents the ability to connect to the communication tools available so that they can participate in the opportunities therein. For others, the goal is to gain recognition in the new economy as a community of creative and forward-thinking companies so as to attract more talent and business to the state.

### Strategic Premise

Whereas the other hot team initiatives are geared toward building the foundations necessary to succeed in the new economy, the creative



communities team focused on the top of the needs hierarchy—pulling these initiatives together to build communities that will grow, attract, and retain the talent that will staff leading industries (see graphic below). Creating such communities requires building upon the strengths of the individual communities that make up the state and finding ways in which those strengths can be translated to attract and grow talent. Such an agenda recognizes that the list of amenities demanded of places is not static, and that communities should continually look for ways to build upon their strengths and use the new economy tools to improve themselves. In addition to strengthening its communities, the state must look to market its resources nationally and internationally. This includes touting traditional economic development resources (workforce, low business costs, and natural resources), as well as new economy amenities.

The team also developed a list of principles for the state to consider, as it may very soon need to revise its tax structure to better fit its evolving economic base. The principles take into account the changes taking place in the economy and the varying array of companies that are emerging. The principles set forth ideas to be considered to promote equity and viability of the state's tax structure (see Appendix)

### Who's Doing What?

Arizona League of Cities and Towns	Represents the collective interests of Arizona's 87 incorporated cities and towns at state and federal levels to promote local self-government and municipal independence.
Arizona Office of Tourism	Provides programs and funding in place to market the regions of the state to tourists.
Regional Economic Development Organizations	Market their individual regions as venues for business relocation and investment.
Local Chambers of Commerce	Support the growth and development of business and the quality of life of Arizona's communities by keeping businesses informed and connected.
Arizona Department of Commerce	Workforce Development Program/Job-training tax provides funding for workforce development and works to align development programs to current and future industry trends and needs.
Individual city initiatives	For example, Tempe is building the "Tech Oasis" and downtown Phoenix is evaluating what it can do to build a downtown that is attractive to smaller technology and creative services firms.

## ***Initiative: Creative Communities***

<b><i>Targeted Outcome</i></b>	Build creative communities in Arizona that grow, attract, and retain talent and cutting-edge businesses from all over the world.
<b><i>Rationale</i></b>	Technological advances and the coming of age of the Internet have changed the way people and companies function. The personal computer and a modem allow people to connect to others from home, on the road, or from the most remote communities or they can choose to telecommute or arrange non-traditional structures of work. The challenge for Arizona will be to nurture the types of communities with a vibrant economy, rich cultural amenities, good schools, access to higher education, housing choices, mixed-use development, and entertainment that attract, retain and grow the talent necessary to be competitive in the new economy while maintaining the state's strong quality of life.
<b><i>Strategy and Suggested Implementation Steps</i></b>	<p>A two-pronged effort of helping communities define their goals in the new economy and of marketing the state's new economy assets both internally and worldwide is suggested. The first prong will be to create a Creative Communities Consortium that will help communities learn from one another and to define their own goals for becoming a new economy community. The Consortium will also share the best practices of other regions and provide input to the E-Government Institute on briefing public officials of changes and demands of the new economy. The second strategy will be based on regional efforts to market the state's regions internationally and will include considering the creation of a website to tout the state's many workforce resources.</p> <p>In addition, the state should consider a set of new economy Tax Principles to make the state's tax structure more conducive to the changing and forecasted needs of businesses.</p>
<b><i>Benchmarks</i></b>	<ul style="list-style-type: none"><li>● Increased economic activity measured by an increase in new, cutting-edge business</li><li>● A recognition of the state and its region as "new economy places."</li><li>● Wealth creation and an increase in the state's overall standard of living</li><li>● Changes in zoning ordinances and tax structure as appropriate to support changing economic/business development needs</li><li>● Improved quality of life in the state</li><li>● Use of Internet sites created by the Consortium</li></ul>
<b><i>Actions needed to launch</i></b>	<ul style="list-style-type: none"><li>❖ The Arizona Department of Commerce will host a summit within 90 days that convenes key players within the state to define further the mission and objective of the consortium and to outline its implementation.</li><li>❖ Obtain appropriations in the magnitude of \$1 per capita biannually or \$2.5 million annually for marketing the state. Half of the monies will be used to market the state nationally and internationally. The remaining half will be used for regional marketing efforts and will be matched by the regions along the lines of the Office of Tourism model.</li><li>❖ The Arizona Department of Commerce will further assess the need and feasibility of a workforce resources website and will report its findings at the Consortium Summit.</li></ul>



## Next Steps

To follow-up on the recommendations in this report, the Partnership will require an implementation strategy. To be successful, the strategy should include a strong vision and leadership from business and government leaders, collaboration among many stakeholders, alliances and public-private partnerships, action by state government, education, clusters, regional groups, and a "bottom-up" process involving as many stakeholders as possible.

To accomplish all that is outlined in the previous pages, APNE recommends the following steps:

- ❖ Establishment of a statewide economic partnership that will guide implementation of the APNE initiatives around new economy foundations
- ❖ A process to gain support from key groups
- ❖ Regional implementation teams to develop regional strategies to promote new economy initiatives
- ❖ Designated "champions" for APNE initiatives

### ***Statewide Economic Partnership***

To guide the state's new economy initiatives, APNE recommends the establishment of the ***Arizona Economic Partnership***, a statewide economic partnership that would incorporate the recommendations and initiatives proposed by APNE with the existing GSPED structure. Through the APNE process, new foundations for the new economy have been identified: telecommunications connections, E-learning, E-government, knowledge leaders, entrepreneurship, and creative communities.

One of the roles of the Arizona Economic Partnership will be to ensure that GSPED cluster industries are connected to these new foundations. Clusters represent the priority, targeted industries for development as part of Arizona's new economy. Therefore, they should be integrated and supported under the Arizona Economic Partnership umbrella.

The Partnership would be created by Executive Order of the Governor and would transform the current Commerce and Economic Development Commission to be geared toward new economy objectives. The Partnership would:

1. Develop, implement, and revise Arizona's economic development strategy;
2. Establish outcome measures to track progress of the state's transition into the new economy;
3. Influence state policy and legislation; and

4. Collaborate with other entities, including regional groups and cluster groups.

The Partnership would be composed of members appointed by the Governor. Membership would represent the private sector, universities, nonprofit organizations, and state and local government. The Governor should appoint co-Chairs and should include the Director of the Arizona Department of Commerce as one of the government representatives. The Arizona Department of Commerce will provide staff support for the Partnership.

The Partnership could be organized into committees co-chaired by members of the Partnership and would include leaders not on the Partnership. The following committees would be included in the Partnership:

- ❖ Knowledge (R&D, technology transfer)
- ❖ Capital and commercialization
- ❖ Connecting
- ❖ Learning
- ❖ Creative community
- ❖ Marketing

Implementation teams would be formed from the APNE recommendations and guided by the Arizona Economic Partnership. Champions for each team would be drawn from the APNE hot team co-chairs, state, regional, or cluster leadership. Each team would develop a specific implementation plan with outcomes. Each of the teams would focus on the new foundations that have importance for regions and clusters, as well as statewide.

### ***Gain Support from Key Groups***

Once the Partnership is established the APNE results will be reviewed in regional summit meetings where implementation strategies for regions will be identified using an interactive Town Hall process. This process will seek buy-in from regional organizations and a commitment to regional strategies. The following regions would be involved: Central Arizona (Pinal and Gila counties); Greater Phoenix region (Maricopa county); Greater Tucson region (Pima county); Northern Arizona (Apache, Coconino, Navajo, and Yavapai counties); Southeastern Arizona region (Graham, Greenlee, Cochise, and Santa Cruz counties); and Western Arizona (Yuma, La Paz, and Mohave counties).

Arizona's recognized industry clusters will not only participate in these regional meetings, but will also develop their own action steps for connecting to the new economy foundations and implementation within regions.

A statewide summit will be conducted to pull together regional and clusters groups involved in implementing the APNE results.

### ***Schedule***

Implementation would begin in January 2001 with the release of the APNE report and the Governor's State of the State.

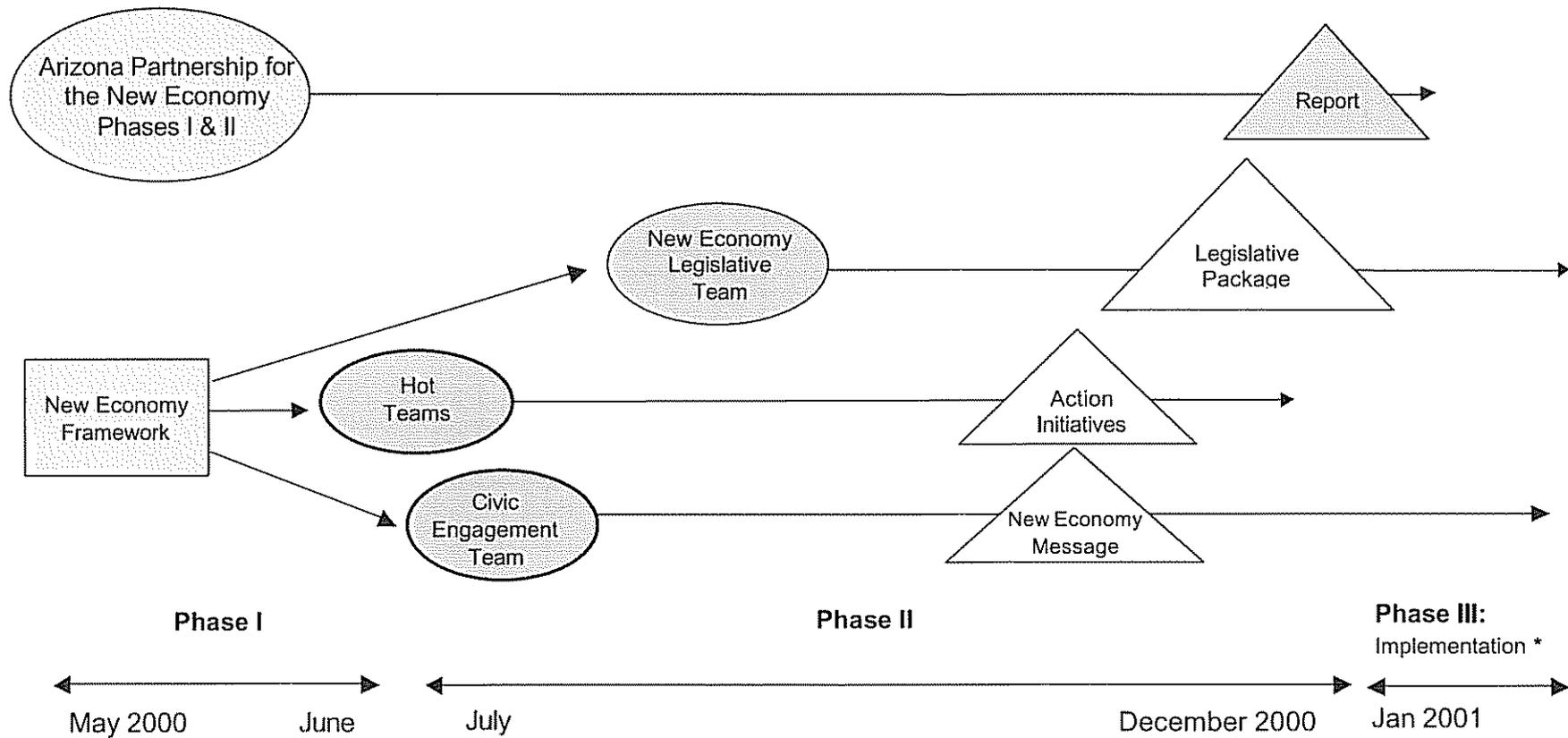
- ❖ Regional Summit meetings would take place from February-April 2001
- ❖ Regional implementation teams would start in February 2001
- ❖ Statewide Summit would take place in late Spring 2001
- ❖ Arizona Economic Partnership carries forward implementing APNE



# Appendix

1. Project road map
2. Commonly used acronyms
3. New economy tax principles
4. Arizona communities online
5. Computer Systems Policy Project  
telecommunications guide description
6. Arizona Learning Online
7. Research priorities at Arizona universities
8. Leadership and supporting organizations

## I. APNE Project Road Map (May – December 2000)



\* Phase III: Implementation will be undertaken by the proposed Arizona Economic Partnership.

## II. Commonly Used Acronyms

<b>ACC</b>	ARIZONA CORPORATION COMMISSION	<b>GADA</b>	GREATER ARIZONA DEVELOPMENT AUTHORITY
<b>APNE</b>	ARIZONA PARTNERSHIP FOR THE NEW ECONOMY	<b>GITA</b>	GOVERNMENT INFORMATION TECHNOLOGY AGENCY
<b>ASPED</b>	ARIZONA STRATEGIC PLAN FOR ECONOMIC DEVELOPMENT	<b>GSPED</b>	GOVERNOR'S STRATEGIC PLAN FOR ECONOMIC DEVELOPMENT
<b>CSPP</b>	COMPUTER SYSTEMS POLICY PROJECT	<b>TOPAZ</b>	TELECOMMUNICATIONS OPEN PARTNERSHIP OF ARIZONA

## III. New Economy Tax Principles

With the changing nature of the economy (e.g. more service-oriented industries, emergence of intangible products, etc.) the state may very soon need to revise its tax structure to better fit the changing nature of businesses. The "New Economy Tax Principles" take into account the changes taking place in the economy and the varying array of companies that are emerging.

Standard Principles	New Economy Principles
<ul style="list-style-type: none"> <li>• <i>Equity</i> <ul style="list-style-type: none"> <li>- <i>Ability to pay</i>- Is the tax system either proportional or progressive in its incidence among income groups? Are taxpayers with similar income taxed uniformly?</li> <li>- <i>Benefits received</i>- Is the tax burden related to benefits received by individuals and businesses?</li> </ul> </li> <li>• <i>Stability</i>: Is the revenue raised by the system stable or is it highly sensitive to economic fluctuations in the short run?</li> <li>• <i>Administration</i>. Is administration of taxes by the government professional, fair and cost-effective?</li> <li>• <i>Compliance</i>: Is compliance with tax provisions, on the part of businesses and consumers, simple and inexpensive?</li> <li>• <i>Exportability</i>: To what degree is the tax burden shiftable to "outsiders", such as tourists, the federal government, or out-of-state business?</li> </ul>	<ul style="list-style-type: none"> <li>❖ <i>Investment</i>: Does the tax system encourage savings and productive investment in plant, equipment, people and technology?</li> <li>❖ <i>Efficiency</i>: Does the tax system distort decision-making by consumers or businesses?</li> <li>❖ <i>Growth</i>: Does the tax system generate revenues that grow in proportion to the state's economy, over time, eliminating the need for frequent changes in tax rates?</li> <li>❖ <i>Diversity</i>: Is the base of the tax system as broad as possible, so that tax rates and burdens are as low as possible?</li> <li>❖ <i>Neutrality</i>: Does the tax system affect competitors uniformly, fostering a "level playing field" for state base businesses?</li> </ul>

## ***IV. Arizona Communities with an Internet Website***

Avondale	Glendale	Sahuarita
Benson	Goodyear	Sedona
Bullhead City	Holbrook	Show Low
Camp Verde	Litchfield Park	Sierra Vista
Carefree	Marana	Springerville
Casa Grande	Mesa	St. Johns
Cave Creek	Oro Valley	Superior
Chandler	Page	Surprise
Chino Valley	Parker	Tempe
Clarkdale	Payson	Thatcher
Cottonwood	Peoria	Tombstone
Douglas	Phoenix	Tucson
Eagar	Pinetop-Lakeside	Wickenburg
El Mirage	Prescott	Willcox
Flagstaff	Prescott Valley	Williams
Fountain Hills	Quartzsite	Winslow
Gila Bend	Queen Creek	Yuma
Gilbert	Safford	

## ***V. Readiness Guide for Living in the Networked World***

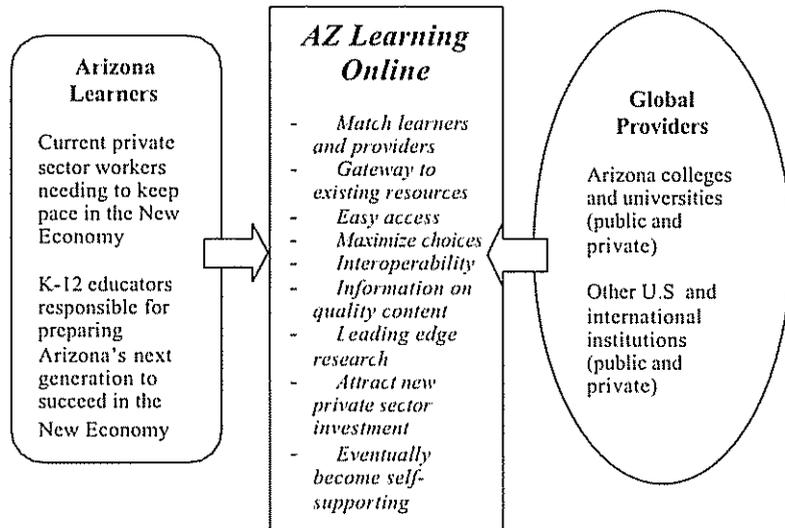
The Computer Systems Policy Project (CSPP) "*Readiness Guide for Living in the Networked World*" is a self-assessment tool to help communities determine how prepared they are to participate in the "Networked World." The first step for communities is to understand where they stand compared to other communities that have a more advanced telecommunications infrastructure. The *Guide* also provides a vision of where communities would need to be to attain certain telecommunications goals.

The matrix developed by CSPP contains five key categories that CSPP believes best represent the elements that need to be in place for a truly connected community. They are:

- **The Network (Infrastructure)**—the backbone technologies and infrastructure that connect communities to the Internet.
- **Networked Places (Access)**—places where people can access communications technology.
- **Networked Applications and Services**—how communities apply the technology and connections to make them meaningful and purposeful.
- **Networked Economy**—the presence of economic foundations to encourage the use of the technology and improvements because of it.
- **Networked World Enablers**—key levers that will support the changes of a more connected world (e.g. Policies that make the exchange of information secure and private, that will ensure that a viable legal framework is in place, and that promote more connections).

More information about the Guide can be found at: [www.cspp.org](http://www.cspp.org).

## VI: Arizona Learning Online



## VII. Research Priorities at Arizona's Universities

Arizona's public universities have the mission of providing instruction, research, and public service for the state of Arizona. The universities each have a different role and vision, as well as a different student body. Together, the three universities have identified areas in which they can distinguish themselves nationally—both as a group and individually. The three aim to be national leaders in the areas of bioscience and biotechnology and information science and technology. The universities have also put forth initiatives to create expertise in manufacturing, environmental engineering, environmental science, water sustainability, and optics.

### Research Institutions

Several years ago, the Carnegie Foundation for the Advancement of Teaching developed a classification system for U.S. universities based upon their missions. The 1994 Carnegie classification groups institutions into categories by both the levels of degree offered and the comprehensiveness of their missions. The categories are as follows:

- **Research I:** These institutions offer a full range of baccalaureate programs, are committed to graduate education through the doctorate degree and give a high priority to research. They receive at least \$40 million in federal support annually for research and development and award at least 50 Ph.D. degrees each year.
- **Research II:** These institutions offer a full range of baccalaureate programs, are committed to graduate education through the doctorate degree and give a high priority to research. They receive between \$15.5 million and \$40 million in federal support annually for research and development and award at least 50 Ph.D. degrees each year.
- **Doctorate-granting I:** Besides offering a full range of baccalaureate programs, the mission of these institutions includes a commitment to graduate education through the doctorate degree. They award at least 40 Ph.D. degrees annually in five or more academic disciplines.
- **Doctorate-granting II:** Besides offering a full range of baccalaureate programs, the mission of these institutions includes a commitment to graduate education through the doctorate degree. They award 20 or more

Ph.D. degrees in at least one discipline or 10 or more Ph.D. degrees in three or more disciplines annually.

Northern Arizona University (NAU) is a Level I Doctorate-granting university. Both the University of Arizona (UofA) and Arizona State University (ASU) have attained Research I status, giving Arizona two of the 88 Research I universities in the country. This is especially important in terms of the major role high-tech industry plays in the state, since high-tech needs research universities to prosper.

### Arizona's Research Activities

The following areas have been identified by each of the three Arizona universities as research priorities under the Governor's Taskforce on Higher Education.

#### Arizona State University

Bioscience and Biotechnology

- Molecular Cellular and Tissue Engineering
- Functional Genomics
- Structural Biology

Information Science and Technology

- Center for Embedded Systems
- Software
- Telecommunications Research

Individual Initiatives

- Manufacturing Institute
- Material Sciences (including nanostructure science and technology)

#### Northern Arizona University

Bioscience and Biotechnology

- Biotechnology, Plants, and Human Health
- Emerging Infectious Disease
- Heavy Metals and Cancer
- Biotechnology, Genetic Medicine and Society

Information Science and Technology

- e-Learning Initiative
- Software
- Telecommunications Research

Individual Initiatives

- Environmental Engineering
- Environmental Sciences

#### University of Arizona

Bioscience and Biotechnology

- Genomics research
- MRI Center for Cognition and Neuroimaging
- Bioinformatics

Individual Initiatives

- Optics
- Water Sustainability

## VIII. Leadership and Supporting Organizations

The work of the Partnership and the facilitation of the group's work by the *Collaborative Economics/Morrison Institute* consulting team were made possible by generous contributions from the following organizations:

#### State of Arizona/Department of Commerce

*Jackie Norton, Director*

*Craig Sullivan, APNE Project Manager*

The Arizona Department of Commerce (ADOC) is the state's community and economic development authority. It works with communities, businesses and economic development organizations to build the foundation for a strong economy and superior quality of life through the development of competitive industries and sustainable communities.

#### Greater Phoenix Chamber of Commerce

*Valerie Manning, President and CEO*

Established in 1888 and representing more than 4,000 companies with more than 385,000 employees, the Greater Phoenix Chamber is Arizona's oldest and largest chamber. The Chamber has been a leader in helping the community recognize and adapt to changing economic and business conditions, joining with private and public organizations to help lead the Arizona Partnership for the New Economy. Recently named the most influential organization in the Valley by the *Business Journal*, it is strengthened by high-quality programs such as *BidSource*, a government procurement

program, and affiliations with the Greater Phoenix Black Chamber of Commerce, the North Phoenix Chamber of Commerce, and the South Mountain/Laveen Chamber of Commerce. The Chamber plays a valuable leadership role in supporting the success of area businesses, improving the quality of life for the community, and championing the voice of business in government, which results in an informed, connected, and prosperous business environment.

### **Greater Phoenix Economic Council**

*Rick Weddle, President and CEO*

The Greater Phoenix Economic Council (GPEC) was founded in 1989 to serve the region through establishing a collaborative network for promoting and sustaining the economic vitality of Greater Phoenix. Our vision is for the Greater Phoenix region to become widely recognized as a successful region and a leader for economic opportunities and sustained improvement in quality employment, per capita income, and tax base.

The mission of GPEC is to leverage region-wide, public-private resources to create high-quality jobs by attracting and growing globally competitive high value-added firms. GPEC is guided and strategically focused by two specific, long-range goals:

- Marketing the region to generate targeted opportunities; and
- Connecting public and private allies and leveraging resources to capture opportunities and improve competitiveness.

### **Greater Phoenix Leadership**

*Tom Browning, Executive Director*

Founded in 1975 by business and civic leaders, Greater Phoenix Leadership is a non-profit organization comprised of presidents and CEOs of corporations throughout the Phoenix metropolitan region.

The mission of Greater Phoenix Leadership is to improve the greater Phoenix area and the state of Arizona by bringing together talent, resources, and leadership to create action or priority issues.

### **Greater Tucson Economic Council**

*Larry Aldrich, Acting President*

The mission of the Greater Tucson Economic Council (GTEC) is to attract and retain quality jobs for Greater Tucson. GTEC serves as the focal point for the public and private sectors to identify economic issues and to coordinate and

facilitate relevant economic development activities that are critical for the financial health of the community.

GTEC, in collaboration with state and regional partners, has implemented a cluster-based economic development strategy focusing on Tucson's industry clusters of optics, information technology, environmental technologies, industry and aerospace, bioindustry, teleservices, and plastics/advanced composite materials. The industry cluster practice has gained Tucson and Pima County international recognition in Canada, Scotland, and New Zealand and as a noted "best practice" by Fluor Daniel Consulting. With the responsibility for strategic business recruitment and strategic planning, GTEC plays an important role in the development of Tucson and Pima County's future as a leader in the knowledge-based global economy.

*The work of APNE was also facilitated through the technical and professional expertise of the following companies:*

#### **Reister-Robb**

*Tim Reister, President*

Reister-Robb is a full-service advertising and public relations agency that has been on the Inc. 500 list for the last four years as one of the fastest growing, privately held firms in America. With offices in Phoenix, AZ and Berkeley, CA, Reister-Robb handles a myriad of clients across a broad range of categories.

#### **Advantiv**

*Margaret Gorsche, Manager, Knowledge Development*

Advantiv was formed in 1997 with the vision of creating technology that dramatically reduces the cost, time and risks associated with buying and selling complex products and services. Advantiv is a business solutions provider that leverages the Internet to drive people, process, knowledge, and expertise across the enterprise and supply chain to achieve breakthrough results. Advantiv hosted an online forum where APNE hot team participants could go to share ideas.

#### **Kinetic Thinking, LLC**

*Charlie Martin, President*

Kinetic Thinking is a professional services firm focused on bringing the power of the Internet to inter-business relationships and transactions. As tactical advisors, Kinetic Thinking helps businesses profit by creating honest, practical solutions.