



The  
*Sam  
Nunn*

**Bank of America**  
POLICY FORUM

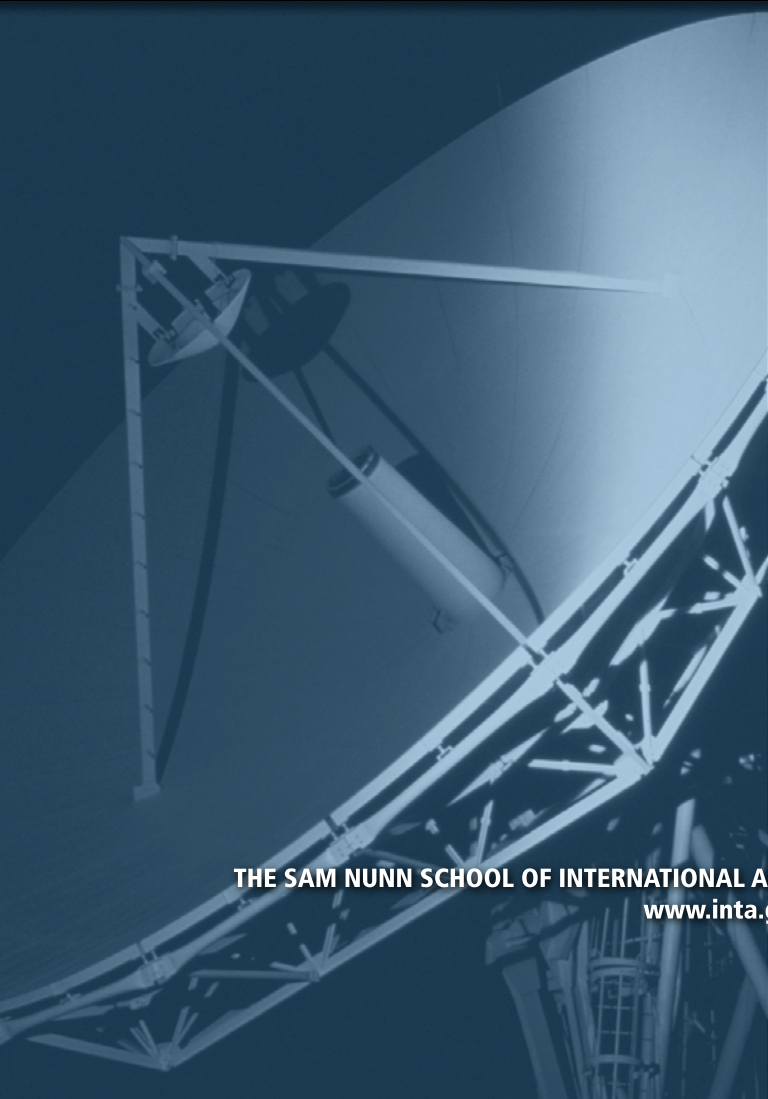


## **Executive Summary**

# **The Impact of Information and Communications Technologies on**

**Economic Development,  
National Competitiveness,  
and Social Justice**

**October 2006**





## Executive Summary

Modern information and communications technologies (ICTs) have revolutionized work and play, enhancing many aspects of economic welfare and social justice. ICTs hold great promise for economic development, the empowerment of women and marginalized groups, and the reconciliation of post-conflict societies, but while these technologies can bridge social divides, they can also be used to create and reinforce them. The two-edged sword of global communication requires serious investigation if we intend to mitigate ICTs' harmful effects and maximize their positive potential.

In 2006, the Sam Nunn Policy Forum began a multi-year effort to study the tension between the promise and peril of global ICTs in the fields of economic development and health, national economic strength, and social justice. This year's Sam Nunn Policy Forum panelists discussed a variety of pressing ICT issues, from the use of ICTs in India to benefit the poor to the dissemination of racist and anti-Semitic propaganda on the Internet. Morning Forum panelists discussed ICT issues affecting economic development, equity, and national competitiveness, while afternoon panelists discussed the opportunities and limits of gender empowerment through ICTs, the impact of race and poverty on digital access, and the utilization of the Internet by hate groups.

This document provides excerpts from the 2006 Forum panelists and keynoters, whose investigations into global communication continue the Forum's mission to foster informed discussion of critical issues confronting the United States in the twenty-first century. By sharing the insights and findings produced at the Forum through documents such as this, the Forum connects academic and policymaking communities, and encourages effective and creative responses to the critical challenges facing the nation.

# 2006 Sam Nunn Bank of America Policy Forum

The Impact of Information and Communications Technologies on Economic Development, National Competitiveness, and Social Justice

## Morning Session

- 7:30–8:30** Registration and Continental Breakfast
- 8:30–9:00** Introductions and Welcoming Remarks  
–Dr. Sue Rosser, Dean, Ivan Allen College, Georgia Tech  
–Senator Sam Nunn, Distinguished Professor, The Sam Nunn School of International Affairs, Georgia Tech
- 9:00–9:50** Keynote Address: “ICTs and Development: Promise and Perils” (“Two Visions of the Future: Global ICT’s Potential and Potential Costs”)  
Mr. Charles Kenny, Senior Economist, the World Bank  
Keynote Commentator: Dr. Ernest J. Wilson III, Professor, University of Maryland
- 9:50–10:10** *Break—Refreshments, Second Floor Breakout Area*  
  
*Displays, First Floor Lobby Area*
- 10:10–12:00** Panel Discussion: Economic Growth and Equity  
–Dr. Michael L. Best, Assistant Professor, The Sam Nunn School of International Affairs, Georgia Tech  
–Dr. Silas Lwakabamba, Rector, Kigali University of Science and Technology  
–Dr. Karen Mossberger, Associate Professor, University of Illinois, Chicago  
–Mr. Chetan Sharma, Founder and CEO, Datamation
- 12:15–2:00** Lunch with Keynote Speaker—Biltmore Hotel (complimentary to attendees)  
Luncheon Address: “America’s Economic Future in an Age of Global ICT Networks”  
Ambassador David A. Gross, U.S. Coordinator for International Communications and Information Policy  
  
*Displays, First Floor Lobby Area*

## Afternoon Session

- 2:00-3:30** Panel Discussion: Social Divides and Bridges: The Role of ICTs  
–Mr. Bart Cohen, Assistant Director, Southeast Region, Atlanta Regional Office, Anti-Defamation League  
–Dr. Nancy J. Hafkin, Director, Knowledge Working  
–Dr. Sylvia Maier, Assistant Professor, The Sam Nunn School of International Affairs, Georgia Tech  
–Dr. Karen Mossberger, Associate Professor, University of Illinois, Chicago  
–Dr. Joseph A. Reid, Senior Advisor, Information Technology Services Office, Centers for Disease Control
- 3:30–4:15** Afternoon Keynote Address: “Freedom to Search: The OpenNet Initiative”  
Mr. Colin M. Maclay, Managing Director, Berkman Center for Internet and Society, Harvard Law School
- 4:15-4:30** Program Wrap-up: Senator Sam Nunn



## Morning Session



Dean Sue Rosser

### Dean Sue Rosser

Welcome to the 2006 Sam Nunn Bank of America Policy Forum. The Policy Forum is a biennial public meeting that brings together noted academic, private sector, and government experts on technology,

public policy, and international affairs to address an issue of immediate importance to the nation and to the world. Senator Nunn has reminded us that technology and science are outrunning the worlds of law, religion, human relations, government, and international relations. He has urged us to begin to build bridges between the world of science and the world of human relations, bridges that can give shape and purpose to our technology and breathe heart and soul into our knowledge. With that as our charge, this year's Forum considers the challenges and opportunities presented by Information and Communications Technologies, or ICTs for short. It is now my pleasure to introduce former Senator Sam Nunn.



Sam Nunn

### Senator Nunn

Let me begin by expressing my thanks to Bank of America, which has provided a generous endowment that has underwritten all of the Policy Forums since their

inception in 1997. I am also grateful to the John D. and Katherine T. MacArthur Foundation for providing additional support for today's Forum, and for supporting research on the impact of ICTs through a significant grant to The Sam Nunn School of International Affairs at Georgia Tech.

The topic for today's Forum is *The Impact of Information and Communications Technologies on Economic Development, National Competitiveness, and Social Justice*. This is, of course, a very broad and rich topic, and today's Forum constitutes the beginning of a multi-year research and analysis effort to examine both the positive aspects of ICTs, which have been substantial, and the negative effects that ICTs may bring to some countries, peoples, and genders, and to examine ways in which these obstacles may be mitigated or overcome. Over the next several years, the Sam Nunn School will convene workshops, meetings, and possibly another Forum to continue to address this important topic.

Thomas Friedman, in his latest book, *The World Is Flat*, describes how the information revolution has leveled the playing field for millions of workers in distant lands, especially in India and China. China's GDP is now the world's fastest growing, and some have predicted that its economy will overtake ours within the next twenty years. Today, your information call to 411 will likely be answered by a worker in India who will answer your query in impeccable English. Today, your tax preparer is probably sending your tax data to someone in Bangladesh, who will fill in your raw data in the proper blanks, thus freeing your tax preparer to focus his time on issues of tax law affecting your return. In the same way, computer software development is now a 24/7 effort. As the sun sets in Redmond, Washington, development tasks will be sent to an overseas firm where the sun is just rising. Later, they will pass the work on to another country where the sun is rising, before it returns to Redmond as the sun comes up there.

We take for granted that ICTs have produced major benefits in the developed world, and enhanced many aspects of economic welfare and social justice, and they have. We have devoted far less

attention to examining the costs, human and economic, of lack of access to ICTs in many parts of the developing world, and to exploring possible ways to mitigate or eliminate those adverse effects, and reduce the so-called “digital divide” that separates rich from poor countries. For example, last evening many of us saw a briefing called *The Seven Revolutions*, presented by the Center for Strategic and International Studies, a think tank in Washington, D.C. This briefing is a forecast of the potential effects of seven critical factors that will affect our world over the next twenty years. Consider just the following three factors from that briefing. One is population growth—the world adds a population equal to that of Mexico every year; moreover some 95 percent of these newborns are born in the developing world, not the developed countries. The second factor is resource scarcity—shortages of clean water are already a constraint on development and may lead to conflicts over access to water resources. Moreover, we have seen scarcities in oil and many other commodities. The third factor is new technologies, where many technologies are “dual-use,” that is, they can be used to improve the quality of life, but they can also be used to cause great misery. These illustrate both the promise and peril of advances in science and technology.

The existence of gaps between the “haves” and the “have-nots” are exposed by the widening availability of ICTs across much of the developing world. The poor can now begin to see the way the rich live, and they are unhappy about their poverty. Those who live under dictatorships can now see how free peoples prosper. And those in poor countries who are afflicted by endemic diseases that the rich countries have already cured or eradicated want to receive those cures as well, but often cannot afford them.

In addition to disclosing these gaps, ICTs can also offer some potential solutions. Telemedicine is one possibility for delivering better healthcare. Access to the Internet allows poor women in Bangladesh to sell crafts worldwide. But much more needs to be done to identify ways of closing the gaps in the digital divide. We will hear more about ICTs’ perils and possibilities in the course of today’s Forum.

*William J. Long, chair of the Sam Nunn School, introduced the keynote speaker, Mr. Charles Kenny, senior economist, the World Bank.*



*Mr. Charles Kenny*

**Charles Kenny:**  
**“ICTs and Development: Promise and Perils” (“Two Visions of the Future: Global ICT’s Potential and Potential Costs”)**

There are many studies about ICTs, the vast majority of which

show that, in general, countries that increase their stocks of ICTs per capita tend to grow faster than countries that do not. This also applies, in general, to particular regions, cities, villages, and so on. In general, ICTs are more important to developing countries than in the developed world. All of these studies present results at the macroeconomic level.

However, there are also many microeconomic success stories. One of the classics is the combination of micro-credit and mobile phone ownership among women in Bangladesh, which allows these women to sell access time to villagers without phones. This innovation has led to these women earning the equivalent of \$700 U.S. per year, far above the average annual wage.

In China, we can compare the results among villages that do receive mobile coverage and similar villages that do not. It is clear that as phones arrive, growth follows, relative to other villages without phones. This effect can even be seen in some fairly rough places. In Afghanistan, as a result of significant private investment, mobile telephony now reaches about half of the population (up from zero in 2000), and this telecom sector now employs some 20,000 Afghans.

The speed with which ICTs are spreading around the globe is incredible. It took over 100 years for the fixed landline telephone to reach 10 percent of global households, and over 40 years for TV to do

the same. PCs, mobile phones, and Internet access are technologies that all have been adopted much more rapidly, within 10 to 15 years.

Moreover, the mobile telephone has spread much more rapidly in the developing world than in the developed world. China now has more mobile phones than any other country, and, worldwide, about three billion people (or roughly half of the world's population) now have access to a mobile phone, and mobile service areas now cover about 70 percent of the world's population.

In high-income countries, about one-third of the population is a regular user of the Internet; the figures are much lower for middle-income countries, and lower still for low-income countries. This is one of the "gaps" people point to. This is not surprising; Internet usage is a consumption good, and poor people usually consume less of such goods than rich ones. However, if we look at this measure in terms of how much usage poor countries make of the Internet, we see a very different picture. In terms of users of the Internet per million dollars of GDP, people in low-income countries are well ahead of people in high-income countries. And people in middle-income countries have even higher usage.

However, we need to be realistic about the extent to which ICTs drive growth rates. One of the most detailed studies of India's GDP finds that the ICT industries and the investment by corporations in ICT technologies appears to be responsible for about 0.2 percentage points of the roughly 6 to 7 percent annual growth in GDP. While every tenth of a percent of growth is important, it is clear that ICTs won't be a "magic bullet" to propel poor countries to the top. It will continue to be an important tool to promote growth in the developing world, but many other factors are needed as well. And, as we all know, corruption, bad governance, poor or non-existent judicial and educational systems, and lack of infrastructures can easily offset the beneficial effects of ICTs. For example, a program to computerize land titles of farmers in rural India has greatly reduced the time required to get or transfer a title from weeks to an hour or so, and has also greatly reduced the need to bribe government officials. Although this sounds like a roaring success, it took over 10 years to implement this ICT program.

*William J. Long introduced Dr. Ernest J. Wilson III, professor, University of Maryland, to comment on Mr. Kenny's presentation.*

### **Dr. Ernest J. Wilson III**

Mr. Kenny is somewhat controversial within the development community, since he tends to suggest that "the emperor may not



*Dr. Ernest J. Wilson III*

be fully clothed." He is careful to point out that technology alone is not necessarily a do-all and end-all; that behind the technology, institutions matter, historical legacies matter. I want to emphasize this by asking three "what" questions. The first is: "What is the digital divide, what is

the information revolution all about?" The second is: "So what? Why should I care?" The third is: "If all these things are important, what do we need to do next?"

Access is a critical issue—not just physical access to a landline or a cell tower, which many in the developing world already have, but financial access as well. Even if one has physical access and financial access, one must have cognitive access. People need to know how to use the new technologies. Finally, one needs content access—if the Web has nothing of interest, that person is unlikely to access the Internet. All of these considerations need to be examined by practitioners and researchers.

ICT revenues are expected to grow to a three-trillion-dollar-a-year level worldwide before the next decade, with about one-third of that market in the developing world. Will we continue to be able to expand our share of that market, or will countries like China and India come to dominate this segment? What would that mean

for American scientists and engineers in these fields? What would it mean for maintaining or improving information security? What would it mean for defending us from terrorism?

One thing is clear—we need many more interactions between the science and engineering communities and the public and foreign policy communities, and we need to do this not just within the U.S., but in many foreign lands as well.

## Panel Discussion: Economic Growth and Equity

### Dr. Karen Mossberger

Associate Professor, University of Illinois, Chicago

### Mr. Chetan Sharma

Founder and CEO, Datamation

### Dr. Silas Lwakabamba

Rector, Kigali University of Science and Technology

### Dr. Michael L. Best

Moderator, Assistant Professor, The Sam Nunn School of International Affairs, Georgia Tech

### Dr. Karen Mossberger

I want to discuss what my colleagues and I refer to as “digital citizenship.” There are two questions I want to address: “Who uses the Internet regularly?” and “What difference does it make?”

Even in this country, there are considerable disparities in Internet usage. Those Americans who are less likely to have computers or be online share one or more of the following characteristics: lower income, less educated, African-American, Latino, older, and/or lacking technical skills and computer literacy. Women are also less frequent users of the Internet.

How do these disparities affect prosperity and economic advancement? Information technology (IT) is one major factor in

the growth of American productivity since the 1990s. Future growth and investment will be in the “old economy” sectors as they add IT. Using IT effectively changes jobs and work practices, and demands higher skill levels.

From surveys, we know that more than half of Internet users also use the Internet at work, which appears to be beneficial even for those in the “disadvantaged” categories above. And from our research, we conclude that Internet use at work produces greater income increases for less educated workers than for college and graduate-degree workers. So IT holds the potential to lift poorly educated workers to higher-paying jobs. Our study also found that Internet use at work matters even more for raising the incomes of minority workers.

### Mr. Chetan Sharma

I want to discuss whether ICTs can reduce poverty and under-development in India. Here is the situation today. Some 350 to 400 million people are progressing, but that means that some 700 to 800 million are excluded from the growth process. Moreover, more than 40 percent of India’s population is illiterate. Even if the Indian economy were to grow at nine or ten percent per year, this would not be enough to bridge the disparities and eradicate poverty. The official Indian government statistics report the partial or full unemployment rate at over 35 percent, largely due to non-competitive industrial and agricultural sectors.

Do ICTs have the potential to offset these limitations over time? Over the next five years, it is estimated that 4.5 to 5 million new jobs in the ICT sector will be created, and that another 25 million people will be employed as indirect beneficiaries of this ICT growth. Most of this employment, however, will result from well-educated Indians meeting offshore servicing needs. Very little effort has been devoted to using ICTs to help improve the lot of the poor in India.

Through both the Datamation Foundation and Datamation Consultants, we are working to deliver to major corporations high-quality, responsive, and cost-effective ICT services, which are

processed by a marginalized and deprived workforce in India. Our profits are mostly plowed back into training and improvements for our workforce, to create economic opportunities for our poor.

We have focused on both Indian and international markets, and we have seen sustained growth over the past several years. Our workers provide a wide range of services: document management, scanning and imaging, data conversion and data-entry, applications programming, and E-services.

Currently, we employ over 4,400 full-time staff operating from 30 locations. We have larger offices in major Indian cities to provide services to local Indian clients, while most international projects are serviced from non-metro locations, to reduce our costs and increase profitability. Our client retention rate is about 90 percent, a testimonial to the quality of our work. Some 85 percent of our workforce is comprised of women and marginalized people, many of whom are physically handicapped. We expect to reach revenue of U.S. \$50 million by 2008 to 2009, and to employ about 8,000 workers.

### **Dr. Silas Lwakabamba**

Rwanda is a small country, about the size of Maryland, in the heart of Africa, with a population of 8.3 million, and gross domestic product (GDP) of about two billion dollars (U.S.). Agriculture provides 47 percent of this GDP, while employing 91 percent of the population. Industry provides 18 percent of GDP, and services provide 35 percent, while employing only nine percent of the population in both sectors. Thus, Rwanda's growth of GDP could be increased rapidly if more of the population were able to contribute to these two sectors rather than remaining in agriculture. To achieve this, we must rely on ICTs as the backbone of such a transformation.

To accomplish this, Rwanda has developed the National Information and Communication Infrastructure (NICI) plan, which is to be implemented in four phases, through the year 2020. Phase one, the development phase, ended in 2005, phase two (NICI-II) will extend from 2006 to 2010, and the third and fourth phases will carry the plan forward to 2020. The Government's main priority in phase two will be human resource development.

Rwanda faces many problems in human resource development. One is education; of those who have attended schools, 88 percent have a primary education (or less), only 11 percent have a secondary level, and only one percent achieve higher levels. Of the teachers in the system, at the primary level, 81 percent of teachers are qualified, but this falls to only 52 percent in secondary schools. Rwanda also has 15 institutions of higher education, but these institutions have only 151 faculty with PhD degrees, and 341 with master's degrees. Textbooks are insufficient at all levels, and so are many laboratories.

Among the initiatives under way to improve education are: distance learning courses for teachers, telemedicine at King Faisal hospitals, teacher training seminars in ICTs, and 4,000 PCs to secondary schools, as well as the development of fiber optic links to create a Higher Learning Backbone. In addition, the World Bank is supporting an E-Rwanda project to use ICTs to improve the efficiency and effectiveness of Government operations, as well as to improve service delivery and provide information systems in rural areas. Part of this effort will be to develop a fiber optic network to provide country-wide connectivity.

To sum up, Rwanda faces many challenges: limited human resources, a poor ICT infrastructure, global inequities in Internet access and pricing, weak regulatory policies, broadband connectivity that is both rare and overpriced, and an internal digital divide due to poor rural connectivity. In addition, English is the language of the Internet, which is an obstacle for those who are not literate in that language.

However, our vision for the year 2020, if achieved, will mark a transition to an ICT-based knowledge economy.

### **Dr. Michael L. Best**

I am going to try to provide an overview that will integrate much of what the previous speakers discussed. On the one hand, we can see the extraordinary promise for places like Rwanda and much of India to achieve economic development through a transition from subsistence agriculture to the use of knowledge-based systems. On the other hand, there are many obstacles and deep divides that must



be overcome for this promise to be fulfilled. In addition, ICTs can also allow malevolent people to inflict great harm on others. Thus, our task is to understand how to purposefully move countries and peoples toward that utopian result, while protecting against the cyber-pessimistic outcomes, recognizing the deep digital divides that exist between North and South, between rich and poor, between male and female, between old and young, and among religions, communities, races, and languages.

In my judgment, these are the critical questions to be answered, and on which we are working together with many colleagues at other institutions:

- What are the links between the Internet and social and economic development in low-income countries?
- What are the main challenges in the sustainability of village information services?
- How can we ensure equity in access and empowerment and reduce risks?
- How does one design appropriate information technologies for under-represented communities?

USAID has been supporting the work of several students here at Georgia Tech who have been working on real-world problems. For example, three students spent their semester break in Rwanda developing a communications network to link 20 rural Rwandan coffee cooperatives to allow them to sell their beans on world markets. As a result, you can now buy Rwandan coffee at your local Starbucks.

We have also been analyzing the spread of the Internet via wireless kiosks in rural Indian villages not served by landline telephones. We have looked at about 100 kiosks, all locally owned and operated, in about 50 villages, ranging in size from 200 to about 1,500 households. We have developed surrogate measures for kiosk usage as well as some proxy measures of revenues, since real revenues in India—and many other places—are often significantly under-reported.

We found, not surprisingly, that usage increases with the size of the village in which the kiosk is located, and with the facility managed by the owner, rather than by a hired operator. Usage also increased if the owner-operator was better educated and was computer literate. We also found that Muslim communities had lower overall usage rates. On the other hand, neither the gender, age, nor caste of the owner was statistically significant for usage and revenue, and more importantly, the total income of the “service area” was also not statistically significant. From this, we conclude that the Internet kiosks are not serving merely the relatively wealthy or elites, but also providing useful services to the relatively poor.

Finally, we are now in the process of conducting a survey of some 35 owner-operator kiosks, to try to better understand what worked and what failed. We believe some of the key factors include the source and amount of initial funding, the existence of local support networks, the range of services on offer, and being the first kiosk in an area, rather than a later one.

From this body of work, we draw some tentative lessons for ICTs intended to promote economic development:

- collaborative local design is central;
- human aspects are more important than engineering aspects;
- public policies really matter;
- the “unit of analysis” is simultaneously the “village” and the “nation-state”;
- standard PC interfaces and desktop designs are flawed for most purposes;
- entrepreneurial skills and capabilities are most important; and,
- monitoring, assessment, and evaluation are keys to success (especially as hype and over-statement is common).

## Luncheon Address: "America's Economic Future in an Age of Global ICT Networks"



Ambassador David A. Gross

### Ambassador David A. Gross

*U.S. Coordinator for  
International Com-  
munications and  
Information Policy*

I am delighted to be here at Georgia Tech as our colleges and universities, together with private sector businesses, are the

engines for America's technological progress and leadership. On my frequent travels abroad, I am invariably approached by people from foreign colleges and universities seeking to understand how they might better emulate the ways in which American colleges and universities build bridges between advances in science and technology and the policy world. In bringing together technical experts, scientists, and policymakers today, we will be sharing knowledge about how those in the developing world can do a better job in their countries.

Technology is advancing rapidly, more rapidly than most Americans really understand. For example, there are about two billion cell phones in the world today, a far faster expansion than anyone forecast. In 1980, a famous McKinsey forecast suggested there might be as many as 900,000 cell phones in the U.S. by the year 2000. Today, China has more cell phones in use than the U.S. and Canada combined. The Internet now has about one billion connected individuals, but, as we heard this morning, there are even more users in the developing world, as a result of the rental by others of connect time at kiosks.

ICTs have begun to revolutionize the prospects for more rapid development across the developing world, by increasing "connectedness" between remote buyers and sellers, and by allowing people to dream of brighter futures than were available even a generation ago. Most do not recognize the extent to which the costs of "connectedness" have come down. In 1956, the cost of providing a single international circuit through a submarine cable was one million dollars. Today, the cost of adding a single Internet circuit is about three hundred dollars, or a reduction of more than 99 percent. This has allowed the price of "connectedness" to drop precipitously, and allows extended families to stay connected regardless of location.

This growth in connectedness has political implications as well. During the crisis at Tiananmen Square, TV provided some insight into some of the events to the world, until transmission ceased. Today, there are over 800 million Chinese cell phones in use, many with camera and Internet capabilities. The social impact of this proliferation is especially noticeable in the developing world; signs for cell phone and Internet kiosks are everywhere, and this is contributing to both social cohesion and educational opportunities. This is not to suggest there are no problems; in fact, progress can best proceed under an "enabling" environment, one in which corruption is minimized, the rule of law is maintained, transparency prevails, and competition is welcomed.

Corruption is one of the serious problems in much of the world, but even here there is hope. In Romania, for example, the government has moved to conduct most of its procurement over the Internet, which increases transparency and reduces collusion and corruption. I am also heartened by the declarations at both the 2003 and 2005 World Summits, which contained explicit recognition of the need for greater transparency, competition, and the rule of law within all of the participating countries.

In the 1970s, there were probably no more than 30 democracies in the world. Those democracies faced grave threats from totalitarian states. Senator Nunn did much to deal with these threats during his years in the Senate, relying in large measure on the ability of the democracies to develop innovative technologies for both

defense and economic growth. Today, one generation later, there are some 122 democracies in the world—a growth rate unlike any other time in human history. This enormous growth of freedom owes much to advances in technology, most certainly including ICTs.

There is a vast increase in content available on the Internet, most of it in English. But content in other languages is increasing rapidly. The People’s Republic of China boasts that Chinese will be the dominant Internet language within two decades. I personally do not have a problem with this—content is not a zero-sum game. One more page in Chinese does not mean one less page in English. And the more content in more languages, the more freedom and democracy are likely to flourish.

Finally, I return to my opening theme. It is not what government is doing that really matters; the real drivers of economic growth, of freedom, and of democracy, are to be found in what the private sector and our colleges and universities are doing to meld technological advances with sound policy options, to help us with the growth of freedom and democracy.

Thank you very much.

## Afternoon Session

### Panel Discussion:

#### Social Divides and Bridges: The Role of ICTs

##### Dr. Karen Mossberger

Associate Professor, University of Illinois, Chicago

##### Dr. Nancy J. Hafkin

Director, Knowledge Working

##### Dr. Joseph A. Reid

Senior Advisor, Information Technology Services Office, Centers for Disease Control (CDC)

##### Mr. Bart Cohen

Assistant Director, Southeast Region, Atlanta Regional Office, Anti-Defamation League

##### Dr. Sylvia Maier

Moderator, Assistant Professor, The Sam Nunn School of International Affairs, Georgia Tech

##### Dr. Sylvia Maier

This afternoon we will focus on the role of ICTs as social bridges and as dividers. This morning’s speakers discussed the considerable promise that ICTs hold for economic development in the global South, especially for historically disadvantaged groups such as women and minorities. However, we must recognize that technologies are not necessarily racial and gender neutral, either in design or in implementation. In fact, if we deploy these technologies without regard for the social and cultural context within which they are expected to function, they may reinforce existing social, ethnic, racial, and gender divides. An awareness of the gender and racial dimension of new technologies is particularly important, as gender and racial biases are notoriously deep-seated and complex. Moreover, the Internet has become a very effective tool for the dissemination of racist and anti-Semitic propaganda, as well as the organizational and recruitment tool for white supremacist groups worldwide.

##### Dr. Karen Mossberger: “Digital Citizenship: The Internet, Society, and Participation”

By “digital citizenship,” we mean the ability to participate in society online, and patterns of exclusion from participation. How we count the participants makes a difference. We define “citizenship” as regular and effective use (essentially daily use and with appropriate skills). We tend to think that “everyone” in America is online, but the true picture is somewhat different. Pew “Internet in American Life” project surveys have been conducted annually since 2000, and show that the number of Americans who use the Internet or send and receive e-mail has risen from 46 percent in 2000 to 68 percent in 2006. On closer examination, it appears that only about 60 percent of those responding affirmatively are actually daily as opposed to occasional users, so the actual percentage of digital citizens is probably only about 40 percent of Americans.

We find that usage is lowest among older people, those with lower incomes, and those with limited educational attainment. We

also find that those with broadband access engage in wider uses of the Internet than those with slower access. In many cases, this stems from limited access within low-income communities, especially those in poor minority communities.

These represent some of the sources of exclusion, but there are also benefits from Internet usage. Those who go online get more of their news online than from newspapers and TV, and are more involved in civic engagement. Most of these users are young, and they are more engaged in civic affairs than the young people who lack such access.

### **Dr. Nancy J. Hafkin: “Why the World Isn’t Flat Enough: Gender Equity and ICTs”**

The title of my talk is a takeoff on Thomas Friedman’s latest book, a starting point for examining why, globally, women are not benefiting as much as men from information technologies, and some possibilities to improve this situation.

Women’s participation in the information society lags behind that of men, and the gender divide is more pronounced in developing countries. But even countries with high rates of women’s access have inequalities in usage. The gender divide and the overall digital divide do NOT move in tandem, and actions are necessary to increase gender participation, as the divide will not necessarily be self-correcting. Those of us who are American or Canadian do not really appreciate the extent of the divide. For example, in a number of Western European countries with high info-system participation rates—France, Germany, Luxemburg, Norway, and the United Kingdom—the participation rates of women resembled those for women in Brazil, Mexico, Zimbabwe, and Tunisia. In Italy, the participation by women in Internet usage matched the rate for women in Kyrgyzstan. Even in countries like Greece and Portugal, high on the list for overall participation, the participation by women is near the bottom, while in less-developed countries like Mongolia and the Philippines where overall participation is low, participation by women is very high. What this brief overview makes plain is that

female participation does not necessarily increase with increasing overall usage of information systems, and, therefore, higher overall participation rates alone will not necessarily correct gender inequalities.

We must note that gender participation data that support the analyses and conclusions about female Internet usage in developing countries cover only a limited set of countries—only South Africa in Africa, only five Latin American countries, no Middle East countries except Israel, and a number of Asian countries—but are strongly weighted toward wealthy countries (not India). Still, the data available clearly reflect a global gender digital divide.

What are some of the obstacles that prevent women from full participation in the information society? These include gendered roles and domestic responsibilities, social norms, education and employment, cultural constraints, class factors, and the confluence of culture and computers. Other factors include the absence of infrastructure where most women live, women have less time to visit public access facilities, and attitudes that information technology is not appropriate for women to learn, access, and use. There are also many educational barriers to women gaining access to information technologies. Finally, there are financial factors that limit women’s ICT usage. Women in general have less disposable income than men worldwide, there are often high communications costs in developing countries, and many developing countries prohibit or prohibitively tax low-cost technologies such as community radio and Voice over Internet communications (VoIP).

Finally, we must mention some of the perils of ICTs for women. These include trafficking, pornography, and violence against women.

### **Dr. Joseph A. Reid: “ICTs and Global Health”**

CDC is both a global and a domestic organization that is critically dependent on ICTs for virtually everything we do. It is critically important in the following areas:

- surveillance data collection, transmission, and analysis;
- clinical methods and pharmaceuticals;

- distance learning for health professionals;
- professional collaborations;
- scientific and medical collaboration (tele-everything);
- emergency and outbreak responses; and,
- health improvement communications.

CDC has staff currently in 53 different countries. The global AIDS project is our largest. We have 183 disease surveillance programs underway today. Our biggest problem is not enough personnel (both medical and public health) on the ground in various regions. Much of our effort is focused on the developing countries, for obvious reasons, and these projects are carried out in collaboration with foreign governments, international organizations, and other U.S. agencies. ICTs are critical in all of these activities.

From our perspective on the interaction between development and health we see the following cycle:

- disease, malnutrition, and injury stimulate a lack of healthy and skilled labor;
- this diminishes foreign investment for manufacturing and service industries;
- which prejudices foreign investment to resource-extractive industries;
- that inhibits social and economic development;
- resulting in individual and national poverty and lack of infrastructure;
- including clinical public health infrastructure;
- which leads to disease, malnutrition, and injury.

Indeed, with the sole example of the hanta virus in the western U.S., all global microbial threats that emerged during the 1990s arose in the developing world. The pace of migration has increased fourfold over the last two decades, greatly increasing the likelihood that diseases can spread from the developing world to the developed in a matter of days or weeks.

What are some of the global health benefits we can expect from ICTs? I believe they include:

- reducing the impact of health worker shortages;
- complementing basic health services;

- providing significant cost reductions;
- improving the effectiveness and timeliness of health services;
- extending the scope of scarce resources and skills;
- providing life-saving information in emergencies;
- providing life-enhancing information anytime;
- supporting global collaborations;
- providing flexible healthcare alternatives; and,
- delivering services to large underserved or remote populations.

Finally, there is another important aspect of ICTs, which has nothing to do with CDC, but which in some pessimistic circumstances may come to be needed. That is when the President releases a statement (which is already pre-recorded) advising all of you that you should not be attending conferences like this. He will advise that a pandemic disease is affecting our country, and that large gatherings of people must be avoided. In this case, businesses must be prepared to survive and operate with employees telecommuting from home. This can only be enabled through massive planning for the use of ICTs, planning that must take place *before* the need arises.

### Mr. Bart Cohen: "Extremists on the Internet"

We tend to think of hate groups in terms of organizations like the Klan, dressed in hooded garments and burning crosses in yards. The truth, however, is that today's hate groups are much more polished. An example is David Duke, who has gone from a hooded Klansman to a candidate for the Senate, a progression made possible through the use of new technologies such as ICTs. Extremists today can use the Internet in a wide variety of ways:

- spreading their message;
- communicating with the like-minded;
- fundraising;
- training and organizing; and,
- intimidating enemies and coordinating efforts.

Today, the Internet can be used to create false Web sites to defame individuals or causes, create hate-based music and computer games, and provide chat rooms for like-minded individuals.



## Afternoon Keynote Address: "Freedom to Search: The OpenNet Initiative"



*Colin M. Maclay*

### Mr. Colin M. Maclay

Managing Director,  
Berkman Center for  
Internet and Society,  
Harvard Law School

We have heard a lot today about the promise and the perils of the Internet. On the "promise" side we have VoIP, worldwide

access to markets, free expression, peer production, and independent and citizen media through blogs. In my view, the last of these may be one of the most important. Bloggers used to be characterized as "journalists sitting on their couches in their underwear." But lately, the media have begun to pick up stories from various blogs, and many professional journalists in both print and TV media have begun their own blogs. Another way of looking at this phenomenon is to recall that, in 2000, more people had illegally downloaded music than voted for President, but today bricks-and-mortar institutions are learning how to profit from the Internet and digital media.

At the same time, there are clear perils in this digital world. Analog institutions of government are seeking to control the content of IP providers through censorship and filtering of content, spam is a constant irritation, and hackers are a serious threat. To deal with these perils will require a combination of research, strategy, and coordination. I have no grand solution to offer today, but rather will try to challenge you to think about the issues of filtering and censorship, and encourage all of us to share ideas and concepts.

As an example of filtering, if you use Google.cn to access "Tiananmen Square" from the People's Republic of China (PRC), you will see pictures of the square as it looks today, filled with flags and smiling people. If you Google it from the U.S. or the West, you will see pictures of tanks and accounts of the horrific events that occurred there when the PRC government attacked the protesters. So, the Internet is in the process of becoming several "Internets" as a result of filtering.

Our partnership to address issues of filtering is called OpenNet (at [www.opennet.net](http://www.opennet.net)). It is a consortium of the University of Toronto, Cambridge University, Oxford University, and Harvard University. We have produced reports on filtering by a number of countries: Bahrain, Burma (Myanmar), China, Iran, Saudi Arabia, Singapore, Tunisia, and the UAE and Yemen; others in progress include Vietnam and Belarus, and others are planned. We also have in process a book that will cover some three dozen countries. Our research is supported by the John D. and Katherine T. MacArthur Foundation.

If you had asked us several years ago about the prospects for a state to block access to selected content, we would have said that was impossible, that there are too many ways around any attempt. However, as the Tiananmen pictures show, blocking may not be perfect, but it can do a pretty good job.

Why do countries seek to filter Internet content? Some do it for e-commerce reasons, such as taxation, copyrights, or VoIP regulation. Most countries try to prevent or limit access to child pornography and violent content. While these motives are ones with which there can be little argument, there are other forms of filtering content that are less clear-cut. There surely are security issues related to cyber-terrorism and hacking that may merit filtering, but the issue is where to draw the line. So it is with adult access to what some would regard as pornographic content, and there are issues related to Internet gambling. In the realm of politics, many countries would seek to limit access by dissidents, and to control independent media. Finally, in the realm of religion, states may wish to block criticism of a state religion, and to limit the activities of anyone seeking conversion of the faithful.

So, there can be legitimate reasons for some degree of governmental filtering of content. However, there are problems with how blocking is to be applied to achieve the filtering; in many cases, this can lead to under- or over-blocking of content. Indeed, there is no reliable way to impose perfect blocking; inevitably, some sites intended to be blocked will be missed, and many sites not intended

to be blocked will in fact be captured. This is particularly likely if the filter blocks all content on an IP provider, as many sites hosted by that IP are likely to be harmless.

In addition to the relatively crude “blocking an IP” approach, there are many other approaches to filtering unwanted content:

- legal/regulatory—libel actions through a state-controlled judiciary, state security, press restrictions;
- industry self-regulation—sometimes encouraged by state actions;
- intimidation or imprisonment by the state;
- state-directed control of filtering products; and,
- self censorship—brought on by fear, arrests, and/or intimidation.

In many countries, there is little transparency as to what sites or activities may be objectionable or any accountability as to who has ordered the blocking, and on what grounds. In general, governments offer no answers to questions like:

- What are the blocking criteria?
- Is there a review process?
- What is the policy on collateral site blocking?
- Is there a grievance mechanism?
- How are users informed that they are attempting to access prohibited content?

Let me give you a brief overview of the results of our completed surveys of blocking and filtering in various countries. Of the seven countries we initially examined, China was by far the most aggressive in limiting access, followed by Myanmar, the UAE, and



Saudi Arabia. Surprisingly, blocking in Iran was modest, and almost non-existent in Bahrain and Singapore.

How have the major U.S. content providers like Microsoft and Google reacted to the increased filtering demands from various countries? Microsoft, after blocking a Chinese blogger's site on an informal request, and receiving much criticism for doing so, has now articulated a new policy on deleting foreign blogs. They will only do so upon receiving a legally binding notice from a government indicating a violation of local law; they will only block the site within the country issuing the order; and they will notify users of the blocking due to government restriction.

Google has also clarified its policy. It will report all required takedowns to the <[www.ChillingEffects.org](http://www.ChillingEffects.org)> clearinghouse, and, for any filtered Web site, they will insert a notice to the requester indicating that content from a requested site, such as [www.google.cn](http://www.google.cn), has been filtered.

Let me also remind you that the Internet is not the only form of ICTs likely to face governmental filtering. As has been discussed extensively today, cell phones in the developing world are proliferating widely, and many are used for text-messaging rather than telephony. Cell phones and instant messaging have already been

credited with influencing elections in both South Korea and the Philippines, so it seems likely that some governments will seek to control this form of communications as well.

In closing, let me just remind everyone that this problem area is an exceedingly complex mix of law, markets, politics, culture, ethics, and technology, and no simple or easy solutions are likely to exist.

## Forum Conclusion

### Senator Nunn

As I indicated at the beginning of the program this morning, this will not be a "one-shot" conference, but rather the beginning of a substantial multi-year effort to develop and articulate policy options to deal with the many challenges that have been identified today. I want to thank all of our participants in today's program for their contributions to and insights about this very complex and challenging problem area. And I want to encourage those in our audience who will want to stay engaged to speak to any of the Sam Nunn School's participants about staying informed.

I also want to thank Bank of America for its continuing support for the biennial Policy Forums, and to thank the John D. and





Catherine T. MacArthur Foundation for its support of today's Policy Forum. And I also want to thank the Forum organizers, the student volunteers, and the many others whose hard work has helped to make this Forum a success.

## Participant Biographies

**Dr. Michael L. Best** is an assistant professor with The Sam Nunn School of International Affairs at Georgia Tech and an adjunct assistant professor with the Institute's College of Computing. In addition, he is a fellow of the Berkman Center for Internet and Society at Harvard University and a research affiliate with the Center for Technology, Policy, and Industrial Development and the Massachusetts Institute of Technology's (MIT) Program for Internet and Telecoms Convergence.

Best is the co-founder and editor-in-chief of *Information Technologies and International Development* published by the MIT Press. He also serves as a frequent consultant to the World Bank, International Telecommunications Union (ITU), and the United States Agency for International Development (USAID). Best holds a PhD from the MIT Media Lab and has served as the director of Media Lab Asia in India and head of the eDevelopment group at the MIT Media Lab.

**Mr. Bart Cohen** has spent his professional career in the areas of research and education, primarily in the non-profit sector. He is currently the assistant director of the Anti-Defamation League's (ADL) Southeast region, which serves Alabama, Georgia, South Carolina, and Tennessee.

At the ADL, Cohen is responsible for monitoring and studying domestic terrorists and extremist groups. He conducts high-level training for local, state, and federal law enforcement officials in the areas of extremism, radical ideology, threat assessment, tattoo and hate symbol identification, and numerology.

Cohen worked as a media resource and research specialist at the University of Vermont and graduated as a John Dewey Scholar in Cultural Anthropology. He is currently a registered mediator for the state of Georgia and, in addition to his work at the ADL, coordinates its Peace By Piece project, an experiential interfaith program for Muslim, Christian, and Jewish youth in Atlanta.

**Ambassador David A. Gross** serves as the U.S. Coordinator for International Communications and Information Policy of the U.S. Department of State. Since joining the Department of State, Ambassador Gross has addressed the United Nations (UN) General Assembly and has led U.S. delegations to many major international telecommunications conferences and is a member of the United Nations' Information and Communications Technologies Task Force. He led the U.S. Government's participation in the preparatory work and served as head of delegation for both phases of the UN's "Heads of State" World Summit on the Information Society in 2003 and 2005. He also has led interagency telecommunications delegations and conducted bilateral discussions with senior representatives from more than sixty countries and provided commercial and policy advocacy on behalf of U.S. companies in markets around the world.

Gross began his career in communications more than twenty years ago after graduating from the University of Pennsylvania (BA in economics) and receiving his law degree from Columbia University.

**Dr. Nancy J. Hafkin** is the director of Knowledge Working, a consultancy on information and international development. She has promoted the development of information and communications in Africa over the course of thirty years. After earning a PhD degree in history from Boston University, she spearheaded the Pan African Development Information System (PADIS) of the United Nations Economic Commission for Africa (ECA) from 1987 until 1997. She then served as team leader for Promoting Information Technology for Development within the Development Information Services Division of ECA from 1997 until 2000, coordinating the African Information Society Initiative (AISI), the African governments' mandate to use information and communications technology to accelerate socio-economic development in Africa.

Hafkin has a long history of working with gender and development issues. In 1976, she co-edited *Women in Africa: Studies in Social and Economic Change*. From 1976 to 1987, she worked as chief of research and publications at the African Centre for Women of ECA. In 2000, the Association for Progressive Communications established an annual Nancy Hafkin Communications Prize competition.



**Mr. Charles Kenny** joined the World Bank in 1996. He is a senior infrastructure economist in the Infrastructure Economics and Finance Department (IEF) of the World Bank, where he concentrates on issues connected to corruption and the political economy of reform.

Prior to his appointment to IEF, Kenny worked in the Global Information and Communications Technology Department of the World Bank and the International Finance Corporation. He managed a number of projects related to telecommunications, posts, and broadcasting policy and investment, including coordination of the bank's information infrastructure activities in Afghanistan and Kenya.

An author of the 1999/2000 *World Development Report* and an analyst in the Development Economics Division of the World Bank, Kenny has published papers and book chapters on several issues, including the role of information and communications technologies in development, the impact of reform in the telecommunication sector, the digital divide, what we know about the causes of economic growth, the link between economic growth and broader development, and the link between economic growth and happiness. He earned a bachelor of arts degree in history from Cambridge University, and a master of arts degree in developmental studies from London University's School of Oriental and African Studies.

**Dr. Silas Lwakabamba** is the founding rector of the Kigali University of Science, Technology and Management. Beginning in 1997, he developed a program to train both engineering and technician personnel, whose scarcity was exacerbated by the 1990-1994 Rwandan civil war and genocide, which depleted the country's human resources.

The chairperson of the International Human Resources Board for the African Virtual University, Lwakabamba is a member of several national, sub-regional, and international boards and committees, including UNESCO's Executive Board. He is particularly proud to have participated in setting up the African Network of Scientific and Technological Institutions under the Executive Board of the United Nations Educational, Scientific, and Cultural Organization (UNESCO), especially the sub-networks on water resources engineering, mechanical production, and energy/power (1976–1986). The current president of the Institution of Engineers of Rwanda, he is chairman of the Board of Directors of the Rwanda Information Technology Authority and a member of various national commissions and steering committees on economic affairs, information and communication technology, human resource development, and higher education.

Lwakabamba holds a PhD degree in mechanical engineering from the University of Leeds.

**Mr. Colin M. Maclay** is the managing director of Harvard Law School's Berkman Center for Internet and Society, where he facilitates the Center's diverse teaching, research, advising, and advocacy activities. His broad interest is in the interaction of ICTs with society, policy, and institutions, and in particular, the capacity of new technologies to foster social, political, and economic change. He has worked extensively in India, Latin America, and globally on ICT policy issues, including rural ICT access, ICTs in education, entrepreneurship, and telecommunications infrastructure and policy. Maclay's research has an activist bent, often creating collaborations that seek channels of engagement, with the generation of data and research that reveal trends, challenges, and opportunities for the integration of ICTs in developing world communities. His current research examines developing world universities' unique capacity to engage in research, development, and dialogue vis-à-vis ICTs and ICT policy.

**Dr. Sylvia Maier** is an assistant professor in The Sam Nunn School of International Affairs at Georgia Tech. Her research and teaching interests lie in the legal, social, and political consequences of cultural diversity, specifically, the legal accommodation of Muslim minority rights in Western Europe.

Maier has written extensively about human rights and society. Her forthcoming book is titled *Mainstreaming Muslims: Islam, Culture and the Law in France and Germany*. Her work has appeared in the *East*

*European Human Rights Review*. In other projects, she explores the potential of the Internet to empower women in rural South India, the effectiveness of European Union policies to combat sex-trafficking, state responses to honor killings in Britain and Germany, and the development of an independent Islamic feminism in Afghanistan and Saudi Arabia. She earned a PhD from the University of Southern California.

**Dr. Karen Mossberger** is an associate professor in the Graduate Program in Public Administration at the University of Illinois at Chicago. She focuses on technology and public policy research, concentrating on the use of information technology, particularly the digital divide and e-government. Currently she is completing a manuscript she co-authored with Caroline Tolbert and Ramona McNeal titled *Digital Citizenship: The Internet, Society, and Participation*. A forthcoming article in *Public Administration* explores the relationship between e-government and citizen attitudes toward government more generally.

Mossberger's collaborative work on information technology has been supported by grants from the Smith Richardson Foundation and the U.S. Department of Housing and Urban Development, among others, and has appeared in *Public Administration Review*, *Social Science Quarterly*, *Urban Affairs Review*, and *Virtual Inequality: Beyond the Digital Divide*.



Along with co-authors Tolbert and Michele Gilbert of Kent State University, she recently won the 2005 Best Paper Award for the Public Policy Section of the American Political Science Association for "Race, Place, and Information Technology," which will soon appear in *Urban Affairs Review*. She earned a PhD degree in political science in 1996 from Wayne State University.

**Dr. Joseph A. Reid** is the senior advisor, Information Technology Services Office, for the Center for Disease Control. He has broad responsibilities across the scope of IT infrastructure development and management for domestic and global areas of activity. Previously, he led the technical implementation of the National Electronic Disease Surveillance System (NEDSS), an initiative that promotes the use of data and information system standards to advance the development of efficient, integrated, and interoperable surveillance systems at federal, state, and local levels. He received his PhD in physics from the University of Michigan and was a postdoctoral scholar at the Institute of Science and Technology.

**Mr. Chetan Sharma** is the founder of Datamation Foundation Trust, a

registered non-profit organization that received an e-Governance Silver Icon Award for Exemplary Leadership and Information and Communications Technology Achievement in 2004 and 2005 from the Government of India's Department of Administrative Reforms & Public Grievances. He is also the founder and CEO of the Datamation Group, one of India's most reputable knowledge management companies, which seeks to empower women and youth and employs more than 2,500 full-time employees.

Sharma is a member of several of the Government of India's national committees, a member of the Governing Council of the India Country Development Gateway, and a member of the Centre for Public Policy-Indian Institute of Management in Bangalore. He actively works with the United Nations-backed gender and youth caucuses of the World Summit on Information Society. He has also assisted with monitoring, evaluating, researching, and capacity-building initiatives of the Universalization of Elementary Education, National Urban Renewal Mission, National Rural Employment Guarantee, and various health programs in partnership with the Government of India and other governments.

A regular speaker at various national and international seminars, he has been a strong proponent and implementer of innovative approaches to wireless technology in India, South Asia, and African countries. He was recently awarded



the Global Knowledge Partnership International Gender and ICT Award at the World Summit on Information Society.

**Dr. Ernest J. Wilson III** is a professor at the University of Maryland. He is the author of *The Information Revolution and Developing Countries* (MIT Press, 2004), and co-editor-in-chief (with Professor Michael Best) of *Information Technologies and International Development*. He chaired the Technical Advisory Panel for the World Bank's infoDEV program, and is senior advisor to the Global Information Infrastructure Commission. Wilson was appointed by President Clinton and re-appointed by President Bush to the Board of the Corporation for Public Broadcasting and to the International Advisory Board for the National Research Council. He worked in the Clinton White House, on the National Security Council staff. Director of the International Center e-Leadership, he is former director of the Center for International Development and Conflict Management at the University of Maryland, College Park, where he is a professor of government and politics. He holds degrees from Harvard University and the University of California, Berkeley, and taught at the University of Pennsylvania and the University of Michigan.



## The 2006 Sam Nunn Bank of America Policy Forum appreciates the displays provided by the following individuals and organizations:

- Patrick Biltgen, Tom Caulfield, and Drew Reid, *Development of a Future Energy Policy Using Probabilistic Multiple Attribute Decision Making*
- Kelly Caine and Walter Hargrove, *Rwandan Coffee Stakeholders: Need for and Familiarity with ICT Solutions*
- Tony Dickherber and William Hunt, *Breaking Down Cost Barriers to Improve Public Health: Applying Emerging Technologies and Low-cost Microelectronic Production Techniques to Improve Global Access to Public Health Screening*
- Sofia Espinoza, *Evaluating the Potential Impact and Affordability of ICTS in Rural Primary Health Centers of Peru*
- Walter Hargrove and Clint Cope, *Healthcare Assistant: Tablink*
- Lynn Hartley and Michael Murphree, *Influences on the Partial Liberalization of Internet Service Provision in Ethiopia*
- Kipp Jones and Michael Best, *Whither or Wither: Sustainability of Regional Regulatory Bodies*
- Taehyun Jung and Keegan Wade, *An Evaluation of Macedonia Connects: A Rural Internet Diffusion Aid Model*
- Divya Kalb, *Empowerment and Equality Through E-commerce*
- Daniel Moore, *Nanotechnology and the Developing World: Transferring Nanotechnology Developments to Third World Peoples*
- Benay Sager, Seymour Goodman, and Ayse Alibeyoglu, *The Internet and Cyprus: An Assessment of the Diffusion and the Role of the Internet in Cyprus*
- David Sibal, *USAID Implementing Networks: A Macedonian E-case Study*
- Judith Siegel, *Inserting Culturability into Health Care Applications: An HCI Approach*
- Keegan Wade and Michael Best, *The Internet and Democracy: Global Catalyst or Democratic Dud*

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*Senator Sam Nunn*

**Sam Nunn** is the co-chairman and chief executive officer of the Nuclear Threat Initiative (NTI), a charitable organization working to reduce the global threats from nuclear, biological, and chemical weapons. He served as a U.S. Senator from Georgia for twenty-four years (1972–1996) and is retired from the

law firm of King & Spalding. In addition to his work with NTI, Senator Nunn has continued his service in the public policy arena as a distinguished professor in The Sam Nunn School of International Affairs at Georgia Tech and as chairman of the board of the Center for Strategic and International Studies in Washington, D.C.

During his tenure in the U.S. Senate, Senator Nunn served as chairman of the Senate Armed Services Committee and the Permanent Subcommittee on Investigations. He also served on the Intelligence and Small Business Committees. His legislative achievements include the landmark Department of Defense Reorganization Act, drafted with the late Senator Barry Goldwater, and the “Nunn-Lugar” Cooperative Threat Reduction Program, which provides assistance to Russia and the former Soviet republics for securing and destroying their excess nuclear, biological, and chemical weapons.

Raised in the small town of Perry in middle Georgia, Sam Nunn attended Georgia Tech, Emory University, and Emory Law School, where he graduated with honors in 1962. After active duty service in the U.S. Coast Guard, he served six years in the U.S. Coast Guard Reserve. He first entered politics as a member of the Georgia House of Representatives in 1968.

## The Sam Nunn Bank of America Policy Forum

The Sam Nunn Bank of America Policy Forum is a policy meeting that brings together noted academic, government, and private-sector experts on technology, public policy, and international affairs to address issues of immediate importance to the nation. It was developed from former Senator Sam Nunn’s vision of increasing understanding among policymakers, academic researchers, technologists, and citizens regarding important issues they face. Senator Nunn is a distinguished professor at The Sam Nunn School of International Affairs at Georgia Tech.

The Policy Forum is open to the public and is designed to foster informed discussion of critical issues confronting the United States in the twenty-first century. Offering a significant venue for policy-relevant research and dialogue, the Policy Forum transcends disciplinary boundaries and engages scholars, practitioners, students, and the public. The insights and findings produced at the Forum are shared with policymakers and the broader public through congressional testimony, circulation of proceedings, policy papers, journal articles, and educational television and Internet broadcasts. The Forum connects the academic and policymaking communities to craft effective and creative responses to the critical challenges facing the nation and engages and informs interested citizens on these issues.

The initial Policy Forum series was held annually from 1997 to 2002; was cosponsored jointly by the University of Georgia, the Georgia Institute of Technology, and Emory University; and was hosted in turn by each institution. Since 2004, the Policy Forum is held biennially and is sponsored by, and held at, the Georgia Institute of Technology. The Policy Forum is funded by a generous endowment provide by Bank of America.



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