DIGITAL GEORGIA

A White Paper on Information and Communication Technologies in Georgia

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EXECUTIVE SUMMARY

This white paper was commissioned by the Office of the Governor to assist the State of Georgia in establishing policy guidelines that would improve the ability of all Georgians to participate in a digital society. Our daily lives and workplace opportunities increasingly require the use of information and communication technologies (ICTs).[1] To this end, the Georgia Center for Advanced Telecommunications Technology (GCATT) was selected as the neutral party to gather information and solicit statewide viewpoints from government, business, and citizen groups.

Georgia's strategic focus on information and communication technologies gives the State an advantage in developing new technologies and attracting new businesses.[2] Consequently, it is important that all citizens in Georgia -- young and old, urban and rural -- have the knowledge and tools to become skilled in the use of these new technologies. It is equally important that all our citizens are comfortable participating in a technology-rich environment. The ability of some citizens to be able to participate in a technology-rich environment (the "haves") and for other citizens not to be able to participate (the "have nots") is popularly referred to as the "digital divide."[3] States that take a comprehensive approach to closing the digital divide among all sectors of society will become **"PowerChangers,"** nationally and globally.

A number of studies and groups have recognized the growth of a national digital economy and have examined related issues. We began this white paper by reviewing programs, reports and digital initiatives within Georgia and nationally. This review and analysis of the data led to the identification of five primary sectors, within Georgia, we are referring to as "stakeholders" -- business, citizens, education, government, and healthcare -- which would benefit the most from our findings.[4] Unique to this study, **three A's** -- awareness, application and access -- were identified as critical categories in understanding the relationship between technology and stakeholders. These categories proved important to the white paper because increasingly, research indicated that, in addition to the physical presence of technology, other factors (awareness and application) could have an equal or greater influence in the adoption of information and communication technologies.[5]

Our conclusions surrounding the primary stakeholders in Georgia reaffirmed many national and state observations. Other findings led to unique solutions for Georgia and its citizens. We found that several common themes emerged, and these formed the basis of the following recommended policy initiatives.

(1) Georgia should ensure that all digital divide activities address the three A's - issues of awareness, application and access including technology strategic planning and public and private sector programs and partnerships.
Recommendation: Create a collaborative culture among education, business, and State and local government leaders that use the 3 A's in developing a proactive agenda for Digital Georgia. New awareness, application and access strategies can create a more comprehensive and systematic approach to statewide economic development and benefit all stakeholders.

(2) Georgia should develop a system to integrate digital literacy in all statewide economic development, workplace development and telecommunications infrastructure plans and policies as a measured component of functional literacy in the schools and in the workplace.
Recommendation: All State and local programs and initiatives that involve workforce development and education for life long learning should integrate digital literacy as a priority for the State. Such programs should be reviewed and strategies developed that establish mutual goals and performance assessment criteria for the education of Georgia's citizens throughout their lives. The State should further leverage resources of business, education and government that will allow Georgia to become a global competitor.

(3) Georgia should support/develop a digital portal for not only the target stakeholders but also for other segments of society to obtain assistance and information. In some cases, this can have the side effect of increasing the use and demand for information and communication technologies.
Recommendation: Commit to putting State and local government services, where practical, on the Web. This would, 1) increase the transparency of government; 2) make services and information available to citizens when they need it, even outside of standard office hours, and 3) increase the efficiency of government. This can

increase awareness and demand for Web based services across the State for both connected and unconnected stakeholders.

(4) Georgia should review, revise and remove barriers that hinder the advancement of economic development, educational reform, healthcare, and community self-help programs through ICT use. The State should also provide incentives to advance opportunities for these stakeholders.
Recommendation: Create an ad hoc task force to perform a comprehensive review of State and Federal regulatory statutes and laws specific to each stakeholder. The objective would be to ensure that existing laws and regulations do not adversely impact advances being made by the stakeholders referred to in this paper.

(5) Georgia should publicly recognize and honor "best practices" and significant local achievements that provide outstanding examples of reaching and teaching with information and communication technologies. An inventory of "best practices" across the five stakeholders should be shared on a government website with linkages to the entity being recognized.
Recommendation: Create within the designated agency a unit or mechanism for monitoring and assessing State national and global exemplar "best practices." The unit could use these best practices to create a resource pool with reference materials for the stakeholders and then post those practices on the State website to share with education, government and business entities. An annual awards ceremony of Georgia's "best practices" could be promoted to gain national exposure.

This white paper is submitted to be a useful document for policy makers as they identify and prioritize information and communication technology patterns and policy needs in Georgia. These potential policy initiatives are presented for State-level implementation, with the understanding that some of the options may be more appropriate for implementation at the local level. **PowerChangers** can use the **three A's** – awareness, application, and access - to close the digital divide in Georgia and have Georgia become a national and global ICT model for business, education, and all citizens.

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[1] The use of "ICT" is widespread in social sciences/communications terminology. It means essentially the same as advanced Information Technology/Telecommunication services, but in addition carries the connotation of use and awareness.

[2] Georgia has numerous high-tech public and private initiatives, such as the Georgia Research Alliance, GCATT, and Yamacraw. Leading companies such as BellSouth, AT&T, Cox Communications, Scientific-Atlanta, Turner Broadcasting Systems, Lucent Technologies, and Earthlink have made significant investments in telecommunications technology, economic development, and education in Georgia. The State completed an extensive multi-year Y2K effort headed by the former Information Technology Policy Council, whose role has been consolidated in the new Georgia Technology Authority (GTA). GTA is now developing a state technology vision.

[3] The term *digital divide* evolved from a 1995 study by the National Telecommunications and Information Administration that quantified the use of ICTs by various socioeconomic groups in the U.S. (U.S. Department of Commerce, (1995), Falling Through the Net: a Survey of the "Have-Nots" in Rural and Urban America.) Since this initial report, the Department of Commerce has produced two additional reports that indicate the various increases and reductions in gaps among socioeconomic groups and has made a commitment to tracking statistics associated with the digital divide in the United States. See reports by the National Telecommunications and Information Administration: Falling through the Net II: New Data on the Digital Divide (1998) and Falling through the Net: Defining the Digital Divide (1999).

[4] The use of these sectors profiles similar national studies and allows the information to be grouped more succinctly into issues, needs, and recommendations.

[5] See 2.0 Framework of the white paper.

1.0 INTRODUCTION

In February 2000 the Office of the Governor requested the Georgia Center for Advanced Telecommunications Technology (GCATT) to conduct a study of issues that would be useful in establishing telecommunications policy guidelines to improve the ability of all Georgians to participate in a Digital Georgia. This white paper is timely because of the national attention on the digital economy and its impact on business, citizens, education, government, healthcare and our communities. While some studies approach the technology gap as an economic issue, there is a growing recognition within government, industry, and the citizenry that it is a civic issue as well, and that all citizens should be enabled to participate in all aspects of public life. As more daily functions take place using information and communication technologies, it is increasingly important that all citizens have the opportunity to fully participate in a "point and click" society. The gap (or shortcoming) between those that can participate and those that cannot is popularly called the *digital divide*.[1] The Governor's Office asked GCATT to recommend policy directions that would help resolve and meet the challenges of a digital divide within Georgia. This white paper provides information that can assist in closing Georgia's digital divide.

The GCATT project team[2] reviewed national and State programs, reports, and digital initiatives as part of the fact-finding mission of the study. The viewpoints of both private and public sector entities were captured in order to provide meaningful discussions of Georgia's information and communication technologies and services, patterns, needs, and capabilities. The project team then developed parameters to define the key stakeholders and to assess relevant related information.

The results provide a broad framework for developing strategies and policies for the State. It is not intended to be inclusive of all the information and communication options available, but to shed insights into the patterns and needs of the State government as well as a variety of public, non-profit, and private sectors. This paper further provides insights on selected key stakeholders of Georgia, identifies and summarizes key issues, recommends policy initiatives and provides policy options and recommendations that can assist Georgia policy makers in maximizing existing programs and creating initiatives that make information and communication technologies and services available to all residents. This century will determine the states that will take important leadership roles in ensuring that their constituents are ready for the digital age, and Georgia intends to lead.

2.0 FRAMEWORK OF WHITE PAPER

The project team began a review of the use and deployment of information and communication technologies (ICTs)[3] within Georgia in February 2000. GCATT's project team developed a Digital Georgia website (http://www.digitalgeorgia.org) for promoting the project. The website included a feedback form for providing comments and recommendations for the Digital Georgia website and also served to promote three regional public forums in Georgia. The forums were held in Albany (June 16th), Clarkesville (June 23rd) and Statesboro (June 30th) and provided the GCATT team with comments from the public across the state. Because of a concern that many of the targeted groups for this project may not actively be using the Internet, GCATT contacted the local chambers of commerce to coordinate invitations to the local community. Georgia Public Broadcasting videotaped each of the forums on-site, providing a record of public comments.[4]

As the study took shape, it became clear that specific issues could best be addressed by grouping them into three, somewhat overlapping categories: 1) awareness, 2) application, and 3) access.[5] For the purpose of our study, *awareness* refers to the motivation and competency of a person to use technology. Digital training and education also fall into this category because they raise the awareness of the usefulness of these technologies. *Application* refers to how an individual integrates the content and services when using information and communication technologies. An application must be relevant, meaningful, and valuable to their experiences and the experiences of their peer user base. *Access* for purposes of this study refers to the actual physical assets available to use information and communication technologies such as the networking infrastructure and computer hardware. Access also describes any issue of speed or bandwidth. The framework of this study uses these categories because increasingly research indicates that, in addition to the physical presence of technology, other factors (awareness, application) can have an equal or greater influence in the adoption of information and communication technologies.[6] Awareness, application, and access offer a much broader framework for the examination of the digital divide and therefore can provide policy makers with more tools and information on how to assure the full participation of all Georgia citizenry in the digital era.

Using these three categories as the base for the study, the project team defined five target groups within Georgia that would benefit from the findings in this paper; these groups also closely resemble the profiles of similar studies conducted nationally. This report focuses on five primary stakeholders:

- *Business*
- *Citizens*
- *Education*
- *Government*
- *Healthcare*

3.0 SNAPSHOT OF GEORGIA

The most recent "Cyberstates" national survey by the American Electronics Association ranks Georgia 11th in high-tech employment and 12th in high-tech average wages, with 46 out of every 1,000 private sector workers in Georgia employed by high-tech firms.[7] For example, the software services industry of Georgia employed 20 percent of all the State's high-tech industry workers, ranking 9th in the nation. In addition, the State has had one of the highest growth rates in high tech jobs over the past decade.[8]

A 1999 statewide inventory of major fiber optic network routes and access facilities showed that Georgia had a competitive environment with more than a dozen major providers offering high-speed telecommunications service throughout the State. As might be expected, there are greater concentrations of high-speed telecommunication facilities and, therefore, more competitive markets in the larger cities: Atlanta, Macon, Columbus, Augusta, Savannah and Albany.[9]

One should note that these are state-level figures used for reference, but there is much variation among the State's urban, suburban, small town, and rural areas. A recent study by the Georgia Rural Development Council analyzed the State's economic vitality by county and by region, and identified a comprehensive set of factors, including telecommunications, that indicate high-tech growth has not been spread proportionally across the State.[10] Indeed a recent in-depth study by Brown University researchers of government at all levels ranked Georgia 40 overall on all indicators, suggesting that the State may not be making progress as rapidly as other states. Additionally, a number of national level studies have been compiled assessing the progress of states in moving toward a digital society. While Georgia has not been at the bottom of the list it is of some concern that it has not been perceived, by these eternal evaluators as "cutting edge" or leaders in the arena.[11]

Georgia is actively pursuing methods to vitalize high tech growth and development across the State. The Georgia Research Alliance, GCATT, and Yamacraw, for instance, reflect the State's strategy of industry, government and education partnerships for research-driven economic development, mainly through investment in technology infrastructure. The new Georgia Technology Authority (GTA) will have an important role in creating a State vision and affecting that vision at multiple levels including setting State government technology goals. GTA will then provide state agencies with technical assistance in strategic planning, procurement, program management, and human resources development. It will also leverage State government's consolidated purchasing power, and provide leadership in research and development.[12]

The State maintains one of the largest two-way interactive video networks, the Georgia Statewide Academic & Medical System (GSAMS), which connects over 400 sites for educational and telemedicine services.[13] PeachStar, a satellite educational service of Georgia Public Broadcasting, reaches over 2000 schools and libraries across the State. Georgia's funding for educational technology in schools ranks above the national average.[14] Since fiscal year 1995, the Georgia Legislature has appropriated $267 million

in State funds for educational technology to its 180 school systems and over 1.4 million K-12 students.[15] Georgia ranked 5th in the amount of Federal E-rate funding it received for discounted telecommunications service to schools: Georgia schools received $78M in year one of the program (1/98-6/99) and $91M in year two of the program (7/99-6/00).[16] Though there have been above-average amounts of funding invested in educational technologies here, the results of these investments have yet to be fully realized in terms of student achievement when comparing Georgia's students to their national peers.[17]

4.0 FIVE PRIMARY STAKEHOLDERS

This section alphabetically distinguishes the study's target stakeholders. Each sector provides a framework for understanding the constituencies and includes: an overview, issues identified during the research, observations, and opportunities; and a brief summary of findings.

4.1 Business

4.1.1 Introduction

The National Governor's Association New Economy Task Force recently identified policy challenges confronting state governments as they reassess their role in the "new economy."[18] The Task Force concluded that the globalization of markets, the pervasiveness of technology and the renewed focus on deregulation are significantly changing America's economic landscape.[19]

Georgia policy makers are implementing strategies that take into consideration this changing economic landscape which will position Georgia to promote economic development and enhance the role of the State as a global competitor.[20] As a result of these efforts, Georgia has been successful in various high-tech areas. For example, the State has made significant strides in securing funds necessary to fuel today's high-tech economy. Specifically, in 1999 Georgia ranked 10th in increasing venture capital investments in the U.S. ($740 million).[21] For purposes of the "new economy" industries, Georgia ranked 3rd in 1995 in wireless telephone service employment; 6th in wireline telephone service employment; 9th in communications and other multimedia equipment employment; and 10th in computer software employment.[22]

Although high-tech employment and export has increased over the past five years in the State, traditional industries continue to drive the Georgia economy. In 1999, agricultural production was the largest component of the State's overall economy. Agricultural production accounted for 16 percent ($56.7 billion) of Georgia's $352.8 billion economic output.[23] According to analysis by the Center for Economic Development Services, traditional manufacturing industries (including textile and apparel, food processing and pulp and paper) in 1995 accounted for 45 percent of total manufacturing employment in Georgia compared with 22 percent for the nation.[24]

4.1.2 Issues

It has been projected that it will cost approximately $10.9 billion to upgrade rural local exchange carrier network exchanges to bring broadband capability to non-metro communities throughout the U.S.[25]

Similar to the national trend, some of Georgia's rural areas generally lack broadband access.[26] In instances where the technical infrastructure is in place, economic development still has not kept pace with metropolitan communities.[27] This trend has been especially prevalent where small businesses lack access to awareness programs and the core business support services necessary to benefit from their Internet connection.

The data indicates that small farmers and manufacturers are better positioned to be global competitors when they are provided timely information regarding cost of raw materials, daily market prices, agricultural news, availability of new markets, and transportation options via the Internet.

Deficiencies in the telecommunications infrastructure of rural Georgia counties may also undermine marketing campaigns aimed at attracting potential business relocations or expansions in operations. The lack of specificity regarding infrastructure information has also been an impediment when marketing rural and urban businesses.[28]

Based on research for this white paper, Georgia policy makers have an opportunity to enhance economic development by integrating the infrastructure needs of both rural and metropolitan businesses and thereby becoming "industry inclusive."

It is also important to note that the business and regulatory climate of Georgia impacts the ability to attract business to rural areas. Last year, as part of OneGeorgia, several localities promoted tax credits for technology investments. Expanding incentive-based, not prescriptive based laws, and reviewing how Georgia compares with business and tax laws in other states will help to better position Georgia in the global marketplace.

4.1.3 Observations & Opportunities

4.1.3.1 Awareness

Technology centers: Economic growth is curtailed when small rural businesses are not aware of the business benefits derived from the use of information and communication technologies. Our analysis suggests that some small businesses erroneously believe that they require broadband capabilities to produce profits, without having performed a technology needs assessment. Georgia policy makers have an opportunity to expand existing community information technology extension centers and to customize the services offered to fit local business needs.[29] When funded and staffed appropriately, these strategically located centers can provide a technology education function to small businesses while contributing to the local economy.

4.1.3.2 Application

Economic development government website: A growing number of states use the Internet to provide local businesses with web-based access to a variety of government services. For example, government websites provide resources for business licensing and registration information; information on federal and state funding opportunities; and sources for obtaining workforce development assistance.[30] Georgia has an opportunity to leverage the use of its government websites for economic development purposes by creating comprehensive workforce development information and services for small and rural businesses.

4.1.3.3 Access

Inventory existing business infrastructures: Similar to other states, broadband availability in Georgia's rural localities lags behind broadband deployment in metropolitan areas.

Providing broadband access to rural businesses could spur economic growth, especially if awareness programs were implemented in conjunction with "digital literacy" educational campaigns. One suggestion is to assess the needs of small and rural businesses and then develop non-traditional methods of deploying high-speed telecommunications services to those businesses. Maintaining a detailed inventory of current telecommunications infrastructure capabilities[31] could help efforts to attract new businesses to the state and to their local economy.

4.1.4 Summary

Sustained economic development in Georgia is at a critical crossroads as the State positions itself as a global competitor. Although the State has achieved high rankings in high-tech employment and venture capital investment, economic growth has not permeated the manufacturing and agricultural business segments nor all communities.

Deploying broadband access services not only presents an economic challenge, but also a marketplace challenge of whether there will be informed users of these services. Rapid advances in information and communication technologies suggest that comprehensive K-12, university and vocational technology educational reform, workforce development and innovative economic growth strategies must be in place to benefit the "new economy." In order to develop innovative answers and stimulate partnerships between community leaders and local businesses (with government serving as a facilitator), sufficient resources must be allocated and partnerships created that will formulate a "Digital Georgia" vision. Additionally, any policies should be "technologically sound," and allow for innovative ways for delivering cost effective advanced telecommunications services to non-metropolitan areas.

4.2 Citizens

4.2.1 Introduction

Equal access to public telecommunications resources dates back to the creation of universal telephone services at the turn of the century.[32] Today, equal access is taking on new urgency with the emergence of information and communication technologies as fundamental tools.[33] There are several initiatives within Georgia working toward ensuring that information and communication technology tools are available to all citizens. The failure of individuals to take advantage of these new tools whether through lack of awareness, or simple disinterest may create a self-imposed form of segregation. For these reasons, this section focuses on the citizens within Georgia.

According to 1999 population estimates by the U.S. Census Bureau released August 30, 2000, Georgia is the sixth fastest growing state and remains the 10th most populated with 7.8 million residents. Georgia's population grew by 1.3 million people since 1990 with most of this growth occurring in northern Georgia. Population projections show a 12 percent increase in the State's total population between 2000 and 2010, with the number of Georgians 18 years of age and older increasing from 5,805,000 to 6,660,000, and accounting for more than 72 percent of the total.[34] Assuming these projections are accurate, the State's ability to connect the adult population in this new information age

will be critical, as government bodies, community organizations, and corporations replace traditionally printed material with electronically accessible materials.[35]

As expressed by the Federal government in various documents and speeches, it is critical to understand why some segments of the population are not connected or taking advantage of the benefits of ICTs.[36] While many Georgians, particularly those living in more concentrated urban areas are embracing information and communication technologies, there are many others who do not realize that this technology is relevant to their lives.[37] Determining why some Georgia households are willing to adopt information and communication technologies, and why others either lag behind or choose to reject it, it is a critical step in developing a statewide digital strategy.

4.2.2. Issues

In earlier studies, it was assumed that lack of a computer was the main barrier preventing an individual from actively participating in the information age, not the lack of interest in information and communication technologies.[38] However, new evidence suggests that education, attitudes toward technology, and individuals' motivation are among the primary reasons adults use the Internet.[39] Considering the ambivalence and outright suspicion with which many residents view new technologies, many social scientists contend that the information revolution has little to do with bits and bytes when compared to the realities and aspirations of everyday people.[40]

The most common barrier for some citizens is a fear of technology, commonly referred to as "technophobia," which often stems from the belief that the technology is too complex to use.[41] Some adults do not perceive value in information and communication technologies or they lack the motivation and/or encouragement to use information and communication technologies. Others who are eager to use ICTs lack the necessary training and access to essential tools.[42] For those underserved users who must overcome literacy and/or language barriers, the issue becomes even more complex. For a new user having to face such challenges, the learning curve is quite steep, and a first-time user may end up never adopting the Internet as a result of an unpleasant initial experience. Finally, there is the mounting debate regarding online content. Even though the Internet contains an abundance of information, some believe there is a cultural bias in the content. Enabling users to be active creators and producers of information and content could result in the creation of relevant as well as useful examples that can be used to train and motivate other first-time users.

4.2.3 Observations and Opportunities

4.2.3.1 Awareness

- *Focus on a grassroots approach:* Most individuals would rather go to "somebody they know" (e.g., family, friends, and other trusted people) than to a person in a position of authority, such as a librarian, for help with learning about technology.[43] Thus, information and communication technology initiatives aimed at non-users of technology should take a bottom-up approach, leveraging relationships between existing community-based organizations and local residents.

- *Promote a sense of community:*[44] Technology alone cannot eliminate the isolation and feelings of disconnect experienced by some underserved populations. Promoting and improving digital literacy has benefited communities by increasing citizen involvement, encouraging human interactions, and increasing networking within the community and beyond.

4.2.3.2 Application

- *Foster a sense of "doing":* Often, community technology efforts employ outside experts because of the perception that only they can provide real help.[45] While technical support and guidance is essential to developing and implementing a local program, there are numerous opportunities for citizens to be personally involved throughout the process.
- *Create value-added accessible content:* Studies indicate that underserved adults are in search of "life information"[46] to help with their day-to-day problems and enable them to fully participate within their respective community. Training local residents to create and produce on-line resources[47] may encourage citizens to become active ICT users and thus create relevant community-based content as well as content applicable to their daily lives.[48]

4.2.3.3 Access

- *Provide creative access capabilities:* "Build it and they will come" strategies do not ensure local or statewide success. It is important to recognize that there are other modes for delivering and introducing information and communication technologies (e.g., Tech-mobiles). Creative outreach efforts help to ensure successful technology programs. For example, the City of Atlanta is opening cyber technology centers in low income areas to be managed by community-based organizations to help introduce technology to new first-time users and give other users a sense of ease which comes with being in a familiar setting.[49]
- *Have a long-range view*: Technology is constantly changing and the costs associated with keeping up with new versions and updates of software and hardware can be daunting. Planning for technology upgrades via budget allocations or vendor alliances will further facilitate the sustainability of any information and communication technologies initiative.

4.2.4 Summary

Encouraging the development of digital literacy for citizens requires digital access, awareness of its benefits and a willingness to try and use information and communication technologies. The value of the Internet to a user is closely tied to the ease with which that individual is able to use the technology. If a user faces too many obstacles to access the Internet and then does not find the content useful, he or she may become an "Internet dropout."[50] To ensure this does not happen, studies suggest that the needs of the local community must be addressed. New skills and new tools will become critical as more and more resources move online. Digital literacy will become a necessity for every Georgian as information becomes the currency of the information society.

4.3 Education

4.3.1 Introduction

This section focuses on the K-12 educational community. However it is recognized that university and technical vocational education are equally important elements that require further study. The reader should refer to Georgia's Education Reform Act for discussion on the desire for seamless education in Georgia. As Georgia's K-12 educational system seeks to prepare students to live and work in today's society, an increasing emphasis has been placed on the information and communication technology skills that students will need to be productive citizens in the emerging digital age. Those students without knowledge of the essential technology tools will be at a significant disadvantage when they seek employment or enter higher education.

Most Georgia schools have made a concerted effort to purchase computer equipment, network classrooms, and provide professional development opportunities for teachers to be able to seamlessly integrate technology into the classroom curriculum. The Georgia Department of Education (DOE) has developed its own teacher professional development model for technology use: the Georgia Framework for Integrating Technology in the Student-Centered Classroom (InTECH).[51] DOE is making large strides in the design of the Georgia Learning Connections[52] website—a central site where teachers can access targeted information on the Internet aligned with Georgia's Quality Core Curriculum (QCC) standards. State leadership has planted the seed for school reform efforts to include technology as an integral component of improving Georgia's educational system. Yet, further strides must be made on the part of Georgia's 180 school systems if the benefits of information and communication technologies are to be fully realized for Georgia's students.

4.3.2 Issues

Despite significant funding efforts for educational technology by the State, a digital divide still exists among Georgia schools. As indicated by the Georgia Department of Education's 1999 *School District Technology Inventory,* some schools and classrooms lack sufficient networking technology capabilities. Other schools do not integrate information and communication technologies into daily learning (as recommended by academic experts) and many teachers face difficulties when some students have access at home while their peers do not.

Georgia spends more on educational technology than the national average (Georgia spends $199 per year per student while the national average is $115), yet most of this funding is exclusively for purchasing hardware. Once the technology is in place, however, schools face the more difficult task of maintaining computer equipment and networks, strategic planning and funding technology upgrades.

Placing working computers in the classroom is only the first step in integrating technology into the educational process. There is a critical need for building a base of technology-savvy teachers.[53] Research shows that teachers are the single most important factor in student achievement. According to the U.S. Department of Education, less than

20 percent of teachers in K-12 described themselves as prepared to integrate educational technologies into classroom activities.[54] The reality is that teachers are being asked to learn new methods of teaching, while at the same time they are facing the greater challenges of rapidly increasing technological changes. Research also indicates that some teachers resist using technology, especially when requirements for its use come from a top-down approach. Seamless integration into the curriculum requires rethinking the traditional classroom model to a student-focused classroom where the teacher acts as a facilitator of learning.[55]

Federal guidelines for computer use in schools are for five networked computers per classroom.[56] There are schools in Georgia that have a sufficient number of networked computers, but they may be placed in isolated computer labs which hinder immediate access and seamless integration into the existing coursework. Additionally, some students do not know how to use computers effectively as a result of limited access. As students increasingly rely on software and the Internet for their homework, students who do not have computer access at home must spend extra time waiting their turn in computer labs while their classmates with home computers are able to complete assignments more effectively. In response to this discrepancy, some teachers may place less emphasis on technology-related homework than optimal for students to fully master necessary technology skills. Some school systems, such as DeKalb County, have demonstrated effective models for community technology centers[57] based on the underlying principle that education cannot exist in a closed social system.[58] Non-profit organizations can also play an important role in providing access to ICTs. For example, Tech Corps Georgia has been successful in providing 3,500 refurbished computers and training to low-income families. The purpose of these programs is to help bridge the technology gap for K-12 teachers, students, and parents who live and work in low-income communities where access to technology and the Internet is still very limited.[59]

4.3.3 Observations and Opportunities

4.3.3.1 Awareness

- *Professional development:* Many teachers report feeling inadequately prepared to use technology and effectively integrate it into the curriculum. The opportunity exists to provide ongoing training for teachers and provide incentives so that technology use can assist, rather than hinder, time-pressed teachers.
- *Leadership training for administrators:* Several programs in Georgia are focused on leadership training for school administrators, including the Georgia Staff Development Council[60] and the Leadership Academy.[61] These programs could be complemented with additional leadership training that addresses the importance of technology in K-12 education, issues associated with its deployment, and ways to establish buy-in from the community so that educational leaders can make more informed decisions and drive its use.

4.3.3.2 Application

- *Centralized educational technology website:* Through partnerships with other organizations, the Georgia Department of Education has several projects underway

that seek to increase the use of technology by Georgia schools. An opportunity exists to centrally catalog these efforts so teachers could more readily identify best practices and strategies applicable to their teaching needs.

- *Technology standards:* The Georgia A Plus Education Reform Act of 2000[62] initiated technology proficiency standards that high school students must demonstrate to meet graduation requirements and other standards that teachers must meet for certification requirements. Schools can use these standards to plan for appropriate technology use in the educational process. Additionally, provisions could be made so that these standards can be revisited periodically to keep pace with technology developments.
- *Meaningful measures of student achievement:* Increasingly, new modes of learning in the classroom and different expectations for K-12 students from passive to active learners are being adapted in education which require new ways of thinking about how student achievement is measured. Teachers, school administrators, and the greater school community have an opportunity to work together to reevaluate testing mechanisms and develop ways to assess student achievement to reflect these transitions in the learning process.

4.3.3.3 Access

- *Support for advanced telecommunications service deployment:* Funding, staffing, and expertise are all significant factors for school systems seeking to deploy advanced telecommunications networks. BellSouth is connecting all K-12 school systems to the Internet with a T1 connection.[63] Recent legislation passed in the Georgia A Plus Education Reform Act of 2000 allocates funding for one technology specialist for each 1,100 students. Extra school staff for ICT use and maintenance would likely increase its use and impact in the Georgia educational arena.
- *Community use of school technology resources:* As the school community encompasses more than simply its students, some Georgia schools have opened their doors to their communities for use of computer facilities and have found these programs to be effective. Schools possess a wealth of resources (hardware, software, Internet access, expertise) that typically are closed to the community after school hours. Making effective use of these existing resources may help provide access and training to parents of students, constituents in the communities, and the traditionally underserved populations in many areas of Georgia.
- *Learning outside of the classroom:* Students with access to technology outside of the classroom have an advantage over those that do not have access. Opportunities exist for organizations outside the school system to play a meaningful role in reaching those students without access by engaging the local community to provide services such as computer donations, technology mentoring, and internship opportunities to disadvantaged students.

4.3.4 Summary

The K-12 educational system in Georgia faces awareness, application, and access issues that must be overcome in order to prepare students for life in the digital era. Teachers and administrators need professional development opportunities for technology integration; the educational system must provide mechanisms to facilitate the use of technology in the curriculum; and sufficient resources must be allocated for access both

in and outside of the classroom. Consideration must also be given to provide incentives for teachers to complete technology training.

4.4 Government

4.4.1 Introduction

A review of selected state programs around the U.S. indicates that state governments use information and communication technologies in a variety of ways.[64] These uses can be roughly classified into internal applications and external applications. Internal applications focus on administrative and operational processes such as improving the efficiency of state operations, or improving the range of information available to the government itself. External applications are focused on providing better information and services to citizens and businesses.

The best state websites[65] focus on the needs and preferences of users and offer the same kinds of customer conveniences found on private-sector web sites. However, re-engineering Georgia operations using information and communication technologies is a major undertaking requiring financial, managerial, and technical resources. The effort may be justified as several interviewees (and much of the background literature) noted that web-enabled government has the potential to be a "killer app." [66] Creating electronic information and enabling electronic transactions are spawning new public/private business models for states. The combination of the need for speed and expertise make public/private partnerships indispensable.[67]

4.4.2 Issues

Government documents, research on government practices, the Digital Georgia forums, and interviews with key stakeholders suggests a "chicken and egg" scenario. The perceived choices are: the creation of communications infrastructure prior to the demand to support it, or the demand for services where the infrastructure cannot support the demand.

Additional issues such as the specific location of telecommunications infrastructure, access to fiber broadband services, tariffs, and right-of-way concerns were also raised in the public forums and in interviews.[68] No clear consensus, however, seemed to emerge on how to gauge the influence of these issues on changing government rules and policies. However, a number of factors appear to influence the availability of access such as geographic location, willingness to pay, and perceived demand for services.

Regarding local government, the State's activities may be most effective if aimed at educating local leaders, sharing best practices among localities, and assisting local government with resources. Several local leaders expressed the belief that the State and local government "cannot do it alone."[69] Several model local efforts have been highly successful in heightening the use of ICT services. The City of LaGrange, for instance, received the "Intelligent City of 2000" award by the World Teleport Association for its efforts to offer free Internet services to its residents.[70] The West Georgia Telecommunications Alliance, an exemplary coalition based in Carrollton, is working to

develop that area's telecommunications infrastructure, and has recently announced plans for a high-tech business incubator and broadband network for Carroll County.[71]

A variety of efforts to study or evaluate the impact of information and communication technologies and "high tech deployment" in the State of Georgia have been initiated as a result either of grants or initiatives from the Federal government, the State government, or efforts undertaken by local entities. At present these tend to take the form of preliminary cataloguing of infrastructure and access related indicators in relatively narrow defined categories. This was noted by several of the interviewees who observed that initial efforts at tracking and evaluation of the various ICT linked initiatives were "a good beginning," and suggested that other State efforts might include expansion of comprehensive and coordinated efforts to develop State-wide, cross-agency baseline indicators and data. Additional efforts along this line might include: providing resources for training; infrastructure and technical support; and setting up pertinent demonstration technologies that might "pull citizens" into using information and communication technologies.

4.4.3 Observation and Opportunities:

4.4.3.1 Awareness

- *Best practices:* Looking at national and state exemplar programs reveals interesting models for creative delivery of goods and services. An expanded effort to seek out and learn from these best practices and innovative program across the country could be used to develop a "toolkit" and set of templates that could be easily adopted by both state and local government. This avoids the waste involved in constantly re-inventing the wheel.
- *Increase use to drop costs:* Use of information and communication technology services can be accomplished both from a pull (demand) by users as well as push (provision of new services provided by the government). Deploying new uses of technology as well as making the technology more user friendly and convenient can act as a powerful driver for the demand and availability of services. In theory this makes them more cost-effective and potentially increases the number of users that can take advantage of the services as the cost drops.
- *Reduce regulatory or administrative barriers:* A variety of hurdles exist for users of government services and information, including lack of knowledge of government services, perceived problems with access, or complexity in accessing the information. Initiatives that can reduce technology-related barriers can increase the use of government sponsored ICT programs and initiatives. [72]

4.4.3.2 Application

- *New models:* Aside from purely transaction-related efforts, information and communication technology services offer the potential for new uses for governance, such as voting online, online public forums, and interactive communication with governmental officials. Although innovation is complex and somewhat risky for the public-sector, there is an opportunity to promote increased use of ICTs through the deployment of online demonstration projects.

- *Creating planning templates:* There appears to be a need to understand and assess existing telecommunication facilities from an infrastructure (access) viewpoint, and in terms of awareness, use of these technologies by the general public. Promotion of the development of local strategic telecommunications plans, analogous to "comprehensive plans," can be achieved through the provision of templates, and training sessions for citizens and officials.
- *Evaluation procedures:* Efficient and wise use of public sector resources is sometimes complicated because there are few evaluation models to assist in maximizing the development of new initiatives.[73] Diagnostics programs could be created to assist the "planner" in modifying practices or deploying alternative strategies where practical or expedient to achieve new organizational missions.

4.4.3.3 Access

- *Cataloging system:* Review of the data indicates an uncertainty about the availability, location and nature of information and communication technologies and services which contribute to inefficiency and a duplication of effort. A useful tool would be the coordination of ongoing efforts through cataloging,[74] and identification of state-wide infrastructure related factors such as broadband capabilities,[75] location of facilities; cost of services provision; array of what alternatives are available; and regulatory issues that impact delivery.

4.4.4 Summary

The picture that emerges suggests a scenario where awareness and demand for digital services is less than expected because of perceived cost, lack of utility (content), or lack of availability. In turn, lack of infrastructure or services awaits deployment until the demand is exhibited. Awareness, application and access of State and local government services is not easily quantified as a "rural vs. urban" problem, but one related to interest or perceived "need" for service. Creating government incentives to increase the use of information and communication technologies should include both access and application related efforts. Information and communication technologies infrastructure location and tracking of physical facilities would be useful for planning and for economic development activities. Several interviewees as well as some data also pointed to the fact that government alone could not solve all the problems.

4.5 Healthcare

4.5.1 Introduction

Much like the education sector, there are multiple opportunities to use information and communication technologies in healthcare. This white paper addresses the distinctive benefit that online healthcare services and telemedicine[76] have on the quality of life and how these services could assist in the adoption of information and communication technologies. In addition, telemedicine can offer the indirect benefit of attracting health professionals to underserved urban and rural areas by providing ongoing training and collaboration with other health professionals.[77]

In the private sector, the healthcare industry has been slower than other industries to embrace the Internet.[78] Findings indicate that most of the online activity in Georgia's healthcare industry currently is focused on information services, which are provided by hospitals, HMOs, and by a growing group of companies that specialize in medical information processing.[79] All the State's hospitals use electronic billing, and about half have web sites.[80] Web-based networking technologies are mostly being used internally for physicians' research, and for consulting between departments.[81] Nonetheless, the general public is becoming aware of the value of accurate web-based information.[82] While there seems to be plenty of drive to provide online health *information* to patients, online health *services* are emerging more slowly. Some hospitals with an interest in telemedicine services are exploring telemedicine on their own on a limited basis.[83]

The State's most prominent initiative for online healthcare has been the Georgia State Telemedicine Program (GSTP), a program of the Georgia Statewide Academic and Medical System (GSAMS).[84] The Telemedicine Center at the Medical College of Georgia manages GSTP.[85] GSTP includes 21 active telemedicine sites, with 9 new sites in progress, and 27 additional sites being planned. There are other state-level, local, and regional online healthcare initiatives,[86] often funded with a mixture of federal, state, and private funds.[87]

4.5.2 Issues

Several major policy and regulatory issues that affect the provision of online healthcare services and telemedicine lie at the Federal government level, and they tend to be specific to the medical industry, rather than the telecommunications industry. A detailed analysis of these issues is beyond the scope of this paper.

Privacy, as it relates to the transmission and storage of personal medical records, affects the growth of telemedicine and online health initiatives. Nationally, the Health Insurance Portability and Accountability Act of 1996 (HIPAA), in part, requires the U.S. Department of Health and Human Services to develop standards and requirements for maintenance and transmission of health information that identifies individual patients. HIPPA standards, once set, will help alleviate much of the uncertainty surrounding the privacy issue and the use of electronic medical records. Even so, the cost of implementing HIPPA may be an obstacle for smaller hospitals.[88] Georgia law grants patients the right to access their medical records in the possession of healthcare providers.[89]

Reimbursement for telemedicine services has received state and federal attention. Medicaid and some third-party payers have approved coverage for some services offered through GSTP; the limited reimbursements may discourage some physicians from offering services via telemedicine. The system of licensure may also be a barrier. Many states, including Georgia, will not allow out-of-state physicians to practice unless they are licensed in their state.[90] Current malpractice laws, and questions of liability and venue for telemedicine malpractice lawsuits, may hinder physicians from participating in interstate telemedicine.

The data reveals there is a perceived need to improve access to broadband telecommunications among hospitals and healthcare facilities in the State.[91] Plain old telephone service may support some healthcare services,[92] but there is a perception among some telemedicine practitioners that high-bandwidth infrastructure to healthcare facilities will boost demand and use of telemedicine.[93]

GSTP is a hardware-specific videoconferencing network. The GSTP network uses the switched telephone network, which provides guaranteed service and network security, two requirements not yet met by Internet-based platforms.[94] This may be one reason for healthcare providers' cautious approach to offering Internet-based medical services.[95] However, as the Internet becomes a common networking platform, the GSTP network may face limitations in use and boundary.[96]

4.5.3 Observations and Opportunities

4.5.3.1 Awareness:

- *Technology training:* An increase in telemedicine training would help promote the use of telemedicine resources, and would help spread the availability of these services around the state. There exists an opportunity at the Medical College of Georgia and other medical and nursing schools to increase technology training among practitioners and students
- *Catalogue of resources:* Telemedicine awareness among healthcare professionals and medical students appears to be unmeasured. A comprehensive catalogue of Georgia telemedicine resources and activities would assist patients seeking to improve their healthcare.

4.5.3.2 Application:

- *Regulatory review:* A variety of state regulations specific to the medical industry -- such as privacy/confidentiality of medical records, physicians' and nurses' licensure, malpractice, and reimbursements -- affect telemedicine. Regulatory changes may be able to alleviate some undue burdens on physicians who wish to use telemedicine in their practices in Georgia.
- *State support of various medical applications*: ICTs could improve the efficiency of healthcare services. Opportunities exist to promote electronic transfer of information for such applications as Patient Records, Claims Settlements, and Benefit Payments.
- *Assessing statewide telemedicine capacities:* Our initial research indicates a lack of a comprehensive statewide assessment of its telemedicine capabilities. An empirical study of telemedicine needs, and applications would benefit the practitioners, and would assist the state in setting related policies.

4.5.3.3 Access:

- *Technology medical plan:* The State appears to lack a comprehensive evaluation of its investment in GSTP, including the costs and benefits of the existing infrastructure. A comprehensive assessment of GSTP would provide Georgia with a technology planning tool for healthcare.

- *Infrastructure partnerships:* There are opportunities for healthcare providers to partner with businesses, schools, universities, and other public institutions in innovative telemedicine projects. Funding from Federal sources and State entities could be applied to local initiatives. An opportunity exists to promote healthcare as a driver of telecommunications infrastructure deployment, especially by encouraging innovative partnerships.

4.5.4 Summary

With the growing use of information and communication technologies, online services and telemedicine can play an important role in rural as well as overburdened urban medical settings. Information and communication technologies can benefit practitioners and patients. Georgia has an opportunity to build on the State's investment in GSTP, using it to extend the benefits of telemedicine to more Georgians. A thorough assessment of telemedicine information and communication technologies for healthcare in the State may assist in effective ICT use by Georgia's healthcare providers.

5.0. CONCLUSIONS

Using the popular "information superhighway" analogy, we illustrate below the conclusions of this paper. Each of the report's target stakeholders (Business, Citizens, Education, Government, and Healthcare) appears to share similar challenges. Creating a common vehicle could help promote their movement toward a Digital Georgia.

While some of the stakeholder observations and recommendations reaffirmed national and state findings, they also offered unique value-added solutions for Georgia and its citizenry.

Business: The report found that it was not the presence or access to technology that enabled small farmers, manufacturers, and businesses to better position themselves in the marketplace, but the relevance and timeliness of information to enhance their core business goals that allowed them to become more competitive. Traditional and "new economy" businesses needed the ability to develop a digitally literate workforce (K-12, university & vocational training) in order to effectively participate and master core business competencies. This included an awareness of the potential benefits of having access to global markets via electronic commerce and having access to cost and infrastructure data needed for economic development. Incentive-based initiatives, leveraging the use of government websites for economic development, workforce educational campaigns, innovative partnerships, and creative ways for delivering cost effective advanced telecommunications services to rural businesses were some of the strategies to realizing strong and competitive Georgia businesses.

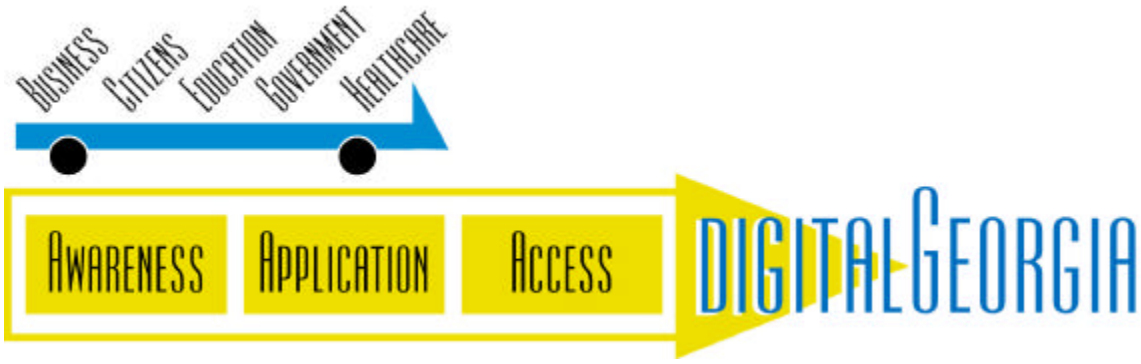
Citizens: Data revealed that Georgia was among the top ten states in population and among the fastest growing states in the nation. While many Georgians were embracing technology, an equally significant number of Georgians did not see technology as relevant to their lives. A critical step in developing statewide digital literacy for Georgians requires understanding why some reject technology or become "dropouts" of technology. The failure to take advantage of information and communication technologies may result in a kind of self-imposed form of segregation. Some of the ways to build a digitally savvy public has more to do with awareness and motivation than with applications and access. Recommendations include grassroots activities; value-added "life information" services on the Web; cyber-based technology centers in the community; rewards and incentives for groups and individuals; and creative campaigns that demonstrate how digital literacy can advance personal and professional growth.

Education: State leadership has invested resources in educational technology for many years. There is also awareness that information and communications technologies need to be an integral component of improving Georgia's educational system. Nonetheless, the data reveals there is still a digital divide among Georgia schools. To prepare Georgia students for life in the digital economy, Georgia's teachers and administrators need professional technology development opportunities, mechanisms to facilitate the use of technology in the curriculum, and meaningful ways to measure student success. Several initiatives championed within the State include: rethinking the traditional classroom teacher model; technology savvy teachers; computer access at home and school for the student and parent; centralized Website for diverse educational programs, strategic plans, and "best practices;" and promoting public/private sector partnerships for advanced telecommunications service deployment.

Government: Creating and providing access to electronic information and enabling electronic transactions are spawning new public/private models for states. In fact, the best state websites focus on the needs and preferences of the users and offer the same kinds of customer conveniences found on private-sector websites. Some of the data shows a strong interest in developing common protocols, seamless platforms, and user friendly information and communications technologies services that allow the public, local government and business to perform "one stop" shopping. Initial efforts at tracking and linking ICT initiatives suggested that expansion of statewide and cross-agency efforts might have the positive effect of "pulling citizens" into using information and communications technologies for their everyday needs. The new Georgia Technology Authority has an important role in creating a Georgia technology vision and affecting that vision at multiple levels. Other activities include creating a State toolkit that can be adopted by local government, increasing consolidated buying to decrease cost, reducing technology regulatory and administrative hurdles that impair business development, providing more online awareness and service programs to stimulate the citizens use of information and communication technologies, and creating statewide technology partner awards to foster greater collaboration among state entities.

Healthcare: Data showed a distinctive benefit that online healthcare services and telemedicine had on the quality of life and how these services actually assisted users in adopting information and communication technologies. Several of the major policy and regulatory issues that affect telemedicine and online healthcare services lie at the Federal government level and are more related to medical than telecommunications issues. Nonetheless, there are ways that Georgia can still build a program of awareness, application and access. They include technology training for practitioners and students, cataloging telemedicine resource that would assist patients seeking to improve or monitor their healthcare, reviewing State regulations that place undue burden on physicians who wish to use telemedicine, and creating partnership for innovative telemedicine projects.

Unique to this study, three A's -- awareness, application, and access -- were identified as critical categories in understanding the relationship between technology and stakeholders. We found that, in addition to the physical presence of technology (access), other factors (awareness and application) were often of equal or greater influence in the adoption of information and communication technologies. The three A's -- awareness, application, and access -- offered a broader framework for the examination of the digital divide. Therefore, we believe the three A's will enable policy makers to creatively and collectively work toward developing a digitally savvy Georgia.



These components together provide the roadmap for a Digital Georgia. At times, the vehicle may have only one driver (or stakeholder), but at best it will form a carpool moving toward common goals. The three A's can provide either separate routes or a common highway toward closing the digital divide. All the elements above exist, and they have been utilized by both the public and private sectors. We believe that this illustration, however, presents a new comprehensive, versatile roadmap that local and State leaders can utilize in creating policy initiatives. We propose the following recommendations as a first step toward planning the timely arrival of all citizens at a Digital Georgia.

6.0 POLICY INITIATIVES

1) Georgia should consider the issues of awareness, application, and access in technology strategic planning. Georgia should work with local and private sector partners to ensure that all Digital Divide programs are sensitive to issues of awareness, application and access.

Options

- Monitor and share data and results of efforts that incorporate the 3 A's.
- Encourage state and local leaders to look for opportunities to partner, where appropriate, in existing technology initiatives, to incorporate the 3 A's.
- Coordinate and integrate effective awareness, application and access programs of State and local government into existing and future technology planning and technology initiatives to ensure the closing of the Digital Divide.

Recommendation

Create a collaborative culture among education, business and state and local government leaders that uses the 3 A's in developing a proactive agenda for Digital Georgia. New awareness, application and access strategies would create a more comprehensive and systematic approach to statewide economic development and would benefit all stakeholders.

2) Georgia should develop a system to integrate digital literacy in all statewide economic development, workforce development, and telecommunications infrastructure plans and policies as a measured component of functional literacy in the schools and in the workplace.

Options

- Adopt digital literacy initiatives that foster life long learning programs. An adult focused program would promote the states' initiative of having an Internet-trained citizenry, help close the "generational" divide, and would stimulate workforce development and ensure that Georgia's employees have the technical competencies to grow with the "new economy."
- Form coalitions with business and local government to develop community based programs and technology centers to encourage life-long learning activities.
- Focus information and communication technologies related education programs on vocational and technical training.

Recommendation

All state and local programs and initiatives that involve workforce development and education for life long learning should integrate digital literacy as a priority for the State. Such programs should be reviewed and strategies developed that establish mutual goals and performance assessment criteria that the education of Georgia's citizens throughout their lives and that leverage resources of business, education and government that will allow Georgia to become a global competitor.

3) Georgia should support a digital portal for stakeholders to obtain assistance and information. In some cases this may have the side effect of increasing the use and demand for information and communication technologies.

Options

- Make State and local government services available on the Web.
- Encourage local businesses, non-government agencies, and even faith-based institutions to create web based incentive programs.
- Sponsor a statewide initiative to develop new online initiatives, incorporating existing state-level initiatives.

Recommendation

Commit to putting State and local government services, where practical, on the Web. This would, 1) increase the transparency of government, 2) make services and information available to citizens when they need it, even if not during standard office hours, and 3) increase the efficiency of government. This would increase awareness and demand for Web based services across the State for both connected and unconnected stakeholders.

4) Georgia should review, revise and remove barriers that hinder the advancement of economic development, educational reform, healthcare, and community self-help programs through ICT use. The State should also create incentives to advance opportunities for these stakeholders.

Options

- Perform a basement to attic review of existing ICT rules and policies to determine which need to be removed in order to stimulate economic development in Georgia.
- Create a vehicle (less formal than hearings) to ensure discussion of ICT rulemaking matters and policy initiative of Federal and State governments.
- Promote private-public partnerships to provide support, technical platforms and assistance to local governments in reviewing local ICT laws and regulations.

Recommendation

Create an ad hoc task force to perform a comprehensive review of State and Federal regulatory statutes and laws specific to each stakeholder. The objective would be to ensure that existing laws and regulations do not adversely impact advances being made by the stakeholders referred to in this paper.

5) Georgia should publicly recognize and honor "best practices" and significant local achievements that provide outstanding examples of reaching and teaching with information and communication technologies. An inventory of "best practices" across the five stakeholders would be shared on a government website with linkages to the entity being recognized.

Options

- Monitor national and global best practices and track new funding sources for innovative practices.

- Monitor existing State, national, and global best practices and track new funding sources by agency specific mission.
- Provide the public with tools/websites etc., that track exemplar efforts, reports, etc.

Recommendation

Create within the designated agency a unit or mechanism for monitoring and assessing State, national, and global exemplar "best practices." The unit could translate these best practices into a set of tools and materials for the stakeholders and then post those practices on the State website to share with education, government and business entities. An annual awards ceremony of Georgia's "best practices" could be promoted to gain national exposure.

End Notes

[1] See discussion of digital divide in the first endnote of the Executive Summary.
[2] See project team under Acknowledgements.
[3] For this study, we use the term "information and communication technologies" to describe the convergence of information technology and telecommunication technologies.
[4] The videotapes of each forum, along with the respective attendance rosters are available for review at GCATT.
[5] Prior studies on the digital divide often focus exclusively on demographic, geography and socio-economic characteristics of ICT users as they relate to levels of access to these technologies. In this report, we acknowledge that these factors have a meaningful role yet are not addressed in the framework for this study.
[6] For example, *awareness* – Georgia citizens must first perceive the use of these technologies as relevant to their lives, and gain sufficient digital literacy to use baseline technology (e.g. the computer); *application* – Georgia citizens as users need the ability to create, transact, and manipulate information in a systematic way (e.g. renewing a driver's license online); and finally, Georgia citizens must have *access* to the appropriate physical technology for their identified task (e.g. computer, modem, access to the World Wide Web).
[7] The nation's leading cyberstates were California, Texas, New York, Illinois and Massachusetts.
[8] Cyberstates: A State-by-State Overview of the High-Technology Industry Report. American Electronics Association. (1999).
[9] Georgia is well positioned to compete with other states based on the quality of its existing and developing telecommunications infrastructure. Source: Georgia High-Speed Telecommunications Atlas, created by GCATT and the Georgia Tech Center for Geographic Information Systems, Fall 1999, online at http://maps.gis.gatech.edu/telecomweb
[10] Georgia Rural Development Council, 2000. State of Rural Georgia Report.
[11] See for instance the rankings in Government Technology Magazine [http://www.govtech.net/publications/gt/2000/july/Empowering/Empowering.shtm]; from the AEA; and in the recent Brown University Report assessing E-Government: The Internet, Democracy, and Service Delivery by State and Federal Governments. Brown Univ., Taubman Center for Public Policy and American Initiatives. [http://www.inside politics.org/govtreport00.html] on e-government where Georgia ranked in the bottom third (at 40) of states in all categories. For comparison, the ranking includes Tennessee at 36, South Carolina at 33, Mississippi at 32, Virginia at 27, North Carolina at 20, and Florida at 8.
[12] See the GTA web site, at http://www.gagta.com/gta/about.html.
[13] The telemedicine service of GSAMS has been recognized nationally as a model telemedicine system.
[14] According to the College Board, Georgia's average SAT score is 50th out of the 50 states and the District of Columbia, coming only second to last to South Carolina whose test scores are increasing at a faster rate than Georgia. The five-year total of Georgia appropriations for education technology (FY95-FY99) expressed as amount per student: $199 (national average is $115). Georgia funds earmarked for K-12 educational technology compared with total K-12 education expenditures in FY98: 0.87 percent (national average = 0.52 percent). (Milken Family Foundation, 1999).
[15] This funding includes $36.8M for the Computers in the Classroom program that allocates funds to school districts for hardware, software, and networking technologies; $15.4M for on-site technology specialists in every school system (at a ration of one specialist for every four schools); $8.5M for administrative technologies; $2.8M for regional technology training centers; and $2.1M to provide schools with access to the Internet and to Galileo (Milken Family Foundation, 2000).
[16] The Schools and Libraries Division (SLD) of the Universal Service Administrative Company (USAC) provides affordable access to telecommunications services for all eligible schools and libraries in the United States. The Schools and Libraries Universal Service Program was established as part of the Telecommunications Act of 1996 with the express purpose of providing affordable access to telecommunications services for all eligible schools and libraries, particularly those in rural and inner-city

areas. Funded at up to $2.25 billion annually, the Program provides discounts of 20 percent to 90 percent on telecommunications services, Internet access and internal connections. See http://www.sl.universalservice.org for more information.

[17] From 1999 to 2000, Georgia's SAT verbal scores improved from 487 to 488 and math scores from 482 to 486. The best possible score on each section is 800. Georgia's combined average score of 974 is 45 points below the national average of 1019. For more information see The College Board's website at http://www.collegeboard.com

[18] "New Economy" in this white paper is used to describe the global economic market that has evolved as a result of the convergence of advances in technology and telecommunications services. As noted by the Progressive Policy Institute, the U.S. economy is undergoing a fundamental transformation at the dawn of the new millennium. Some of the most obvious outward signs of change are in fact among the root causes of it: revolutionary technological advances, including powerful personal computers, high-speed telecommunications and the Internet. The market environment facilitated by these and other developments in the last decade and a half has been variously labeled the "information economy," "network economy," "digital economy," "knowledge economy," and the "risk society." Together, the whole package is simply referred to as the "New Economy." See http://www.neweconomyindex.org/introduction.html.

[19] State Strategies for the New Economy. NGA established a task force to examine the driving forces and implications of recent economic changes and to provide governors with tools to respond to these changes. See http://www.nga.org/New Economy/Links.asp. Jane Fraser and Jeremy Oppenheim, of the consulting firm McKinsey & Company, also noted that "we are on the brink of a major long term transformation of the world economy from a series of local industries locked in closed national economies to a system of integrated global markets contested by global players." Progressive Policy Institute Trade Is an Increasing Share of the New Economy. See http://www.neweconomyindex.org/section1_page03.html. National Governor's Association (NGA) New Economy Task Force. 2000

[20] See partial listing of various business, education and work force development initiatives identified in Appendix A, Information Communications Technology Programs in Georgia.

[21] During this period, high-tech venture capital investment in the U.S. totaled $35.6 billion (more than double the $11.5 billion investment amount in 1997), with California, Massachusetts, New York, Texas and Colorado leading in this category. (Source: American Electronics Association. (1999)). Cyberstates: A State-by-State Overview of the High-Technology Industry Report.

[22] Georgia Institute of Technology - Economic Development Institute. December 1997. Georgia Research Alliance Industry Profiles; Advanced Telecommunications, Biotechnology, and Environmental Report. Also see Snapshot of Georgia on "Cyberstates" national survey. Cyberstates: A State-by-State Overview of the High-Technology Industry Report. American Electronics Association. (1999)

[23] Gnewikow 2000

[24] Profile of Georgia's Traditional Industries: Textile and Apparel, Food Processing, and Pulp and Paper. Georgia Institute of Technology - Economic Development Institute. December 1997

[25] A Rural Broadband Cost Study, which was recently completed, estimated the dollar investment needed to upgrade rural telephone lines and provide insight regarding the pace of broadband deployment. NECA Rural Broadband Cost Study. See http://www.neca.org/pr062100.htm. The National Exchange Carrier Association. (2000, June 21).

[26] A recent U.S. government report indicates that deployment in rural areas is not proceeding at comparable pace. For various reasons, the major cable and DSL providers are both concentrating on serving metropolitan urban areas with high population density. The likelihood of receiving broadband service through either technology declines with population density. As a result, residents in rural areas will generally be the last to receive service. That said, the size of the provider and the nature of its service area are undoubtedly significant factors in determining which areas are served. Providers with both rural and non-rural service will likely bring broadband to their larger, urban, and more lucrative markets first, whereas rural providers are most likely to serve rural towns before remote, out-of-town areas. This means that those last served will be in the sparsely settled countryside. Advanced Telecommunications in Rural America - The Challenge of Bridging Broadband Service to all Americans. Washington, DC. U.S. Government Printing Office. As noted in a May 15, 2000 BellSouth news release, which announced a major broadband deployment initiative in the State, high speed service was currently limited to customers in Atlanta, Augusta, Athens, Carrollton and Rome. U.S. Department of Commerce, National Telecommunications and Information Administration and Rural Utilities Service. (April 2000).

[27] The State of Rural Georgia- "Surviving Not Thriving." Report of the Technical Advisory Committee. Despite its growth, Georgia's economic prosperity is unevenly distributed with some areas of the state much worse off than others are. As of 1997 139 out of the 159 counties still had per capita income below the average for the Southeast U.S. Georgia Rural Development Council. (2000, January 20).
[28] The Georgia High-Speed Telecommunications Atlas was a source for some of this information. It appears that telecommunications infrastructure and facilities information are not inventoried in sufficient detail for the entire state.
[29] The Economic Development Institute of Georgia Tech has established a Center for Manufacturing Information Technology (CMIT). Currently, the Center provides manufacturers with information and assistance in the application of computer-based solutions to manufacturing problems. Building upon this concept, EDI has sought to expand its technology-based economic development services by establishing Community IT Extension Service (CITE) Centers in small and rural communities. The goal of the service is to help companies and communities in rural Georgia make the transition from a labor-and-resource intensive economic base to one that more effectively uses information technologies by delivering (1) company and community technology assessments; (2) community leadership training and user group formation; (3) access to new technology through company technology demonstration centers; and (4) information technology, and community-wide information technology products. We are unaware of any state that has implemented such an initiative.
[30] A summary of state information technology initiatives is provided by the National Governors' Association. Issue Brief "States on the Internet". See http://www.nga.org/Pubs/IssueBriefs/2000/000226 States Internet.asp.
[31] For example, the Georgia High-Speed Telecommunications Atlas.
[32] Universal service emerged as a trade-off for the elimination of competition in the telephone market, and from the very first represented a balance between the benefits attributable to market competition with the need in terms of policy to encourage the widespread distribution of telephone services. This was accomplished with the "Kingsbury Commitment" in 1913, in which AT&T put control of its telephone network under control of the federal common carrier regulation in exchange for protection from further competition, with part of the deal that AT&T would deliver "universal services" with cost averaging, which to a large extent has been accomplished. Newman et. al (1999).
[33] Many Americans view information technology tools as technological "gadgets" and don't perceive an overriding public need to ensure their equitable distribution.
[34] U.S. Census Bureau, Population Paper Listing PPL-47.
[35] The U.S. Office of Management and Budget estimates that by 2010, 75 percent of all transactions between individuals and government will take place over the Internet.
[36] U.S. Department of Commerce, National Telecommunications and Information Administration. *Americans in the Information Age Falling Through the Net*. http:www.ntia.doc.gov/ntiahome/digitaldivide/
[37] In a study conducted by the University of Georgia, 75% of poor Georgians who were interviewed and who are Temporary Assistance to Needy Families (TANF) recipients expressed the view that information technology tools were irrelevant to their lives and of little interest.
[38]Babb, 1998; Hoffman and Novak, 1998
[39] A 1998 national survey showed that, while there was a significantly high telephone penetration rate (91.4%) among 2,926,000 Georgia households, only 36 percent had home computers, compared to the national average of 42 percent. Of the 700,000 Georgia households with Internet capability, about 24 percent were actually accessing the Internet, while the national average was 26 percent. Citizens will be the beneficiaries of State and local activities. See Walsh, 1999; Katz 1997
[40] Paula Uimonen, "The Internet as a Tool for Social Development," United Nations Research Institute for Social Development, SWITZERLAND http://www.isoc.org/inet97/proceedings/G4/G4_1.HTM
[41] Remark by the National Security Advisor, Sandy Berger, in a Marketing Session at the Digital Divide Summit. http\\:digitaldivide.gov/summit/
[42] Children's Partnership *Online Content for Low-Income and Underserved Americans* 2000.
[43] "Motivations for and barriers to Internet usage: results from a national public opinion survey," Internet Research, vol. 7, no. 3, pp. 170-188. Katz, J. and Aspden, P., (1997).
[44] Studies show that most Americans expect equality in education, health care, and basic political rights, but tolerate a much wider differentiation in those things categorized as a part of the economic domain (Hochschild, 1981)

[45] Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets. Kretzman, J.P. and McKnight, J.L., (1993).
[46] *Journal of Education for Library & Information Science* defines life or community information as that pertaining to the availability of human services, such as healthcare, financial assistance, housing, transportation, education, and child care services, as well as information on recreation programs, clubs, community events, and information about all levels of government.
[47] Some of the content will attract both the young – who view technology as an entertainment source – and adults – who view it as an information source.
[48] Burbules, Nicholas and Thomas A. Callister Jr., "Who Lives Here? Access to and Credibility Within Cyberspace." Forthcoming in Watch IT: The Risks and Promises of New Information Technologies for Education (Westview Press). (http://www.ed.uiuc.edu/facstaff/burbules/ncb/papers/who_lives_here.html)
[49] The City of Atlanta's first cyber technology center was opened in the Summer of 2000. The Executive Director, Dr. Jabari Samama shared plans for future sites and strategic planning documents that can serve as models for other localities.
[50] While the issue of Internet dropout has been overlooked in much of the discussion, studies suggest that the number of persons in this category is in the millions. Preventing further increases in the number of Internet dropouts is important.
[51] The Georgia Framework for INtegrating TECHnology in the Student-Centered Classroom envisions how schools will be organized and how teaching and learning will take place as Georgia moves into the twenty-first century. It is a picture of high performance student-centered classrooms, technology empowered learning opportunities, and restructured schools that meet the needs of all 21st century citizens. See http://intech.ga-edtech.org/ for more information.
[52] The Georgia Learning Connections program's mission is to provide a dynamic, interactive, online resource that will enhance and support teaching and learning in Georgia with the Quality Core Curriculum (QCC) standards as the main focus. Georgia Learning Connections seeks to provide the resources necessary for teachers to accomplish their goals of meeting the educational needs of their students and increasing student achievement. GLC was developed by the Georgia Department of Education based on the Quality Core Curriculum standards and requests by teachers for resources that are connected to the standards. The Department of Education formed a partnership with Georgia Institute of Technology - CEISMC (Center for Education: Integrating Science, Mathematics, and Computing) for web and database development. The central focus of GLC is the Quality Core Curriculum (QCC) standards where users will find web links, lesson plans and assessment correlations attached directly to the standards. These resources have been gathered and created to help teachers teach and assess the standards. In addition there is another large collection of materials on the site called the Teacher Resource Center. See http://www.glc.k12.ga.us/
[53] Mendels, 2000
[54] U.S. Department of Education, National Center for Educational Statistics, *Survey on Professional Development,* 1999.
[55] Once collaborative learning takes place in the classroom and the teacher has shifted from the sole source of learning to a learning facilitator, the educational system must find meaningful measures of progress to gauge student achievement.
[56] Georgia's Department of Education reports 1,418,933 students in 1999 with 256,238 total computers for a state average of 5.54 students per computer (Georgia Department of Education, 1999).
[57] The Family Technology Resource Center (FTRC) program is a program designed and maintained by the DeKalb County School System (DCSS) in Atlanta, Georgia to help address the digital divide that exists between the technology haves and have-nots in the DeKalb County community. The DCSS 106,000-student school district is Georgia's most urban, economically distressed, international, and fastest growing county. More than half the students qualify for free or reduced lunch, and the student body is 86.5 percent minority population. DCSS keeps school facilities and community centers open after traditional school hours to provide computer-based learning opportunities for all community members. Started with just one FTRC in 1996, the program has grown to include 16 centers distributed throughout the school system. All 16 FTRCs are available to DeKalb County students, their parents, senior citizens, and other interested residents, such as parents of private school students. The centers offer courses delivered through interactive multimedia technologies that allow each student to learn personal computer skills, job-related technical skills, basic and advanced literacy skills in reading, writing, mathematics and a variety of government regulations related to the workplace.

[58] The goals of the centers are to provide equal access to computer training to all segments of the community; enhance parent knowledge of computing skills so they can help support their children's education and improve their own employment opportunities; and strengthen partnerships among schools, parents, businesses, and community organizations.

[59] Tech Corps Georgia, established in 1993 and formally known as Computers in the Classrooms Inc., is a charter affiliate of the national Tech Corps volunteer organization. Tech Corps Georgia is a non-profit technology education center. Tech Corps Georgia's core programs are the K-12 Outreach Program and the Community Outreach Program. Since 1993, over 1,100 donated computers have been refurbished by TCGA technical volunteers; over 520 teachers from 42 metro Atlanta schools have received computers and training; over 220 low-income families have received computers and training; loaned PCs to over 45 students; over 25 computers have been provided to non-profit agencies focusing on education; and TCGA volunteers helped wire over 15 inner-city schools for Internet access. Tech Corps Georgia provides training and a refurbished computer to community members for a $150 fee. TCGA uses effective partnerships with four vocational technology institutions to leverage available resources.

[60] The mission of the Georgia Staff Development Council is to ensure success for all students by serving as the state network for those who improve schools and by advancing individual and organizational development. See http://itc.gsu.edu/gsdc/ for more information.

[61] The mission of the Leadership Academy is to provide relevant leadership development programs that enable Georgia P-12 public school instructional/administrative personnel and teachers to develop, update, and expand knowledge and skills required for creating optimal teaching and learning communities for a diverse student population. See http://www.doe.k12.ga.us

[62] The A Plus Education Reform Act of 2000 (HB 1187) mandates that holders of a renewable certificate must pass a computer skills competency test before they can receive certification renewal. Successful completion of the phase one InTech model training at a state educational technology training center or a State Board of Education approved redelivery team shall be acceptable for certificate renewal purposes.

[63] BellSouth is involved in a project to connect all K-12 districts to the Internet with a T1 connection (minimum 256 kilobit connection). This is a transition from the present PeachNet ISP connection.

[64] See note 11.

[65] Exemplar state IT implementations include Washington and Illinois for infrastructure and policy and Washington and Arizona for digital democracy [http://govtech.net/].

[66] "Killer app" - An application of such widespread use that it drives the adoption of the hardware on which it runs.

[67] See National Governor's Association, 2000, for an in-depth discussion of the broad issues facing governmental implementation of advanced IT/Telecom services.

[68] While noted by several interviewees, there appeared to be several and somewhat differing viewpoints of the pertinence of this consideration vis-à-vis deployment and availability of information and communication technology services. As such it is suggested that a detailed technical analysis be undertaking to assess and calibrate the influence of these factors.

[69] Interview with Georgia Municipal Association President, Andrew Harris, August 2000.

[70] "LaGrange Marries Web and TV for Free" AJC, August 21, 2000 by Jennifer Brett.

[71] See the WGTA web site at http:''www.wgta.org

[72] These barriers range from outdated regulations, and lack of legislative regulation permitting innovative government practices to administrative roadblocks such as insufficient resources, outdated computer programs, or manual processes that require significant re-engineering and training.

[73] As indicated in the August 2000 issue of *Government Technology*, state and local governments will spend more than $50 billion on information technology in 2000. However, research indicates that most agencies do a poor job of measuring the impacts of these investments. One significant barrier is the difficulty associated with such metrics and lack of suitable evaluation models. Reference: Towns, Steve, (2000), "The Bottom Line: What's all this computer stuff worth anyway?" Government Technology, vol. 13, no. 10, August, p. 42.

[74] Although several efforts are underway to start to catalog state level efforts, these are primarily oriented at specific sectors or areas of activity, such as social welfare, workforce development, and economic development, etc., including the Georgia Department of Industry Trade and Tourism and Georgia Tech Economic Development Institute's Technology Infusion Project Work Plan. A centralized objective effort would be useful to other agencies as well as private sector individuals.

[75] For example, the Georgia High-Speed Telecommunications Atlas.
[76] The term telemedicine used here generally describes medical information and services delivered via telecommunications or computer networks. Another term becoming popular is telehealth which includes an even broader range of services and technology.
[77] Kantor, 1997
[78] Consumer Reports, 2000; Barrett, 2000
[79] E.g., Georgia information industry companies focusing on the healthcare industry include Healtheon/WebMD, McKessonHBOC, National Data Corporation, Helios Health, and Third Millennium Healthcare Systems.
[80] Lore, 2000
[81] Eckford, 2000; Dash, 2000
[82] Eckford, 2000; Chin, 2000
[83] Eckford, 2000; Lore, 2000; Hauber, 2000
[84] One purpose of GSAMS was to aid citizens who were unable to obtain necessary healthcare in their communities. See the Georgia Distance Learning and Telemedicine Act of 1992, the legislation that created GSAMS.
[85] Stachura, 2000
[86] E.g., Georgia INPHO (Information Network for Public Health Officials), a statewide network that provides health information to public health and personal healthcare practitioners and their communities, is managed by the Georgia Dept. of Human Resources, Division of Public Health. A grant from the National Library of Medicine supports the Tifton-Tift County Public Library in promoting online health information services available from the library. The Electronic House Call project, at Georgia Tech and the Medical College of Georgia, is developing a portable system for in-home checkups using telemedicine technology.
[87] E.g., at the federal level, the 1996 Telecommunications Act has provisions for Universal Service Fund dollars to go towards qualified rural healthcare networks. The Universal Service Administrative Corporation, which administers the Universal Service Fund, is considering a possible healthcare tie-in to rural schools, using school clinics as a satellite facility of rural hospitals (Sanders, 2000). The U.S. Department of Agriculture, Rural Utilities Service, offers funding toward the construction of telecommunications infrastructure in rural areas to encourage and improve telemedicine and distance learning services.
[88] Stachura, 2000, Toal, 2000
[89] Pritts, 2000
[90] A 1997 Georgia law requires a Georgia license for anyone using telecommunications to provide patient care in Georgia (with some statutory exceptions). GA Title 43-34-31.
[91] Stachura, 2000; Pearson, 2000; Peifer, 2000
[92] Hauber, 2000
[93] Stachura, 2000; Peifer, 2000; Sanders, 2000
[94] Stachura, 2000
[95] For instance, telemedicine practitioners are pursuing home healthcare applications rather than limiting telemedicine to videoconferencing office locations. Peifer, 2000; Sanders, 2000.
[96] The costs and benefits of using GSTP are not clearly understood; some hospital managers find the cost of maintaining a GSTP site not cost-efficient. (Albany Forum, Clarkesville Forum). There is interest among the Telemedicine Center and several State and university groups in expanding the scope and size of GSTP.

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APPENDIX A - Technology Programs in Georgia

A sampling of information and communications technology resources and programs

- **Atlanta Community Technology Initiative**

http://www.atlantacommunitytech.com

ACTI establishes programs in targeted Atlanta neighborhoods that promote community outreach; establish community cyber centers; provide one-stop information shops; provide basic literacy and computer literacy programming; and provide job skills programming.

- **Center for Education Integrating Science, Mathematics, and Computing (CEISMC)**

http://www.ceismc.gatech.edu

The CEISMC at Georgia Tech mission is to advocate and participate in efforts to effect systemic changes that lead to improved appreciation and performance in science, mathematics and technology for all K-12 students.

- **DeKalb County School System's Family Technology Resource Centers (FTRC)**

http://www.dekalb.k12.ga.us/ftrc

The FTRC program is designed and maintained by the DeKalb County School System (DCSS) in Atlanta, Georgia to help address the digital divide in the DeKalb County community. DCSS keeps school facilities and community centers open after traditional school hours to provide computer-based learning opportunities for all community members. The centers offer courses delivered through interactive multimedia technologies that allow each student to learn personal computer skills, job-related technical skills, basic and advanced literacy skills in reading, writing, and mathematics, and a variety of government regulations related to the workplace.

- **Educational Technology Training Centers**

http://www.ga-edtech.org

The Georgia Department of Education maintains 14 regional educational technology centers throughout the state. The mission of these centers is to provide high quality, low cost, convenient access to educational technology training and technical support to educators, administrators and support personnel at Georgia's Pre-K through Grade 16 schools.

- **Foundations for the Future**

http://www.f3program.org

Foundations for the Future (F3) is a technical assistance project at the Georgia Tech Research Institute to assist K-12 educators to incorporate technology into the classroom. F3 researchers work with the support of key agencies and educators to leverage telecommunications technology investments and available learning/training expertise to improve K-12 educational practices in Georgia. Now in its fourth year, the F3 team provides three key services: technical assistance with network design/installation/maintenance; tailored learning opportunities/outreach to educators; and a resource center that works with school systems to identify and secure funding for technology in schools.

- **Georgia Association of Educational Technology Professionals**

http://www.gaetp.org

The Georgia Association of Educational Technology Professionals seeks to enhance educational opportunities offered to all students in Georgia, strengthen and support regional technology organization, provide a statewide voice that can address issues and respond to concerns about educational technology, provide education technology professionals with information and resources to help them with their jobs, foster interaction among education technology professionals, promote infusion of technology into school curriculum, instruction and administrative tasks.

- **Georgia Center for Advanced Telecommunications Technology**

http://www.gcatt.org

GCATT unites centers focused on technology research, public policy, and economic development to strengthen Georgia's leadership in advanced telecommunications. Formed in 1991, GCATT is a division of

the Georgia Research Alliance, a public/private partnership fostering technology-based economic development.

- **Georgia Department of Education and BellSouth Broadband Initiative**

http://www.bellsouthcorp.com/proactive/documents/render/32762.vtml

The Georgia Assembly established the Business Expansion and Support Act (BEST) to encourage investment in rural parts of the state. Funded by BellSouth capital investments and tax incentives provided through BEST, this is an initiative to build a broadband infrastructure throughout the state and deliver high-speed Internet access to rural Georgia residents and all of Georgia's approximately 1,800 K-12 schools.

- **Georgia Department of Education's Listserv**

LISTSERV@zeus.gcsu.edu

The Georgia Department of Education sponsors a mailing listserv for Georgia K-12 personnel interested in using technology called the TECH-LEADERSHIP-L. To join the list, send an email to LISTSERV@zeus.gcsu.edu and in the body of the message say subscribe TECH-LEADERSHIP-L YOUR FIRST AND LAST NAME

- **Georgia Department of Education's Office of Technology Services**

http://techservices.doe.k12.ga.us/

The mission of the Office of Technology Services is to provide leadership and services for education and information technologies. The office includes three units: Administrative Technology, Educational Technology, and Internal Technology.

- **Georgia Distance Learning Association (GDLA)**

http://www.gsu.edu/GDLA

A state chapter of the United States Distance Learning Association, GDLA is a non-profit association formed to promote the development and application of distance learning for education and training.

- **Georgia Educational Technology Conference (GaETC)**

http://www.gaetc.org

GaETC is dedicated to the professional development of educators. It brings together approximately 4,000 educators to share new ideas, to learn about the latest in educational technology, and to provide a forum for discussion among professionals concerned with education.

- **Georgia Framework for INtegrating TECHnology in the Student-Centered Classroom Professional Development Model**

http://intech.ga-edtech.org

The Georgia Framework for INtegrating TECHnology in the Student-Centered Classroom envisions how schools will be organized and how teaching and learning will take place as Georgia moves into the twenty-first century. It is a picture of high performance student-centered classrooms, technology empowered learning opportunities, and restructured schools that meet the needs of all 21st century citizens.

- **Georgia Institute of Technology Economic Development Institute**

http://www.edi.gatech.edu

EDI offers an array of services that promote the growth of business and industry in Georgia. The Advanced Technology Development Center (ATDC) accelerates the formation and growth of technology-based companies. The Center for Economic Development Services provides Georgia's communities and economic developers with research, training, and technology consulting.

- **Georgia Learning Connections (GLC)**

http://www.glc.k12.ga.us

Georgia Learning Connections seeks to provide the resources necessary for teachers to accomplish their goals of meeting the educational needs of their students and increasing student achievement. The program's mission is to provide a dynamic, interactive, online resource that will enhance and support teaching and

learning in Georgia. The central focus of GLC is the Quality Core Curriculum (QCC) standards where users will find web links, lesson plans and assessment correlation's attached directly to the standards.

- **Georgia Library Learning Online (GALILEO)**

http://galileo.peachnet.edu

GALILEO is an advanced Internet-based library system and its extension to schools, public libraries, technical institutions, and private colleges and universities.

- **Georgia Global Learning Online for Business and Education**

http://www.georgiaglobe.org

Georgia GLOBE provides access to online classes, telecourses and student support services offered through the University System of Georgia. Students who enroll in courses or degree programs marketed by Georgia GLOBE earn their credits and degrees from one of the public colleges and universities that comprise the University System of Georgia.

- **Georgia Partnership for Excellence in Education (GPEE)**

http://www.gpee.org

The mission of the Georgia Partnership for Excellence in Education is to be Georgia's foremost change agent and a significant leader in the journey to higher standards and increasing academic achievement for all students. GPEE sponsors many different programs to bring attention to and work toward sustainable school reform in Georgia. Many of these programs include ICTs as an integral component for school reform.

- **Georgia Public Broadcasting's PeachStar Education Services**

http://www.peachstar.org

PeachStar Education Services, a division of Georgia Public Broadcasting, provides over 2,000 sites (public schools, colleges and universities, adult technical institutes, regional public libraries and youth development centers) with educational programming to support learning in Georgia classrooms. PeachStar also offers staff development training for teachers and other educators.

- **Georgia Research Alliance**

http://www.gra.org

Founded in 1990, the Georgia Research Alliance is a partnership of the state's research universities, the business community, and state government. Its mission is to foster economic development within Georgia by developing the research capabilities of the research universities within the state, and to assist and develop scientific and technology-based industry, commerce, and business.

- **Georgia Statewide Academic and Medical Systems (GSAMS)**

http://www2.state.ga.us/departments/doas/gsams/v3/master.html

GSAMS is one of the world's largest two-way interactive H.320 video networks, providing citizens throughout the state access to resources without the restrictions of time or distance. Just over 400 sites ranging from elementary schools to rural hospitals have held more than 100,000 conferences since GSAMS' inception in 1992.

- **Georgia Technology Authority**

http://www.gagta.com

GTA is a new authority created bring a coordinated and comprehensive information and communication technology vision to state government. GTA will leverage state government's consolidated purchasing power to and provide leadership in research and development to ensure the effective use of resources in Georgia state government and make e-government a reality for the state.

- **Intellectual Capital Partnership Program**

http://www.icapp.org

ICAPP is an economic development incentive program of the University System of Georgia that provides education designed to meet the work force needs of specific companies.

- **Medical College of Georgia Telemedicine Center**

http://www.mcg.edu/Telemedicine/

The Telemedicine Center conducts telemedicine research, provides technology training, clinical services and projects, and it manages the Georgia Statewide Telemedicine Program.

- **OneGeorgia Authority**

http://www.onegeorgia.org

The OneGeorgia Authority was created by the Governor and the Georgia General Assembly to help bridge the economic divide in Georgia. The Authority will channel one third of the state's tobacco settlement to economic development projects, including technology development.

- **Rural Development Council**

http://www.ruralgeorgia.org

Located in the Dept. of Community Affairs, the Rural Development Council's mission is to initiate and sustain development opportunities in rural communities. These opportunities include technology infrastructure.

- **TECH CORPS Georgia (TCGA)**

http://www.techcorpsga.org

A charter affiliate of the national TECH CORPS volunteer organization, TCGA is a non-profit technology education center. Its core programs are the K-12 Outreach Program and the Community Outreach Program. Since 1993, over 1,100 donated computers have been refurbished by TCGA technical volunteers; over 520 teachers from 42 metro Atlanta schools have received computers and training; over 220 low-income families have received computers and training; loaned PCs to over 45 students; over 25 computers have been provided to non-profit agencies focusing on education; and TCGA volunteers helped wire over 15 inner-city schools for Internet access. TCGA uses effective partnerships with four vocational technology institutions to leverage available resources.

- **Technology Leadership Conference**

http://techservices.doe.k12.ga.us/tlc.htm

The Georgia Department of Education sponsors an annual Technology Leadership Conference for technology leaders from across Georgia to share and learn about technology in pre-kindergarten through college classrooms and the latest in administrative technology applications.

- **Yamacraw**

http://www.yamacraw.org

Yamacraw is an economic development initiative to make Georgia a world leader in the design of broadband (high-speed) communications systems, devices, and chips - the next-generation of hardware and software infrastructure.

APPENDIX B - National Technology Programs

A sampling of information and communications technology resources and programs

- **The American Telemedicine Association (ATA)**

http://www.atmeda.org

ATA is a non-profit association promoting greater access to medical care via telecommunications technology.

- **Association of Telehealth Service Providers**

http://www.atsp.org

An international membership-based organization dedicated to improving health care through growth of the telehealth industry.

- **CitySkills.org**

http://www.cityskills.org/home/index.cfm

CitySkills.org is a nonprofit committed to the job training and hiring of under-employed urban adults into Internet careers by helping community-based organizations deliver training for high-demand jobs.

- **The Community Connector**

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

The Community Connector website is for community-serving organizations, funders, academics, and students who are using technology to improve their local communities.

- **Community Technology Centers' Network (CTCNet)**

http://www.ctcnet.org

Housed at Educational Development Center, Inc. (EDC), in Newton, Massachusetts, the Community Technology Center's Network is a national membership organization that is committed to work toward a society where each member is "equitably empowered by technology skills and usage. What started as a storefront access center by a high school math teacher, CTCNet is composed of more than 400-computer access centers throughout the United States and Europe, with four locations here in Georgia: The Atlanta Community Technology Centers, Concurrent Technologies Corp., Morehouse School of Medicine / Prevention Research Center, and the Nonprofit Resource Center of Georgia.

- **Concord Consortium's Virtual High School (VHS)**

http://vhs.concord.org/home

The Concord Consortium's project is a collaborative of high schools from around the country. In exchange for contributing a small amount of teaching time, a school in the collaborative can offer its students NetCourses ranging from advanced academic courses to technical and specialized courses. The VHS grant provides training, software, and technical and administrative support.

- **Digital Divide Web Site**

http://www.digitaldivide.gov

This comprehensive web site of the US Department of Commerce National Telecommunications and Information Administration (NTIA) offers much information on federal programs designed to close the digital divide. See their October 2000 report, "Falling Through the Net: Toward Digital Inclusion."

- **The Digital Divide Network (DDN)**

http://www.digitaldividenetwork.org/

Produced by the Benton Foundation in association with the National Urban League, the Digital Divide Network (DDN) tackles the growing gap between those who have access to technology and information skills and those who do not through a powerful knowledge network. The purpose of the DDN is to enable and facilitate the sharing of ideas, information and creative solutions among industry partners, private foundations, nonprofit organizations and governments. The Network is aimed at a broad audience of policymakers, nonprofit leaders, foundation officers, educators, community organizers, social entrepreneurs, and industry experts.

- **Digital Government Online (dg.o)**

http://diggov.org

dg.o promotes National Science Foundation-sponsored emergent information technologies research by creating partnerships between academic researchers, government agencies, and the private sector. The partnership seeks to leverage research and identify financial resources to help build the Digital Government of the 21st Century.

- **ED Technology**

http://www.ed.gov/Technology/

The US Department of Education Office of Educational Technology web site offers reports and resources to assist the education community with meeting the national goals for educational technology.

- **Office for the Advancement of Telehealth**

http://telehealth.hrsa.gov/

Part of the Health Resources and Services Administration (of the Department of Health and Human Services), the Office for the Advancement of Telehealth promotes telehealth activities and the wider adoption of advanced technologies in the provision of health care services and education.

- **The Rural Health Care Program**

http://www.rhc.universalservice.org/

A universal service support program authorized by Congress and designed by the Federal Communications Commission (FCC) to provide reduced rates to rural health care providers for telecommunications services related to the use of telemedicine and telehealth. (A program of the Rural Health Care Division of Universal Service Administrative Company.)

- **Rural Information Center Health Service (RICHS)**

http://www.nal.usda.gov/ric/richs/

RICHS is a joint project of the Office of Rural Health Policy (ORHP), Department of Health and Human Services, and the National Agricultural Library (NAL), United States Department of Agriculture. Operating as part of NAL's Rural Information Center (RIC), RICHS collects and disseminates information on rural health issues.

- **Southern Regional Education Board's Educational Technology Cooperative**

http://www.sreb.org/programs/EdTech/edtechindex.asp

The Southern Regional Education Board (SREB) helps government and education leaders work cooperatively to advance education and, in doing so, improve the social and economic life of the region. It also initiates and implements technology- oriented projects.

- **Telemedicine Strategic Healthcare Group of the Department of Veterans Affairs**

http://www.va.gov/telemed/

The mission of the Telemedicine Strategic Healthcare Group is to improve access, coordination, continuity, and outcomes of healthcare for veterans through the use of electronic information and communications technologies to provide and support healthcare when distance separates the participants.

- **The Universal Service Administrative Company (USAC)**

http://www.universalservice.org

USAC is a private, not for profit organization responsible for providing every state and territory in the United States with access to affordable telecommunications services through the Universal Service Fund.

- **The U.S. Department of Agriculture, Rural Utilities Service (RUS)**

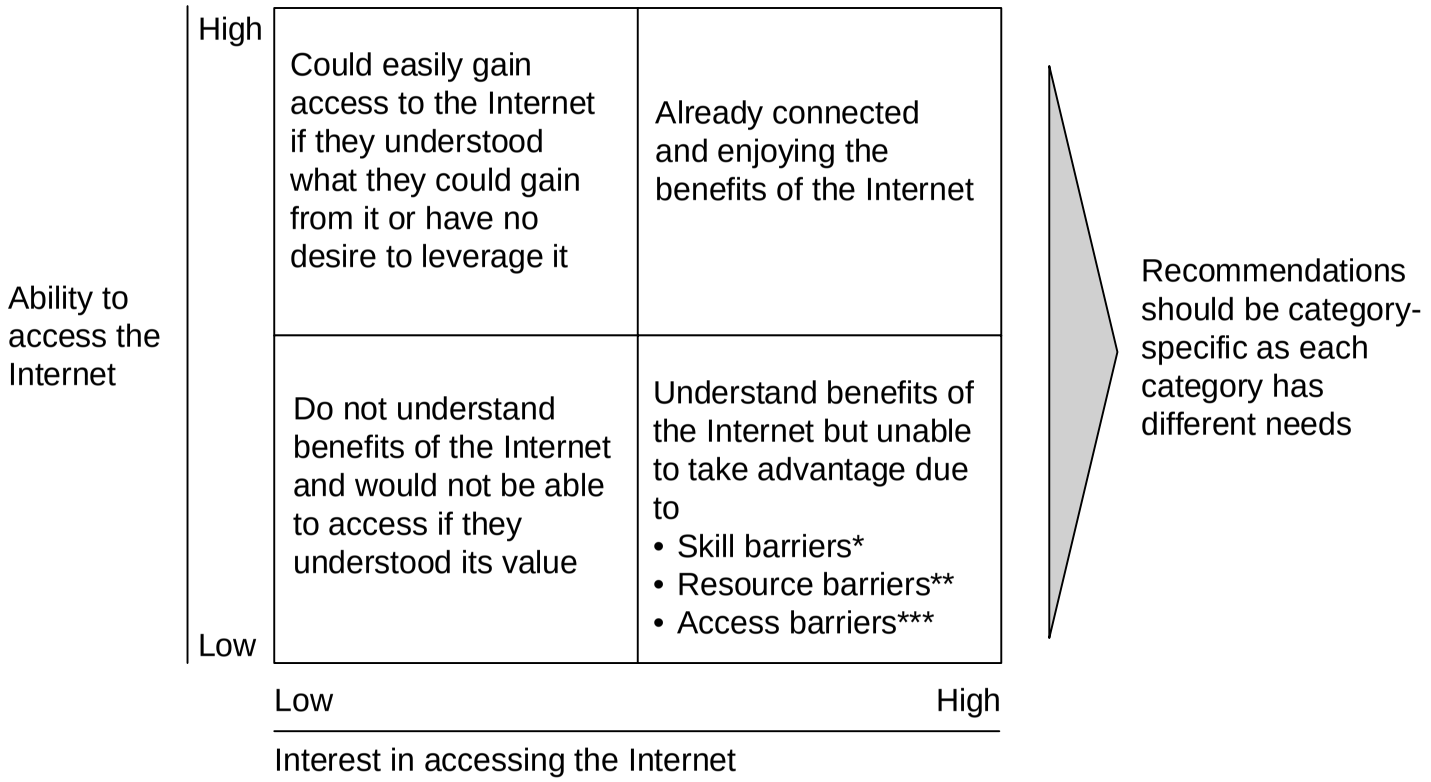
http://www.usda.gov/rus/telecom/dlt/dlt.htm

RUS creates public-private partnerships to finances the construction of the telecommunications infrastructure in rural areas to encourage and improve telemedicine and distance learning services.

APPENDIX C - Additional Infrastructure Data & Statistics

The volunteer services of McKinsey & Company and King & Spalding were primarily utilized during the data-gathering phase. Their efforts coupled with prior and subsequent research conducted by the project team has resulted in a substantial amount of reference material, some of which is contained in Appendix C. A reference archive has been established to house the majority of the state comparison data compiled by King & Spalding and other information obtained from the regional forums, written reports from various sources, and numerous other documents used in compiling this paper. To review any of these materials, please contact Steven Spell at GCATT, spell@gcatt.gatech.edu, or (404) 894-1698.

4 CATEGORIES BASED ON INTEREST IN AND ABILITY TO ACCESS THE INTERNET



* Skills barriers refer to ability to use a computer

** Resource barriers refer to ability to have access to a computer

*** Access barriers refer to ability to access telecommunications network

Developed with the assistance of McKinsey & Company, Inc.

LOW INTEREST AND HIGH ACCESS CAPABILITIES

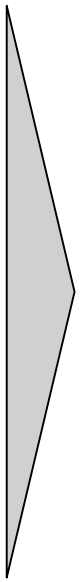
Analysis

Residents who do not understand value of interest

- Distribution by income level, geography, age and race
- Level of exposure to the Internet
- Day-to-day activities that could be done more efficiently by leveraging the Internet
- Activities/functions that attract people most to the Internet

Resident who understand value of the Internet but are not interested in leveraging it

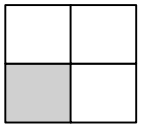
- Reasons for lack of interest
- How to revive their interest



Potential solutions

The answer for this category lies in education, marketing, and outreach

- Demonstrations on the power of the Internet
- Marketing efforts to attract residents to technology computer
- Outreach campaigns on opportunity cost of not accessing the Internet
- Partnerships with existing organizations that sponsor local programs residents currently support



LOW INTEREST COUPLED WITH LOW ACCESS CAPABILITIES

Analysis

Residents who do not understand value of interest

- Distribution by income level, geography, age, and race
- Level of exposure to the Internet
- Day-to-day activities that could be done more efficiently by leveraging the Internet
- Activities/functions that attract people most to the Internet

Understand skill barriers by income level, geography, age, and race

- Literacy rate
- Computer literacy

Potential solutions

The answer for this category lies in education, marketing, and advertising

- Demos on the power of the Internet
- Marketing efforts to attract residents to computer centers
- Advertising campaigns on opportunity cost of not accessing the Internet

HIGH INTEREST BUT LITTLE ACCESS CAPABILITY

Analysis	Potential recommendations
Understand skills barriers by geography, income level, age, and race • Literacy rate • Computer literacy	Skills barriers • Discounted/free computer classes • Rotating computer workshops
Understand resource barriers by income level, geography, age, and race • Computer ownership • Computer costs relative to other devices of innovation • Willingness/ability to pay for computer	Resource barriers • Strengthen existing technology centers • Open new technology centers • Make computers available in places citizens already frequent (e.g. churches) • Subsidize computer costs
Understand access barriers by geography, income level, age and race • Phone penetration • ISP POPs • Access costs	Access barriers • Provide incentives for ISPs to build POPs in rural regions • Subsidize costs to access network

State Telecom Policy Initiative

GCATT

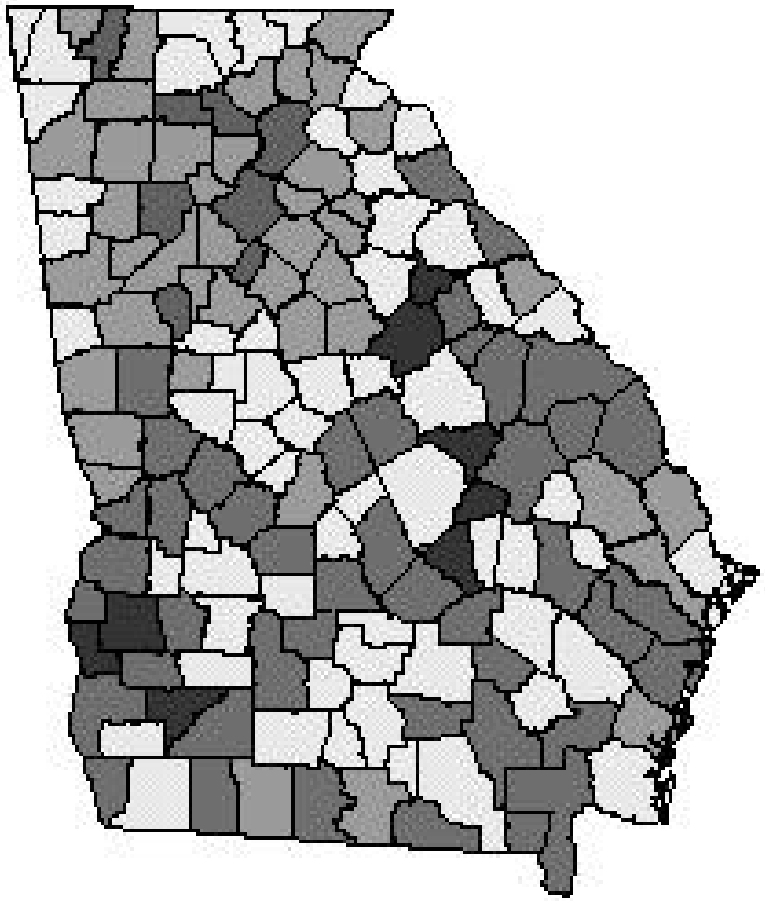
Constituency fact pack

May 26, 2000

STRUCTURE OF THE FACT PACK

1. Georgia's 5 economies (i.e., economic divide)
2. Constituencies
   - General population
   - Business
   - Education
   - Healthcare (in process)
   - Government (in process)
3. State of telecommunication infrastructure

GEORGIA'S 5 "ECONOMIES"



- Rapidly developing
- Developing
- Existing and emerging growth center
- Lagging rural
- Declining rural

The economic vitality of each county is determined based on 7 economic variables

- Per capita income, 1977
- Unemployment, 1998
- Bank deposit per 1,000 population, 1998
- Labor force participation rate, 1998
- Average manufacturing weekly wages, 1997
- Annual growth in total population, 1980-98
- Percentage of people below the poverty line, 1995

Source: Rural development Council Technical Advisory Committee and Georgia Institute of Technology, 1999

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OVERVIEW OF GEORGIA'S ECONOMIES: POPULATION STATISTICS

Economy (Numbers of countries)	**Population***		**Density** Persons/sq. mile	**Per capita income*** Dollars	**Age** Percent		**Education level** Percent	
	Millions	**Percent**			**Population under 18**	**Population over 65**	**At least high school diploma**	**At least bachelor's degree**
Rapidly developing (8)	1.10	18.0	430	21,300-30,300	26-30	5-14	46-86	7-30
Developing (42)	3.10	48.0	250	15,900-29,400 (excluding Fulton – 37,800)	23-32	2-18	49-89	5-25
Existing and emerging growth centers (58)	1.70	25.0	90	13,700-24,300	17-32	6-24	49-86	5-33
Lagging rural (43)	0.50	8.0	30	11,700-18,600	20-33	4-18	43-84	4-37
Declining rural areas (8)	0.05	0.6	19	14,100-17,000	22-30	7-19	48-75	6-18

* 1990 census

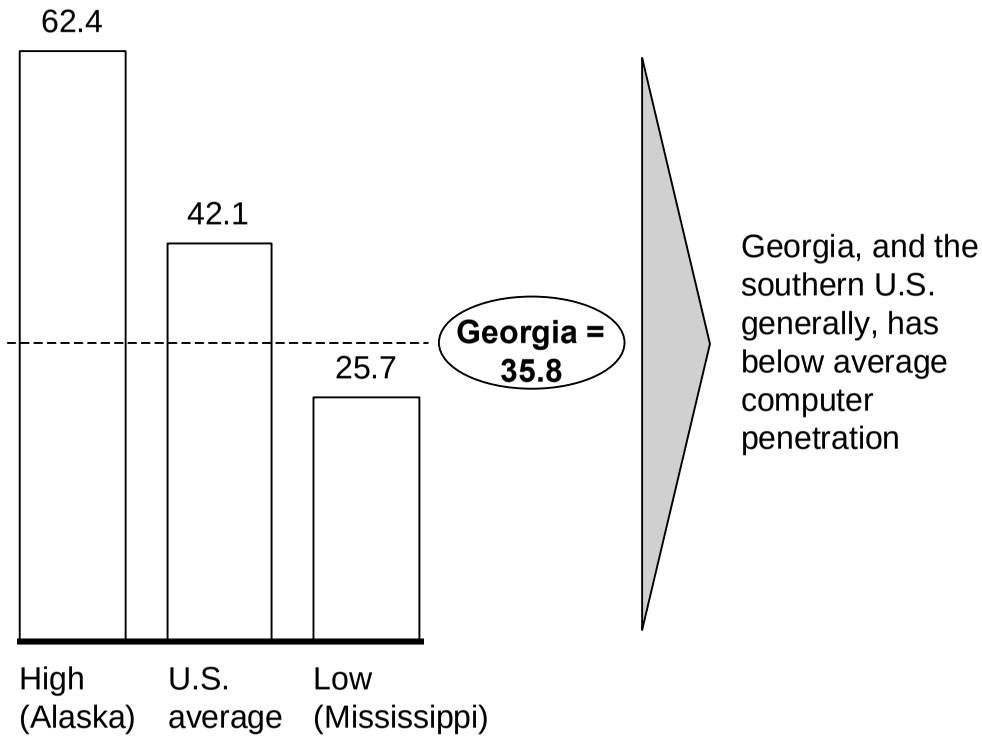
** 1997 data

Source: www.ruraggeorgia.org/state; State of Rural Georgia Report

COMPUTER PENETRATION IN THE U.S. BY STATE

1998 DATA

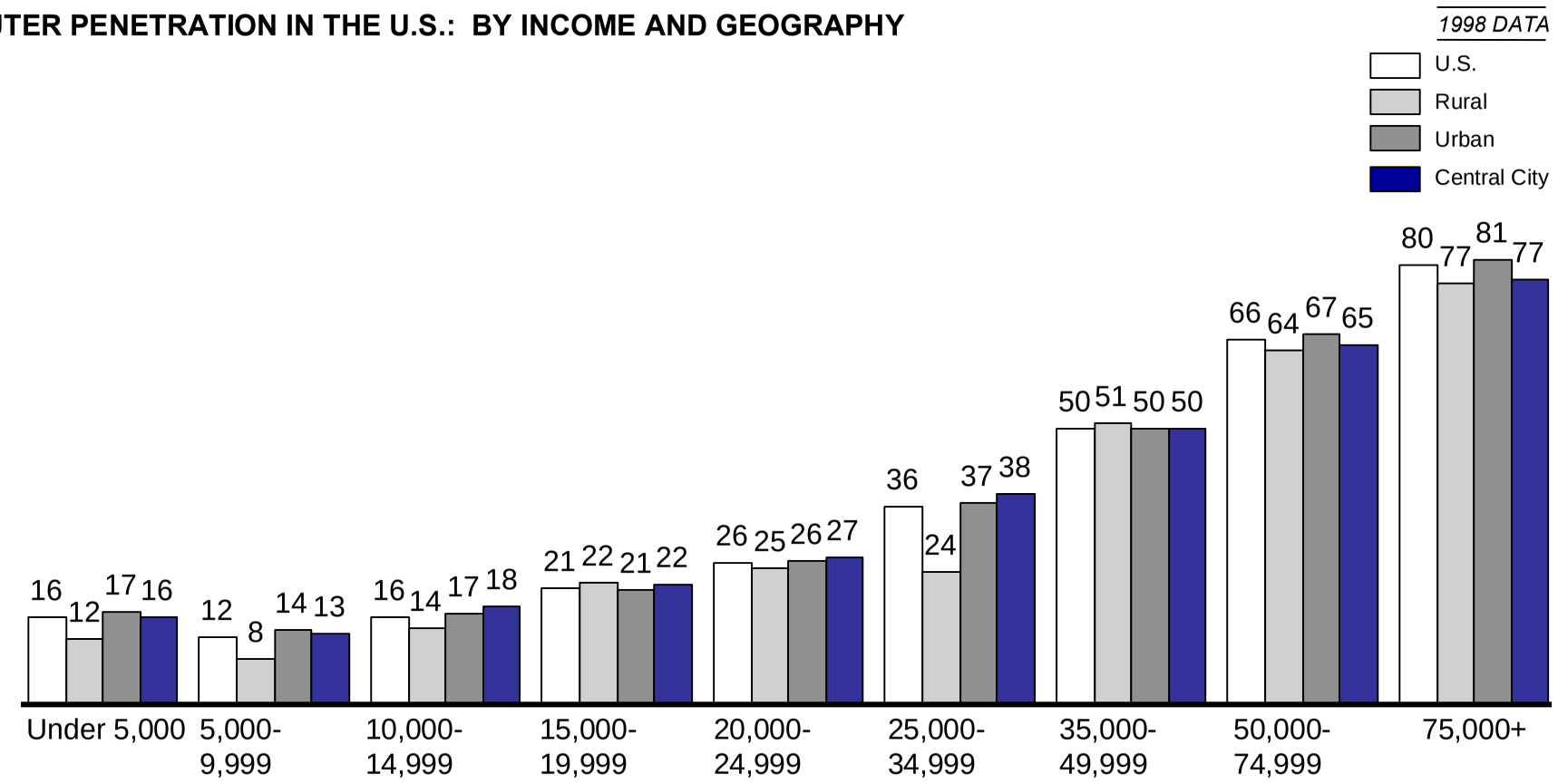
Percent



Source: NTIA; U.S. Census Bureau; U.S. Department of Commerce

COMPUTER PENETRATION IN THE U.S.: BY INCOME AND GEOGRAPHY

Percent



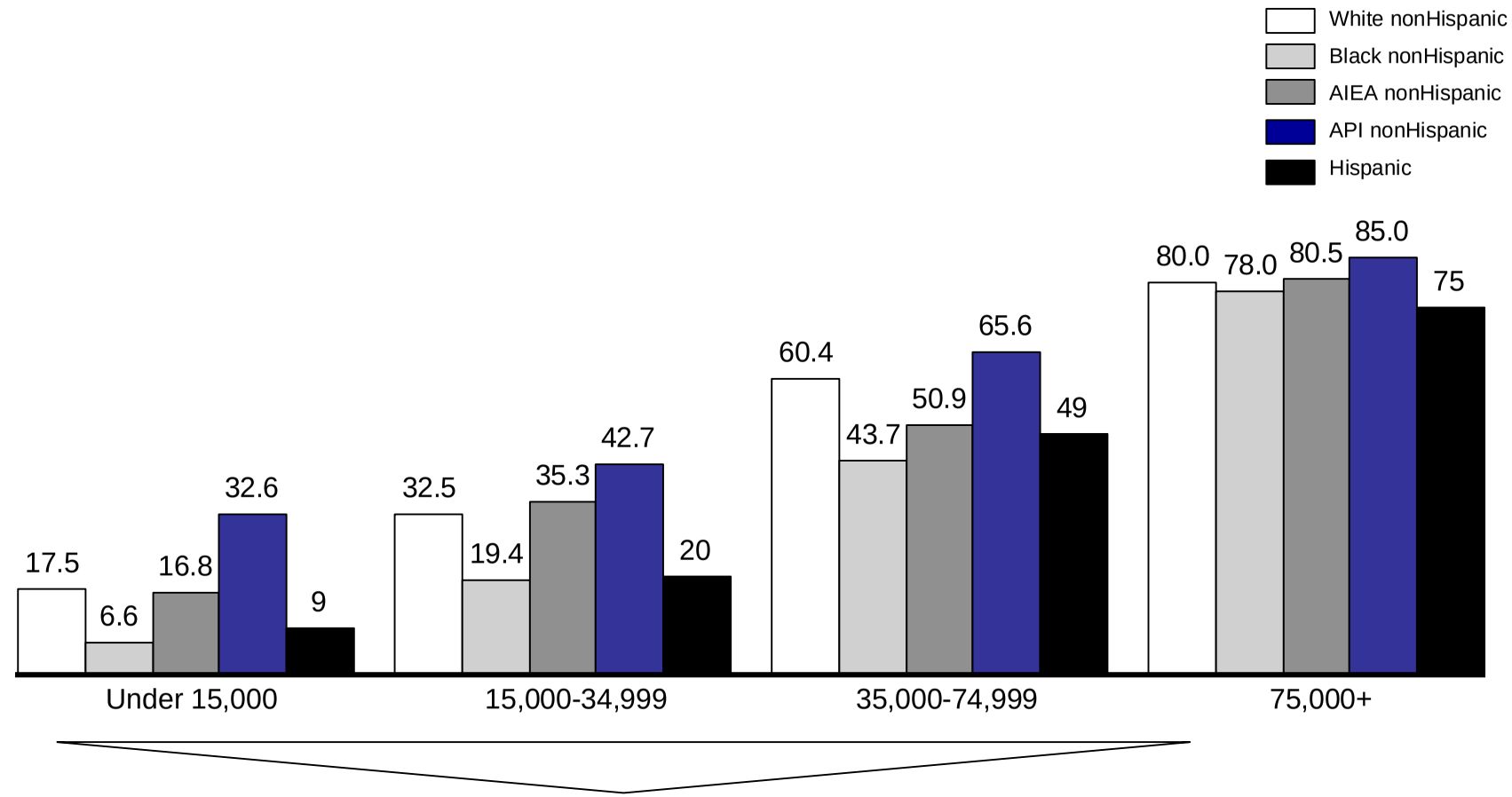
- Household income significantly influences computer penetration
- Geography (e.g., urban vs. rural) has little influence on computer penetration

Source: NTIA; U.S. Census Bureau; U.S. Department of Commerce

COMPUTER PENETRATION IN THE U.S.: BY INCOME AND RACE/ORIGIN

1998 DATA

Percent



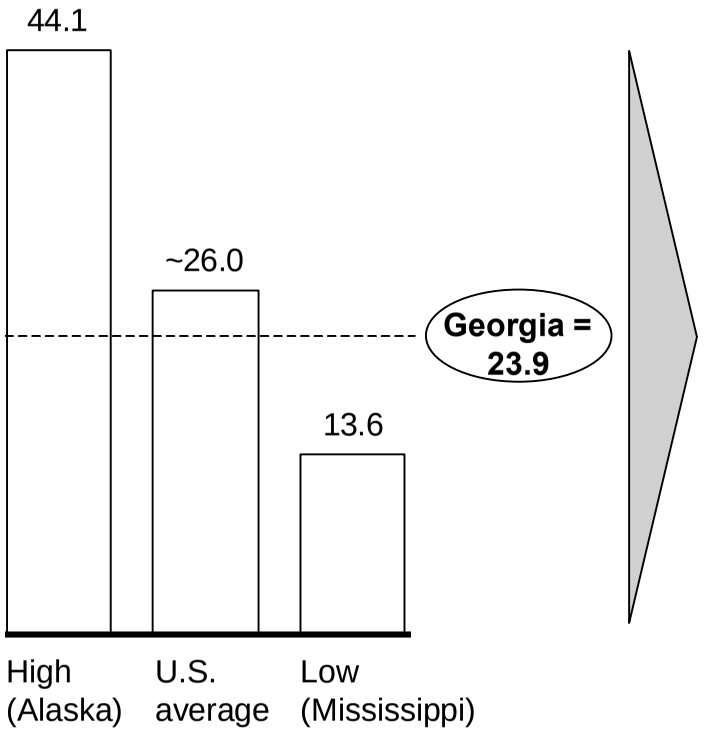
Within income brands, race/origin significantly influences household computer penetration, especially in the lower income bands

Source: NTIA; U.S. Census Bureau; U.S. Department of Commerce

HOUSEHOLD INTERNET ACCESS IN THE U.S.

1998 DATA

Percent

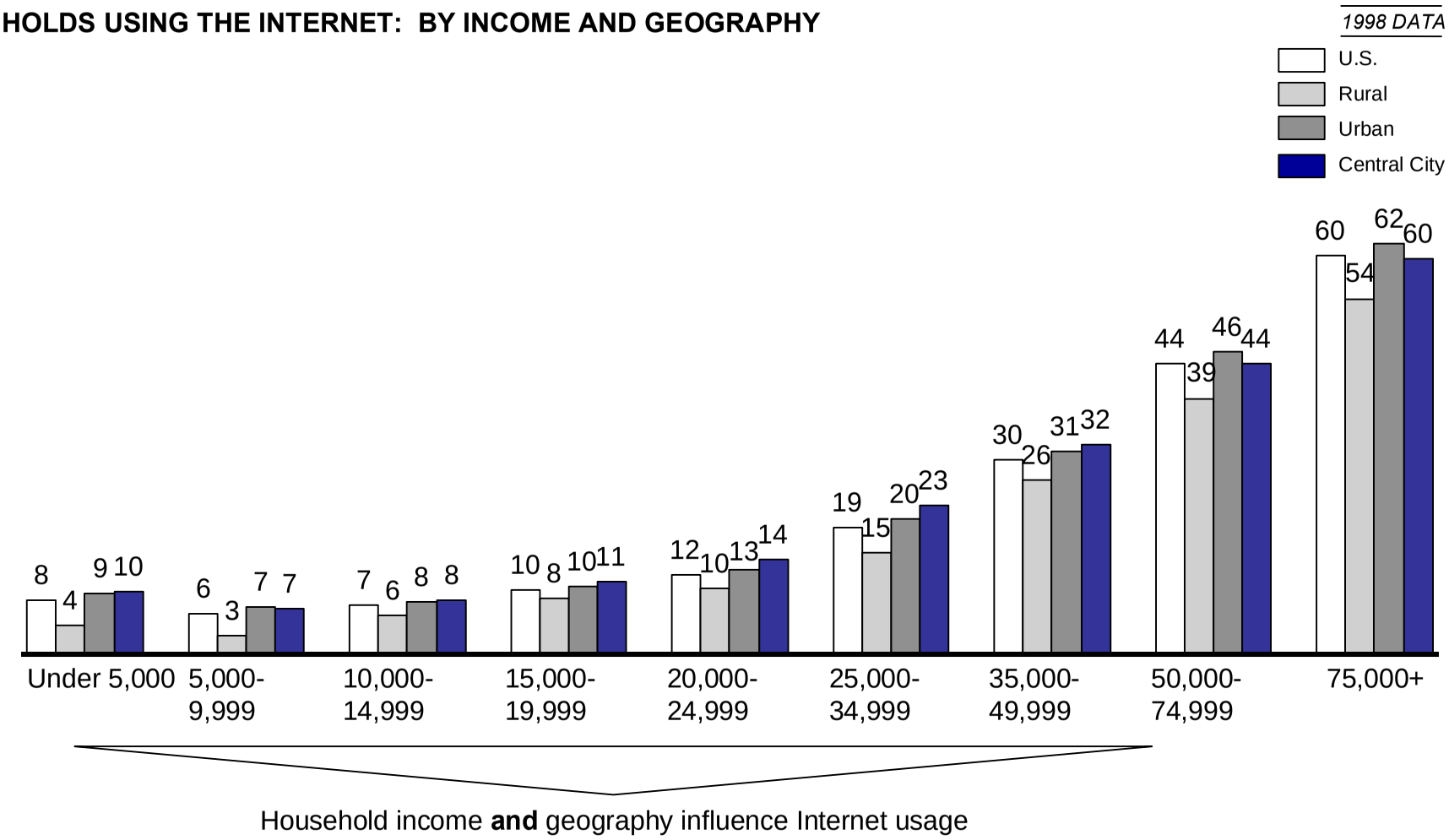


- Georgia, and the Southern U.S. generally has below average Internet usage
- ~70% of Georgia computer owners access the Internet

Source: NTIA; U.S. Census Bureau; U.S. Department of Commerce

HOUSEHOLDS USING THE INTERNET: BY INCOME AND GEOGRAPHY

Percent

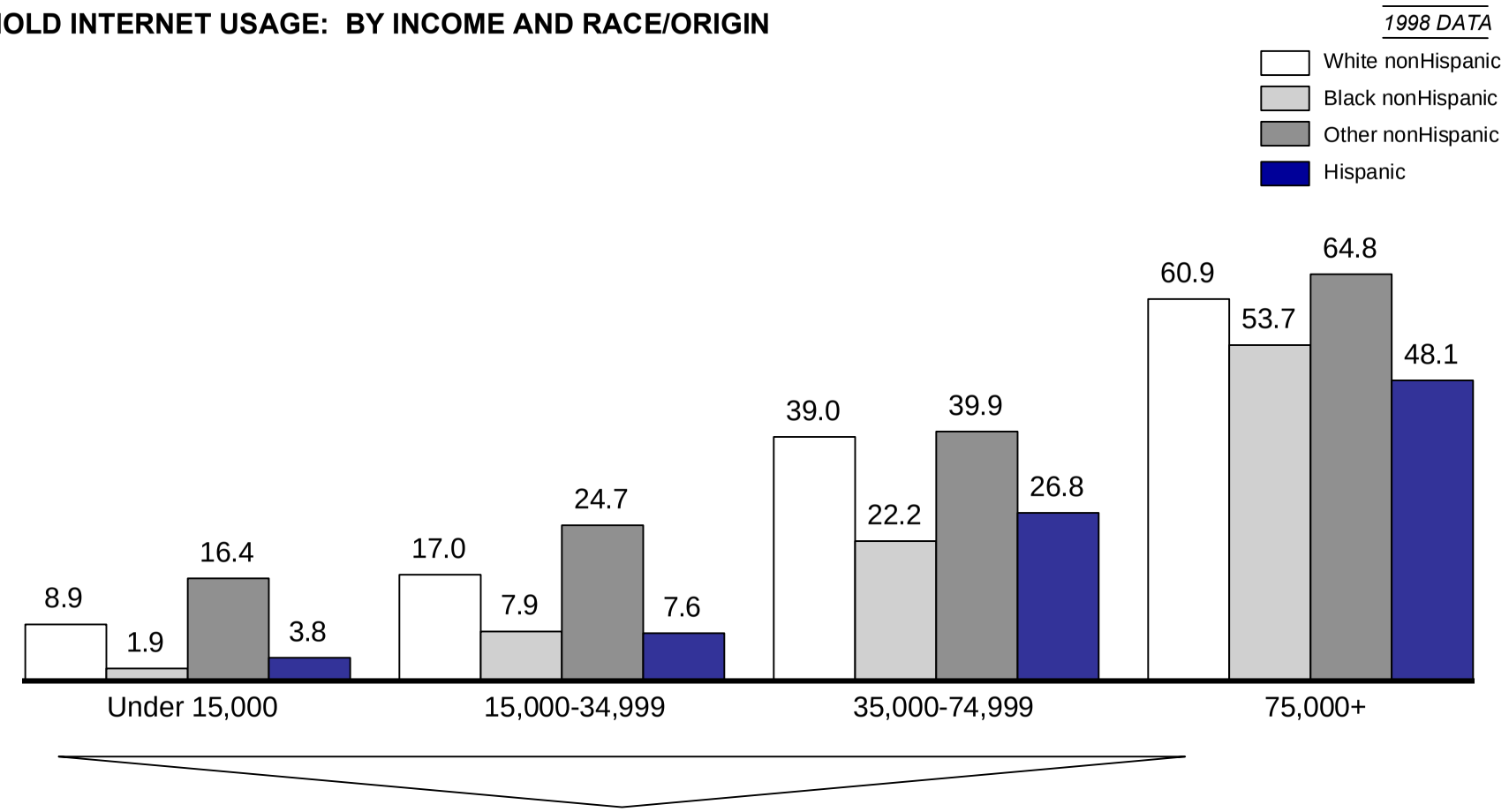


Source: NTIA; U.S. Census Bureau; U.S. Department of Commerce

HOUSEHOLD INTERNET USAGE: BY INCOME AND RACE/ORIGIN

1998 DATA

Percent



As with computer ownership, race/origin influences Internet usage even after income levels are taken into account

Source: NTIA; U.S. Census Bureau; U.S. Department of Commerce

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OVERVIEW OF GEORGIA'S ECONOMIES: BUSINESS STATISTICS

Economy	**Number of counties**	**Number of establishments**	**Number of employees**	**Unemployment rate** Percent	**Poverty rate** Percent
Rapidly developing	8	40,000	600,000	2.3-3.0	3.5-12.8
Developing	42	92,700	1,600,000	2.1-7.3	5.9-21
Existing and emerging growth centers	58	39,000	580,000	3.3-9.9	12.9-29.3
Lagging rural	43	9,800	124,000	3.4-14.0	16.5-32.0
Declining rural areas	8	650	6,500	6.8-13.3	25.0-33.9

Poor economic conditions, although prevalent in lagging rural and declining rural areas, exist in all "economies"

Source: Demographics U.S.A., County Edition, 1999; State of Rural Georgia Report

OVERVIEW OF GEORGIA'S "ECONOMIES": BUSINESS STATISTICS (CONTINUED)

1999 DATA

Top 2 sectors

Economy	Number of counties	Number of establishments	Number of employees	Approximate share by industrial type (Percentage of employees) Agricultural services	Mining	Construction	Manufacturing	Transportation and public utilities	Wholesale trade	Retail trade	Financial and real estate	Services
Rapidly developing	8	40,000	600,000	1	–	7	18	5	11	23	6	29
Developing	42	92,700	1,600,000	1	–	5	16	8	7	21	8	35
Existing and emerging growth centers	58	39,000	580,000	1	–	5	26	5	5	23	4	30
Lagging rural	43	9,800	124,000	1	2	4	36	4	4	21	4	22
Declining rural areas	8	650	6,500	12	–	4	32	5	3	17	3	24

Source: Demographics U.S.A., 1999

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GEORGIA'S EDUCATION SECTOR: PUBLIC SCHOOLS

Level	Enrollment – 1996	Institution – 1996	Teachers and instructional staff	Computers available*	Computers on the Internet
Pre K	26,000 (31,000 in 1999)	938	98,000 (1996)	280,000 (1999)	5,000 (dial up) + 166,000 (continuous connections)
K-12	1,400,000	1,798			
2- and 4-year colleges	318,000	116	32,500 (Fall 1995)		

* Includes computers in classrooms, labs, media centers

Source: Georgia Department of Education

DISTRIBUTION OF PUBLIC SCHOOLS AND STUDENTS BY TYPE OF LOCALE

Percent

	Schools	Students
City	18.8	16.6
Urban fringe	37.7	43.2
Large town	2.9	2.5
Small town	22.3	22.0
Rural	18.3	15.7

Source: State profiles of public elementary and secondary education, 1996-97

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PHONE LINES SUITABLE FOR HIGH SPEED INTERNET ACCESS

ROUGH ESTIMATE

Economy	Percentage of lines suitable for high speed access
Rapidly developing	18
Developing	28
Existing and emerging growth centers	30
Lagging rural	31
Declining rural areas	28

Suitability: Non-DLC, loop length less than 12,000 feet

DIGITAL GEORGIA

The Georgia Telecommunications Technology Policy Study

First Forum -- June 16, 2000
Hosted by Albany State University
Sponsored by BellSouth

8:30 - 8:45: Introductions
Welcome by Senator Michael S. Meyer von Bremen, 12th District
Forum overview by Phil Jacobs, Chairman of the Board, GCATT, and President - Georgia, BellSouth

8:45 - 10:30: Discussions of Telecommunications Technology Needs, Capabilities and Resources, and "Gaps"

10:30 - 10:45: Break

10:45 - 12:30: Discussions of Obstacles, and Policy Recommendations

Key Issues for our Study:

- Government – How can we increase public access to government resources and services and public participation via the Internet?
- Healthcare – How can we increase the availability of health information, services and resources?
- Education – How can we increase the use of computers and the Internet by learners, both in the classroom and at home?
- Business – How can we ensure that existing and new businesses, particularly small businesses and those in rural areas, have access to the telecommunications infrastructure necessary to be successful?
- Citizens – How can we increase the use of the Internet by the general population, particularly those people in low income and rural areas?

12:30 End

Thanks to Georgia Public Broadcasting for videotaping this forum.

GCATT 250 14th Street, NW, Atlanta, GA 30318
phone 404-894-9211, fax 404-894-1445, e-mail msgcenter@gcatt.gatech.edu
www.digitalgeorgia.org

DIGITAL GEORGIA

The Georgia Telecommunications Technology Policy Study

Second Forum -- June 23, 2000
Hosted by North Georgia Technical Institute
Sponsored by ALLTEL

8:30 - 8:45: Introductions
Forum overview by Joe Bankoff, GCATT Board of Directors, and Senior Partner, King & Spalding

8:45 - 10:15: Discussions of Telecommunications Technology Needs, Capabilities and Resources, and "Gaps"

10:15 - 10:30: Break

10:30 - 10:45: Remarks by Senator Carol Jackson, 50th District

10:45 - 12:30: Discussions of Obstacles, and Policy Recommendations

Key Issues for our Study:

- Government – How can we increase public access to government resources and services and public participation via the Internet?
- Healthcare – How can we increase the availability of health information, services and resources?
- Education – How can we increase the use of computers and the Internet by learners, both in the classroom and at home?
- Business – How can we ensure that existing and new businesses, particularly small businesses and those in rural areas, have access to the telecommunications infrastructure necessary to be successful?
- Citizens – How can we increase the use of the Internet by the general population, particularly those people in low income and rural areas?

12:30 End

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DIGITAL GEORGIA

The Georgia Telecommunications Technology Policy Study

Third Forum -- June 30, 2000
Hosted by Georgia Southern University
Sponsored by Bulloch Telephone Cooperative and Frontier Communications

8:30 - 8:45: Introductions
Welcome by Senator Jack Hill, 4th District
Forum overview by Dave Baker, GCATT Board of Directors, and Vice President, EarthLink

8:45 - 10:30: Discussions of Telecommunications Technology Needs, Capabilities and Resources, and "Gaps"

10:30 - 10:45: Break

10:45 - 12:30: Discussions of Obstacles, and Policy Recommendations

Key Issues for our Study:

- Government – How can we increase public access to government resources and services and public participation via the Internet?
- Healthcare – How can we increase the availability of health information, services and resources?
- Education – How can we increase the use of computers and the Internet by learners, both in the classroom and at home?
- Business – How can we ensure that existing and new businesses, particularly small businesses and those in rural areas, have access to the telecommunications infrastructure necessary to be successful?
- Citizens – How can we increase the use of the Internet by the general population, particularly those people in low income and rural areas?

12:30 End

Thanks to Georgia Public Broadcasting for videotaping this forum.

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www.digitalgeorgia.org

DIGITAL GEORGIA

The Georgia Telecommunications Technology Policy Study

Participant Questionnaire
Location: Statesboro
Your name and organization (optional):_____

	Response
1. Telecommunications technology needs: Absent existing constraints, how would you like to leverage computing and telecommunications technology? For example, • Use the internet at home to complete school assignments • Interconnect corporate data networks regardless of geographic location	• _____ _____ _____ _____ • _____ _____ _____ _____ • _____ _____ _____ _____
2. Capability and resource "gaps": What existing constraints limit your ability to leverage computing and telecommunications technology as you would like? For example, • Insufficient understanding of how to use computers and the internet • Insufficient access to high-capacity networks	• _____ _____ _____ _____ • _____ _____ _____ _____ • _____ _____ _____ _____

Send your responses to GCATT 250 14th Street, NW, Atlanta, GA 30318
phone 404-894-9211, fax 404-894-1445, e-mail msgcenter@gcatt.gatech.edu
www.digitalgeorgia.org

	Response
3. Root causes: In your opinion, what are the underlying causes of these capability/resource "gaps"? For example, • Inadequate computer training in school • Laying fiber to all locations is economically unattractive to the service provider	• _____ _____ _____ _____ • _____ _____ _____ _____ • _____ _____ _____ _____
4. Policy recommendations: What suggestions do you have for the Governor to address these root causes? For example, • Assist community organizations in their efforts to provide computer training • Expand telecommunications assistance programs to include some level of business support	• _____ _____ _____ _____ • _____ _____ _____ _____ • _____ _____ _____ _____
5. Other: What other comments or suggestions would you make regarding the use of technology in your community?	• _____ _____ _____ _____ • _____ _____ _____ _____