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Second Annual National Conference of Mayors:

Seizing the Opportunity of E-Government

Conference Proceedings

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Proceedings of the Second Annual Conference of Mayors:

Seizing the Opportunity of E-Government

Conference Venues

New York, NY
June 26–27, 2001

New York City Office of Emergency Management (OEM)

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The Fox School of Business and Management *Temple University*

M. Moshe Porat, Dean

Established in 1918, The Fox School has a distinguished tradition of preparing business leaders, professionals and entrepreneurs for successful careers. Today, it is the largest, most comprehensive business school in the Greater Philadelphia region and among the largest in the world, with over 5,500 students, over 150 full-time faculty and 42,000 alumni.

Accredited by AACSB International — the Association to Advance Collegiate Schools of Business — The Fox School offers BBA, MBA, Executive MBA, International MBA, MBA/MS, MA, MS, and PhD programs on campuses throughout the region and around the world. The Fox School's programs continue to be ranked internationally and nationally by leading business publications and organizations, such as *Computerworld*, *Financial Times*, *Forbes*, *U.S. News & World Report* and the Eastern Technology Council.

The Fox School is thoroughly committed to providing a student-centered education and professional development relevant to today's digital, global economy. That commitment is reflected in its integration of technology into the curriculum and classroom and in its encouragement of entrepreneurship and innovation in business and education. It's also evidenced by Fox's global presence and perspective with international programs such as an Executive MBA program in Tokyo; a three-continent International MBA program in Paris, Philadelphia and Tokyo; the International Business program in Rome; and foreign executive training programs in China, India, Japan, Israel, Ukraine and other centers of international business and commerce throughout the world.

Supporting and enriching The Fox School's academic programs are research and outreach institutes and centers such as The Irwin L. Gross eBusiness Institute, Institute of Global Management Studies, Innovation and Entrepreneurship Institute, Advanta Center for Financial Services Studies, Center for Healthcare and Research Management, Center for Labor and Human Resource Studies, Small Business Development Center, and the institute that organized this conference and brought together so many distinguished mayors, executives, and faculty in demonstration of The Fox School's commitment to scholarship, teaching and service in the practice of public and private sector management: The Center for Competitive Government.

The Fox School is one of the 17 schools and colleges of Temple University. A leader in graduate and professional education, Temple is one of only 148 of over 3,800 higher education institutions in the U.S. designated a Doctoral/Research Extensive university by the Carnegie Foundation for the Advancement of Teaching. This distinction is based on Temple's range of programs and commitment to graduate education, and the breadth and number of doctoral degrees it awards.

Headquartered in Philadelphia, Pennsylvania, Temple is strategically located for corporate partnerships in a hub of the financial services, healthcare, information technology, pharmaceuticals/biotechnology, and tourism industries. Temple's School of Tourism and Hospitality Management, affiliated with The Fox School, offers quality undergraduate and graduate degree programs in sport and recreation management as well as in tourism and hospitality management.

The Center For Competitive Government

Temple University's Center for Competitive Government is a preeminent resource for federal, state and local governments seeking to understand and implement best management practices and e-government strategies. It specializes in applying contemporary economic and management models to public sector problems and is becoming an international center for information about the management of technology to improve constituent services and reduce the cost of government.

To facilitate the development and growth of better practices, the Center conducts policy-oriented research, engages in consulting projects, develops databases, organizes conferences, and publishes reports, books, and articles related to the application of private sector principles to public sector problems. The Center has substantial experience in conducting and analyzing data from large-scale surveys for various public and private entities and has conducted specific studies on topics such as: privatization of police, correctional institutions, welfare services and airport management; public-private partnerships in free trade zones; and private toll roads.

The Center has obtained grants and has organized eight academic and professional conferences, including the highly successful "Making Government Work Conference," hosted by the city of New York and underwritten in 2000 by PricewaterhouseCoopers Endowment for the Business of Government. The Center maintains working relationships with organizations such as the Council for Public-Private Partnerships, Manhattan Institute for Public Policy, National League of Cities, Milken Institute, National Governors Association, Volunteers of America, and with mayors and governors throughout the United States and around the world.

Paul J. Andrisani, PhD

Professor of management Paul J. Andrisani has taught at Temple University since 1974. Director of the Center for Labor and Human Resource Studies, he specializes in human resource management and labor market economics. His research focuses on the labor market experiences of special groups in the American economy, among them older workers, minorities, women, veterans and persons with disabilities. He has also conducted considerable research on the economics of discrimination in employment and credit markets. His research has been funded by many government, educational and private organizations, published in numerous academic journals, and presented to various societies and professional associations and to senior management and board committees of numerous companies and government agencies. He has testified before Congress on issues of human resource management and lectured extensively throughout the U.S. and abroad. He has served as a consultant to major corporations, government agencies, and government entities. He holds a BS and MBA from the University of Delaware and earned his PhD in management science at Ohio State University.

Simon Hakim, PhD

Professor of economics Simon Hakim has taught at Temple University since 1974. His research focuses on analysis of criminal behavior, police operations, and privatization of police and correctional institutions. He is co-author of *Securing Home and Business: A Guide to the Electronic Security Industry* and co-editor of 11 books, mostly on privatization of state and local government. He is an editor for a book series published by Kluwer Academic Publishers on innovations in government. He has published over 50 scientific articles on crime and security in leading economic and criminology academic journals and more than 60 articles in trade magazines for government, and the security and insurance industries. He is often interviewed, and his research findings quoted, on national TV and in major newspapers throughout the nation. He has conducted funded research projects for numerous government agencies and for major international companies. He holds a BA in economics from Hebrew University, an MS in city and regional planning from the Technion, Israel Institute of Technology, and earned MA and PhD degrees in regional science from the University of Pennsylvania.

Dean's Letter

Information technology (IT) has been one of the driving forces of the global economy. The slow down in IT capital investment and subsequently the slow down in world economic growth has not diminished the growth of use and application of IT and particularly the use of the Internet as an effective tool in making government work, and efforts to improve the quality of life of the citzenry in its interaction with government.

The recent major issues facing the U.S. economy, security and safety as well as the crisis in corporate business ethics and accounting will most likely find its resolution through appropriate applications of IT. Government's role in the enhancements of security awareness, alertness and information sharing among government entities and the general public will demand adoption of better IT and data mining systems. Public demands for more transparency and expediency of information on corporate transactions and insider trading can only be implemented by governmental agency intervention, insisting on the use and distribution of such accounting information systems.

The challenge of governments at all three levels in Federal, State and local using e-government will only expand and enhance in the coming years. This volume brings to light some of the important concepts, ideas and actions taken by some cities to improve their services by implementing e-government technologies. In addition, some key corporate leaders describe ideas for connecting people and their organizations to improve in decision making and quality of life through IT systems. We are learning from each other by observing best practices.

M. Moshe Porat, dean of The Fox School of Business at Temple University.

I am confident that our Center for Competitive Government, that has been on the forefront of ideas in competitive government, will continue to advance knowledge, use and applications of e-government through conducting applied research, benchmarking studies and functioning as a depository and review of ideas and best practices in e-government.

The Center brings together leaders in government, business and academia to exchange and share such information and create knowledge exchange.

I am certain that e-government will become even more critical as we face the recent issues of terrorism, safety and financial accountability. The Center for Competitive Government will continue to stay on the cutting edge of this knowledge development.

I want to thank Dr. Simon Hakim and Dr. Paul Andrisani for their vision and efforts to produce this important volume and thank Temple University and the staff of The Fox School for their support.

Best regards,

M. Moshe Porat

Foreword

Dr. Simon Hakim, Co-Director, The Center for Competitive Government, Temple University

The Internet has been with us in its current form since 1995. The global online population was 408 million users in August 2000 and grew 20 percent to 514 million in one year. The U.S. and Canada share 35.2 percent and Europe 30 percent of the total online population (Ronaghan, 2002).

As of September 2001, 149 million or 62.1 percent of Americans are online and two million users join every month. In Canada the percentage is 46.5 and in Mexico 3.5. Sweden has the highest European score of 69.9, followed by Iceland with 67.74 (Ronaghan, 2002).

E-commerce, prompted by market forces, has evolved faster than e-government. As of February 2001, 53 percent of municipal governments purchase products online and 84 percent have their own Web sites (Abramson and Means, 2001). Interestingly, European governments have advanced faster than the U.S. in utilizing the Web. In 2001, over one-third of online French government services were interactive, while just 8.3 percent of U.S. government services were interactive. However, U.S. government spending on information technology is rapidly rising. The total annual Federal investment in IT was $44.5 billion in 2001 (OMB, 2001). Estimates show that all three levels of government combined spent $1.5 billion on Government to Government, Government to Business, and Government to Citizens in 2000 and will reach $6.2 billion in 2005.

President Bill Clinton stated, "The Internet has the potential to strengthen our democracy and to make government more open, efficient, and user-friendly." The following are the components of e-government that attain these ends:

- **Information access and delivery,** a virtual bulletin board where just one-way information is provided by an agency. Although most governments use the Internet they have not exploited its full potential. It is also unclear whether and to what extent the information is used by citizens. Municipalities often use their Web sites to present information about their leaders, the structure of the government, and activities. This would be equivalent to Amazon.com presenting its executives, their achievements, and its board deliberations and decisions rather than what consumers really need — the ability to buy books and other products.

Conference host Mayor Rudolph W. Giuliani with Temple University professors Simon Hakim (left) and Paul J. Andrisani (right), editors of* Making Government Work, *the book that inspired the conference series.

- **Electronic commerce and government regulation.** Governments use the Internet to file and locate paperwork. All but two states offer online licensing and permission forms. Seventy-six percent of the states make their forms available online and make such submission possible. Citizens increasingly demand that governments provide both 24x7 service, and seamless services that crossover various relevant agencies/governments. Providing service to citizens by phone costs $6 to $10 while similar Internet service costs as little as 4 cents per contact.
- **Electronic procurement.** Governments can use the Internet to buy directly from individual suppliers or employ bidding to solicit offers from many suppliers. By using online procurement rather than back office operations, governments can save as much as 25 to 50 percent of their direct and indirect purchasing costs (Abramson and Means, 2001). Further, information about demand for specific products/services becomes ubiquitous. The Internet makes physical distance less of a barrier for information flow and for the conduct of business transactions. Then, the use of the Internet for the coordination and management of the transportation of products becomes more automatic, faster, and cheaper. Transaction costs and prices will

probably decline when more suppliers and governments join the same virtual markets.

- **Government production.** Governments can use the Internet to improve production both by improving communications and collaboration among government agencies and by raising accountability of government employees. Service production often requires attention and action by various agencies of the same government or various horizontal/vertical governments. Use of the Internet will require adjustment and simplification of the process. The Internet enables the use of technologies like Geographical Information Systems (GIS) that improve service production and enhances accountability of managers and workers (e.g., crime mapping). Once again, through use of the Internet, information becomes ubiquitous to both buyers and sellers and transaction costs thereby decline. Governments may even use auctions to sell their assets and products.
- **Democracy enhancement.** With the expansion of e-mail, citizens are able to participate more fully in government decision-making. Information about activities of government officials spreads, and direct communication with officials and public representatives through e-mail is possible. Voting over the Internet will further enhance citizens' participation in electing their representatives.

E-government is not a merely technological innovation. In order to implement and effectively use it, changes must be made in the structure of government and excessively bureaucratic processes. E-government is a move from an inefficient and mainly unaccountable bureaucracy to a new entrepreneurial and accountable culture. It enables and even requires workers at lower levels of the hierarchy to take part in and be accountable for decision-making. Improved communication among workers reduces needed coordination and thus makes middle management less necessary if not obsolete. The number of levels in the pyramid of command is reduced, and workers at all remaining levels in the hierarchy gain more decision-making power and become more accountable for their decisions.

Participants in the Second Annual National Conference of Mayors ring the closing bell at the New York Stock Exchange to end the day on Wall Street.

Successful implementation requires elimination of non-value added or "overhead" activities like checking, multiple approvals, or reworking. The ratio of value time/elapsed time equals one in a well-run operation. However, this ratio in a normal business is typically merely five percent. Improving this ratio requires dissolving organizational boundaries for specific service areas. Also, at the boundaries among agencies/governments there is usually needless repetitious and non-valued time. One solution is virtual and not necessarily physical integration (Hammer, 2001).

Success in virtual integration requires a strong commitment by the mayor and key legislators, and cooperation by workers. Newt Gingrich claims that success requires leaders to possess entrepreneurial spirit, to be willing to take chances, and to learn from mistakes. Both managers and workers must realize that the boundaries they are accustomed to and territories they are obliged to protect cannot further persist.

The following additional conditions are needed for successful implementation of virtual integration and productive e-government. Technically, databases must be shared and system protocols unified. Other managerial elements for success are the creation of a special office that can initiate such ventures, review suggestions, and oversee implementation. Such an agency must have a clear mandate from elected officials and/or be supported by a legislative act. Also, workers must be provided a safety net if implementation of e-government adversely affects their jobs. Unions should become part of the process and their concerns considered fairly and fully. Lack of workers' support at all

levels may lead to failure to fully implement all facets of e-government.

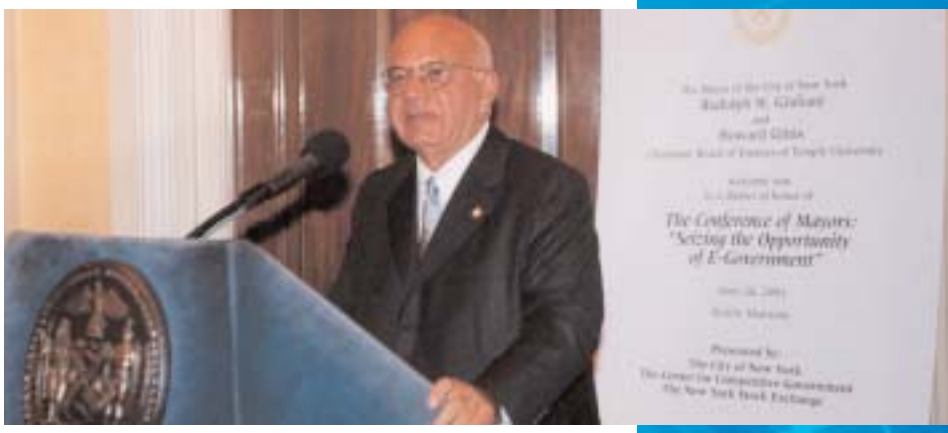
The Center for Competitive Government (CCG) of The Fox School of Business and Management at Temple University specializes in evaluating government operations and suggesting best practices. E-government is currently a major interest area for the Center.

On June, 26, and 27, 2001, Mayor Rudolph Giuliani of New York City, Mr. Dick Grasso, the Chairman and CEO of the New York Stock Exchange, and CCG organized a conference of mayors on best practices in e-government. Mayors with skills and interest in e-government implementation, and CEOs of major IT companies that support such initiatives presented and discussed their experiences.

The first day of the conference took place at the Office of Emergency Management (OEM) of the city of New York at the Twin Towers of the World Trade Center. The OEM was envisioned and built by Mayor Giuliani. Unfortunately, this facility was eliminated less than three months later by the vicious terrorist attacks of September 11th. The terrorist attack on New York provided a new role for e-government in homeland security efforts by cities. Some of the participating mayors at the conference revised their original speech with added discussion on the new challenges of e-government in the aftermath of September 11th.

We would like to thank all the mayors, executives, partners, sponsors and hosts that helped us put this conference together, including Mayors Rudolph Giuliani of New York, Patrick McCrory of Charlotte, Nicholas Tennyson of Durham, Paul Coble of Raleigh, and Skip Rimsza of Phoenix; corporate executives and sponsors, John Morgridge, chairman of Cisco; Dick Parsons, CEO of AOL Time Warner; Ken FitzPatrick, General Manager of Computer Associates; Jim Sims, vice president of Enterasys; Eugene Julian, president, Eastern States Group; and Sophia Wisniewska, dean of Temple University Ambler. Most especially, we would like to thank Dick Grasso, chairman and CEO of the New York Stock Exchange and Laurence Levy, deputy counsel to the Mayor of New York, without whom there would be no conference.

Unfortunately, due to audio difficulties, not all of their speeches and the lively discussion that followed could be reproduced in this volume. Nonetheless, the Center for Competitive Government is pleased to present the remarks of a number of the speakers in these proceedings in hopes that it will stimulate further debate and innovation to improve governmental efficiency at all levels of government.



Howard Gittis, chairman of Temple University's Board of Trustees, welcomes conference attendees to Gracie Mansion.

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Efficiency, Effectiveness, and Accountability: Improving the Quality of Life through E-Government

Rudolph W. Giuliani, Mayor, New York, NY

Introduction

Two-and-a-half months after I addressed Temple University's Center for Competitive Government's Conference of Mayors, our world was changed forever, but the policies and systems that have been instrumental to the renaissance of our city were an important reason our response was so successful. Though the building I gave my welcoming remarks in — World Trade Center 7 — no longer stands, our commitment to bringing the principles and systems of accountability to government should remain unwavering.

I was recently asked what the worst day and the best day were in the course of the past eight years. September 11th was the darkest day in our city's long history. But I also believe that day was our best day. New Yorkers responded to the attack upon our nation immediately, courageously, tirelessly, and generously.

The response of our city's agencies was, likewise, tremendously effective. This is because, during the past eight years, accountability has become an integral part of city government's character. CompStat was the program that first introduced systematic accountability to the Police Department. It then became the model for accountability throughout city government through CapStat and paved the way for New York City to become a leader in e-government. The Mayor's Office of Emergency Management is the embodiment of the lessons we have learned from CompStat, its technological adaptations, and the principles of accountability that have proven to be so successful.

Time ***Magazine honored Mayor Giuliani as its 2001 Man of the Year for his valiant leadership in the aftermath of September 11th terrorist attacks on New York City.***

In April 1996, the Mayor's Office of Emergency Management (**OEM**) was created in order to improve the city's planning and response to emergencies. OEM is responsible for coordinating the planning effort of city, state, and federal agencies as well as corporate and not-for-profit entities. OEM responds to multi-agency events and coordinates the city's response on behalf of the Mayor. The agency is responsible for running the city's Emergency Operations Center — the Command Center — which acts as the central point for information exchange during an emergency.

Since 1996, OEM has prepared for natural disasters and possible terrorist attacks by conducting tabletop exercises and full-scale drills for emergencies ranging from chemical and biological terrorism, to aviation disasters, and Year 2000 preparedness. In 1997, OEM conducted "train the trainer" classes for more than 5,000 responders in order to prepare for response to incidents involving weapons of mass destruction.

OEM was designed to coordinate immediate and efficient responses to natural disasters or attacks upon our city like the one of September 11th. At 5:20 p.m. on September 11th, the building that housed OEM — and its Command Center — collapsed.

One of the remarkable untold stories from the hours and days after September 11th was the speed in which OEM was able to reconstruct a new Command Center.

The original Command Center was not designed to handle the magnitude of destruction from the attack of September 11th.

Nobody could have ever predicted such a barbaric attack upon our nation. But while the city operated out of a temporary Command Center at the Police Academy, OEM built a new Command Center in 72 hours.

More than 100 government, private, and non-profit organizations had computers, networks, and telephones set up for them. The size of the new Command Center located on a pier on the Hudson River provided room to grow and effectively address the staffing and technological requirements of such a massive undertaking.

Agencies were organized in clusters as they were in the original Command Center. An area for press conferences was built. A large round-table and a walled-off room were built for daily briefings where the Governor and I would hear reports from commissioners and agency directors. There was room to have the Red Cross provide food, drinks, and medical attention to everybody who was working. There was even a large space set aside with cots so that people could get some sleep. And OEM operated from a podium in the middle of the Command Center, just like at the original location.

OEM's staff, and the staff of every agency that participated in its drills since 1996, was so well prepared that there was nearly a seamless transition during unbelievable circumstances.

One of the reasons for this was because of the tremendous leadership of men like Fire Commissioner Tom Von Essen, Police Commissioner Bernard Kerik, and OEM Director Richard Shierer. But the other reason the city's response was so effective was the culture of accountability that has grown throughout city government — especially in the three agencies I just mentioned. This mentality within city government is a result of their leadership, but it also comes from the very important systems that paved the way for e-government such as CompStat. The culture of accountability, along with these systems, made it possible for the city of New York to respond to the worst attack upon our nation in an effective and efficient manner.

In 1991, David Osborne published *Reinventing Government*. Cities across America were suffering from rising crime and welfare rolls and a corresponding low quality of life. New York was considered unmanageable and ungovernable. The Internet was still in its infancy and virtually unknown to most Americans.

Ten years later, much of urban America is thriving. A new consensus has emerged from a new philosophy of governing. Best practices have become apparent, the use of new technology as a management tool has increased government accountability and effectiveness. In the process, residents' faith in the future of their cities has been restored.

The rise of e-government offers an unprecedented opportunity to re-invent government by fundamentally changing the structure of government itself to incorporate the lessons we've learned. Those of us who have fought to bring greater efficiency, effectiveness, and accounta-

biography

Rudy Giuliani *was elected mayor of New York City in 1993 and overwhelmingly re-elected in 1997. He was* Time *Magazine's "Man of the Year" in 2001 for his valiant leadership in the aftermath of the September 11th terrorist attacks on New York City.*

He has introduced, fostered and led initiatives that significantly reduced crime rates and welfare rolls, eliminated city budget deficits, increased the availability of health insurance to children, and transformed the urban public education and the emergency response systems. Many of these initiatives have become models for other cities around the world.

Some of these programs have included: the award-winning CompStat program that allows criminal activity to be statistically monitored and positions police as a proactive force in combating crime; a welfare-to-work initiative that cut welfare rolls in half, while making over 640,000 individuals self-sufficient; creation of the Administration for Children's Services that stands as an accountable, proactive and effective protector of the city's children; the creation of the HealthStat initiative that uses computer technology to coordinate a citywide effort to enroll children in existing health insurance programs; and establishment of the New York City Charter School Improvement Fund — a first-ever fund offered by a city government to help charter schools with equipment and facility costs.

Before becoming mayor, he served as U.S. attorney for the Southern District of New York and as associate attorney general at the U.S. Department of Justice. Prior to these appointments, he practiced law at Patterson, Belknap, Webb and Tyler and served as associate deputy attorney general and chief of staff to the deputy attorney general in Washington, D.C. In 1970, he joined the office of the U.S. Attorney, rising to chief of the narcotics unit and executive U.S. attorney.

He holds a BA from Manhattan College and a law degree from New York University Law School.

bility to government will find that e-government will allow us to engrain those management principles into the structure of government in a way that was never possible before.

E-government represents not only a shift in the technological means of delivering services, but a shift in the culture of government itself —a move away from inefficient bureaucracy and toward a more entrepreneurial culture of accountability. The experience of longstanding and distinguished corporations evolving into e-businesses provides a blueprint for those of us in government who are attempting to lay the foundation for e-government.

Much like the corporations that needed to adapt their business models to meet shifting consumer expectations, municipalities face not a technology problem, but a management challenge. We need to incorporate new technologies into the business of government. This is not a chore, but a tremendous opportunity.

E-government represents not only a shift in the technological means of delivering services, but a shift in the culture of government itself —a move away from inefficient bureaucracy and toward a more entrepreneurial culture of accountability.

The United Parcel Service (UPS) provides an interesting blueprint for evolution. Several years ago, UPS decided that it needed to embrace the possibilities of new technology in order to grow. This meant re-examining the systems its company had used successfully for decades.

UPS evolved into a business that offers services, solutions, and strategic partnerships with its customers, not just overnight package delivery. In doing so, it became the first package delivery company to go online and use technology to offer those services at any hour of any day.

To express the new possibilities that new technology had brought to their company, UPS launched a new ad campaign with the tagline, "Moving at the Speed of Business."

This is the kind of innovation we need to bring to government; e-governments can learn from the success UPS has had in the marketplace.

"Moving at the Speed of Business" suggested a proactive 24-hour information network, moving rapidly with thorough professionalism and accountability.

Now, I ask you to consider the government equivalent to that slogan. Historically, government has not provided a model for efficiency or effectiveness. That is why the notion of "Moving at the Speed of Government" might seem absurd to most people. But we have already discovered that, with new technology, "Moving at the Speed of Government" is already much faster than standing in line. And one of the primary goals of e-government is to move city services online, so people no longer have to wait in line

The rise of e-business has inspired the rise of e-government. Both are about not only providing better value, but better service as well.

Many mayors, including myself, grew up in an age before personal computers were widely used. But we can demystify e-government if we understand that it is fundamentally about improving the quality of life.

The type of transition that e-government offers has happened before in the private sector, where new technology is regularly employed to offer greater convenience to consumers.

For example, 20 years ago, ATMs were unknown. Americans had access to their money only when banks were open, and banks' hours of operation were limited, typically from 9:00 a.m. to 3:00 p.m. Monday to Friday and never on holidays. It was an unofficial but generally accepted practice in New York City Government to give employees an extra half hour for lunch on Friday so they could go to the bank, fill out a withdrawal or deposit slip, wait in line, and meet with a bank teller to complete their transaction. Getting money on a Saturday or Sunday was impossible because banks were closed.

In retrospect, this weekly ritual seems unnecessary and absurd. The availability of new technology created a paradigm shift in the banking industry that has made it much more customer oriented. Government is still oper-

ating within the old paradigm. But that is changing rapidly because traditional bureaucratic structures initially built in the 19th century are being replaced with a 21st century technological infrastructure that is directly responsive to the people it serves.

New York Mayor Rudolph W. Giuliani expands on how the shift of technology and in the culture of government itself has helped make government more efficient, effective and accountable.

One of the most significant early uses of technology in my administration was the development of a program called CompStat. The movement toward e-government started with trying to solve one problem: crime. We didn't fully understand, at the time, that this process of collecting crime statistics combined with a computer pin-mapping system was, in fact, the first step toward e-government in New York City. The lessons we learned and the systems we developed were then applied to three or four other problems, and now, to virtually all of the problems that New York City faces.

At the beginning of the 1990s, New York City was notorious for its crime. We had 2,245 murders in New York City in 1990. We were setting records for crime. We had more people on welfare than we had ever had before in our history. By 1992, we had reached 1 million people on welfare. Our city had a population then of 7.3 million; so, one-seventh of the people in the city were on welfare and that number was predicted to grow to 1.5 million.

We were losing jobs at a record rate as well. New York City had lost 320,000 jobs since 1990. We had a deficit of $1.6 billion that grew to $2.3 billion. And, according to a poll, in 1993 more than half the people who lived in the city, if they had a choice, would have preferred to live somewhere else, which is very much a sign of a society that's in decline rather than a society that's growing.

What we did was to understand that the first thing we had to do was to make New York city safe. We had to make it a place where people could feel a sense that they could be secure, that they didn't have to worry about going out at night to the movies, going to a restaurant, visiting here, doing business here. First thing's first. If people don't feel safe, nothing else can happen.

During the mid-1970s and the early 1980s, crime statistics were studied in a very inefficient manner. Studies were released from the federal government that would say things such as New York City was number one for homicide or Washington, DC was number one for grand larceny and some other city was number one for robbery and some other city was number one for property crime. They'd all be on a long list, and it always occurred to me that this was kind of crazy; we were reporting on what happened roughly six months or a year ago.

There was nothing anybody could do about the crimes at that point. The murders had already taken place; the robberies had already taken place; the burglaries had already taken place. And it was interesting sociological data, it was interesting news, interesting political information, but it had no relevance to management. It had no relevance to anything that you could do about it because it all happened six months, a year ago.

What we decided to do was to capture all that information on a daily basis. Using CompStat, we figured out every day how the FBI was going to measure us a year later. Then, we figured out how to improve our crime fighting strategies so that when New York City was measured, we would be able to demonstrate substantial crime reduction. So we launched CompStat, with which we collected crime data every single day from every single precinct in the city of New York. This allowed us to respond to areas of the city that were subjected to specific types of crime waves.

More than 70 mayors, executives, and educators attended the two-day conference.

Rather than just collecting the raw data, we started putting it on a maps so that we could figure out that in particular areas of precincts within the city we were having a significant number of robberies, grand larcenies, car thefts. With that type of information, we were able to allocate our police officers in the right way. We were able to put them in the right place at the right time.

After several months of collecting this data, we were able to figure out which days of the week we were making the most narcotics arrests — it happened to be on Wednesdays. And we discovered what time of the day we were making the most narcotics arrests, which would roughly be in the middle of the day, the middle of a tour. The same thing happened with shootings. Which days of the week did we have the most shootings? Thursdays and Fridays. We could then have our police officers assigned where they were needed, anytime of day, in any precinct, and right down to the exact street corners where crimes were increasing.

Anytime we begin to see increases in crime, we can usually — not always — figure out the reason for it: We have the police in the wrong area. We have more police officers assigned during times when there's less crime rather than more crime. Sometimes, the increase in crime that we have is an increase in auto theft, while there's a decrease in shootings. So then we have to move in more police officers who have expertise in catching people who are stealing cars or in reporting the crimes more effectively.

Sometimes, we start to see an increase in shootings. Whenever we see an increase in shootings, we know that shortly we're going to start seeing an increase in murders. So then we try to figure where the shootings were located, and if they were gang related. If they were gang related, we need to bring in police officers who have expertise with gangs. If the crimes were related to domestic violence, then we put more emphasis on addressing domestic violence.

Fundamentally, CompStat takes statistics, that used to be just a political or sociological tool, and uses them as a management tool. This is like thinking of the Police Department as a bank with 77 branch offices. Everyday we get the performance results of every branch office. If it had good results, fine. But if there were bad results, then we want to know why and how we are going to improve it. We're going to want to look at the offices that had good results and figure out what they're doing right, so that the offices that had bad results can figure out how they can build from that.

Fundamentally, CompStat takes statistics, that used to be just a political or sociological tool, and uses them as a management tool.

The results of using the CompStat program for the Police Department have been impressive. Those 2,245 murders a year have gone to less than 650. The last three years in a row, we have had less than 700 murders. Our FBI index crimes, all the ways in which they measure crime, over the last four years has us down to the lowest level in the history of the city. New York City used to be thought of as the crime capital of America. Now, we're ranked 192 on the FBI list of cities with populations of a 100,000 or more. Murder is down almost 67 percent, shootings are down 69 percent, grand larceny is down 46 percent, auto theft is down 73 percent, robbery is down 67 percent, burglary is down 69 percent, rape is down 39 percent, and assault is down 44 percent.

From this success, we decided to adapt the CompStat program a number of years ago and start applying it to other areas of government.

The first application of it after the Police Department was with our Corrections Department. We organized a program in the Corrections Department called the Total Efficiency Accountability Management System (TEAMS). It measures every incidence of violence, slashings, and stabbings. We tried to take a look at when our correction officers were assigned, what areas they were assigned in, and whether they were having an effect in reducing the amount of violence that goes on in the jail.

We also took a look at management and budget issues in this program, such as the relationship between the amount of overtime that we actually have and its effectiveness in reducing violence. The result of that was that over a period of six years, through TEAMS we've cut violence by 93 percent in our city jails.

We've also used it to great effect in our Human Resources Administration (HRA). The HRA is the place in which we deal with our welfare program. We had had 1.1 million people on welfare. Today, we have 695,000 fewer people on welfare. That's larger than the population of most cities in the United States. We've helped over 375,000 of those 695,000 people find jobs. We've either found the job for them or helped them find the job, and we did it with a program called JobStat.

We've taken our welfare offices, of which we have 32, and we've changed the name from "welfare office" to "job center." The purpose of a welfare office in New York City, now, is not to put you on welfare. It's not to help you become dependent. It's not to help you drop out of society or to encourage you to do that, which is what we used to do. The purpose of a welfare office is to help you be self-sufficient— to help you help yourself, to help you help your family — by helping you find a job. That's why we call it a job center.

We even have our job centers compete with each other to find jobs for people. We reward the job centers that find the most jobs for people, not the offices that put the most people on welfare. We reward the welfare workers who are the ones who have turned themselves into employment agents as opposed to dependency enablers.

We've created a totally different mindset, and the difference is that you take a city that had 1.1 million people on welfare, and now you have 695,000 fewer people dependent on the government of the city. And you have 375,000 who have jobs.

I hold town hall meetings once a month — I'm going to do my 90th tomorrow night — and people will say to me, "I can't find a job." I've not yet failed in finding a job for someone who wants to work.

So basically, JobStat is not only a statistical program; it's also changed the philosophy of the city. It's changed the thinking of the city from encouraging dependency to encouraging people to work, to help themselves, to take care of themselves. And, today, the city cares about them in a deeper way than it used to.

Another program in which we found this CompStat approach enormously helpful, which is somewhat different than the other two, is the HealthStat program. This began about a year and a half ago.

There's a debate throughout America about universal health insurance, how can we make certain that people are covered and have health insurance. The reality in New York City is that we have a tremendous number of people — about 300,000 children, maybe as many as 600,000 or 700,000 adults in addition — who are eligible for health insurance, but don't apply for it. They don't know how to fill out the forms, or they don't realize they can fill out the forms, or they don't know how to accomplish it, or they just don't want to.

So what we did was exactly the same thing we did with reducing crime. We created pin maps. We tried to figure out where in particular the children are who weren't covered by health insurance. We took all of the agencies of city government, and every week, they meet and we go out and try to sign up all the children that we can sign up for health insurance. Then we measure it, we pin map it, and we try to figure out how successful we are, and we've done about 195,000 so far that would not have been covered but for the outreach program.

So, this method and approach to management, which grew out of CompStat, has become enormously valuable. The principles have been adopted throughout every city agency through a program called CapStat.

CompStat was an important first step toward e-government because it brought the principles of efficiency, effectiveness, and accountability citywide. The purpose of e-government is to create transparent government — a government that people can watch, under-

stand, and hold accountable. But before becoming transparent, it is important to be organized correctly. If you're disorganized and transparent, it's a disaster. You have to first organize yourself, and then you can accomplish what government really has to accomplish, which is to become transparent. Transparent government allows people to look at all of the things we've discussed online, and see how good a job we are really doing and where they can find information.

On NYC.gov, for example, you can look at my addresses, my messages, and every press conference I hold. I do a radio show that's also on there.

People can also access the city agencies, like the Police Department. The crime statistics that I mentioned before are on our Web site. Anybody in New York City can now get the crime statistics for their police precinct.

The New York Police Department really led the way in illustrating the potential for e-government and what e-government will ultimately do for all areas of government. The principles of efficiency, effectiveness, and accountability are now part of the character of city government. Adapting CompStat has helped us reduce bureaucracy, save time and money, improve the delivery of services, and create a transparent government with managerial responsibility built into it.

E-government is going to make it virtually impossible for people to roll back the organizational reforms we've made. The presence of performance indicators — objective measures of success — on the Internet will let every resident see how well a particular administration is doing their job by comparing their results to previous years. The condition of the city will be apparent to all, and much of the information that mayors get across their desks every day will be available at home to the average citizen.

As we move away from the brick-and-mortar bureaucracy of traditional city government, e-government offers us an opportunity to add a degree of common sense to the sometimes-confusing process of getting information from city agencies.

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Longtime employees of city government often become so familiar with the structure of the city government that they speak in an alphabet soup of acronyms. They forget that many New Yorkers don't know what DOH or ACS is; what they want to know is where they can get a copy of their birth certificate or receive information about adoption.

The new NYC.gov is organized in such a way that visitors don't need to understand the intricacies of city government to get the information they want or need.

We call it an "I Want To…," which allows visitors to access a full range of city information based on their individual needs — regardless of the city agency that provides the services they are looking for.

NYC.gov is already being used by thousands of New Yorkers each day and had 34 million visitors in the last calendar year alone. Here are just some of the functions that visitors can access to make their lives easier:

Traffic Cameras

There are 60 traffic cameras placed throughout the five boroughs to help New Yorkers with their commute to and from work. By logging on to NYC.gov, visitors are able to see the state of traffic along different routes in real time. As a result, they can avoid traffic jams and cut the time of their commute considerably.

Pay Parking Tickets

One of the most utilized functions on NYC.gov allows New Yorkers to pay parking tickets conveniently and securely by credit card. Should they choose to contest the parking ticket, they can submit a plea to the violation and present a defense for review by an Administrative Law Judge, rather than taking a day off from work and waiting for hours at a Central Adjudications Bureau to

have their case heard. This is much more efficient and fair way of addressing contested parking tickets than making a person take a day off work.

Restaurant Inspections

The result of restaurant inspections has been unexpectedly popular. When the Department of Health first placed its restaurant inspection results online in May of 1999, the site received an average of 45,000 visits per hour in its first day. That is significantly more inquiries than the Department received about restaurant inspection results during the entire previous year.

Reserve a Baseball field

Not many NewYorkers have the time to come down to the Parks Department to fill out the necessary forms to reserve fields for a little league game. But now, NewYorkers can log on to the Parks Department Web site, fill out an application, and make their plans accordingly.

Steps to E-Government

These are all examples of the potential of e-government, but there are several evolutionary steps toward a fully integrated e-government.

In the first stage of e-government, municipalities merely publish existing information on their Web site. Limited, but specific, information is available to the public, but there is no interactive component. It is a largely passive and early form of e-government.

At the second stage of e-government, it is possible for visitors to interact with the agencies they are accessing, but in a limited manner. They are able to submit information, but no transactions are possible.

The third stage of e-government allows for interactive information gathering — full business transactions such as the payment of parking tickets.

NewYork City is now in the process of fully evolving to the fourth stage of e-government, which allows full service delivery from multiple agencies through the creation of virtual agencies. E-government will be completely customizable according to the needs and interests of the individual.

Once a municipality has its own Web site fully in order, it is time to look beyond its own borders. It will become increasingly important for residents to be able to access information not only from their city, but from their corresponding state or neighboring counties' Web sites. In the fifth stage of e-government, information and government Web sites are integrated to provide for maximum convenience.

Business owners will find that e-government has transcended bureaucratic structures and processes by creating a much more streamlined and efficient way to interact with the government.

Conference organizers Dr. Simon Hakim (left), Dr. Paul J. Andrisani (center), and Fox School Dean M. Moshe Porat (right) listen intently to a compelling presentation by Mayor Guiliani at New York's Office of Emergency Management.

For example, in the past, an individual wanting to start a small business — a restaurant, for example — had to navigate a bureaucratic maze to get the necessary forms he needed filled out from various city and state agencies.

This could be a very confusing process, with various forms needing to be approved by multiple agencies. Some businesses understandably resorted to hiring third party expeditors to help them cut through all the red tape.

E-government will make the process of filling out forms in triplicate a thing of the past. A small restaurateur just starting out can apply for all the necessary permits from different agencies at once online, rather than filling out endless forms and waiting for weeks for a reply.

With one application, a credit card, and an electronic signature, all corresponding city, state and federal forms will be automatically filled out. Appropriate personnel will review the applications simultaneously on their computers, instead of sequentially on paper.

As a result, a process that used to take weeks will only take days or even hours, and companies will be able to check on the status of their application online at their own convenience. We view this as an issue of competitiveness in the new economy: as businesses are increasingly mobile, they will bring their jobs to cities that make it easier to do business.

We're going to go from a government structure that makes people wait in line to offering virtually all those services and information online.

An estimated 50 percent of all NewYorkers have access to the Internet, but we are determined not to leave any New Yorkers out of the new world of opportunity that e-government provides. That's why we have taken proactive steps to help bridge the digital divide.

The city is deploying Information Kiosks — interactive, multimedia information booths — in prominent neighborhood locations such as libraries, train stations and shopping malls throughout the five boroughs. Through these kiosks, every e-government function that is available online will be accessible to people without a computer at home. There will be at least one kiosk in every one of the 59 Community Districts.

Beyond kiosks, our long-term goal is to do everything we can to encourage the development of a computer literate citizenry that can take full advantage of the promise of e-government and the new economy.

That's why buildings in the New York City Housing Authority also offer computer access and classes to young residents, while 15 recreation centers spread throughout the parks in our city do the same.

Through an initiative called Project Smart Schools, we have given every middle school classroom in the public school system access to computers:

- ***High-speed Internet in schools:*** Through a partnership with AOL Time Warner and Cablevision, all New York City Public Schools will have high-speed Internet access in the future.
- ***Web-Phones:*** Furthermore, the city is actively encouraging the placement of pay telephones that offer access to the Web throughout New York City. This will make Internet access available on nearly every street corner.

This generation of mayors has overseen a tremendous transformation in urban America. In New York City, we have been able to reduce crime, reform welfare, encourage economic growth and improve the quality of life.

This reflects a profound social and cultural transformation that has occurred: we've changed the way people think about their city. New York is no longer considered an ungovernable, unmanageable city that is doomed to perpetual decline.

Now, e-government gives us the opportunity to change the way people think about government. We're going to go from a government structure that makes people wait in line to offering virtually all those services and information online.

Those of us serving in government today have an historic opportunity to create an entirely new 21st century infrastructure that will return government directly to the people it serves.

We have an obligation to make the most of it.

Securing the Future of America

Ken Fitzpatrick, General Manager, Computer Associates

Our country has changed drastically since we met on June 26, 2001 at the New York City Emergency Operations Center in the World Trade Center. The attacks of September 11, 2001 have had an irrefutable impact on the priorities addressed by our e-government initiatives. For this reason, I have replaced the transcript of my presentation with the following paper, which focuses on securing infrastructure, including critical e-government operations.

Securing Our Infrastructure

In the emerging generation of e-government, information technology (IT) touches every aspect of government — connecting citizens, employees, government agencies and branches of government, suppliers, businesses, and partners around the globe. E-government security and privacy management are primary components of public trust, particularly in the context of the growing importance of ensuring continuity of government online services as part of the national strategy for critical infrastructure protection. Our nation's success depends upon our ability to protect its information, intelligence and infrastructure.

Infrastructure Protection and Privacy

More than 80 percent of U.S. infrastructures (such as electricity, telecommunications, IT hardware and software, financial services, transportation) are managed by the private sector, and both traditional and e-government systems rely almost completely on these infrastructures for their service delivery and citizen communications functions. To help manage the risk that such infrastructures will be attacked and damaged or destroyed, thus undermining the delivery of vital services, a new protection model of formal, public-private sector cooperation has emerged over the past six years, accelerated by the terrorist attacks in New York City and in Washington, DC. This model has been incorporated in the government's Homeland Security initiatives.

The operational keystone of this model will be the collection, processing and communication of data and information both within and across infrastructure sectors and with all levels of government. Such data will include personal information and confidential business information. Consequently, sound risk management principles, as well as legal and regulatory requirements in many instances, will demand that critical infrastructure protection (CIP) systems incorporate privacy and security controls or risk serious exposure to threats against these systems, inadequate buy-in from private sector companies, and loss of public confidence.

The impetus to build CIP systems emerged from the 1996 President's Commission on Critical Infrastructure Protection, which warned of a number of serious issues and threats to the infrastructures of the United States. The Commission defined a set of infrastructures as critical to the well-being of the United States and its citizens — Information Technology, Electricity, Emergency Services, Financial Services, Government Services,

biography

Kenneth F. Fitzpatrick *is general manager, customer advocacy group for Computer Associates (CA). In this role, he spearheads initiatives to ensure that the focus on customer satisfaction is paramount throughout the organization. Previously, he served as general manager, global marketing, responsible for worldwide advertising, communications, public relations, branding, field and channel marketing, market strategy and planning.*

A recognized leader in helping global companies transform to an e-business, he has worked in the information technology industry for nearly 20 years. He has extensive marketing, sales and development experience in bringing to market leading-edge, world-class e-business solutions.

Prior to CA, he held various executive leadership positions at IBM in marketing, sales and development, most recently driving the company's Internet security business.

Earlier, he was general manager of CMA North America, a London-based software firm. He also was vice president of sales and marketing for CompuAdd Computer Corporation, and group director, product marketing for Sterling Software, Inc. and Sterling Commerce.

He received a bachelor's degree in economics from Iona College and did graduate work in executive marketing while with IBM.

Kenneth Fitzpatrick, general manager of Computer Associates, addresses conference attendees at New York's Office of Emergency Management (OEM).

Health Services, Oil and Gas, Telecommunications, Transportation, and Water — and identified a number of serious vulnerabilities requiring immediate attention.

In addition to what it viewed as well-understood physical disruptions, the report discussed new cyber threats exacerbated by the complexity and interdependence of systems supporting these infrastructures. As a result, it viewed infrastructure assurance as a shared responsibility and advocated infrastructure protection through a formal program of education, industry cooperation, information sharing, and a national organization structure. This important study led directly to the establishment of a number of mechanisms to address the actions recommended by the report, including the establishment of private sector Information Sharing and Analysis Centers (ISACs) in each of the major critical infrastructure sectors. Within government, the Critical Infrastructure Assurance Office (CIAO), the National Infrastructure Protection Center (NIPC), and more recently, the Critical Infrastructure Protection Board, have been organized to bring structure to the government's mission with respect to CIP.

Given that the bulk of the infrastructures in the United States are privately owned and operated, much of the information sharing must be done initially by companies within the critical sectors (and by government agencies within the government services sector) and must also be shared with government if the types of protections advocated in many national studies and reports are to be achievable at the national level.

The terrorist attacks of September 11 transformed abstractions into hard focus. The success of the attackers in penetrating airport security controls, the disruption of local and regional electrical and telecommunication systems, the FAA's shutdown of commercial aviation transportation, the NIMDA worm Internet attack, and the Anthrax attack and its multiple impacts on U.S. government staff, private citizens and the public health system of the United States, collectively led to a rapid sharpening of interest in addressing solutions to the problem of critical infrastructure protection, in particular as part of the Bush administration's Homeland Security initiative.

It is increasingly accepted that both government and private sector entities will need to cooperate in the collection, processing, management, and communication of systems-based personal and confidential business information within and across critical infrastructure boundaries. Industry and government partnerships, such as the Partnership for Critical Infrastructure Security (PCIS) and various sector ISACs, such as the Information Technology ISAC the Financial Services ISAC, and the FedCIRC operated by the General Services Administration are now operational. Further work is under way to design programs that will facilitate building systems needed to capture data for threat warnings and detection of attacks. These systems will employ data integration technology to collect and aggregate information, use data warehousing and mining technologies, employ expanded networked communications and apply other technology tools to ensure threat mitigation.

A necessary component of such systems will be sound security policies and effective procedural and technical security controls. While not trivial, such policies and controls can be built upon existing knowledge, tools and practices in the information security discipline. For example, the use of identity management, threat management, and access management security software and other technologies, combined with a security analysis and command center, are able to address the security requirements of CIP systems. Commercial, off-the-shelf technology, and products are available and can do this today. The information security discipline is emerging as an important area of specialization within the field of information technology, with a growing body of knowledge, standards, and practitioners.

However, privacy of information is another matter. Information privacy, as a technical discipline, has to date achieved very little formal structure, and aside from the development of narrowly focused technologies to address very specific privacy requirements, there are no generally accepted architectures, protocols, languages, or schemas to ensure that all privacy principles and fair information practices can be embodied in IT systems and interoperate across networks. This is also true within government.

This inability to provide interoperable technical support for consumer and citizen privacy policies and practices means that many jurisdictional information privacy laws and regulations, as well as business privacy requirements, are, as a practical matter unenforceable given the volume of data being collected and processed for electronic as well as traditional services. With the acceleration of data sharing necessary for critical infrastructure protection, the problem becomes even more serious, and further amplified by the gravity of national defense and the importance of citizen trust in their democratic systems.

Our nation's success depends upon our ability to protect its information, intelligence and infrastructure.

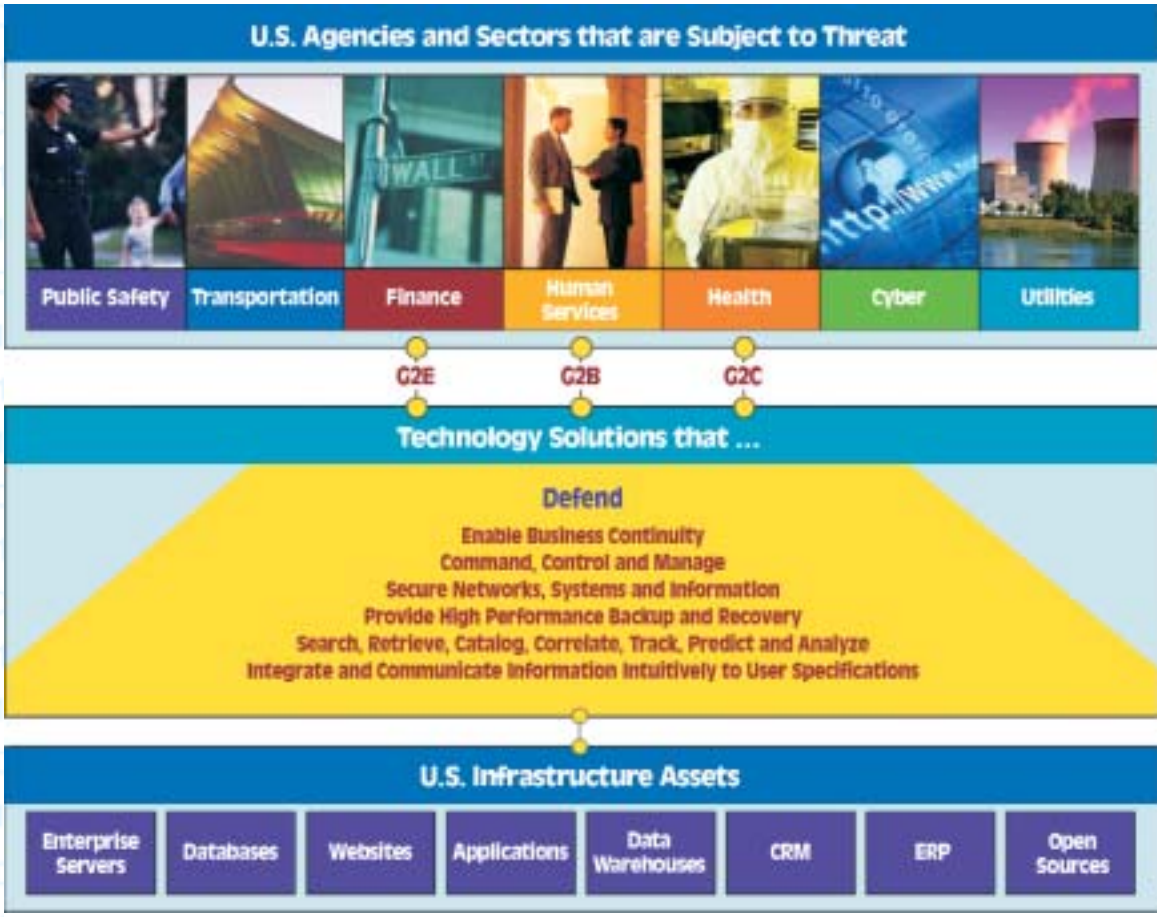
Interesting and relevant work has been under way by the International Security, Trust, and Privacy Alliance (ISTPA) to address this problem. ISTPA is a non-profit organization composed of global companies, technology providers, academic institutions and small businesses working together to provide objective and unbiased research and evaluation of privacy standards, tools, and technologies. ISTPA's goals include researching and developing an objective privacy framework for the protection of personal and organizational data, a framework for privacy services, analogous to the well-understood, high-level frameworks which define information security.

Privacy focuses on how personal information is collected, used, and distributed. The high-level principles that govern the proper handling of personal information have been incorporated into ISTPA's Privacy Framework, an important tool for architecting systems that will provide citizen confidence and trust. These principles include:

- Notice and awareness of what personal information is being requested or collected
- Choice and consent over that collection
- Individual access and correction capability for personal information already collected
- Limitations on collection, re-disclosure and processing
- Recourse in case the information is improperly collected, used, or distributed
- Information security

Generally these principles are applicable to both private and government collection and use of data, with specific regulations providing detailed guidance (for example with health data).

Using the Framework services in the critical infrastructure context, it becomes possible to determine clearly where privacy process controls are needed. It also assists government policymakers, managers and technical architects in identifying which services are essential and how they interact. From such evaluation, business process controls and technical mechanisms can be identified and implemented to support critical infrastructure protection solutions capable of satisfying jurisdictional legal and regulatory privacy requirements and the trust expectations of citizens — particularly important as policy choices made by govern-



ments require increased information collection and processing to ensure enhanced infrastructure protection.The ISTPA Framework represents a major step forward in providing a construct to help achieve the public policy balances necessary to make critical infrastructure protection successful, both operationally and in terms of public acceptance. From an e-government perspective, where new systems are being designed and engineered to support online services, such a framework can be extremely valuable in addressing the use of personal data for government services, as well as the issues related to data provided to government in support of critical infrastructure protection and Homeland Security.

Charlotte, North Carolina — Using Technology and Making E-Government Work

Patrick McCrory, Mayor, Charlotte, NC

Charlotte is a Sun Belt, southern city that has witnessed dramatic growth and has worked to prepare citizens for the 21st century. The city is currently the 23rd largest city in the United States with a population of 565,000 people within its city limits of 270 square miles. As the second largest banking center in the United States, Charlotte is home to the Bank of America and Wachovia Bank, which merged with First Union National Bank on September 4, 2002. The city's eight Fortune 500 companies that have headquarters operations in Charlotte lead the city's main employment base, in addition to US Airways' 7,000 employees. Because of the strong corporate community and efforts by the local school system, Charlotte is a technology friendly city. According to The Progressive Policy Institute, 36.7 percent of Charlotteans have Internet access at home or work and 77 percent of Charlotte-Mecklenburg school children use computers in the classroom. While growth and infrastructure issues have dominated the city agenda for the past 15 years, the city has also worked to prepare for the great challenges facing the community over the next 20 to 30 years, including the technology needs of the future.

Increasing Productivity and Enhancing Communication

Charlotte generally uses technology as a way to increase productivity in the work force and enhance communication opportunities. However, it took a long time to utilize technology in such a manner. In 1995, when I was first elected mayor of Charlotte, I was the first mayor in its history to put a computer on the mayor's desk. Admittedly, I had my 13-year-old nephew help me figure out how to use the computer, but before then, the city never had e-mail sent to the mayor's office. Things, such as e-mail, that was once considered cutting-edge technology, have now become basic components of conducting business. When I was first connected to e-mail, I only received and sent a limited number of e-mails. Now, seven years later, the mayor's office receives about 70 to 80 e-mails a day from citizens. This increase in e-mail volume and the electronic data storage space needed for the city's 5,000 employees continues to challenge the Information Technology Department. E-mail, in particular, has completely changed the dynamics of communication between public officials and citizens. Many citizens enjoy the autonomy associated with e-mail when they have a complaint or want to offer feedback on a certain position or vote of their elected representative. They also enjoy the direct access of communicating with their public officials from the smallest of issues such as a garbage complaint, stating their arguments for a zoning issue vote, to sharing ideas on how to make government run better.

biography

Patrick McCrory *began his third term as mayor of Charlotte in 1999. First elected to Charlotte's city council in 1989, he was re-elected in 1991 and 1993, serving as mayor pro tem in 1993.*

As mayor, he has led a number of innovative programs, including the Parole Accountability Committee, the Tolerate No Truancy, Target 100 and the Mayor's Mentoring Alliance. In addition, he has guided the development of Charlotte's 25-year transportation plan, as well as its "pedestrian friendly" land use policies.

Prior to his career in the public sector, he held many positions at Duke Energy Corporation, including manger of business relations, director of training and development and recruiter.

He serves on the board of the U.S. Conference of Mayors and as chair of its Environmental and Energy Committee. He also chairs the North Carolina Coalition of Public Transportation and serves on the board of directors for the North Carolina Institute of Politics and the North Carolina League of Municipalities.

Additionally, he is involved in the community, serving on the boards of directors of the United Way of Central Carolina Inc., the Charlotte World Affairs Council, and the Charlotte Chamber of Commerce. He is an honorary chair of the Cystic Fibrosis and Arthritis foundations.

He graduated from Catawba College with a degree in political science and education.

Nick Tennyson, mayor of Raleigh, NC, shares his views with fellow mayors, executives and academics.

The use of technology by both the young and old has been a fascinating evolution. The technology surge has been a challenge for people in their 40's who did not use computers growing up. The younger generation feels much more comfortable on the computer and is capitalizing on that technology in knowledge enhancement and resource access. Schools are promoting computer use by encouraging contact with government officials over the Internet to doing presentations on PowerPoint — and this is from sixth graders. Without realizing that we grew up in a different era, many of our students and young adults expect the baby boom generation to understand modern technology. However, some of the most active people sending me e-mails today are senior citizens and retirees — and I know many grandparents use the Internet to keep in touch with families and share pictures between relatives.

Collaboration

One of Charlotte's successes as a city is that we engage in numerous partnerships and collaborations of technology with the Web site being a highlight. A great technology achievement in Charlotte was creating a shared Web site between city government and county government (www.ci.charlotte.nc.us). Since 1997, the city of Charlotte and Mecklenburg County have been the only two local governments in the country to share a Web site. Charlotte is very proud of the Web site, which won the *Digital Government Award* in 1999. In addition to the *Digital Government Award*, Charlotte was recognized by TekInsight for progress in "adopting and utilizing digital technologies to improve the delivery of services to citizens."

The joint city-county Web site can be accessed in one of three ways —through a county web address, a city web address or through the joint Charlotte-Mecklenburg web address. These three different tools enable entrance to the Web site and then allow a viewer to link to other Web sites throughout the city, county and nation, including the local Chamber of Commerce (www.charlottechamber.org) and Convention and Visitors bureau (www.visitcharlotte.org). There are frequent commonalities between the Charlotte and Mecklenburg County political bodies as we share 19 consolidated services, so it made sense for the city and county to collaborate on the Web site to share costs, technology features, and service resources for this project. One benefit of a consolidated Web site for citizens is that they can look up information about their city and county elected officials on one Web site. The Web site also features a Board of Elections section that verifies voter registration and provides the location, with maps, of designated voting sites. The city and county work to ensure that the system is updated frequently, and is currently working on a complete redesign of the Web site to add more online services and ease of customer/citizen use.

Closing the Digital Divide — Computer Access to Neighborhoods

In order to promote computer literacy and increase access to technology, the city of Charlotte has collaborated with the Charlotte-Mecklenburg School District, Volunteers and Partnership Office, to support a program entitled, "Computer Access to Neighborhoods." These 38 sites located around the community, including YMCAs, churches, housing authority sites, park and recreation facilities, neighborhood service centers, and four schools, were developed to help break down the digital divide to communities and families that do not currently have access to technology. First Union/Wachovia Bank donated all the computers and Time Warner Cable donated Internet access so that children and adults in certain geographic areas can use the tech-

nology for free GED instruction, summer youth programs, and resume development and job research. The goal is to expose children to computers and technology with kids getting first priority on the computers and adults using them when kids are in school.

E-Government

When people think of technology, their immediate thoughts are of e-mail and the Internet. The new dynamic in technology is to develop a technology structure to support e-government to promote transactions between businesses or citizens and government. The Charlotte definition of e-government is:

"The transformation of public sector internal and external relationships through net-enabled operations, and information and communications technology in order to optimize government service delivery, constituency participation, and governance."

Most public officials in large cities are working with some type of e-government system. New York City, under Mayor Rudy Giuliani, used e-government for public safety initiatives, even before the World Trade Center terrorism. Charlotte and New York City have both been successful in using e-government as a means of conducting business and delivering information to citizens.

E-mail has completely changed the dynamics of communication between public officials and citizens.

Charlotte is working to use this technology of e-government for a host of services. Such basic functions as paying water and sewer bills, requesting new water service, or cut off and service repairs, submitting customer service requests, and purchasing supplies and materials from vendors. Most city fees can now be transacted online, from payment of licenses, citations, transit passes, pet licensing, and red light (SafeLight) violations. Our ability to offer payment transactions through a secure online network is possible through a partnership with First Union/Wachovia Bank.

The city offers literally hundreds of e-government transactions with some being better utilized than others. Presently, citizens wishing to pay their bills or purchase permits are benefiting most from Charlotte's online services. Such transactions as obtaining a business privilege license, yard sale license, and even parade permits can be applied, granted, and paid for all through the Internet. One of our particular focuses is on speeding up the permitting process required by the city and county for a host of issues. Providing one-stop shopping can be one of the biggest tools of technology for government services. When developers are constructing a building, they need literally hundreds of permits. As recently as three years ago, people had to pay separately for all the permits required by the city and county. Now Charlotte requires only one check to pay for all the different permits and this process is saving a tremendous amount of time. Furthermore, that one check can be paid through a computer system, easing the process for developers and other citizens who, in the past, had to go to the county to write a check, and then to the city to write a check. They might have had to write three or four different checks within our governmental organizations. The system was streamlined after realizing that numerous complicated steps in the process were inconveniencing all parties concerned.

While the technology is available and being offered, we still have much work to do to communicate to citizens that we utilize e-government. One area in particular, that has yet to be embraced by Charlotteans, is the ability to pay parking tickets online. Presently, we only average 25 parking fines being paid per month via the Internet. While the transaction level is not where we want it to be at this point in time, we believe the program has potential for increased usage.

Technology Objectives

The driving forces behind Charlotte's use of technology is to:

1. Enhance customer services
2. Increase city staff productivity
3. Contain costs while offering more services

While we feel we are meeting the three most important objectives we are trying to impact through technology, with enhancing citizen service as our primary focus, we are clearly realizing internal benefits. Charlotte's use of the Internet and all it has to offer is admit-

tedly still in the infancy stage for the city, yet technology is clearly benefiting many of our internal processes. We have a customer service system that allows us to track citizen complaints or requests for service from the day the complaint or request is made, to the day it is addressed, and by whom. Human Resource functions and transactions are widely used on our Internet, including submitting resumes and job applications online and providing safety information and expense forms for employees.

Technology still clearly has a "wow" factor, from utilizing a personal data assistant that is also able to operate as a phone, to accessing old historical government documents in the comforts of one's home, and oftentimes outside "normal" business hours and without fees. Despite the excitement many of us share for technology, as a policy maker, I have to be focused on policy issues and not get caught up in the glitz of technology. Enhancing government services at a cost savings to governmental agencies and the taxpayer is something that every politician can support. Managing technology and policy issues is not usually given much consideration, yet it is crucial to successful e-government. Charlotte has realized that updating policies is the first step to implementing e-government. Policies that were implemented 20 years ago may not be effective with the new electronic technology. As we further implement technology resources, it is actually causing review of the policies, such as contracting policies or application policies. We have duplicate forms for many different departments and, now, by putting it on the Internet we have to review them to ensure they make sense and are applicable for e-government. This process of active learning has been very beneficial, if for no other reason, than having taken a step back and asking the basic questions.

- What does the customer want?
- How many customers are actually going to use this service?
- Does the service lend to the overall city focus areas?
- How much would it cost to replace and upkeep?
- Would the city save money by doing this?
- Do we outsource this service or can it be provided by the private sector?

The last question raises some major issues due to the growing number of contract services offering technological services. The type of customer using this technology needs emphasis. We're finding out that it's not the retail customer that really needs e-government; it's the business customer. Charlotte receives its greatest complaint from the business customer, oftentimes from the construction industry regarding the permitting process, but generally, most things related to city contracting/procurement.

> Our ultimate goal is for Charlotte's e-government to be a convenient, secure, and effective way of providing accurate and timely information and services, offering citizens an opportunity to participate in open government, and contributing towards a positive image of Charlotte to the world.

Broadening E-Government

The next technology step is to find new ways to tie our services into not only the county government, but also surrounding governments. Communication between governments is a key component as we incorporate technology. We try to share information or technology in a way that provides win-win situations. We have made a good start with Mecklenburg County and our joint Web site, but we still have a ways to go in such areas as a radio and signal system for all public safety agencies in the county and region. One success is the state of North Carolina's procurement procedure for purchasing equipment, which allows local governments to purchase from their contracts to buy bulk equipment, whether it is cars or other big-ticket items. Another procurement service, offered by the state of North Carolina that the city's Business Support Services is using, is the North Carolina Interactive

Purchasing System (NCIPS). Both the city of Charlotte and Mecklenburg County post bid proposal opportunities on the NCIPS, which then automatically sends an e-mail to each vendor that is registered on the state system and has indicated interest in receiving notification based on certain categories of services. Traditional bid notification methods are still used, but this system has helped to reduce mailing and printing costs, while increasing the number of potential vendors.

Additionally, the city of Charlotte was the first city in North Carolina to implement a SafeLight Program, where cameras are placed at intersections to photograph cars running red lights. This had been very successful for the city in reducing accidents at the high-wreck intersections but it is still very controversial since we are using technology for enforcement. Drivers receive a ticket in the mail when their license plate is photographed entering an intersection after the light has turned red. While this system has been helpful for the city and customers, lawyers are not pleased due to elimination of the court phase, as it is only a civil infraction under North Carolina law. But, true to our technology friendly operations, we can also collect red-light fines over the Internet. This use of technology for public safety has encouraged eight other North Carolina municipalities to implement the SafeLight Program.

Effectively Engaging in E-Government

Use of this new technology necessitates some caveats. Costs, operations, training for employees and customers, and security must be considered to effectively engage in e-government. Charlotte has budgeted more than $2.4 million in fiscal year 2002 to enhance our e-government capabilities.

Given the amount of money we spend on technology, cost control is a key issue. There are many ways that the costs can become much greater than was initially anticipated in a budget. When considering costs, the thought process must delve far beyond the initial purchase of equipment. Long-term upkeep costs and the purchase of contemporary equipment as the technology improves are important considerations. Computers now have countless gigabytes of memory, flat screen monitors, CD burners and DVD players that weren't imaginable just five years ago. In addition, the advantages and shortcomings of leasing versus purchasing equipment must be considered. Web designers command high fees, which raises the need to decide between in-house staff and outsourcing for support of e-government services. These matters must be contemplated before technology is incorporated into your city, not after the process has started. A qualified individual has to be responsible for operations and for updating the system, and the city of Charlotte has two staff members assigned to e-government with a cross-section of departments represented on our e-government strategy group, which is chaired by a Budget and Evaluation staff member.

The third consideration involves citywide training of employees as well as training for customers. Employees must understand how to use the technology and feel comfortable using it for daily work activities. Training your customers how to use technology is another matter. An evaluation is necessary to determine how many of your customers have access to computers. Sensitivity is key when considering the economic background of citizens who may not be able to access e-government — as many in

Dr. Paul Andrisani (second from left) and his wife Barbara (second from right), recount the day's events on the floor of the New York Stock Exchange (NYSE) with mayor Steve Burkholder of Lakewood, CO, and Beth Oporto of the NYSE.

the community do not have computers, which is why we focus on access to technology through the Computer Access to Neighborhoods program and the public library system. Without a personal computer, is there any way for a citizen to access this type of service or information? Charlotte's answer is yes, but we want to encourage people to try e-government, as we believe they will enjoy the experience.

Automated Meter Reading

One example of effective e-government is the city's implementation of new technology for water meter readings. Automated Meter Reading (AMR) utilizes meters equipped with radio transmitters that obtain meter readings by a mobile van. The pilot of this new technology has reduced costs, increased customer satisfaction through more accurate billing, and improved operations. In order to complete the 200,000-plus meter reads, the old system required 36 meter readers and took 30-plus days to complete the meter readings for a monthly billing cycle. However, with the introduction of AMR, the same amount of reads now requires only one meter reader and takes ten days. The city has found cost savings in terms of personnel, equipment and maintenance, support staff, and call center activities. Improved operations have come in the form of reduced water loss, faster, more accurate reads, and fewer estimation and billing errors. Unsurprisingly, similar to implementing any new technology, AMR requires significant upfront, capital investment. However, after careful consideration, a payback in three to four years, on top of improved customer service and operations, is well worth the 3.7 million dollar implementation cost.

Conclusion: Looking to the Future

Through the implementation of such programs as Community Access Neighborhoods, SafeLight, and Automated Meter Reading, the city of Charlotte is realizing both the benefits and challenges of e-government. The city is actively working to anticipate customer requests and needs, and is constantly responding by changing its service offerings. Our ultimate goal is for Charlotte's e-government to be a convenient, secure, and effective way of providing accurate and timely information and services, offering citizens an opportunity to participate in open government, and contributing towards a positive image of Charlotte to the world. I believe Charlotte is well on its way to achieving that goal, which will continue to allow Charlotte to be a technology friendly city that is prepared for more growth and issues facing the new millennium.

Patrick McCrory, mayor of Charlotte, NC, has led a number of innovative programs in guiding the development of technology systems in Charlotte.

E-Government Through the Eyes of AOL Time Warner CEO

Richard D. Parsons, CEO, AOL Time Warner, Inc.

We're members of the New York Stock Exchange at AOL Time Warner, so every time I come down here I feel like I'm visiting an institution that has particular significance to me and my well being.

But I understand that the purpose of today's discussion is to provide our perspective on the so-called e-economy, the new economy, e-government, and I'm delighted to do so.

A word about my background just so you know where some of these thoughts and views are coming from. Before I had the privilege of practicing law with the now mayor of New York, Rudy Giuliani — he and I were partners together — I spent some time in government service, as did Rudy, which is where we met. I worked for a man named Nelson Rockefeller when he was governor of the state of New York, and for Gerald Ford, when he was president.

I have a particular affection for, if not an affinity for, public service. Indeed, on occasion I've even thought of one day running for office. But I have never thought of running for the office of mayor because everybody else has cover. You guys don't. Not only does the buck stop at the mayor's desk, being the chief executive of a municipality, but it always seems to me the blame stops there too. Yours is the level of government closest to the people, which actually provides services as opposed to devising policies that then get implemented at the local level.

We described the mayor of the city of New York back when I was active in political life as being the second toughest job in the country. I think the mayor is the toughest place to carry out one's instinct for serving the public because you're right there on the firing line. So I appreciate the complexity of your job and it's with that appreciation that I'm going to try and share some observations as to how this new digital economy is not only affecting cities, but also what its implications may be to some of your employees and your constituents.

In trying to think about what one might share with a group like this that is, in every sense of the word, in the trenches on a day-to-day basis, I thought I would address three subjects which are overarching or broad.

The first issue was, what is the overall impact of digital technology? Is it going to make our lives better and easier, or not? The second issue is, what are the economic ramifications

biography

Richard Parsons *is Chief Executive Officer of AOL Time Warner Inc., whose industry-leading businesses include interactive services, cable systems, publishing, music networks and filmed entertainment. As CEO, he oversees all the company's businesses and divisions. He is a member of AOL Time Warner's Board of Directors.*

Before assuming his current position in May 2002, he served as Co-Chief Operating Officer of AOL Time Warner, where he oversaw the company's content businesses — Warner Bros., New Line Cinema, Warner Music Group and AOL Time Warner Book Group — as well as two key corporate functions: Legal and People Development.

He previously served as Co-Chief Operating Officer of Time Warner Inc., overseeing the company's film, entertainment and music businesses, as well as all corporate staff functions, including finance, legal affairs, public affairs and administration. He has been a key player in driving Time Warner's growth, working closely with chairman and CEO Gerald M. Levin on a range of strategic, financial and operational initiatives. He was also the principal executive responsible for supervising the interaction and coordination of the company's operating divisions. In addition, he had prime responsibility for helping to roll out a company-wide initiative aimed at examining and defining Time Warner's vision and values.

Before joining Time Warner, he was chair and chief executive officer of Dime Bancorp, Inc. – one of the largest thrift institutions in the United States. He also served as managing partner of the New York law firm Patterson, Belknap, Webb & Tyler and held various state and federal positions, serving as counsel for Nelson Rockefeller and as senior White House aide under former U.S. president Gerald Ford.

He is chair of the Upper Manhattan Empowerment Zone Development Corporation and serves on the boards of Citigroup, Estee Lauder, the Colonial Williamsburg Foundation, Lincoln Center, and Howard University.

He holds a bachelor's degree from the University of Hawaii and a law degree from Union University's Albany Law School.

for our cities? Will the Internet be what I'll call a centripetal force that strengthens the fabric of urban life, or a centrifugal force that pushes people and businesses out from the centers of cities?

The third is, how best can cities harness the power of digital technology in this kind of networked society?

Now, the first question is fairly simple: is digital technology going to make life easier and better? And simple questions deserve simple answers, so I'll give you one, and my answer is yes and no. Certainly what digital technology has enabled is the growth of the Internet. For consumers, and I call them consumers in my business and you call them constituents in your business, it's made things easier for them.

Convenience and choice, I would say, are the two areas that impact most on the lives of the users of this technology for acquiring goods or services. They can do it more conveniently and they have a wider choice because the power of technology and the power of networks and the Internet is to bring everything to the consumer or the end-user and array it, or at least enable it to be arrayed, in a way that they can conveniently manipulate massive amounts of information and data and make choices without ever having to leave their desk or their home.

From the perspective of providers of goods or services, and in this sense you would have to think of yourself and your municipal governments as providers of services to the public, I think the picture is much more complicated. If the Internet were as clarifying and as simplifying of things as people felt when it first broke onto public consciousness, we wouldn't see this bursting of the dot-com bubble that we've been observing over the last 18 months.

Jack Kirksey, mayor of Livonia, NY, inquires about the information presented at New York City's OEM.

What we're finding is that harnessing the power of this technology and making it useful to consumers or constituents by those who have to organize a business around that principle, or organize a set of public services around their business, is pretty complicated stuff, and it has to do with the nature of the medium.

Unlike previous mediums that border on paradigm shifts in terms of the way people spend their time, like television, which is cool or passive even, you turn it on, you sit back and it entertains, the Internet is really a hot medium, built around the notion of person-to-person interaction, and the consequence is that it requires greater intelligence on both sides of the transaction to make it work.

We live in a technological age where people like to propound formulas. So you have Moore's Law that says the power of technology doubles every eighteen months and the cost cuts itself in half every two months. I've propounded what I call Parsons Rule on the utility and power of digital networks. It's "E" equals "I" squared. Where "E" stands for the efficiency of the network and "I" stands for the intelligence that it takes to make the network useful.

In order to make networks useful, I think you need an exponential multiplication of the intelligence possessed by the organization that is trying to use it. By that I mean, this isn't simply a matter of making technology available to people who don't understand it. We need to understand its implications in terms of organizing things for the end-user, the consumer, because it's the whole notion, frankly, on which our AOL business is built.

Originally people thought if you could just get access to the Internet that the world would be brought literally to your doorstep. The problem was, it was the whole world. It was every library and every document and every piece of data in the world brought in some undifferentiated and impossible-to-navigate form. And the secret, which I will share with you since none of you are my direct competi-

tors, the secret to the AOL service was that it organizes that data and makes it simple and accessible to people.

What's always been curious to me is that among the original Internet pioneers, the AOL service has not enjoyed a very favorable or profoundly sophisticated reputation. In fact, we've been accused of dumbing down the Internet.

What we've done through the AOL service is make it so that it's easy and convenient and navigable and understandable by the average consumer who happens also to be your average constituent. In order for you to use the power of digital networks to serve your constituents, well, I think you need more intelligence.

This is my experience, and I'm not going to say anything specific about the city of New York other than I think the city is making a valiant effort to try and leap forward into the 21st century and to put as much of municipal offering and service provision online as they can. The real trick is having the intelligence within the organization that can, if you want to use that term, dumb it down to the point that the average person can use it. Once you get there, then you need intelligence on the other side of that equation so that the average person can understand the power of the network and use it.

> Convenience and choice, I would say, are the two areas that impact most on the lives of the users of this technology for acquiring goods or services.

An example of what I'm talking about: We just completed this merger between Time Warner and AOL. We tried at Time Warner to translate the very powerful brands that we have in our company — I mean, everybody knows *Time* or *Fortune* or HBO or Warner Brothers, these are very powerful brands in the analog world. We tried to figure out how to get a position and how to translate those brands into the digital world. And at the end of the day, I won't say we failed, but we came to the conclusion that it would take almost too long to retrofit and retrain our work force and that a faster, better and more efficient way was to become digital by injection, by merging with AOL and bringing that intelligence into the company.

Now, that's a more difficult assignment for most of your cities because those who you might merge with are in the same shape as you, but it does require thinking about new kinds of workers with new kinds of skills and new kinds of intelligence about the medium, and also educating your constituents as to how to use the medium.

The second question or theme is whether the Internet and all this digital technology is going to be in the more fundamental sense, good for cities? Is it going to be centripetal or centrifugal?

It is a fact that the Internet and the interstate highway system were essentially both born of the same phenomenon. Most people have forgotten, but I actually went back and looked, that one of the articulated reasons for the funding of the highway trust fund and the creation of the interstate highway system was the threat of nuclear attack and the desirability of enabling the evacuation of major American cities on short notice.

The genesis, if you will, of the Internet was essentially the same threat. It was born out of the Cold War. We wanted to make sure that we didn't have all of our computer intelligence residing in one place that could be bombed and therefore all of our computer-based defenses disabled. The Defense Department was given the assignment to go figure out how we could create a network so that if one part of the network is hit, whatever the intelligence is in that part of the network can be spread elsewhere. So the computers needed to talk to each other, they needed to be able to essentially evacuate information from one spot to another, which led to packet switching as a technology, which also led to the Internet.

So you think not only about starting down the road to create these things, but what the effects are. Let's talk about the law of unintended consequences. I mean, we built the interstate highway system essentially to enable the proper evacuation of the cities and it almost killed the cities. It created, it enabled, rapid growth from the mid-'50s through the '80s of the suburbs, the draining of not only people but businesses out of the city, creating suburban malls and all of that. No one thought about that consequence, but in the early going I think it was a highly

Gloria Katz, vice mayor of Fort Lauderdale, FL, confers with Martha Cavanagh, wife of John "Jack" Cavanagh, mayor, city of Winston-Salem.

centrifugal force, forcing things away from the center. People five years ago were suggesting the same thing about the Internet, that it was going to enable all sorts of telecommuting.

I remember having a conversation with my son, who is now approaching his 30th birthday — this was four or five years ago when he still knew everything — that he was going to go work for a dot-com to make a couple million bucks and then he was going to retire to Colorado — he's a big skier — he was going to retire to Colorado and ski all the time and telecommute.

He said, "Well, I can work from anyplace. You know, I've got my computer." He ended up coming home after his dot-com went belly up and having to live with his mother and me for four months, which was, I guess, somewhat humiliating.

But, in any event, he now understands not only that the age of everybody dispersing to their own private acres and telecommuting or working from home or from wherever they happen to have their laptop is not actually upon us yet, that it isn't even desirable.

I think the nature of this technology actually is centripetal. It is bringing people and businesses back into the cities for two very real reasons. One is the infrastructure that needs to be present to build the digital business and make it functional and useful, namely the so-called fat pipes, or telecommunications infrastructure or wiring, and the finance, the money.

And the second relates to the point I was making earlier about intelligence and the exponential growth of intelligence: what makes networks useful is human capital, and human capital in the aggregate, coming together. And so what we're finding, certainly here in New York and I think in numbers of other cities, are these so-called hot buildings or smart buildings, places where you can bring together young, talented entrepreneurs and provide the infrastructure and finance.

Cities are becoming the place to be for young folks and then for everything that surrounds these kinds of businesses that makes them both attractive and productive places to work. Not every city is going to be the beneficiary of this phenomenon. But I think those that appreciate the underlying drivers of the new technological age can position themselves to be the beneficiaries of it.

So then the last question is how do you harness all of this and make it work for you in your town? And obviously that's the 64 thousand dollar question to which I certainly don't profess to have the answer. Other speakers might give you some prescriptions, but I think I can speak to at least a couple of issues that you'll have to wrestle with on your way to the answer.

The first is, as you think about the potential of the new mediums to not only make your constituents' lives easier, more convenient and, by definition, more productive, how do you take advantage of these centripetal forces? I think you have to think about changing the paradigm or the dynamic that exists between the public and private sector.

I'll give you an example that is still searingly real to me. I spent literally all of the last year trying to negotiate, with both the United States government down in Washington and governments around the country and the European Union, both our AOL Time Warner merger, on which we ultimately succeeded, and another merger we were trying to do with a large British music company, for which we failed to gain approval. But in all of those theaters of discussion an operating paradigm presumes an antagonist and a protagonist, the regulated and the regulators.

The notion that you are always faced with when you deal with the regulators is that you

are operating with what I'll call mutually exclusive purposes. Our job is to somehow keep you from doing something, and what you're really trying to do here is something that we should probably keep you from doing. And so it is antagonistic and little, if any, thought is given to that process of how collectively we ensure that this kind of technological shift, this revolution that we're undergoing, is managed in the way that strengthens the nation's economy or expands the supply of jobs and opportunity for people.

I think that's profoundly wrong headed, and I think all the blame doesn't lie on one side or the other. For far too long business has viewed government as the less interaction, the less activity, the less done, the better.

The notion that, look, we're all engaged in an enterprise here that has mutual benefit for the whole is something that people need to be educated to, and there's a lot of education that's happened on both sides. This is not simply a matter of stopping things from happening that present some threat or some disadvantage to some portion of the constituency, it's a matter of thinking collaboratively about how we bring the benefits of this new and enabling technology to our customers, constituents because they're the same people.

The second thing I would observe is that those places, and most of them will be cities, those places that have the strongest educational infrastructure in terms of the 21st century literacy skills, and by that I mean not just the ability to read and write, which remain as essential in this century as it was in the last, but to have some digital fluency.

A place like New York, because of lots of unknown factors, can attract people from outside the city who are not local products and who have the educational background and skill sets to come in and take these new digitally-based, network-oriented jobs. But still, if we don't get our act together in terms of educating our own indigenous young people, all we'll do is end up in a posture where you have exaggerated the haves and have nots.

For cities that don't have the allure of a New York, I think you need to think about how you're going to build and equip your young people with digital literacy skills so that they not only can manipulate the new technology but they understand it at a level where — going back to my first theme — they can make it accessible and useful to people who have the ability to access it.

Lastly, having to understand yourself and what the implications of a networked society are will help you in formulating public policy within your cities, create policy environments that are more friendly and supportive and nurturing, the kinds of businesses you want to attract and the kind of efficiency that you want to implement through your governments. And the best kind of description of those implications that I've come across was uttered by a man who didn't live to see the reality of a networked society, but somehow seemed to grasp the profound nature of the change that living in a networked society will bring. The man was Martin Luther King, Jr., and I want to read you a quote from his letters from a Birmingham jail.

To quote Dr. King, "I am cognizant of the interrelatedness of all communities and states. I cannot sit idly by in Atlanta and not be concerned about what happens in Birmingham. We are caught in an inescapable network of mutuality, tied on a single garment to destiny. Whatever affects one directly, affects all indirectly."

For far too long business has viewed government as the less interaction, the less activity, the less done, the better.

I would submit to you for your thinking that "the inescapable network of mutuality" isn't merely a metaphor today. More and more, it's becoming a technological fact and an economic imperative, and the challenge for government and the private sector together will be to ensure that it is also an instrument for turning the promise of a better life, a more productive life, a more rewarding life, greater opportunity for all of our customers and constituents, into reality. This requires an understanding of the interrelatedness of all these things.

So that's really, I think, what all of you who are mayors signed up to do for your constituency: create a better life, a more rewarding city, a more satisfying and enjoyable city to live in. Technology is a tool with which to do it. But it will require intelligence and understanding and a lot of hard work.

E-Government Through the Eyes of Cisco's Chairman

John Morgridge, Chairman of the Board, Cisco Systems Inc.

How many of you were born before 1940? If you were born before 1940, then you have some sense of the Industrial Revolution. If you were born after that date, perhaps it doesn't stick so strongly in your mind.

My mother, who lived to be a little over 100, was born in 1895. She had a real insight into the Industrial Revolution because so much of it unfolded in her lifetime. Believe it or not, the Industrial Revolution started a century before her birth or more, and it spanned a very, very long period of time. That span causes us to look at it differently because we can adjust to change at that rate.

The Internet Revolution is far more compact.

biography

*As chairman of the board since 1995, **John Morgridge** dedicates much of his time to Cisco Systems' education and government initiatives.*

He served as Cisco's president and chief executive officer from 1988 to 1995, increasing company sales from $5 million to over $1 billion, expanding company operations from 34 to over 2,200 employees, and facilitating Cisco's public listing in 1990. Under his guidance, Cisco Systems became one of the fastest growing companies in the history of the computer industry and one of the highest market valued companies in the world.

He serves as director of numerous non-profit organizations, including the Morgridge Family Foundation; Interplast, Inc.; American Leadership Forum for Silicon Valley; Nature Conservancy; and Wisconsin Alumni Research Foundation. He is also a member of the 21st Century Education Board and the Stanford Business School Advisory Council,

Speaking regularly on entrepreneurship and management strategies to corporations and universities around the world, he also teaches part-time at Stanford University's Graduate School of Business.

He is the 1996 recipient of the Arbuckle Award bestowed by Stanford's Graduate School of Business and has received honorary degrees from the University of Wisconsin, Lesley College and Northern Illinois University.

He holds a BBA from the University of Wisconsin and an MBA from Stanford University.

As a result, its impact on our lives is more visible. It also impacts us in really having to adjust to change in a meaningful way. That change is impacting all of our institutions, not just a select number of institutions and not just a select number at a given point in time, but all of them within a continuum, a continuum that is impacting them in decades — or a decade — versus a century.

This revolution is going to have an impact — a more far-reaching impact — on our institutions, our organizations, our cities, our towns, our states, our nations, and that's the important point. It says that change is going to happen at a different pace, and we as individuals have to embrace it and apply it at a totally different pace than we did with the Industrial Revolution. It's going to impact all of these institutions in that time frame.

It's had an impact also on the rate of growth and this, of course, is close to political people's heart, because growth, after all, is the engine that permits a dynamic political environment. It is the funding engine that permits us to provide all of the services and capabilities that you as politicians and as government leaders feel is important.

Historically a rate of growth of two or three percent per year was typical and considered good. In this networked environment, you can actually have growth rates higher than that without the associated inflation that historically has been the limiting factor.

I joined the computer age in 1960 and was not a very good salesman. It took me a long time to figure out why. Clearly, the reason I wasn't was that only a small percentage of the capital budget was expended on information technology. Today, of course, with over 50 percent expended on IT, it's easy to be a successful salesman, and we have many of them at Cisco.

Now, I'm often asked why did Cisco succeed where others didn't. You know, if I look back over our short but long Internet history of a little over a decade, we've probably had three or four sets of competitors, and there have been a lot of reasons why we have survived and grown while they have not. But one of those reasons certainly is that we're not only a

pusher of our equipment, we're also a user of our equipment. We actually started investing in our network capability back in the early '90s, and I would say it is one of the differentiating factors between us and our competitors at that time, and that's the reason we've survived and grown and they have not.

And where have we applied that talent or that network capability? We've applied it across the total spectrum of our constituencies and that's how government should think of it. Government should think of the network capabilities as reaching out to all of your constituencies. That means your suppliers, that means your employees, that means your associates in government at the state and federal levels. That means to those people, to your constituencies that use your service in a multiplicity of ways. That's where you get the impact.

We didn't start where a lot of companies did using the network principally as a marketing tool. We actually started work where, perhaps, government ought to start — as a service tool, servicing our customers. So we started with customer care support. That was the first major application that we put up.

Today, over 90 percent of our business comes in over the Internet. Over 85 percent of our customer queries are satisfied online. Now, that's a tremendous potential, because what it says is we don't provide an 8:00-to-4:00 or a 9:00-to-5:00 service. We provide a 7-by-24 service. And that's one of the reasons that this kind of capability is so important in terms of servicing constituencies, because we don't just service our customers, we service our suppliers through our virtual manufacturing. We service our employees through e-learning and all kinds of services.

You know, when you join Cisco, we give you a laptop computer, and for your first ten days with the company, that's your friend. That's what you deal with.

That's where you register for all of the services that we provide. That's where you do your health benefits. All of your investment program is done there. All of your learning is done about the organization you're joining, about our products, about our competitors. It's all provided online.

John Morgridge, chairman of the Board for Cisco Systems, Inc., explains how a networked environment can produce growth rates in productivity higher than two to three percent per year.

> In this revolution, there is a broad array of business activity that can be available in a city from designing Web pages to actually providing support to end users — a very, very broad landscape of jobs and opportunities — and they can be started in your local community to meet those requirements.

Gino Menchini, recently employed by CISCO, can relate his experience, as well as that of his brother's, who is also a CISCO employee.

MR. MENCHINI: I was mentioning to Mr. Morgridge that my brother brought me over to Cisco. I was in the city actually for 17 years — the city of New York — and I came to Cisco in December. My brother had been at Cisco for five years, and he said when you come in December, get ready. It's going to be right around the holidays. You're going to spend a lot of time on the plane going back and forth to San Jose for training. And I was telling Mr. Morgridge that I have yet to be to San Jose. Everything that I did from the first day I joined Cisco was done online in the office in New York and, actually, I think it allowed me to better service my customer, my client, the city of New York, by not being away as much for training.

So the contrast was actually rather dramatic between my brother's experience five years ago at Cisco and my experience at Cisco over the last six months.

MR. MORGRIDGE: Because we're challenged with this change in terms of training and, certainly, state and city governments have a huge training load. One of the ways to solve that training load is through the network, using the network as the principal training vehicle for your people.

One other interesting application is what we call the "virtual close." That's the ability to understand every day exactly where we are. At Cisco, all of our information is first created in the networked environment. Indeed, you could say, in the case of our company, that the network is the company. And in that environment, all of that data is available, be it orders received, equipment shipped, supplies purchased, what the gross margins are, what the products are, what our expenses are.

> Licensing and permitting are two areas where you can deliver a lot of service online very inexpensively … these are big areas where you can do two things: you can cut costs and you can improve service.

We don't fill out expense accounts on paper, we do it online. For our some 20,000 employees here in the United States, we have three accountants that follow expense accounts. Three for 20,000 employees. And that includes the employee who does his own travel reporting online. It goes through a screen so that he can't rent that Lincoln automobile. He can only rent that Ford Escort. I think it's an Escort. That's what I always recommend.

The point is you can create the total business environment so that employees complete day to day activities online. By doing so, you can actually transmit a type of corporate culture.

These are some of the applications. The instant close permits management to actually look at where it is financially at any given point in time. And, certainly, government — I know state government, local government — doesn't have that ability. Both in terms of the revenue end and the expenses out, it would be a huge advantage in terms of planning exactly how you execute.

You can see the estimated savings: $1.4 billion on revenue of about $18 billion just to give you a little order of magnitude of what we think we've saved and the productivity that we've increased through it.

Now, I'm asked a lot: "What can I do in local government, state government or national government to ensure that I'm part of this revolution, that my community participates fully and remains competitive in the space?"

There are a number of things. This happens to be a listing that was put together for a book coming out shortly. Gordon Moore of Intel was part of the committee that put this together, and it lists a number of things that are fundamental. I'll give you some examples of how it can be done. And I'm not talking about designing and building computers.

In this revolution, there is a broad array of business activity that can be available in a city from designing Web pages to actually providing support to end users — a very, very broad landscape of jobs and opportunities — and they can be started in your local community to meet those requirements.

These are some of the things as you might expect. It doesn't hurt to have some kind of a technology business like New York has. It doesn't hurt to have a lot of well-trained engineers. The idea of lack of fear of failure is an important one. You have to be able to accept failure within the business, within the capital system. Certainly, money in states and cities can help there, because they can provide early funding. The state of Pennsylvania does it; the state of Wisconsin does it, the state of Georgia does it: they take a small piece of their pension money to provide that first $100,000 to get a business started in this space. Then there are all kinds of accommodating policies that you can enact or help to have enacted in your space.

There are some cities that have capitalized on it. They're not necessarily hotbeds of technology — Oakland, California doesn't strike me as a hotbed of technology. Yet, it has been successful in creating that environment there.

Some of the others have had anchor tenants going way back such as Huntsville, Alabama and certainly Tulsa. Omaha is kind of an unusual place to be a technology center. So it can be created.

Next are some of the areas that you might expect. Perhaps the only one that's a little unusual is the Washington, DC, area. Certainly from technology innovation, there's been a lot of it done there in Northern Virginia, and you might say that the state of Virginia really worked hard at creating that environment. The governor there, Governor Gilmore, had a committee that focused in on each of the significant pillars that were required from education to government regulation to funding issues to training issues. All of those issues they addressed, and they've had an impact in stimulating their environment.

Now, certainly, this revolution applies also in your space. And you're investing money in it. The federal government is investing money in it. They have a $78 billion investment in the year 2000 going up to over $100 billion, and they probably started earlier, went through perhaps more phases than state and local governments. And you do have an opportunity as a mayor to leapfrog. You don't have to go through all of those stages that they went through.

So it's both a disadvantage and an advantage that they've been involved in this for a long-time. I could make the argument that it's probably an advantage not to have done too much historically, because you can step in at this juncture in a totally different kind of a paradigm setting.

The level of federal spending is growing at about five percent a year. As you might expect, the Defense Department leads the way in terms of its spending. The Defense Department is spending a little over $10 billion U.S. on a budget of $300 billion, plus or minus a few billion. I could argue that that's not an overly large investment. In our own case, we're probably spending three, four, five percent of our budget, and this doesn't include all of the capital spending, perhaps, that's reflected in it.

You'll notice it's growing faster, perhaps a reflection of the fact it didn't start at the same plateau. And in your community, you're not the only one that may be investing. Here's an example of a chamber of commerce partnering with the city to provide a series of services that the city might normally provide.

One of the beauties of networked environment is that you can capitalize on capabilities other than your own. You can leverage other resources, and certainly here in terms of promoting the city of Louisville, the chamber of commerce is a networking partner. Certainly state government and local government have a lot of opportunities to both simplify and improve the service that they deliver to the community. I happen to live part time up in New Hampshire.

It's a wonderful experience licensing your automobile in New Hampshire. It's a wonderful experience. The first thing you do is you go to the local town office, and there's no line usually and very nice people, very accommodating people, and you pay a fee and then they give you a couple of pieces of paper, and then in my case, that's right in Holerness. So it's convenient: maybe ten, 15 minutes from my house.

But then that doesn't give me a license.

Then I have to go to the county office. That's in Gilford. That's about a 30-to 40-minute drive, usually no line, nice people, and then you pay another fee, and then they send that in, and after a couple of weeks, the local Post Office — in my case, I have to go into the Post Office because we don't have rural delivery —

(Left to right) Sophia Wisniewska, dean Temple University Ambler, Joan Ballots, Trustee Temple University, John Morgridge and Howard Cohen, associate dean of the Fox School, take a moment for a photo.

John "Jack" Cavanagh, mayor, city of Winston-Salem, NC, and his wife Martha chat with Cisco chairman John Morgridge.

you can pick up your license.

Now, I had a hiking accident. I broke my leg. If you want to get a handicap sticker, you have to mail it in. Of course, if you're recovering too quickly, it may arrive after you've actually recovered. So I decided I would actually go in and get one. In this case, you drive to Concord. Now, that's a little longer drive, maybe a half-day effort, some line there, people not quite as nice because, of course, they're more distant, and then you can get your handicap sticker.

In the case of Colorado, you can do all of that online. They took all of their permitting, all of their licensing and they put it online, so that I can apply for my license online. There are some states now that are testing online, doing some testing online, and those capabilities will continue to increase. But, certainly, licensing and permitting are two areas where you can deliver a lot of service online very inexpensively.

I would also make the argument that going forward all of you do work-permitting of various types at the state and local level and, basically, what you do is you're really not permitting. You're basically collecting fees, because you're not certifying, you're not tracking, you're not keeping those people up to date.

In the online environment, you'll be able to do that. You'll be able to certify undertakers, and you can retrain them or upgrade them, your healthcare workers, your child care workers. All of those things will become possible in this new realm, and I know that to be true because we do that.

I got an e-mail on our system and it was for the Visa card. A number of years ago, we realized that 80 percent of our transactions represented 20 percent of the dollars, and we said, well, why don't we just let people buy those locally with a company Visa card. So we issued Visa cards.

I knew that, but I don't have one. So I ignored it. I dumped it, as I do a lot of my e-mail.

Then I got another one. Then I got a third one that said it was urgent and that if I didn't read it, that my secretary, who does have a Visa card, will have it withdrawn, and then I became interested.

So I opened it up, and it was a training session on how the company Visa card can be used — what it can be used for and what it can't be used for — at the end of which I was to be given a test that if I didn't answer correctly, I would have to go back and retake the material.

You can track that kind of thing. The computer does not forget, and it ensures that those kinds of policies are enforced. And, within local government, I'm sure there are hundreds of applications. In the case of the state of Colorado, there were over 700 applications of licensing and permitting that were combined at a single Web site. I understand the city of New York is doing something along those lines. I know the city of San Jose has done things along those lines. These are big areas where you can do two things: you can cut costs and you can improve service.

Now one of my favorite subjects is education, and I know that's part of the area that you either operate in directly or indirectly in your positions. And this gets back to the whole thing of learning online. One of the reasons that Gino did not have to go to San Jose is that a tremendous amount of our training is done online. It's delivered that way, and there are a lot of advantages to that, not the least of which is keeping it current and keeping a record of who took what and when they have to be updated.

And it's a whole series of applications that are available here, all the way from presentations by John Chambers, our president, to training for our partners who provide a lot of our education. You can see we have over seven million objects of content available online.

Ninety percent of our field sales training is done online as was outlined earlier. Manufacturing — over $1 million a quarter through training — and customer service, about $500,000 per year through online service.

In the field of education, I can tell you what the experience is typically like. What it's typically like is that you see a very interesting application that some teacher has created in their classroom. There are two problems with it: number (1), it's not scalable and, number (2), you can't keep it current. I've only seen a couple of what I call scalable examples of online learning. One is the math emporium at Virginia Tech down in Southern Virginia where everyone coming to Virginia Tech takes either a basic calculus or a basic algebra course, some 4,000, 5,000 students per year, 40, 50 sections to teach that course.

What they did — and this is the kind of creative thing you can do — they rented a department store, 10,000 square feet, carpeted it, put in 500 computers and put the two courses online, and they pump students through there.

Now, that facility is open 24-by-7, and they have floating instructors in that room, and two things have happened. They've reduced the cost of putting the people through this program by two-thirds, and they've reduced the dropout rate by 40 percent. And the reason? You hear a lot about testing these days in education. There are two types of testing. One type of testing is testing for spelling stream. That's where you get the spelling words on Monday, you study them, you have a pretest on Wednesday and you have a final test on Friday.

The goal of that testing is not to determine whether or not you can spell those words. It's really to determine what words you can't spell and then help you master those words, so at the end of the week, you can spell all the words.

They do the same thing in the math emporium: very frequent quizzes, so that the student knows what he or she knows and, more importantly, what he or she does not know. In this environment, students can just raise their hand, an instructor floats over, handles the problem, the student moves on. The student doesn't wait until midterm exams to find out they don't understand some part of the math curriculum. This is the kind of thing you can do online in providing education capability.

The second example is closer to home. It's the Cisco Networking Academy. I know some of you are familiar with it. It's 280 hours of material delivered as an elective to juniors and seniors, typically in high school, to train them in the fundamentals of networking: how to design, install and maintain networks. It's delivered via PC off a server with online quizzes to every five sessions to drive the student to mastery with a mentor/instructor who also has been pre-trained, one week of training for every 70 hours of curriculum to teach the course.

We piloted this in the spring of '97 at the Thurgood Marshall High School in San Francisco. It was successful. We launched it that fall. We had 64 academies. That means 64 institutions teaching the material in seven states.

> If you're not ready for e-government, you ought to get ready, because this is upon you. It's going to be demanded of you.

Today, we have almost 7,500 academies located in 131 countries. We have 160,000 students taking the curriculum. We've given over six million exams online. We've trained 18,000 instructors, and it's been translated into 11 different languages.

Now that demonstrates the power of the network. No way you could scale a program like this. And you can imagine the kind of scaling you can do in training within your environments using this kind of a tool.

The other thing it demonstrates is that the network gives you the ability to leverage assets that are either under-utilized or that you don't own. You know, we don't own those classrooms. We don't own those instructors. We don't own those PCs. We provide none of that. We don't provide the students. All we provide is the curriculum, some training and some equipment, and the rest of it is leveraging the assets of a lot of other people.

As I said, it's 280 hours of curriculum. It's been so successful that we've added another 280 hours. We also now have a course provided by Sun on Unix and a course provided by Adobe on Web design. We're hopeful of creating a total curriculum in this space, in the tech-

nology space, one fit to industry standards, and we certify through an exam after the student has completed.

Incidentally, we made a commitment last fall to take it to the 25 poorest countries in the world. We're currently teaching in 28 countries in Africa. We know technology. Our corporation has a lot of capability in that space. We're helping with the resources that we have across all of the spectrum — our knowledge, our products, our money — not just writing the check. We're involved, and that's one of the reasons that these kind of programs are successful: because you're capitalizing on your total capability.

Here are some examples of where we have academies. A detention center. We actually have them in churches in the U.K. because that's where the economically disadvantaged gather. We're teaching at Portland Community College.

Certainly, one of the advantages of the network is in addressing advanced placement courses that most schools are challenged with and also doing things in the space of the learning challenged, the disabled of any type. These kinds of technology have good solutions in those spaces. We have them in union halls even though we're a nonunion company.

You may have read in *Time* magazine about the Indian Butte reservation where one of their leaders is actually creating a technology community there. I had the privilege of meeting a couple of our graduates who are involved in wiring that community up there. We're in emergency housing. We're in a lot of housing projects. We're in a job training center.

Certainly we have them all over the United States. And we have a lot of them right here in the state of New York. You can see we have the regional academies. It's a tiered setup where the regional academy is responsible for up to 10 or 12 local academies.

We train teachers at the training center. We don't run the training center, but we train the people in it. They train the trainers for the regional academies, and the regional academies train the local instructors. That's how it's set up. It's a method. We do some funding at these two levels. Below that, the school actually pays to have its instructor trained, and I've met a lot of instructors, and they're all the way from a shop teacher, a home economics teacher to a math teacher to a business training teacher. We've been able to train a broad spectrum of people to teach this material.

These happen to be the regional centers here, and notice one of them is supported by Time Warner. They actually have a regional training center at their facility. This is a business joining in and providing a capability to do that kind of training.

We have 31 local academies. Certainly, with the population here, you could easily have 100 academies because there are that number of jobs, particularly here in New York City where there's a huge shortage. You know, the most recent survey says there are six, seven hundred thousand jobs in this space — six-to-seven hundred thousand jobs — and understand these are not $30,000-a-year jobs. These are $60,000-and-above-a-year jobs. So they're good jobs, and there is a requirement for them.

Here are some of our partners. Across a broad spectrum you can involve other partners in order to bring forward a solution. And, certainly, our local office is part of supporting this also.

What's needed in order to pull this off? What's needed is leadership and, certainly, the city of New York has had that in its mayor, a leader who is committed to make the e-environment a vital part of his city or town.

You need funding. You know, it's like any other infrastructure: it has to be funded. You need accountability, and certainly all of you are aware of accountability. You need a standard base. You don't let everyone do their own thing — you have standards — and you build a robust infrastructure.

And then, lastly, you pick projects that yield quick payoffs, and there are a lot of them. And when I talk about quick payoffs, I'm not talking about years. I'm talking 90 to 120 days to put up a citywide directory, to put up citywide permitting, to put up citywide licensing, to provide services, a certain set of services online. Those are not long-term projects.

So in closing, if you're not ready for e-government, you ought to get ready, because this is upon you. It's going to be demanded of you, because people are seeing this capability in the services delivered by business and other institutions. They're going to demand the same of government.

From Wall Street to Main Street, A Community Connected

Richard M. Grasso, Chairman and CEO, The New York Stock Exchange

Partnering in this conference with Temple University and the city of New York was a very easy decision for us because the mayor of the city of New York has made such an incredible difference not just in the quality of life in our town over the past eight years, but in the economic infrastructure, in the magnetism for tourists. And literally, every walk of life in New York City over the course of our great mayor's years in office have been a shining star for this town.

I must confess I have a commercial reason as well. The opportunity to have John Morgridge and Cisco in this building for any extended period of time, no matter what the reason, represents for this institution one of those great moments of opportunity. So, John, I'm thrilled that the Cisco team is here and so many of the other businesses whom you'll hear from over the course of your symposium.

This is a somewhat, some would believe, incongruous part of your otherwise very symmetrical program over the course of the day and a half. But when you think a little bit more about the commonality between what I do and what you do, it becomes a bit clearer.

In fact, we have, indeed, a great alignment in our respective roles. I like to think of this institution, my privilege to serve some 85 million consumers. We call them investors. I, too, like you have a charter. Mine is called the Constitution of the New York Stock Exchange (NYSE). We have our own police force. The mayor and police commissioner of the city of New York look the other way, but we do indeed have some almost 100 full-time partners in the business of making your entry into this building a rather interesting exercise. We have, in essence, the operations of the world's largest populous city, even though we only operate on 46,000 square feet of real estate.

Eighty-five million constituents each day come to this marketplace through the benefits of a platform of technology that we have created over the last two dozen years. This technology was designed to recognize, as you are beginning to recognize, the possibilities and the enormous capabilities that technology placed at the fingertips of those both in the public and private sector today.

This institution, while very proudly tracing its origins back almost to the very founding of the great nation, commenced operations in 1792, just a couple of hundred yards away from our current locale. From 1792 through 1990, we evolved from the world's first

biography

Dick Grasso *has been chairman and chief executive officer of the New York Stock Exchange since 1995. Since 1988, he had served as president and chief operating officer. In 1991, while continuing in those positions, he became executive vice chairman of the Exchange. He is the first member of the NYSE's management to be elected to any of these positions in the NYSE's 208-year history.*

He joined the Exchange in 1968 and, in 1973, became director of listings and marketing, responsible for adding qualified prospects to the NYSE's list of companies. In 1977, he was promoted to vice president, corporate services and, in 1981, he was appointed senior vice president, corporate services, with the added responsibility for liaison, coordination and support for all NYSE-listed companies. He became executive vice president, marketing group, in 1983 and then executive vice president, capital markets, in 1986, with responsibility for all financial products and the market data group.

He serves on the board of directors of Computer Associates International Inc., National Italian American Foundation, The Centurion Foundation, New York City Police Foundation, and New York City Public Private Initiatives Inc. He is chair of the YMCA of Greater New York, co-chair of New York City's Project Smart Schools, and a trustee of the Stony Brook Foundation. He is also a member of the National Advisory Board of the Leon and Sylvia Panetta Institute for Public Policy, Yale School of Management advisory board, New York University Stern School of Business Board of Overseers, Baruch College School of Business Advisory Council, and Federal Reserve Bank of New York's International Capital Markets Advisory Committee,

He has received honorary Doctor of Law degrees from Fordham University School of Law, Pepperdine University Graziadio School of Business and La Salle University, as well as an honorary Doctor of Commercial Science degree from Pace University.

provider of capital to government. I say that because the first great trade that occurred on this institution had nothing to do with equity securities, in fact, had nothing to do with debt securities.

The first great trade took place just at our foot steps when Hamilton and Jefferson decided that in return for the agrarians taking back the capital out of the hands of the financial engineers, meaning that that small building just across the street that once housed all three branches of our government would be relocated to Washington, DC, in return, Hamilton got the opportunity to take the collective but individual debts of the 13 colonies and roll them into the first United States Treasury issue which became the first product traded on this exchange.

Indeed, as a provider of capital to the newly formed nation, to the building of some of our first infrastructures beginning with the Erie Canal to the railroads, to the engines of commerce of the late 1900s, through about the turn of the 20th century, we were primarily a debt market designed to provide a platform to those who chose to borrow in a securitized way. As equity securities became more popular, we became a platform to trade equities, and interestingly, it wasn't until about 1908 that equities overtook debt as the primary product of this institution.

Professor Simon Hakim and Dean Porat meet Dick Grasso, chairman and CEO of The New York Stock Exchange.

One great reminder of how quickly the fortunes of government can change, having nothing to do with the wonderful American democratic process, lies in the rear of this room. If it's not been explained to you, that urn that sits in the far corner was a gift to this institution by the last of the Romanovs, Nicholas, to thank the New York Stock Exchange. As the Romanovs were planning in the period around 1900 to build an infrastructure of railroads in old Mother Russia and recognizing they didn't have the capital to fund that buildout, they borrowed $2 billion on a global basis, the bonds trading on the board here at the New York Stock Exchange. Nicholas was so thrilled to have that debt listed that he commissioned the House of Faberge to create that piece.

Of course, my observation about the quick changes in fortune focus on what happened to both the bond holders and the Romanovs in 1917. Bad news for both of those communities. In our case, we got to keep the Faberge.

But it is, and stands today as, a very important reminder that reinvention— whether one is reinventing government or reinventing a business given the enormous capabilities of technology— is the constancy of challenge, be it the public or private sector. In my case, I love to draw the time line between 1792 and 1990. I'm very proud. I've never worked anywhere else. This is my 34th year here. But I will tell you, you need only turn the clock back to 1990 to understand where this business traces its roots.

While very proud are we of 209 years of service to our great country, if you were to look back prior to 1990, you would find but only a third of the companies that we are, today, privileged to trade, two-thirds having joined us in the last dozen years. So, while on the one hand we're very, very respectful and proud of our heritage, we recognize that in many respects, we're not even yet to become a teenager.

And as we've evolved in these last ten years, as our business has grown from the second largest equities market in the world— second by a considerable margin to the then leader Tokyo, which had a trillion dollar lead or roughly a 50 percent margin over us— we are today the world's only $18 trillion market. I'm very proud of the fact that I can lay claim,

without statisticians taking exception, to the fact that we are numbers one, two and three.

If you were to look at our gross market value, it's about $18 trillion. The second largest market in the world would be just those non-U.S. companies that we've listed in the last decade. Taking our franchise from fewer than a 100 to this year, we will cross the 500 line. Those 500 non-U.S. issuers have a gross market cap that standing alone would place them as the second largest equities market in the world, some $6 trillion U.S.

The third would be just our subsector in telecom media technology.

I use those as benchmarks for how quickly the fortunes of business can change. The business of government — look at my town — there was a time not too long ago when people were afraid to go north of 59th Street. Today, you can travel anywhere in this great city. I'm not suggesting that we haven't got a lot of work to do in terms of the economic allocations and prosperities in the South Bronx or in Red Hook or in parts of Manhattan or in parts of Queens. But today, in a short period of time, this city is being reinvented by a collaborative partnership between the public and private sector.

> Reinvention — whether one is reinventing government or reinventing a business given the enormous capabilities of technology — is the constancy of challenge, be it the public or private sector.

For my business to do well, I've had to have an environment where we in this town could attract great people at all levels. Where we could take from the high schools clerical forces to support that very critical part of our business that wraps the infrastructure around the high value added, the high content and, thus, the high skill that applies in the financial engineering of our capital markets. To constantly take technology, because whether you're in government or you're in my business, to have watched what's happened in the last dozen years by virtue of technology being at our fingertips... I can tell you ladies and gentlemen, there was a time when an order coming to this marketplace, be it a 100 shares or a 100,000 shares, the time factor would be the same. In some cases, it would have been hours.

Today, 92 percent of my orders, which produce half my business, come on an e-platform application from anywhere in the world to the floor of the stock exchange. And I must say with great respect to John and his colleagues at Cisco, that a lot of those orders ride Cisco networking activity to the floor of the exchange and back in less than three seconds: anywhere in the world, the floor of the exchange and back. The customer, my customers being investors, your customers being citizens.

I love to listen to our mayor and our police commissioner talk about crime. Crime in this city has been driven down so dramatically that for the past five years, the FBI has labeled this America's largest and safest city. It is an application of technology in terms of monitoring statistics, in terms of deploying assets. In my business, it's a matter of recognizing what technology and interconnectivity can do for us.

Today, we're in the latter stages not just of being the world's largest domestic equities market, but in the latter stages of applying that application of networking to our global partners. Just about a year ago, we announced an alliance with markets on the APAC theater, in Latin America and in Europe. By this time next year, our first pilot will be up. We will interconnect markets in Canada with ours and the markets in Hong Kong. We, in essence, will roll our liquidity around the world following the sun. In some cases where there's overlap of operating hours, we will operate in competition. In some cases where there are discrete operating venues, we will simply move our business via the Net to those partner markets around the world.

This is a time where you can, as a business or as a government in the business of serving communities, take technology and fully embrace what I'll call the neighborhood. My neighborhood is 85 million participants directly, literally in all parts of the globe—from a standing position as we entered the '90s, fewer than 90 non-U.S. companies. Today, every part of the developing and emerging world can lay claim to a company traded on the NYSE.

Applying technology for re-inventive purposes, taking the best of breed —and I'm a great believer. In our world, connectivity and reliability is not 99 percent up time as you heard a few weeks ago. When we have a minute of downtime, we quickly launch ourselves onto the front pages of every newspaper, and it gives me an opportunity to spend a lot of time with my friends in the halls of Congress explaining why this business wasn't operating. So, unlike my dear friends in the airline reservation business who are very proud of a one percent down time, one percent down time for me is a guaranteed invitation to appear before a House or Senate committee asking why the one percent occurred.

It is a military application that we run here with a goal of zero. And I know that some in the technology world would say,"That's unrealistic, Dick."

It's not unrealistic when you consider that my consumers are in distant parts of the globe. They expect this institution to be up 100 percent of the time, because it is no longer an institution on the southern tip of Manhattan, some strange place known as Wall Street.

What has happened in this great country of ours in the last 20 years is that we've emerged from a defined benefit to a defined contribution society, from fewer than 40 million investors to approaching 100 million investors. When you add indirect ownership to those numbers, more than 200 million Americans own the institution that is proud to host this conference.

This institution is no longer the private parlance of a few in dark suits and drab ties— and I say that with all due respect to the wonderfully talented women in the room. When I came here, this was a very different, noninclusive society. Today, half this company is run by my partner who joined me some 27 years ago right off the campus, and she is without a doubt the most talented person that I've ever recruited to this business.

But this is a business that has in these last 20 years recognized that Wall Street and Main Street have, indeed, become one street. Not just here in the United States, but in Great Britain, on the Continent, on the Pacific Rim — everywhere I go — people want, governments want, the opportunity to do what we've done in this great country of ours, and that is democratize the ownership process, empower people to take ownership in government. Again, I don't profess to have the skills that you do in terms of the public sector, but in government, I've watched our mayor and I've watched many mayors, and I think it is important that the private and public sectors have a total alignment of that partnership interest. The quickest way to lift some of those areas of our city, some of the other inner cities of this country, or the underserved in rural America who have yet to benefit from the economic prosperity of the last eight years, is to empower them, to democratize ownership.

> Today, we're in the latter stages not just of being the world's largest domestic equities market, but in the latter stages of applying that application of networking to our global partners.

We had a fabulous example of that here a number of years back: a very small feeder railroad in Illinois that for ten years was the subject of a competing bid from two existing major rail networks. In those days, the government had something called the ICC, which had to approve the merger or the takeover of that railroad. It spent ten years deliberating, came to no conclusion. Both of the major carriers walked away. It was the poorest run, most lost labor railroad in the country.

The managers threw up their hands and threw the keys to the union. In two years, it was the most profitable railroad and it had emerged as a listing on the NewYork Stock Exchange—one of the great examples of empowerment and partnership.

In the NewYork Stock Exchange's history, the period of reinvention is one of continuous and, I would say, increasingly challenging levels. Today, however, we have the benefit of a society where what I'll call the commodity technology has been refined to the level that allows us to have comfort.

We use the e-platform in our world to connect those 85 million investors and give them a certainty that in less than three seconds or, in some cases, as much as nine seconds, their

orders from lower Manhattan or their orders from Kuala Lumpur are going to arrive, gain access to pricing and certainty of completion and be back at point of origin.

This is a societal challenge for my business, not unlike yours. How do you embrace the Net? In my world, it's by recognizing what the Net truly has done. It has basically eliminated that traditional separation between consumer and producer.

Let me give you a case study. I trade 3,000 great companies. The 1,000 of those produce 95 percent of my daily activity, the first 500, 75 percent. To buy or sell 50 or 75 thousand shares of General Electric is an e-platform application. To buy or sell 75 shares of Berkshire Hathaway Class A, which trades at $70 thousand per share, will never be an e-platform application. So, understanding technology's capabilities and mating them to your business model are really the challenges we in the private sector have and you in the public sector share as well.

It is a time where understanding the difference between commodity and high value added, understanding the difference between communicating with a constituency and bringing the need for town hall to continue under the same roof. In our world, that roof is something known as Network NYSE where a suite of products sits under our technology platform that allows the traditional open outcry that you will see today at the close, and an e-application that takes orders from around the world in nanoseconds and brings them back. It's understanding where the technology does it best and where the human does it best.

In government — and, again, I think that there is no nobler cause than to be serving people —I think that no matter how successful we in the private sector are, without your succeeding, without your administrations deploying all of the tools that we in the private sector have to serve your customers — your constituents — the partnership is incomplete. The landscape will be less than what it could be.

I'm thrilled to have listened to some of the earlier presentations, because I think they highlight the importance of understanding what is at your fingertips as a business manager. And you are, when you strip away the rhetoric of campaigns, you are business managers. You're running municipalities that in many cases would be larger than the typical new company coming to list on the Big Board or on any of our other great markets in this country. The challenges of deploying process and technology and people are one and the same, and the challenge of engagement of those in the public and private sector never greater.

Dean Sophia Wisniewska of Temple's Ambler College greets Dick Grasso.

Information Technology as a Tool for Government Reform

Stephen Goldsmith, Former Mayor, Indianapolis, IN

New Governance Technology for a New Century

I first attempted to bring access to government information online in the mid-1980s when most technology services were available only through cumbersome mainframe computer systems. Often these mainframe-based information systems were controlled by an internal, centralized government monopoly that dictated what information was available and controlled both the terms and pricing of access.

biography

Stephen Goldsmith *served as mayor of Indianapolis, the nation's 12th largest city, from 1992 until 2001. His two-term tenure attracted nationwide attention and earned him a reputation as one of America's most innovative mayors. His book,* The Twenty-First Century City: Resurrecting Urban America *(Regnery, 1997) details his efforts to make city government more efficient. He has also written several articles on urban reform that have appeared in national media, including* The New York Times *and* The Wall Street Journal.

In 1995, he received the Council for Economic Development President's Award and was named Public Official of the Year by Governing Magazine. *In 1993, he received the National Council for Public-Private Partnership's Distinguished Leadership Award.*

Before being elected mayor, he served as Marion County prosecutor for twelve years, as Indianapolis chief trial deputy for two years, as Indianapolis deputy corporation counsel for one year, and as an attorney in private practice for seven years.

In 2001, Stephen Goldsmith served as senior fellow and chair of the Center for Civic Innovation at the Manhattan Institute, an organization dedicated to improving the quality of life in cities by shaping public policy and enriching public discourse on urban issues. He is also a research fellow at Harvard University's Kennedy School of Government and assistant professor at Indiana University's School of Public and Environmental Affairs. During the 2000 Presidential election, he served as domestic policy advisor to then Governor George W. Bush's presidential campaign.

He holds a BA in political science from Wabash College and a degree in law from the University of Michigan.

Fortunately, information technology has evolved from cumbersome mainframes to today's more flexible networks. These networks may include a mainframe but they are also comprised of myriad other technologies, supplied or managed by the private sector, which are designed to give system end-users enormous discretion and functionality from the desktop.

Defining Network Governance

These new networks both provide a model for and enable the practice of new governance networks. A "networked government" is one which can assimilate all resources at its disposal into a package which is most useful for the customer. It allows public officials to extend effective services to their constituents via a variety of channels, whether public, private, not-for-profit, or faith-based. It can move information.

Within this "networked government" model, information moves both horizontally — from agency to agency — and vertically — from constituent to agency — effortlessly. Key components of a networked government include widely deployed information technologies and e-government services. These components permit managers to move ideas and information through once-sturdy barriers imposed by layers of bureaucracy.

During my tenure as mayor of Indianapolis this principle of widely deployed information technology as an information-mover played out when AFSCME union leaders in the solid waste department requested computer terminals be placed next to the time clocks. This investment enabled union leaders to monitor service complaints personally and communicate ideas to me directly, without the barriers imposed by bureaucratic layers of management.

Network Governance and a New Focus on Values

Traditional government structure by necessity produces red tape. After all, a significant number of employees pass each day shuffling papers, completing forms, examining completed forms for rule compliance, and

requesting revisions for inaccurately completed forms. Without red tape, where would these employees be? And government has transferred to the citizen responsibility for navigating municipal red tape. After all, government employees are too overwhelmed with forms to adequately guide citizens through bureaucracy.

Network governance and e-government services radically alter this status quo. By utilizing e-government services, citizens can navigate government on their own terms, 24 hours per day, seven days a week. By creating e-government options, managers establish a virtual filing system that automatically sends citizen-submitted data to the correct location. Managers can build submission requirements into an e-government system that substantially reduces human error in form completion and outsource mundane processing work to private companies.

What can government do with the resources available due to increased accuracy and efficiency provided by e-government services? Redouble its focus on upholding core public values — safeguard the privacy of confidential information while facilitating fair and equitable access to public services and public information.

Information as a Product

E-government transforms information from an item used by the government to deliver a product into a product in its own right. Cities can now use the Internet to provide information to enable more efficient markets. New York City information on restaurant inspections allows citizens to make more informed decisions about where they want to dine. Many of the regulatory functions of municipal government can become more effective when government informs interested citizens about compliance rates.

Government can deploy information in a way that creates public value in a wide range of ways. It can work with neighborhood associations to take city-wide information and disaggregate it around neighborhood issues. These associations then can produce social capital by knitting people together around important local issues. Government can procure and audit with more transparency, inducing trust. It can provide feedback mechanisms that are instant and easy to monitor, allowing citizens more input. And it can allow its residents to request personalized information that can be easily narrowcast to them: e.g., a notice that your license will expire in a month and a simple form to renew it. These are just a few of the ways technology will help deploy information that produces value.

Technology Drives Management Reform

Delays in securing permit applications have haunted many cities, and Indianapolis was no exception. It took my entire eight-year tenure as mayor to successfully modernize the process of securing a building permit. However, instead of developing a clear vision from the outset, we took a series of sometimes well-intentioned, but not always successful, steps.

The first step in reforming the department involved outsourcing the drainage permit review. Drainage permit review outsourcing was a logical first step because it was the slowest part of the permit process. When a year of outsourcing reduced total permit acquisition time only marginally, I inquired about the insufficient progress. The vendor replied that there were many ways to streamline the permit acquisition process, but the city had only asked him to speed the drainage review process, not streamline the overall permitting system.

That conversation was the catalyst for a five-year effort to digitize every land-related record

Former Mayor Steve Goldsmith of Indianapolis presents his views on the relationship between new technology and govennment.

(left to right) Temple Chairman of the Board Howard Gittis chats with Steve Goldsmith, Dean Porat, and Deputy Counsel to the Mayor Laurence Levy of New York.

the city possessed (zoning regulations and variances, covenants, and previous permits, to name a few) and move from a sequential permit processing system (read: employees frantically scouring their offices in search of in-process files) to a team-oriented, concurrent digitized permit processing system.

In the initial system, plans passed sequentially from specialist to specialist. Each reviewed his specialty and frequently inserted changes that affected another reviewer. Sequential processing created an efficiency model comparable to a cat chasing his tail.

Concurrent processing was impossible prior to the advent of digital files and shared databases. But as the use of the databases and files became widespread and inter- and intranet capability became a reality, efficiency of the permit processing system increased markedly. Not only could members of a processing team access and manipulate a digital file and apply different specialties simultaneously, but applicants could file permit applications online, avoiding the ordeal of travel, wait, and form-weary bureaucrats.

E-government transforms information from an item used by the government to deliver a product into a product in its own right.

The move to a concurrent and digitized permit processing system further increased efficiency because system designers built error-reduction rules into the e-government system. For example, permit applications for locations not appropriately zoned were simply not accepted.

These new systems allow the architects to build complex, accuracy determining questions into the software. Coupled with advanced training, city workers can exercise more discretion, solve more problems with fewer errors and avail themselves of more interesting and satisfying public sector jobs.

Local officials stand at the front line of innovation, often by necessity. E-government and related technology advances provide progressive managers with tools to dramatically increase constituent services. When well executed the quality of the work can go up, the cost can go down and the public servant can enjoy a more satisfactory and fulfilling career.

The Center for Competitive Government at Temple University

Publications

The Center for Competitive Government publishes regularly on privatization topics as part of its ongoing commitment to encourage debate and promote research.

Volumes

To date we have edited the following volumes:

- "Securing Home and Business: A Guide to the Security Industry"
- "The New Public Management: Lessons from Innovating Governors and Mayors"
- "Reinventing Water and Wastewater Systems: Global Lessons for Improving Management"
- "Making Government Work: Lessons from America's Governors and Mayors"
- "Restructuring Education: Innovations and Evaluations of Alternative Systems"
- "Privatizing the United States Justice System"
- "Privatizing Correctional Institutions"
- "Privatizing Education and Educational Choice"
- "Privatizing Transportation Systems"
- "Privatization and Competition in Telecommunications: International Developments"
- "Restructuring State and Local Services"
- "Smart Contracting for Local Government Services"
- "Contracting Out Government Services"
- "Privatization and Restructuring of Electricity Provision"
- "America's Water and Wastewater Industries: Competition and Privatization"
- "Innovations in Education: Evaluating Alternative Systems"

These volumes are part of the series "Privatizing Government: An Interdisciplinary Series," which we edit for Praeger Publishers. All our publications contain a variety of articles written by researchers, practitioners, and members of groups directly involved in privatization such as government, business and labor organizations. We present diverse viewpoints, and cover all aspects of restructuring and privatization from theoretical analysis to actual implementation.

Conference Proceedings

- "Making Government Work: Best Practices in Competitive Government"
- "Seizing the Opportunity of E-Government"

Articles

Members of the Center for Competitive government conduct research in various fields of privatization. Articles were written on police, prisons, highways and human services. The following are a few published articles.

- "A Market Alternative to Child Adoption and Foster Care," Erwin A. Blackstone and Simon Hakim
- "Regulation," Cato Institue, Vol. 25 (1), Spring 2002: 16-19, Erwin Blackstone, Simon Hakim, Uriel Spiegel
- "The Economics of Crying Wolf," for the Milken Institute , Erwin Blackstone, Simon Hakim, Uriel Spiegel
- "Police Services: The Private Challenge," *An Independent Institute Policy Report*, Erwin Blackstone and Simon Hakin
- "Making Inroads in Private Highway Construction," *American City & County Magazine*, (with E. Blackstone), August 1999: 52-56.
- "Private Guard Response to Alarm Activation," *Security Technology and Design*, April 1995: 54-55.
- "Privately Managed Prisons Go Before the Review Board," *American City & County*, (with E. Blackstone) Vol. 111 (4), April 1996: 40-50.
- "Crying Wolf with Public Safety," *American City & County*, (with E. Blackstone), Vol. 111 (10), August 1996: 54-64.
- "Private Ayes: A Tale of Four Cities," *American City & County*, Vol. 112, (2), February 1997: PS4-PS12.

(continued)

Working Papers

- "A Market Alternative to Child Adoption and Foster Care"
- "Congestion in Delivery of Emergency Services in Urban Areas: The Case of Police Response to Burglar Alarms"
- "Efficient Provision of a Mixed Public-Private Good: The Case of Police Response to Alarms"
- "Introduction to Privatization"
- "Description and Evaluation of Free Trade Zones"

Other Books

- "Kids Raised by the Government," Ira M. Schwartz and Gideon Fishman, Praeger, 1999.
- "Justice for All," Arye Rattner and Gideon Fishman, Praeger, 1998.
- "The New Public Management: Lessons from Innovating Governors and Mayors," Paul J. Andrisani, Simon Hakim and E.S. Savas, Kluwer Academic Publishers.

CENTER *for*
SUSTAINABLE
COMMUNITIES

Temple University AMBLER

The Center for Sustainable Communities

at Temple University Ambler

The Center for Sustainable Communities at Temple University Ambler is committed to promoting an effective, holistic approach to land use planning and management, sustainable development, ecological restoration, and community revitalization.

Established in July 2000, the Center is designed to build on Temple University Ambler's strengths in landscape architecture, horticulture, and environmental studies while drawing upon the expertise of all Temple University faculty and affiliated research fellows. The Center fosters interdisciplinary collaboration in educational programs, research, public policy, and community service projects.

The Center for Sustainable Communities has hosted public forums and workshops for public officials and planners on the topics of livability, smart growth, water conservation, and transportation, and has conducted environmental citizenship seminars for high school students. The Center also conducts public policy and interdisciplinary research symposia on topics of regional and national interest impacting the development of sustainable communities. The first conference of this kind in April 2002 focused on redevelopment and revitalization strategies for older suburbs and boroughs.

The Center is developing its capacity to serve as a resource for municipal government officials, community organizations, and citizens by providing objective information and services to improve decision making relative to land use planning and management. A design studio (offering services to create and evaluate development and redevelopment proposals) and an interactive Web site (to provide technical and public policy information, research data, best practices, and model laws and ordinances) are currently being implemented.

Please visit the CSC website (www.csc.temple.edu) to learn more about our programs, events, faculty associates, and research fellows.

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