Report of the Advisory Council on the Digital Economy (ACDE)

Bringing Digital Opportunity to All Texans

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Council members

http://www.senate.state.tx.us/75r/ltgov/Policy/digital.htm

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- Senator Gonzalo Barrientos, http://www.senate.state.tx.us/75r/Senate/members/dist14/dist14.htm
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- Senator Florence Shapiro, http://www.senate.state.tx.us/75r/Senate/members/dist8/dist8.htm

Letter

October 9, 2000

The Honorable Rick Perry
Lt. Governor of Texas
Austin, TX

Dear Lt. Governor Perry:

The Advisory Council on the Digital Economy has completed its initial assignment: to address a range of public charges and devise a framework for approaching issues critical to Texas' success in the New Economy.

After four public hearings, considerable input from interested parties and the work of individual council members and subcommittees, we have compiled the following document of principles, recommendations and resources that we believe will help lay the groundwork for future partnerships between public institutions and entities in the New Economy. We believe that these cooperative approaches will bring the agility and innovation to the public sphere necessary to address the challenges of the 21st Century. We have chosen to post our findings on the Web and include testimony received, written submissions, and links to additional material, in hopes that this site will serve as a resource to state leaders and to the public as we approach the public policy issues raised by the Digital Economy.

Our goal is as simple as your initial admonition to us: make Texas a national thought leader in the New Economy. Thank you for the opportunity to serve. We look forward to working with you to build these partnerships and implement these recommendations.

Respectfully submitted,

Mike Maples
Chairman

Charges

The ACDE held three full public hearings. Each hearing addressed one of the charges below. **Meeting agendas, minutes and audio/video can be found at http://www.senate.state.tx.us/75r/ltgov/Policy/digital.htm**
Throughout this document, links to testimony and other resources are organized by issue.

Charge 1: With a focus on maintaining Texas' leadership in the Digital Economy, the Council shall consider strategies that (a) promote Texas' already-existing technology-friendly climate, (b) reduce governmental impediments to greater economic opportunities for technology companies in Texas, and (c) encourage technology companies to locate in and remain in Texas. Specifically, the Council shall consider:

- How to create broad promotional efforts that highlight Texas' pro-technology business climate.
- How tax policy encourages or discourages the growth of Texas' high tech industry.
- How state government permitting, contracting and regulatory compliance processes affect the growth of Texas' high tech industry.

Charge 2: To enhance Texas' position as a leader in the Digital Economy, the Council shall consider strategies to develop a more educated workforce. Specifically, the Council shall consider:

- Which improvements in K-12 mathematics and science education programs might help meet the workforce needs of the high tech industry.
- How to improve the technology training for primary and secondary school teachers and how technology can be more fully integrated into the curriculum of Texas' schools.
- Whether current high school technology programs meet the workforce needs of the high tech industry.
- How Texas' community colleges can be a key to addressing the workforce demands of the high tech industry.
- How to encourage the movement of technology from university laboratories into Texas' high tech companies.

Charge 3: The growth of the Internet brings new opportunities, such as greater information distributed more broadly, and new risks. The Council shall develop strategies to promote the broad opportunities that the Internet brings and shall consider what, if any, steps might be taken to minimize the adverse effects of the new risks. Specifically, the Council shall consider:

- How to bridge the Digital Divide and make the opportunities of the Internet available to more Texans.

- What consumer protection measures, including fraud protection, privacy protection and anti-spamming protection, can provide consumers with greater confidence in their use of the Internet as a tool for information and commerce.
- How to utilize the Internet as a means of addressing public health concerns regarding the delivery of medical information and services.
- How to utilize the Internet as a tool to allow for greater public participation in the democratic process.
- How to utilize the Internet as a means of enhancing rural economic development.

Report of the Council

Introduction

The ACDE was given a series of broad charges and tasked by Lt. Governor Perry with a project of mutual education:

> "I encourage you to be involved in shaping the vision of Texas in the New Economy. You can help government understand technology better and in the process, help the technology community understand government better….
>
> Much as the explorers of the past…came and mapped the New World, your job is to help Texas explore and map the new information technology economy. As leaders of the various segments of that New Economy, I hope you can help foster understanding between technology and government and help us create a long-term strategy for making Texas the world's leader in technology research, development and job creation…."

Leaders of the high tech community were anxious to help governmental leaders understand the realities and needs of their work – the enterprises driving unprecedented economic growth in our state. As well, elected official were hoping to help educate these leaders on the capacities and limitations of the public sector, and enlist their assistance in deploying the tools of the Digital Age to improve the functioning of the public sector for the benefit of all citizens.

The Council held three full public hearings, and one hearing in conjunction with the Democracy Online Project with George Washington University (**http://democracyonline.org/**). From those public deliberations, issue task force work and online communication, the ACDE offers a framework for the state leadership in addressing technology policy issues in the coming years, as well as creating partnerships to bring benefits of the Digital Economy to all parts of Texas.

This online document is designed to be a renewable resource for the leadership and the public, providing information received by the Council, links to other sources of information and our best thoughts on the way to approach Digital Economy issues in the coming years.

Guiding Principles

Increase Access and Participation

Ensure access to technology and make government more user-friendly.

The Council heard repeatedly from experts and citizens alike that contemporary technologies would provide unprecedented opportunities for improved citizen access to information and services. While the "Digital Divide" was a concern, ACDE members saw "digital opportunity" – the capacity of technology tools and the dynamics of the New Economy – as a more critical concept to guide their deliberations.

Deliver Excellence in Education

Use technology to help build a 21st Century education to equip Texans with the skills for success in the Digital Age.

ACDE members believe that more than at any other time in economic history, an industry's bottom line in tied to quality education. This close tie between the value of education and the success of a business enterprise provides substantial opportunities for innovation and investment in education.

Address Technology Challenges

Encourage innovative partnerships between the high tech industry and public institutions to lay the groundwork to address the challenges brought by technological innovations.

The pace of innovation is accelerating, bringing new challenges and new opportunities. The ACDE firmly believes that approaches to these challenges must be flexible and on-going, to adapt to new technologies and market forces.

Promote Innovation and Economic Growth

Create networks of leaders to support innovation and work to share that expertise across the state

Some ACDE members became students of the Milken Institute characterization of "Regional Clusters" – a checklist of attributes a community should have to successfully support entrepreneurial growth. ACDE members are committed to helping other Texas communities build those capacities.

First Step: Leadership and Coordination at the Highest Levels

The critical first step to maintaining Texas' leadership in the Digital Economy is to create a forum for bringing leaders of the New Economy together with the public sector. These relationships will help assure that the state continues to foster the strong business climate, quality education and livability that have enabled our growth.

- **Appoint a State Technology Commissioner.** With the rapid growth of the high tech sector, the state should create an advisory position reporting directly to the Governor and the state leadership to act as the central point of contact between state government and the technology community. The Commissioner should also advise on issues, including e-government (with the Department of Information Resources) regional clustering, and education technology. This position will also help provide coordination among technology efforts.

- **Appoint a State Technology Council (STC).** To advise and support the Technology Commissioner, there should be a standing body that will work with the Commissioner of Technology to prioritize issues and recommend action to both the Governor and the Legislature. This STC will provide the statewide initiative to interconnect individual regional clusters, and establish a repository of "best practices" on technology policy.

These appointments will help bring decision-making on state technology matters to the highest level of state leadership. As technology becomes an increasingly important part of governmental service delivery, education and economic growth, decisions should be made at the strategic and enterprise level, bringing together the best minds from across disciplines, sectors and regions.

The following sections organize the ACDE recommendations around the guiding principles outlined above.

The text includes links to resources provided to the Council by a variety of sources. Inclusion of those links in this document does not imply an endorsement of a site's content by the ACDE or the Office of the Lt. Governor.

Increase Access and Participation

Ensure access to technology and make government more user-friendly.

Access is a broad term. It can mean access to basic technology tools, access to government services, or access to the rewards of the Digital Economy. ACDE members divided the notions of access into recommendations concerning E-government (access to public sector services and information online) and strategies for bridging the complex "Digital Divide."

e-Government

Prominent research on technology adoption in organizations suggests that there are four ways, listed in increasing complexity, for an organization to benefit from using the World Wide Web:

- **Publish.** This capability provides a low-cost, high-turnaround means of making information about a company and its products available. This capability is the easiest to implement, and the State of Texas has already made good progress here -- of the approximately 260 state agencies and Texas universities, 160 have Web sites.

- **Interact.** The next step is interaction, which allows individuals/potential customers a means of requesting further input. This capability is also relatively easy to implement and allows citizens to request, and agencies to easily provide, additional information.

- **Transact**. A more sophisticated functionality allows customers to interact directly with the organization through the Web, e.g., obtain a license, make a payment, etc. This capability is somewhat more difficult because to accurately address these issues, the Internet application must have timely data regarding the citizen's status – e.g., when did the license expire, what is the late fee, etc.

- **Transform.** This development is the most critical, because it uses the above strategies as a catalyst for real structural innovation in the way that an institution conducts its business. Where the functionalities above promote a better citizen or customer experience with government,

ultimate efficiency and cost savings are realized when those interactive capabilities are leveraged to re-engineer back office processes.

Based on these principles, the state leadership should make agency adoption of new technologies a top priority by acting on the following recommendations.

- **Move state information and services online.** The Department of Information Resources (DIR) has recently launched a portal pilot http://www.texasonline.com. The state should commit to make government seamless and accessible, by moving all agencies and local governments online through the portal, to maximize efficiency and ease of use for citizens. Agencies should work closely with DIR to establish an aggressive, but realistic timetable to bring state services online.

- **Appoint public/private oversight task force**. To assure success of the portal, a permanent task force – to replace the temporary one currently in place -- should be appointed to set goals and oversee development. Membership should include players integral to the success of the project: technology professionals; state agency executives; local government leaders; the public; and the Technology Commissioner.

- **Set standards for security, privacy and cost effectiveness.** Critical components of e-government are: citizen/customer service; security; and cost savings. The state should set benchmarks to evaluate progress in the three areas and encourage maximum use of the portal to prevent duplication of effort and redundant costs. By setting these clear benchmarks, agencies and local governments can clearly compare the cost of preparing their own Web presence consistent with these standards, with the cost of coordinating with other governmental agencies to deliver services to citizens through a single online interface.

- **Prioritize progress**. In moving services on line, the state should give priority to high volume transactions, to provide more convenience for citizens, and show the value of e-government in citizen and business transactions. Many of these transactions will require working across jurisdictions, especially between state and county agencies.

    - **G2C**: **Government to Citizen**. These services where most citizens do business with government should be top priority for movement online:

        - Motor vehicle registration

- Driver's licenses
- Renewal of professional licenses.
- Birth certificates

- **G2B: Government to Business: Online procurement**. Doing the people's business means working efficiently with the private sector. These transactions should be moved online through the expansion of the General Services Commission (GSC) online procurement portal and the use of reverse auctions, which have been shown to generate considerable savings in other states. A more detailed explanation is available at http://www.freemarket.com. Reverse auctions are an online mechanism that enables vendors of commodity items to bid against one another in real time. Thus, an agency sets a top price, and pre-cleared vendors compete against one another to lower their price to secure the business. When bidding stops, the lowest bid – the best price for taxpayer funds – wins the contract. This process has shown significant procurement savings in other states.

- **Create an annual online report card of progress**. DIR should prepare a simple annual report card to be presented to the state leadership and the public of agency e-government performance in order to rank the progress of the top agencies against their peers in comparable agencies across state government to reward progress and encourage innovation. This strategy would create a dynamic of competition among agencies, accelerating the move to e-government and the resulting re-evaluation and transformation of outdated agency processes, and ultimately improving Government-to-Government (G2G) transactions.

Resources for E-government

The Texas State Portal
http://www.texasonline.com

E-Texas
http://www.e-texas.org/x/whatis.htm

Department of Information Resources
http://probop.dir.state.tx.us/bop/reports/state_s.htm

Texas E-Government Task Force
http://lanner.dir.state.tx.us/egov/links.htm

Governing Magazine
http://www.Governing.com

Government Technology Magazine
http://egovernment.govtech.net/

Other state models

State of Washington
http://access.wa.gov/

State of North Carolina
http://www.ncgov.com/html/basic/index.html

State of Pennsylvania
http://www.state.pa.us/pa_frame.html

State of Minnesota
http://www.state.mn.us

Digital Divide

The "Digital Divide" has many connotations, but generally refers to the well-documented disparities in Internet access among persons of different ages, ethnicity, race, education and socioeconomic status. In many ways, the Digital Divide is more complex, less about access to technology tools and more of a current manifestation of persistent socioeconomic inequalities in American society.

Regardless of which definition one employs, there is a sense among several ACDE members that Internet technologies provide an historic opportunity to mitigate old divides and bring new opportunity to the disadvantaged. Therefore, the ACDE recommendations employ both tactical and strategic approaches. The first works to bridge the most basic Digital Divide – access to the tools of technology.

- **Create a public/private partnership to bring technology tools to economically disadvantaged families.** Access to e-government demands a basic access to technology. To help bridge this most basic "Digital Divide," a non-profit clearinghouse should coordinate a partnership among the Texas Department of Human Services (DHS), the Texas Workforce Commission

(TWC), local businesses and non-profit organizations to direct donated computers and job training services to disadvantaged families, helping build their skills and move them to meaningful work in the Digital Economy. Companies frequently donate computers to schools. This project will streamline the mechanics of corporate donations of computer equipment to schools, but also facilitate donations to individuals and families for use in their homes, a strategy increasingly used by large private corporations to enable people to experiment with and learn to use technology privately, at their own pace. Perhaps most importantly, the project combines the placement of donated technology with technical and job training for recipients and assures that donations are used productively and efficiently. This project would help simplify the process of donating for companies and provide a central entity for individuals and institutions to contact to acquire technology tools.

- **Use technology to help build stronger communities.** Ensuring access to technology tools is the first step to bridge the Digital Divide. The State should also leverage that access. One national example of this approach is America's Promise (http://www.americaspromise.org), which uses Web technologies to help local communities and organizations organize resources to support the healthy development of children. Organized around "5 pillars" or critical elements to building of character and competence in youth, the model envisions technology as a tool to bridge old divides, rather than as an end in itself. The pillars of success are:
    - Mentors;
    - Safe Places;
    - Healthy Start;
    - Marketable Skills; and
    - Opportunities for Community Service.

Under this approach, the Web is used to help bring people, services and resources together to promote the healthy development of youth, making technology a catalyst to community development, rather than an end in itself. An example of this approach has recently been launched in San Diego.

The ACDE recommends that such frameworks be used by the Telecommunications Infrastructure Fund (TIF) http://www.tifb.state.tx.us as it formulates their community networking planning grants. This approach would help local communities and leaders gear technology deployments towards larger community goals and leverage TIF funds with other public and philanthropic efforts within the community.

- **Expand efforts in Tele-health to bring medical services to remote areas of the state.** An often overlooked component of the "Digital Divide" is access to health care services in remote areas. Testimony before the ACDE showed

the dramatic capabilities of "remote house calls" by conducting an exam from the Senate floor. Contemporary technology provides significant opportunities in rural health care. And although tele-health challenges the status quo related to the scope of practice and reimbursement, the technology can provide access to numerous screenings, treatments, and services in under-served areas of Texas. To help realize these benefits, the ACDE recommends that the state investigate the following projects to help increase the availability of tele-health services in remote areas:

- Allow for more reimbursement of tele-health services under state Medicaid program and evaluate reimbursement/services under private health insurance;

- Modify (TIF) to allow private for-profit providers who meet certain criteria (i.e. certain amount of indigent care, Medicaid, or Medicare) to be eligible for TIF grants; and

- Create pilot project using Medicaid and potentially TIF funds to use tele-health applications to increase access to health care. This pilot could be cast in several ways, including targeting a specific region, disease, or population.

Digital Divide Resources

The Digital Divide is a multi-faceted issue, but one which ACDE members believe technology tools and innovative partnerships can remedy. Further, these tools may actually be used as a catalyst to bridge old divides as well. Informational resources on this topic are broad and plentiful. The following list represents a cross section of useful and most frequently cited sources.

- Falling Through the Net III is by far the most widely cited research on the Digital Divide. This is a nationally based report, which provides recent data on the technology gap in America. (National Telecommunications and Information Administration, 1999) http://www.ntia.doc.gov/ntiahome/digitaldivide/

- http://www.DigitalDivideNetwork.org

- http://www.pbs.org/digital

- The Texas Information Policy Institute has conducted a number of studies to quantify the Digital Divide in Texas. http://www.utexas.edu/research/tipi/

- Annenberg Public Policy Center of the University of Pennsylvania publishes research pertaining to public policy issues at the local, state and federal levels. Consistent with the mission of the Annenberg School for Communication, the Center has four ongoing priorities:
  - 1) Information and Society
  - 2) Media and the Developing Mind
  - 3) Media and the Dialogue of Democracy
  - 4) Health Communication
  - http://www.appcpenn.org/

- The Benton Foundation works to realize the social benefits made possible by the public interest use of communications. Benton demonstrates and promotes the use of digital media to engage, equip and connect people to solve social problems. http://www.benton.org/home.html

- The Kaiser Family Foundation works with several academic and non-profit organizations in the collection and analysis of media sources and how media shapes the lives of families, individuals, and ethnic or income divided groups. http://www.kff.org/sections.cgi?section=mediapart

- The Markle Foundation pursues the goal of creating opportunities and developing community communications through a range of activities, which include program analysis, research, public information and the development of innovative media products and services. The foundation also provides grants and invests in companies that engage in community development. http://www.markle.org/index.html

Digital Divide Programs

It is not possible to list every program working to bridge the Digital Divide. Those described here offer an effective overview of the types of programs available; and, of those types, this group encompasses many of the most readily recognized programs.

- The Alliance for Community Media promotes equitable access to all electronic media. Alliance for Community Technology addresses the gap between the potential of technology and the capacity of people and communities to use it to solve problems by promoting the creation, use, evaluation, and propagation of appropriate technologies in support of communities. http://www.alliancecm.org/

- KLRU-TV launched a multi-year project to address these questions and help the Austin community develop solutions. More than 100 people attended the "Navigating the Digital Divide" summit, held in the KLRU studios on April 29, 2000 to delve into these questions and begin a dialogue on solutions.
  http://www.klru.org/Navigating/main_navigating

- Austin Free-Net is a non-profit corporation providing public access to the Internet and emerging technologies for all Austin residents, especially those who don't have computers in their homes. Our services are available only in public locations. Austin Free-Net is a community-driven project. http://www.austinfree.net

- Campestre Elementary School Programs (speaker at the July ACDE hearing) 11399 Socorro Rd, El Paso, TX 79927-3011 Phone: (915)860-3640 (no Web site available for the school – the district site is: http://www.sisd.net/main/index.html

- HAL-PC is a privately funded, non-profit corporation. This Houston based program was a formed to facilitate learning in all areas and disciplines through individuals teaching each other and the community ways to obtain maximum benefits from personal computing.
  http://www.hal-pc.org/

- Street-Level Youth Media educates Chicago's inner-city youth in media arts and emerging technologies for use in self-expression, communication and social change. Street-Level's programs build self-esteem and critical thinking skills for urban youth who have been historically neglected by policy makers and mass media. Using video production, computer art and the Internet, Street-Level's young people

address community issues, access advanced communication technology and gain inclusion in our information-based society." http://streetlevel.iit.edu/

- Technology For All was developed by the Enron Corporation to balance out the inequalities in computer access once the child has left the educational environment. This after school and 24-hour program hopes to level the playing field and create greater educational and economic opportunities for the disadvantaged in a changing global economy. http://www.tfa-houston.org/

- SBC (Southwestern Bell Corporation). Community Partnership Agreement: The Community Partnership Agreement is a non-profit collaboration between SBC subsidiary Pacific Bell and nine California community coalitions representing 134 Latino, Asian American, African American, civil rights, and disability organizations that is dedicated to closing the Digital Divide by bringing communications technologies to traditionally disadvantaged communities. SBC is providing a $50 million monetary contribution to the fund, which is distributing $5 million per year over a ten-year period. http://www.sbc.com/

Digital Divide Grants and Funding Sources

Government Support

- The Technology Opportunities Program (TOP), formerly known as TIIAP (Telecommunications and Information Infrastructure Assistance Program,) provides matching grants to improve the quality of, and the public's access to, education, health care, public safety, and other community-based services. http://www.ntia.doc.gov/otiahome/top/

- The U.S. Department of Education's Community Technology Centers promote programs that demonstrate the educational value of technology in urban, rural and economically distressed communities. http://www.ed.gov/offices/OVAE/CTC/

- U.S. Department of Housing and Urban Development's Neighborhood Networks site is a clearinghouse of information for community-building efforts. http://www.hud.gov/nnw/nnwindex.html

Private Support

- The Annie E. Casey Foundation provides grants for neighborhood redevelopment and awards grants to programs focusing on the welfare of children. http://www.aecf.org/

- The Bill and Melinda Gates Foundation assists public libraries in ensuring community access to the Internet, and training library personnel in the use of emerging communications technologies. http://www.gatesfoundation.org/Default.htm

- Kellogg Foundation's Managing Information with Rural America helps rural citizens use electronic communications and information systems as a tool to meet current and future challenges. http://www.wkkf.org/

- The National Cristina Foundation donates technology to people with disabilities, students at-risk and the economically disadvantaged. http://www.cristina.org/

- The Telecom Opportunity Institute is a nationwide effort working to increase opportunities in telecommunications and technology for at-risk youth, ethnic minorities and women in under-served communities. http://www.ttoi.org/

- Microsoft's national corporate philanthropy is focused on creating greater access to information technology in disadvantaged communities worldwide. They support higher education, youth programs, non-profit technology solutions, public libraries and the creative community. http://www.microsoft.com/giving/

This listing is not meant to be all-inclusive or represent an endorsement of any particular program. These efforts were brought to the attention of the ACDE as potential resources for state and local education efforts.

Education has never been more closely tied to economic progress than it is today. Success in the Digital Economy requires more than simple access to technology tools and online information. Leaders of the Digital Economy repeatedly assert that the most important component to their bottom line is an educated workforce. Yet, education has remained essentially unchanged for generations, even as the economy has evolved. Our current educational system is an industrial model on an agrarian calendar working to meet the demands of the Digital Economy. ACDE members believe that technology tools provide unprecedented opportunity to improve education and create greater coherence between the educational system and the modern work place.

In examining what employers want from education, a recent study found that companies are looking for employees who:

- Have the ability to think critically and communicate effectively, verbally and in writing;
- Are comfortable working in teams, in their own field and across disciplines;
- Have technical skills and the ability to learn new ones quickly; and
- Have knowledge of the global environment and the cultural sensitivity required to operate in a global marketplace.

The state's investment in quality education yields extraordinary personal and societal benefits. Contemporary technology and the global nature of the Internet provide educators with the tools to provide this education to young people in Texas. In addition to demanding a broad range of skills and attributes, these Digital Economy jobs represent enormous opportunity.

According to the Industry Standard, (http://www.thestandard.com/article/display/0,1151,18386-1,00.html) Internet workers average $84,700 per year in salary. Including bonuses and commission, that total jumps to $104,000. Fifty-five percent receive stock options (a median of 6,000 shares). Nine out of 10 Net employers offer health insurance, 54 percent offer 401(k) matching, 25 percent offer health-club memberships, 8 percent allow pets at work and 7 percent offer child care. Despite such impressive earning potential, ITAA http://www.itaa.org, recently found that over a million tech jobs remained unfilled nationally, with a considerable percentage in Texas.

For continued economic growth in all areas of the state, the Texas educational system at all levels must increase and improve offerings in math/science, and encourage young people to prepare to enter these lucrative and growing fields. Technology adoption at all levels will help accomplish these workforce and economic development aims.

However, not all technology adoption is created equally. Simply putting computers in schools is not enough. For example, after studying standardized test scores of 13,373 fourth- and eighth-grade students, the Educational Testing Service found that those who used computers at least *once a week* in school fared worse on tests than those who didn't use them that frequently. The only eighth-grade computer users who boosted their test scores were those who used the machines *to work out complex problems* -- but most teachers didn't offer challenging assignments.

Further, a recent Heritage Foundation http://www.heritage.org study affirmed that a mere "computers in the classroom" approach to technology in education had no effect on student performance on standardized tests. These studies point to the need for a more pedagogically thoughtful approach to technology and learning, not merely the basic use of off- the-shelf applications or a simple focus on hardware and software deployments.

Given these findings, the ACDE recommends the following approach to the use of technology in K-12 education in Texas:

- **Create incentives to increase the numbers of math teachers and of students interested in math.** Mathematical ability and critical thinking skills are critical needs in the Digital Economy. Yet, the Texas Board of Educator Certification (http://www.tbec.state.tx.us) estimates that over 48,000 teaching vacancies exist in Texas today. The state should encourage and develop, in partnership with corporate and non-profit entities, projects that encourage interest and participation in math. Possible projects include expansion of the Master Teacher program to include math teachers; development of "camps" for math and science; and promotion of hands-on science museums.

- **Build and implement an education technology vision.** As technology becomes an increasingly integral part of education, the STC, together with TIF, education professionals and high tech leaders, should craft a vision for education technology in the state that is flexible and assures that funds are leveraged, ideas are shared and schools provide young people the skills to succeed in the Digital Economy.

- **Invest in human infrastructure.** In addition to improving math and science education, the state should increase teacher training and professional development and technical support to schools. TIF has taken the initial step of supplying hardware, software and infrastructure to over 90% of the school districts in the state. It is time to provide teachers with the skills and support they need to integrate technology into their teaching to improve

student learning. Efforts should be made to collaborate with private and non-profit entities to leverage funds and existing curricula.

This call for technology training and professional development was made repeatedly to the ACDE, prompting Lt. Governor Perry to observe, "If you put technology in schools and libraries without training the people to use and maintain it, the only sure outcome you will get is a higher electric bill." Technology leader Geoff Fletcher (http://www.thejournal.com) graphically illustrated the crisis in support for school IT infrastructure:

> "[In] a typical large suburban school district, [there are] 50,000 users, 10,000 computers, six support people…do the math, [that is] one to 1,667. The numbers from the business sector are 15,000 computers, 15,000 users, 50 support people, or one to 300, significantly different."

If a goal of TIF investments is to diffuse technology meaningfully into schools and communities, this support funding is critical. As observed in a study by Hank Becker, teachers are *four times more likely* to be an exemplary computer user when there is a full time technical support person at the campus. In 1998, this type of professional development spending was $5.65 per student nationwide. By comparison, schools spent $88.19 per student on instructional hardware, software and connectivity. In essence, schools are spending over 15 times as much on equipment as they are teaching people how to use that equipment in a meaningful way.

The ACDE sees the circulation of people between schools and the high tech sector as a way to give each group a better understanding of the needs and pressures faced by the other, an integral strategy to building a 21st Century education. To facilitate this circulation:

- **Bring high tech professionals into the classroom.** In addition to bringing tools and expertise into the classroom, the ACDE believes that bringing high tech professionals – New Economy mentors and role models -- into the schools to teach will show the connection between math and exciting, lucrative work in the New Economy and ultimately encourage young people to study technology and engineering fields.

To provide more streamlined ways to get college-degreed professionals who want to become teachers into the classroom, the State should:

- Expand current alternative certification programs;
- Support new school district-based teacher preparation programs;
- Make greater use of the local school district teaching permit;
- Create "adjunct professors" of technology from high tech sector;

- Allow anyone with a bachelor's degree to take the state teacher certification exam (the EXCET test); and
- Encourage and recognize collaborative projects with companies and communities as a part of class work.

This strategy would also serve as a catalyst for closer relationships between the high tech community and schools, potentially facilitating innovative partnerships for funding, projects and internships.

- **Provide scholarships in technology fields.** In addition to the long-term strategies in K-12 education, workforce shortages demand immediate responses. To rapidly increase the ranks of technically skilled workers and provide economic opportunity to the state's neediest young people, the state should match private dollars to create a fund to provide tuition for disadvantaged high school graduates to pursue a technical degree at a community college, junior college or technical school. These jobs, from Web design to basic programming to silicon wafer fabrication are in high demand. Further, many large companies, after a fixed time of employment, offer to pay for further education in engineering and computer science.

- **Increase output of engineering graduates**. In conjunction with the 2-year college effort, the State should also work to increase the number of engineering graduates from four-year institutions by targeting community college graduates for enrollment in university-based engineering programs and increase the retention and yield rate of existing students in engineering programs. The goal is to increase the production of engineering graduates by a third over four years and increase retention and yield from 50% to 80% over that same time period.

  Strategies to accomplish this goal include:

  - Create a clear course work pathway from community college to university by ensuring transferability of credits through articulation agreements.

  - Induce student participation through scholarship/loan forgiveness programs and employer internships.

  - Increase retention and graduation by designating specific program advisors for Community College students.

  - Purchase additional program capacity by funding additional faculty.

  - Match state and private sector funds specifically appropriated for this purpose.

- Leverage distance learning opportunities to reduce duplication and provide greater opportunity to a wider range of students.

- Examine funding and incentives for public/private partnerships that encourage research and development, student retention and technology and engineering education throughout the state.

Education Information Resources

- Texas Education Agency is a clearinghouse for Texas grants and funding sources and provides a long-term outlook for technology in the Texas school system, and links to technology service centers across the state. http://www.tea.state.tx.us/technology/

- TIF (Telecommunications Infrastructure Fund) Board operates to help Texas deploy an advanced telecommunications infrastructure by stimulating universal and scaleable connectivity for public schools, higher education, public libraries, and non-profit healthcare facilities. The Telecommunications Infrastructure Fund Board will also effect technology training programs and encourage quality content that strengthens education, health care, and libraries in Texas. Priority will be given to rural and under-served populations. http://www.tifb.state.tx.us/

- The mission of the Horizon Web site (http://horizon.unc.edu) is to provide a forum that

  - (1) explores the implications of a rapidly changing world on educational organizations and processes, and

  - (2) examines ways to make educational organizations and programs more effective.

- Educational On-Ramp links to information databases that provide social, technological, economic, environmental, and political data in addition to informed discussions on the future of education. http://horizon.unc.edu/onramp.

- Rising Star provides financial assistance to disadvantaged high school graduates in South Dallas to pursue technical degrees. http://www.dcccd.edu/

- Converge Magazine is a monthly publication covering innovative leaders and best practices in education technology. http://www.convergemag.com.

- Girl Start began as an organization aimed to increase the use of games and programming software by female grade and high school students. The organization has developed into a host for training young girls and women through day and summer camps, after-school programs, and works as a information source for local events http://www.girlstart.org/

- Just for the Kids (http://www.just4kids.org) is an online tool for evaluating the performance of schools across a number of indicators, and down to the grade and classroom level.

Corporate Efforts in Education

- Inventing the Future Through Education is a project of Texas Instruments that has developed, measured, tested, and funded education programs at all levels, from pre-K through graduate study. http://www.ti.com/corp/docs/company/citizen/education/index.shtml The company also provides teacher training (over 30,000 teachers to date) in the use of graphing calculators in math instruction. http://www.t3ww.org/t3/t3.htm

- AT&T has developed several national programs which offer access and training: (for example, The AT&T Learning Network, which offers free online resources to help families, schools and communities use technology effectively to enhance teaching and learning.) http://www.att.com/foundation/

- Gateway sponsors several programs which are linked through non-profit organizations, major corporations and federal agencies. PowerUP (http://www.powerup.org) is comprised of more than a dozen such agencies that have joined together to launch a major new multimillion dollar initiative to help ensure that America's under-served young people acquire the skills, experiences and resources they need to succeed in the Digital Age. Gateway and the Waitt Family Foundation will provide 50,000 Gateway computers. http://www.gatewayatwork.com/gw_atwork/edu/gw_edu.shtml

- Intel Computer Clubhouse Network: In cooperation with the Museum of Science, Boston, and the Massachusetts Institute of Technology Media Lab, Intel's Innovation in Education Network will open 100 Intel Computer Clubhouses by 2005, creating safe after-school environments where young people from under-served communities will be able to work closely with adult mentors. http://www.intel.com/

- Microsoft Public Libraries: In partnership with the Bill and Melinda Gates Foundation, Microsoft will donate an estimated $200 million in software to create access to technology at public libraries that serve low-income communities. http://www.microsoft.com/giving/

- Apple Computer's Education Grants work with schools and other educational institutions to find support to realize a technology vision. http://www.apple.com/education/k12/leadership/grants/edgrants.html

- BellSouth Foundation emphasizes education initiatives targeted to the needs of southern K-12 schools. http://www.bellsouthcorp.com/bsf/

- Cisco Foundation funds community projects that provide education, generate and sustain community service or meet basic human needs. http://www.cisco.com/warp/public/779/edu/

- IBM Philanthropy Grants and Funds for Community Service work primarily with K-12 education initiatives by providing funding and expertise. http://www.ibm.com/ibm/IBMGives/grantfaq.htm

- Intel provides funding to students and schools through its annual Science Talent Search and works with the American Medical Association in the Internet Health Initiative. http://www.intel.com/

- MarcoPolo, a collaboration of MCIWorldCom and major education institutions, provides innovative standards-based curricula to teachers. Their grant program targets grants at school districts. http://www.wcom.com/marcopolo/

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Address Technology Challenges

Encourage innovative partnerships between the high tech industry and public institutions to lay the groundwork to address the challenges brought by technological innovations.

While technology has brought huge opportunities to the New Economy, it has also brought new challenges and risks. These developments demand careful study and thoughtful action to educate citizens, empower them to make informed decisions and build partnerships to ensure safety and fairness, while maintaining the conditions that have been key to innovation and growth. The primary challenges are faced in the areas of privacy, taxation, and security, particularly in the area of online voter participation.

Privacy

"Privacy" – concern about the accumulation, use, and dissemination of data about persons -- has emerged as the hottest high tech issue. Numerous polls and studies indicate broad concern, both in Texas and nationwide, about "privacy on the Internet."

Generally speaking, the issue of privacy online concerns two types of personal information that can be collected from Web users. The first is "clickstream" data, non-personally identifiable information collected from a Web browser when a person visits a Website, such as by using "cookies," small programs that the Website implants on the Web browser. This data can be compiled with clickstream data collected from the browser by other Websites to compile a "profile" of the user's viewing/shopping patterns --- or can even be correlated to databases of personally identifiable information obtained from other sources. The second type of personal information collected by Websites is that affirmatively provided to Websites by customers. Examples include names, addresses, or credit card account numbers submitted when a customer adds his or her name to a mailing list or makes a purchase.

There currently is no comprehensive regulation of the accumulation, use, or dissemination of personal information collected online. Most regulatory efforts to date have been voluntary. The most common self-regulatory measure by online companies has been to post a privacy policy to inform consumers how the Website collects, uses, and disseminates information about customers. Similarly, some online companies participate in seal programs, such as TRUSTe and BBB, under which companies who comply with a series of voluntary privacy standards earn a seal or certification.

Additionally, a number of federal and state statutes may be applied to help protect online privacy in particular ways. These statutes include:

- **The Texas Deceptive Trade Practices Act**, which empowers the Texas Attorney General to bring actions against any company, including an e-commerce company, that engages in false, misleading or deceptive acts or practices. Such acts or practices can include collection, use, or dissemination of personal information contrary to the terms of a posted privacy policy. In recent months, the Attorney General has initiated several investigations and actions against online companies that have violated their own privacy policies.

- **The Children's Online Privacy Protection Act** (COPPA), which is a new federal law designed to protect the privacy of children online. Website operators who collect personal information from children younger than 13 must post, on the home page and everywhere personal information is collected, a clear and prominent privacy notice stating the name and contact information of the person collecting the information, how the information is collected (e.g., directly or with cookies), how the information is used, and whether it is disclosed to third parties. Operators must also obtain parental consent before collecting, using, or disclosing a child's information. Parents also are entitled to review information collected about a child and to delete it. COPPA can be enforced by either federal authorities or the Texas Attorney General.

- **Identity Theft.** In 1999, Texas criminalized "identity theft." The new law, Section 32.51(b) of the Penal Code, makes it a state jail felony to obtain, possess, transfer or use identifying information of another person without the other person's consent and with the intent to harm or defraud another.

- **Breach of Computer Security.** Chapter 33 of the Texas Penal Code gives the Attorney General broad authority to assist with the investigation and prosecution of offenses involving the use of a computer. Under this law, a person commits an offense if he or she knowingly communicates with, retrieves or intercepts data from a computer, computer network or computer system without the effective consent of the owner.

- **Unlawful Interception, Use or Disclosure of Wire, Oral or Electronic Communications.** Similarly, Chapter 16 of the Texas Penal Code makes it a crime to unlawfully intercept, use or disclose wire, oral or electronic communications. While this law was adopted prior to the advent of the Internet, the definition of "electronic communications" appears to be broad enough to encompass communications over the Internet.

- **Unlawful Access to Stored Communications.** Chapter 16 of the Texas Penal Code also makes it a crime for a person to obtain, alter or prevent authorized access to a wire or electronic communication while the communication is in electronic storage by (1) intentionally obtaining access without authorization to a facility through which a wire or electronic communications service is provided; or (2) intentionally exceeding an authorization for access to a facility through which a wire or electronic communications service is provided.

There have been a number of proposals in Congress that would more ambitiously regulate online privacy. The Federal Trade Commission (FTC), moreover, recently recommended federal legislation to require compliance with "fair information practices":

- Giving customers a right to control – though either an "opt out" or "opt in" procedure -- whether to permit collection or use of their personal data in a transaction;

- Requiring the company to give clear and conspicuous notice regarding their accumulation and use of customer information and the opt in/out right;

- Giving customers a right to access information collected about them and to correct it, if warranted; and

- Requiring companies to ensure security of customer data. The FTC also recently released a report on online profiling in which it endorsed self-regulatory standards established by the Network Advertising Institute that are based on "fair information practices."

Opponents of more comprehensive regulation have urged that online privacy is best addressed through existing self-regulation and voluntary compliance and that overly zealous regulation would undermine online companies and the Digital Economy as an engine of economic growth. Moreover, because of the "borderless" nature of the Internet, there is great concern among online businesses that individual states will enact a patchwork of inconsistent laws that would make compliance complicated and expensive. Still others have urged that the answer lies in technology, such as the P3P program, which would enable persons to pre-set their Web browsers to visit only Websites that observe a particular standardized level of privacy protection.

It is important not to confuse the online privacy issue with privacy issues that recently have arisen in other areas of commerce. Although motivated by a similar concern with the accumulation, use and dissemination of personal information, these other types of privacy issues are distinguished from the online privacy issue by the types of information at issue, the uses of the information, the interests involved, the degree to which the consumer has a choice whether

to enter into the transaction or provide the information requested in the transaction, and the legal environment, including the interplay of existing or potential federal law. (But, of course, any of these issues could also become an online privacy issue to the extent the information in question is collected or made available via the Internet).

There are at least three "privacy arenas" other than online privacy that have evolved to date:

- **Financial information** – The collection, use and dissemination of personal information by financial institutions – banks, securities firms, insurance companies, and any other institution "the business of which is engaging in financial activities" -- are governed by the Gramm-Leach-Bliley law (GLB), which recently deregulated the financial services industry. Briefly, GLB permits affiliated financial service companies to freely share customer information without the need to obtain consent from customers. However, GLB requires that financial service companies: (1) "clearly and conspicuously" disclose to consumers privacy policies describing how they accumulate, use, and disseminate customer information; (2) permit consumers to "opt out" of allowing the firms to share information with unaffiliated firms (such as third party marketers); (3) not share customer account access information with third party marketers; and (4) safeguard the security of customer information.

  These new privacy requirements are to be effectuated through regulations issued by the various federal and state regulators who have oversight over each segment of the financial services industry. The federal authorities issued their regulations in May 2000, to be effective November 13, 2000, but compliance is not required until July 1, 2001. The Texas Department of Insurance anticipates issuing its regulations sometime during or after the next legislative session, with a compliance date no earlier than July 1, 2001.

- **Health information –** Existing Texas statutes limit the dissemination of certain health care-related information, by certain health care providers, but do not comprehensively regulate the privacy of health information. The Senate Health Services Committee has issued a number of recommendations for legislation in this area. Additionally, the Department of Health and Human Services has issued draft regulations under the Health Insurance Portability and Accountability Act (HIPAA) that would require privacy policies, a customer "opt-in" before information can be shared for non-health care-related purposes, and the right of customers to access and correct information obtained about them. These regulations, however, are not yet final and, in any event, would apply only to information that is, has been, or will be transmitted in electronic form.

- **Government information/Open records –** State and local governments collect reams of personal information from their citizens, from names and addresses, to drivers' licenses and social security numbers. Due to the Open Records Act, much of this information has long been open to the public, but practical considerations have traditionally limited its accessibility and use. This has all changed with the advent of advanced data processing technology and the availability of the information in electronic form. Thus, we see, for example, Internet-based research services that can compile lengthy reports on citizens, derived from public information, detailing such personal matters as social security numbers, drivers' licenses, residences, employment, tax payments, voting registration, and even the identities of neighbors.

There are several hundred Texas statutes that restrict dissemination of personal information by state and local governments. These statutes, however, are often piecemeal and sometimes inconsistent. There currently is a general federal privacy act; nine other states have enacted similar comprehensive statutes, as well.

* * *

The ACDE recommends a multi-tiered strategy for the State's initial work in addressing online privacy concerns, divided by sector.

- **Set privacy standards for e-government.** The state should lead by example, setting rigorous privacy standards for information collected about citizens, posting privacy policies on all agency Websites, and carefully evaluating the necessity of the information about citizens that the State collects through the portal.

- **Texas should create a public/private partnership for online privacy**. Privacy issues have become critical as information is increasingly online. The State should undertake several actions immediately to educate the public about current law, privacy policies and ways to protect their personal information online.

    - **Publish state privacy statutes on the Web.** The Attorney General has prepared a catalogue of existing privacy statutes. That publication should be made available to the public online.

    - **Educate the public**. The State, through the new Internet Bureau of the Attorney General (http://www.oag.state.tx.us) and in partnership

with business organizations, should undertake a public information campaign to educate Texas businesses and consumers on current privacy rules, protections and recourse.

- **Enforce current consumer protection law and report to the legislature**. As demonstrated above, there currently are several state and federal civil and criminal laws that can be used to protect online consumers. These laws should be enforced and their effectiveness evaluated before new state laws are enacted. The Attorney General should track the effectiveness of these laws and report to the legislature on the potential need for additional enforcement tools.

Online Privacy Resources

BBBOnLine. A wholly owned subsidiary of the Council of Better Business Bureaus, BBBOnLine's mission is to promote trust and confidence on the Internet through, the BBBOnLine Reliability and the BBBOnLine Privacy programs.

The Center for Democracy and Technology (CDT). With expertise in law, technology, and policy, CDT seeks practical solutions to enhance free expression and privacy in global communications technologies. CDT is dedicated to building consensus among all parties interested in the future of the Internet and other new communications media.

Computer Professionals for Social Responsibility (CPSR). CPSR is a public-interest alliance of computer scientists and others concerned about the impact of computer technology on society.

Electronic Frontier Foundation (EFF). A non-profit, non-partisan organization working in the public interest to protect fundamental civil liberties, including privacy and freedom of expression, in the arena of computers and the Internet. EFF was founded in 1990, and is based in San Francisco, California, with offices in Washington, DC, and New York City.

Electronic Privacy Information Center. EPIC is a public interest research center in Washington, D.C. It was established in 1994 to focus public attention on emerging civil liberties issues and to protect privacy, the First Amendment, and constitutional values. EPIC is a project of the Fund for Constitutional

Government. EPIC is a member of the Internet Privacy Coalition, and the Trans Atlantic Consumer Dialogue (TACD).

Online Privacy Alliance. A cross-industry coalition of more than 80 global corporations and associations -- encourages companies to adopt and post a privacy policy and become a supporter of the Alliance. The Alliance is helping to define privacy policy for the new electronic medium and to foster an online environment in which businesses respect personal privacy.

Privacy Rights Clearinghouse. The purposes of the Clearinghouse are to raise consumers' awareness of how technology affects personal privacy, empower consumers to take action to control their own personal information by providing practical tips on privacy protection, document the nature of consumers' concerns about privacy in reports and make them available to policymakers, industry representatives and consumer advocates and advocate for consumers' privacy rights in local, state, and federal public policy proceedings.

TRUSTe. An independent, non-profit privacy organization whose mission is to build users' trust and confidence in the Internet and, in doing so, accelerate growth of the Internet industry. Through extensive consumer and Web site research and the support and guidance from many established companies and industry experts, TRUSTe has earned a reputation as the leader in promoting privacy policy disclosure, informed user consent, and consumer education. The TRUSTe privacy program-based on a branded online seal, the TRUSTe "trustmark" bridges the gap between users' concerns over privacy and Web sites' desire for self-regulated information disclosure standards.

Privacy International. An international human rights group based in London, England, with offices in Washington, DC and Sydney, Australia. PI has members in over 40 countries and has led campaigns against national ID cards, video surveillance and other privacy violations in numerous countries, including Australia, New Zealand, the United Kingdom, and the Philippines. PI publishes the International Privacy Bulletin and sponsors yearly international conferences on privacy issues.

Publications

Privacy Journal. A monthly journal on privacy, mainly in the U.S., now in its 23rd year of publication.

Privacy Times. Biweekly newsletter on information law. Each issue covers developments related to privacy and information access, including summaries of court decisions on the Freedom of Information Act and other relevant statutes.

International Privacy Bulletin. Published quarterly by Privacy International. The IPB covers international trends and new technologies. Each issue also includes reports from different countries and reviews of new publications.

Other sites of interest

CPSR Internet Library. Maintains the online archives for CPSR, EPIC Privacy International and other groups.

Electronic Frontier Foundation Archives. Archives on privacy, free speech, underground newsletters.

Electronic Privacy Information Center. Includes back issues of EPIC Alert, privacy resources, legislation, and articles.

Privacy.net. Extensive archives on consumer privacy and federal and state levels.

Tech Law Journal. Decisions, legislation, news, and other materials on privacy, encryption, censorship, copyright and other online legal issues.

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Internet Taxation

ACDE members watched the deliberations of the national commission on e-commerce with frustration (http://www.ecommercecommission.org). As predicted, many state and local elected officials and bricks and mortar retailers argued for taxation. Some private sector commission members argued for no taxation. Each sector used hyperbole about the potential impact of taxation on either governmental receipts or growth of e-commerce. The ACDE believes that both approaches adopted on that commission are counter-productive to the ultimate success of high tech-driven economic growth.

Several experts testified before the ACDE on the need for simplification and multi-state cooperation and on the potential growth of e-commerce and the potential effect of that growth on state and local tax bases. Based on that testimony, the ACDE proposes thoughtful cooperation between the public and private sector and among states to make progress on this issue.

- **Participate in multi-state tax study**. Given growth trends in e-commerce and the reliance of Texas and localities on the sales tax, the ACDE opposes federal action that would preclude states' and localities' ability to manage their own tax systems.

  Like the Lieutenant Governor, the Council also *opposes any new or specific taxes on Internet access or transactions.* Instead the Council recommends a two pronged approach to addressing this issue long term. First, the state should investigate a technical functionality to seamlessly and efficiently calculate existing sales taxes, without posing an unfair burden on consumers or merchants. Secondly, the state should cooperate with other states on a simplification effort to make definitions more consistent across jurisdictions.

Resources on Internet-related Tax issues

Testimony from Hearing 1.

Hands off the Internet?

http://www.ecommerce.gov/

http://www.policy.com/news/dbrief/dbriefarc576.asp

Online Voting and Civic Participation

According to testimony received by the ACDE and the Democracy Online project, young technophiles believe the Internet will promote civic involvement in a variety of ways, including:

- enabling voters to access vast amounts of information;
- increasing the dialogue between policy makers and constituents by leveraging the immediacy and convenience of the new medium;
- encouraging higher voter turnout because people are more likely to vote if they are informed and engaged; and
- providing a greater level of accountability for policy makers because the Internet provides a whole new level of scrutiny of public action.

The ACDE is optimistic about the potential of online voter registration, online voting and other forms of online civic participation. There have been several experiments in online voting in recent months. The broadest was in Arizona during the Democratic primary http://election.com/us/index.htm . The results were mixed. While the project did show great increases in voter turnout, there were some technical difficulties that underscore the need for further study. Therefore, the ACDE recommends that Texas proceed, but do so cautiously, through a series of pilot projects.

- **Pilot full online voter registration**. Access meets participation in the area of technology and voting. Research shows young people would be more likely to register to vote if online mechanisms were made available. To boost their involvement, Texas should pilot online voter registration, which would likely require a digital signature provision.

- **Pilot online voting/absentee voting**. The step beyond registration is online voting. The Secretary of State should research experiments in other states and study security issues and the potential for fraud. Once those concerns have been addressed, the State should conduct a pilot project to determine the risks and potential reward for adding an online voting option to traditional methods.

Resources on Online Civic Participation

Project VoteSmart (http://www.vote-smart.org) characterizes itself as a voter defense system**.** The site is a national library of factual information on 13,000 candidates for public office from President of the United States down to state legislatures. PVS provides demographic and detailed political and record data in five areas: backgrounds, issue positions, voting records, campaign finances, and performance evaluations made by over 100 liberal to conservative special interest groups. In addition to this process information, the group actually interviews all 13,000 candidates and provides special services on issues for journalists, teachers and students. As testament to their success, the American Political Science Association honored Project Vote Smart as "the best source for accurate political information on the World Wide Web."

Other "voter" sites are designed to provide information about officeholders to hold politicians accountable for such things as voting records (e.g., The Democracy Network, http://www.dnet.org/), fundraising activities (e.g., Open Secrets, http://www.opensecrets.org/home/index.asp), and secret donors (for a discussion of issue advocacy ads and how groups create them to help candidates see http://www.publici.org/adwatch/index.htm).

The Annette Strauss Center for Civic Participation.
http://communication.utexas.edu/strauss The Strauss Center is designed to (1) conduct original research on civic involvement and (2) develop new programs to increase democratic understanding among the nation's citizens.

GetHeard.org
http://www.getheard.org
GetHeard.org is a non-profit organization that is dedicated to providing the citizens of Austin and Travis County with online information services that make participation in civic life easier, more interesting, and more satisfying. The group uses the Internet as the primary link to the world because it is the mass medium best suited to supporting the dialogue that is necessary in a democratic society. Because the Internet is interactive, it breaks down the traditional wall between message senders and receivers. Because the Internet can simultaneously present several points of view, people can use it to observe and participate in discussions that will help them to form their own opinions. And because the Internet has the ability to host information for as long as it is needed, people can go to the Web to get what they need when they need it.

For Profit Sites

http://www.Voter.com
The earliest entrant into this market was Voter.com, founded in 1999. Promising "legislation in plain English," this site features political news, links to officials, a video library, polling data and message boards where visitors can join in political conversations. Additionally, the Debate of the Day may be found helpful to citizens as it positions reputable groups against one another (e.g., the Heritage Foundation against the Sierra Club on the topic of Globalization) on a set of subjects.

http://www.EVOTE.com
EVOTE.com, like most entities in this space, promises to be non-partisan. Yet, unlike some of the other sites that focus on issues and policies, their goal is "to treat American Politics the way it should be treated: as the most complex and exciting sport in the world." In reporting and commenting on politics, they admit that the site may be viewed as cynical, but hope that viewers find it thought-provoking.

http://www.Vote.com
Vote.com is a fully interactive site designed to offer a voice on important public issues and other topics. In their words, "the Internet is filled with chances for us to listen and read. This site gives us a chance to speak out and to be heard. When you vote on a topic listed on our site, we'll send an immediate e-mail to significant decision makers like your congressional representative, your Senators, and the President telling them how you feel."

http://www.Speakout.com
Based in Washington, DC, SpeakOut.com is a non-partisan Internet activism site and online opinion research company that offers a wide variety of news and information links as well as activism tools allowing aggregated messaging to a vast array of public officeholders, candidates, business and news executives.

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Promote Innovation and Economic Growth

Create networks of leaders to support innovation and work to share that expertise across the state.

The Milken Institute found that the Southwest is ideally suited for "cluster" development -- concentrations of entrepreneurial activity around the different components of the high tech sector http://www.milken-inst.org/rdbpmaps/mapslist.html. The critical elements include the presence of research institutions, an educated workforce and the cooperation and collaboration of entrepreneurs, educational and political leaders. Texas will work to build these conditions across the state. The first step is to create a statewide network of high tech, business and political leaders to leverage resources, share ideas and promote opportunity statewide. These networks are "regional clusters."

Regional Clusters

Regional high-tech "clusters" have proven to be important in fostering innovative economic activity. The "network effect" achieved by clustering similar high technology companies has helped accelerate at a rapid rate innovation, companies, jobs and improved standards of living. High-visibility, successful examples of clusters in Texas have occurred in Richardson (telecommunications), Austin (PC's, semiconductor, software/Internet) and Houston (medical). The Digital Economy is not just about a few select industries; rather it is about new ways of competing that will impact all industries. The Digital Economy is characterized by the following:

- **Speed.** Time to market is paramount in the Digital Economy. Anything that impedes moving product/services to the consumers is a barrier to success.

- **Flexibility.** Firms need to be able to change course immediately, to react to changes in markets, technology and competition, continuously reinventing themselves.

- **Knowledge.** Intellectual capital is a key source of competitive advantage. The successful enterprises access, create and use knowledge rapidly.

- **Collaboration.** Firms of all sizes develop Webs of relationships, local and remote, to help them achieve competitive advantage quickly.

In order for regional economic development to create the best atmosphere for clusters to develop, its infrastructure must accommodate and encourage these characteristics. In addition, the ability of a geographic regions to create, sustain and grow a technology-focused "cluster" of companies is driven (or retarded) by several key factors:

- **Established, successful companies.** The existence of industry-leading, large technology companies with headquarters, R&D or manufacturing facilities in the region.

- **Talent pool.** The ability of the region to grow, attract and retain the necessary spectrum of talent in the correct quantity and quality.

- **Education.** Quality (not quantity) focused K-12, vocational, college, university and research institutions.

- **Networking.** Efficient, plentiful venues to connect entrepreneurs, mentors, capital and workforce.

- **Risk capital**. The local presence of both venture capital and "angel" investors.

- **Business climate.** The willingness of state and local governments to make the hard, pro-technology choices in areas like taxes, transportation, and education.

- **Support services.** The local presence of independent, sharable, specialized service providers in areas like legal, accounting, recruiting, marketing, sub-contracting, specialized equipment, contract labor, etc.

- **Livable region/Quality of life.** New successful regional clusters provide a distinctive quality of life that attracts knowledge workers by supporting a choice of living, working and playing alternatives that acknowledge the increasing diversity of career and life paths.

To promote this type of high-yield economic development across the state, the ACDE recommends the following:

- **Foster Regional Technology Councils.** State Leadership, the Technology Commissioner and STC members should encourage the development of Regional Technology Councils (RTCs) across the state. These groups would be local versions of the ACDE initiated by any region wanting to expand its economy through high tech entrepreneurial activity. They would share clustering projects and ideas, and represent their region's issues as the STC helps establish statewide policy. These RTCs should coordinate with, or be a part of, existing chambers of commerce, workforce boards, or community networking planning initiatives.

- **Promote and expand technology transfer from universities.** Universities are an integral part of the Digital Economy. The state should work to build partnerships between university leadership and the high tech sector, leveraging the work of research universities to build companies, create jobs, and build clusters of entrepreneurial activity. Initial steps are:

    - **Encourage universities to establish tech transfer centers**. Universities should be able to manage, transfer and commercialize technologies created on campus. The state should allow institutions to use licensing agreements, equity stakes, royalty payments or other strategies to maximize positive economic impact to the school and surrounding community.

    - **Foster business/risk competency into university leadership**. To build competency in technology transfer, universities should create and involve an advisory board of professionals at research universities that include legal, business development and licensing experts along with venture and investment bank advisors.

    - **Encourage university involvement in RTCs.** To foster closer collaborations between academic and economic leaders, senior university officials should be members of Regional Technology Councils to build relationships and foster collaborative projects.

Sources on Technology Transfer

http://www.nttc.edu/gov/other/tech.html

http://www.federallabs.org/

http://www.nttc.edu/

http://fuji.stanford.edu/events/vc98/goodman.html

http://www.autm.net

http://www.cogr.edu

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Conclusion

Public institutions, from local to regional to statewide, are working to accommodate the relentless pace of change in the Digital Economy. Through strategic partnerships, thoughtful pilots, innovative expansion of nascent projects and rigorous evaluation, Texas can be a national leader in putting technology tools to work as catalysts for economic growth; expanded opportunity in education; and improved relationships between citizens and their government. We believe that the work of the ACDE is an important first step in that process, providing a framework for future state technology policies to make Texas a national thought leader in technology-related economic growth.

> "This is an opportunity for us to work together, to make Texas the capital of the New Economy, and to unleash unprecedented opportunity and prosperity for every citizen of this great state."

Lieutenant Governor Rick Perry

Appendix: Additional Resources

Hoffman and Novak are two of the most prominent researchers in e-commerce. Together they head the eLab at Vanderbilt University. eLab is a corporate sponsored research center founded as Project 2000 in 1994 to study the marketing implications of commercializing the World Wide Web. In the years since, this pioneering scholarly effort has emerged as one of the premiere research centers in the world for the study of eCommerce. eLab research objectives are to enrich and stimulate the knowledge base on the role of marketing in new media environments, provide a principal point for the discussion and exchange of these ideas, and impact business practice in this emerging area. http://ecommerce.vanderbilt.edu/index.html

http://www.utexas.edu/lbj/21cp/resources.htm

http://www.whitehouse.gov/media/pdf/workforcerpt.pdf

http://www.jointventure.org/siliconvalley2010/a1.htm

http://www.jointventure.org/siliconvalley2010/d2d.htm

http://www.digitaleconomy.gov/

http://neweconomyindex.org/

http://www.athenaalliance.org/

http://www.pewtrusts.com/Internet

http://databases.si.umich.edu/cfdocs/community/index.cfm

http://www.aolfoundation.org/

Texas Resources

http://txsoft.com/vc/

http://www.technetwork.org/texas.html

http://telecomcorridor.com/edp/faq.html

http://probop.dir.state.tx.us/bop/reports/

http://www.texasecomm.org/ecomm/index.asp

http://www.mcc.com\/mcc/about/aboutmcc.html

http://www.internetindicators.com/

This listing is not meant to be all-inclusive or represent an endorsement of any particular program. These efforts were brought to the attention of the ACDE as potential resources.